Ministère
de l'Agriculture,
des Pêcheries
et de l'Alimentation

Québec 🔷🔷

Bureau du sous-ministre

Québec, le 12 février 2025

███████████████████

Objet : Demande d'accès aux documents
N/Réf : 2025-01-21-008

Madame,

La présente fait suite à votre demande d'accès aux documents reçue par courriel le 20 janvier dernier, visant à obtenir toute communication concernant la règlementation du bien-être des animaux pour la période allant du 4 décembre 2015 au 20 janvier 2025.

À cet égard, il appert de l'analyse du dossier que nous ne pouvons y répondre que partiellement, et ce, conformément aux articles 9 (2), 18, 19, 31, 33 et 34 de la Loi sur l'accès aux documents des organismes publics et sur la protection des renseignements personnels (chapitre A-2.1), ci-après « Loi sur l'accès ».

En effet, conformément au deuxième alinéa de l'article 9 de la Loi sur l'accès, le droit d'accès ne s'étend pas aux ébauches ou à tout document de cette nature.

De plus, en vertu des articles 18 et 19 de la Loi sur l'accès, un organisme peut refuser de communiquer un renseignement obtenu d'un gouvernement autre que celui du Québec, notamment lorsque sa divulgation porterait vraisemblablement préjudice à la conduite des relations entre le gouvernement du Québec et un autre gouvernement.

Conformément à l'article 31 de la Loi sur l'accès, un organisme peut refuser de communiquer une opinion juridique ou tout document de cette nature.

Aussi, conformément à l'article 33 de la Loi sur l'accès, les avis, analyses et recommandations qui sont communiqués au ministère du Conseil exécutif sont confidentiels pour un délai de 25 ans conformément à l'alinéa 5 de cet article.

Enfin, conformément à l'article 34 de la Loi sur l'accès, un document du bureau d'un membre de l'Assemblée nationale ou un document produit pour le compte de ce membre par les services de l'Assemblée n'est pas accessible à moins que celui-ci ne le juge opportun.

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Conformément aux articles 51 et 135 de la Loi sur l'accès, nous vous informons que vous pouvez demander la révision de cette décision auprès de la Commission d'accès à l'information dans les trente (30) jours de cette décision. Vous trouverez ci-joint les dispositions de la Loi sur l'accès mentionnées dans la présente.

Pour toute information, vous pouvez joindre Edith Couture, adjointe à la responsable de l'accès à l'information, par téléphone au 418 380-2136 ou par courrier électronique à accesinformation@mapaq.gouv.qc.ca.

Veuillez recevoir, Madame, l'expression de nos sentiments les meilleurs.

Marie-Odile Koch
Sous-ministre adjointe à la gouvernance, à la performance ministérielle et à l'innovation
Responsable de la Loi sur l'accès

Loi sur l'accès aux documents des organismes publics et sur la protection des renseignements personnels
(Chapitre A-2.1)

Article 9
Toute personne qui en fait la demande a droit d'accès aux documents d'un organisme public.
Ce droit ne s'étend pas aux notes personnelles inscrites sur un document, ni aux esquisses, ébauches, brouillons, notes préparatoires ou autres documents de même nature.

Article 18
Le gouvernement ou un ministère peut refuser de communiquer un renseignement obtenu d'un gouvernement autre que celui du Québec, d'un organisme d'un tel gouvernement ou d'une organisation internationale.

Il en est de même du lieutenant-gouverneur, du Conseil exécutif et du Conseil du trésor.

Article 19
Un organisme public peut refuser de communiquer un renseignement lorsque sa divulgation porterait vraisemblablement préjudice à la conduite des relations entre le gouvernement du Québec et un autre gouvernement ou une organisation internationale

Article 31
Un organisme public peut refuser de communiquer une opinion juridique portant sur l'application du droit à un cas particulier ou sur la constitutionnalité ou la validité d'un texte législatif ou réglementaire, d'une version préliminaire ou d'un projet de texte législatif ou réglementaire.

Article 33
Ne peuvent être communiqués avant l'expiration d'un délai de 25 ans de leur date:
1° les communications du Conseil exécutif à l'un de ses membres, au Conseil du trésor ou à un comité ministériel, à moins que le Conseil exécutif n'en décide autrement;
2° les communications d'un membre du Conseil exécutif à un autre membre de ce conseil, à moins que l'auteur n'en décide autrement;
3° les recommandations du Conseil du trésor ou d'un comité ministériel au Conseil exécutif, à moins que l'auteur ou le destinataire n'en décide autrement;
4° les recommandations d'un membre du Conseil exécutif au Conseil exécutif, au Conseil du trésor ou à un comité ministériel, à moins que l'auteur ou le destinataire n'en décide autrement;
5° les analyses effectuées au sein du ministère du Conseil exécutif ou du secrétariat du Conseil du trésor et portant sur une recommandation ou une demande faite par un ministre, un comité ministériel ou un organisme public, ou sur un document visé dans l'article 36;
6° les mémoires ou les comptes rendus des délibérations du Conseil exécutif ou d'un comité ministériel;
7° une liste de titres de documents comportant des recommandations au Conseil exécutif ou au Conseil du trésor;
8° l'ordre du jour d'une réunion du Conseil exécutif, du Conseil du trésor ou d'un comité ministériel.
Le premier alinéa s'applique, compte tenu des adaptations nécessaires, aux mémoires des délibérations du comité exécutif d'un organisme municipal, aux recommandations qui lui sont faites par ses membres ainsi qu'aux communications entre ses membres.

Article 34
Un document du bureau d'un membre de l'Assemblée nationale ou un document produit pour le compte de ce membre par les services de l'Assemblée n'est pas accessible à moins que le membre ne le juge opportun.

Il en est de même d'un document du cabinet du président de l'Assemblée, d'un membre de celle-ci visé dans le premier alinéa de l'article 124.1 de la Loi sur l'Assemblée nationale (chapitre A-23.1) ou d'un ministre visé dans l'article 11.5 de la Loi sur l'exécutif (chapitre E-18), ainsi que d'un document du cabinet ou du bureau d'un membre d'un organisme municipal ou scolaire.

Article 51
Lorsque la demande est écrite, le responsable rend sa décision par écrit et en transmet copie au requérant et, le cas échéant, au tiers qui a présenté des observations conformément à l'article 49.

La décision doit être accompagnée du texte de la disposition sur laquelle le refus s'appuie, le cas échéant, et d'un avis les informant du recours en révision prévu par la section III du chapitre IV et indiquant notamment le délai pendant lequel il peut être exercé.

Article 135
Une personne dont la demande écrite a été refusée en tout ou en partie par le responsable de l'accès aux documents ou de la protection des renseignements personnels peut demander à la Commission de réviser cette décision.
Une personne qui a fait une demande en vertu de la présente loi peut demander à la Commission de réviser toute décision du responsable sur le délai de traitement de la demande, sur le mode d'accès à un document ou à un renseignement, sur l'application de l'article 9 ou sur les frais exigibles.

Ces demandes doivent être faites dans les trente jours qui suivent la date de la décision ou de l'expiration du délai accordé par la présente loi au responsable pour répondre à une demande. La Commission peut toutefois, pour un motif raisonnable, relever le requérant du défaut de respecter ce délai.

Bonjour!

Jean, je te mets dans la boucle puisque Josiane n'est pas disponible aujourd'hui et que je pense que ça presse puisque le conseil des ministre est demain.
Tu peux prendre connaissance du courriel ci-dessous que j'avais envoyé à Josiane ce matin, mais elle est occupée!
À la suite de cet envoi, j'ai parlé avec France Lalande au sujet du CP en pièce jointe qui concerne le r.1
Cette dernière n'est pas responsable de ce CP, mais a pu me fournir des informations.

Ce qu'elle m'a dit, c'est qu'il s'agit d'un communiqué de presse qui remplace le premier (l'autre n'a finalement pas été diffusé)
Le communiqué de presse initial a été modifié à la demande de M. Verret (en remplacement de M. Dufresne). Il souhaitait simplifier l'information.
On pourrait encore demander des modifications, mais il a été approuvé à plus haut niveau.

Vous pourrez prendre connaissance de mes commentaires dans le CP mis à jour en pièce jointe.
En fait, puisque ça a été approuvé à plus haut niveau, mes commentaires seront possiblement non-pertinents, mais lorsqu'on dit que cette modification règlementaire est la première de 3 et que 2 autres règlements seront publié dans les prochains mois, on peut créer des attentes irréalistes.
On peut penser que le r.2 sera prépublié à l'hiver-printemps ou été 2022, mais le r.3 arrivera dans quelques années.
Était-ce voulu de dire ça de cette façon?

France Lalande m'a dit de m'adresser à mes gestionnaires qui pourront faire le suivi nécessaire si vous jugez que mes commentaires sont pertinents.

Jean, au besoin, tu peux contacter Marie-ève Lessard, je suis absente cet après-midi.

Bonne journée!

Émilie Pelletier │ Médecin vétérinaire

Conseillère en bien-être animal et en réglementation
Direction adjointe à la règlementation et des programmes
Sous-ministériat à la santé animale et à l'inspection des aliments
Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
Courriel : emilie.pelletier@mapaq.gouv.qc.ca
Site web : www.mapaq.gouv.qc.ca

De : Pelletier Émilie (DSABEA) (Granby)
Envoyé : 21 septembre 2021 09:51
À : Garneau Josiane (DSABEA) (Québec)
Objet : TR: Demande d'info au SMSAIA: CP désignation espèces - semaine du 20 sept.

Bonjour Josiane,

France m'a fait parvenir la version finale du CP à la suite de mon courriel de ce matin.

Voici mes commentaires pour ce CP. France Lalande ne m'a pas sollicité pour commenter, simplement pour me demander le nom du Règlement et la date de publication à la Gazette. Cependant, à la lecture de la version corrigée et approuvée de ce CP, je constate que des éléments ont été modifiés suites à la version commentée qu'on avait transmise il y a 2 semaines avec lesquels je ne suis pas à l'aise (voir mes commentaires dans le document en PJ).

Petite question : est-ce qu'il y a un communiqué de presse à chaque fois que ça passe au conseil des ministres?
Est-ce que celui d'il y a 2 semaines a été diffusé et celui-ci en est un autre supplémentaire?
Ou est-ce ce CP qui remplace tout simplement celui d'il y a 2 semaines?
Je constate que le contenu a changé depuis la version précédente d'il y a 2 semaines.

Merci!

Émilie Pelletier │ Médecin vétérinaire
Conseillère en bien-être animal et en réglementation
Direction adjointe à la règlementation et des programmes
Sous-ministériat à la santé animale et à l'inspection des aliments
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Site web : www.mapaq.gouv.qc.ca

De : Pelletier Émilie (DSABEA) (Granby)
Envoyé : 21 septembre 2021 07:55
À : Lalande France (DC) (Québec) <France.Lalande@mapaq.gouv.qc.ca>
Cc : Garneau Josiane (DSABEA) (Québec) <Josiane.Garneau@mapaq.gouv.qc.ca>
Objet : TR: Demande d'info au SMSAIA: CP désignation espèces - semaine du 20 sept.

Bonjour France!

La pièce jointe n'a pas suivi, alors je ne peux vérifier la version finale du communiqué de presse, mais sur une version antérieure, on y lit le nom complet du Règlement, c'est : *Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal.*

Juste un petit point qui attire mon attention cependant sur la version antérieure du communiqué de presse, c'est qu'en entête, un y lit :

« LE MINISTRE LAMONTAGNE PROPOSE DES MODIFICATIONS AU RÈGLEMENT SUR LA DÉSIGNATION DES AUTRES ANIMAUX VISÉS PAR LA LOI

Je n'avais précédemment pas accroché sur l'entête, mais je ne suis pas certaine de bien comprendre pourquoi c'est écrit ce qui est surligné en jaune, puisque ce Règlement est complètement nouveau… Tu peux m'appeler au besoin ce matin, mais je suis absente en après-midi.

En ce qui concerne la publication à la Gazette, je ne suis pas certaine de la date. Je pense que ce qui est visé est 14 jours suivant le conseils des ministres prévu demain le 22 septembre, mais je ne peux le confirmer.

Bonne journée!

Émilie Pelletier │ Médecin vétérinaire
Conseillère en bien-être animal et en réglementation
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De : Garneau Josiane (DSABEA) (Québec) <Josiane.Garneau@mapaq.gouv.qc.ca>
Envoyé : 20 septembre 2021 17:07
À : Lalande France (DC) (Québec) <France.Lalande@mapaq.gouv.qc.ca>
Cc : Pelletier Émilie (DSABEA) (Granby) <Emilie.Pelletier@mapaq.gouv.qc.ca>
Objet : TR: Demande d'info au SMSAIA: CP désignation espèces - semaine du 20 sept.

Allo France,
Émilie Pelletier pourra faire le lien avec toi.
Bonne soirée!

Agriculture, Pêcheries et Alimentation
Québec

Josiane Garneau, M. Sc., MBA │Directrice adjointe
Direction adjointe à la réglementation et des programmes
Direction de la salubrité alimentaire et du bien-être des animaux
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Téléphone : 418-380-2100 poste 2077
josiane.garneau@mapaq.gouv.qc.ca

De : Diaz Eduardo (DSABEA) (Québec) <Eduardo.Diaz@mapaq.gouv.qc.ca>
Envoyé : 20 septembre 2021 17:05
À : Lalande France (DC) (Québec) <France.Lalande@mapaq.gouv.qc.ca>
Cc : Garneau Josiane (DSABEA) (Québec) <Josiane.Garneau@mapaq.gouv.qc.ca>
Objet : RE: Demande d'info au SMSAIA: CP désignation espèces - semaine du 20 sept.

Bonjour France,

Désolé, je ne suis pas vraiment au courant de ce dossier.

Josiane pourra te diriger à la bonne personne.

Bonne soirée,

Eduardo Diaz, M.Sc.
Conseiller
Direction adjointe à la réglementation et des programmes,
Sous-ministériat à la santé animale et à l'inspection des aliments

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De : Lalande France (DC) (Québec) <France.Lalande@mapaq.gouv.qc.ca>
Envoyé : 20 septembre 2021 16:37
À : Diaz Eduardo (DSABEA) (Québec) <Eduardo.Diaz@mapaq.gouv.qc.ca>
Cc : Garneau Josiane (DSABEA) (Québec) <Josiane.Garneau@mapaq.gouv.qc.ca>
Objet : Demande d'info au SMSAIA: CP désignation espèces - semaine du 20 sept.

Bonjour Eduardo,

Peux-tu me confirmer le nom complet du règlement sur la désignation des espèces stp? Aussi, sais-tu quand ce projet va paraître dans la Gazette officielle? C'est pour compléter le communiqué de presse approuvé et révisé en pièce jointe.

Merci et bonne fin de journée,

France Lalande
Conseillère en communication

Direction des communications
Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
200, chemin Sainte-Foy, 1er étage
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Cellulaire : 581 307-6162
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France,
En p.j., la version du communiqué approuvée et révisée.
- Il manque le nom du Règlement au complet.
- Est-ce qu'on mettra le lien vers la Gazette officielle?

Merci,

LUCIE LALIBERTÉ I COORDONNATRICE RELATIONS DE PRESSE ET INTERVENTIONS PUBLIQUES
Direction des Communications
Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
200, chemin Ste-Foy, bureau 1.06

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Québec ✚✚✚
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Gouvernement du Québec
Le ministre de l'Agriculture, des Pêcheries et de l'Alimentation
Le ministre responsable de la région de la Chaudière-Appalaches
Le ministre responsable de la région du Centre-du-Québec

Communiqué de presse

LE GOUVERNEMENT VA PROTÉGER 40 ESPÈCES ANIMALES SUPPLÉMENTAIRES DANS LE CADRE DE LA *LOI SUR LE BIEN-ÊTRE ET LA SÉCURITÉ DE L'ANIMAL*

Québec, le XX septembre 2021. – Le gouvernement du Québec montre toute l'importance qu'il accorde à la protection animale en protégeant plusieurs nouvelles espèces animales. C'est ce qu'a confirmé le ministre de l'Agriculture, des Pêcheries et de l'Alimentation, M. André Lamontagne, aujourd'hui ou hier lors de la séance du Conseil des ministres.

Le gouvernement ajoute donc plusieurs animaux élevés ou présentant le potentiel d'être élevés pour le commerce de la fourrure, de la viande ou d'autres produits alimentaires à la liste des animaux déjà visés par la *Loi*. Plusieurs espèces de mammifères, de poissons et d'oiseaux seront désormais sous la protection de cette loi. De plus, les abeilles à miel gardées à des fins d'élevage seront aussi incluses dans la liste du *Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal*.

La désignation de ces animaux dans le *Règlement* les assujettit aux obligations de l'application des exigences de la *Loi sur le bien-être et la sécurité de l'animal* lorsqu'ils sont élevés en captivité dans un but de faire le commerce de la fourrure, de la viande ou d'autres produits alimentaires: les obligations de soins et l'interdiction de certains actes s'appliqueront donc.

Les soins comprennent notamment que l'animal soit gardé dans un lieu salubre, propre, convenable, suffisamment espacé et éclairé, qu'il soit gardé dans un lieu dont l'aménagement ou l'utilisation des installations n'est pas susceptible d'affecter son bien-être ou sa sécurité et qu'il reçoive les soins nécessaires lorsqu'il est blessé, malade ou souffrant. Ce règlement permettra de veiller au bien-être et à la sécurité de ces animaux de manière cohérente au regard du mandat de chaque ministère.

Citation

« En ajoutant ces espèces animales à la liste de celles visées par la *Loi sur le bien-être et la sécurité de l'animal*, le gouvernement élargit la portée de la *Loi* à l'ensemble des animaux d'élevage. Nous reconnaissons que les animaux sont des êtres doués de sensibilité ayant des impératifs biologiques et qu'il est primordial d'assurer collectivement leur sécurité et leur bien-être tout au long de leur vie. Le Québec est maintenant un pionnier en la matière, et je suis fier que le MAPAQs'implique activement pour le bien-être et la sécurité de l'ensemble des animaux de notre secteur agroalimentaire québécois. »

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Votre gouvernement ☙

M. André Lamontagne, ministre de l'Agriculture, des Pêcheries et de l'Alimentation, ministre responsable de la région de la Chaudière-Appalaches et ministre responsable de la région du Centre-du-Québec

Faits saillants

- Actuellement, la *Loi sur le bien-être et la sécurité de l'animal* (LBSA) vise tous les animaux domestiques (ex. : chiens, bovins, chevaux) ainsi que les renards roux et les visons d'Amérique élevés pour le commerce de la fourrure.
- Les espèces sauvages gardées dans un but d'élevage pour la consommation humaine (ex. : cailles, wapitis et cerfs rouges, pour n'en citer que quelques-uns) ainsi que d'autres animaux gardés pour le commerce de la fourrure (ex. : renards arctiques) ne sont pas visés par la LBSA.
- Le bien-être et la sécurité de ces espèces sont présentement encadrés par la *Loi sur la conservation et la mise en valeur de la faune* (RLRQ, chapitre C-61.1), dont est responsable le ministère des Forêts, de la Faune et des Parcs. Le bien-être et la sécurité des poissons et des abeilles à miel ne sont actuellement encadrés par aucune de ces lois. Les deux ministères ont collaboré pour arriver à ces changements.
- Un projet de règlement contenant des normes spécifiques à la garde des chats, des chiens, de certains petits animaux de compagnie (ex. : cochons d'Inde, lapins, furets) et des équidés est en cours d'élaboration et sera déposé à la *Gazette officielle du Québec* pour commentaires.

Liste des espèces animales supplémentaires protégées par *Loi sur le bien-être et la sécurité de l'animal*

Mammifères :
- le bison d'Amérique (*Bison bison*);
- le buffle d'eau (*Bubalus bubalis*);
- le cerf rouge ou wapiti (*Cervus elaphus*);
- le cerf Sika (*Cervus nippon*);
- le cerf de Virginie (*Odocoileus virginianus*);
- le daim (*Dama dama*);
- le mouflon à manchettes (*Ammotragus lervia*);
- les mouflons (*Ovis spp.*);
- le renard arctique (*Vulpes lagopus*);
- le sanglier (*Sus scrofa*);
- le tahr de l'Himalaya (*Hemitragus jemlahicus*);
- le yak (*Bos grunniens*).

Oiseaux :
- l'autruche (*Struthio camelus*);
- le canard colvert (*Anas platyrhynchos*);
- le canard musqué (*Cairina moschata*);
- la caille des blés (*Coturnix coturnix*);
- la caille du Japon (*Coturnix japonica*);
- le colin de Virginie (*Colinus virginianus*);
- le coq de bruyère (*Tetrao urogallus*);

- le dindon sauvage (*Meleagris gallopavo*);
- l'émeu (*Dromaius novaehollandiae*);
- les faisans (*Phasianus spp.*);
- les francolins (*Francolinus spp.*);
- le nandou d'Amérique (*Rhea americana*);
- l'oie cygnoïde (*Anser cygnoides*);
- l'oie cendrée (Anser anser);
- les perdrix (Alectoris spp.);
- le pigeon biset (*Columba livia*);
- la pintade de Numidie (*Numida meleagris*).

Poissons :
- le bar rayé (*Morone saxatilis*);
- le doré jaune (*Sander vitreus*);
- le loup tacheté (*Anarhichas minor*);
- l'omble chevalier (*Salvelinus alpinus*);
- l'omble de fontaine (*Salvelinus fontinalis*);
- la perchaude (*Perca flavescens*);
- le saumon de l'Atlantique ou ouananiche (*Salmo salar*);
- le touladi (*Salvelinus namaycush*);
- la truite arc-en-ciel (*Oncorhynchus mykiss*);
- la truite brune (*Salmo trutta*).

Les autres animaux non visés par la *Loi sur la conservation et la mise en valeur de la faune* (chapitre C-61.1) :

- l'abeille à miel (*Apis mellifera*) gardée à des fins d'élevage.

Liens connexes

Pour plus d'information : www.mapaq.gouv.qc.ca

Lien vers la *Gazette officielle du Québec* pour le décret administratif : XXXXXXX

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De: Pelletier Émilie (DSABEA) (Granby)
Envoyé: 28 septembre 2021 15:00
À: Lessard Marie-Ève (DSA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: TR: CB_POUR APPROBATION - Lignes de presse édiction r.1_commCB.docx
Pièces jointes: CB_POUR APPROBATION - Lignes de presse édiction r.1_commCB.docx

Émilie Pelletier │ Médecin vétérinaire
Conseillère en bien-être animal et en réglementation
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De : Larouche Nathalie (DGDSI) (Québec)
Envoyé : 28 septembre 2021 14:51
À : Garneau Josiane (DSABEA) (Québec) ; Pelletier Émilie (DSABEA) (Granby)
Cc : Lafrance Annie (DGDSI) (Québec)
Objet : TR: CB_POUR APPROBATION - Lignes de presse édiction r.1_commCB.docx

Pvi, voici les lignes approuvées par Christine Barthe, légèrement modifiées (voir annexe).

Salutations,

Nathalie Larouche | conseillère stratégique et adjointe exécutive à la directrice générale
Sous-ministériat à la santé animale et à l'inspection des aliments
Direction générale du développement et du soutien à l'inspection

Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
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Téléphone : 418-380-2100, poste 3266
Nathalie.larouche@mapaq.gouv.qc.ca
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De : Rodrigue Geneviève (BSM) (Québec) <Genevieve.Rodrigue@mapaq.gouv.qc.ca>
Envoyé : 28 septembre 2021 09:08
À : Larouche Nathalie (DGDSI) (Québec) <Nathalie.Larouche@mapaq.gouv.qc.ca>
Cc : Lafrance Annie (DGDSI) (Québec) <Annie.Lafrance@mapaq.gouv.qc.ca>; Robert Guylaine (BSM) (Québec) <Guylaine.Robert@mapaq.gouv.qc.ca>
Objet : CB_POUR APPROBATION - Lignes de presse édiction r.1_commCB.docx

Allo,

Voici les lignes de presse approuvées, avec quelques modifications.
Bonne journée!

Agriculture, Pêcheries et Alimentation
Québec 🟦🟦

Geneviève Rodrigue, adjointe exécutive
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LIGNES DE PRESSE – RÈGLEMENT SUR LA DÉSIGNATION DES AUTRES ANIMAUX VISÉS PAR LA LOI SUR LE BIEN-ÊTRE ET LA SÉCURITÉ DE L'ANIMAL- DSABEA

2021-09-08

Porte-parole : N/A

Collaborateur interne : N/A

Collaboration SMSAIA : N/A

Échéancier DGDSI : N/A

Demande : N/A

Lignes de presse préparées en prévision de l'édiction du Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal.

Lignes de presse

- Actuellement au Québec, en vertu de *la Loi sur le bien-être et la sécurité de l'animal* (chapitre B-3.1), tout propriétaire ou gardien d'un animal domestique, d'un renard roux ou d'un vison d'Amérique doit assurer le bien-être et la sécurité de ses animaux.
- Le *Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal* prescrit que les espèces animales qui y sont listées soient visées par la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1) et s'ajoutent aux animaux déjà visés par cette *Loi* lorsqu'ils sont élevés en captivité dans un but de faire le commerce de la fourrure, de la viande ou d'autres produits alimentaires.
- Une de ses principales dispositions de la Loi prévoit que le propriétaire ou le gardien d'un animal a l'obligation de s'assurer que ce dernier reçoit les soins propres à ses impératifs biologiques.
- Le *Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal* dresse la liste de certaines espèces qui sont visées notamment par la réglementation du ministère des Forêts, de la Faune et des Parcs. À la suite de l'entrée en vigueur du *Règlement*, c'est le ministère de l'Agriculture, des Pêcheries et de l'Alimentation qui veillera à assurer leur bien-être et leur sécurité lorsqu'ils sont élevés en captivité dans un but de faire le commerce de la fourrure, de la viande ou d'autres produits alimentaires en vertu de la Loi sur le bien-être et la sécurité de l'animal dont il est responsable.
- Le Règlement entrera en vigueur dans un an, sauf les exigences concernant les poissons qui entreront en vigueur dans 3 ans.
- En plus de l'abeille à miel, 12 espèces de mammifères, 17 espèces d'oiseaux, 10 espèces de poissons sont désignés par règlement.
- Le service d'inspection du MAPAQ veille au respect de la LBSA pour l'ensemble des espèces animales visées par la Loi. Pour les situations préoccupantes en matière de bien-être animal, une plainte recevable requiert une action de la part du service d'inspection. Cette action se traduit généralement par une inspection sur place.

- Le MAPAQ a instauré un programme d'inspection en bien-être et sécurité de l'animal. Les objectifs du programme sont entre-autres de veiller au bien-être et à la sécurité des animaux en favorisant la responsabilisation de leurs propriétaires ou gardiens ainsi que de les amener à se conformer rapidement et de manière durable aux règles régissant le bien-être et la sécurité de leurs animaux. Des sanctions sont prévues à la Loi, au besoin.

Les changements à venir

- Les inspecteurs du ministère de l'Agriculture, des Pêcheries et de l'alimentation appliquent déjà la LBSA pour tous les animaux domestiques, les visons d'Amériques et les renards roux. Ils l'appliqueront à de nouvelles espèces à la suite de l'entrée en vigueur du Règlement.

- Les propriétaires ou gardiens d'animaux visés par le Règlement devront s'assurer de respecter les exigences de la Loi sur le bien-être et la sécurité de l'animal, exigences qui sont très similaires à celles contenues dans le Règlement sur les animaux en captivité dont la plupart sont actuellement assujettis.

- À la suite de la mise en vigueur du Règlement, le bien-être et la sécurité des espèces animales nouvellement désignées seront encadrés par la Loi sur le bien-être et la sécurité de l'animal au lieu du Règlement sur les animaux an captivité, le cas échéant. Certaines exigences spécifiques du Règlement sur les animaux en captivité, appliqué par le MFFP, continueront à s'appliquer aux espèces concernées, notamment en matière de normes pour le confinement, le signalement des animaux échappés, la déclaration de maladie et certains éléments ciblant les sangliers et les grands cervidés.

- Pour toutes les espèces nouvellement désignées, un médecin vétérinaire ou un agronome qui a des motifs raisonnables de croire qu'un animal subit ou a subi des abus ou mauvais traitements ou qu'il est ou a été en détresse aura l'obligation de signaler ses constatations au ministère de l'Agriculture, des Pêcheries et de l'Alimentation.

- À la suite de l'entrée en vigueur du Règlement, tout citoyen qui estime que des animaux sont maltraités, qu'ils reçoivent des soins inappropriés nécessitant une intervention ou qu'ils se trouvent dans une situation inacceptable, pourra dorénavant déposer une plainte au MAPAQ par téléphone au 1-844-ANIMAUX ou par courriel à l'adresse suivante: animaux@mapaq.gouv.qc.ca. Entre temps, les plaintes doivent encore être acheminées au ministère des Forêts, de la Faune et des Parcs.

- Le bien-être et la sécurité des poissons et des abeilles à miel seront dorénavant assurés par une règlementation spécifique en matière de bien-être animal.

Qu'est-il advenu du projet prépublié en 2019

- Le projet de règlement sur le bien-être et la sécurité de l'animal et sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal a fait l'objet, à titre de projet, d'une publication pour commentaires à la *Gazette officielle du Québec*, partie 2, le 9 janvier 2019. Afin de répondre à certains des nombreux commentaires reçus, le projet de règlement publié a conséquemment été séparé en trois règlements distincts pour faciliter la compréhension.
- Le *Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal* est le premier de 3 Règlements à être édicté découlant du projet de

règlement sur le bien-être et la sécurité de l'animal et sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal.

Pourquoi désigner les abeilles?

L'objectif visé par le Règlement est de protéger le bien-être et la sécurité de l'ensemble des animaux d'élevage présents dans le secteur agroalimentaire par une même Loi, dont l'abeille à miel fait partie.

Une grande partie de la production agricole dépend de la pollinisation. Les pollinisateurs jouent un rôle écologique de première importance pour la production agricole et l'alimentation de la population mondiale.

Encadrer le bien-être et la sécurité des abeilles permettra notamment d'assurer qu'elles recevront les soins nécessaires lorsqu'elles seront malades. Cela limitera la propagation de maladies, et conséquemment, des mortalités importantes.

Informations complémentaires

Aucune pour cette demande.

De: Lessard Marie-Ève (DSA) (Québec)
Envoyé: 12 octobre 2021 10:17
À: Boissonneault Esther (DDSA) (Québec)[EX:/o=mapaq/ou=exchange administrative group (fydibohf23spdlt)/cn=recipients/cn=usera5ed38aa]
Objet: RE: Ajout espèce règlement BEA - Article La presse ce matin

Bonjour Esther,

Il s'agit d'une mauvaise interprétation de la Loi B 3.1 :

- Conformément à l'article 7 de la *Loi sur le bien-être et la sécurité de l'animal (B 3.1),* les activités d'agriculture sont exemptées des articles 5 et 6 **à la condition qu'elles soient pratiquées selon les règles généralement reconnues faisant consensus et basées sur la science. Lorsque les activités ne sont pas pratiquées conformément à ces règles, les articles 5 et 6 de la *Loi* s'appliquent**. Il est important de noter qu'il n'y a aucune exemption pour l'article 12, qui concerne l'abattage et l'euthanasie.

- Pour l'application de la Loi B 3.1, on s'appuie principalement sur les différents Codes de pratiques émis par le Conseil national pour les soins aux animaux d'élevage, qui sont reconnus à l'échelle pancanadienne. Les Codes de pratiques contiennent des lignes directrices qui visent à favoriser les bonnes pratiques de régie du troupeau et de gestion du bien-être des animaux et l'amélioration des pratiques; elles renferment des exigences et des recommandations en ce qui concernent les conditions de logement, la gestion, l'alimentation et l'abreuvement, le transport, l'abattage et les autres pratiques relatives à l'élevage des animaux.

- Plusieurs raisons motivent l'utilisation de ces codes de pratiques comme référence pour l'application de la *Loi sur le bien-être et la sécurité de l'animal*, notamment :
    o Ils font consensus à l'échelle nationale et sont basés sur la science;
    o Ils représentent la conception des besoins et des pratiques recommandées en matière de soins aux animaux au Canada;
    o **Ils sont élaborés de façon collaborative avec divers intervenants, dont l'industrie (pas *seulement* l'industrie…): des organismes de protection des animaux, des médecins vétérinaires, des membres de l'industrie et des membres du gouvernement précisent les exigences minimales de façon concertée afin de faire progresser le bien-être des animaux;**
    o Les Codes sont révisés régulièrement pour tenir compte de l'évolution des connaissances et des technologies en vue d'une amélioration continue. Les Codes peuvent donc s'adapter plus vite que ne pourrait le faire les Règlements, ce qui est avantageux pour le bien-être des animaux d'élevage.

N'hésites pas à m'appeler si tu as d'autres questions,

Bonne journée!

Marie-Eve

Marie-Eve Lessard │ DMV, IPSAV

Conseillère en bien-être animal et en réglementation

Direction adjointe à la règlementation et des programmes

Sous-ministériat à la santé animale et à l'inspection des aliments

Ministère de l'Agriculture, des Pêcheries et de l'Alimentation

Courriel : marie-eve.lessard@mapaq.gouv.qc.ca

Site web : www.mapaq.gouv.qc.ca

De : Boissonneault Esther (DDSA) (Québec)
Envoyé : 8 octobre 2021 11:46
À : Lessard Marie-Ève (DSA) (Québec)
Objet : Ajout espèce règlement BEA - Article La presse ce matin

Bonjour Marie-Ève,

Je lisais l'article en p.j. ce matin et j'étais un peu confuse.

Dans l'article, on mentionne que les animaux d'élevage sont exclus du règlement et que c'est l'industrie qui les régit.

Est-ce vraiment une bonne interprétation du règlement?

Si c'est le cas, alors je ne vois pas pourquoi le règlement désigne des espèces vouées à l'élevage, si elles sont par la suite exclues.

Je tenais à connaître la rhétorique du MAPAQ à cet égard, car je peux m'attendre à avoir à répondre à ce genre de question dans les prochaines semaines.

Bonne journée,

Esther Boissonneault, agr.

Conseillère au développement des secteurs de la cuniculture, des oiseaux fermiers et des élevages de spécialités

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Téléphone : 418 380-2100 poste 3841

Esther.Boissonneault@mapaq.gouv.qc.ca

Veuillez prendre note que je ne travaille pas les lundis

De: Pelletier Émilie (DSABEA) (Granby)
Envoyé: 23 novembre 2021 09:17
À: Garneau Josiane (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange
Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user4aaf309f]
Cc: Lessard Marie-Ève (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange
Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: RE: Commentaire r.1

Bonjour Josiane,

En résumé, voici les commentaires de l'AQSS à propos du r.1:

1- De manière générale, l'AQSS appuie l'ajout de nouvelles espèces à la *Loi sur la sécurité et le bien-être de l'animal*, incluant les poissons et les abeilles.

2- Ils estiment toutefois que « les gains de protection seront considérablement atténués, voire anéantis en ce qui concerne les espèces couvertes par la *Loi sur la conservation et mise en valeur de la faune*, par l'exemption pour les pratiques généralement reconnues de l'industrie prévue à l'article 7 de la *Loi sur la sécurité et le bien-être de l'animal*. » Ils disent que « ces animaux se retrouveront en effet avec une protection juridique amoindrie relativement à leur situation actuelle. »

3- Ils reprennent les propos d'Alain Roy : « Étant donné que l'expression « pratiques généralement reconnues » n'est pas définie dans la Loi, une telle exemption a pour effet de conférer à l'industrie le pouvoir d'elle-même déterminer quelles pratiques bénéficient d'une exemption à la loi et sont donc légales. L'exemption de l'article 7 permet essentiellement au secteur privé de s'auto-réglementer et représente donc une abdication de responsabilité publique de la part du gouvernement »

4- Ils recommandent d'inclure toutes les espèces gardées en captivité à des fins d'élevage en vue du commerce de la fourrure, de la viande ou d'autres produits alimentaires et non seulement les quarante espèces désignées par le projet de règlement.

Leurs propos démontrent une mauvaise compréhension de la fameuse exemption de l'article 7 et du terme pratiques généralement reconnues. J'en conclue que de règlementer les codes de pratiques dans le r.3 pourrait régler une bonne partie du problème.

Pour l'inclusion de toutes les espèces gardées en captivités à des fins d'élevage, il faudrait revoir ce qu'il reste, mais il ne doit pas en rester tant que ça non plus qui n'ont pas été désignées.

Bonne journée!

Émilie Pelletier │ Médecin vétérinaire
Conseillère en bien-être animal et en réglementation
Direction adjointe à la règlementation et des programmes
Sous-ministériat à la santé animale et à l'inspection des aliments
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De : Garneau Josiane (DSABEA) (Québec)
Envoyé : 22 novembre 2021 13:15
À : Pelletier Émilie (DSABEA) (Granby) ; Lessard Marie-Ève (DSABEA) (Québec)
Objet : Commentaire r.1

Allo,
Pour ton info, voici les commentaires de l'AQSS sur le r.1 (2 ans trop tard)
Je ne les ai pas lu, vous pourrez me dire ce qu'il y avait de pertinent.

Bonne journée!

Josiane Garneau, M. Sc., MBA │Directrice adjointe
Direction adjointe à la réglementation et des programmes
Direction de la salubrité alimentaire et du bien-être des animaux
Ministère de l'Agriculture, des Pêcheries et de l'Alimentation
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De: Lessard Marie-Ève (DSABEA) (Québec)
Envoyé: 28 septembre 2022 08:58
À: Pelletier Émilie (DSABEA) (Granby)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user1651df8d]
Objet: comparaison des lois et règlements BEA au Canada
Pièces jointes: comparaison des règlementations provinciales et fédérales.PDF

Allo!

Je suis tombée sur ce document en cherchant pour les animaux à fourrure, c'est vraiment intéressant. À garder en référence..

Marie-Eve Lessard │ DMV, IPSAV

Conseillère en bien-être animal et en réglementation

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Sommaire des changements aux lois fédérales, provinciales et territoriales canadiennes sur la protection des animaux depuis la publication de Fraser *et al.* (2018)[1]

Présenté par

Eugénie Duval[2]

Boursière de recherches postdoctorales invitée

Programme de bien-être animal

Université de la Colombie-Britannique

Décembre 2021

Table des matières

I.   INTRODUCTION ET CONTEXTE

Au Canada, les lois sur la protection des animaux consistent en une combinaison de règlements fédéraux, provinciaux et territoriaux et de codes de pratiques de l'industrie qui sont parfois, mais pas toujours, cités dans les règlements. Cette mosaïque de lois et de codes de pratiques crée des écarts considérables d'un endroit à l'autre du pays. En 2018, Fraser *et al.* ont résumé la législation sur le bien-être animal au Canada dans un article intitulé « Toward a harmonized approach to animal welfare law in Canada » (« Vers une harmonisation législative du bien-être animal au Canada ») et ont publié leurs constatations dans une publication à comité de lecture : la *Revue vétérinaire canadienne*. Dans leur article, les auteurs David Fraser, Katherine Koralesky et Geoff Urton réclamaient un système de protection animale national et uniforme. Au moment d'écrire ces lignes en décembre 2021, les lois de chaque province et territoire demeurent très variables, mais des progrès ont été accomplis dans la façon dont les animaux sont protégés.

Exécuté à la demande du Conseil national sur la santé et le bien-être des animaux d'élevage (rebaptisé Santé animale Canada le 10 janvier 2022), le présent rapport résume les changements apportés aux lois sur la protection des animaux aux paliers fédéral, provincial et territorial depuis l'article de Fraser *et al.* (2018). Il constitue donc un addenda à l'article de Fraser *et al.* (2018) et devrait être lu conjointement avec l'article original. Je présente aussi ci-dessous un résumé très succinct de certains des principaux changements (mais non pas tous) apportés depuis la fin, en septembre 2017, de l'étude de recherche sur laquelle reposait l'article de 201i de Fraser *et al.* J'invite le lecteur à consulter les tableaux 1 et 2 du présent rapport pour trouver une description détaillée de chaque changement. Pour les personnes que cela intéresse, j'ai inclus un hyperlien vers la version actuelle de chaque texte de loi.

II.   PRINCIPAUX CHANGEMENTS AU PALIER FÉDÉRAL

Au Canada, les lois afférentes à la protection des animaux sont en majorité adoptées au palier provincial ou territorial, mais pas exclusivement, car il existe aussi des lois fédérales sur la protection des animaux. Depuis septembre 2017, plusieurs changements ont entraîné des modifications aux lois ou aux règlements existants au palier fédéral (voir le tableau 1). Par

exemple, le *Code criminel* fédéral inclut maintenant une longue liste d'activités prohibées, dont le fait de garder des **cétacés en captivité** (avec certaines exceptions). Les dispositions existantes du Code touchant aux **combats d'animaux** et à la **bestialité** ont aussi été développées afin d'en élargir la portée.

La modification de la législation fédérale sur le **transport d'animaux vivants**, appelée « *Règlement sur le transport sans cruauté* », est sans doute le domaine de gouvernance qui a le plus touché les animaux d'élevage au Canada. Le *Règlement sur la santé des animaux* fédéral a été révisé en février 2019 à l'issue d'une période de consultation de 6 ans auprès d'un vaste éventail d'acteurs. Le nouveau règlement fédéral sur le transport sans cruauté, qui remplace le libellé adopté il y a 40 ans en 1977, est entré en vigueur en février 2020. Les mesures législatives modifiées comprennent davantage d'exigences axées sur les résultats (une démarche axée sur les résultats laisse plus de marge de manœuvre aux transporteurs et aux agriculteurs/producteurs pour obtenir les résultats exigés). Cela contraste avec une réglementation prescriptive, qui présente des exigences claires à respecter. Entre autres exemples clés, des durées de voyage plus courtes ont été prescrites (avec des durées de repos plus longues après des intervalles maximaux, soit 8 heures au lieu de 5), ainsi qu'une réglementation plus stricte de l'aptitude au transport.

Le nouveau règlement prévoit des temps de transport plus courts et des exigences plus strictes quant aux durées de voyage des jeunes animaux. Ces derniers (bétail, camélidés et cervidés ayant au plus 8 jours; jeunes ruminants âgés de 9 jours ou plus, mais trop jeunes pour être nourris exclusivement de foin ou de céréales) ne peuvent être transportés que si le temps en transit prévu (entre l'embarquement et le débarquement) et l'intervalle maximal sans aliments, eau, ni repos ne dépassent pas 12 heures. Les très jeunes animaux cependant (au plus 8 jours) ne peuvent être transportés qu'une fois; ils ne peuvent donc pas passer par un centre de rassemblement. Par contre, les jeunes ruminants de 9 jours ou plus, mais qui sont trop jeunes pour être nourris exclusivement de foin ou de céréales peuvent passer par un centre de rassemblement et donc être réembarqués.

Le règlement modifié précise aussi la définition des « animaux inaptes » en présentant une liste plus détaillée de signes (p. ex. pis gangréneux; respiration laborieuse; animaux extrêmement maigres). En outre, le nouveau règlement aborde maintenant les « animaux fragilisés » (p. ex. engelures aiguës; cécité des deux yeux; au plus fort d'une période de lactation) et indique

explicitement qu'ils ne peuvent pas être transportés vers un centre de rassemblement, et que la période de transport sans aliments, eau ni repos ne doit pas dépasser 12 heures. De plus, les animaux au plus fort d'une période de lactation qui ne peuvent pas être traits pour prévenir l'engorgement du pis sont dits « fragilisés » et sont en conséquence assujettis au temps de transport des animaux fragilisés. Les animaux en lactation qui sont traits pour prévenir l'engorgement du pis peuvent, eux, être transportés, mais en respectant les exigences générales sur les durées de voyage (p. ex. un maximum de 36 heures sans aliments, eau, ni repos pour les vaches laitières).

L'utilisation d'aiguillons électriques pour la **manipulation** des animaux est elle aussi plus strictement réglementée (interdite avec certaines exceptions) dans le *Règlement sur la salubrité des aliments au Canada* (autrefois le *Règlement sur l'inspection des viandes*).

L'**enlèvement d'ailerons de requin** est maintenant interdit en vertu de la *Loi sur les pêches* modifiée, qui inclut aussi des dispositions élargies sur la protection du poisson et de son habitat. Enfin, un règlement supplémentaire visant spécifiquement à améliorer la protection des **mammifères marins** contre les perturbations (p. ex. en prescrivant des distances d'approche à respecter) a aussi été adopté (le *Règlement sur les mammifères marins* de la *Loi sur les pêches*).

III. PRINCIPAUX CHANGEMENTS AU PALIER PROVINCIAL-TERRITORIAL

- **Changements dans les provinces et territoires**

Depuis septembre 2017, la plupart des provinces et territoires ont révisé jusqu'à un certain point leurs lois ou règlements sur la protection des animaux (voir le récapitulatif détaillé au tableau 2). En Alberta, en Colombie-Britannique, au Manitoba, à l'Île-du-Prince-Édouard, à Terre-Neuve-et-Labrador, au Nouveau-Brunswick et dans les Territoires du Nord-Ouest, ces changements sont mineurs et/ou leur portée est plus limitée que dans les autres provinces et territoires. À l'Île-du-Prince-Édouard par exemple, la loi sur le bien-être animal (*Animal Welfare Act*) a été modifiée en 2020, mais uniquement pour inclure des dispositions sur la libération malavisée d'animaux commerciaux. Les changements apportés en Alberta, au Manitoba, à l'Île-du-Prince-Édouard et

dans les Territoires du Nord-Ouest sont presque exclusivement liés aux révisions des règlements sur la faune.

Par contre, la Nouvelle-Écosse, l'Ontario, le Québec et la Saskatchewan ont revu en profondeur leurs lois sur la protection des animaux. En Saskatchewan par exemple, le règlement sur l'élevage d'animaux à fourrure (*The Fur Farming Regulations* [2017]), la loi et le règlement sur la protection des animaux (*The Animal Protection Act* [2018], *The Animal Protection Regulations* [2018]), le règlement sur le gibier d'élevage (*The Domestic Game Farm Animal Regulations* [2019]) et plus récemment le règlement sur les animaux sauvages en captivité (*The Captive Wildlife Regulations* [2021]) ont été considérablement modifiés (voir le tableau 2).

- **Normes nouvelles ou révisées citées dans les lois provinciales sur la protection des animaux**

De nombreuses provinces abordent dans leur législation des « normes » nationales ou internationales en matière de protection des animaux, que l'on appelle aussi parfois « codes de pratiques » (p. ex. les codes pour les animaux d'élevage du Conseil national pour les soins aux animaux d'élevage [CNSAE]), ou des lignes directrices (p. ex. le *Manuel sur le soin et l'utilisation des animaux d'expérimentation* du Conseil canadien de protection des animaux [CCPA]). La plupart des provinces et territoires ont revu leur législation pour y inclure des normes nouvelles et/ou actualisées. En Colombie-Britannique par exemple, en septembre 2017, le *Code pour le soin et la manipulation des bovins laitiers* du CNSAE était la seule référence mentionnée en matière de « pratiques raisonnables et généralement acceptées ». Le nouveau règlement (révisé en 2019) mentionne maintenant d'autres codes du CNSAE (pour les bovins de boucherie; les bisons; les équidés; les porcs; les renards; les visons; les œufs d'incubation, reproducteurs, poulets et dindons; les poulettes et pondeuses; les lapins; les moutons; et les veaux lourds). De même, la Saskatchewan cite maintenant les normes minimales pour la réhabilitation de la faune (*Minimum Standards for Wildlife Rehabilitation*) publiées aux États-Unis par l'International Wildlife Rehabilitation Council (IWRC) et la National Wildlife Rehabilitators Association (NWRA). Le nouveau code pour les lapins du CNSAE – publié en 2018 – est maintenant cité dans plusieurs lois et règlements provinciaux (Colombie-Britannique; Terre-Neuve-et-Labrador; Saskatchewan). Dans d'autres cas, la législation révisée cite les versions actualisées de normes (Terre-Neuve-et-Labrador;

Saskatchewan). À Terre-Neuve-et-Labrador par exemple, le règlement sur les normes de protection des animaux (*Animal Protection Standards Regulations* [2019]) cite maintenant les versions actualisées du code pour les chenils de l'Association canadienne des médecins vétérinaires (ACMV) (2018) et les autres codes révisés récemment par le CNSAE.

Cependant, le langage employé pour citer ces normes (pratiques acceptées ou obligation de conformité)[3] n'est en général pas touché par ces changements récents. En Saskatchewan par exemple, la loi indique maintenant que l'euthanasie doit être pratiquée conformément aux normes, codes de pratique ou lignes directrices prescrits (ce qui équivaut à une obligation de conformité). En Nouvelle-Écosse, la phrase « conformément aux pratiques raisonnables et généralement acceptées de prise en charge d'animaux » (sauf pour les modifications/interventions chirurgicales acceptables exécutées conformément aux codes du CNSAE ou à d'autres codes de pratiques prescrits par règlement), qui représentait auparavant une exception pour un animal en détresse, ne figure plus dans la nouvelle loi.

- **Obligation de diligence et définition de la détresse**

Selon Fraser *et al.* (2018), sept provinces incluent dans leur législation les devoirs des propriétaires et gardiens d'animaux. En Nouvelle-Écosse toutefois, la nouvelle loi sur la protection des animaux (*Animal Protection Act* [2018]) omet de définir les obligations de diligence spécifiques. Par contre, en 2018, la Saskatchewan a adopté un langage similaire à celui des obligations de diligence décrites dans le règlement manitobain (p. ex. fournir des aliments et de l'eau en quantité suffisante, des soins vétérinaires ou médicaux adéquats lorsque des animaux sont blessés ou malades, un abri et une protection raisonnable contre les températures extrêmes).

Parmi les provinces qui mentionnent les animaux en détresse, deux ont revu leur définition de ce terme. Depuis 2018 en Nouvelle-Écosse, la définition inclut les animaux qui subissent des interventions chirurgicales esthétiques (p. ex. amputation de la queue; coupe d'oreilles) ou qui sont

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[3] Selon Fraser et al. (2018), le langage employé pour citer les normes peut soit créer une obligation positive de se conformer, soit fournir une défense en établissant des « pratiques acceptées », donnant ainsi aux normes divers degrés de force dans la loi.

entraînés ou soumis à des combats d'animaux. Dans le même ordre d'idées, la Saskatchewan a elle aussi élargi sa définition de la détresse en 2018 pour inclure les animaux gardés dans des conditions qui, par exemple, contreviennent aux normes, codes de pratiques ou lignes directrices prescrits.

À l'exception de ceux apportés par la Nouvelle-Écosse, ces changements sont bienvenus, car ils contribuent à peaufiner la liste des obligations de diligence et les définitions juridiques de la détresse, comme le mentionnaient déjà Fraser *et al.* (2018).

- **Exécution**

L'exécution des lois sur la protection des animaux varie beaucoup d'un endroit à l'autre du pays, comme l'ont aussi fait remarquer Fraser *et al.* (2018). Il y a toutefois eu un changement notable en Ontario, où une nouvelle démarche d'exécution a été mise en œuvre. En 2019, l'Ontario a introduit le « *premier système d'exécution des ordonnances en matière de bien-être des animaux réglementé par un gouvernement provincial*[4] », qui incluait le retrait de la Société de protection des animaux (SPA) comme principal service d'exécution de la Loi (aujourd'hui la *Loi sur les services provinciaux visant le bien-être des animaux*). La nouvelle équipe d'exécution inclut désormais les inspecteurs provinciaux et des inspecteurs spécialisés dans les domaines du bétail, de la zoologie, des aquariums et des chevaux. L'inspecteur en chef du bien-être des animaux est maintenant nommé par le ministre. Entre autres exemples de changements, avec ce nouveau système il est désormais possible pour les inspecteurs provinciaux du bien-être des animaux, les agents de police et les agents des Premières Nations d'entrer dans un véhicule automobile pour aider un animal en détresse critique.

La Nouvelle-Écosse et la Saskatchewan ont aussi revu leurs règlements en matière d'exécution. En Nouvelle-Écosse, les inspecteurs de la SPA ont des pouvoirs accrus pour entrer dans un logement privé ou saisir un animal. En Saskatchewan, les agents de protection des animaux peuvent désormais ordonner au propriétaire ou gardien d'un animal de prendre des mesures correctives pour soulager ou prévenir la détresse de l'animal.

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[4] https://news.ontario.ca/fr/release/54953/lontario-donne-du-mordant-a-son-systeme-de-protection-des-animaux

Des sanctions pénales et administratives plus strictes ont été introduites au Québec (en vertu de la *Loi sur la conservation et la mise en valeur de la faune*, 2021), et d'autres règlements liés aux sanctions sont en vigueur en Saskatchewan (en vertu de la loi sur la protection des animaux [*Animal Protection Act*, 2018]). La *Loi sur les services provinciaux visant le bien-être des animaux* de l'Ontario (2019) prévoit aussi des sanctions plus lourdes, en imposant « *les peines les plus sévères au Canada*[5] ».

- **Faune**

Bien que Fraser *et al.* (2018) n'aient pas visé principalement les règlements sur la faune et la chasse, le présent rapport inclut certains changements récents (mais pas tous) à ce sujet.

Dans certaines provinces, la réglementation a été considérablement revue (p. ex. en Alberta : nouvelle interdiction de nourrir un animal sauvage; levée de plusieurs restrictions à la chasse), mais ailleurs (p. ex. au Nouveau-Brunswick), les changements ont été limités.

Au Québec, le *Règlement sur les animaux en captivité* et le *Règlement sur les permis de garde d'animaux en captivité* (2018) imposent de nouveaux permis et des conditions plus strictes pour la capture d'un animal, mais aussi pour l'importation d'un animal dans la province, la garde d'un animal en captivité et la protection du public. En 2021, le Québec a modifié la *Loi sur la conservation et la mise en valeur de la faune* (p. ex. les invertébrés et les sous-produits de la faune font maintenant partie du champ d'application de cette loi). La portée de la *Loi sur le bien-être et la sécurité de l'animal* (2021) est plus large (elle inclut d'autres animaux et poissons sauvages gardés en captivité, comme le bison, le faisan, la truite arc-en-ciel et l'abeille à miel gardée à des fins d'élevage).

En 2021, la Saskatchewan a adopté plusieurs modifications à son règlement sur les animaux sauvages en captivité (*The Captive Wildlife Regulations*) (qui inclut maintenant p. ex. une liste d'espèces faisant l'objet de restrictions; un nouveau règlement pour les espèces ne figurant pas sur la liste et pour les espèces faisant l'objet de restrictions; une référence aux *Normes d'AZAC*

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[5] https://news.ontario.ca/fr/backgrounder/54948/le-nouveau-systeme-de-protection-des-animaux-de-lontario

[Aquariums et Zoos accrédités du Canada]; et de nouvelles exigences pour l'importation ou l'exportation d'un animal sauvage en captivité). L'Ontario aussi a adopté de nouvelles mesures réglementaires, par exemple sur le contrôle sanitaire de la faune (*Loi sur la protection du poisson et de la faune*, 2019). À l'Île-du-Prince-Édouard, les changements ont touché plusieurs règlements (p. ex. ceux-ci incluent désormais une liste d'espèces qui ne peuvent pas être vendues ni gardées en captivité comme animaux de compagnie). Enfin, aux Territoires du Nord-Ouest, le *Règlement général sur la faune* modifié en 2019 introduit des changements en présentant, par exemple, une liste d'espèces qui ne peuvent pas être importées, possédées ou transportées dans les Territoires.

Plusieurs provinces ont aussi revu leurs règlements sur la chasse. Par exemple, le Manitoba (2020) et l'Île-du-Prince-Édouard (2019) ont adopté une interdiction de la chasse de nuit. À Terre-Neuve-et-Labrador, le règlement sur la faune (*Wild Life Regulations* [2020]) a révisé les conditions pour chasser (p. ex. en abaissant l'âge minimum). En Colombie-Britannique, les changements incluent l'interdiction de chasser le grizzli (2017) et d'amorcer ou de nourrir un dindon ou un ongulé dans la région de Kootenay (2020). Enfin, plusieurs provinces ont interdit ou restreint l'utilisation de drones pour la chasse (Alberta, Territoires du Nord-Ouest, Yukon).

- **Autres changements**

Au Québec, une nouvelle loi adoptée en 2018 (*Loi visant à favoriser la protection des personnes par la mise en place d'un encadrement concernant les chiens*) établit une réglementation spécifique pour les chiens (p. ex. enregistrement obligatoire; laisse obligatoire dans les lieux publics). Cette loi aborde aussi spécifiquement les chiens jugés « dangereux » ou « potentiellement dangereux ». Par exemple, les municipalités locales peuvent désormais exiger qu'un chien soit soumis à l'examen d'un médecin vétérinaire afin que son état et sa dangerosité soient évalués; le médecin vétérinaire doit aussi signaler sans délai à la municipalité locale les blessures infligées par un chien.

En Saskatchewan, en plus du règlement sur l'inspection et le transport du bétail (*Livestock Inspection and Transportation Regulations*), la loi modifiée sur la protection des animaux (*Animal Protection Act*) interdit le transport d'un animal inapte et mentionne l'euthanasie et l'abattage « sans cruauté ». Toujours en Saskatchewan, le nouveau règlement sur l'élevage d'animaux à fourrure (*The Fur Farming Regulations* [2017]) a une portée plus restrictive quant aux espèces (plusieurs espèces ne peuvent plus être élevées) et inclut de nouvelles mesures réglementaires

(p. ex. licences; nouvelles normes sur la taille des enclos; respect de l'*Animal Protection Act*). De nouvelles exigences en matière de licences ont aussi été ajoutées au règlement de la province sur le gibier d'élevage (*The Domestic Game Farm Animal Regulations*) en 2019.

Enfin, une interdiction de 18 mois des rodenticides anticoagulants de deuxième génération, ou SGAR, a été imposée en Colombie-Britannique en juillet 2021 pour réduire les risques d'empoisonnement d'animaux sauvages. Sont exclus les services essentiels et les exploitations agricoles.

- **Changements futurs envisagés**

Les changements à venir pourraient inclure des modifications au *Règlement sur les établissements hébergeant des animaux familiers* et au *Règlement général* du Nouveau-Brunswick (p. ex. certificat sanitaire obligatoire pour la vente de chats et de chiens). Au Québec, des changements sont attendus concernant les permis, la garde et les normes de soins, et d'autres règlements liés aux chats et aux chiens. Enfin, en novembre 2021, la Colombie-Britannique a amorcé un processus d'abandon progressif de l'élevage du vison.

Lois fédérales sur la protection des animaux	**Principaux changements** (date d'adoption d'une nouvelle réglementation ou de modification d'une réglementation existante)

Tableau 1. Principaux changements aux lois fédérales sur la protection des animaux au Canada depuis septembre 2017 (voir Fraser *et al.*, 2018 pour un résumé des lois avant cette date). Les informations présentées sont à jour au 31 décembre 2021.

Lois fédérales sur la protection des animaux	**Principaux changements** (date d'adoption d'une nouvelle réglementation ou de modification d'une réglementation existante)
Code criminel	**- Abandon progressif de la captivité de cétacés** (2019) o Interdiction de : ▪ garder un cétacé en captivité ▪ reproduire ou féconder un cétacé ▪ posséder ou tenter d'obtenir du matériel reproductif de cétacés. o Exceptions à l'infraction de garder un cétacé en captivité : ▪ les animaux qui étaient déjà en captivité à la date d'entrée en vigueur de ce règlement ▪ un cétacé qui est en captivité pour recevoir des soins ou assurer sa réadaptation ▪ si la captivité est dans l'intérêt du bien-être du cétacé ▪ à des fins de recherche **- Combats d'animaux – dispositions élargies** (2019) o Encourager, *faire la promotion, organiser*, prêter son concours, *recevoir de l'argent* ou *prendre part* à des combats d'animaux ou *le dressage, le transport ou l'élevage* d'animaux aux fins de combats d'animaux = infractions o Construire/faire/entretenir/garder une arène pour les combats d'animaux (ou permettre que ce soit fait) = infractions **- Bestialité – dispositions élargies** (2019) o Définition de la bestialité : « tout contact, dans un but sexuel, avec un animal » o Possibilité pour le tribunal d'ajouter à toute autre peine infligée pour bestialité : ▪ interdire au prévenu d'être propriétaire d'un animal, d'en avoir la garde ou le contrôle ou d'habiter un lieu où se trouve un animal (au moins 5 ans en cas de récidive) ▪ ordonner au prévenu de rembourser à la personne ou à l'organisme qui a pris soin de l'animal les frais raisonnables engagés par suite de la perpétration de l'infraction

Règlement sur la santé des animaux	**- Modification de la [législation sur le transport des animaux](#) (2019)** o Aptitude au transport ▪ Liste plus détaillée de signes d'inaptitude (p. ex. pis gangréneux; respiration laborieuse; animaux extrêmement maigres) ▪ Ajout d'une liste détaillée de signes de fragilisation (p. ex. engelures aiguës; cécité des deux yeux; au plus fort d'une période de lactation) : les animaux fragilisés ne peuvent pas être transportés vers un centre de rassemblement et ne peuvent être transportés que sur une période maximale de 12 heures sans aliments, eau, ni repos. ▪ Animaux en lactation : à transporter avec leurs petits ou traits à des intervalles suffisants pour empêcher l'engorgement mammaire o Durées de voyage ▪ Durées de voyage plus courtes (p. ex. maximum 36 h sans aliments, eau, ni repos pour les ruminants) ▪ Temps de repos plus longs : 8 h ▪ Temps plus cours pour les jeunes animaux : • Animaux d'au plus 8 jours : ne peuvent être transportés qu'une seule fois tant que l'animal a au plus 8 jours et pour une durée maximale de 12 heures sans aliments, eau, ni repos entre l'embarquement et le débarquement; ne peuvent pas passer par un centre de rassemblement. • Jeunes ruminants (9 jours ou plus) nourris exclusivement de foin et de céréales : durée maximale de 12 heures sans aliments, eau, ni repos entre l'embarquement et le débarquement; peuvent passer par un centre de rassemblement et peuvent être réembarqués. o Exigences davantage axées sur les résultats
Règlement sur l'inspection des viandes (abrogé en 2018) => *[Règlement sur la salubrité des aliments au Canada](#)* (2018)	**- Manipulation – utilisation des aiguillons électriques plus strictement réglementée** o Interdiction d'utiliser des aiguillons électriques o Sauf si : ▪ Il est en pratique impossible de faire déplacer l'animal en utilisant une autre méthode ▪ L'aiguillon est appliqué sur la partie latérale des muscles des membres postérieurs située entre l'articulation du jarret et celle de la hanche […].

Loi sur les pêches	**- Enlèvement d'ailerons de requin** (2019) o Interdiction d'enlever des ailerons de requin o Interdiction d'importer ou d'exporter tout ou partie d'ailerons de requin séparés de la carcasse (ou de tenter de le faire). Exception : à des fins de recherche. **- Protection du poisson et de son habitat – dispositions élargies** (2019) o Dispositions élargies à tous les poissons et à leurs habitats o Sont interdites la détérioration, la destruction ou la perturbation de l'habitat du poisson

Règlement sur les mammifères marins de la Loi sur les pêches	**- Perturbation des mammifères marins** (2018)
	o L'interdiction de perturber un mammifère marin inclut à présent (sauf exceptions) :
	    ▪ Le nourrir ou interagir avec lui
	    ▪ Le séparer de son groupe/d'un veau
	    ▪ Le coincer
	    ▪ L'étiqueter ou le marquer
	    ▪ S'en approcher au moyen d'un véhicule à une certaine distance et pendant une certaine période
	o Distances à respecter pour s'approcher de mammifères marins (p. ex. 100 mètres pour la plupart des baleines; 200 mètres pour les épaulards de la C.-B. et de l'océan Pacifique).
	
	- Contact fortuit avec des mammifères marins (2018)
	
	S'il y a contact fortuit entre un véhicule ou un engin de pêche et un mammifère marin, sauf si le contact est déclaré au même titre qu'une prise accessoire dans un livre de bord, il est obligatoire d'aviser le ministre de la date, de l'heure et du lieu de l'incident; de l'espèce en cause; des circonstances de l'incident […].

Tableau 2. Principaux changements aux lois provinciales et territoriales sur la protection des animaux au Canada depuis septembre 2017 (voir Fraser *et al.*, 2018 pour une description des lois sur les animaux avant cette date). Les informations présentées sont à jour au 31 décembre 2021. Veuillez noter qu'il n'y a pas eu de changement majeur au Nunavut, et qu'aucun changement dans cette province n'est donc indiqué.

Province ou territoire et Loi	Principaux changements (date d'adoption d'une nouvelle réglementation ou de modification d'une réglementation existante)
Alberta	**- Révision de la loi sur la faune (*Wildlife Act*) (2020)** : les aéronefs, drones, embarcations et véhicules sans pilote ou télécommandés sont maintenant interdits pour la chasse aux animaux sauvages. **- Révision du règlement sur la faune (*Wildlife Regulation*) (2020)** : pour le sommaire des modifications, voir le sommaire officiel [en anglais]. Changements : o Certaines restrictions à la chasse sont supprimées; la saison de la chasse au lynx roux et à l'ours noir est allongée o Il est permis aux propriétaires, occupants ou résidents autorisés de chasser le corbeau sur les terres publiques servant au pacage o Changements temporaires visant les pourvoyeurs (p. ex. la chasse guidée est autorisée pour les chasseurs résidents) o Nouvelle interdiction de nourrir les animaux sauvages (sauf exceptions) o Les véhicules sans pilote pour la chasse et la reconnaissance sont interdits o Sanctions nouvelles et plus strictes (p. ex. nourrir un animal sauvage dangereux : nouvelle infraction et nouvelle peine; chasser dans un sanctuaire de protection d'espèces en danger : nouvelle infraction et nouvelle peine)
Colombie-Britannique	**- Adoption du règlement sur les codes de pratiques pour le soin des animaux (*Animal Care Codes of Practice Regulation*) (2019)** : dans le règlement sur les bovins laitiers (*Dairy Cattle Regulation*), seul le code pour les bovins laitiers du CNSAE était mentionné comme présentant des « pratiques raisonnables et généralement acceptées ». Le nouveau règlement mentionne les codes du CNSAE pour : les bovins de boucherie (2013), les bisons (2017), les bovins laitiers (2009), les équidés (2013), les porcs (2014), les renards (2013), les visons (2013), les œufs d'incubation, reproducteurs, poulets et dindons (2016), les poulettes et pondeuses (2017), les lapins (2018), les moutons (2013) et les veaux lourds (2017).

- Abandon progressif de l'élevage du vison : en novembre 2021, la Colombie-Britannique a amorcé un processus d'abandon progressif de l'élevage du vison (lire le communiqué [en anglais]). Des changements sont attendus dans le règlement sur les fermes d'élevage d'animaux à fourrure (*Fur Farm Regulation*).

Plan d'abandon progressif proposé :

o interdiction permanente de l'élevage du vison;
o interdiction permanente de la présence de visons vivants dans les élevages d'ici avril 2023;
o arrêt complet de toutes les exploitations et vente de toutes les peaux d'ici 2025.

- Interdiction temporaire des rodenticides anticoagulants de deuxième génération (SGAR) – depuis le 21 juillet 2021 : le ministre de l'Environnement et de la Stratégie contre les changements climatiques de la Colombie-Britannique a ordonné, en vertu de l'article 8 de la loi sur la lutte antiparasitaire intégrée (*Integrated Pest Management Act*), l'interdiction de l'utilisation des SGAR pendant 18 mois pour réduire le risque d'empoisonnement d'animaux sauvages. Sont exemptés les services essentiels (entreprises et services voués à préserver la vie, la santé, la sécurité publique et les fonctions essentielles de la société) et les exploitations agricoles.

- Révision du règlement sur la chasse à entrée limitée (*Limited Entry Hunting Regulation*) (2017) : les changements incluent l'interdiction de la chasse au grizzli.

- Révisions du règlement général de la loi sur la faune (*Wildlife Act General Regulation*) (2018; 2019; 2020) : les changements incluent l'interdiction d'amorcer ou de nourrir un dindon ou un ongulé dans la région de Kootenay (région 4) et d'autres changements sur les permis et autorisations (p. ex. les chasseurs doivent porter sur eux leurs permis pour chaque espèce au cours d'une expédition de chasse); le transport; la récupération des animaux sauvages tués; et les déclarations.

- Révision du règlement sur les activités commerciales de la loi sur la faune (*Wildlife Act Commercial Activities Regulation*) (2018) : les changements incluent une nouvelle infraction (un taxidermiste ou un tanneur qui reçoit tout ou partie d'un grizzli doit présenter un rapport dans un délai de 10 jours); et de nouveaux règlements sur les méthodes de piégeage et les permis.

- Révision du règlement sur la chasse (*Hunting Regulation*) (2020) : les changements incluent l'interdiction de la chasse avec une arme à feu munie d'un mécanisme de mise à feu électronique; de la chasse au gros gibier avec toute autre arme qu'une carabine, un fusil de chasse, une arme à chargement par la bouche ou un arc; de l'utilisation ou du partage, aux fins

	de la chasse, d'informations sur l'emplacement d'animaux sauvages obtenues au moyen d'un aéronef; de l'utilisation de l'optique infrarouge au cours d'une expédition de chasse; de l'utilisation de vélos électriques dans les zones où les véhicules automobiles sont interdits ou restreints; et la déclaration obligatoire des cochons féraux récoltés.
Manitoba	**- Révisions de la *Loi sur la conservation de la faune*** (2020; 2021) : les changements incluent l'interdiction de la chasse de nuit (sauf exceptions); la possibilité pour le propriétaire d'un bien-fonds privé ou une personne autorisée de détruire ou d'enlever une hutte ou un barrage de castor; le ministre peut nommer les membres d'un comité de gestion intégrée pour lui présenter des recommandations sur la conservation ou la gestion d'espèces de gibier dans une zone qu'il désigne.
	- Révision du *Règlement général concernant la chasse* (2017) : les changements visent la mise à mort par piégeage dans une certaine zone (les ours noirs n'étant plus mentionnés, ils ne peuvent donc plus être tués à l'aide de pièges dans cette zone); l'amorçage dans le but de chasser l'ours noir ou le loup gris; les permis et licences délivrés par Internet; la chasse en groupe.
	- Révision du *Règlement sur le piégeage des animaux sauvages* (2020) : les changements incluent une nouvelle règle sur les permis et licences délivrés par Internet; les méthodes de piégeage; et la portée du règlement.
Nouveau-Brunswick	**- Changements futurs envisagés** aux règlements de la ***Loi sur la Société protectrice des animaux*** :
	o Modifications au *Règlement sur les établissements hébergeant des animaux familiers* :
	▪ licences d'établissement hébergeant des animaux familiers : autorisation obligatoire de la Société avant de modifier ou d'agrandir l'établissement si cela peut avoir une incidence sur l'activité visée par la licence
	▪ le Règlement cite une version révisée du code pour les chenils de l'ACMV (2018)
	o Modifications au *Règlement général* :
	▪ un certificat de santé est maintenant obligatoire pour les chiens et chats à vendre
	▪ les chiens ne peuvent être gardés en laisse à l'extérieur que si l'on se conforme à plusieurs dispositions du *Code de pratiques relatives aux soins des chiens au Nouveau-Brunswick* de la SPANB (2018) : l'article 2.1; les alinéas 2.2(a) et (b); les sous-alinéas 2.2(c)(1) à (4); l'article 2.3.
	▪ l'infraction relative aux concours de combats d'animaux est révoquée
	▪ le Règlement cite une version révisée du code pour les chenils de l'ACMV (2018)
	▪ la liste des codes de pratiques mentionnés dans le *Règlement général* en tant que normes pour les soins aux animaux inclut maintenant le code pour les lapins du CNSAE (2018) et le code pour les chiens de la SPANB (2018)

	- Révision du _Règlement sur la prise d'animaux à fourrure_ (2019) : nouvelle règle sur les méthodes de piégeage du chat sauvage d'Amérique [lynx roux].
Terre-Neuve-et-Labrador	**- Révision du règlement sur les normes de protection des animaux (_Animal Protection Standards Regulations_) (2019) :** o Est maintenant inclus le code pour les lapins du CNSAE (2018) o Sont maintenant visés par les exigences des codes et normes les poneys, chevaux miniatures, ânes, mules, bardots et lapins o Le règlement cite maintenant les versions actualisées : des codes du CNSAE pour les équidés (2013), les poulettes et pondeuses (2017), les moutons (2013), les bovins de boucherie (2013), les veaux lourds (2017), les lapins (2018), les porcs (2014), les œufs d'incubation, reproducteurs, poulets et dindons (2016) et les bisons (2017); du code de l'ACMV pour les chenils (2018); des _Normes d'accréditation_ d'AZAC (2018); et du _Manuel sur le soin et l'utilisation des animaux d'expérimentation_ du CCPA (2017). **- Révision du règlement sur la faune (_Wild Life Regulations_) (2020) :** les changements incluent une exemption à l'interdiction de la chasse de nuit (à l'orignal, s'il est considéré comme une nuisance ou une menace, et avec permission) et une nouvelle réglementation sur l'âge/les handicaps des chasseurs (p. ex. abaissement de l'âge minimum).
Nouvelle-Écosse	**- Révision de la loi sur la protection des animaux (_Animal Protection Act_) (2018) :** o **Définition élargie de la « détresse » d'un animal : la détresse inclut maintenant :** 　▪ la chirurgie esthétique 　▪ les combats d'animaux o **Description des pouvoirs de la Société de protection des animaux (SPA) :** 　▪ Ont été clarifiés : la compétence et les pouvoirs des inspecteurs 　▪ Élargissement des pouvoirs des inspecteurs ou des agents de la paix dans les logements privés : 　　• L'inspecteur ou l'agent de la paix peut exiger que le propriétaire produise tout animal sur les lieux pour examen 　　• Il peut entrer dans un logement privé (avec un mandat ou télémandat) s'il croit pour des motifs raisonnables et probables qu'il y a un animal abandonné sur les lieux et que le gardien est introuvable; qu'un animal est en détresse et que le gardien est introuvable ou refuse de produire l'animal; qu'un animal est possédé en violation d'une décision de justice et que le gardien est introuvable ou refuse de produire l'animal. 　▪ Pouvoirs accrus de saisie d'un animal (inspecteurs ou agents de la paix) :

- Si l'inspecteur croit pour des motifs raisonnables et probables que le propriétaire est en violation d'une condition d'une ordonnance du tribunal de ne pas posséder d'animaux
- Animaux abandonnés
- Animaux en détresse
  - Le propriétaire ou gardien d'un animal saisi a 7 jours (au lieu de 5 jours pour un animal retiré en vertu de la Loi antérieure) pour en appeler de la saisie
  - Les audiences sont maintenant publiques (sauf si le comité d'appel en décide autrement)
  - Les décisions et les sommaires du comité d'appel sont maintenant publics (le comité d'appel peut omettre certaines informations)

o **Changements au libellé :**
  - L'article sur la « prévention de la cruauté envers les animaux » s'intitule maintenant « protection du bien-être des animaux ».
  - Le « comité d'appel sur la cruauté envers les animaux » est maintenant le « comité d'appel sur le bien-être des animaux ».

o **Exemptions aux infractions – animal en détresse :**

La loi prévoit des exceptions à un animal en détresse = un animal n'est pas en détresse dans plusieurs cas : ce n'est pas nouveau – cela existait avant 2018 – mais la nouvelle loi supprime les mentions suivantes, qui faisant auparavant partie des exceptions « conformément aux pratiques raisonnables et généralement acceptées de la prise en charge des animaux » (sauf pour les modifications/interventions chirurgicales effectuées conformément aux codes du CNSAE ou à d'autres codes de pratiques prescrits par les règlements).

o **Nouvelles exceptions à la disposition suivante :** « Le gardien d'un animal ne continue pas à permettre que l'animal soit en détresse s'il prend immédiatement les mesures appropriées pour soulager la détresse » = ne s'applique pas si :
  - il y a manquement à l'article 20 (inspection des lieux par les inspecteurs de la SPA) ou à l'article 22 (ingérence ou obstruction) ou refus de prendre des mesures correctives
  - le gardien a été précédemment condamné (pour une infraction à cette loi ou à tout article du *Code criminel* (du Canada) en lien avec la cruauté envers les animaux)
  - une saisie immédiate est requise

	Interdiction – chirurgie esthétique : - Définition : « chirurgie pratiquée dans le seul but de modifier l'apparence d'un animal, sans bénéfice médical », y compris : - amputation de la queue - niquetage/anglaisage ou blocage de la queue - coupe d'oreilles - dévocalisation - désonglage (dégriffage) - ablation des ergots - toute autre modification/chirurgie prescrite - Exceptions à cette interdiction : - Chirurgie pratiquée par un médecin vétérinaire pour traiter une blessure, une maladie ou pour d'autres raisons médicales nécessaires ou bénéfiques pour la santé de l'animal - Pratiques agricoles – conformément aux codes du CNSAE ou à d'autres codes de pratiques prescrits par règlement **Obligations du propriétaire ou gardien :** ne sont plus définies
Ontario	**- La _Loi sur la Société de protection des animaux de l'Ontario_ est devenue la _Loi sur les services provinciaux visant le bien-être des animaux_** (LSPVBEA, 2019) - Changements – exécution : - La SPA de l'Ontario n'est plus chargée d'exécuter la loi => ce rôle appartient à l'inspecteur en chef du bien-être des animaux, à ses adjoints et à d'autres inspecteurs (le ministre joue aussi un grand rôle, dont la surveillance du travail de l'inspecteur en chef du bien-être des animaux) - L' « inspecteur en chef » s'appelle maintenant l' « inspecteur en chef du bien-être des animaux », et il est nommé par le ministre (et non plus par la SPA; auparavant, la SPA nommait l'un de ses employés inspecteur en chef). - Inspecteurs du bien-être des animaux : - Nommés par l'inspecteur en chef du bien-être des animaux; ce sont des personnes employées par un organisme du secteur public qui est une institution. - Nouvelle réglementation spécifique incluant la conformité à un code de conduite - Les inspecteurs sont des agents de la paix aux fins de l'exécution de la loi

- Nouvelle réglementation spécifique pour les plaintes
  - Portée élargie – Obligation de faire rapport : un médecin vétérinaire qui a des motifs raisonnables de croire qu'un animal est maltraité, *est la victime de souffrances, de privations* ou de négligence *physiques ou psychologiques excessives, notamment en participant/en étant dressé à des combats avec d'autres animaux* doit en faire rapport.
  - Portée élargie des inspections : elles incluent maintenant les animaux gardés à des fins éducatives, de bienfaisance ou d'une autre fin prescrite par le lieutenant-gouverneur en conseil qui se rapporte aux sports.
  - Pouvoirs accrus/réglementation plus détaillée :
    - les inspecteurs peuvent entre autres entrer sans mandat et inspecter des lieux servant de logements (si un animal s'y trouve dans un état de détresse critique et s'il n'y pas le temps d'attendre un mandat)
    - durant les inspections, il est entre autres permis d'ouvrir des récipients, bagages, emballages, contenants ou cages, de faire des enregistrements, notamment photographiques, d'exiger la production d'un animal ou d'une chose, d'utiliser ou de faire utiliser un ordinateur qui contient des renseignements, d'enlever des documents et de prendre possession d'un animal dressé pour le combat ou participant à un combat
    - exécution de la loi : mandats de perquisition liés aux infractions; perquisitions sans mandat liés aux infractions; extraction de renseignements d'ordinateurs; mandat pour effectuer des tests; ordonnances de communication; saisie
- Nouvel article – Détresse critique à bord d'un véhicule automobile : une personne prescrite peut maintenant entrer dans un véhicule (et causer des dommages au véhicule) si elle a des motifs raisonnables de croire qu'il y a un animal en détresse à bord; la personne peut prendre possession de l'animal et prendre des mesures raisonnables pour le soulager de son état de détresse
- Portée élargie – Interdictions relatives aux combats d'animaux : elles incluent maintenant encourager, favoriser, organiser ou diriger des activités de combat d'animaux, y contribuer, y participer ou recevoir un avantage financier ou matériel à l'égard d'activités du dressage d'un animal ou d'une rencontre, d'un concours, d'une exposition, d'un passe-temps, d'une présentation ou d'un événement
- L'interdiction d'élever ou de posséder un épaulard s'étend maintenant à tous les animaux interdits (les animaux qui posent un risque indu pour la sécurité des personnes ou qui ne peuvent pas être gardés en captivité de façon humaine)
- Interdiction de posséder ou d'élever un animal faisant l'objet de restrictions (à moins d'y être autorisé)
- Interdiction – Exposition à un risque indu de détresse
- Sanctions plus strictes; nouveau : sanctions administratives (voir le tableau – Peines plus sévères)

- Révision de la *Loi sur la protection du poisson et de la faune* (2019) : les changements incluent une règlementation spécifique sur les zones de contrôle et de surveillance des maladies des animaux sauvages

	- Révisions du règlement sur la chasse (*Hunting Regulation* – en anglais seulement) (2017, 2018, 2020) : les changements visent les permis, la chasse en groupe, le petit gibier, le dindon sauvage, la grenouille, le chevreuil, le wapiti, l'orignal, l'ours, les rapports sur les activités de chasse, la chasse avec un chien, la chasse au gibier à plumes; et l'interdiction de chasser le cormoran à aigrettes (sauf si la personne a les moyens adéquats de récupérer tout oiseau abattu). **- Révisions du *Règlement sur le piégeage*** (2017, 2018, 2020) : changements aux méthodes de piégeage et à la portée du règlement (p. ex. le lynx roux et le loup peuvent être piégés à l'aide d'un piège par collet suspendu).

Île-du-Prince-Édouard	**- Révision de la loi sur le bien-être des animaux (*Animal Welfare Act*) (2020)**
	
	o Libération malavisée d'animaux commerciaux :
	  ▪ Interdiction d'entrer dans un bâtiment ou autre lieu clos et d'en libérer les animaux ou de les laisser s'échapper
	  ▪ Responsabilité pour libération malavisée; une amende peut aussi être imposée
	
	- Révision du règlement général de la loi sur la conservation de la faune (*Wildlife Conservation Act General Regulations*) (2019) : nouvelle réglementation sur les permis d'exportation et d'importation.
	
	- Adoption du règlement sur la chasse (*Hunting Regulations*) (2019) : les changements incluent l'interdiction de la chasse de nuit (sauf exceptions)
	
	- Révision du règlement sur les animaux sauvages en captivité (*Keeping Wildlife in Captivity*) (2019) :
	o Exigences semblables pour toutes les catégories de permis (certaines exigences qui s'appliquaient aux catégories 1 et 2 s'appliquent maintenant à toutes les catégories).
	o Changements de la portée du règlement (p. ex. le permis de catégorie 5 vise maintenant la garde d'un animal sauvage légalement importé comme animal de compagnie).
	o Inclut maintenant une liste d'espèces qui ne doivent pas être vendues ni gardées en captivité comme animaux de compagnie (p. ex. crocodiliens; primates).

Québec	**- Révision de la *Loi sur le bien-être et la sécurité de l'animal*** (2021) : une « sous-espèce » est maintenant incluse sous « animal ».

- Adoption de la *Loi visant à favoriser la protection des personnes par la mise en place d'un encadrement concernant les chiens* (2018) et du *Règlement d'application de la Loi visant à favoriser la protection des personnes par la mise en place d'un encadrement concernant les chiens* (2019)

o Un médecin vétérinaire doit désormais déclarer sans délai à la municipalité locale si un chien qui a infligé une blessure par morsure à une personne ou à un animal domestique constitue un risque pour la santé ou la sécurité publique

o Le médecin vétérinaire doit aussi signaler une blessure infligée par un chien

o La municipalité locale :
  ▪ peut exiger qu'un chien soit soumis à l'examen d'un médecin vétérinaire afin que son état et sa dangerosité soient évalués
  ▪ peut déclarer un chien potentiellement dangereux après un tel examen ou si une morsure ou une attaque par un chien a blessé une personne ou un animal domestique
  ▪ ordonne de faire euthanasier le chien s'il a mordu ou attaqué une personne et a causé sa mort ou lui a infligé une blessure grave
  ▪ peut, lorsque des circonstances le justifient :
    • ordonner au propriétaire ou gardien de soumettre le chien à une ou plusieurs des normes prévues dans le règlement (section IV) ou à toute autre mesure qui vise à réduire le risque que constitue le chien pour la santé ou la sécurité publique
    • faire euthanasier le chien
    • ordonner au propriétaire ou gardien de se départir du chien ou lui interdire de posséder, d'acquérir, de garder ou d'élever un chien pour une période qu'elle détermine

o Nouvelles normes :
  ▪ tous les chiens : enregistrement obligatoire; laisse obligatoire dans les lieux publics; autorisation expresse nécessaire pour qu'un chien se trouve sur la propriété d'une personne qui n'est pas son propriétaire ou gardien
  ▪ un chien potentiellement dangereux : doit avoir un statut vaccinal à jour contre la rage en tout temps; être stérilisé et micropucé; ne peut être gardé en présence d'un enfant (10 ans ou moins) sauf sous la supervision constante d'un adulte; doit être empêché de sortir des limites d'un terrain privé; une affiche doit annoncer la présence sur ce terrain d'un chien déclaré potentiellement dangereux; et dans un endroit public, le chien doit porter en tout temps une muselière-panier et être tenu au moyen d'une laisse plus courte

o Inspection par un inspecteur :
  ▪ dans un lieu ou véhicule (l'inspecteur peut y pénétrer, en faire l'inspection, examiner le chien, prendre des photographies ou des enregistrements, exiger tout document)
  ▪ dans une maison d'habitation (le propriétaire ou l'occupant doit obtempérer sur-le-champ si l'inspecteur demande de voir le chien; un mandat est nécessaire si le propriétaire refuse)

o Saisie par un inspecteur :
- pour soumettre un chien à l'examen d'un médecin vétérinaire
- si le propriétaire ou gardien est en défaut d'une ordonnance rendue par la municipalité locale
o Infractions (voir les articles 33-40)

- Révision de la *[Loi sur la conservation et la mise en valeur de la faune](#)* (2021)
o Les invertébrés et les sous-produits de la faune sont maintenant dans le champ d'application de la loi
o Nouveaux pouvoirs et attributions du ministre incluant les projets pilotes pour expérimenter ou innover en matière de protection de la faune et de son habitat; interdiction ou limitation de la chasse et du piégeage s'il y a lieu
o Sanctions pénales et administratives plus strictes

- Révision du *[Règlement sur les animaux en captivité](#)* et du *[Règlement sur les permis de garde d'animaux en captivité](#)*
(2018)
o Révision des permis (y compris un plus grand nombre d'espèces visées par le permis obligatoire, dont certains animaux exotiques; catégories et classes de permis; établissement d'un nombre maximal de spécimens pour différentes classes de permis)
o Nouvelles conditions plus strictes et plus détaillées pour la capture d'un animal (dont l'interdiction de capturer un animal en le blessant ou en l'intoxiquant; façons de capturer certaines espèces, par exemple à la main ou à l'aide d'un filet de type épuisette)
o Nouvelles conditions et restrictions pour importer un animal au Québec
o Nouvelles conditions plus strictes et plus détaillées pour garder un animal en captivité (y compris aliments et eau, habitat, intégrité physique)
o Nouvelles règles plus strictes et plus détaillées de protection du public et de sécurité avec des exigences détaillées selon la catégorie d'animaux (dont la conception, les dimensions minimales et les périmètres des installations pour garder des animaux)

- Adoption du *[Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal](#)*
(octobre 2021; entrera en vigueur en octobre 2022, sauf pour la réglementation concernant le poisson, qui entrera en vigueur en octobre 2024) : la *Loi sur le bien-être et la sécurité de l'animal* s'applique aussi maintenant aux animaux sauvages et aux poissons gardés en captivité :
o Mammifères : bison, buffle d'eau, cerf rouge ou wapiti, cerf Sika, cerf de Virginie, daim, mouflon à manchettes, mouflons, renard arctique, sanglier, tahr de l'Himalaya, yak

	o Oiseaux : autruche, caille des blés, caille du Japon, canard colvert, canard musqué, colin de Virginie, coq de bruyère, dindon sauvage, émeu, faisans, francolins, nandou d'Amérique, oie cygnoïde, oie cendrée, perdrix, pigeon biset, pintade de Numidie o Poissons : bar rayé, doré jaune, loup tacheté, omble chevalier, omble de fontaine, perchaude, saumon Atlantique ou ouananiche, touladi, truite arc-en-ciel, truite brune o Abeille à miel gardée à des fins d'élevage **- Révisions du _Règlement sur la chasse_** (2018; 2019; 2020) : les changements incluent de nouvelles règles sur les permis; la chasse n'est permise qu'à plus de 100 m de tout endroit où des appâts ont été déposés (pendant la période de chasse au dindon sauvage); changements apportés à la limite de prise; utilisation de substances nutritives, olfactives ou naturelles pour l'appâtage. **- Changements futurs envisagés – projets de règlements :** En 2019, un projet de règlement a été publié dans la Gazette (_**Règlement sur le bien-être et la sécurité de l'animal et sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal**_). Il n'a pas été adopté; au lieu de l'adoption d'un règlement général, plusieurs règlements ont été recommandés pour adoption, le premier étant le **_Règlement sur la désignation des autres animaux visés par la Loi sur le bien-être et la sécurité de l'animal_**, qui a été adopté en octobre 2021 (voir plus haut). Le projet de règlement de 2019 incluait : o L'ajout de nouvelles espèces visées par la _Loi sur le bien-être et la sécurité de l'animal_ => nouveau règlement adopté en 2021 o Les permis o Les normes générales et spécifiques à la garde et aux soins o La réglementation liée aux chats et aux chiens; portée élargie; règles supplémentaires o L'abrogation du _Règlement sur la sécurité et le bien-être des chats et des chiens_.
Saskatchewan	**- Révision de la loi sur la protection des animaux (_The Animal Protection Act_) (2018)** o La partie II, « Animaux en détresse », s'intitule maintenant « Protection des animaux » et se divise en 4 sections : Obligations et interdictions en matière de soins aux animaux; Administration; Intervention et soulagement de la détresse; et Généralités. o Les sociétés d'assistance aux animaux (c.-à-d. la SPA de la Saskatchewan et tout autre organisme d'assistance aux animaux autorisé) s'appellent maintenant « organismes de protection des animaux ».

- o Définition plus large de la détresse avec les ajouts suivants :
  - Animal ayant besoin d'une protection raisonnable contre les températures extrêmes
  - Animal gardé dans des conditions qui sont : insalubres; susceptibles d'altérer de manière significative sa santé ou son bien-être au fil du temps; de provoquer une anxiété ou une souffrance extrême; ou de contrevenir aux normes, codes de pratiques ou lignes directrices prescrits
  - Animal abandonné par son propriétaire ou gardien d'une manière qui cause ou est susceptible de causer une détresse résultant de l'un ou de tous les facteurs énumérés dans la définition de la détresse
- o Les obligations de diligence spécifiques sont maintenant définies :
  - Fournir de la nourriture et de l'eau en quantité suffisante, des soins vétérinaires adéquats ou des soins médicaux en cas de blessure ou de maladie, un abri et une protection raisonnable contre les températures extrêmes
  - Ne pas nuire de manière significative à la santé ou au bien-être de l'animal en le confinant dans un enclos ou une zone où l'espace est insuffisant, les conditions insalubres, la ventilation ou l'éclairage inadéquats, sans possibilité d'exercice
  - Le propriétaire ou gardien est réputé s'être conformé aux exigences précédentes s'il se conforme aux normes, codes de pratiques ou lignes directrices
- o Le transport d'un animal inapte est maintenant interdit selon la loi :
  - Définition : un animal incapable de se tenir debout ou qui souffrirait pendant le transport en raison d'une infirmité, d'une maladie, d'une blessure, de la fatigue ou de toute autre cause
  - Un animal inapte peut être transporté (s'il est chargé et transporté de façon non cruelle) pour recevoir des soins ou un traitement
- o La loi mentionne maintenant l'abattage sans cruauté/l'euthanasie :
  - Le moins possible de douleur et d'anxiété
  - Euthanasie : respect des normes, codes de pratiques ou lignes directrices prescrits + perte immédiate de sensibilité + entraîner rapidement la mort
- o Le médecin vétérinaire doit désormais signaler sans délai à un agent ou un organisme de protection des animaux tout événement qui constitue selon lui une infraction aux exigences sur les animaux en détresse, le transport d'animaux inaptes, l'abattage sans cruauté et l'euthanasie.
- o Tout agent réglementé de protection des animaux et toute catégorie réglementée d'agents de protection des animaux a le pouvoir d'un agent de la paix en ce qui a trait à l'application de la partie 2 (Protection des animaux) de la loi et a droit aux mêmes mesures de protection qu'un agent de la paix en appliquant le *Code criminel*.
- o Portée plus large des inspections – agent de protection des animaux : sont maintenant inclus les véhicules, les locaux et les lieux où des animaux sont gardés *pour la prestation d'un service concernant l'animal*.

o Agent de protection des animaux – portée élargie : inclut le soulagement et aussi maintenant la *prévention* de la détresse d'un animal; non seulement un animal en détresse mais un animal *susceptible de l'être*
o Pouvoirs accrus de l'agent de protection des animaux : ordres de mesures correctives
  ▪ l'agent peut maintenant ordonner au propriétaire ou gardien d'un animal de prendre les mesures correctives nécessaires pour soulager ou prévenir la détresse de l'animal dans un délai déterminé (droit d'appel); le propriétaire ou gardien doit obtempérer
  ▪ si un ordre est toujours en vigueur, l'agent peut pénétrer sans mandat dans un véhicule, un lieu ou un local (autre qu'un logement privé) pour l'inspecter et vérifier si l'ordre a été respecté
  ▪ l'ordre est annulé quand le propriétaire ou gardien a obtempéré
o L'agent de protection des animaux peut maintenant mettre sous garde un animal abandonné.
o Délai plus long – animal mis sous garde : l'animal peut être vendu, donné ou détruit si le propriétaire ou gardien n'est pas trouvé et avisé dans un délai de *5* jours ou s'il est trouvé et avisé, mais n'a pas respecté l'ordre de mesure corrective ou d'autres exigences (comme le paiement des frais)
o Sanctions : les sociétés sont maintenant mentionnées (et non pas seulement les particuliers), et leurs dirigeants et administrateurs (dans certains cas) sont aussi coupables de l'infraction et sont passibles, sur déclaration de culpabilité par procédure sommaire, des peines prévues pour l'infraction; les récidives sont maintenant incluses (pas seulement la première infraction)
o Ordonnance exécutoire : un organisme de protection des animaux ou le ministre peut maintenant demander une ordonnance exécutoire à un juge
o Protection de certains animaux contre les chiens : une personne coupable de l'infraction d'avoir détruit ou éliminé un chien autrement que selon les modalités prescrites est maintenant passible, sur déclaration de culpabilité par procédure sommaire, d'une amende pouvant aller jusqu'à 5 000 $ (elle était de 1 000 $ avant 2018)

- Révision du règlement sur la protection des animaux (*[The Animal Protection Regulations](#)*) (2018)
o Changements des normes, lignes directrices et codes de pratiques cités :
  ▪ révisés – sont maintenant citées les dernières versions des codes du CNSAE pour les veaux lourds (2017), les bisons (2017) et les œufs d'incubation, reproducteurs, poulets et dindons (2016); du code pour les chevaux sur les exploitations de production d'urine de jument gravide (2018); et du code pour les chenils (2018)
  ▪ nouveaux – sont maintenant cités :
    • les normes minimales pour la réhabilitation de la faune (*Minimum Standards for Wildlife Rehabilitation*) (2012) publiées par l'International Wildlife Rehabilitation Council et la National Wildlife Rehabilitators Association
    • les codes du CNSAE pour le transport (2001), les poulettes et pondeuses (2017) et les lapins (2018)

- ne sont plus cités :
  - « Guidelines for euthanasia of domestic animals by firearms » (J. [Al] Longair *et al.*, *Revue vétérinaire canadienne*, 1991)
  - *Code de pratiques recommandées pour le soin et la manipulation des poulettes, pondeuses et poules de réforme* (Conseil de recherches agro-alimentaires du Canada, 2003)

- Révision du règlement sur l'élevage d'animaux à fourrure (*The Fur Farming Regulations*) (2017)
o Portée plus restreinte – animaux d'élevage à fourrure : les espèces suivantes n'étant plus mentionnées dans le règlement révisé, il est interdit d'en faire l'élevage : castor; putois; martre; rat musqué; raton laveur; écureuil roux; belette; renards de noms scientifiques *Alopex lagopus* ou *Vulpes velox*
o Nouvelle réglementation liée à la demande, à la délivrance et au transfert de licences, dont la possibilité pour le ministre d'exiger l'inspection de la ferme d'élevage d'animaux à fourrure proposée (ou de la ferme actuelle s'il s'agit d'un transfert)
o En cas d'annulation ou d'expiration d'une licence : dans un délai de 180 jours, les peaux et les animaux d'élevage à fourrure qui restent doivent être récoltés, ou tout animal restant doit être transféré ou vendu
o Possibilité de demander une licence pour des animaux ne figurant pas sur la liste des animaux d'élevage à fourrure, mais qui sont actuellement des espèces fauniques indigènes de la Saskatchewan (à certaines conditions)
o Nouvelles interdictions : personne ne doit :
  - exposer au public un animal d'élevage à fourrure
  - chasser ou permettre la chasse d'un animal d'élevage à fourrure
o La possibilité pour une personne détenant un animal à fourrure de le libérer dans la nature (à certaines conditions) n'est plus mentionnée
o Nouvelle réglementation liée à l'importation et à l'exportation, dont l'interdiction d'importer le lynx d'Eurasie
o Nouvelle exigence de soin et de manipulation : le titulaire d'une licence doit s'occuper de ses animaux conformément à la loi sur la protection des animaux (*The Animal Protection Act*)
o Nouvelles normes sur les dimensions des enclos

- Révision du règlement sur le gibier d'élevage (*Domestic Game Farm Animal Regulations*) (2019)
o Exigences nouvelles et supplémentaires pour les licences, dont la possibilité pour le ministre de modifier ou d'annuler une licence
o Publicité sur le programme de surveillance de la maladie débilitante chronique (MDC)

- Révision du règlement sur les animaux sauvages en captivité (*The Captive Wildlife Regulations*) (2021)

o Espèces permises : liste plus précise et détaillée incluant la classe et le nom scientifique (tableau 1 de l'annexe)
o Inclut maintenant une liste des espèces faisant l'objet de restrictions (tableau 2 de l'annexe)
o Les espèces ne figurant pas sur la liste sont interdites sauf si (période de transition) :
  ▪ L'animal pose un danger imminent pour la santé ou la sécurité du public : la personne peut être autorisée à garder l'animal le temps que le ministre détermine si l'espèce ne figurant pas sur la liste est une espèce permise ou si elle fait l'objet de restrictions (et si c'est une espèce faisant l'objet de restrictions : division 1 ou 2 du tableau 2 de l'annexe)
  ▪ L'animal est désigné comme une espèce faisant l'objet de restrictions :
    • Division 1 du tableau 2 de l'annexe : la personne doit se défaire de l'animal sauvage (c.-à-d. le céder à un jardin zoologique autorisé situé en Saskatchewan; le céder à un particulier ou une installation hors de la Saskatchewan; d'une autre manière que le ministre juge appropriée)
    • Division 2 du tableau 2 de l'annexe : possibilité de garder l'animal
o Les espèces faisant l'objet de restrictions sont interdites sauf avec :
  ▪ Possession d'une licence;
  ▪ Notification obligatoire du ministre si la personne garde déjà en captivité des espèces faisant l'objet de restrictions sans posséder de licence – période de transition :
    • Espèces faisant l'objet de restrictions (division 1 du tableau 2 de l'annexe) : la personne doit se défaire de l'animal sauvage (c.-à-d. le céder à un jardin zoologique autorisé situé en Saskatchewan; le céder à un particulier ou une installation hors de la Saskatchewan; d'une autre manière que le ministre juge appropriée)
    • Espèces faisant l'objet de restrictions (division 2 du tableau 2 de l'annexe) : possibilité de garder l'animal
o Nouvelles licences pour la réhabilitation de la faune et la recherche scientifique
o Nouvelle réglementation spécifique avec différentes normes : fauconnerie; jardin zoologique et zoo itinérant (incluant les *Normes* d'AZAC; licences pour la réhabilitation de la faune; licences pour la recherche scientifique et le gibier à plumes sédentaire en captivité
o Exigences nouvelles et plus strictes pour l'importation et l'exportation d'animaux sauvages en captivité; la quarantaine; les animaux sauvages malades; les animaux sauvages dangereux; la destruction d'animaux sauvages

- Révisions du règlement sur la faune (*Wildlife Regulations*) (2018; 2021) : les changements incluent une nouvelle réglementation sur certaines armes à feu; l'interdiction de nourrir des animaux sauvages dangereux ou de fournir, laisser ou placer un appât pour attirer un animal sauvage dangereux (sauf exceptions); une obligation de déclaration pour toute

	personne qui, dans des circonstances exceptionnelles, tue illégalement un animal sauvage qui ne pourrait pas survivre dans la nature; licences.

Territoires du Nord-Ouest*	**- Révision du _Règlement général sur la faune_** (2019) :
	
	o Il est maintenant interdit, à moins d'une autorisation, d'endommager, de détruire, de perturber ou de porter atteinte à la demeure d'été de la chauve-souris (avec une exception)
	o La question de la chasse à l'aide d'un drone est maintenant abordée (p. ex. il est interdit de chasser du gibier ou des oiseaux migrateurs considérés comme gibier dans les 12 h après l'avoir repéré en utilisant un drone)
	o Les espèces suivantes ne doivent pas être importées, possédées ni transportées aux T. N.-O. (sauf exceptions/exigences particulières) : cerf mulet ou cerf de Virginie et chauve-souris
	o Les espèces suivantes ne doivent pas être importées, possédées ni transportées aux T. N.-O. dans certaines zones et régions (p. ex. dans la zone de gestion de la faune G à l'ouest du fleuve Mackenzie), sauf exceptions :
	    ▪ l'alpaga ou la vigogne
	    ▪ la chèvre domestique
	    ▪ le mouton domestique
	    ▪ le lama ou le guanaco
	o Une espèce faunique déclarée organisme nuisible par le ministre peut maintenant être tuée ou capturée par un résident si l'animal n'est pas gardé dans un enclos
	o Renseignements supplémentaires sur les plans de gestion et de surveillance de la faune
	
	- Révisions du _Règlement sur la chasse au gros gibier_ (2018; 2021) : les changements incluent de nouvelles restrictions à la chasse à l'orignal et au caribou dans certaines régions.

Nunavut*	--

Yukon	**- Révisions du *[Règlement sur la faune](#)*** (2017; 2019; 2020) : les changements incluent une nouvelle interdiction de la chasse à l'aide d'un drone; une nouvelle réglementation de la chasse à l'ours polaire (il est désormais interdit de chasser un ours polaire de moins de 2 ans; la limite d'âge était de 3 ans auparavant); la remise du spécimen biologique de l'ours; l'exploitation de la faune sur le versant Nord du Yukon par les Inuvialuit; les méthodes de chasse; et le gaspillage de la viande et de la peau.

De: Lessard Marie-Ève (DSABEA) (Québec)
Envoyé: 29 septembre 2022 15:30
À: Jacques Myriam (DISBEA) (Sainte-Marie)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=bb2b488f974e407ba2e1c4b54f578b5b-Jacques Myr]; Fruteau de Laclos Camille (DISBEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user2510e300]; St-Pierre Roxane (DISBEA) (Sainte-Marie)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=32f4751fb00643af8fe529f9e9ed17c2-St-Pierre R]
Objet: Document européen évaluation BEA vison et renard
Pièces jointes: Mink_protocol_final_web_edition_light.pdf; WelFur_fox_protocol_web_edition.pdf

Bonjour,

Tel que discuté ce matin, voici les documents européens concernant l'évaluation du BEA dans les fermes de fourrure de visons et de renards.

Bon après-midi,

Marie-Eve

Marie-Eve Lessard │ DMV, IPSAV
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Direction adjointe à la règlementation et des programmes
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WelFur

Welfare assessment protocol for mink

WelFur
Welfare assessment protocol for mink

Acknowledgement

Introduction to WelFur

Foreword

Animal welfare is a societal issue that most citizens and consumers are clearly concerned about. For the same reason animal welfare is a key priority in the European fur farming sector. The fur sector acknowledges however, that welfare standards on fur farms may not be sufficiently transparent to the general public and other stakeholders, just as the fur farming sector acknowledges that animal welfare standards are not fixed objectives, but the results of dynamic processes in which new knowledge and technologies must be considered as they appear.

In the preparation of the WelFur protocols for fur-farmed species (mink and fox), all existing scientific knowledge has been reviewed. Scientific research on animal welfare in farmed mink and fox have been conducted in a number of countries for more than 30 years. Consequently the WelFur protocols must be considered as the latest scientific reference with regard to animal welfare for fur-farmed species.

The overall aims of the WelFur project rest on three principles.
1) WelFur is a reliable and feasible system for animal welfare assessment based on scientifically proven measurements.
2) WelFur is designed to create transparency around the animal welfare standards.
3) WelFur works as a strategic tool for the individual fur farmer to identify and improve any areas on the fur farm where the welfare standards can potentially be improved.

Background

To promote a more objective and transparent view of the state of animal welfare on European fur farms, the European Fur Breeders' Association (EFBA), initiated the WelFur project, in 2009. WelFur is largely inspired by the Welfare Quality® project that the European Commission initiated in 2004 covering pigs, poultry and cattle. The welfare assessment relies on a sequential evaluation process, in which measurements are collected on farms to assess the welfare status of the farm within 12 criteria. Those criteria are then aggregated into four main welfare principles and finally an overall welfare classification is produced.

The objectives of WelFur

The main objective of WelFur is to check the level of animal welfare on European fur farms.

This can form the basis for a solid certification programme to cover all European fur farms. Assessments will be carried out by third-parties and results will be communicated to the fur farmer in order to encourage the farmer to take the most appropriate steps to improve animal welfare. This should be seen as a 'win-win' situation. It must be underlined that the WelFur assessment protocols evaluate the actual welfare of the fur animals and not primarily compliance with any national and/or EU legislation.

At present, national authorities carry out controls of fur farms with the objective of ensuring compliance with existing legislation on animal welfare. However, the levels of control and the basic legislation differ considerably from one member state to the other. Another potential benefit of the WelFur project is consequently to influence the reform of current controls and legislation on both national and EU levels. The industry proposes that WelFur could serve as an EU-based scientific reference for regulation and control.

WelFur structure and timeline

In 2009, EFBA appointed a consortium of 7 European universities and institutes (see Annex B 'Contributors to WelFur') to gather existing research in two protocols – one for mink and one for foxes. The senior scientist Dr. Steen Henrik Møller from Aarhus University and Prof. Jaakko Mononen from the University of Eastern Finland, were appointed project co-ordinators for mink and fox species.

To secure the validity and the independence of the research on the protocols, three external reviewers were appointed: Prof. Georgia Mason from Guelph University, Prof. Harry Blokhuis, from Swedish University of Agricultural Sciences and Prof. David Morton, member of the European Food Safety Authority (EFSA). The reviewers participated in all the review meetings of the project and will issue a report at the end of the development process.

The scientists identified and evaluated the possible welfare indicators and measurements to be included in the protocols following an in-depth review of the existing welfare research on fur animals. They selected a number of these on the basis of their scientific validity, reliability and feasibility. The description of the selected welfare measurements was finished in early 2011. The researchers decided on 23 measurements to assess the welfare of foxes and 22 measurements for mink. About half of the measurements are animal-based. The goal has never been to have 100% animal-based indicators but instead, to have an overall picture of the farm which includes a combination of animal-based, management-based and resource-based indicators.

With the support of INRA (French National Institute of Agronomic Research) and various consultations with scientists, the scoring of the welfare measurements was accomplished by the end of 2011. WelFur is designed to be implemented directly at the farm. That is why the protocols were then tested in a number of commercial fur farms in Denmark, Finland, The Netherlands, Norway and Sweden during 2011 and 2012, in order to get a first set of farm data covering the 3 periods of the annual production cycle. From these tests, the scientific team concluded that the assessment can be performed within one day (approx. 5-7 hours). The tests also showed that the measurements are sensitive enough to demonstrate variation between farms.

Transparency paper

The 22 and 23 specific measurements for mink and foxes respectively, have been chosen by the scientists for their scientific validity, reliability and feasibility. During the development of WelFur several hundred measurements have been considered, and, on completion of the WelFur protocols, the scientists will produce a transparency paper explaining in detail the reason for the final choice of measurements.

WelFur implementation

The WelFur implementation consists of 4 procedures:

· Publishing the WelFur assessment protocols presenting both the measurements and the way calculations are performed up to the final overall classification of farms (present document).

· Development of a software tool to calculate the scores and store the data. This work by INRA started in parallel with the development of the protocols. It is expected that the software tool will be finalised in the course of 2013. This tool will be available to both the assessors (for the tests) and the farmers (for information and improvement purposes).

· Development of the training material for the assessors was started in parallel with the development of the protocols. Training material (e.g. videos, pictures, farm visit, etc.) will be consolidated by the same scientific team. It should be ready in 2015.

· National implementation action plans will be developed in the course of 2016 with the support of each EFBA member association, including the third party selection to perform the assessments. There will not be a pan-European solution. Instead each member country will have to develop a solution suited for national circumstances. The implementation of WelFur started in 2017.

Ethical and societal aspects

WelFur differs from the Welfare Quality® project in that no social scientists were involved when setting the consolidation rules from the welfare criteria to principles and the overall assessment. Therefore, in WelFur, these two steps were extrapolated from the consolidated Welfare Quality® data. This situation is particular and mainly due to the fact that there is a polarisation of views when addressing the welfare of fur farm animals. Despite this there is general agreement within the scientific community about what represents good animal welfare. This consensus was expressed in the 'Five Freedoms' that Welfare Quality is based on.

In order to address citizens' concerns regarding the fur sector, the European Fur Breeders' Association currently Fur Europe has also launched a number of key initiatives in parallel with WelFur:

- In September 2010, Fur Europe undertook a public survey (conducted by independent market research company Ipsos) regarding fur farm animals in Belgium, Germany and The Netherlands in order to get a clear understanding of the public's concerns.

- Following this survey, Fur Europe appointed a consortium of 3 scientists from the fields of bioethics and animal welfare with the purpose of having the consortium reflect on the subject of ethics in fur production. A first scientific publication, framing the ethical debate around animal use and fur farming in particular, is due to be released in the course of 2015.

- Responding to this first paper, the future scope of the Ethical Committee is to analyse the ethics in the European fur farming sector. Considering areas like animal welfare, sustainability, the value of animals and various moral views, the Ethical Committee can point out ethical gaps in fur production. Ultimately, the European fur sector will introduce an Ethical Charter in order to assure the public that consistent ethical consideration is integrated with European fur production.

- Further analysis of public attitudes towards animal use and fur production were undertaken with a second public survey in December 2012 (again by independent market research company Ipsos) in Denmark, France, The Netherlands, Poland, Spain and the UK. The outcome of this survey will be used to further articulate the WelFur implementation plan in member countries.

Future developments

WelFur is a dynamic programme and the welfare assessment protocols for mink and foxes should be considered a first version. We will strive for a 5 year revision cycle, with a view to improving its scientific basis and providing more efficient tests. The revision will be based on the experiences gained from the implementation process and will include recommendations from external reviewers and ethical experts as well as new research.

Given that WelFur is a farm level certification programme with the objective of demonstrating transparency, the European Fur Breeders' Association will gather and publish annual reports with data from the assessments when the implementation is under way.

Conclusion

The European fur farmers associated with Fur Europe have the same objectives as the general public. The implementation of WelFur, the testing and the controls may well reveal room for some future changes. This is in accordance with the purpose of the programme as Fur Europe recognises the need and demand for constant improvement. WelFur is a scientifically valid and reliable programme that will further develop the welfare of our fur-farm animals and demonstrate transparency in the European fur-farming sector.

Table of content

Terms and definitions

Adult: Individual older than 7 months. In WelFur terms adult mink can be present in period 1, 2 and 3.

Animal-based measurement: Measurement that is taken directly from the animal.

Assessor: Person in charge of collecting data using the WelFur protocol on a farm in order to assess the welfare of animals.

Dam: Adult female mink selected for breeding.

Farm: In this protocol, "farm" is used to designate the animal unit, which means the whole or section of a farm that deals with mink.

Farm manager: Person responsible for the farm.

Fur-chewing: A behavioural disorder where mink chew their own fur or that of a cage mate.

Habituation: The weakening of responses due to repeated exposure to stimulus.

Juveniles: Young mink older than 10 weeks and less than 8 months. Thus juveniles are found on farms in the period between the time of separation and pelting or selection. In WelFur terms mink juveniles are present only in Period 3.

Kits: Young mink from birth until separation/10 weeks of age. In WelFur terms, mink kits are only present in Period 2. Kits become juveniles at separation typically before or at 10 weeks of age, also if they are continuously housed with the mother.

Management-based measurement: Measurement that refers to what the farm manager does on the farm and what management procedures are used or planned.

Overall assessment of welfare: Synthesis of welfare information, which will be used to allocate a farm to a welfare category.

Pelting: The killing of animals to harvest mature winter pelts. In the northern hemisphere this period would be early November to late December and defines the end of Period 3. Killing for harvesting fur can also take place in late March or early April after mating e.g. of males and unmated females.

Resource-based measurement: Measurement that is taken regarding the environment in which the animals are kept.

Section of cages: Battery type pens assembled as one unit, often 6 cages.

Separation: When the kits are put out in pairs or groups after weaning. One or more kits may be housed with the female mother with or without weaning.

Weaning: When the dam is removed from the litter or vice versa, terminating the lactation if it has not ceased already. Usually at 6-8 weeks after birth.

Welfare category: Final categorisation given to a farm that indicates the overall welfare of animals in that particular farm.

Welfare criterion: Represents a specific area of welfare concern that has to be addressed to satisfy good animal welfare.

Welfare measurement: Measurement taken on a farm that is used to assess a welfare criterion. A welfare measurement may be animal, resource or management-based.

Welfare principle: Collection of criteria associated with: feeding, housing, health and behaviour.

Welfare score: Score that indicates the welfare state under a criterion or principle.

WelFur protocol: Description of the measurements that will be used to calculate the overall assessment of welfare. The protocol also specifies how the data will be collected.

Photo : © Kopenhagen fur

1 Scope

This protocol deals with measurements related to the on-farm welfare assessment of mink. The interpretation of these in terms of mink welfare and their aggregation to produce an overall judgment on the level of welfare on a given farm was performed by experts and calculations deriving from their opinions.

A similar objective of producing an overall score of animal welfare at farm level was dealt with for cattle, pigs and poultry within a European project called Welfare Quality®[1]. In WelFur, even if the general construction procedure is the same as in Welfare Quality®, several characteristics, listed below, have to be taken into consideration in the model construction for farmed fur animals.

Contrary to many other farm animal production systems, the whole production cycle (including breeding, lactation, weaning, growing and finally killing for pelting) occurs on the same farm in fur production. As a consequence, it is necessary to take into account, all types of animals (adult males, adult females, kits and juveniles). Consequently, when appropriate, the construction of each criterion needed to be adjusted according to the different animal types so that their differences can be taken into account for the interpretation of the related measurement in terms of welfare.

Moreover, to have an overall view of the whole fur farm, the entire production cycle has to be evaluated. As a consequence, three periods (from pelting to mating / from mating to separation / from separation to pelting time) were defined and have to be assessed. Depending on the period, the number and types of animals (adult males, adult females, kits and juveniles) and the resources used differ (see Figure 1). This has a direct impact on the frequency of visits and on the construction of the criteria. Moreover, at criterion level the data collected at several periods have to be integrated and this requires specific arrangements for the calculation of scores. Consequently, to build a model for the overall assessment of welfare on a fur farm, it is necessary to combine the results from the three periods.
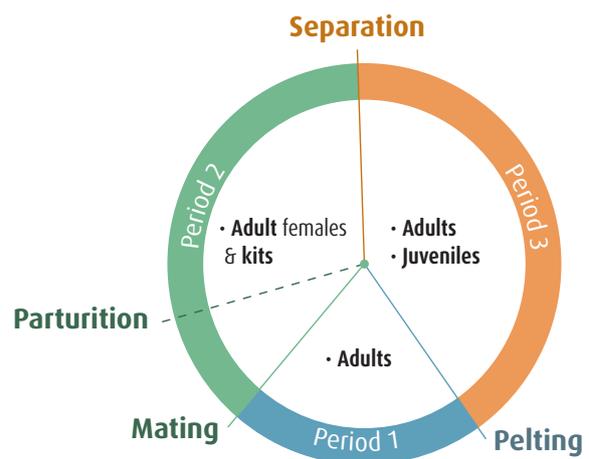
Figure 1 The three periods of the production cycle considered for mink

1 Welfare Quality® Assessment Protocol for Cattle, 2009, ISBN/EAN 978-90-78240-04-4, 180 pages.
   Welfare Quality® Assessment Protocol for Poultry, 2009, ISBN/EAN 978-90-78240-06-8, 119 pages.
   Welfare Quality® Assessment Protocol for Pigs, 2009, ISBN/EAN 978-90-78240-05-1, 119 pages.

Furthermore, the assessment system developed in WelFur should be applicable to all the production systems present in Europe, including variability in regulations (*e.g.* cage enrichments) and climatic conditions (from Finland to Greece).

Even if the general procedures presented here might be applicable to other farmed fur animals, such as Ferrets, this protocol cannot be used before a revision of the procedures, for other species than mink.

With regard to the implementation procedure, it is suggested by EFBA to not run the whole protocol each year but to follow this proposal: the first year a farm is assessed, three visits on the farm are required (one per period) ; then, one visit per year is necessary, with a different period assessed each year (Figure 2 Suggested implementation procedure over several consecutive years).
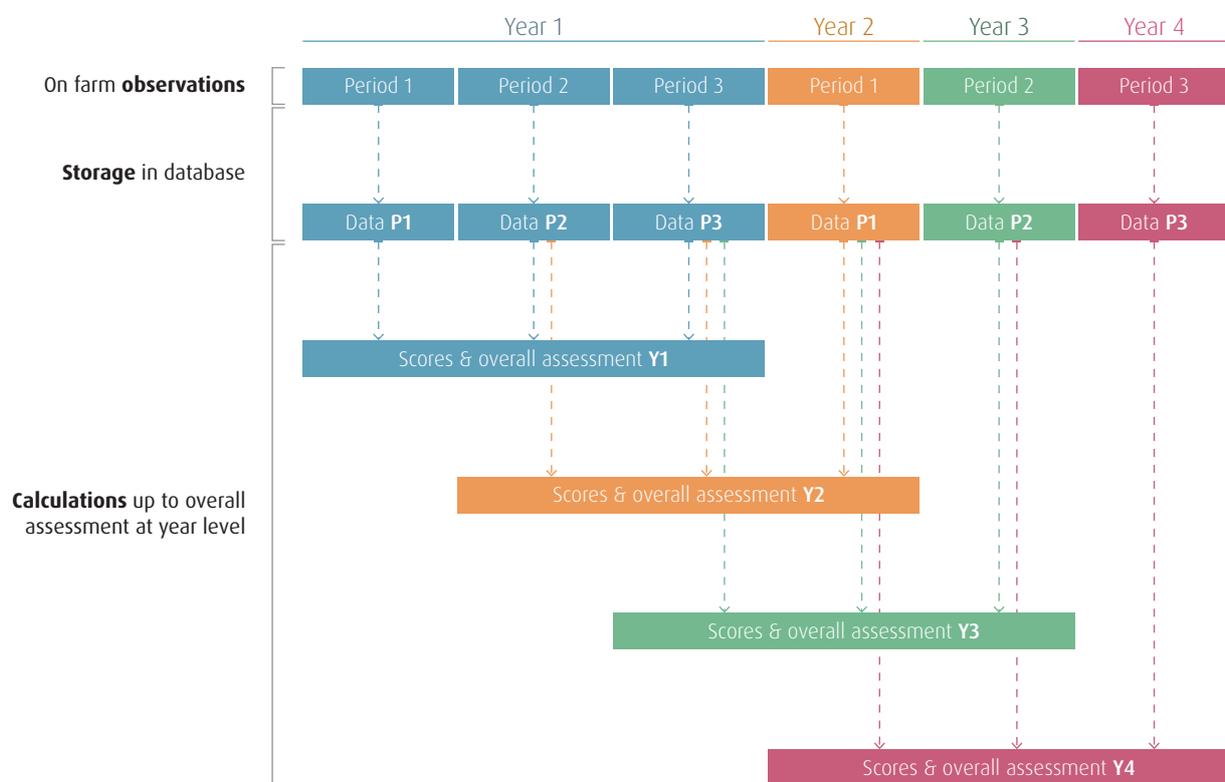
Figure 2 Suggested implementation procedure over several consecutive years (with P = period and Y = year)

Photo : © Kopenhagen fur

2 Background of WelFur protocols

2.1   Overall structure of the WelFur assessment

The objective of the WelFur project was to develop farm-level welfare assessment protocols for the three main fur animal species farmed in Europe (the mink, the blue fox and the silver fox). As in the Welfare Quality® project, the aim was to build an overall assessment of welfare. Therefore, the results obtained from measurements are synthesised to form such an overall assessment.

The welfare assessment related to a given farm is based on the calculation of welfare scores from the information collected on that farm (Figure 3). An advisor can use the welfare assessment to highlight points requiring the farm manager's attention. The information can also be used to inform consumers about the welfare status of the animals whose fur they buy.

This document contains the protocol for mink. It presents all the measurements relevant for the farm mink and an explanation of what data should be collected and in what way.
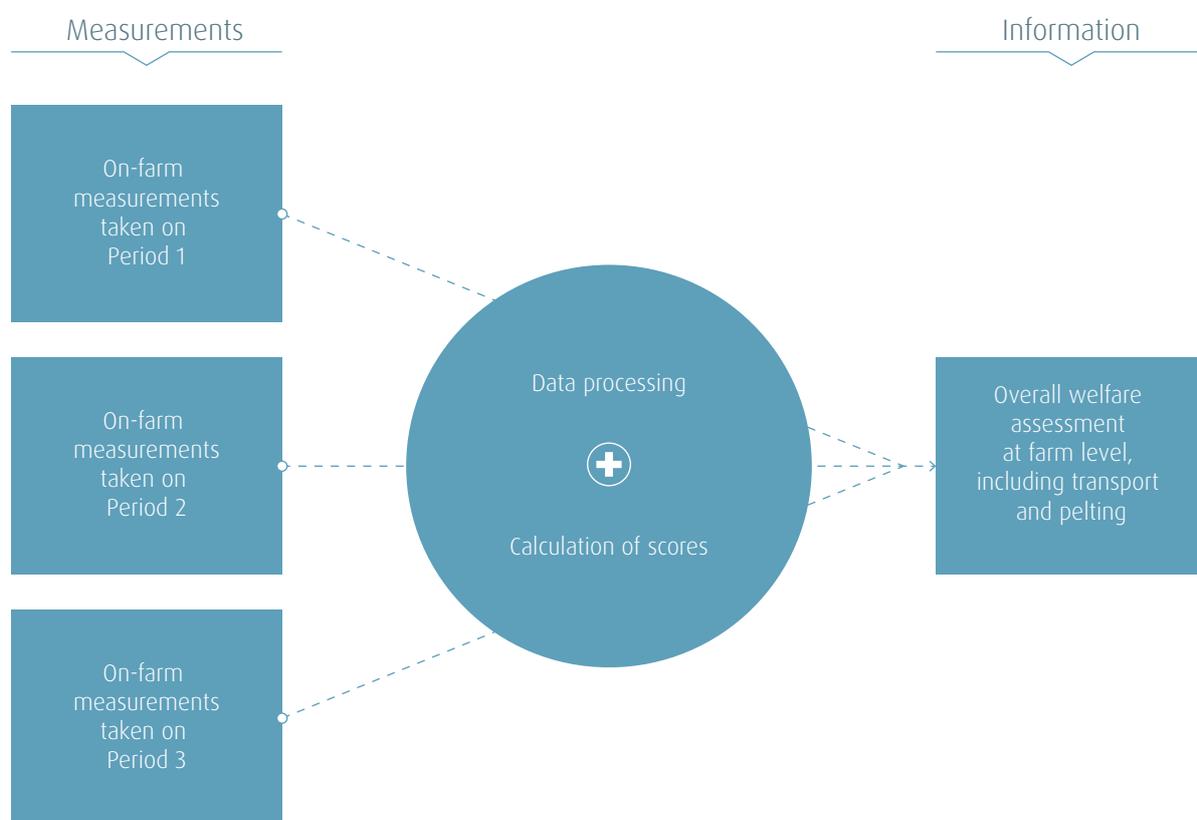
Figure 3 Structure of the WelFur assessment including the different sources of information.

2.2   Basic principles

2.2.1   Defining welfare principles and criteria

The WelFur project used the welfare principles and criteria defined in Welfare Quality® (Table 1).

Welfare principles	Criterion number	Welfare criteria
Good feeding	1	Absence of prolonged hunger
	2	Absence of prolonged thirst
Good housing	3	Comfort around resting
	4	Thermal comfort
	5	Ease of movement
Good health	6	Absence of injuries
	7	Absence of disease
	8	Absence of pain induced by management procedures
Appropriate behaviour	9	Expression of social behaviours
	10	Expression of other behaviours
	11	Good human-animal relationship
	12	Positive emotional state

Table 1 The principles and criteria that are the basis for Welfare Quality® and WelFur assessment protocols

The criteria are detailed as follows in the Welfare Quality® protocols:

1. Animals should not suffer from prolonged hunger, *i.e.* they should have a suitable and appropriate diet.

2. Animals should not suffer from prolonged thirst, *i.e.* they should have a sufficient and accessible water supply.

3. Animals should have comfort when they are resting.

4. Animals should have thermal comfort, *i.e.* they should neither be too hot nor too cold.

5. Animals should have enough space to be able to move around freely.

6. Animals should be free of injuries, e.g. skin damage and locomotory disorders.

7. Animals should be free from diseases, *i.e.* farm managers should maintain high standards of hygiene and care.

8. Animals should not suffer from pain induced by inappropriate management, handling, killing or surgical procedures (e.g. castration).

9. Animals should be able to express normal, non-harmful, social behaviours (e.g. grooming).

10. Animals should be able to express other normal behaviours, *i.e.* it should be possible to express species-specific natural behaviours such as observing surroundings.

11. Animals should be handled well in all situations, *i.e.* handlers should promote good human-animal relationships.

12. Negative emotions such as fear, distress, frustration or apathy should be avoided whereas positive emotions such as security or contentment should be promoted.

2.2.2 Calculation of scores and consultation process

As in Welfare Quality®, once all the measurements have been recorded on a farm, a bottom-up approach is followed to produce an overall assessment of animal welfare on that particular farm. First the data collected (*i.e.* the values obtained for the different measurements) on the farm are combined to calculate criterion-scores; then criterion-scores are combined to calculate principle-scores and finally the farm is assigned to one welfare category according to the principle-scores it attained (Figure 4). A mathematical model has been designed to obtain the criteria and principle scores.

Figure 4 Approach defined in Welfare Quality® and therefore in WelFur, to produce an overall assessment of animal welfare

As in Welfare Quality®, animal scientists, including those who developed the measurements, were consulted to define formulae to compute data from measurements into criterion-scores (Step 1 in Figure 4).

In Welfare Quality®, these consultations helped to define principle-scores from criterion-scores and to decide of a procedure to synthesise principle-scores into an overall assessment (Steps 2 and 3 in Figure 4). Therefore, in WelFur, these two steps were extrapolated from Welfare Quality® with no further consultation.

Calculation of criterion-scores

The data produced by the measurements relevant to a given criterion are interpreted and synthesised to produce a criterion-score that reflects the compliance of the farm to this criterion. As in Welfare Quality® assessment protocols, this compliance is expressed on a 0 to 100 value scale, in which:

· '0' corresponds to the worst situation one can find on a farm (*i.e.* the situation below which it is considered there cannot be further decrements in welfare),

· '50' corresponds to a neutral situation, the level of welfare is not too bad but not good,

· '100' corresponds to the best situation one can find on a farm (*i.e.* the situation above which it is considered there cannot be further improvements in welfare on a farm).

As in Welfare Quality®, several methods were used to compute data from measurements into criterion-scores[2]:

· When all measurements used to check a criterion are taken at farm level and are expressed in a limited number of categories or when there are more than 4 possible situations at animal level, a decision tree is produced. An example is provided in Explanation box 1.

· When a criterion is checked by only one measurement taken at individual level expressed on an ordinal scale (≤ 4 possible situations), this scale generally represents the severity of a problem and, at farm level, the proportion of animals observed in each possible situation can be calculated (e.g. percentage of mink with good nest box quality, percentage of mink with moderately good nest box quality, percentage of mink with moderately bad nest box quality and percentage of mink with bad nest box quality). In that case, a weighted sum is calculated, with weights increasing with the severity of the problem and a non-linear function is then applied. An example is provided in Explanation box 2.

Experts from animal sciences were consulted to interpret the raw data in terms of welfare. Then experts were asked to score virtual farms. In the situations where weighted sums were to be calculated, this consultation was used to define weights that produce the same ranking of farms as the one given by experts.
Experts do not in general follow a linear reasoning, I-spline functions were therefore chosen to produce criterion-score. I-spline functions allow calculation of portions of curves (expressed as cubic functions) so as to obtain a smooth increasing representative curve (see Explanation box 2).

Explanation box 1: Decision tree as applied to Measurement of *Protection from exceptional weather* conditions in Period 2, as part of the Criterion of *Thermal Comfort* in mink

To assess the Criterion of Thermal Comfort on a mink farm in Period 2 during which adults and kits are farmed, two measurements are to be considered: Measurements of Protection from exceptional weather conditions and of Nest box material and bedding/nesting material. To evaluate the Measurement of Protection from exceptional weather conditions on a farm, four questions based on the protection from wind, the protection from direct sunlight, whether the farm is within the thermal comfort zone, and if not, if means of cooling are used. These aspects can be considered hierarchically due to their respective dependence and importance. This led us to propose the following decision-tree:
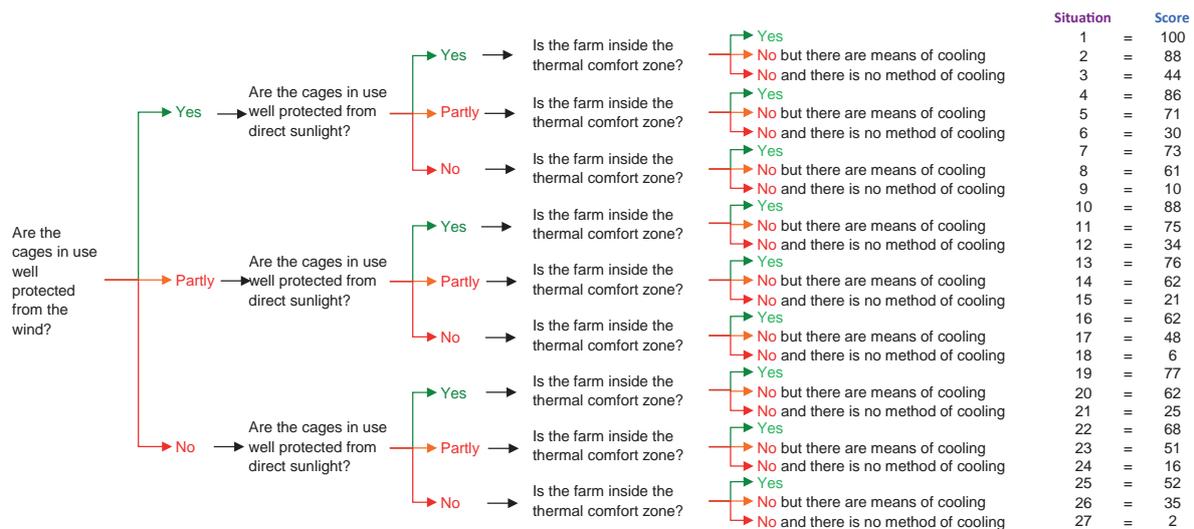
2   The text below is derived from the Welfare Quality® protocols. The examples are from the WelFur project

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Since there may be several types of cages on a given farm, several situations may be observed simultaneously on the farm. Then, the score to be assigned to the farm is the one corresponding to the worst situation observed on, for this measure, at least 10% of the animals.

Explanation box 2: Weighted sum and I-spline functions as applied to Measurement of *Resting quality of the nest box/ resting area in Period 3*, as part of the Criterion of *Comfort around resting* in mink

The % of mink with 4 categories of nest box quality are combined in a weighted sum, with a weight of 0 for the higher score, 1 for the moderately high score, 2 for the moderately low score and 3 for the lowest score of nest box quality. This sum is then transformed into an index (I) that varies from 0 to 100:

$$I = \left(100 - \frac{0\left(\% \text{ high} \right) + 1\left(\% \text{ moderately high} \right) + 2\left(\% \text{ moderately low} \right) + 3\left(\% \text{ low} \right)}{3} \right)$$

This index is computed into a score using *I*-spline functions:

When $I \leq 40$
then Score = $(-0.000000000000009137342158053 \times I)$ + $(0.013617157616759903090986 \times I^2)$ + $(-0.0000822938927662926754695 \times I^3)$

When $I \geq 40$
then Score = $-13.6658715834814543654829322$ + $(1.024940368793673339809473 \times I)$ + $(-0.0120063516036931442615421 \times I^2)$ + $(0.00013123535074100652346663 \times I^3)$
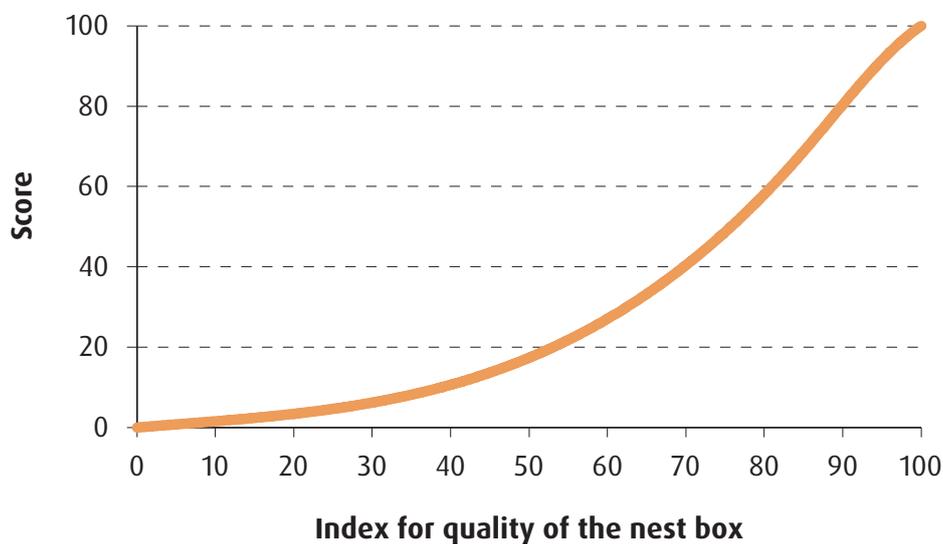
Index for quality of the nest box

When a criterion was composed of very different measurements which experts found difficult to consider together and/or when a given measurement is assessed at several periods of the production cycle and/or on several animal types (*e.g.* adults *vs*. juveniles), measurements, periods or animal types were aggregated using Choquet integrals (see Explanation box 3).

Calculation of principle-scores from criterion-scores

In the WelFur project, we averaged the parameters set in Welfare Quality® for the various species (cattle, pigs and poultry) to determine the parameters to be used for fur animals.

Explanation box 3: Use of the Choquet integral to aggregate sub-scores

Each time sub-scores are to be aggregated (*i.e.* when a measurement is observed during several periods or when several measurements are interpreted independently and need therefore to be aggregated to obtain a score at criterion level), we use the *Choquet integral*. In that explanation box, we will use Measurement of *Body condition score* of the Criterion of *Absence of prolonged hunger* as an illustrative example. In that example the three period sub-scores are to be aggregated. Choquet integral allows fine control of the importance attached to periods in the aggregation but also of the impact of low and high sub-scores on the aggregated one.

Formally, the Choquet integral to aggregate n elements (corresponding here to the sub-scores, noted Si) writes:

$$C(S_1,\ldots,S_n) = \sum_{i=1}^{n} \left[S_{(i)} - S_{(i-1)} \right] \times \mu\left(A_{(i)} \right)$$

With the convention $S_{(0)} = 0 \le S_{(1)} \le S_{(2)} \le \ldots \le S_{(n)}$ $X_{(0)} = 0 \le X_{(1)} \le X_{(2)} \le \ldots \le X_{(n)}$ (*i.e.* the brackets indicate a reordering of the elements, in that example the three periods, depending on the score they obtained, from the lowest to the highest) and $A_{(i)} = \{(i),\ldots,(n)\}$, $A_{(n+1)} = \varnothing$.

μ is a capacity function defined for any subset of periods entering in the composition of the measurement-score at year level. This capacity is a set function subject to the following constraints: $\mu(\varnothing) = 0$, $\mu(\{1,\ldots,n\}) = 1$ and

To be somewhat more operational, here are the explanations on how to practically calculate the score for our example. The scores obtained by a farm for the 3 periods are sorted in increasing order. The difference between the lowest sub-score and the next sub-score is multiplied by the 'capacity' of the group comprising all periods except the one that has the lowest score. Then, the difference between the last but one sub-score and the next sub-score is multiplied by the 'capacity' of the group comprising all periods except the two that have the lowest sub-scores (here, since that there are only 3 elements to be aggregated, it is the capacity of the period that has the highest sub-score). Finally, the measure-score therefore corresponds to the sum of these three terms. This can be written as follows:

$$\text{Measure-score} = \begin{cases} S_1 + (S_2 - S_1)\mu_{23} + (S_3 - S_2)\mu_3 & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + (S_3 - S_1)\mu_{23} + (S_2 - S_3)\mu_2 & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + (S_1 - S_2)\mu_{13} + (S_3 - S_1)\mu_3 & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + (S_3 - S_2)\mu_{13} + (S_1 - S_3)\mu_1 & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + (S_1 - S_3)\mu_{12} + (S_2 - S_1)\mu_2 & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + (S_2 - S_3)\mu_{12} + (S_1 - S_2)\mu_1 & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the sub-scores assigned to Measurement of *Body condition score* in Periods 1, 2 and 3 respectively. μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively. μ_{12} is the capacity of the group made of Periods 1 and 2 and so on…

The parameters of the Choquet integral used to calculate the Criterion of *Absence of prolonged Hunger*-score are:

μ_1	=	0.11	μ_{12}	=	0.11
μ_2	=	0.08	μ_{13}	=	0.34
μ_3	=	0.22	μ_{23}	=	0.51

Thus, with the μ listed above:

$$\text{Absence of prolonged hunger-score} = \begin{cases} S_1 + 0.51(S_2 - S_1) + 0.22(S_3 - S_2) & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + 0.51(S_3 - S_1) + 0.08(S_2 - S_3) & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + 0.34(S_1 - S_2) + 0.22(S_3 - S_1) & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + 0.34(S_3 - S_2) + 0.11(S_1 - S_3) & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + 0.11(S_1 - S_3) + 0.08(S_2 - S_1) & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + 0.11(S_2 - S_3) + 0.11(S_1 - S_2) & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

The importance of each period is given by the so called *Shapley Value,* which, for this example, is:

Period 1 (1) = $\dfrac{1}{3} \times (1 + \mu_1 - \mu_{23}) + \dfrac{1}{6} \times (\mu_{12} - \mu_2 + \mu_{13} - \mu_3)$ = 0.225

Period 2 (2) = $\dfrac{1}{3} \times (1 + \mu_2 - \mu_{13}) + \dfrac{1}{6} \times (\mu_{12} - \mu_1 + \mu_{23} - \mu_3)$ = 0.295

Period 3 (3) = $\dfrac{1}{3} \times (1 + \mu_3 - \mu_{12}) + \dfrac{1}{6} \times (\mu_{13} - \mu_1 + \mu_{23} - \mu_2)$ = 0.48

The calculations are derived from the following general formula of the *Shapley Value*:

$$\Phi(i) = \sum_{A \subseteq N \setminus \{i\}} \frac{(n - a - 1)! \, a!}{n!} \times [\mu(A \cup \{i\}) - \mu(A)]$$

The interactions between the scores are given by the interaction indices. The higher the index, the more limited are the compensations (*i.e.* one low score is sufficient for the farm to be low):

$I_{12} = \dfrac{1}{2} \times (1 - \mu_{13} - \mu_{23} + \mu_3) + \dfrac{1}{2} \times (\mu_{12} - \mu_1 - \mu_2)$ = 0.145

$I_{13} = \dfrac{1}{2} \times (1 - \mu_{12} - \mu_{23} + \mu_2) + \dfrac{1}{2} \times (\mu_{13} - \mu_1 - \mu_3)$ = 0.235

$I_{23} = \dfrac{1}{2} \times (1 - \mu_{12} - \mu_{13} + \mu_1) + \dfrac{1}{2} \times (\mu_{23} - \mu_2 - \mu_3)$ = 0.35

$I_{123} = 1 - \mu_{12} - \mu_{13} - \mu_{23} + \mu_1 + \mu_2 + \mu_3$ = 0.45

The calculations are derived from the following general formula of the *Interaction Index*:

$$I_{ij} = \sum_{A \subseteq N \setminus \{i,j\}} \frac{(n - a - 2)! \, a!}{(n - 1)!} \times [\mu(A \cup \{ij\}) - \mu(A \cup \{i\}) - \mu(A \cup \{j\}) + \mu(A)]$$

Assignment of farms to the welfare categories

We transposed the rules used in Welfare Quality® to produce an overall welfare assessment of farms.
However, contrary to Welfare Quality®, the names of the classes have been changed because we believe that an animal production can never be excellent and that the key reference point is the best current practice according to experts. Briefly, a farm is classified in one welfare category according to its principle-scores (Figure 5):

- A farm is considered to correspond to '**Best current practice**' if it scores more than 55 on all principles and more than 80 on two of them.

- A farm is considered to correspond to '**Good current practice**' if it scores more than 20 on all principles and more than 55 on two of them.

- A farm is considered to correspond to '**Acceptable current practice**' if it scores more than 20 on three principles and more than 10 on the remaining principle.

- Other farms are considered to correspond to '**Unacceptable practice**'.

In addition, an indifference threshold equal to 5 is applied: for instance, a score of 50 is not considered to be significantly different from one of 55. This means, as in Welfare Quality®, that 5 is added to each principle-score before assigning a category to a farm.
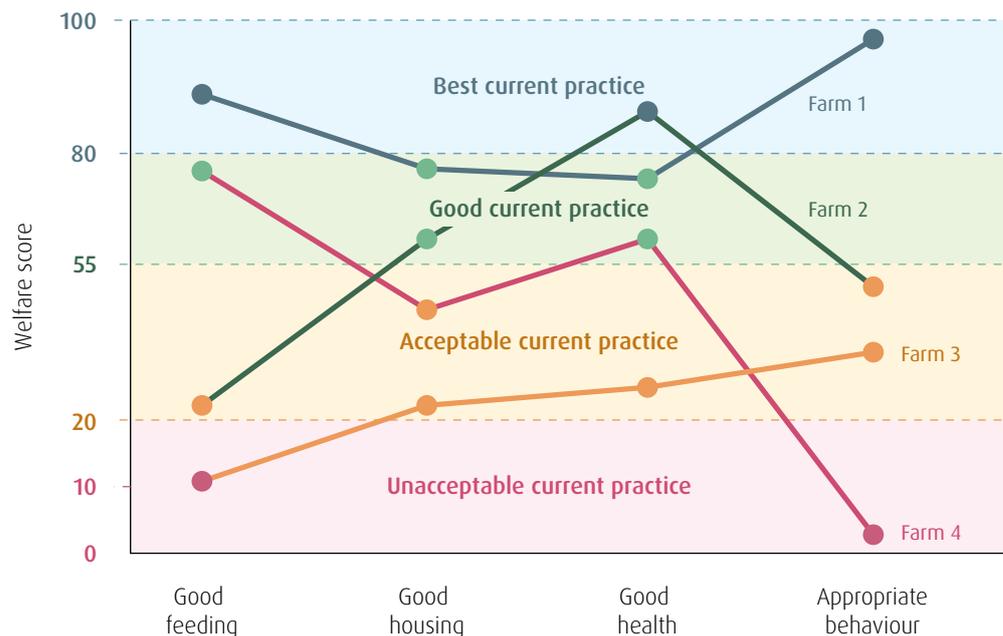
Figure 5 Examples of farms in the four welfare categories

Final comments

In this protocol the reader will find all the necessary information to understand what is done in WelFur to produce an overall welfare assessment of mink at farm level. However, for the data collection, specific training is required to ensure the relevance and the reliability of the observations. The development of the training material for the assessors started in parallel with the development of the protocol and training material (*e.g.* videos, pictures, farm visit, etc.) will be consolidated. A software package has been developed to calculate welfare scores and to produce the overall assessment of farms. For more information, contact the partners of the WelFur project, represented by the Fur Europe office.

The following chapters are specific to mink. They are structured to present firstly the measurements collected on farms and the sampling strategy to be adopted and secondly the calculation of scores needed for the overall assessment.

Photo : © Kopenhagen fur

3 Welfare assessment protocol for mink

The assessment of welfare should be a multi-disciplinary process since only the assessment of a variety of different parameters can provide the comprehensive assessment of an animal's welfare in any given system. To this end, the WelFur project utilizes physiological, health and behavioural aspects as well as the more traditional input based aspects of housing and management, to assess the welfare of mink on farms.

In this chapter, a description of each measurement for mink is given, followed by additional information about the sampling strategy to be adopted and the order in which the different measurements should be carried out during a farm visit.

Before commencing farm visits, assessors need to be fully trained in all the measurements that are to be assessed by using photographs, video clips and practical 'on farm' training. For some of the health measurements, this training will involve recognition of certain conditions/ diseases; however it is imperative that this document is not used as a diagnostic tool to identify individual health conditions but rather as a tool to highlight the presence of health problems affecting the welfare of animals. The assessor should not enter into discussions with the farm manager on the prevalence or severity of different diseases on the farm; this is a matter for the farm manager and the herd veterinarian. Additionally, in general, the role of the

assessor is to assess and not to advise directly. The farm manager should, however, be advised if serious health problems are observed.

Trained assessors will use animal-based, management-based and resource-based measurements to achieve a representative assessment of mink's welfare on each farm. In this chapter, the same protocol describes the three periods of the production cycle considered for mink. However, how each measurement applies to each period is specified in the data collection descriptions while section 3.2.5 "Registration guidelines for use on farm visit" and Annex A "Recording sheets for mink" will have a set of descriptions for each period. Moreover, for the on-farm assessment, it is impossible to evaluate all the animals present on the farm according to the time needed to assess all the measurements. Therefore, a stratified sample of mink is defined at the beginning of the farm visit in order to have a representative number of the different types of animals for all measurements. The majority of the measurements are scored according to either a two-point scale (0/1) or a three-point scale (0/1/2).

The assessment scale has been selected so that, as a general rule, a score 0 is awarded where welfare is good and a score 1 (and 2 or 3 in case of a three- and four-point scales) is awarded where welfare is poor or unacceptable. In some cases, a cardinal scale (*e.g.* cm or m^2) is used.

3.1   Introduction to mink production

3.1.1   The mink

The mink (*Neovison vison*) is a carnivore that originates from North America where the first fur farms were established around 1865. The first farms in Europe were established in 1920. There is also a European mink (*Mustela lutreola*) which is not farmed.

In the wild, adult mink are solitary and territorial and their home range is maintained by scent-marking and aggression. The male territory may overlap several females while territory overlap does not occur between

adult animals of the same sex. Adult males and females come together briefly at mating time. Juvenile mink disperse in search of vacant territories in the autumn at the age of 3 to 5 months. Mink retreat to a den for resting and the den is also important during the annual delivery of young in April-May. Mink kits are born altricial, *i.e.* small (8-11 g), hairless, without the ability to hear, see, or thermo regulatory capacity until the age of 21-30 days.

In nature, mink eat a wide range of prey, such as small mammals (rodents and lagomorphs), fish, amphibians, echinoderms, crustaceans and birds, dependent on local availability, season and competition. The size of a mink territory depends on the food resources, *i.e.* smaller in case of a rich habitat.

Mink have been farmed in basically the same housing conditions consisting of wire netting cages with a nest box for the last 100 years. This has enhanced the adaptation of the farmed mink to the housing environment resulting in common signs of domestication, such as reduced fear and smaller brains compared to wild mink. The reproductive ability (number of kits delivered) and body size of farm mink has increased, due to domestication/directional selection.

3.1.2 Welfare and the annual cycle of production

Mink production is characterised by a strict annual cycle of very different seasons which are synchronised within a few weeks for all mink in the northern hemisphere. Traditionally all annual seasons of production, *e.g.* conditioning, breeding, whelping, growing and pelting take place on the same farm. The number of mink therefore varies by a factor of 6 between the winter season and the growth season and some farmers have separate farm units for the growth season. As all mink are in the same phase of production the welfare measurements can be taken when the risk of welfare problems is at its highest, as illustrated by the observation period within each season in Figure 6.
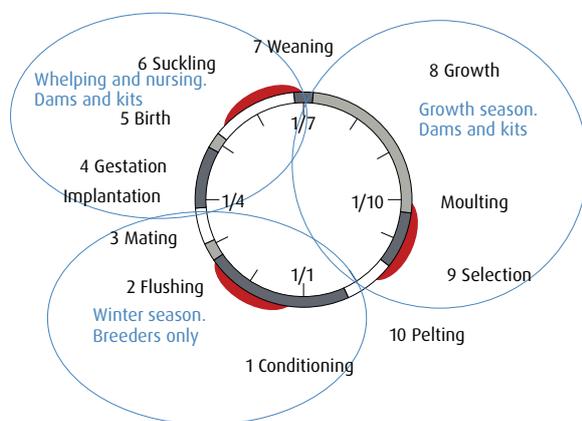
Figure 6 The three major seasons of the annual cycle of mink production to be covered by WelFur. The 10 major management tasks are marked by numbers while observation periods for assessment are marked in red within each season.

The main management principle in mink production is to follow the annual cycle and handle the shifts between them. The annual cycle is governed by the changes in day length and mink are therefore housed under natural light and day-length conditions. Mink are allowed natural mating behaviour and artificial insemination is not possible. All mink are housed with a nest box and bedding material usually allows for nest building in which the females are

allowed unrestricted delivery and nursing of the kits. Mink kits are weaned when lactation ceases after the kits have started to eat and drink. Production does not restrict the time of weaning from what is found to be the best for the female and her kits. No physical mutilation is needed and the mink are left intact (no identification mark, trimming, clipping, castration, *etc*.). During their life span farm mink can be housed in accordance with their main social needs in all production phases. At the end of production mink are killed on-farm directly from the home-cage, without prior transportation. *Post mortem* inspection indicates that mink are generally pelted with few clinical problems or physical lesions. The general housing conditions allow for efficient inspection of health and behaviour.

A range of potential welfare problems often encountered in animal production is therefore not an issue in mink production (mutilations, early weaning, transportation for slaughter). This is only indirectly reflected in the WelFur mink protocol, as a relatively low number of measurements, because the protocol only includes valid measurements that vary between farms.

3.1.3 Building the mink WelFur assessment protocol

The goal for WelFur has been to build a protocol with which the welfare of the mink on a farm can be assessed during three one-day visits of 5-7 hours. WelFur is built on the available scientific literature and the knowledge within the project group on behaviour, health, management and housing conditions. The welfare assessment protocol is evaluating the actual welfare of the mink and not the compliance with legislation. This is partly because there is not necessarily a relation between scientific knowledge and legislation and partly because the actual legislation differs between European countries although the legal framework for mink production is based on the Council of Europe (CoE) recommendations.

By reviewing the literature, 54 potentially feasible welfare measurements for mink were identified. For each of the three periods, each measurement was evaluated according to their:

- Validity: whether the measurement reflects some aspect of the actual welfare of the mink relative to the criteria

- Reliability: acceptable inter- and intra-observer reliability and robustness to external factors *e.g.* time of day or weather condition

- Feasibility: whether the measurement is possible and practical to apply in practice with reasonable costs

The review for each of the 12 assessment criteria led to an assessment of the validity, reliability and feasibility of the measurements based on a three point scale:

1. High certainty: Solid and complete data available; strong evidence in multiple references with most authors coming to the same conclusion

2. Medium certainty: Some or only incomplete data available; evidence provided in small number of references; authors' conclusions vary from one to the other; solid and complete data available from other species which can be extrapolated to the species considered

3. Low certainty: Scarce or no data available; evidence provided in unpublished reports or based on personal observations or communications; authors' conclusions vary considerably between the reports

A total of 22 welfare measurements passed this evaluation and are included in one or more of the three periods. Some measurements were excluded due to lack of scientific knowledge on the validity or reliability or due to lack of feasibility. However, on-going scientific research may refine measurements so that the validity and feasibility will be high enough for inclusion in the protocol at a later state. As an example a measurement of prolonged stress includes activity of the Hypothalamic-Pituitary-Adrenal (HPA)-axis. In mink, the main stress hormone is cortisol. Prolonged or repeatedly high levels of cortisol have negative consequences, for example, suppression of digestion, growth, reproduction, immunity and the inflammatory response. Baseline levels of cortisol can be measured non-invasively as metabolites present in faeces of adult mink. This could be a relevant additional indicator in mink, if its feasibility increases.

Another aspect of WelFur-mink is that it should be applicable in all European countries, even though it has been developed and tested only in the Nordic countries and The Netherlands. Unforeseen situations may appear during application in other countries and therefore it is planned that the WelFur protocols will be updated in a number of years in the light of new knowledge gained.

3.1.4 Welfare of mink during the annual production cycle

In the farm situation, new female breeders are selected in November among often fat or obese young mink. The selected females are conditioned to an average or below average body condition in the period between selection and late February, in order to reproduce well and to respond to flushing. The mink are slimmed by reducing the energy allowance in order to mobilize their abundant deposits of body fat. Although the mink is somewhat adapted to body weight changes, this can have some consequences for animal welfare that can be observed with higher and higher certainty towards the end of the observation period. Low temperatures in this period increases the need for nest box insulation, bedding material and frost protected watering systems but also on feeding management. Welfare is therefore assessed using a combination of animal-based measurements of behaviour (stereotypy and fur chewing) and health (mortality, disease, body condition) and resource based measurements of housing conditions.

During mating and gestation mink are in a positive energy balance and health and welfare are generally good. After parturition mink kits develop rapidly from a female-male weight of 8-11 g at birth to 158-176 g at four weeks when they start to take solid food, 315-367 g at six weeks when they begin to drink water, and 805-1157 g at weaning in July. This development puts high demand on the females as well as her litter, and welfare measurements therefore, apply to the lactation period in mink.

Mink kits join the annual cycle of adults and are synchronised in terms of body weight and pelt moulting 3-4 months after birth. In September, the mink body is fully developed in terms of mineral content and body length. Weight gain from September is primarily via deposition of body fat. Due to selection, the average body weight of mink has increased by more than 2% a year over the last decade. Consequently, the farm mink of today have a large appetite resulting in high body condition at pelting time when the mink are 6–7 months old. Although obesity is not a welfare problem in itself, consequences for health, mortality or access to the nest box may develop during autumn. The vernal equinox is the signal for the change to a winter coat and it also seems to be a signal to secure the territory for the winter. The risk of aggression between mink in the cage increases and wounds may result. The juvenile mink also reach their adult level of temperament in the autumn. The latter part of the growth season is therefore optimal for assessment of all the animal-based measurements of behaviour (stereotypy, temperament and fur chewing) and health (injuries, mortality, disease, body condition) and resource based measurements of housing conditions.

3.2   Collection of data for mink

Specific considerations for each period are listed in each description, *i.e.* for Period:

- Adult breeders during the winter period: December 1st to February 28th. Data collection period for animal-based measurements: January 1st to February 20th. Data collection in Period 1 ends when generous flush-feeding before mating begins, if this is before February 20th.

- Adults and kits in the reproduction period: March 1st to July 15th. Data collection period for animal-based measurements: May 5th to July 1st. Data collection in Period 2 ends when weaning begins, if this is before July 1st.

- Adults and juveniles in the growth period: July 16th to November 30th. Data collection period for animal-based measurements: September 23rd to November 30th. Data collection in Period 3 ends when pelting begins, if this is before November 30th.

Sample size:
A representative sample of the mink on the farm are selected according to § 3.2.6. For all periods the sample should represent the farm and only mink included in the representative sample are considered.

The 22 welfare measurements for mink.

Principles	Welfare Criteria	Measurements	Period
1. Good feeding	1 Absence of prolonged hunger	Body condition score	1, 2, 3
	2 Absence of prolonged thirst	Continuous water availability, measured by Type of watering system	1, 2, 3
		Function and cleanliness of the water points	1, 2, 3
2. Good housing	3 Comfort around resting	Access to a nest box	1, 2, 3
		Resting quality of the nest box	1, 2, 3
	4 Thermal comfort	Protection from exceptional weather conditions	2, 3
		Nest box and bedding material	1, 2, 3
	5 Ease of movement	Space available for moving (area and height)	1, 2, 3
3. Good health	6 Absence of injuries	Skin lesions or injuries to the body	1, 2, 3
	7 Absence of disease	Mortality	1, 2, 3
		Diarrhoea/Sticky kits	1, 2, 3
		Lameness and impaired movement	1, 2, 3
		Obviously sick animals	1, 2, 3
	8 Absence of pain induced by management procedures	Killing methods for pelting of mink	1, 2, 3
		Killing methods for individual mink	1, 2, 3
4. Appropriate behaviour	9 Expression of social behaviours	Social housing	3
		Age and procedures at weaning	2
	10 Expression of other behaviours	Stereotypic behaviour	1, 2, 3
		Cage enrichment	1, 2, 3
		Fur chewing	1, 3
	11 Good human-animal relationship	Frequency and duration of handling and transportation	1, 2, 3
	12 Positive emotional state	Temperament test	1, 2, 3

3.2.1 Good feeding

3.2.1.1 Absence of prolonged hunger

Title	Body condition score
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6.
Method description	Make sure that all mink are outside the nest box – preferably standing on their hind legs. Walk slowly from cage to cage, potentially at the back end of the cages and try to get each mink standing on its hind legs, for example, using a tongue spatula or similar to make the mink interested/stand up. Observe the mink's neck, shoulders, hips and belly. Consider how hollow the stomach is and how visible the spine is.

Assess the 5 grade Body Condition Score (BCS) of the mink according to the classification described below. This 5 grade score is also frequently used by farmers but for welfare assessment only grades 1 and 2 are of interest and therefore only mink in these two low grades need to be registered.

Specifically in Period 1: Mink selected as breeders in November are usually in high BCS (4 or 5). Loss of more than 2 scores in BC per month is associated with prolonged hunger and the classification therefore varies with time of the evaluation. Prolonged hunger is expected BCS 2 in January and BCS 1 in February. Grade females first and then males – do not switch back and forth between females and males if possible.

Specifically in Period 2: Only adults are scored. Mink dams will ideally increase their BCS from 2 in late February to 3 in late March, 4 in late gestation and 3-4 after birth. Mink dams in BCS 1 in late lactation is therefore associated with prolonged hunger.

Specifically in Period 3: During growth mink will generally increase their BCS from 3 at weaning to 3 to 5 in November. Mink in BCS 2 is therefore associated with prolonged hunger.

Body condition scores:
Developed from scoring system by Kirsti Rouvinen-Watt and Dean Armstrong

1 = Very thin: The mink has an emaciated appearance with decreased muscle mass, a thin neck and a narrow waistline. There is no body fat and the stomach is sunk in. Shoulder and hip bones can be seen.
2 = Thin: The mink has a thin neck and a visible waistline. There is no subcutaneous body fat layer and only little in the neck.

Body condition scores 3 to 5 can all be scored the same if the assessor wants to save time assigning a score:
3 = Ideal: The mink has a slender neck and a straight body shape. There is a slight amount of subcutaneous body fat.
4 = Heavy: The mink has a thicker neck and a pear-shaped body. The shoulder and hip bones are covered by a moderate fat layer. An abdominal fat pad is present.
5 = Obese: The mink has a thick neck with a rounded chest and a full body shape. The shoulder and hip bones are covered by a moderate to thick fat layer. A fat pad is present in the abdomen and the tail. Fat deposits can be seen in the limbs and the face.

Individual level:
0 – Period 1: BCS > 2 in January and BCS > 1 in February. Period 2: BCS > 1. Period 3: BCS > 2.
1 – Period 1: BCS ≤ 2 in January and BCS ≤ 1 in February. Period 2: BCS ≤ 1. Period 3: BCS ≤ 2. |

Farm level:
Percentage of animals that are too thin (1) at the time of inspection:

Adult in body condition 1

Adult in body condition 1

Adult in body condition 2

Adult in body condition 2

Adult in body condition 3

Adult in body condition 3

| Adult in body condition 5 | Adult in body condition 5 |

Photos : © Bente Krogh Hansen & Jesper Clausen.

3.2.1.2 Absence of prolonged thirst

Two sub-measurements are taken and combined to the measurement of *Continuous water availability* to assess the Criterion of *Absence of prolonged thirst*. Each sub-measurement leads to a classification. The classification at farm level results from the combination of these two sub-measurements and is described at the end of this section.

Sub-Title	**Type of watering system**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The farm/sample defined in 3.2.6
Method description	Consult the farmer about the watering system(s) providing drinking water for the animals. Is it an automatic watering system that secures continuous access at all times – also in times of low temperatures that are common in the area during the period? If not, how many times per day is water provided? If various systems are used on the farm, these should be covered by the stratified sample. Unusual systems are assigned as they fit best: for example, automatic watering system providing water for example, 6 times a day is recorded as 1 or 2 for *Continuous water availability* and 0 for *Watering frequency*. If ice or snow is provided instead of water in sub-zero temperatures, this is recorded as 1 or 2 for *Continuous water availability* and 2 for *Watering frequency*. **Specifically in Periods 1 and 3:** In areas of sub-zero temperatures during winter, consider the functioning of the drinking water system and/or the practice of providing drinking water in periods of frost during winter (water circulation/defrosting mechanism or manual water supply). **Specifically in Period 2:** Additional equipment to help kits access to the water resource (e.g. extra equipment to ease the activation of the nipple or to secure that drops of water remains after activation, open water surface, drinking nipples close to the nest box, etc).

Farm/section level:
Watering system:
0 – Automatic watering system providing water at all times throughout the year. Frost protection, so the system does not freeze in sub-zero temperatures.
1 – Automatic watering system providing water at all times but that may freeze or is not working in sub-zero temperatures.
2 – Water is provided manually throughout the year.

If 1 or 2, watering frequency:
0 – Water is provided at least twice a day
1 – Water is provided once a day
2 – Water is provided less than once a day

Additional watering for kits (only in Period 2):
0 – There is additional watering system for kits
1 – There is no additional watering system for kits

Classification	**Farm level**: Seven possible situations are resulting from the combination of watering system and watering frequency: **0** – 0 **1** – 1 and 0 **2** – 1 and 1 **3** – 1 and 2 **4** – 2 and 0 **5** – 2 and 1 **6** – 2 and 2 **At farm level the evaluation is 0 or 1 regarding:** Additional watering for kits

Additional water for kits – Score 0 for Additional watering

Sub-Title	**Functioning and cleanliness of the water points**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	Check the functioning of all the water points in the sample (by activating the watering system/ nipple with a long stick from the aisle or a bent nail from behind the cage). Check the cleanliness of all the water points (nipples/cups) in the sample. If various systems are used in the farm, these should be covered by the stratified sample.

Specifically in Periods 1: The functioning of watering systems is only tested in frost protected type 0 watering systems. If ice or snow is generally provided instead of water in sub-zero temperatures, functioning is not scored while cleanliness is classified as 0 if ice/snow is clean and as 1 if not.

Specifically in Period 2: The cleanliness of water points is <u>only</u> regarding the primary watering system, <u>not</u> additional equipment. For example, if a drinking nipple system is the primary source of water and additional water is supplied in a bowl, only the cleanliness of the nipple is assessed.

Specifically in Periods 3: The functioning of watering systems is only tested in automatic type 0 or 1 watering systems. If ice or snow is generally provided instead of water in sub-zero temperatures, functioning is not scored while cleanliness is classified as 0 if ice/snow is clean and as 1 if not.

Cage level:
Functioning of the water points:
0 – The drinkers/nipples work properly (water comes out when activated)
1 – The drinkers/nipples do not work (no water comes out when activated)

Cleanliness of the water points (drinkers/nipples):
0 – Clean
1 – Dirty

Classification	**Cage level**: For each cage the evaluation is 0 or 1 regarding: • Functioning of the water points • Cleanliness of the water points
Additional information

Frozen water nipples seen from outside

Clean and frozen nipple – still working
Score 0 for functioning

Frozen nipple – not working but acces to ice
Score 1 for functioning

Dirty nipple - Score 1 for cleanliness
Not functioning - Score 1 for functioning.

Photos : © Steen H. Møller & Jesper Clausen |

Title	**Continuous water availability**
Classification	**Farm level:** Percentage of animals in each of the situations resulting from the combination of the two sub-measurements described above: *Type of watering system* and *Functioning and cleanliness of the water points*. The number of situations differ from one period to another:

Period 1: 16 different situations are relevant

Period 1	Type	Functioning	Cleanliness	% of animals
Situation 1	0	0	0	*P1*
Situation 2	0	0	1	*P2*
Situation 3	0	1	0	*P3*
Situation 4	0	1	1	*P4*
Situation 5	1		0	*P5*
Situation 8	2		1	*P8*
Situation 9	3		0	*P9*
Situation 10	3		1	*P10*
Situation 11	4		0	*P11*
Situation 12	4		1	*P12*
Situation 13	5		0	*P13*
Situation 14	5		1	*P14*
Situation 15	6		0	*P15*
Situation 16	6		1	*P16*

Period 2: 14 different situations are relevant

Period 2	Type	Kits	Functioning	Cleanliness	% of animals
Situation 1	0	0	0	0	*P1*
Situation 2	0	0	0	1	*P2*
Situation 3	0	0	1	0	*P3*
Situation 4	0	0	1	1	*P4*
Situation 5	0	1	0	0	*P5*
Situation 6	0	1	0	1	*P6*
Situation 7	0	1	1	0	*P7*
Situation 8	0	1	1	1	*P8*
Situation 9	4			0	*P9*
Situation 10	4			1	*P10*
Situation 11	5			0	*P11*
Situation 12	5			1	*P12*
Situation 13	6			0	*P13*
Situation 14	6			1	*P14*

Period 3: 22 different situations are relevant

Period 3	Type	Functioning	Cleanliness	% of animals
Situation 1	0	0	0	*P1*
Situation 2	0	0	1	*P2*
Situation 3	0	1	0	*P3*
Situation 4	0	1	1	*P4*
Situation 5	1	0	0	*P5*
Situation 6	1	0	1	*P6*
Situation 7	1	1	0	*P7*
Situation 8	1	1	1	*P8*
Situation 9	2	0	0	*P9*
Situation 10	2	0	1	*P10*
Situation 11	2	1	0	*P11*
Situation 12	2	1	1	*P12*
Situation 13	3	0	0	*P13*
Situation 14	3	0	1	*P14*
Situation 15	3	1	0	*P15*
Situation 16	3	1	1	*P16*
Situation 17	4		0	*P17*
Situation 18	4		1	*P18*
Situation 19	5		0	*P19*
Situation 20	5		1	*P20*
Situation 21	6		0	*P21*
Situation 22	6		1	*P22*

3.2.2   Good housing

3.2.2.1 Comfort around resting

Title	**Access to a nest box**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6.
Method description	A nest box is a compartment in -or attached to- the cage giving the mink physical and visual shelter. Only cages in use are considered. The size of the nest box must allow: nest building, birth, lactation and that all mink in the cage can be contained in the nest box. Observe if all mink have access to a nest box.

Specifically in Period 3. All mink in the cage should have access to a nest box at the same time. In case of many animals sharing a nest box (*e.g.* 4 mink or more) it is evaluated on the basis of whether all the mink can stay in the nest box at the same time. Four female mink can normally share one nest box with the floor dimensions 23 x 28 cm with an inner height of 20 cm or larger while two males and two females need 28 x 28 cm. This rule of thumb can be overruled by subjective evaluation in case where males are extraordinarily large – hindering access via the nest box opening or resulting in the nest box being too small to accommodate all mink at the same time.

Record the number of animals in the sample that **do not** have access to a nest box. This may be because the nest box access is blocked, because there are too many animals to fit into the nest box or because there is no nest box.

Cage level:
0 -Yes, all mink in the cage have access to a nest box
1, 2, 3, 4 or x – Number of mink without access to a/the nest box

Classification	**Farm level:** **Percentage** of mink with access to a nest box

Title	**Resting quality of the nest box/resting area**
Scope	Resource/management-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	Inspect the nest boxes or, in case of no nest box, the resting area. Open the lid or remove bedding material in order to inspect the inside of the nest box and use a torch if needed. Assess whether the nesting material is dry or wet, whether the resting area is clean or dirty, undamaged or damaged and whether there are fleas in the nest box. **Specifically in Period 2:** In the last part of the lactation period, the litter may be fed from the top of the nest box. Therefore bedding material may be removed from the top of the nest box in that period. The entrance part of the nest box may be contaminated with feed but the nesting area should be clean. **Cage level**: Record for each cage in the sample if the nest box/resting area is: **0 – Dry** or **1 – Wet** **0 – Clean** or **1 – Dirty** **0 – Whole/undamaged** or **1 – Damaged** (*e.g.* sharp edges) **0 – Free from fleas** or **1 – Infested with fleas**
Classification	**Farm level:** **Percentage of animals** with a nest box / resting area of the following quality: 0 – Dry and clean and not damaged nest box without fleas 1 – Wet or dirty or damaged nest box / resting area or with fleas 2 – Nest box / resting area with 2 of the following: wet, dirty, damaged or fleas 3 – Nest box / resting area with 3 or all of the following: wet, dirty, damaged or fleas

| Clean nest, Score 0 | Threshold for clean nest | Dirty nest, Score 1 |

Photos : © Steen H. Møller.

3.2.2.2 Thermal comfort

Title	**Protection from exceptional weather conditions**
Scope	Resource/management-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	The mink should be protected from direct sunlight, heat, cold wind and strong draughts while the cages should still be well ventilated. This protection from exceptional weather conditions depends on farm location, surroundings, more or less open sheds and cages/nest boxes design. Examine the type of environmental protection at cage section level, not at individual cage level. Assess the general protection for the mink in the part of the shed of the sampled section. Assess the general protection for the full length of the season, not only the actual day of assessment. This protection will often be the same for all cages in the sample or for all cages in each shed.
	Specifically in Period 1: Only climate protection from the wind is recorded.
	Specifically in Periods 2 and 3: Record climate protection from wind, direct sunlight and heat. The mink are at risk of heat exhaustion in ambient temperatures above 30 °C.
	Wind: General protection from the wind by landscape, fencing, stand of trees around the farm, closed sheds, neighbouring sheds, wind shields or similar. **Sun**: Protection from direct sun by shade in closed sheds, wide roof in two-row sheds or shade by other means. Are clear roofing plates covered/painted during summer **Heat**: Protection from heat exhaustion by means of cooling is needed in areas where temperatures above 30 °C can be expected, for example, by water vaporisers or sprinklers.
	At cage section level: **Protection from wind (all periods):** **0** – High, the cage sections are well protected from the wind, for example, in closed sheds, sheds with wind protection that can be closed or in open sheds that are well protected by landscape, fencing, neighbouring sheds and/or a stand of trees around the farm **1** – Medium, the cage sections are somewhat protected from the wind, for example, in open sheds, without wind protection but some protection by landscape, fencing, neighbouring sheds, and/or a stand of trees around the farm **2** – Low, the cage sections are exposed to the wind, for example, in open sheds, without wind protection, no protection by landscape, fencing, neighbouring sheds, or trees or bushes around the farm

Protection from direct sunlight (Periods 2 and 3):
0 – High, the cages in his part of the shed are well protected from direct sunlight by roof shade in closed or two-row sheds or shade by other means. Clear roofing plates are covered/painted during summer
1 – Medium, the cages in his part of the shed are somewhat protected from direct sunlight by roof shade in closed or two-row sheds or shade by other means. Clear roofing plates are not covered/painted during summer
2 – Low, the cages in this part of the shed are not well protected from direct sunlight because the roof does not shade the entire cage <u>and</u> clear roofing plates are not covered/painted during summer

Is the farm placed in a geographical region with low risk of temperatures above 30°C (See climate information on national or regional level in registration descriptions). (Periods 2 and 3):
0 – Yes. The farm is at low risk of temperatures above 30°C
1 – No. The farm is at risk of temperatures regularly above 30°C

Possibility for cooling in case of temperatures above 30°C (Periods 2 and 3):
0 – Means of cooling installed and turned on in ambient temperatures above 30°C
1 – No means of cooling are installed

Classification	**Farm level**:

In Period 1, *Protection from wind*: Percentage of animals with score 0, score 1 and score 2

In Periods 2 and 3: Percentage of animals in each of the 27 possible situations resulting from the combination of risk of temperatures above 30°C the 3 scores for *Protection from wind,* the 3 scores for *Protection from direct sunlight,* the 2 scores for *Risk of temperatures above 30°C* and the 2 scores for *Possibility for cooling*

Periods 2 & 3	Protection from wind	Protection from sunlight	Risk of temperatures above 30°C	Possibility for cooling	% of animals
Situation 1	0	0	0		*P1*
Situation 2	0	0	1	0	*P2*
Situation 3	0	0	1	1	*P3*
Situation 4	0	1	0		*P4*
Situation 5	0	1	1	0	*P5*
Situation 6	0	1	1	1	*P6*
Situation 7	0	2	0		*P7*
Situation 8	0	2	1	0	*P8*
Situation 9	0	2	1	1	*P9*
Situation 10	1	0	0		*P10*
Situation 11	1	0	1	0	*P11*
Situation 12	1	0	1	1	*P12*
Situation 13	1	1	0		*P13*
Situation 14	1	1	1	0	*P14*
Situation 15	1	1	1	1	*P15*
Situation 16	1	2	0		*P16*
Situation 17	1	2	1	0	*P17*
Situation 18	1	2	1	1	*P18*

Situation 19	2	0	0		P19
Situation 20	2	0	1	0	P20
Situation 21	2	0	1	1	P21
Situation 22	2	1	0		P22
Situation 23	2	1	1	0	P23
Situation 24	2	1	1	1	P24
Situation 25	2	2	0		P25
Situation 26	2	2	1	0	P26
Situation 27	2	2	1	1	P27

Title	**Nest box material and bedding/nesting material**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	Nest boxes may be made of wood, plywood, chip-board, plastic or other material with different properties for insulation, moisture absorbance and diffusion. Bedding material may be hay, straw, flax or other straw-like material, shredded straw/paper, wood or other soft shavings, wool or similar, with different properties for insulation and as nest building material. Record the insulating capacity of the nest box material the mink get in contact with. Record if there is access to enough bedding material to build a closed nest in the box, to cover the floor, or less than that. Record whether the nest box is protected from draughts by a wind breaking device at the entrance or by being covered, for example, by a plate and/or bedding material. In areas with high risk of temperatures below -10°C for long periods (more than two weeks) the insulation capacity of the nest box is especially important.

The presence and quality of a nest box and bedding material are important in each of the three periods. However, there may be a shift of the underlying reasons for this, as follows:

Specifically in Period 1: This is a cold period, where mink require a thermal protective nest dependent on the outside climate and housing conditions. The nest box should be suitable to fit the adult male or female mink and/or supplied with enough bedding material to form a nest of the right size.

Specifically in Period 2: The pregnant females have a behavioural need to prepare a nest for the young and the newborn kits need a warm nest, in particular for the first weeks of life.

Specifically in Period 3: Assess whether bedding material is available for the mink to regulate the nesting quality in order to be protected against both heat and cold?

Based on the observations of the previous measurement **Resting quality of the nest box/ resting area**, a general assessment of the nest box material and bedding is applied at section level, but not at individual nest box level. The assessment is based on the general insulating capacity, the general amount of bedding material and the general draughts protection, e.g. the presence of a wind breaking device in front of the nest box entrance or a covered nest: |

A: Nest box in Periods 1 and 3 in areas with high risk of temperatures below -10°C for more than two weeks. (See climate information on national or regional level in registration descriptions):
0 – Especially high insulating capacity nest box (*e.g.* expanded polystyrene or netting insert with insulating material around)
1 – High insulating capacity nest box (*e.g.* wood plywood, chip/particle-board) with netting insert
2 – No nest box OR nest box without netting insert

A: Nest box in all periods in areas with low risk of temperatures below -10°C for more than two weeks:
0 – High insulating capacity nest box (*e.g.* wood, plywood, chip/particle-board,) with netting insert.
1 – Medium insulating capacity nest box (*e.g.* wood, plywood, chip/particle -board, without netting insert or plastic with netting insert).
2 – Low insulating capacity (e.g. plastic without netting insert or no nest box)

B: Bedding material at section level, based on the observations of resting quality of the nest box/resting area:
0 – Plenty: Access to enough bedding material to build a closed nest in the box/cover the mink
1 – Some: Access to enough bedding material to cover the floor of the box
2 – None: Not enough bedding material to cover the floor of the box

C: Protection against drafts by sheltered nest box opening, nest box filled with bedding or lid/nest covered with bedding or other material:
0 – Yes
1 – No

These combinations are condensed into 4 categories of thermal protection of the nest box (based on sum of the three scores A+B+C):

At cage-nest level:
0 – A+B+C ≤ 2.

1 – A+B+C = 3.

2 – A+B+C = 4.

3 – A+B+C > 4.

Classification	**At farm level:** **Percentage of mink** in each category of nest box.
Additional information	 **A**: Nest box, Score 0 (in low risk area) **A**: Nest box, Score 0 **B**: Bedding material, Score 0 **B**: Bedding material, Score 1 **C**: Nest covered, Score 0 **C**: Nest covered, Score 1

A: Nest box, Score 0 (in low risk area)
B: Bedding material, Score 1

A: Nest box, Score 0
B: Bedding material, Score 2

Photos : © Steen H. Møller.

3.2.2.3 Ease of movement

Title	**Space available for moving (area and height)**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	Measure the cage size (width, length and height) in cm (or count the wire-mesh in inches and multiply by 2.5). When two floor cages are used, the area and height in both sections is measured. Only the cage area with full height is included, however the area beneath cage enrichments (e.g. shelves) is not excluded, while the area beneath low parts of the roof (less than 40 cm or top nesters) is excluded. Calculate the floor area of the cage sizes encountered and the number of each.
	At cage level:
	Floor area:
	0 – $\geq$ 2550cm^2
	1 – 1000 $\leq$ cage area <2550cm^2
	2 – < 1000cm^2
	Cage height:
	0 – $\geq$ 50cm
	1 – 40 $\leq$ cage height <50cm
	2 – < 40cm
	Floor area above 2550cm^2 / mink more than two in Period 3 (see additional information):
	0 – $\geq$ 850cm^2/ with minimum 40cm height
	1 – < 850cm^2/ with minimum 40cm height
Classification	**Farm level:**
	Floor area:
	Percentage of animals kept in cage sizes classified as: 0, 1 or 2.
	Cage height:
	Percentage of animals kept in cage sizes classified as: 0, 1 or 2.
	Floor area/mink (only in Period 3):
	Percentage of animals kept in cage sizes classified as: 0 or 1.

Additional information	The number of animals in each cage in the sample is known from the animal-based measurements and need not to be counted again.

3.2.3   Good health

3.2.3.1 Absence of injuries

Title	**Skin lesions or injuries to the body**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	Inspect the body of all mink in the sample, for example, after scoring temperament or body condition, where a full visual inspection of the body is possible. If two lesions or more are observed in the same mink, each lesion is scored and the added score is recorded. However, 3 is the maximum score recorded for a mink. For example, 1+1=2, 1+2=3, 1+3=3, 2+2=3... **Specifically in Period 1**: Inspect adults housed alone especially at the tail. **Specifically in Period 2**: In late lactation aggression/injuries in litter occurs especially in the throat/neck/head region after they begin to eat solid food at 4 weeks of age and until weaning, especially in hot and dry weather conditions. Inspect the females and the throat/neck/head region of kits. **Specifically in Period 3**: Inspect especially at the tip and base of the tail. Abscesses, ear and eye injuries may also occur. **Individual level:** **0 –** No injuries **1 –** Unhealed injuries with a diameter < 10mm OR minor healed lesions, for example, missing part of an ear or less than half the tail **2 –** Unhealed injuries with a diameter < 30mm OR major healed lesions, for example, missing more than half the tail **3 –** Unhealed injuries with a diameter > 30mm OR other major unhealed injury, for example, missing more than half the tail or bone exposed
Classification	**Farm level:** **Percentage of mink** with injuries in categories 1, 2 and 3
Additional information	

Unhealed injury, tail missing, score 3

Bite injury at tail, score 2

Bite injury at tail, score 3

Unhealed injury, score 1

Unhealed injury, score 2

Healed injury, score 1

Photos : © Steen H. Møller & Steffen W. Hansen

3.2.3.2 Absence of disease

Title	**Mortality**
Scope	Management-based measurement: Periods 1, 2 and 3
Sample size	The farm
Method description	Mortality is defined as unwanted/uncontrolled death of animals as well as humanely killed mink. This means that all mink that are humanely killed or found dead are included while mink that are killed for pelting during the normal pelting time (November/December as well as males and unmated females in March/April) are not included. Consult the farmer on the mortality records for the actual period and one year back. **Specifically in Period 1:** Record the mortality from December 1st to the day of visit. Use data from last year for the rest of the period. Check with the farmer if the number of animals has changed significantly (more than 10 %) since last year. **Specifically in Period 2:** Male and female dams since March 1st. Mink pelted after the mating season in April are <u>not</u> included. The farmers' records of loss of new born kits is very dependent on the farmers' practices in counting juveniles (*e.g.* at a few days or weeks after birth). Therefore kit mortality is not included in the measurement until May 15th. Mortality is recorded within the 3 following sub-periods, using actual or last years data: 2a. Adults from March 1st to May 14th (from the beginning of Period 2 to mid lactation). 2b. Adults and kits from May 15th to June 15th (from the time of expected valid mortality data to weaning). 2c. Adults and kits from June 16th to July 15th (from normal weaning time to the end of separation). Check with the farmer if the number of animals has changed significantly (more than 10 %) since last year. **Specifically in Period 3:** Record the mortality from July 16th to the day of visit and use data from last year for the rest of the period. Check with the farmer if the number of animals has changed significantly (more than 10 %) since last year. **Farm level:** Number of dead mink in each period (and sub-periods of Period 2)
Classification	**Farm level:** · Percentage of dead mink during the period (1 and 3) · Percentage of dead mink in each of the three sub-periods of Period 2

Title	**Diarrhoea**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	Diarrhoea is defined as grey, yellow, green or red mucoid droppings which can best be observed in the slurry trough or under the cages while checking the drinking nipples. In some cases diarrhoea can be observed directly on the mink – especially in case of "sticky kits" in Period 2. Clear clinical signs of serious diarrhoea are noted.

This includes very mucous, watery, fluent or bloody manure without form or texture. The manure is often not black and can include blood or parts of intestinal epithelium, e.g. in case of more serious disease (shrimp' like droppings are seen in case of mink virus enteritis).

While observing the animals in each cage and especially while checking the functioning of each water nipple note the cages containing mink that are affected.

Specifically in Period 2: 'Sticky kits' (an astro or calici viral infection causing exudation and diarrhoea, which gives the kits a 'sticky' appearance) is prevalent.

Specifically in Period 3: Notifiable diseases (*e.g.* Mink virus enteritis) may also appear after weaning and separation of the juveniles. In the autumn fast growing male juveniles with high feed intake may be affected by unspecific health problems like diarrhoea.

Cage level:
0 – No evidence of diarrhoea
1 – Evidence of diarrhoea (including 'Sticky kits' and later forms of enteritis in Period 2)

Classification	**Farm level:** **Percentage** of cages with evidence of diarrhoea
Additional information	

<div align="center">

Two examples of diarrhoea, Score 1   Sticky kits, Score 1

Photos : © Steen H. Møller & Nordvacc   **Photo** : © Tove N. Clausen

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Title	**Lameness or impaired movement**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	Lameness or impaired movement is defined as mink not moving normally, without any obvious reason such as injuries noted elsewhere in the protocol. All clinical signs of lameness, impaired movement or paralysis is noted, without discriminating between different levels of seriousness of the condition: While observing the animals in each cage, record the number of individual mink that are affected. **Individual level:** **0** – No evidence of lameness or impaired movement **1** – Evidence of lameness or impaired movement
Classification	**Farm level:** **Percentage** of mink with evidence of lameness or impaired movement

Title	**Obviously sick animals**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	All clinical signs of obviously sick mink, apart from the two previous measurements (*i.e.* Diarrhoea and *Lameness or impaired movement*) are noted in this category, without discriminating between different symptoms or levels of seriousness of each condition. Notifiable diseases (Virus enteritis, Distemper, Aleutian Disease) may appear in all periods. In the autumn fast growing male juveniles with high feed intake may be affected by unspecific health problems. While observing the animals in each cage, record the number of individual mink that are affected with physical signs of poor health or disease other than diarrhoea, lameness or impaired movement. **Individual level:** **0** – No signs of poor health or disease **1** – Obvious signs of poor health or disease
Classification	**Farm level:** **Percentage of mink** with evidence of poor health or disease

3.2.3.3 Absence of pain induced by management procedures

Mink production does not involve any management procedures mutilating the animals such as castration, trimming, teeth or tail cutting, not even marking of the animals. Two management procedures that might be painful if applied incorrectly are vaccination and blood sampling for prevention or testing and stamping out diseases. Due to their purpose, however, these two management procedures are not considered under this criterion.

Title	Killing methods for pelting of mink
Scope	Management/resource-based measurement: Periods 1, 2 and 3
Sample size	The killing methods in use at the farm
Method description	Ask the farmer how mink are killed for pelting at the farm and how many methods/units (*e.g.* killing boxes) are in use on the farm at pelting time and inspect and evaluate all methods/units. If killing boxes are used there should be a gas hose for the gas used for killing or connection to a gas engine for carbon monoxide release into the box. The hose for transfer of the gas should not be broken, destroyed or worn out, as this could cause insufficient levels of gas in the box. If a gas engine is used, the gas must be cleaned and cooled before entering the box. Working procedures must secure sufficient concentration of gas before animals are put into the box. During an outbreak of disease the general procedure for killing mink at pelting may be needed. Therefore access within two days to functioning killing methods/boxes is necessary all year round. In November and early December a large part of the mink that were born in May are killed and pelted. Check/evaluate all killing methods/boxes that are in use for functionality. Are they in a functional state or can they be made functional? (*i.e.* is gas available within 2 days if needed?) Killing boxes should be solid and not destroyed in any parts. They should have an opening at the top for putting individual animals in the box and this should have a lid so that it can be closed. Correctly applied, such methods include: CO > 4% (pure or from engine), CO_2 > 80%, lethal injection, head-only electrical stunning and head-to-body electrical stunning.

Killing box/method level:

0 – Box with no broken, destroyed or worn out parts and well-functioning gas transfer to the box. Working procedures secure sufficient amount and quality (*i.e.* clean and cool) of gas before use. Enough gas is available within 2 days if needed. Other documented and efficient killing method meeting the requirements of Council Regulation (See additional information).

1 – Boxes with minor defects but gas transfer to the box is working AND/OR uncertain if working procedures secure sufficient amount and quality of gas before use (*i.e.* clean and cool). Enough gas is available within 2 days if needed. Other killing method that is efficient but not sufficiently documented or doubt about meeting the requirements of Council Regulation (See additional information).

2 – Old or worn out box with several defects or broken hose for the gas transfer into the box AND/OR working procedures does not secure sufficient amount and quality of gas before use (*i.e.* clean and cool). Not enough gas available within 2 days if needed. Other killing method that is not sufficiently documented or efficient or does not meet the requirements of Council Regulation (See additional information).

Classification	**Percentage** of killing boxes/methods in category 0, 1 or 2
Additional information	A list of killing methods and their key parameters approved by the COUNCIL REGULATION (EC) No 1099/2009 of 24 September 2009, on the protection of animals at the time of killing can be found at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF
	See also Council of Europe, Recommendation concerning fur animals at: http://www.coe.int/t/e/legal_affairs/legal_co-operation/biological_safety_and_use_of_animals/farming/Rec%20fur%20animals%20E%201999.asp

Title	**Killing methods for individual mink**
Scope	Management/resource-based measurement: Periods 1, 2 and 3
Sample size	The killing methods in use at the farm
Method description	When sick or injured individual animals are found it should be possible to kill them instantly if treatment is not possible or when the best option to reduce pain and suffering is humane killing.

Efficient means of killing individual mink should be available at all times. Assess the functionality of the killing equipment/method that are used on the farm, that it is functioning and without defects and that the farmer knows how to operate it.

Correctly applied, efficient means of killing individual mink include: CO > 4 % (pure or from engine), CO_2 > 80%, lethal injection, head-only electrical stunning, head-to-Body electrical stunning, percussive blow to the head, Penetrative captive bolt device and firearm with free projectile.

Killing method level:
0 – Access to well-functioning efficient means of killing individual mink meeting the requirements of Council Regulation (See additional information).
1 – Access to not very well-functioning or efficient means of killing individual mink or no gas available at the visit or doubt about meeting the requirements of COUNCIL REGULATION (See additional information).
2 – No functioning equipment on the farm for killing individual animals that meets the requirements of Council Regulation (See additional information). |
| Classification | **Farm level:** **Killing method** in category 0, 1 or 2. |

3.2.4 Appropriate behaviour

3.2.4.1 Expression of social behaviours

Title	**Social housing**
Scope	Management-based measurement: Period 3
Sample size	The farm
Method description	Ask the farmer how the mink are housed in different social combinations at the farm (register in sheet 1.2 of Annex A).
	Specifically in Period 3: Social housing is relevant only in Period 3 (after separation).
	Farm level (juveniles): **0 –** Pair housing one male and one female **1 –** Pair housing two of the same sex or group housing, *i.e.* three or more mink in the same cage (including an adult female with two or more juveniles) **2 –** Single housing
	Farm level (adult dams): **0 –** Single housed **1 –** Housed together with one or two male juveniles **2 –** Family housed together with her litter **3 –** Housed together with other adult(s)
Classification	**Percentage of juveniles** housed according to 0, 1 or 2 **Percentage of adult dams** housed according to 0, 1, 2 or 3

Title	**Age and procedures at weaning**
Scope	Management-based measurement: Period 2
Sample size	The farm
Method description	Ask the farmer about the strategy for weaning focusing on the normal, planned procedure. Assess the weaning procedure according to the classification described below.
	Farm level: Age at weaning in weeks **0 –** ≤ 6 **1 –** 7 **2 –** 8 **3 –** 9 **4 –** ≥ 10 including no weaning
	Distance between dams and weaned kits: Is the distance between the dams and the kits > approximately 20 m after weaning? **0 –** Long distance between dams and weaned kits **1 –** Short distance between dams and weaned kits
	Litters kept together: Are litters kept together for ≥ 7 days after weaning? **0 –** Together ≥ 7 days **1 –** Together < 7 days

| Classification | The farm combination of the 20 potential combinations of 5 ages of weaning, 2 distances between dams and weaned kits and 2 periods of keeping the litter together. |

Period 2	Age at weaning	Distance between dams and weaned kits	Are litters kept together for ≥ 7 days after weaning	% of animals
Situation 1	0	1	0	P1
Situation 2	0	1	1	P2
Situation 3	0	0	0	P3
Situation 4	0	0	1	P4
Situation 5	1	1	0	P5
Situation 6	1	1	1	P6
Situation 7	1	0	0	P7
Situation 8	1	0	1	P8
Situation 9	2	1	0	P9
Situation 10	2	1	1	P10
Situation 11	2	0	0	P11
Situation 12	2	0	1	P12
Situation 13	3	1	0	P13
Situation 14	3	1	1	P14
Situation 15	3	0	0	P15
Situation 16	3	0	1	P16
Situation 17	4	1	0	P17
Situation 18	4	1	1	P18
Situation 19	4	0	0	P19
Situation 20	4	0	1	P20

3.2.4.2 Expression of other behaviours

Title	**Stereotypic behaviour**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	Stereotypic behaviour is defined as repetitive, invariant motor acts without any obviously function or goal. A common form of stereotypy in mink is pacing along the side of the cage but stereotypies can take many different forms. Three repetitions of the behaviour are used as criteria for repeatability. **Specifically in Period 2:** Only the Dam is observed. During observation, the observer keeps a distance from the mink, for example, by observing the mink from the parallel row or a nearby shed to minimise the impact of the observer on the mink.

Let the mink habituate until they do not pay attention to the presence of the observer, before starting the registration of stereotypic behaviour (usually a few seconds but one minute maximum)

Observe the cage-section for 2 minutes and note the number of mink per cage that were active and the number of mink that performed stereotypic behaviour within the 2 minutes (3 or more repetitions). Depending on the layout of the shed, one or two sections of battery type pens typically of 6 cages each can be observed at the same time.

Mink are primarily active at dawn and at dusk and before feeding, which makes it important to synchronise the observations in practise. In order to overcome the variation in stereotypies during the day due to daily rhythm in the minks´ activity or between periods due to the feeding strategy, the observation of stereotypies in all three periods is performed from 1 hour before the usual (expected) time of feeding. If the observations cannot be completed before the time of feeding, ask the farmer to postpone the feeding until the observation of stereotypic behaviour is completed as the mink should not be able to hear the feeding machine during the observation.

Individual level:
0 – Not active (lying in the cage or in the nest box with only minor changes in the lying position)
1 – Stereotypic behaviour (three or more repetitions in a row of the same behavioural pattern)

Classification	**Farm level:** The **percentage** of mink observed performing stereotypic behaviour

Title	**Cage enrichments**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	The sample defined in 3.2.6
Method description	Check the availability of bedding material and of one or more occupational objects in the cage that may promote a more varied behavioural pattern. In order to cover all types of enrichments that may be used in practice and to include future enrichments, the occurrence of environmental enrichments is classified in three levels according to the documented effect. For example, to decrease abnormal behaviour such as stereotypy or fur chewing, to reduce baseline stress or to increase health. This classification is the same as that used for evaluation of the validity and reliability of measurements: **0 –** High certainty: Solid and complete data available; strong evidence in multiple references with most authors coming to the same conclusion **1 –** Medium certainty: Some or only incomplete data available; evidence provided in small number of references; authors' conclusions vary from one to the other; solid and complete data available from other species which can be extrapolated to the species considered **2 –** Low certainty: Scarce or no data available; evidence provided in unpublished reports or based on personal observations or communications; authors' conclusions vary considerably between the reports In this way new enrichments can be included as their effect is documented. If other enrichments that do not fit into the descriptions listed below with high or medium certainty are observed, these are registered under low certainty until the effects have been evaluated and documented.

In all periods:

Access to beneficial enrichments with:

0. High certainty:
   - Platforms (or attached tubes) at least 20cm above the cage floor, big enough to allowed the mink to rest on the platform or in the tube
   - Biting ropes
   - Soft plastic tubes (unfixed)
1. Medium certainty:
   - Straw, straw like material and straw briquettes
   - Hard plastic tubes, plastic chains, or balls
   - Running wheel
   - Swimming water
   - Other water-based enrichments
2. Low certainty:
   - Other objects not yet documented

More than two enrichments in a high category are added to the category below (*e.g.* three high certainty enrichments equal two high certainty enrichments and one medium certainty enrichment).

| Classification | Calculate the **percentage** of mink in each of the situations resulting from the combination of the number of enrichments with certainty level 0, 1 or 2. |

All periods	Number of high certainty enrichments	Number of medium certainty enrichments	Number of low certainty enrichments	% of animals
Situation 1	2	2	≥2	P1
Situation 2	2	2	1	P2
Situation 3	2	2	0	P3
Situation 4	2	1	≥2	P4
Situation 5	2	1	1	P5
Situation 6	2	1	0	P6
Situation 7	2	0	≥2	P7
Situation 8	2	0	1	P8
Situation 9	2	0	0	P9
Situation 10	1	2	≥2	P10
Situation 11	1	2	1	P11
Situation 12	1	2	0	P12
Situation 13	1	1	≥2	P13
Situation 14	1	1	1	P14
Situation 15	1	1	0	P15
Situation 16	1	0	≥2	P16
Situation 17	1	0	1	P17
Situation 18	1	0	0	P18
Situation 19	0	2	≥2	P19

Situation 20	0	2	1	*P20*
Situation 21	0	2	0	*P21*
Situation 22	0	1	≥2	*P22*
Situation 23	0	1	1	*P23*
Situation 24	0	1	0	*P24*
Situation 25	0	0	≥2	*P25*
Situation 26	0	0	1	*P26*
Situation 27	0	0	0	*P27*

Additional information
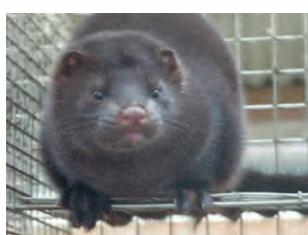
Platform enrichment (0)

Straw briquettes (1) and soft plastic tube (0)

Straw enrichment (1)

Hard plastic tube (1)

Biting rope (0)

Biting ropes (0), open and closed attached tubes (0) + ping pong ball (2)

Photos: © Steen H. Møller, Steffen W. Hansen & Bente K. Hansen

Title	**Fur chewing**
Scope	Animal-based measurement: Periods 1 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	Fur chewing is defined as mink chewing their own fur or that of a cage mate. Fur chewing is most often observed on the tip of the tail but larger area on the tail and body may be fur-chewed. Observe all mink in the cage and record fur chewing. If two or more areas of fur chewing are observed in the same mink, each is scored and the added score is recorded. However, 3 is the maximum score recorded, for example, 1+1=2, 1+2=3, 1+3=3, 2+2=3... **Individual level:** **0 – No/very little** fur chewing (The outer tip of the tail is not visible (not naked) and/or less than 0.5cm^2 of the tail or body has been chewed).

1 – Moderate fur chewing (The outer tip of the tail is visible (naked) and/or fur chewing of less than 3cm of the tail or less than 3 x 3cm fur chewing of the body).
2 – Severe fur chewing (> 3cm of the tail or > 3 x 3cm of the body has been chewed).
3 – Extensive fur chewing (> 10cm of the tail or > 10 x 10cm of the body has been chewed).

Classification	**Percentage of mink** with fur chewing at level 0, 1, 2 or 3.
Additional information	

Fur chewing, Score 0	Fur chewing, Score 1	Fur chewing, Score 3

Photos : © Steen H. Møller & Steffen W. Hansen

3.2.4.3 Good human-animal relationship & Positive emotional state

Title	**Temperament test**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Mink in the sample defined in 3.2.6
Method description	The aim is to categorize the temperament of the mink as being explorative, fearful, aggressive or undecided. The mink can be tested at any time except in the period from one hour before the usual time of feeding (because of the stereotypy observations) to 30 minutes after feeding. If the mink are in the nest box make sure that the mink are awake and aware of your presence, for example, by making noise drawing the wooden tongue spatula across the wire netting. In order to categorize fearful mink correctly the mink should be shut out from the nest box, but this would make the test unfeasible. An approach-avoidance assessment has therefore been included to handle this.

The assessor stands still in the aisle in front of the mink cage and puts a wooden tongue spatula through the wire netting in the middle of the front of the mink cage, 3 - 4 inches from the top, which is usually the door, depending on cage design. The mink's first stable reaction (within 15 sec.) to the spatula is recorded according to the four categories (see photographic reference).

Specifically in Period 3: Due to social interactions the testing of cages with more than 2 mink can be more complicated. The procedure is basically the same but in two-floor cages, two tongue spatulas (one in each floor) may be needed if the mink are present on both floors during testing or if one mink (often a female) is prevented from approaching the stick due to the presence of one or more other mink.

Individual level:
Exploratory: The mink approaches, makes contact with and explores the tongue spatula. Also mink that makes a rapid attack but quickly revert to exploration
Fearful: The mink flee away from the tongue spatula and retreats into the cage or the nest box without having contact with the spatula. Mink that focus on (are aware of) the tongue spatula but do not leave the nest box enough to get closer than 15 cm from the tongue spatula.
Aggressive: The mink makes an intense attack on the tongue spatula, bites it and maintains the bite (often combined with hissing sound and tail flick).

Undecided: The mink does not reach a stable reaction but shifts between more than one, does not react according to one of the three above-mentioned ways, stays in the nest box or does not react within 15 seconds. Mink that focus on (are aware of) the tongue spatula and leaves the nest box enough to get closer than 15 cm from the tongue spatula but does not make exploratory contact within 15 seconds.

Classification	**Farm level:** **Percentage of mink** with each of three categories of temperament: **0: Exploratory** **1: Aggressive or Undecided** **2: Fearful**
Additional information	 Exploratory (0) Aggressive (1) Fearful (2) **Photos** : © Steen H. Møller & Steffen W. Hansen

Title	**Frequency and duration of handling and transportation**
Scope	Management-based measurement: Periods 1, 2 and 3
Sample size	The farm
Method description	Handling is defined by catching or trapping the mink and removing it from the cage or nest box. Mink may be caught and handled for a number of reasons, for example, vaccination, inspection (*e.g.* at grading), weighing, moving to another cage (*e.g.* at weaning or separation of juveniles), for mating, to another farm *etc*. Each time the animal is affected by the catching and by the duration of the time it is caught, handled or transported. Consult the farmer about pre-planned management routines involving handling for the full actual production period (not only the observation periods). **Specifically in Period 1:** The mink selected as next years' breeders are often moved from the cage where they grew up to another shed for the winter. This may be before or at the beginning of Period 1. In order to keep things simple, this moving is always recorded as part of period 1, while live animal grading is recorded exclusively as part of period 3. **Specifically in Period 2:** The mink are moved briefly for mating (usually the females) and often a number of times. Mated females are often moved before parturition and again at weaning. Juveniles are often separated (and sometimes moved to other farms) for the growing period. Counting or moving kits to other dams is not regarded as handling until the kits are 4 weeks of age - and can hear and see. **Specifically in Period 3:** The juveniles are often handled for vaccination, weighing and sorting of breeders before pelting time. In order to keep things simple, live animal grading is recorded exclusively as part of period 3, even if it may extend into period 1.

	Within the current farming practice:
	1a: How often are mink caught, handled and/or moved for less than 1 minute?
	1b: How many mink (or % of the population) are involved?
	2a: How often are mink caught, handled and/or moved for more than 1 minute but less than an hour?
	2b: How many mink (or % of the population) are involved?
	3a: How often are mink caught, handled and/or moved for more than an hour?
	3b: How many mink (or % of the population) are involved?
Classification	**Farm level:**
	Calculate the average number of times mink are caught and handled:
	1 – Average number of times mink are caught and handled for less than 1 minute
	2 – Average number of times mink are caught and handled for more than 1 minutes but less than an hour
	3 – Average number of times mink are caught and handled for more than an hour

3.2.5   Guidelines for a farm visit

3.2.5.1 Before the visit

Before the farm visit, the assessor needs to inform the farmer about the purpose of the visit, how it is conducted and what preventive measures are taken against spreading of disease. In order to be able to stratify the sampling to sections covering the minks' age, social grouping, colour types and housing facilities, the assessor needs to get the background information needed. This includes number and distribution of colour types of mink in the sheds, social grouping in Period 3, and the general farm layout (number and type of sheds, cage types, and watering systems) (registration sheet 1 of Annex A). Ask for the usual time of feeding and make an agreement with the farmer to be able to observe stereotypic behaviour before feeding.

3.2.5.2 Bio-security

Adhere to the individual farms' own bio-security requirements and take care to shower, change clothing and clean and disinfect boots and other non-disposable items (*e.g.* clipboard, torch etc.) after each visit. Make sure to comply with national or regional bio-security regulations for mink farms.
The assessor should park his/her vehicle outside the farm area.

3.2.5.3 Equipment required

- Tablet with the WelFur Mobile Application for data collection and registration sheets, description and board for backup

- Cards with section and cage number to mark the cage sections in the sample

- Torch to observe the nest box and animals for injuries and fur chewing

- Tongue spatulas for temperament tests

- Equipment to test the functioning of water nipples

- Folding ruler or measuring tape for measuring cage size

- Device for getting the mink out of the nest box

- Measures for disinfection of equipment (the torch, the folding ruler)

- Clean clothes and boots/shoe covers

3.2.5.4 The farm visit

Check and confirm the previously agreed information at the beginning of the actual visit and fill in further information that might be needed in order to define a representative sample as described in section 3.2.6. Discuss and record the management-based measurements with the farmer or agree on a more appropriate time to do so. Repeat your brief

explanation of what is about to be done during the course of the visit, since the person hosting the visit may not be familiar with the assessment. Explain to the farmer that there will be an assessment of animal-based and resource-based measurements and how long these will approximately take to complete. Ask the farmer to show you the location of the mink selected as your representative sample and make a brief sketch or note of the buildings for personal records, for example, on a farm print from Google maps or similar. Show the farmer the labelling of the selected cage sections – and explain that these will be left in order to make the observation results transparent to the farmer after the visit – and may then be removed by the farmer.

Thank the farmer for their time and help during the visit. Inform the farmer about observations that may be of special interest, for example, sick or injured mink. Explain how data are treated and how and when the outcome can be expected.

3.2.6   Sampling and practical information

3.2.6.1 Sample size

A representative sample of the mink on the farm is selected according to social housing, sex, age and colour type for each of the three observation periods. Thereafter shed type, cage system and watering systems are included in the selection of the sample. Each sample consists of 120 cages equal to 20 cage sections of 6 cages. In case of other types of cage systems stick to the sample size of 120 cages, for example, in case of 5, 7 or 8 cages per section, mark 20 sections of 6 cages by the pre-printed cards with section and cage number. The smallest unit in the sampling is a section of 6 cages and therefore typically 5 % of the total sample.

In Period 1 the breeders are normally kept singly in the cages and the sample of 120 cages is primarily selected according to sex, colour type and housing. In Period 2 a sample of 120 litter/females is taken, including barren females which occur in the selected sections. If litters are housed in every second cage 40 sections are sampled. In Period 3 a key parameter is social housing of mink (which may well be confounded with, for example, colour type and shed). Sampling in Period 3 is therefore more complicated and as each cage holds more mink, the sample size is reduced to 15 sections and 90 cages:

1. Calculate the proportion of dams housed singly, paired with a juvenile or with more than one juvenile in Sheet 1.2 Table 2 (Annex A).

2. Calculate the proportion of juvenile mink housed singly, pair-wise or in groups (more than 1 mink of each sex) in Sheet 1.2, Table 3 (Annex A). For example, 1 male + 1 female, 1 male + 2 females, 2, 3 or 4 females and so on.

3. In Sheet 1.2, Table 4 (Annex A), calculate the number of mink in total and divide by the number of sections to be sampled (*e.g.* 15). This is the reference number of mink that roughly should justify a section of cages to be sampled. (For example, if the number of adult males is way below this number, no males are sampled.) If the number of pair-housed juveniles is roughly 4 times this number, four sections are sampled. Distribute the number of cage sections according to 1 and 2 using Table 4 in Sheet 1.2 (Annex A).

4. Calculate roughly the proportion of colour types involved in the different social group housing combinations and distribute the number of sections of cage sections.

3.2.6.2 Practical information

Mark/label the sections selected by the cards with section and cage number that is easy to observe also from outside or from some distance (for example for observation of stereotypy). Plan to take the animal based measurements in the order defined in Sheet 3 (Annex A), so that most measurements can be taken as part of the same observation. Make sure that you are able to observe stereotypic behaviour from one hour before the usual time of feeding. If needed, agree with the farmer that you can finish the observation before feeding. If the mink are fed several times a day, stereotypy is observed before the main feeding during the farm visit.

For all observation periods only mink included in the representative sample are considered for collection of the resource- and animal-based measurements given in the table below. The management-based measurements include all mink affected on the farm: For example, "mortality" is measured as percentage of total number of animals in each period,

which is specially important when kits are included in period 2.

An overview of the order in which the information and the measurements can be collected and how much time the recordings may take, is given in Table 2.

Information collected	Specification	Time & sheet(s) required
Practical information	Specifying a representative sample	**60 minutes Sheets 1 and 2**
Type of watering system	Management-based measurement: Periods 1, 2 and 3	
Social housing	Management-based measurement: Period 3	
Mortality	Animal-based measurement: Periods 1, 2 and 3	
Killing methods	Management-based measurement: Periods 1, 2 and 3	
Age and procedure at weaning	Management-based measurement: Periods 1, 2 and 3	
Frequency and duration of handling and transportation	Management-based measurement: Periods 1, 2 and 3	
Function and cleanliness of the water points	Resource-based measurement: Periods 1, 2 and 3	**15 minutes Sheet 3**
Diarrhoea	Animal-based measurement: Periods 1, 2 and 3	
Temperament test	Animal-based measurement: Periods 1, 2 and 3	**60 minutes Sheet 3**
Body condition score	Animal-based measurement: Periods 1, 2 and 3	**90 minutes Sheet 3** While these measurements are taken, the rest of the below measurements in sheet 3 can also be observed
Fur chewing	Animal-based measurement: Periods 1 and 3	
Skin lesions or injuries to the body	Animal-based measurement: Periods 1, 2 and 3	
Lameness or impaired movement	Animal-based measurement: Periods 1, 2 and 3	
Obviously sick animals	Animal-based measurement: Periods 1, 2 and 3	
Access to a nest box	Resource-based measurement: Periods 1, 2 and 3	**30 minutes Sheet 3**
Resting quality of the nest box/resting area	Resource-based measurement: Periods 1, 2 and 3	
Cage enrichments	Resource-based measurement: Periods 1, 2 and 3	
Stereotypic behaviour	Animal-based measurement: Periods 1, 2 and 3	**60 minutes Sheet 3**
Space available for movement	Resource-based measurement: Periods 1, 2 and 3	**15 minutes Sheet 4**
Nest box material and bedding/nesting material	Resource-based measurement: Periods 1, 2 and 3	
Protection from exceptional weather conditions	Resource-based measurement: Periods 1, 2 and 3	

Table 2 Order of information collected, type of measurement and time required. For the resource based measurements and the animal based measurements a representative sample of 90-120 cages is selected.

The number of males and females in each cage is recorded in the registration sheet. For each of the measurements of Temperament test, Body Condition Score, Fur chewing, Skin lesions or injuries to the body, Lameness or impaired movement, Obviously sick animals and Stereotypic behaviour, the number of animals in each category is recorded.

During the nursing period the number of kits in each cage is recorded in the registration sheet. For each of the measurements of Obviously sick animals and of Skin lesions or injuries to the body the number of kits affected is recorded.

For the clinical measurements it is important that a good visual inspection of the body is possible. Therefore, mink hiding in the nest box have to be chased out in the cage if careful inspection in the nest box is not sufficient. As the same is the case for the body condition score (BSC) clinical measurements may most efficiently be recorded as part of or immediately after the scoring of body condition. During these procedures the other measurements in sheet 3 (except for stereotypy and functioning of water points) can also be recorded.

In general, empty cells are taken as a 0 and do not, therefore, have to be recorded. Binary measurements are, therefore, taken as 1 = "yes, there is a problem". Missing information must be marked with a horizontal line, for example, in the case of an empty cage in a sampled section.

Photo : © Kopenhagen fur

3.3 Calculation of scores for mink

3.3.1 Criterion-scores

From measurements to criterion-scores, up to 3 steps can be necessary. They are briefly presented in Figure 7.
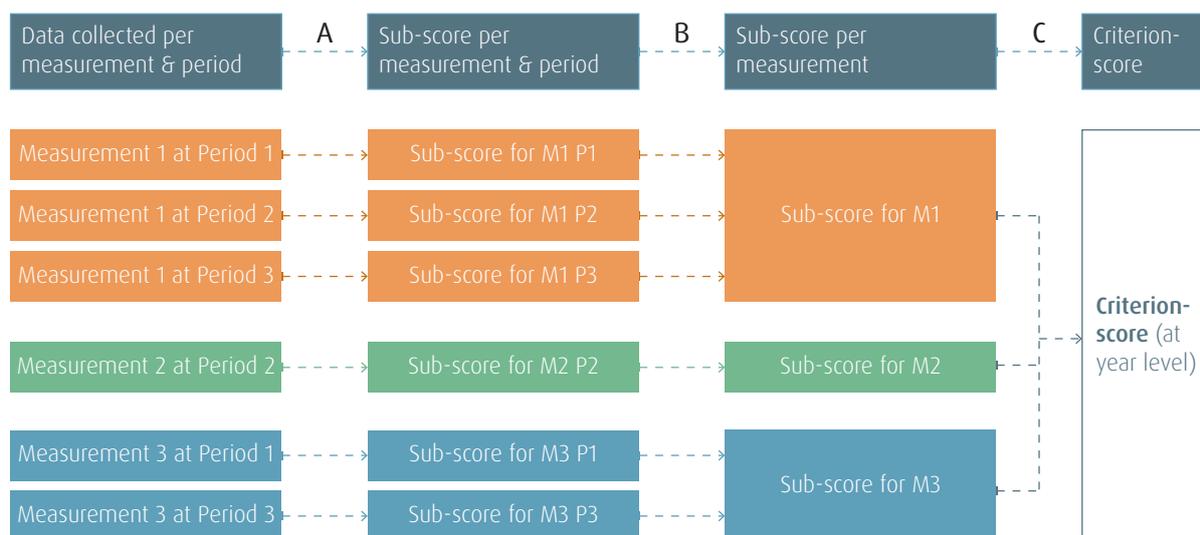
Figure 7 Up to 3 steps (called A, B and C) are necessary to go from raw data collected on farms to criterion-score, here presented as a virtual example: **A-** Interpretation in terms of welfare of data collected for a given measurement at a given period, **B-** Aggregation of sub-scores obtained for a given measurement at different periods and **C-** Aggregation of sub-scores obtained on the different measurements.

To perform those steps, different aggregation tools are used. These are summarised in Table 3.

Spline	% of animals in an impaired welfare state (*e.g.* % of lean mink) transformed into a score using least-squares spline curve fitting
Decision-tree	Construction of a decision-tree leading to X possible situations, scores directly assigned to each of these X situations
Decision-tree & % Rule	Construction of a decision-tree leading to X possible situations (including protection against freezing), scores directly assigned to each of these X situations + The worst situation observed on at least Y% of the animals is considered
Index & Spline	Calculation of an index based on a linear combination of the % of animals in the different categories (*e.g.* % of mink presented cages with an area above / at / below the recommendation), transformed into a score using least-squares spline curve fitting
Choquet	The sub-scores (*e.g.* one per period or one per measure) are synthesised thanks to a Choquet integral

Table 3 The different types of construction used to assess welfare on mink farms

More particularly, Table 4 presents the twelve criteria used to assess welfare of mink with, for each, the measurements used, the type of measurement (*i.e.* animal- or resource-based or taken from farm records), the period(s) concerned and the aggregation tools used.

Criterion number	Measurement	Type of measurement*	Period	No. of measurements	A-Construction at measurement level	B-Aggregation of periods per measurement	C-Aggregation of measurements
C1	Body condition score	A	P1, P2 & P3	1, 1, 1	Spline (% of too lean mink)	Choquet	no
C2	Continuous water availability	R	P1, P2 & P3	6, 6, 4	Decision-tree (16, 14, 16 situations, for P1, P2, P3 respectively) + 4 % Rule	Choquet	no
C3	Access to a nest box	R	P1, P2 & P3	1, 1, 1	Spline (% of animals with access to a nest box)	Choquet	Choquet
	Resting quality of the nest box	R + M	P1, P2 & P3	1, 1, 1	Index (% of mink with no/ one/ two / three or four problems) & Spline	Choquet	
C4	Protection from exceptional weather conditions	R + M	P1	1	Index (% of mink in cages with high / medium / low protection from wind) & Spline	Choquet	Choquet
			P2 & P3	4, 4	Decision-tree (27 situations) +10 % Rule, different for P2 and P3		
	Nest box material and bedding / nesting material	R	P1, P2 & P3	1, 1, 1	Index (% of mink with high / moderate / low / bad protection) & Spline	Choquet	
C5	Floor area	R	P1, P2 & P3	1, 1, 1	Index (% of mink in cage with good / moderate / bad area) & Spline	P3: Choquet (to aggregate the two sub-measurements) T	Choquet
	Floor area/extra mink more than 2	R	P3	1	Spline (% of mink in cage with bad area/ extra mink)	Choquet	
	Cage height	R	P1, P2 & P3	1, 1, 1	Index (% of mink in cage with high / medium / low cages) & Spline	Choquet	
C6	Skin lesions or injuries to the body	A	P1, P2 & P3	1, 1, 1	Index (% of mink without injuries / with injuries of category 1 / with injuries of category 2 / with injuries of category 3) & Spline	Choquet	no

Type of measurement: observed on the farm may be animal-based (A), resource-based (R) or management-based (M)

Table 4 Measurements and construction tools for each criterion
Table 4a Criteria 1 to 6

Criterion number	Measurement	Type of measurement*	Period	No. of measurements	A-Construction at measurement level		B-Aggregation of periods per measurement	C-Aggregation of measurements
C7	Mortality	A	P1	1	Spline (% of dead mink)		Choquet	Choquet
			P2 sub-P1	1	Spline (% of dead mink)	Choquet		
			P2 sub-P2	1	Spline (% of dead mink)			
			P2 sub-P3	1	Spline (% of dead mink)			
			P3	1	Spline (% of dead mink)			
	Diarrhoea	A	P1, P2 & P3	1, 1, 1	Spline (% of mink with evidence of diarrhoea), different for P1, P2 and P3		Choquet	
	Lameness or impaired movement	A	P1, P2 & P3	1, 1, 1	Spline (% of mink, including kits) with evidence of impaired movement), different for P1, P2 and P3		Choquet	
	Obviously sick animals	A	P1, P2 & P3	1, 1, 1	Spline (% of mink, including kits) with evidence of impaired movement), different for P1, P2 and P3		Choquet	
C8	Killing method for pelting of mink	R + M	P1, P2 & P3	1, 1, 1	Index (% of mink killed with good / acceptable / bad method of killing) & Spline, different for P1, P2 and P3		Choquet	Choquet
	Killing method for individual mink	R + M	P1, P2 & P3	1, 1, 1	Decision-tree (3 situations), different for P1, P2 and P3		Choquet	
C9	Social housing adult dams	M	P3	1	Index (% of dams housed with other adults / famely housed with her litter / housed with one or two male kits / singly housed) & Spline		no	Choquet
	Social housing juveniles	M	P3	1	Index (% of juvenile housed in groups of three or more mink in the same cage / housed in pair with the same sex cage mate or with the other sex cage mate / singly housed) & Spline		no	
	Age and procedures at weaning	M	P2	3	Decision-tree (20 situations) + 15 % Rule		no	
C10	Stereotypic behaviours	A	P1, P2 & P3	1, 1, 1	Spline (% of mink performing stereotypy), different for P1, P2 and P3		Choquet	Choquet
	Cage enrichments	R	P1, P2 & P3	1, 1, 1	Decision-tree (27 situations) + 6 % rule, different for P1, P2 and P3		Choquet	
	Fur chewing	A	P1 & P3	1, 1	Index (% of mink with no or very little / moderate / severe / extensive fur chewing) & Spline		Choquet	

| C11 & C12 | Temperament test | A | P1, P2 & P3 | 1, 1, 1 | Index (% of exploratory / expressing other temperament (undecided or aggressive) / fearful mink) & Spline, different for P1, P2 and P3 | Choquet | Choquet |
| | Frequency and duration of handling and transportation | M | P1, P2 & P3 | 1, 1, 1 | Index (average number of handlings of mink < 1 min / 1 min ≤ Handling of mink < 1h / ≥ 1h) & Spline, different for P1, P2 and P3 | Choquet | |

* Type of measurement: observed on the farm may be animal-based (A), resource-based (R) or management-based (M)

Table 4b Criteria 7 to 12

3.3.1.1 Absence of prolonged hunger

The score of a farm with regard to the Criterion of *Absence of prolonged hunger* is calculated from the % of very lean mink for the three periods of the production cycle. So a the first step is to calculate one sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the criterion-score covering the production cycle.

Sub-scores S_1, S_2 and S_3 for Periods 1, 2 and 3
The calculation of the sub-score is the same for each period:
The greater the % of very lean mink, the lower the criterion-score. As a consequence we first have to calculate an intermediate value, for each period, called *index*:

Let I_1 = 100 - % of very lean mink in Period 1
Let I_2 = 100 - % of very lean mink in Period 2
Let I_3 = 100 - % of very lean mink in Period 3

I_i is computed into a score using *I*-spline functions (Figure 8) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ i = 1, 2 or 3

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 1 - Periods 1, 2 and 3			
a_1	0	a_2	-30577.793349020819732686504721 6
b_1	0.036580620948438544171033 0	b_2	1042.461126898846941912779584 5
c_1	-0.0003664038330266726635370 2	c_2	-11.84609744673154274607895 79
d_1	0.00000224705048113386997061	d_2	0.04489265513391030998358 03
k	88		

with i = 1, 2 or 3 according to the period considered while assessing the farm.

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
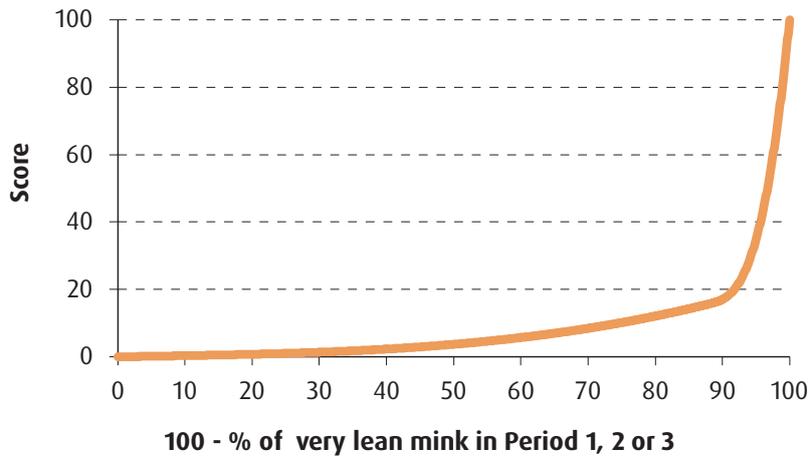
Figure 8 Calculation of the sub-score S_i for the Criterion of **Absence of prolonged** hunger according to the percentage of very lean mink in period i (with i= 1, 2 or 3)

Score for the Criterion of *Absence of prolonged hunger*

The three sub-scores are combined to form the global score for the Criter*ion of Absence of prolonged hunger* using a Choquet integral. Here is the formula:

Choquet integral:

$$C(a_1,\ldots,a_n) = \sum_{i=1}^{n} \left(a_{(i)} - a_{(i-1)}\right) \mu(\{(i),\ldots,(n)\})$$

With the convention $a_{(0)} = 0 \leq a_{(1)} \leq \cdots \leq a_{(n)}$ (*i.e.* a reordering of the periods (or measurements or criteria) depending on the score they obtained, from the worst period (or measurement or criterion to the best one).

$\mu(A)$ is a capacity function defined for any subset A of criteria entering in the composition of the principle. This capacity is subjected to the following constraints:

$$\begin{cases} \mu(\varnothing) = 0 \\ \mu(\{1,\cdots,n\}) = 1 \\ A \subseteq B \Rightarrow \mu(A) \leq \mu(B) \end{cases}$$

The parameters of the Choquet integral used to calculate the criterion 1-score are:

μ_1	=	0.11	μ_{12}	=	0.11
μ_2	=	0.08	μ_{13}	=	0.34
μ_3	=	0.22	μ_{23}	=	0.51

Reminder:

Absence of prolonged hunger-score $=\begin{cases} S_1 + (S_2 - S_1)\mu_{23} + (S_3 - S_2)\mu_3 & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + (S_3 - S_1)\mu_{23} + (S_2 - S_3)\mu_2 & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + (S_1 - S_2)\mu_{13} + (S_3 - S_1)\mu_3 & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + (S_3 - S_2)\mu_{13} + (S_1 - S_3)\mu_1 & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + (S_1 - S_3)\mu_{12} + (S_2 - S_1)\mu_2 & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + (S_2 - S_3)\mu_{12} + (S_1 - S_2)\mu_1 & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$

Therefore, with the μ listed above:

Absence of prolonged hunger-score $=\begin{cases} S_1 + 0.51(S_2 - S_1) + 0.22(S_3 - S_2) & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + 0.51(S_3 - S_1) + 0.08(S_2 - S_3) & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + 0.34(S_1 - S_2) + 0.22(S_3 - S_1) & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + 0.34(S_3 - S_2) + 0.11(S_1 - S_3) & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + 0.11(S_1 - S_3) + 0.08(S_2 - S_1) & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + 0.11(S_2 - S_3) + 0.11(S_1 - S_2) & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$

Where S_1, S_2 and S_3 are the scores obtained by a given farm during Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

3.3.1.2 Absence of prolonged thirst

We evaluate the daily water availability, the functioning and the cleanliness of the water points in different ways according to the period considered. These aspects are assessed in sheds containing animals, with no difference between all the types of animals and species.

For each cage the observer must answer the questions:

- *Is there continuous access to fresh water throughout Period i (including type of water supply, special arrangements for kits and functioning of the automatic watering system)?*

- *Is the watering system (nipple or cup) clean?*

Water availability is assessed in different ways for the three periods of the production cycle according to the type of climate during one period and the animals present on farm during each period (especially kits in Period 2). So the first, sub-scores are calculated at farm level for each of the three periods and, then, these three sub-scores are combined in order to obtain the Criterion-score covering the three periods of the production cycle.

Sub-scores S_1, S_2 and S_3 for Periods 1, 2 and 3
The score S_i (where i = 1, 2 or 3 according to the period considered) for the Criterion of *Absence of prolonged thirst* is assigned to the sample of mink according to the answers to the two questions (Figure 9, Figure 10 and Figure 11) as follows:
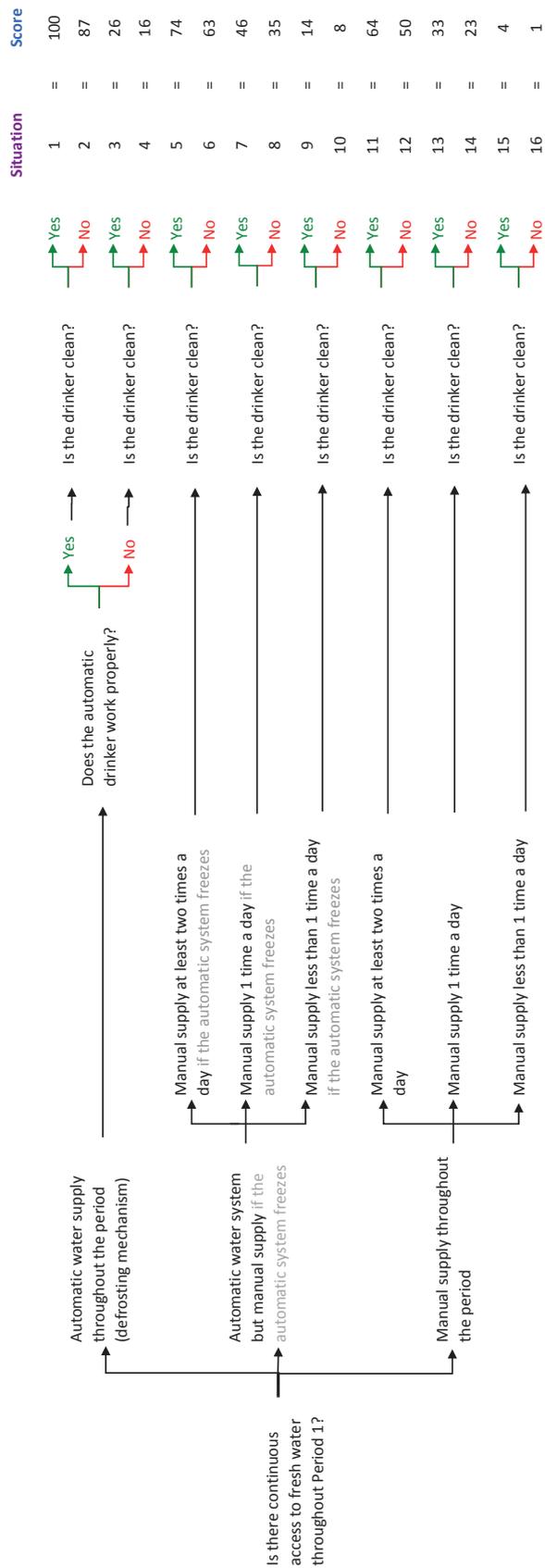
Figure 9 Sub-scores S_1 assigned to combinations of answers to questions on the Criterion of **Absence of prolonged thirst** in Period 1

Situation		Score
1	=	100
2	=	87
3	=	26
4	=	19
5	=	64
6	=	56
7	=	19
8	=	13
9	=	63
10	=	46
11	=	28
12	=	21
13	=	3
14	=	0
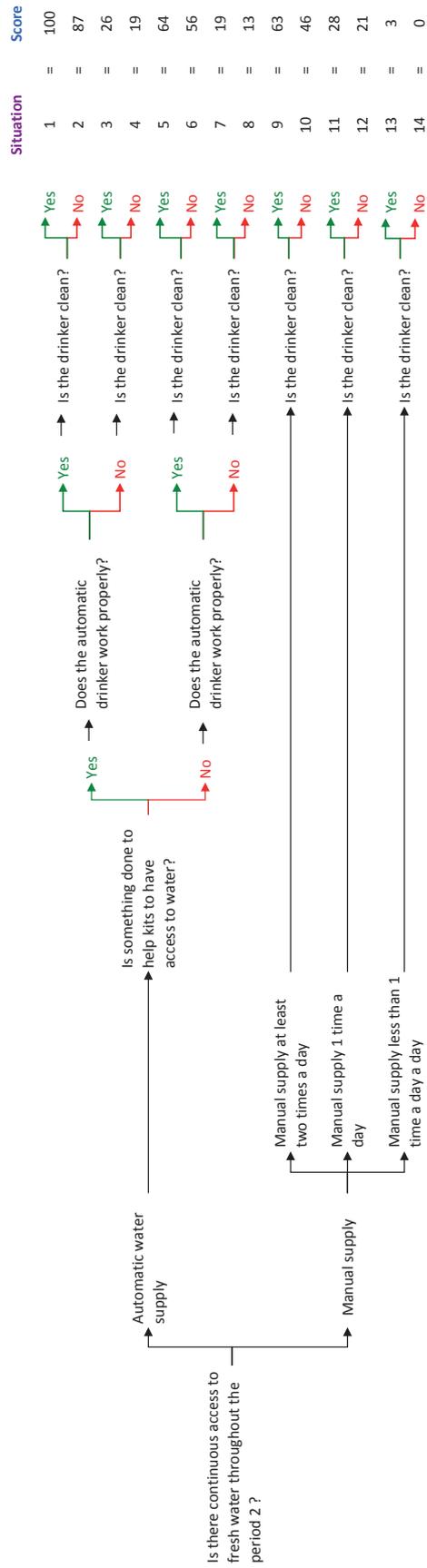
Figure 10 Sub-scores S_2 assigned to combinations of answers to questions on the Criterion of **Absence of prolonged thirst** in Period 2
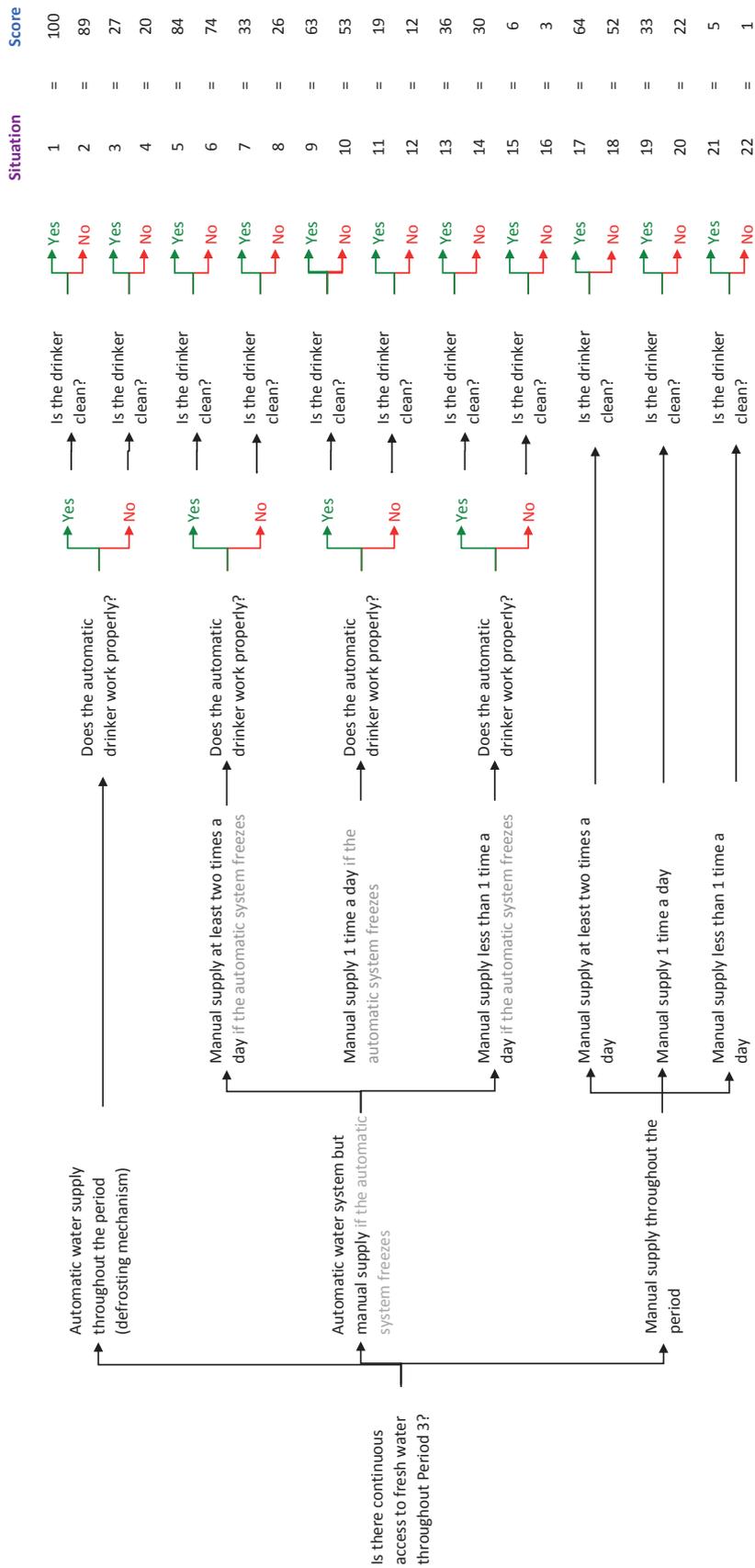
Figure 11 Sub-scores S_3 assigned to combinations of answers to questions on the *Criterion of Absence of prolonged thirst* in Period 3

Since animals may be housed with different water provision conditions, we consider the % of animals in each situation defined by the decision-tree and the final score to be assigned to the farm is the lowest score (= the one corresponding to the worst situation found on the farm) observed on at least 4 % of the animals.

Score for the Criter*ion of Absence of prolonged thirst*
The three sub-scores are combined to form the global score for the Criter*ion of Absence of prolonged thirst* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.00		μ_{12}	=	0.28
μ_2	=	0.28		μ_{13}	=	0.10
μ_3	=	0.04		μ_{23}	=	0.49

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$\text{Absence of prolonged thirst-score} = \begin{cases} S_1 + (S_2 - S_1)\mu_{23} + (S_3 - S_2)\mu_3 & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + (S_3 - S_1)\mu_{23} + (S_2 - S_3)\mu_2 & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + (S_1 - S_2)\mu_{13} + (S_3 - S_1)\mu_3 & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + (S_3 - S_2)\mu_{13} + (S_1 - S_3)\mu_1 & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + (S_1 - S_3)\mu_{12} + (S_2 - S_1)\mu_2 & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + (S_2 - S_3)\mu_{12} + (S_1 - S_2)\mu_1 & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of prolonged thirst-score} = \begin{cases} S_1 + 0.49(S_2 - S_1) + 0.04(S_3 - S_2) & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + 0.49(S_3 - S_1) + 0.28(S_2 - S_3) & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + 0.10(S_1 - S_2) + 0.04(S_3 - S_1) & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + 0.10(S_3 - S_2) + 0.00(S_1 - S_3) & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + 0.28(S_1 - S_3) + 0.28(S_2 - S_1) & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + 0.28(S_2 - S_3) + 0.00(S_1 - S_2) & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the scores obtained by a given farm for Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on…

3.3.1.3 Comfort around resting

Two partial scores are calculated, one for Measurement of *Access to a nest box* and one for Measurement of *Resting quality of the nest box/resting area,* before being combined into a criterion-score.
Moreover, these two measurements are assessed for the three periods of the production cycle. So the first step is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_1^{nba}, S_3^{nba} and S_3^{nba} for Periods 1, 2 and 3 for Measurement of *Access to a nest box*
The score of a farm with regard to Measurement of *Access to a nest box* is calculated from the % of mink with access to a nest box, for the three periods of the production cycle.
The greater the percentage, the greater the measurement score.

The calculation of the sub-score is the same for each period:

In Period 1:
Let P_1 = % of mink with access to a nest box in Period 1

P_1 is computed into a score using *I*-spline functions (Figure 12) as follows:

Score = $a_x + b_x \times P_1 + c_x \times P_1^2 + d_x \times P_1^3$

with $x = 1$ when $P_1 < k$ and $x = 2$ when $P_1 \geq k$

Criterion 3 - Access to a nest box - Period 1			
a_1	0	a_2	-30414.758088391485216561704840
b_1	0.0890991931683837445898888	b_2	1036.9558009659833714977139607
c_1	-0.00101249083228280279363596	c_2	-11.783588095970028319925404 5
d_1	0.000024092727352816118639 5	d_2	0.0446550589530783845204631
k	88		
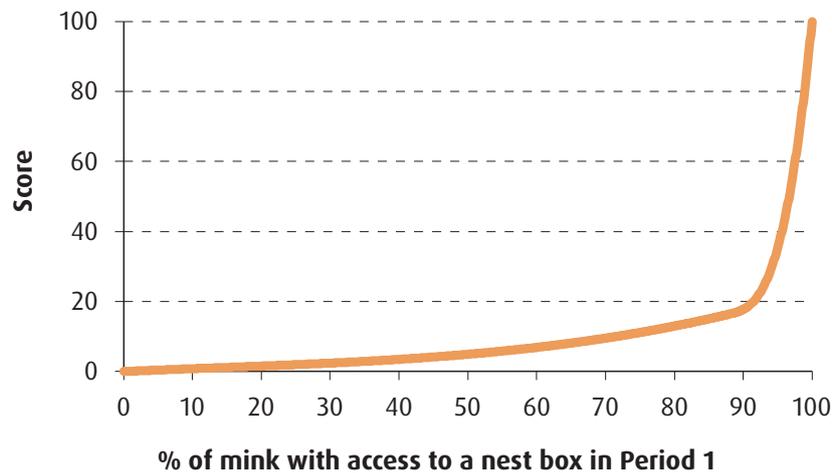
Figure 12 Calculation of the sub-score S_1^{nba} for Measurement of Access to a nest box according to the percentage of mink with access to a nest box in Period 1

In Period 2:
Let P_2 = % of mink with access to a nest box in Period 2

P_2 is computed into a score using *I*-spline functions (Figure 13) as follows:

Score = $a_x + b_x \times P_2 + c_x \times P_2{}^2 + d_x \times P_2{}^3$

with $x = 1$ when $P_2 < k$ and $x = 2$ when $P_2 \geq k$

Criterion 3 - Access to a nest box - Period 2			
a_1	0	a_2	-32802.56499134198384126664830685
b_1	0.1215824048021407893793722	b_2	1118.3907882406729186186566949
c_1	-0.0012689122990455982582791	c_2	-12.7088729297420730546264167
d_1	0.0000173538934356706755981	d_2	0.0481522154664039414573296
k	88		
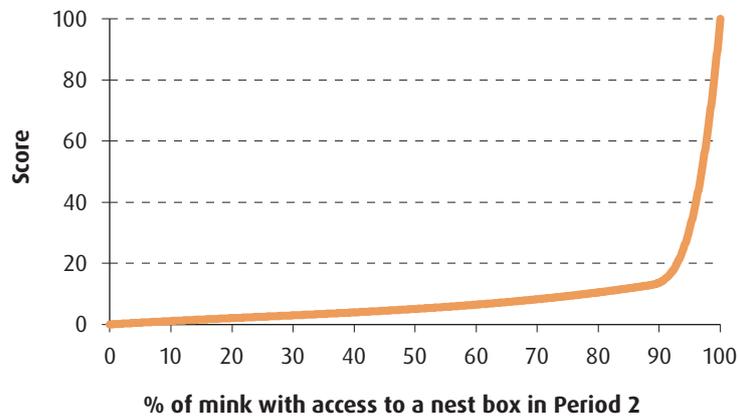
Figure 13 Calculation of the sub-score S_2^{nba} for Measurement of Access to a nest box according to the percentage of mink with access to a nest box in Period 2

In Period 3:
Let P_3 = % of mink with access to a nest box in Period 3

P_3 is computed into a score using *I*-spline functions (Figure 14) as follows:

Score = $a_x + b_x \times P_3 + c_x \times P_3{}^2 + d_x \times P_3{}^3$

with $x = 1$ when $P_3 < k$ and $x = 2$ when $P_3 \geq k$

Criterion 3 - Access to a nest box - Period 3			
a_1	0	a_2	-17020.50980436091413936561346
b_1	0.0727275179541331667776305	b_2	593.8115746644905357243260369
c_1	-0.0008456688129509048849897	c_2	-6.9047872030941590537622687
d_1	0.0000277557826894666521207	d_2	0.0267872243625895123386726
k	86		
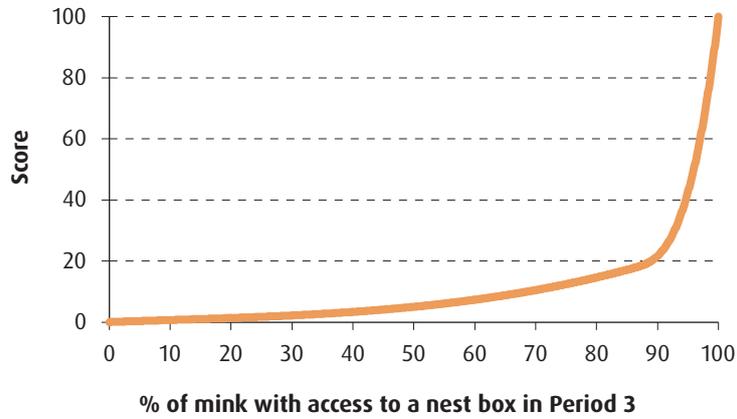
Figure 14 Calculation of the sub-score S_3^{nba} for Measurement of Access to a nest box according to the percentage of mink with access to a nest box in Period 3

Score S^{nba} for Measurement of *Access to a nest box*

The three sub-scores are combined to form the partial score S^{nba} for access to a nest box using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.05			μ_{12}	=	0.59
μ_2	=	0.21			μ_{13}	=	0.05
μ_3	=	0.00			μ_{23}	=	0.21

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^{nba}\text{-score} = \begin{cases} S_1^{nba} + \left(S_2^{nba} - S_1^{nba}\right)\mu_{23} + \left(S_3^{nba} - S_2^{nba}\right)\mu_3 & \text{if} & S_1^{nba} \leq S_2^{nba} \leq S_3^{nba} \\ S_1^{nba} + \left(S_3^{nba} - S_1^{nba}\right)\mu_{23} + \left(S_2^{nba} - S_3^{nba}\right)\mu_2 & \text{if} & S_1^{nba} \leq S_3^{nba} \leq S_2^{nba} \\ S_2^{nba} + \left(S_1^{nba} - S_2^{nba}\right)\mu_{13} + \left(S_3^{nba} - S_1^{nba}\right)\mu_3 & \text{if} & S_2^{nba} \leq S_1^{nba} \leq S_3^{nba} \\ S_2^{nba} + \left(S_3^{nba} - S_2^{nba}\right)\mu_{13} + \left(S_1^{nba} - S_3^{nba}\right)\mu_1 & \text{if} & S_2^{nba} \leq S_3^{nba} \leq S_1^{nba} \\ S_3^{nba} + \left(S_1^{nba} - S_3^{nba}\right)\mu_{12} + \left(S_2^{nba} - S_1^{nba}\right)\mu_2 & \text{if} & S_3^{nba} \leq S_1^{nba} \leq S_2^{nba} \\ S_3^{nba} + \left(S_2^{nba} - S_3^{nba}\right)\mu_{12} + \left(S_1^{nba} - S_2^{nba}\right)\mu_1 & \text{if} & S_3^{nba} \leq S_2^{nba} \leq S_1^{nba} \end{cases}$$

Therefore, with the μ listed above:

$$S^{nba}\text{-score} = \begin{cases} S_1^{nba} + 0.21\left(S_2^{nba} - S_1^{nba}\right) + 0.00\left(S_3^{nba} - S_2^{nba}\right) & \text{if} & S_1^{nba} \leq S_2^{nba} \leq S_3^{nl} \\ S_1^{nba} + 0.21\left(S_3^{nba} - S_1^{nba}\right) + 0.21\left(S_2^{nba} - S_3^{nba}\right) & \text{if} & S_1^{nba} \leq S_3^{nba} \leq S_2^{nt} \\ S_2^{nba} + 0.05\left(S_1^{nba} - S_2^{nba}\right) + 0.00\left(S_3^{nba} - S_1^{nba}\right) & \text{if} & S_2^{nba} \leq S_1^{nba} \leq S_3^{n} \\ S_2^{nba} + 0.05\left(S_3^{nba} - S_2^{nba}\right) + 0.05\left(S_1^{nba} - S_3^{nba}\right) & \text{if} & S_2^{nba} \leq S_3^{nba} \leq S_1^{n} \\ S_3^{nba} + 0.59\left(S_1^{nba} - S_3^{nba}\right) + 0.21\left(S_2^{nba} - S_1^{nba}\right) & \text{if} & S_3^{nba} \leq S_1^{nba} \leq S_2^{nl} \\ S_3^{nba} + 0.59\left(S_2^{nba} - S_3^{nba}\right) + 0.05\left(S_1^{nba} - S_2^{nba}\right) & \text{if} & S_3^{nba} \leq S_2^{nba} \leq S_1^{n} \end{cases}$$

Where S^{nba}_1, S^{nba}_2 and S^{nba}_3 are the scores obtained by a given farm for the partial score S^{nba} in Periods 1, 2 and 3 respectively. μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Sub-scores S^q_1, S^q_2 and S^q_3 for Periods 1, 2 and 3 for Measurement of *Resting quality of the nest box/resting area*
The score of a farm with regard to Measurement of *Resting quality of the nest box/resting area* is calculated from the % of mink in each category of quality of the nest box/resting area (4 levels here):

Level	0	1	2	3
% of mink	$p^q_{i,0}$	$p^q_{i,1}$	$p^q_{i,2}$	$p^q_{i,3}$

$$\text{Let } I_i = \left(100 - \frac{\sum_{k=0}^{3} w^q_{i,j}\, p^q_{i,j}}{w^q_{i,3}} \right)$$

with i = 1, 2 or 3 according to the period considered and j = 0, 1, 2 or 3 according to the level.

Weights	$w^q_{i,0} = 0$	$w^q_{i,1} = 1$	$w^q_{i,2} = 2$	$w^q_{i,3} = 3$

I_i is computed into a score using *I*-spline functions (Figure 15) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ i = 1, 2 or 3

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 3 - Quality of the nest box - Periods 1, 2 and 3			
a_1	0	a_2	-13.6658715834814543654829322
b_1	-0.000000000000009137342158053	b_2	1.0249403687936733398089473
c_1	0.0136171576167599030909861	c_2	-0.0120063516036931442615421
d_1	-0.0000822938927662926754695	d_2	0.0001312353507410065234663
k	40		
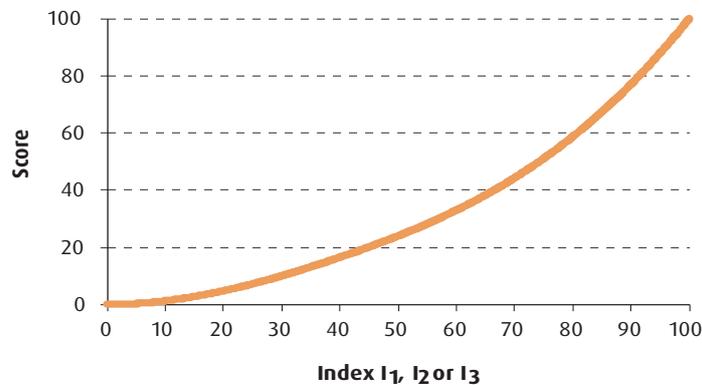
Figure 15 Calculation of the sub-score S^q_i for Measurement of *Resting quality of the nest box/resting area* according to the percentage of mink in each category of quality of the nest box/resting area (with i = 1, 2 or 3 according to the period considered)

Score S^q for Measurement of *Resting quality of the nest box/resting area*

The three sub-scores are combined to form the partial score S^q for Measurement of *Resting quality of the nest box/resting area* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.11		μ_{12}	=	0.60
μ_2	=	0.28		μ_{13}	=	0.11
μ_3	=	0.00		μ_{23}	=	0.29

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

$$S^q\text{-score} = \begin{cases} S_1^q + \left(S_2^q - S_1^q\right)\mu_{23} + \left(S_3^q - S_2^q\right)\mu_3 & \text{if} \quad S_1^q \leq S_2^q \leq S_3^q \\ S_1^q + \left(S_3^q - S_1^q\right)\mu_{23} + \left(S_2^q - S_3^q\right)\mu_2 & \text{if} \quad S_1^q \leq S_3^q \leq S_2^q \\ S_2^q + \left(S_1^q - S_2^q\right)\mu_{13} + \left(S_3^q - S_1^q\right)\mu_3 & \text{if} \quad S_2^q \leq S_1^q \leq S_3^q \\ S_2^q + \left(S_3^q - S_2^q\right)\mu_{13} + \left(S_1^q - S_3^q\right)\mu_1 & \text{if} \quad S_2^q \leq S_3^q \leq S_1^q \\ S_3^q + \left(S_1^q - S_3^q\right)\mu_{12} + \left(S_2^q - S_1^q\right)\mu_2 & \text{if} \quad S_3^q \leq S_1^q \leq S_2^q \\ S_3^q + \left(S_2^q - S_3^q\right)\mu_{12} + \left(S_1^q - S_2^q\right)\mu_1 & \text{if} \quad S_3^q \leq S_2^q \leq S_1^q \end{cases}$$

Therefore, with the μ listed above:

$$S^q\text{-score} = \begin{cases} S_1^q + 0.29\left(S_2^q - S_1^q\right) + 0.00\left(S_3^q - S_2^q\right) & \text{if} \quad S_1^q \leq S_2^q \leq S_3^q \\ S_1^q + 0.29\left(S_3^q - S_1^q\right) + 0.28\left(S_2^q - S_3^q\right) & \text{if} \quad S_1^q \leq S_3^q \leq S_2^q \\ S_2^q + 0.11\left(S_1^q - S_2^q\right) + 0.00\left(S_3^q - S_1^q\right) & \text{if} \quad S_2^q \leq S_1^q \leq S_3^q \\ S_2^q + 0.11\left(S_3^q - S_2^q\right) + 0.11\left(S_1^q - S_3^q\right) & \text{if} \quad S_2^q \leq S_3^q \leq S_1^q \\ S_3^q + 0.60\left(S_1^q - S_3^q\right) + 0.28\left(S_2^q - S_1^q\right) & \text{if} \quad S_3^q \leq S_1^q \leq S_2^q \\ S_3^q + 0.60\left(S_2^q - S_3^q\right) + 0.11\left(S_1^q - S_2^q\right) & \text{if} \quad S_3^q \leq S_2^q \leq S_1^q \end{cases}$$

Where S^q_1, S^q_2 and S^q_3 are the sub-scores obtained by a given farm for Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Score for the Criterion of *Comfort around resting*
The two partial scores are combined to form the global score for the Criterion of Comfort *around resting* using a Choquet integral. The parameters of the Choquet integral are:

μ_{nba}	=	0.49		μ_q	=	0.05

with nba, nest box access and q, quality of the nest box.

Reminder:

Comfort around resting-score $= \begin{cases} S^{nba} + \left(S^q - S^{nba} \right) \mu_q & \text{if} \quad S^{nba} \leq S^q \\ S^q + \left(S^{nba} - S^q \right) \mu_{nba} & \text{if} \quad S^q \leq S^{nba} \end{cases}$

Therefore, with the μ listed above:

Comfort around resting-score $= \begin{cases} S^{nba} + 0.05 \left(S^q - S^{nba} \right) & \text{if} \quad S^{nba} \leq S^q \\ S^q + 0.49 \left(S^{nba} - S^q \right) & \text{if} \quad S^q \leq S^{nba} \end{cases}$

Where S^{nba} and S^q are the partial scores obtained by a given farm for measurements of *Access to a nest box* and *Resting quality of the nest box/resting area* respectively.
μ_f and μ_p are the capacities of measurements of a*ccess to a nest box* and *Resting quality of the nest box/resting area* respectively.

3.3.1.4 Thermal comfort

Two partial scores are calculated, one for Measurement of Protection from exceptional weather conditions and one for Measurement of Nest box material and bedding/nesting material, before being combined into a criterion-score.
Moreover, these two measurements are assessed for the three periods of the production cycle. So the first step is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_2^t, S_2^t and S_3^t for Periods 1, 2 and 3 for Measurement of *Protection from exceptional weather conditions*

Since climate changes between periods, Measurement of Protection from exceptional weather conditions is evaluated differently according to the needs of the mink to be protected against wind, draft or overheating. In Period 1, only protection from the wind is considered. In Periods 2 and 3, all these elements are taken into account and therefore the construction has to be done differently by combining them into a finite number of possible combinations.

In Period 1:

The score of a farm with regard to Measurement of *Protection from exceptional weather conditions* is calculated from the % of mink within each level of the scale used to assess protection from the wind (3 levels here):

Level	0	1	2
% of mink	p_0^t	p_1^t	p_2^t
Let $I_1 = \left(100 - \dfrac{\sum_{j=0}^{2} w_j^t \; p_j^t}{w_2^t} \right)$		with j = 0, 1 or 2 according to the level considered	
Weights	$w_0^t = 0$	$w_1^t = 1$	$w_2^t = 5$

I_1 is computed into a score using *I*-spline functions (Figure 16) as follows:

Score = $a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 4 - Protection from exceptional weather conditions - Period 1			
a_1	0	a_2	4.276940858175949600195 0538
b_1	1.013963114615096028359 1758	b_2	0.586269028812069104006 3548
c_1	-0.015768218002572415015 0151945	c_2	-0.001511748476083917555 9483
d_1	0.000210618857980671083 0036	d_2	0.000005221364102143781 75396
k	30		
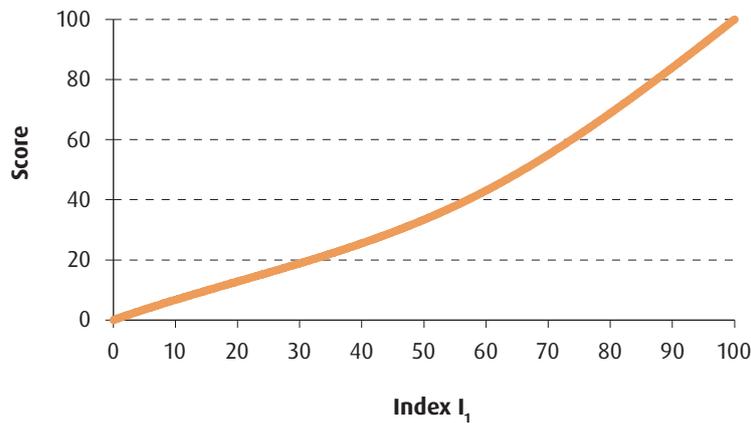
Figure 16 Calculation of the sub-score S_1^t for Measurement of **Protection from exceptional weather** conditions according to the percentage of mink in each category of protection from the wind in Period 1

In Periods 2 and 3:

One score is assigned to Measurement of Protection from exceptional weather conditions according to a decision tree combining the protection from wind, the protection from direct sunlight, the protection from thermal discomfort (is the farm inside or at risk of exceeding the thermal comfort zone) and the presence of means of cooling (Figure 17 and Figure 18). Since the interpretation in terms of welfare is different between the periods considered, the two periods are scored separately. Since animals may be housed with different environmental protection conditions, we consider the % of animals in each situation defined by the decision-tree and the final score to be assigned to the farm is the worst score (= the one corresponding to the worst situation found on the farm) observed on at least 10 % of the animals.

Are the cages in use well protected from the wind?

- **Yes**
- **Partly**
- **No**

Are the cages in use well protected from direct sunlight?

- **Yes**
- **Partly**
- **No**

Is the farm inside the thermal comfort zone?

Leaf answers:
- Yes
- No but there are means of cooling
- No and there is no mean of cooling

Situation		Score
1	=	100
2	=	87
3	=	43
4	=	86
5	=	69
6	=	29
7	=	73
8	=	62
9	=	11
10	=	88
11	=	73
12	=	34
13	=	78
14	=	62
15	=	21
16	=	64
17	=	51
18	=	7
19	=	76
20	=	58
21	=	23
22	=	67
23	=	48
24	=	16
25	=	51
26	=	36
27	=	2

Figure 17 Sub-scores S_2^t assigned to combinations of answers to questions on **Measurement of Protection** from exceptional weather conditions in Period 2

Figure 18 Sub-scores S_3^t assigned to combinations of answers to questions on Measurement of Protection from exceptional weather conditions in Period 3

Score S^p for Measurement of *Protection from exceptional weather conditions*

The three sub-scores are combined to form the partial score S^p for Measurement of *Protection from exceptional weather conditions* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.21		μ_{12}	=	0.59
μ_2	=	0.07		μ_{13}	=	0.21
μ_3	=	0.00		μ_{23}	=	0.10

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$
S^p\text{-score} = \begin{cases}
S_1^p + \left(S_2^p - S_1^p \right) \mu_{23} + \left(S_3^p - S_2^p \right) \mu_3 & \text{if} & S_1^p \le S_2^p \le S_3^p \\
S_1^p + \left(S_3^p - S_1^p \right) \mu_{23} + \left(S_2^p - S_3^p \right) \mu_2 & \text{if} & S_1^p \le S_3^p \le S_2^p \\
S_2^p + \left(S_1^p - S_2^p \right) \mu_{13} + \left(S_3^p - S_1^p \right) \mu_3 & \text{if} & S_2^p \le S_1^p \le S_3^p \\
S_2^p + \left(S_3^p - S_2^p \right) \mu_{13} + \left(S_1^p - S_3^p \right) \mu_1 & \text{if} & S_2^p \le S_3^p \le S_1^p \\
S_3^p + \left(S_1^p - S_3^p \right) \mu_{12} + \left(S_2^p - S_1^p \right) \mu_2 & \text{if} & S_3^p \le S_1^p \le S_2^p \\
S_3^p + \left(S_2^p - S_3^p \right) \mu_{12} + \left(S_1^p - S_2^p \right) \mu_1 & \text{if} & S_3^p \le S_2^p \le S_1^p
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^p\text{-score} = \begin{cases}
S_1^p + 0.10 \left(S_2^p - S_1^p \right) + 0.00 \left(S_3^p - S_2^p \right) & \text{if} & S_1^p \le S_2^p \le S_3^p \\
S_1^p + 0.10 \left(S_3^p - S_1^p \right) + 0.07 \left(S_2^p - S_3^p \right) & \text{if} & S_1^p \le S_3^p \le S_2^p \\
S_2^p + 0.21 \left(S_1^p - S_2^p \right) + 0.00 \left(S_3^p - S_1^p \right) & \text{if} & S_2^p \le S_1^p \le S_3^p \\
S_2^p + 0.21 \left(S_3^p - S_2^p \right) + 0.21 \left(S_1^p - S_3^p \right) & \text{if} & S_2^p \le S_3^p \le S_1^p \\
S_3^p + 0.59 \left(S_1^p - S_3^p \right) + 0.07 \left(S_2^p - S_1^p \right) & \text{if} & S_3^p \le S_1^p \le S_2^p \\
S_3^p + 0.59 \left(S_2^p - S_3^p \right) + 0.21 \left(S_1^p - S_2^p \right) & \text{if} & S_3^p \le S_2^p \le S_1^p
\end{cases}
$$

Where S^p_1, S^p_2 and S^p_3 are the sub-scores obtained by a given farm for Periods 1, 2 and 3.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Sub-scores S_1^n, S_2^n and S_3^n for Periods 1, 2 and 3 for Measurement of *Nest box material and bedding/nesting material*

The score of a farm with regard to Measurement of *Nest box material and bedding/nesting material* is calculated from the % of mink within each level of the scale used to assess nest box material and bedding/nesting material (4 levels here):

Level	0	1	2	3
% of mink	P_0^m	P_1^m	P_2^m	P_3^m

The calculation is the same for the three periods but as the interpretation is different in terms of welfare between periods, the measurement is interpreted separately for these periods and therefore the coefficients of the curve are different.

In Period 1:

$$\text{Let } I_1 = \left(100 - \frac{\sum_{j=0}^{3} w_j^m \, p_j^m}{w_3'^m} \right)$$

with j = 0, 1, 2 or 3 according to the level considered.

Weights	$w_0^m = 0$	$w_1^m = 1$	$w_2^m = 5$	$w_3^m = 10$

I_1 is computed into a score using I-spline functions (Figure 19) as follows:

Score = $a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 4 - Nest box and bedding/nesting material - Period 1			
a_1	0	a_2	-820.32635236856719984643385979
b_1	0.2028352950532869292121774	b_2	32.163602016561434027153 1546
c_1	0.0003932782735833407670133	c_2	-0.41468161127119057551837 50
d_1	0.0000053921281075930936 6104	d_2	0.0018507822634598535774 947
k	77		
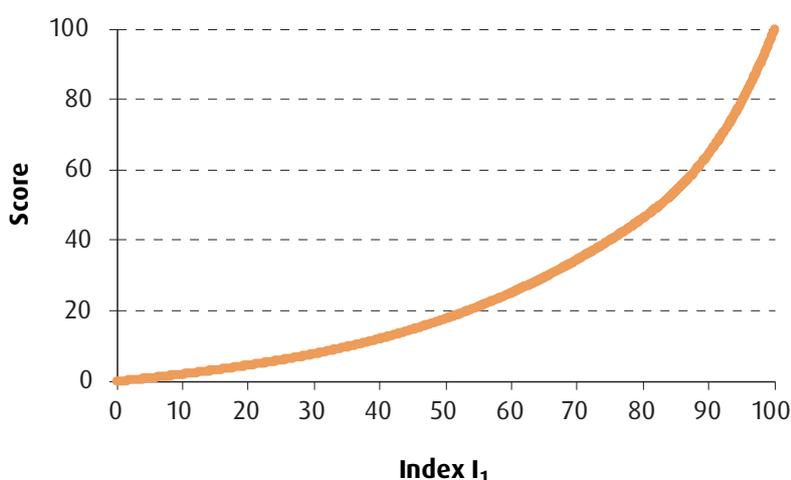
Figure 19 Calculation of the sub-score S_1^n for Measurement of **Nest box material and bedding/nesting material** according to the percentage of mink in each category of nest box material and bedding/nesting material in Period 1

In Period 2:

$$\text{Let } I_2 = \left(100 - \frac{\sum_{j=0}^{3} w_j^m \; p_j^m}{w_3^m} \right)$$

with j = 0, 1, 2 or 3 according to the level considered.

Weights	w_o^m = 0	w_1^m = 2	w_2^m = 8	w_3^m = 19

I_2 is computed into a score using I-spline functions (Figure 20) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2{}^2 + d_x \times I_2{}^3$

with x = 1 when $I_2 < k$ and x = 2 when $I_2 \geq k$

Criterion 4 - Nest box and bedding/nesting material - Period 2	
a_1 0	a_2 -1293.52002814419711285154335520
b_1 0.1870886711664711543612327	b_2 50.5839736992405590854104958
c_1 -0.0024297230022081377047438	c_2 -0.6569347328151176057531302
d_1 0.0000711149290486233622921	d_2 0.0029044699862519956709561
k 77	
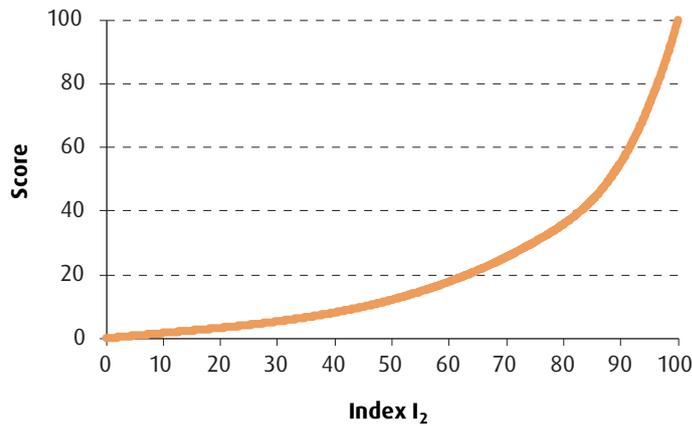
Figure 20 Calculation of the sub-score S_2^n for Measurement of **Nest box material and bedding/nesting material** according to the percentage of mink in each category of nest box material and bedding/nesting material in Period 2

In Period 3:

$$\text{Let } I_3 = \left(100 - \frac{\sum\limits_{j=0}^{3} w_j^m \; p_j^m}{w_3^m} \right)$$

with j = 0, 1, 2 or 3 according to the level considered.

Weights	w_0^m = 0	w_1^m = 1	w_2^m = 5	w_3^m = 12

I_3 is computed into a score using I-spline functions (Figure 21) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3^2 + d_x \times I_3^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 4 - Nest box and bedding/nesting material - Period 3

a_1	0		a_2	-985.9245465190238064678851515
b_1	0.3742768287157148265897888		b_2	38.78692195642178575099902387
c_1	-0.0048607380352113033553096		c_2	-0.5037262644882694040404658
d_1	0.0000849039516287024444543		d_2	0.0022444949956921108821795
k	77			
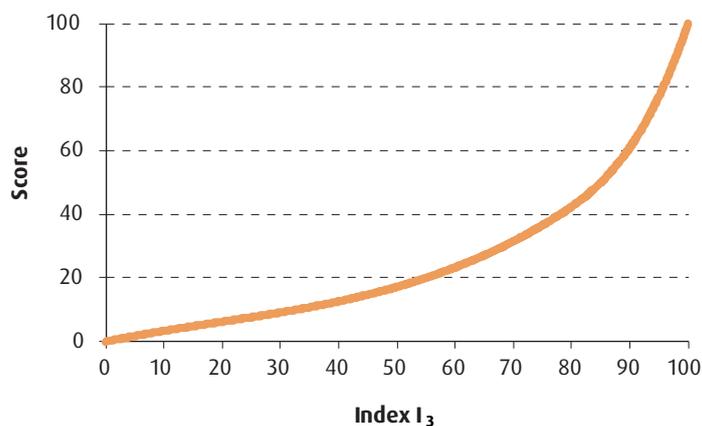
Figure 21 Calculation of the sub-score S_3^n for Measurement of **Nest box material and bedding/nesting material** according to the percentage of mink in each category of nest box material and bedding/nesting material in Period 3

Score S^n for Measurement *Nest box material and bedding/nesting material*

The three sub-scores are combined to form the score S^n for Measurement of *Nest box material and bedding/nesting material* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.00		μ_{12}	=	0.78
μ_2	=	0.20		μ_{13}	=	0.09
μ_3	=	0.00		μ_{23}	=	0.20

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$
S^n\text{-score} = \begin{cases}
S_1^n + \left(S_2^n - S_1^n\right)\mu_{23} + \left(S_3^n - S_2^n\right)\mu_3 & \text{if} \quad S_1^n \le S_2^n \le S_3^n \\
S_1^n + \left(S_3^n - S_1^n\right)\mu_{23} + \left(S_2^n - S_3^n\right)\mu_2 & \text{if} \quad S_1^n \le S_3^n \le S_2^n \\
S_2^n + \left(S_1^n - S_2^n\right)\mu_{13} + \left(S_3^n - S_1^n\right)\mu_3 & \text{if} \quad S_2^n \le S_1^n \le S_3^n \\
S_2^n + \left(S_3^n - S_2^n\right)\mu_{13} + \left(S_1^n - S_3^n\right)\mu_1 & \text{if} \quad S_2^n \le S_3^n \le S_1^n \\
S_3^n + \left(S_1^n - S_3^n\right)\mu_{12} + \left(S_2^n - S_1^n\right)\mu_2 & \text{if} \quad S_3^n \le S_1^n \le S_2^n \\
S_3^n + \left(S_2^n - S_3^n\right)\mu_{12} + \left(S_1^n - S_2^n\right)\mu_1 & \text{if} \quad S_3^n \le S_2^n \le S_1^n
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^n\text{-score} = \begin{cases}
S_1^n + 0.20\left(S_2^n - S_1^n\right) + 0.00\left(S_3^n - S_2^n\right) & \text{if} \quad S_1^n \le S_2^n \le S_3^n \\
S_1^n + 0.20\left(S_3^n - S_1^n\right) + 0.20\left(S_2^n - S_3^n\right) & \text{if} \quad S_1^n \le S_3^n \le S_2^n \\
S_2^n + 0.09\left(S_1^n - S_2^n\right) + 0.00\left(S_3^n - S_1^n\right) & \text{if} \quad S_2^n \le S_1^n \le S_3^n \\
S_2^n + 0.09\left(S_3^n - S_2^n\right) + 0.00\left(S_1^n - S_3^n\right) & \text{if} \quad S_2^n \le S_3^n \le S_1^n \\
S_3^n + 0.78\left(S_1^n - S_3^n\right) + 0.20\left(S_2^n - S_1^n\right) & \text{if} \quad S_3^n \le S_1^n \le S_2^n \\
S_3^n + 0.78\left(S_2^n - S_3^n\right) + 0.00\left(S_1^n - S_2^n\right) & \text{if} \quad S_3^n \le S_2^n \le S_1^n
\end{cases}
$$

Where S_1^n, S_2^n and S_3^n are the sub-scores obtained by a given farm for Measurement of *Nest box material and bedding/nesting material* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities Measurement of *Nest box material and bedding/nesting material* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Score for the Criterion of *Thermal comfort*

The two partial scores are combined to form the global score for the Criterion of *Thermal comfort* using a Choquet integral. The parameters of the Choquet integral are:

μ_p	=	0.68		μ_n	=	0.10

with p, protection from exceptional weather conditions and n, nest box material and bedding/nesting material.

Reminder:

$$\text{Thermal comfort-score} = \begin{cases} S^p + \left(S^n - S^p\right)\mu_n & \text{if} \quad S^p \le S^n \\ S^n + \left(S^p - S^n\right)\mu_p & \text{if} \quad S^n \le S^p \end{cases}$$

Thus, with the μ listed above:

$$\text{Thermal comfort-score-score} = \begin{cases} S^p + 0.68\left(S^n - S^p\right) & \text{if} \quad S^p \le S^n \\ S^n + 0.10\left(S^p - S^n\right) & \text{if} \quad S^n \le S^p \end{cases}$$

Where S^p and S^n are the partial scores obtained by a given farm for Measures *Protection from exceptional weather conditions* and *Nest box material and bedding/nesting material* respectively.
μ_p and μ_n are the capacities of Measures *Protection from exceptional weather conditions* and *Nest box material and bedding/nesting material* respectively.

Where S^p and S^n are the partial scores obtained by a given farm for Measures *Protection from exceptional weather conditions* and *Nest box material and bedding/nesting material* respectively.
μ_p and μ_n are the capacities of Measures *Protection from exceptional weather conditions* and *Nest box material and bedding/nesting material* respectively.

3.3.1.5 Ease of movement

The Criterion of *Ease of movement* is assessed via Measurement of *Space available for moving*. For this measure, two partial scores are calculated, one for Sub-measurement *Area available* and one for Sub-measurement *Cage height*, before being combined into a criterion-score.
Moreover, these two sub-measurements are assessed for the three periods of the production cycle. So the first step is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

The European recommendation for cage size fully meets the requirements of adequate welfare with respect to ease of movement and freedom to display most normal patterns of behaviour. Recommended cage size is 2550cm^2 x 45cm high for one single adult mink or a pair of juveniles or one adult female with her litter. If more than two (young) mink are housed together the floor area must be expanded by 850cm^2 per extra mink.

Sub-scores S_1^{aa}, S_2^{aa} and S_3^{aa} for Periods 1, 2 and 3 for Sub-measurement of *Area available*
To assess Sub-measurement of *Area available*, two sub-measurements are to be considered, Sub-measurement of *Floor area* (in cm^2) in Periods 1, 2 and 3 and Sub-measurement of *Floor area/mink* (in cm^2) only in Period 3, with no difference between the types of animals.
In Periods 1 and 2, Sub-measurement of *Area available* is considered thanks to the score for Sub-measurement of *Floor area*. In Period 3, Sub-measurement of *Area available* is considered thanks to the aggregation of the score for Sub-measurement of *Floor area* and the score for Sub-measurement of *Floor area/mink*.

a) Sub-scores S_1^{aa}, S_2^{aa} and S_{3a}^{aa} for Periods 1, 2 and 3 for Sub-measurement of *Floor area* (*i.e.* sub-scores S$_1$ and S$_2$ for Sub-measurement of *Area available* in Periods 1 and 2)
The score of a farm with regard to Sub-measurement of *Floor area* is calculated from the % of mink within each level of the scale used to assess floor area (3 levels here):

Level	0	1	2
% of mink	P_0^a	P_1^a	P_2^a

$$\text{Let } I_1 = \left(100 - \frac{\sum_{k=0}^{2} w_{i,j}^a \, p_{i,j}^a}{w_{i,2}^a}\right) \quad I_2 = \left(100 - \frac{\sum_{k=0}^{2} w_{i,j}^a \, p_{i,j}^a}{w_{i,2}^a}\right) \quad \text{and} \quad I_{3a} = \left(100 - \frac{\sum_{k=0}^{2} w_{i,j}^a \, p_{i,j}^a}{w_{i,2}^a}\right)$$

with i = 1, 2 or 3 according to the Period and j = 0, 1 or 2 according to the level.

Weights	$w_{i,0}^m$ = 0	$w_{i,1}^m$ = 4	$w_{i,2}^m$ = 15

I_i is computed into a score using I-spline functions (Figure 22) as follows (with i = 1, 2 or 3a according to the period considered):

$$Score = a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3 \qquad i = 1, 2 \text{ or } 3_a$$

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 5 - Floor area - Periods 1, 2 and 3

a_1	0	a_2	-4343.4758040737160627031698823
b_1	0.15302218085316668383377770	b_2	153.4521850919602456997381523
c_1	-0.0018002609513944839523397	c_2	-1.80532001009056575213662665
d_1	0.000078830249733818845664 2	d_2	0.007151457394897534763 9223
k	85		

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
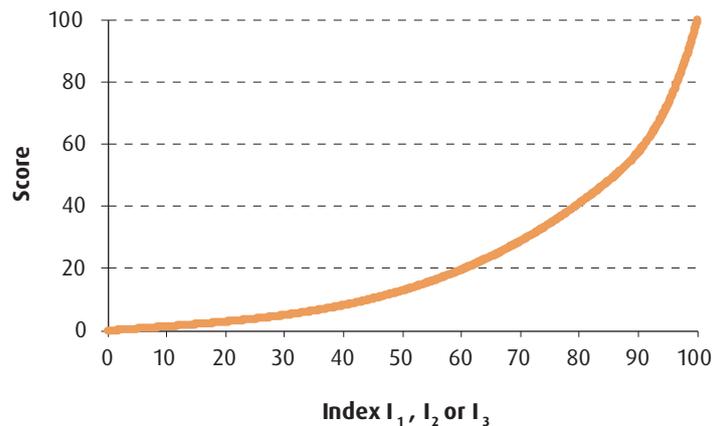
Figure 22 Calculation of the sub-score S_i^{aa} for Sub-measurement of Floor area according to the percentage of mink in each category of floor area (with i= 1, 2 or 3a according to the period considered)

b) Sub-score S_{3b}^{aa} for Period 3 for Sub-measurement of *Floor area/mink*

The score of a farm with regard to Sub-measurement of *Floor area/mink* is calculated from the % of mink in cage with bad area/mink in Period 3:

Let I_{3b} = 100 - % of mink in cage with bad area/mink in Period 3

I_{3b} is computed into a score using *I*-spline functions (Figure 23) as follows:

$$\textbf{\textit{Score = a}}_x + \textbf{\textit{b}}_x \times \textbf{\textit{I}}_{3b} + \textbf{\textit{c}}_x \times \textbf{\textit{I}}_{3b}{}^2 + \textbf{\textit{d}}_x \times \textbf{\textit{I}}_{3b}{}^3 \qquad\qquad i = 1, 2 \text{ or } 3_a$$

with $x = 1$ when $I_{3b} < k$ and $x = 2$ when $I_{3b} \geq k$

Criterion 5 - Floor area/mink - Period 3			
a_1	0	a_2	-42.8909437583104136137990281
b_1	0.16543027808489135788815029	b_2	3.0898128071883275147513359
c_1	-0.0037597790473782033426886	c_2	-0.0702230183471718172327769
d_1	0.00003263045786636644415056	d_2	0.0005361398465110843577705
k	44		
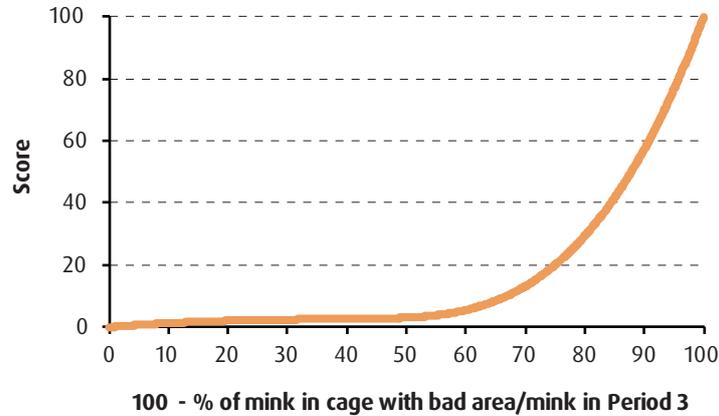
Figure 23 Calculation of the sub-score S_{3b}^{aa} for Sub-measurement of Floor area/mink according to the percentage of mink in cage with bad area/mink in Period 3

c) Sub-scores S$_3$ for Period 3 for Sub-measurement *of Area available*

The two partial scores S_{3a} and S_{3b} are combined to form the sub-score S_3^{aa} for Sub-measurement of *Area available* in Period 3 using a Choquet integral. The parameters of the Choquet integral are:

μ_n	=	0.33
μ_p	=	0.11

with 3a, floor area in Period 3 and 3b, floor area/mink in Period 3.

Reminder:

$$S_3^{aa} = \begin{cases} S_3^a + \left(S_3^b - S_3^a\right)\mu_{3b} & \text{if} \quad S_3^a \le S_3^b \\ S_3^b + \left(S_3^a - S_3^b\right)\mu_{3a} & \text{if} \quad S_3^b \le S_3^a \end{cases}$$

Therefore, with the μ listed above:

$$S_3^{aa} = \begin{cases} S_3^a + 0.11\left(S_3^b - S_3^a\right) & \text{if} \quad S_3^a \le S_3^b \\ S_3^b + 0.33\left(S_3^a - S_3^b\right) & \text{if} \quad S_3^b \le S_3^a \end{cases}$$

Where S_{3a} and S_{3b} are the partial scores obtained by a given farm for Sub-measurements *Floor area* and *Floor area/mink* respectively.
μ_f and μ_p are the capacities of Sub-measurements *Floor area* and *Floor area/mink* respectively.

Score S^aa for Sub-measurement of *Area available*
The three sub-scores are combined to form the partial score S^{aa} for Sub-measurement of *Area available* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.12	μ_{12}	=	0.12
μ_2	=	0.10	μ_{13}	=	0.45
μ_3	=	0.36	μ_{23}	=	0.59

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^{aa}\text{-score} = \begin{cases} S_1^{aa} + \left(S_2^{aa} - S_1^{aa}\right)\mu_{23} + \left(S_3^{aa} - S_2^{aa}\right)\mu_3 & \text{if} \quad S_1^{aa} \le S_2^{aa} \le S_3^{aa} \\ S_1^{aa} + \left(S_3^{aa} - S_1^{aa}\right)\mu_{23} + \left(S_2^{aa} - S_3^{aa}\right)\mu_2 & \text{if} \quad S_1^{aa} \le S_3^{aa} \le S_2^{aa} \\ S_2^{aa} + \left(S_1^{aa} - S_2^{aa}\right)\mu_{13} + \left(S_3^{aa} - S_1^{aa}\right)\mu_3 & \text{if} \quad S_2^{aa} \le S_1^{aa} \le S_3^{aa} \\ S_2^{aa} + \left(S_3^{aa} - S_2^{aa}\right)\mu_{13} + \left(S_1^{aa} - S_3^{aa}\right)\mu_1 & \text{if} \quad S_2^{aa} \le S_3^{aa} \le S_1^{aa} \\ S_3^{aa} + \left(S_1^{aa} - S_3^{aa}\right)\mu_{12} + \left(S_2^{aa} - S_1^{aa}\right)\mu_2 & \text{if} \quad S_3^{aa} \le S_1^{aa} \le S_2^{aa} \\ S_3^{aa} + \left(S_2^{aa} - S_3^{aa}\right)\mu_{12} + \left(S_1^{aa} - S_2^{aa}\right)\mu_1 & \text{if} \quad S_3^{aa} \le S_2^{aa} \le S_1^{aa} \end{cases}$$

Therefore, with the μ listed above:

$$S^{aa}\text{-score} = \begin{cases} S_1^{aa} + 0.59\left(S_2^{aa} - S_1^{aa}\right) + 0.36\left(S_3^{aa} - S_2^{aa}\right) & \text{if} \quad S_1^{aa} \le S_2^{aa} \le S_3^{aa} \\ S_1^{aa} + 0.59\left(S_3^{aa} - S_1^{aa}\right) + 0.10\left(S_2^{aa} - S_3^{aa}\right) & \text{if} \quad S_1^{aa} \le S_3^{aa} \le S_2^{aa} \\ S_2^{aa} + 0.45\left(S_1^{aa} - S_2^{aa}\right) + 0.36\left(S_3^{aa} - S_1^{aa}\right) & \text{if} \quad S_2^{aa} \le S_1^{aa} \le S_3^{aa} \\ S_2^{aa} + 0.45\left(S_3^{aa} - S_2^{aa}\right) + 0.12\left(S_1^{aa} - S_3^{aa}\right) & \text{if} \quad S_2^{aa} \le S_3^{aa} \le S_1^{aa} \\ S_3^{aa} + 0.12\left(S_1^{aa} - S_3^{aa}\right) + 0.10\left(S_2^{aa} - S_1^{aa}\right) & \text{if} \quad S_3^{aa} \le S_1^{aa} \le S_2^{aa} \\ S_3^{aa} + 0.12\left(S_2^{aa} - S_3^{aa}\right) + 0.12\left(S_1^{aa} - S_2^{aa}\right) & \text{if} \quad S_3^{aa} \le S_2^{aa} \le S_1^{aa} \end{cases}$$

Where S^{aa}_1, S^{aa}_2 and S^{aa}_3 are the sub-scores obtained by a given farm for Sub-measurement of A*rea available* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Sub-measurement of *Area available* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made from the measurements in period 1 and 2 and so on...

Sub-scores S^h_1, S^h_2 and S^h_3 for Periods 1, 2 and 3 for Sub-measurement of *Cage height*

The score of a farm with regard to Sub-measurement of *Cage height* is calculated from the % of mink within each level of the scale used to assess cage height (3 levels here):

Level	0	1	2
% of mink	$P^h_{i,0}$	$P^h_{i,1}$	$P^h_{i,2}$

$$\text{Let } I_i = \left(100 - \frac{\sum_{k=0}^{2} w^h_{i,j}\, p^h_{i,j}}{w^h_{i,2}} \right)$$

with i = 1, 2 or 3 according to the period and j = 0, 1 or 2 according to the level...

Weights	$W^h_{i,0} = 0$	$W^h_{i,1} = 1$	$W^h_{i,2} = 5$

I_i is computed into a score using *I*-spline functions (Figure 24) as follows:

$$\textbf{Score} = \textbf{\textit{a}}_x + \textbf{\textit{b}}_x \times \textbf{\textit{I}}_i + \textbf{\textit{c}}_x \times \textbf{\textit{I}}_i^2 + \textbf{\textit{d}}_x \times \textbf{\textit{I}}_i^3 \qquad i = 1, 2 \text{ or } 3$$

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 5 - Floor area/mink - Period 3

a_1	0	a_2	-17.8675694095432788799371338
b_1	0.42434080698224228019257643	b_2	1.4963949714896713771850045
c_1	-0.0022516430531387401567378	c_2	-0.0236927263423259183705571
d_1	0.0000622147804271812240049	d_2	0.0002051553356838930596701
k	50		
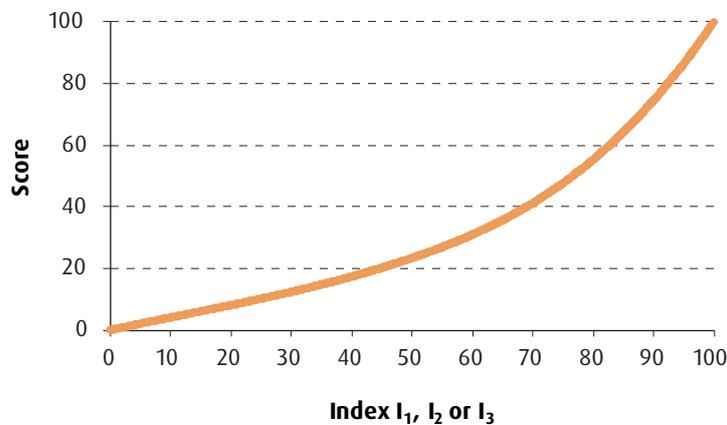
Figure 24 Calculation of the sub-score S^h_i for Sub-measurement of Cage height according to the percentage of mink in each category of cage height (with i= 1, 2 or 3 according to the period considered)

Score S^h for Sub-measurement of *Cage height*

The three sub-scores are combined to form the partial score S^h for Sub-measurement of *Cage height* using a Choquet integral. The parameters of the Choquet integral are:

μ_1 = 0.12 μ_{12} = 0.17

μ_2 = 0.14 μ_{13} = 0.53

μ_3 = 0.50 μ_{23} = 0.50

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$
S^h\text{-score} = \begin{cases}
S_1^h + \left(S_2^h - S_1^h\right)\mu_{23} + \left(S_3^h - S_2^h\right)\mu_3 & \text{if} & S_1^h \leq S_2^h \leq S_3^h \\
S_1^h + \left(S_3^h - S_1^h\right)\mu_{23} + \left(S_2^h - S_3^h\right)\mu_2 & \text{if} & S_1^h \leq S_3^h \leq S_2^h \\
S_2^h + \left(S_1^h - S_2^h\right)\mu_{13} + \left(S_3^h - S_1^h\right)\mu_3 & \text{if} & S_2^h \leq S_1^h \leq S_3^h \\
S_2^h + \left(S_3^h - S_2^h\right)\mu_{13} + \left(S_1^h - S_3^h\right)\mu_1 & \text{if} & S_2^h \leq S_3^h \leq S_1^h \\
S_3^h + \left(S_1^h - S_3^h\right)\mu_{12} + \left(S_2^h - S_1^h\right)\mu_2 & \text{if} & S_3^h \leq S_1^h \leq S_2^h \\
S_3^h + \left(S_2^h - S_3^h\right)\mu_{12} + \left(S_1^h - S_2^h\right)\mu_1 & \text{if} & S_3^h \leq S_2^h \leq S_1^h
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^h\text{-score} = \begin{cases}
S_1^h + 0.50\left(S_2^h - S_1^h\right) + 0.50\left(S_3^h - S_2^h\right) & \text{if} & S_1^h \leq S_2^h \leq S_3^h \\
S_1^h + 0.50\left(S_3^h - S_1^h\right) + 0.14\left(S_2^h - S_3^h\right) & \text{if} & S_1^h \leq S_3^h \leq S_2^h \\
S_2^h + 0.53\left(S_1^h - S_2^h\right) + 0.50\left(S_3^h - S_1^h\right) & \text{if} & S_2^h \leq S_1^h \leq S_3^h \\
S_2^h + 0.53\left(S_3^h - S_2^h\right) + 0.12\left(S_1^h - S_3^h\right) & \text{if} & S_2^h \leq S_3^h \leq S_1^h \\
S_3^h + 0.17\left(S_1^h - S_3^h\right) + 0.14\left(S_2^h - S_1^h\right) & \text{if} & S_3^h \leq S_1^h \leq S_2^h \\
S_3^h + 0.17\left(S_2^h - S_3^h\right) + 0.12\left(S_1^h - S_2^h\right) & \text{if} & S_3^h \leq S_2^h \leq S_1^h
\end{cases}
$$

Where S^h_1, S^h_2 and S^h_3 are the sub-scores obtained by a given farm for Sub-measurement of *Cage height* in Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Sub-measurement of *Cage height* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Score for the Criterion of *Ease of movement*

The two partial scores are combined to form the overall score for the Criterion of *Ease of movement* using a Choquet integral. The parameters of the Choquet integral are:

μ_{aa} = 0.51 μ_h = 0.14

with aa, area available and h, cage height.

Reminder:

$$\text{Ease of movement-score} = \begin{cases} S^{aa} + \left(S^{h} - S^{aa}\right)\mu_{h} & \text{if} \quad S^{aa} \leq S^{h} \\ S^{h} + \left(S^{aa} - S^{h}\right)\mu_{aa} & \text{if} \quad S^{h} \leq S^{aa} \end{cases}$$

Therefore, with the μ listed above:

$$\text{Ease of movement-score} = \begin{cases} S^{aa} + 0.14\left(S^{h} - S^{aa}\right) & \text{if} \quad S^{aa} \leq S^{h} \\ S^{h} + 0.51\left(S^{aa} - S^{h}\right) & \text{if} \quad S^{h} \leq S^{aa} \end{cases}$$

Where S^{aa} and S^{b} are the partial scores obtained by a given farm for Sub-measurements of A*rea available* and *Cage height* respectively.
μ_{a} and μ_{b} are the capacities of Sub-measurements of A*rea available* and *Cage height* respectively.

3.3.1.6 Absence of injuries

The score of a farm with regard to the Crite*rion of Absence of injuries* is calculated from the % of mink within each of the four levels of the scale used to assess injuries, for the three periods of the production cycle. So the first step is to calculate one sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the criterion-score covering the production cycle.

Sub-scores S_1, S_2 and S_3 for Periods 1, 2 and 3 for the Crite*rion of Absence of injuries*
The calculation of the sub-score is the same for each period.
The score of a farm with regard to the absence of injuries is calculated from the % of mink within each of the four level of the scale used to assess injuries (4 levels here):

Level	0	1	2	3
% of mink	$P_{i,0}(X)$	$P_{i,1}(X)$	$P_{i,2}(X)$	$P_{i,3}(X)$

The calculation is the same for the three periods but as the interpretation is different in terms of welfare between periods, the measurement is interpreted separately for these periods and therefore the coefficients of the curve are different.

In Period 1:

$$\text{Let } I_i = \left(100 - \frac{\sum_{k=0}^{3} w_{i,j}\, p_{i,j}}{w_{i,3}} \right)$$

with i = 1, 2 or 3 according to the period considered and j = 0, 1, 2 or 3 according to the level..

Weights	$W_{i,0}$ = 0	$W_{i,1}$ = 3	$W_{i,2}$ = 6	$W_{i,3}$ = 10

I_i is computed into a score using *I*-spline functions (Figure 25) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ i = 1, 2 or 3

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 6 - Absence of injuries - Periods 1, 2 and 3			
a_1	0	a_2	-1397.2944729703920074825873598
b_1	0.000000000000004373770622918	b_2	58.22060347480139341769245522
c_1	-0.0000000000000180651242609	c_2	-0.80861949793387299993401103
d_1	0.0000178202971656746584250	d_2	0.003761429104729826968686505
k	72		
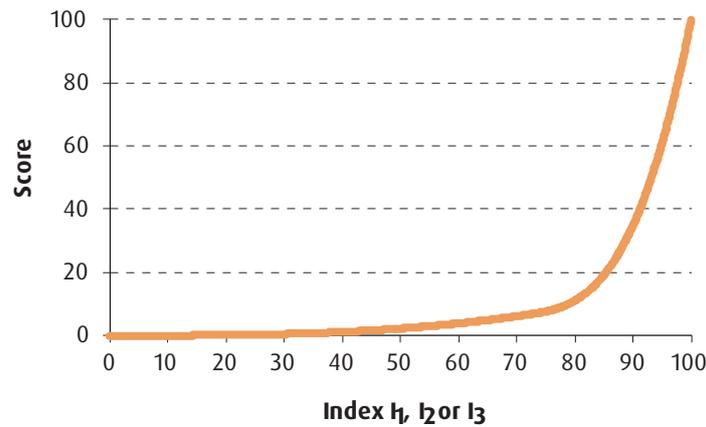
Figure 25 Calculation of the sub-score S_i for the Criterion of **Absence of injuries** according to the percentage of mink in each category of injuries (with i = 1, 2 or 3 according to the period considered)

Score for the Criter*ion of Absence of injuries*

The three sub-scores are combined to form the overall score for the Criter*ion of Absence of injuries* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.00		μ_{12}	=	0.19
μ_2	=	0.19		μ_{13}	=	0.39
μ_3	=	0.14		μ_{23}	=	0.40

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$\text{Absence of injuries-score} = \begin{cases} S_1 + \left(S_2 - S_1\right)\mu_{23} + \left(S_3 - S_2\right)\mu_3 & \text{if} & S_1 \le S_2 \le S_3 \\ S_1 + \left(S_3 - S_1\right)\mu_{23} + \left(S_2 - S_3\right)\mu_2 & \text{if} & S_1 \le S_3 \le S_2 \\ S_2 + \left(S_1 - S_2\right)\mu_{13} + \left(S_3 - S_1\right)\mu_3 & \text{if} & S_2 \le S_1 \le S_3 \\ S_2 + \left(S_3 - S_2\right)\mu_{13} + \left(S_1 - S_3\right)\mu_1 & \text{if} & S_2 \le S_3 \le S_1 \\ S_3 + \left(S_1 - S_3\right)\mu_{12} + \left(S_2 - S_1\right)\mu_2 & \text{if} & S_3 \le S_1 \le S_2 \\ S_3 + \left(S_2 - S_3\right)\mu_{12} + \left(S_1 - S_2\right)\mu_1 & \text{if} & S_3 \le S_2 \le S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of injuries-score} = \begin{cases} S_1 + 0.40\left(S_2 - S_1\right) + 0.14\left(S_3 - S_2\right) & \text{if} & S_1 \leq S_2 \leq S_3 \\ S_1 + 0.40\left(S_3 - S_1\right) + 0.19\left(S_2 - S_3\right) & \text{if} & S_1 \leq S_3 \leq S_2 \\ S_2 + 0.39\left(S_1 - S_2\right) + 0.14\left(S_3 - S_1\right) & \text{if} & S_2 \leq S_1 \leq S_3 \\ S_2 + 0.39\left(S_3 - S_2\right) + 0.00\left(S_1 - S_3\right) & \text{if} & S_2 \leq S_3 \leq S_1 \\ S_3 + 0.19\left(S_1 - S_3\right) + 0.19\left(S_2 - S_1\right) & \text{if} & S_3 \leq S_1 \leq S_2 \\ S_3 + 0.19\left(S_2 - S_3\right) + 0.00\left(S_1 - S_2\right) & \text{if} & S_3 \leq S_2 \leq S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the scores obtained by a given farm for the Criter*ion of Absence of injuries* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

3.3.1.7 Absence of disease

Four partial scores are calculated, one for Measurement of *Mortality*, one for Measurement of *Diarrhoea*, one for Measurement of *Lameness or impaired movement* and one for Measurement of *Obviously sick animals*, before being combined into a criterion-score.

Moreover, these four measurements are assessed for the three periods of the production cycle. So the first step is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these four measurements.

Sub-scores S_1^m, S_2^m and S_3^m for Periods 1, 2 and 3 for Measurement of *Mortality*
In Period 1:
We focus on the male and female mink selected as breeders from December 1st or the end of pelting. Pelted mink are not included.

The score of a farm with regard to Measurement of *Mortality* in Period 1 is calculated from the % of dead mink.

Let I_1 = 100 - % of dead mink in Period 1

Let $J_1 = \dfrac{I_1 - 70}{100 - 70} \times 100$ if $I_1 \geq 70$

$J_1 = 0$ if $I_1 < 70$

J_1 is computed into a score using *I*-spline functions (Figure 26) as follows:

Score = $a_x + b_x \times J_1 + c_x \times J_1^2 + d_x \times J_1^3$

with $x = 1$ when $J_1 < k$ and $x = 2$ when $J_1 \geq k$

Criterion 7 - Mortality - Period 1			
a_1	0	a_2	-704.798202381435885399696417
b_1	0.134156711997245770007225	b_2	30.777556765615646128253502
c_1	-0.001944300173679939288534	c_2	-0.446051546713012447842317
d_1	0.000042112360006064882044	d_2	0.002187557992963076475972
k	69		
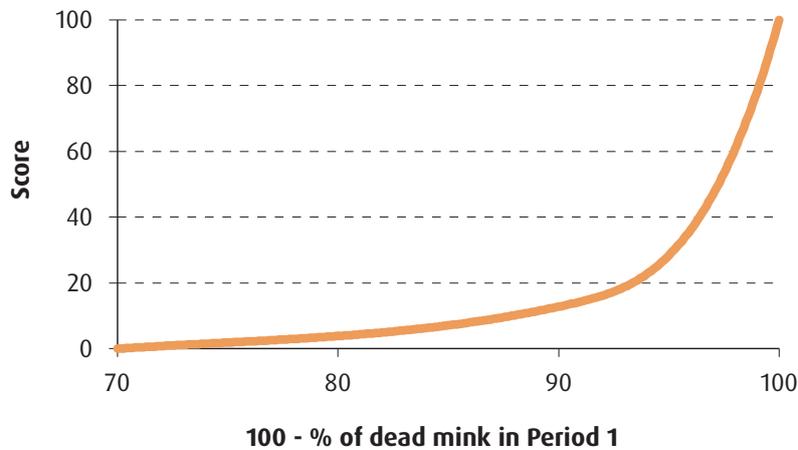
Figure 26 Calculation of the sub-score S_1^m for Measurement of **Mortality** according to the percentage of dead mink in Period 1

In Period 2:
We focus on the male and female breeders since March 1st, just before mating. The mortality in Period 2 is evaluated on the farm in the following 3 sub-periods:

2a. March 1st to May 14th (from the start of mating to mid lactation)
  › Here we add to Period 2 the mortality related to mating, gestation and delivery.

2b. May 15th to June 15th (from the time all kits are born and dead kits can be reliably counted to weaning).

2c. June 16th to July 15th (from normal weaning time to separation).

Mortality data is registered by sub-period for the welfare evaluation in Period 2.
Therefore, the first step is to calculate the three sub-scores for each sub-period of Period 2 for mortality, then to aggregate the three sub-scores obtained for each sub-period 2a, 2b and 2c in order to have the sub-score for Measurement of *Mortality* in Period 2.

a) Sub-partial scores S$_{2a}$, S$_{2b}$ and S$_{2c}$ for *Measurement of Mortality* in Period 2

The score of a farm with regard to Measurement of *Mortality* in Sub-periods 2a, 2b and 2c is calculated from the % of dead mink.

Sub-period 2a:

Let I_{2a} = 100 - % of dead mink in Sub-period 2a

$$\text{Let } J_{2a} = \frac{I_{2a} - 70}{100 - 70} \times 100 \quad \text{if } I_{2a} \geq 70$$

$$J_{2a} = 0 \quad \text{if } I_{2a} < 70$$

J_{2a} is computed into a score using *I*-spline functions (Figure 27) as follows:

Score = a$_x$ + b$_x$ ×J$_{2a}$ + c$_x$ × J$_{2a}$^{2} + d$_x$ × J$_{2a}$^{3}

with $x = 1$ when $J_{2a} < k$ and $x = 2$ when $J_{2a} \geq k$

Criterion 7 - Mortality - Sub-period 2a			
a_1	0	a_2	-797.116467059056162725028163
b_1	0.101041623675652073033264	b_2	34.263175836771253557344 6075
c_1	-0.0014434517668406184574825	c_2	-0.489473939432021332152 0896
d_1	0.0000415835789749478980772	d_2	0.002365538277724382916 4893
k	70		
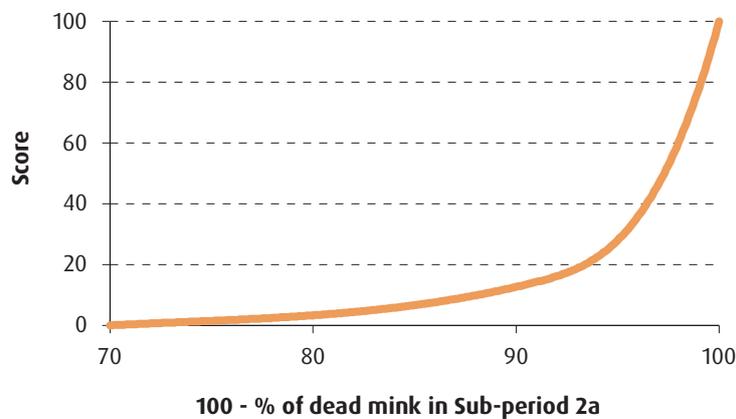
Figure 27 Calculation of the sub-score S_{2a}^{m} for Measurement **of Mortality** according to the percentage of dead mink in Sub-period 2a

Sub-period 2b:

Let I_{2b} = 100 - % of dead mink in Sub-period 2b

Let $J_{2b} = \dfrac{I_{2b} - 60}{100 - 60} \times 100$ if $I_{2b} \geq 60$

$J_{2b} = 0$ if $I_{2b} < 60$

J_{2b} is computed into a score using *I*-spline functions (Figure 28) as follows:

Score = $a_x + b_x \times J_{2b} + c_x \times J_{2b}{}^2 + d_x \times J_{2b}{}^3$

with $x = 1$ when $J_{2b} < k$ and $x = 2$ when $J_{2b} \geq k$

Criterion 7 - Mortality - Sub-period 2b			
a_1	0	a_2	-85.276492790599121462946 6413
b_1	0.106780607302266877800 5340	b_2	4.7582256684201595930971962
c_1	-0.0019414655873093323180251	c_2	-0.0865131939686595435867744
d_1	0.0000620299360631784653169	d_2	0.0005745858656352904056744
k	55		
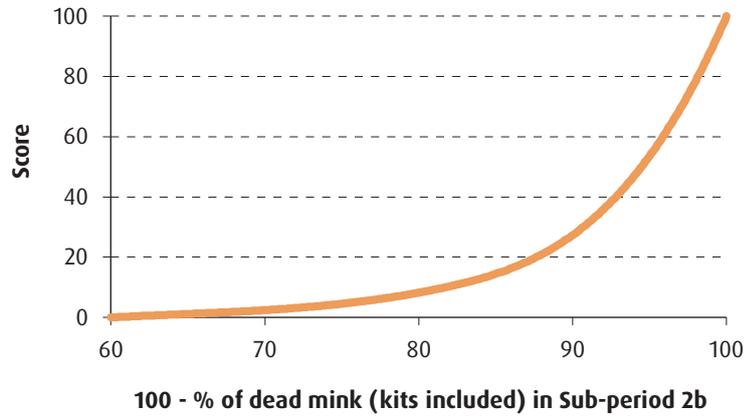
Figure 28 Calculation of the sub-score S_{2b}^{m} for Measurement of Mortality according to the percentage of dead mink (kits included) in Sub-period 2b

Sub-period 2c:

Let I_{2c} = 100 - % of dead mink in Sub-period 2c

$$\text{Let } J_{2c} = \frac{I_{2c} - 60}{100 - 60} \times 100 \quad \text{if } I_{2c} \geq 60$$

$$J_{2c} = 0 \quad \text{if } I_{2c} < 60$$

J_{2c} is computed into a score using *I*-spline functions (Figure 29) as follows:

Score = $a_x + b_x \times J_{2c} + c_x \times J_{2c}^{2} + d_x \times J_{2c}^{3}$

with $x = 1$ when $J_{2c} < k$ and $x = 2$ when $J_{2c} \geq k$

Criterion 7 - Mortality - Sub-period 2c			
a_1	0	a_2	-118.69545733251510455374955 20
b_1	0.17696371760715351451054 29	b_2	6.65126139017907203054846 83
c_1	-0.00321752213831084498546 49	c_2	-0.120932025274429227890 13 83
d_1	0.00004946833993807012603 29	d_2	0.000762889571058970503 66 83
k	55		
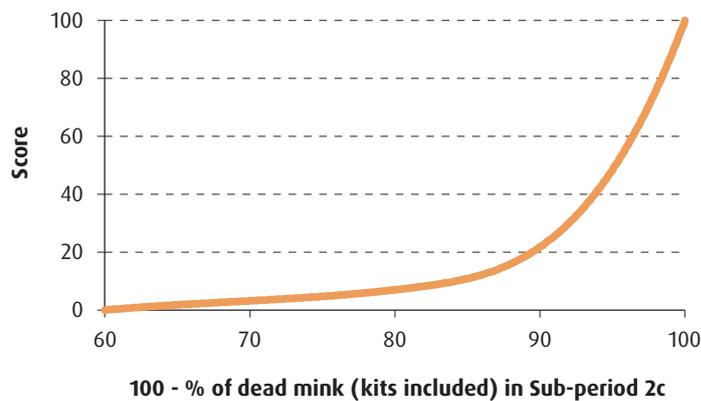
Figure 29 Calculation of the sub-score S_{2c}^{m} for Measurement of **Mortality** according to the percentage of dead mink (kits included) in Sub-period 2c

b) Sub-score S_2^m for *Measurement of Mortality in Period 2*

The three sub-partial-scores are combined to form Sub-score S_2^m for Measurement of Mortality in Period 2 using a Choquet integral. The parameters of the Choquet integral are:

μ_{2a} = 0.32 μ_{2a2b} = 0.35

μ_{2b} = 0.15 μ_{2a2c} = 0.48

μ_{2c} = 0.15 μ_{2b2c} = 0.15

with 2a = Sub-period 2a, 2b = Sub-period 2b and 2c = Sub-period 2c

Reminder:

$$S_2^m\text{-score} = \begin{cases} S_{2a}^m + \left(S_{2b}^m - S_{2a}^m\right)\mu_{2b2c} + \left(S_{2c}^m - S_{2b}^m\right)\mu_{2c} & \text{if} \quad S_{2a}^m \leq S_{2b}^m \leq S_{2c}^m \\ S_{2a}^m + \left(S_{2c}^m - S_{2a}^m\right)\mu_{2b2c} + \left(S_{2b}^m - S_{2c}^m\right)\mu_{2b} & \text{if} \quad S_{2a}^m \leq S_{2c}^m \leq S_{2b}^m \\ S_{2b}^m + \left(S_{2a}^m - S_{2b}^m\right)\mu_{2a2c} + \left(S_{2c}^m - S_{2a}^m\right)\mu_{2c} & \text{if} \quad S_{2b}^m \leq S_{2a}^m \leq S_{2c}^m \\ S_{2b}^m + \left(S_{2c}^m - S_{2b}^m\right)\mu_{2a2c} + \left(S_{2a}^m - S_{2c}^m\right)\mu_{2a} & \text{if} \quad S_{2b}^m \leq S_{2c}^m \leq S_{2a}^m \\ S_{2c}^m + \left(S_{2a}^m - S_{2c}^m\right)\mu_{2a2b} + \left(S_{2b}^m - S_{2a}^m\right)\mu_{2b} & \text{if} \quad S_{2c}^m \leq S_{2a}^m \leq S_{2b}^m \\ S_{2c}^m + \left(S_{2b}^m - S_{2c}^m\right)\mu_{2a2b} + \left(S_{2a}^m - S_{2b}^m\right)\mu_{2a} & \text{if} \quad S_{2c}^m \leq S_{2b}^m \leq S_{2a}^m \end{cases}$$

Therefore, with the μ listed above:

$$S_2^m\text{-score} = \begin{cases} S_{2a}^m + 0.15\left(S_{2b}^m - S_{2a}^m\right) + 0.15\left(S_{2c}^m - S_{2b}^m\right) & \text{if} \quad S_{2a}^m \leq S_{2b}^m \leq S_{2c}^m \\ S_{2a}^m + 0.15\left(S_{2c}^m - S_{2a}^m\right) + 0.15\left(S_{2b}^m - S_{2c}^m\right) & \text{if} \quad S_{2a}^m \leq S_{2c}^m \leq S_{2b}^m \\ S_{2b}^m + 0.48\left(S_{2a}^m - S_{2b}^m\right) + 0.15\left(S_{2c}^m - S_{2a}^m\right) & \text{if} \quad S_{2b}^m \leq S_{2a}^m \leq S_{2c}^m \\ S_{2b}^m + 0.48\left(S_{2c}^m - S_{2b}^m\right) + 0.32\left(S_{2a}^m - S_{2c}^m\right) & \text{if} \quad S_{2b}^m \leq S_{2c}^m \leq S_{2a}^m \\ S_{2c}^m + 0.35\left(S_{2a}^m - S_{2c}^m\right) + 0.15\left(S_{2b}^m - S_{2a}^m\right) & \text{if} \quad S_{2c}^m \leq S_{2a}^m \leq S_{2b}^m \\ S_{2c}^m + 0.35\left(S_{2b}^m - S_{2c}^m\right) + 0.32\left(S_{2a}^m - S_{2b}^m\right) & \text{if} \quad S_{2c}^m \leq S_{2b}^m \leq S_{2a}^m \end{cases}$$

Where S_{2a}^m, S_{2b}^m and S_{2c}^m are the scores obtained by a given farm for the partial score S_2^m in Sub-periods 2a, 2b and 2c respectively.
μ_{2a}, μ_{2b} and μ_{2c} are the capacities of Sub-periods 2a, 2b and 2c respectively.
μ_{2a2b} is the capacity of the group made of Sub-periods 2a and 2b and so on...

In Period 3:
This period is defined for the evaluation of mortality in dams and juveniles after separation /beginning of growth period from July 16th.
I_3 = 100 - % of dead mink in Period 3

Let $J_3 = \dfrac{I_3 - 70}{100 - 70} \times 100$ if $I_3 \geq 70$

$J_3 = 0$ if $I_3 < 70$

J_3 is computed into a score using *I*-spline functions (Figure 30) as follows:

$$Score = a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 7 - Mortality - Period 3			
a_1	0	a_2	-8243.26118891410078504122279367
b_1	0.0503159278019161895767475	b_2	297.999522781923531056236 2429
c_1	0.0051241101613289548322161	c_2	-3.5846254510464459208662902
d_1	0.0000271017847319162787979	d_2	0.0143895634206879109023847
k	83		
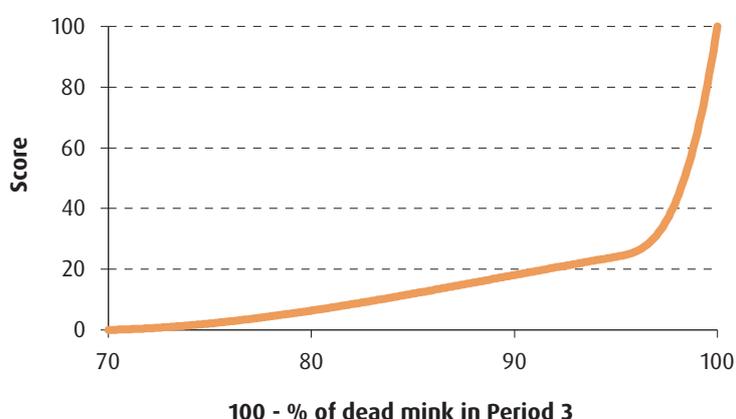
Figure 30 Calculation of the sub-score S_3^m for Measurement of **Mortality** according to the percentage of dead mink in Period 3

Score Sᵐ for Measurement of Mortality
The three sub-scores are combined to form the partial score S^m for Measurement of *Mortality* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.27		μ_{12}	=	0.28
μ_2	=	0.18		μ_{13}	=	0.51
μ_3	=	0.22		μ_{23}	=	0.22

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^m\text{-score} = \begin{cases} S_1^m + \left(S_2^m - S_1^m\right)\mu_{23} + \left(S_3^m - S_2^m\right)\mu_3 & \text{if} \quad S_1^m \leq S_2^m \leq S_3^m \\ S_1^m + \left(S_3^m - S_1^m\right)\mu_{23} + \left(S_2^m - S_3^m\right)\mu_2 & \text{if} \quad S_1^m \leq S_3^m \leq S_2^m \\ S_2^m + \left(S_1^m - S_2^m\right)\mu_{13} + \left(S_3^m - S_1^m\right)\mu_3 & \text{if} \quad S_2^m \leq S_1^m \leq S_3^m \\ S_2^m + \left(S_3^m - S_2^m\right)\mu_{13} + \left(S_1^m - S_3^m\right)\mu_1 & \text{if} \quad S_2^m \leq S_3^m \leq S_1^m \\ S_3^m + \left(S_1^m - S_3^m\right)\mu_{12} + \left(S_2^m - S_1^m\right)\mu_2 & \text{if} \quad S_3^m \leq S_1^m \leq S_2^m \\ S_3^m + \left(S_2^m - S_3^m\right)\mu_{12} + \left(S_1^m - S_2^m\right)\mu_1 & \text{if} \quad S_3^m \leq S_2^m \leq S_1^m \end{cases}$$

Therefore, with the μ listed above:

$$S^m\text{-score} = \begin{cases} S_1^m + 0.22\left(S_2^m - S_1^m\right) + 0.22\left(S_3^m - S_2^m\right) & \text{if} \quad S_1^m \le S_2^m \le S_3^m \\ S_1^m + 0.22\left(S_3^m - S_1^m\right) + 0.18\left(S_2^m - S_3^m\right) & \text{if} \quad S_1^m \le S_3^m \le S_2^m \\ S_2^m + 0.51\left(S_1^m - S_2^m\right) + 0.22\left(S_3^m - S_1^m\right) & \text{if} \quad S_2^m \le S_1^m \le S_3^m \\ S_2^m + 0.51\left(S_3^m - S_2^m\right) + 0.27\left(S_1^m - S_3^m\right) & \text{if} \quad S_2^m \le S_3^m \le S_1^m \\ S_3^m + 0.28\left(S_1^m - S_3^m\right) + 0.18\left(S_2^m - S_1^m\right) & \text{if} \quad S_3^m \le S_1^m \le S_2^m \\ S_3^m + 0.28\left(S_2^m - S_3^m\right) + 0.27\left(S_1^m - S_2^m\right) & \text{if} \quad S_3^m \le S_2^m \le S_1^m \end{cases}$$

Where S^m_1, S^m_2 and S^m_3 are the scores obtained by a given farm for the partial score S^m in Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Sub-scores S_1^d, S_2^d and S_3^d for Periods 1, 2 and 3 for Measurement of *Diarrhoea*

The score of a farm with regard to Measurement of *Diarrhoea* is calculated from the % of mink in cages with evidence of diarrhoea.
The calculation of the sub-score is the same for each period:

In Period 1:

Let I_1 = 100 - % of mink in cages with evidence of diarrhoea in Period 1

I_1 is computed into a score using *I*-spline functions (Figure 31) as follows:

Score = $a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \ge k$

Criterion 3 - Diarrhoea - Period 1			
a_1	0	a_2	-28939.4499183793886913917958736
b_1	0.0000000000615328986533574	b_2	986.5717766954599028395023197
c_1	0.0055645135227670380895226	c_2	-11.2054743208456351055701816
d_1	-0.0000290261022732069317372	d_2	0.0424370154687005382565523
k	88		
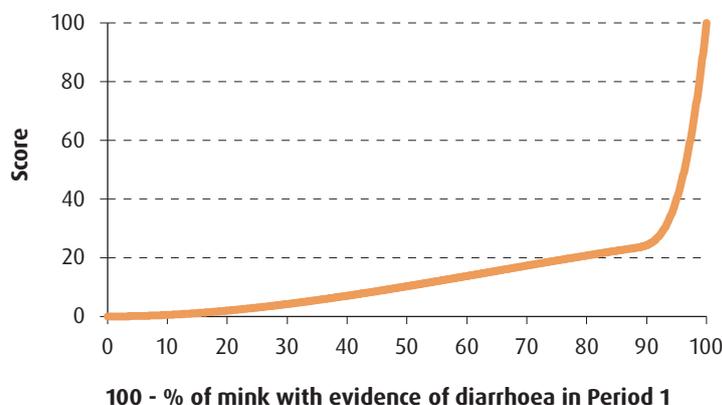
Figure 31 Calculation of the sub-score S_1^d for Measurement of **Diarrhoea** according to the percentage of mink in cages with evidence of diarrhoea in Period 1

In Period 2:

Let I_2 = 100 - % of mink in cages with evidence of diarrhoea in Period 2

I_2 is computed into a score using I-spline functions (Figure 32) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2{}^2 + d_x \times I_2{}^3$

with $x = 1$ when $I_2 < k$ and $x = 2$ when $I_2 \geq k$

Criterion 7 - Diarrhoea - Period 2			
a_1	0	a_2	-19219.1522864225808007176965475
b_1	0.2670510625166777063377310	b_2	655.465171930920860177138820
c_1	0.00148035307402686147106	c_2	-7.4439501227020752338603415
d_1	0.000009757887755467262275	d_2	0.0282121363279420889202953
k	88		
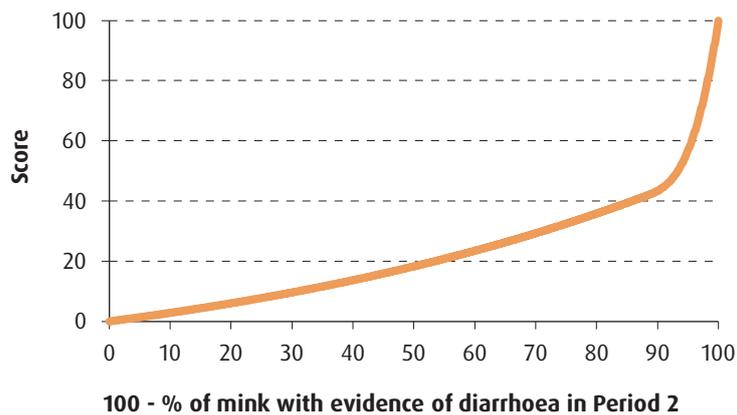
Figure 32 Calculation of the sub-score S_2^d for Measurement of **Diarrhoea** according to the percentage of mink in cages with evidence of diarrhoea in Period 2

In Period 3:

Let I_3 = 100 - % of mink in cages with evidence of diarrhoea in Period 3

I_3 is computed into a score using I-spline functions (Figure 33) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3{}^2 + d_x \times I_3{}^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 7 - Diarrhoea - Period 3			
a_1	0	a_2	-26536.8101766364670766051858664
b_1	0.0673844762620526144258903	b_2	904.7310193970959062426118180
c_1	0.0017481373785241188182488	c_2	-10.2785166946132253684709212
d_1	0.00000849151936206341700065	d_2	0.0389488751935308449847462
k	88		
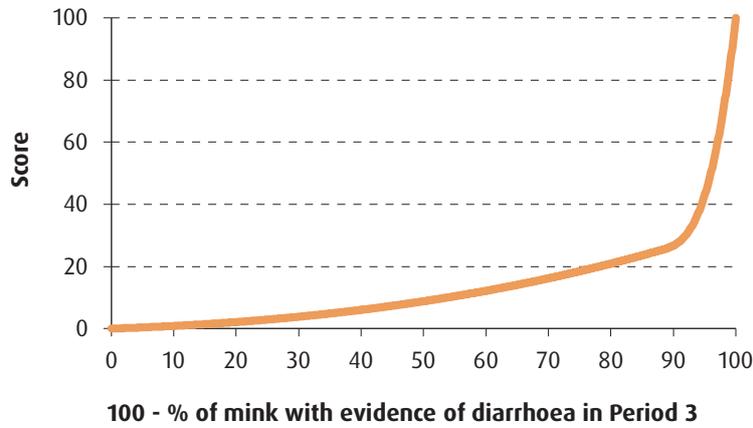
Figure 33 Calculation of the sub-score S_3^d for Measurement of **Diarrhoea** according to the percentage of mink in cages with evidence of diarrhoea in Period 3

Score S^d for Measurement of *Diarrhoea*

The three sub-scores are combined to form the partial score S^d for Measurement of *Diarrhoea* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.28		μ_{12}	=	0.28
μ_2	=	0.22		μ_{13}	=	0.35
μ_3	=	0.23		μ_{23}	=	0.31

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^d\text{-score} = \begin{cases} S_1^d + \left(S_2^d - S_1^d\right)\mu_{23} + \left(S_3^d - S_2^d\right)\mu_3 & \text{if} \quad S_1^d \leq S_2^d \leq S_3^d \\ S_1^d + \left(S_3^d - S_1^d\right)\mu_{23} + \left(S_2^d - S_3^d\right)\mu_2 & \text{if} \quad S_1^d \leq S_3^d \leq S_2^d \\ S_2^d + \left(S_1^d - S_2^d\right)\mu_{13} + \left(S_3^d - S_1^d\right)\mu_3 & \text{if} \quad S_2^d \leq S_1^d \leq S_3^d \\ S_2^d + \left(S_3^d - S_2^d\right)\mu_{13} + \left(S_1^d - S_3^d\right)\mu_1 & \text{if} \quad S_2^d \leq S_3^d \leq S_1^d \\ S_3^d + \left(S_1^d - S_3^d\right)\mu_{12} + \left(S_2^d - S_1^d\right)\mu_2 & \text{if} \quad S_3^d \leq S_1^d \leq S_2^d \\ S_3^d + \left(S_2^d - S_3^d\right)\mu_{12} + \left(S_1^d - S_2^d\right)\mu_1 & \text{if} \quad S_3^d \leq S_2^d \leq S_1^d \end{cases}$$

Therefore, with the μ listed above:

$$S^d\text{-score} = \begin{cases} S_1^d + 0.31\left(S_2^d - S_1^d\right) + 0.23\left(S_3^d - S_2^d\right) & \text{if} \quad S_1^d \leq S_2^d \leq S_3^d \\ S_1^d + 0.31\left(S_3^d - S_1^d\right) + 0.22\left(S_2^d - S_3^d\right) & \text{if} \quad S_1^d \leq S_3^d \leq S_2^d \\ S_2^d + 0.35\left(S_1^d - S_2^d\right) + 0.23\left(S_3^d - S_1^d\right) & \text{if} \quad S_2^d \leq S_1^d \leq S_3^d \\ S_2^d + 0.35\left(S_3^d - S_2^d\right) + 0.28\left(S_1^d - S_3^d\right) & \text{if} \quad S_2^d \leq S_3^d \leq S_1^d \\ S_3^d + 0.28\left(S_1^d - S_3^d\right) + 0.22\left(S_2^d - S_1^d\right) & \text{if} \quad S_3^d \leq S_1^d \leq S_2^d \\ S_3^d + 0.28\left(S_2^d - S_3^d\right) + 0.28\left(S_1^d - S_2^d\right) & \text{if} \quad S_3^d \leq S_2^d \leq S_1^d \end{cases}$$

Where S^d_1, S^d_2 and S^d_3 are the scores obtained by a given farm for the partial score S^d in Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on…

Sub-scores S^l_1, S^l_2 and S^l_3 for Periods 1, 2 and 3 for Measurement of *Lameness or impaired movement*
The score of a farm with regard to Measurement of *Lameness or impaired movement* is calculated from the % of mink with evidence of lameness.
The calculation of the sub-score is the same for each period:

In Period 1:
Let I_1 = 100 -% of mink with evidence of lameness in Period 1

Let $J_1 = \dfrac{I_1 - 70}{100 - 70} \times 100$ if $I_1 \geq 70$

$J_1 = 0$ if $I_1 < 70$

J_1 is computed into a score using *I*-spline functions (Figure 34) as follows:

$Score = a_x + b_x \times J_1 + c_x \times J_1^{\,2} + d_x \times J_1^{\,3}$

with $x = 1$ when $J_1 < k$ and $x = 2$ when $J_1 \geq k$

Criterion 7 - Lameness - Period 1			
a_1	0	a_2	-1972.0978186200036361697129905
b_1	0.077193011078648107736 7327	b_2	78.961106636321844121084 7232
c_1	-0.00102924014791400553897 60	c_2	-1.05281476552031350024 66297
d_1	0.0000295324345607000171901	d_2	0.0047041348100370456927766
k	75		
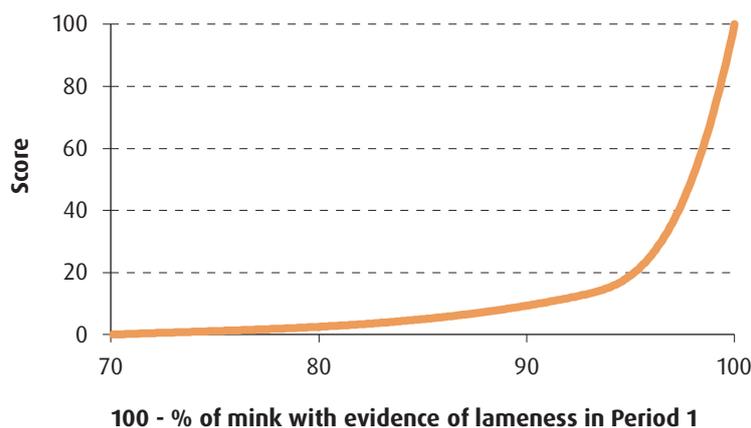
Figure 34 Calculation of the sub-score S^l_1 for Measurement of Lameness or impaired movement according to the percentage of mink with evidence of lameness in Period 1

In Period 2:
Let I_2 = 100 -% of mink with evidence of lameness in Period 2

Let $J_2 = \dfrac{I_1 - 70}{100 - 70} \times 100$ if $I_2 \geq 70$

$J_2 = 0$ if $I_2 < 70$

J_2 is computed into a score using *I*-spline functions (Figure 35) as follows:

Score = $a_x + b_x \times J_2 + c_x \times J_2{}^2 + d_x \times J_2{}^3$

with $x = 1$ when $J_2 < k$ and $x = 2$ when $J_2 \geq k$

Criterion 7 - Lameness - Period 2			
a_1	0	a_2	-1949.0061637655765025556320325
b_1	0.0763630768201912085713090	b_2	78.0366105003068781797992415
c_1	-0.000702716388234301517 3862	c_2	-1.0401726923146334957692716
d_1	0.00002720543691625107 42213	d_2	0.0046470720367286326435430
k	75		
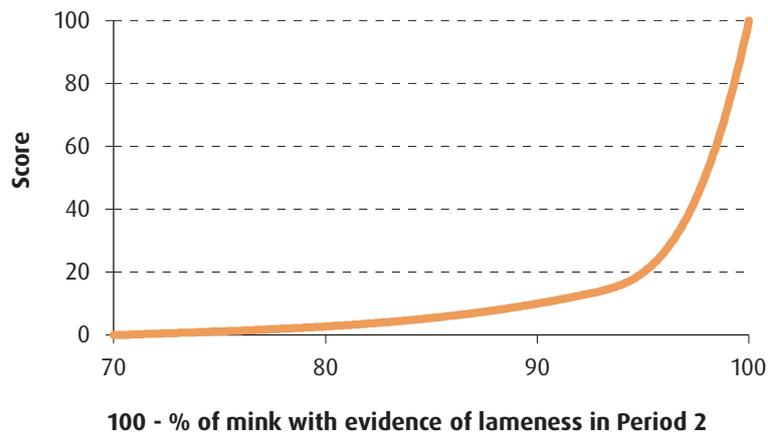
Figure 35 Calculation of the sub-score S_2^l for Measurement of **Lameness or impaired movement** according to the percentage of mink with evidence of lameness in Period 2

In Period 3:

Let I_3 = 100 -% of mink with evidence of lameness in Period 3

Let $J_3 = \dfrac{I_3 - 70}{100 - 70} \times 100$ if $I_3 \geq 70$

$J_3 = 0$ if $I_3 < 70$

J_3 is computed into a score using *I*-spline functions (Figure 36) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 7 - Lameness - Period 3			
a_1	0	a_2	-1972.0978186200036361697129905
b_1	0.0771930110786481077367327	b_2	78.9611066363218441210847232
c_1	-0.0010292401479140055389760	c_2	-1.0528147655203135002466297
d_1	0.00002953243456070000171901	d_2	0.0047041348100370456927766
k	75		

Figure 36 Calculation of the sub-score S_3^I for Measurement of Lameness or impaired movement according to the percentage of mink with evidence of lameness in Period 3

Score S^I for Measurement of *Lameness or impaired movement*

The three sub-scores are combined to form the partial score S^I for Measurement of *Lameness or impaired movement* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.28		μ_{12}	=	0.28
μ_2	=	0.22		μ_{13}	=	0.36
μ_3	=	0.22		μ_{23}	=	0.25

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^I\text{-score} = \begin{cases} S_1^I + \left(S_2^I - S_1^I\right)\mu_{23} + \left(S_3^I - S_2^I\right)\mu_3 & \text{if} \quad S_1^I \leq S_2^I \leq S_3^I \\ S_1^I + \left(S_3^I - S_1^I\right)\mu_{23} + \left(S_2^I - S_3^I\right)\mu_2 & \text{if} \quad S_1^I \leq S_3^I \leq S_2^I \\ S_2^I + \left(S_1^I - S_2^I\right)\mu_{13} + \left(S_3^I - S_1^I\right)\mu_3 & \text{if} \quad S_2^I \leq S_1^I \leq S_3^I \\ S_2^I + \left(S_3^I - S_2^I\right)\mu_{13} + \left(S_1^I - S_3^I\right)\mu_1 & \text{if} \quad S_2^I \leq S_3^I \leq S_1^I \\ S_3^I + \left(S_1^I - S_3^I\right)\mu_{12} + \left(S_2^I - S_1^I\right)\mu_2 & \text{if} \quad S_3^I \leq S_1^I \leq S_2^I \\ S_3^I + \left(S_2^I - S_3^I\right)\mu_{12} + \left(S_1^I - S_2^I\right)\mu_1 & \text{if} \quad S_3^I \leq S_2^I \leq S_1^I \end{cases}$$

Therefore, with the μ listed above:

$$
S^l\text{-score} = \begin{cases}
S_1^l + 0.25\left(S_2^l - S_1^l\right) + 0.22\left(S_3^l - S_2^l\right) & \text{if} & S_1^l \leq S_2^l \leq S_3^l \\
S_1^l + 0.25\left(S_3^l - S_1^l\right) + 0.22\left(S_2^l - S_3^l\right) & \text{if} & S_1^l \leq S_3^l \leq S_2^l \\
S_2^l + 0.36\left(S_1^l - S_2^l\right) + 0.22\left(S_3^l - S_1^l\right) & \text{if} & S_2^l \leq S_1^l \leq S_3^l \\
S_2^l + 0.36\left(S_3^l - S_2^l\right) + 0.28\left(S_1^l - S_3^l\right) & \text{if} & S_2^l \leq S_3^l \leq S_1^l \\
S_3^l + 0.28\left(S_1^l - S_3^l\right) + 0.22\left(S_2^l - S_1^l\right) & \text{if} & S_3^l \leq S_1^l \leq S_2^l \\
S_3^l + 0.28\left(S_2^l - S_3^l\right) + 0.28\left(S_1^l - S_2^l\right) & \text{if} & S_3^l \leq S_2^l \leq S_1^l
\end{cases}
$$

Where S_1^l, S_2^l and S_3^l are the sub-scores obtained by a given farm for Measurement of *Lameness or impaired movement* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Measurement of *Lameness or impaired movement* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in period 1 and 2 and so on...

Sub-scores S_1^s, S_2^s and S_3^s for Periods 1, 2 and 3 for Measurement *Obviously sick animals*

The score of a farm with regard to Measurement of *Obviously sick animals* is calculated from the % of mink with evidence of disease (other than diarrhoea or lameness).
The calculation of the sub-score is the same for each period.

In Period 1:
Let I_1 = 100 -% of mink with evidence of disease in Period 1

Let $J_1 = \dfrac{I_1 - 50}{100 - 50} \times 100$ if $I_1 \geq 50$
$J_1 = 0$ if $I_1 < 50$

J_1 is computed into a score using *I*-spline functions (Figure 37) as follows:

Score = $a_x + b_x \times J_1 + c_x \times J_1^2 + d_x \times J_1^3$

with $x = 1$ when $J_1 < k$ and $x = 2$ when $J_1 \geq k$

Criterion 7 - Obviously sick animals - Period 1			
a_1	0	a_2	-5313.59599071883530996274203306
b_1	-0.0000000000088359856755270	b_2	199.2598444411021887390234042
c_1	0.0010832574505998586542749	c_2	-2.4896647385630714666149288
d_1	0.0000061425084656690913962	d_2	0.010384258932835590399235
k	80		
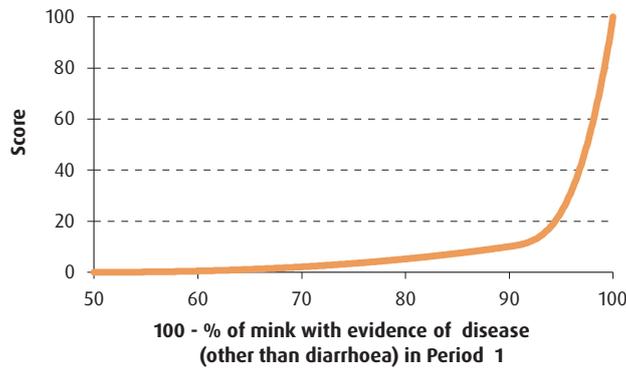
Figure 37 Calculation of the sub-score S_1^s for Measurement **of Obviously sick animals** according to the percentage of mink with evidence of disease in Period 1

In Period 2:

Let I_2 = 100 -% of mink with evidence of disease (other than diarrhoea), juveniles included, in Period 2

Let $J_2 = \dfrac{I_2 - 50}{100 - 50} \times 100$ if $I_2 \geq 50$

$J_2 = 0$ if $I_2 < 50$

J_2 is computed into a score using *I*-spline functions (Figure 38) as follows:

Score = a_x + $b_x \times J_2$ + $c_x \times J_2{}^2$ + $d_x \times J_2{}^3$

with $x = 1$ when $J_2 < k$ and $x = 2$ when $J_2 \geq k$

Criterion 7 - Obviously sick animals - Period 2			
a_1	0	a_2	-3331.97487048380207852460443
b_1	-0.00000000000145249851817790	b_2	126.530690155045817846257052
c_1	0.0000604632109748038165859	c_2	-1.60159382960763729819575
d_1	0.0000368092096495134676014	d_2	0.0067948441511858238134325
k	79		
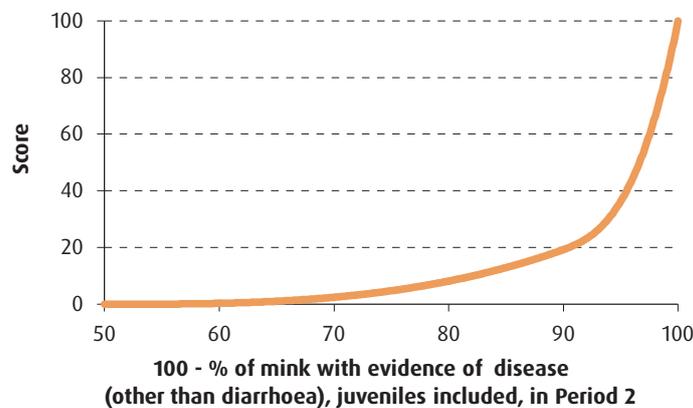
Figure 38 Calculation of the sub-score S_2^s for Measurement of **Obviously sick animals** according to the percentage of mink with evidence of disease other than diarrhoea (juveniles included) in Period 2

In Period 3:

Let I_3 = 100 -% of mink with evidence of disease (other than diarrhoea) in Period 3.

Let $J_3 = \dfrac{I_3 - 50}{100 - 50} \times 100$ if $I_3 \geq 50$

$J_3 = 0$ if $I_3 < 50$

J_3 is computed into a score using *I*-spline functions (Figure 39) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 7 - Obviously sick animals - Period 3			
a_1	0	a_2	-4580.9585438605063245631754398
b_1	-0.00000000000199626994708993	b_2	173.96044947382245027725643106
c_1	0.0017618955496438593738562	c_2	-2.2002690925817391942587165
d_1	-0.0000036654016349956413679	d_2	0.0092876045224754150142488
k	79		
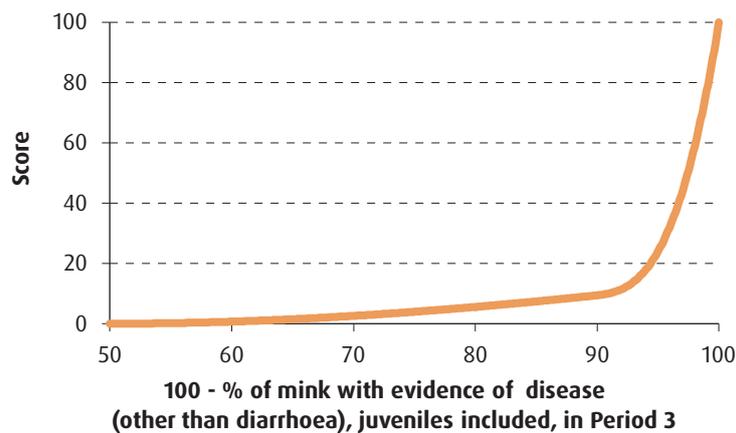
Figure 39 Calculation of the sub-score S_3^s for Measurement of **Obviously sick** animals according to the percentage of mink with evidence of disease in Period 3

Score Sˢ for Measurement of *Obviously sick animals*

The three sub-scores are combined to form the partial score Sˢ for Measurement *of Obviously sick animals* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.25		μ_{12}	=	0.31
μ_2	=	0.14		μ_{13}	=	0.41
μ_3	=	0.21		μ_{23}	=	0.21

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$
S^s\text{-score} = \begin{cases}
S_1^s + \left(S_2^s - S_1^s\right)\mu_{23} + \left(S_3^s - S_2^s\right)\mu_3 & \text{if} \quad S_1^s \le S_2^s \le S_3^s \\[4pt]
S_1^s + \left(S_3^s - S_1^s\right)\mu_{23} + \left(S_2^s - S_3^s\right)\mu_2 & \text{if} \quad S_1^s \le S_3^s \le S_2^s \\[4pt]
S_2^s + \left(S_1^s - S_2^s\right)\mu_{13} + \left(S_3^s - S_1^s\right)\mu_3 & \text{if} \quad S_2^s \le S_1^s \le S_3^s \\[4pt]
S_2^s + \left(S_3^s - S_2^s\right)\mu_{13} + \left(S_1^s - S_3^s\right)\mu_1 & \text{if} \quad S_2^s \le S_3^s \le S_1^s \\[4pt]
S_3^s + \left(S_1^s - S_3^s\right)\mu_{12} + \left(S_2^s - S_1^s\right)\mu_2 & \text{if} \quad S_3^s \le S_1^s \le S_2^s \\[4pt]
S_3^s + \left(S_2^s - S_3^s\right)\mu_{12} + \left(S_1^s - S_2^s\right)\mu_1 & \text{if} \quad S_3^s \le S_2^s \le S_1^s
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^s\text{-score} = \begin{cases}
S_1^s + 0.21\left(S_2^s - S_1^s\right) + 0.21\left(S_3^s - S_2^s\right) & \text{if} \quad S_1^s \le S_2^s \le S_3^s \\[4pt]
S_1^s + 0.21\left(S_3^s - S_1^s\right) + 0.14\left(S_2^s - S_3^s\right) & \text{if} \quad S_1^s \le S_3^s \le S_2^s \\[4pt]
S_2^s + 0.41\left(S_1^s - S_2^s\right) + 0.21\left(S_3^s - S_1^s\right) & \text{if} \quad S_2^s \le S_1^s \le S_3^s \\[4pt]
S_2^s + 0.41\left(S_3^s - S_2^s\right) + 0.25\left(S_1^s - S_3^s\right) & \text{if} \quad S_2^s \le S_3^s \le S_1^s \\[4pt]
S_3^s + 0.31\left(S_1^s - S_3^s\right) + 0.14\left(S_2^s - S_1^s\right) & \text{if} \quad S_3^s \le S_1^s \le S_2^s \\[4pt]
S_3^s + 0.31\left(S_2^s - S_3^s\right) + 0.25\left(S_1^s - S_2^s\right) & \text{if} \quad S_3^s \le S_2^s \le S_1^s
\end{cases}
$$

Where $S^s{}_1$, $S^s{}_2$ and $S^s{}_3$ are the sub-scores obtained by a given farm for Measurement *of Obviously sick animals* in Period 1, in Period 2 and in Period 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Measurement *of Obviously sick animals* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Score for Measurement *of Absence of disease*
The four partial scores are combined to form the overall score for the Criter*ion of Absence of disease* using a Choquet integral. The parameters of the Choquet integral are:

μ_m	=	0.29		μ_{dl}	=	0.15
μ_d	=	0.15		μ_{ds}	=	0.15
μ_l	=	0.00		μ_{ls}	=	0.15
μ_s	=	0.15		μ_{mdl}	=	0.42
μ_{md}	=	0.29		μ_{mds}	=	0.59
μ_{ml}	=	0.29		μ_{mls}	=	0.65
μ_{ms}	=	0.44		μ_{dls}	=	0.31

with m, mortality; d, diarrhoea; l, lameness and s, obviously sick animals.

Reminder:

$$\text{Absence of disease-score} = \begin{cases}
S_m + (S_d - S_m)\mu_{dls} + (S_l - S_d)\mu_{sl} + (S_s - S_l)\mu_s & \text{if} & S_m \le S_d \le S_l \le S_s \\
S_m + (S_d - S_m)\mu_{dls} + (S_s - S_d)\mu_{ls} + (S_l - S_s)\mu_l & \text{if} & S_m \le S_d \le S_s \le S_l \\
S_m + (S_l - S_m)\mu_{dls} + (S_d - S_l)\mu_{ds} + (S_s - S_d)\mu_s & \text{if} & S_m \le S_l \le S_d \le S_s \\
S_m + (S_l - S_m)\mu_{dls} + (S_s - S_l)\mu_{ds} + (S_d - S_s)\mu_d & \text{if} & S_m \le S_l \le S_s \le S_d \\
S_m + (S_s - S_m)\mu_{dls} + (S_d - S_s)\mu_{dl} + (S_l - S_d)\mu_l & \text{if} & S_m \le S_s \le S_d \le S_l \\
S_m + (S_s - S_m)\mu_{dls} + (S_l - S_s)\mu_{dl} + (S_d - S_l)\mu_d & \text{if} & S_m \le S_s \le S_l \le S_d \\
S_d + (S_m - S_d)\mu_{mls} + (S_l - S_m)\mu_{ls} + (S_s - S_l)\mu_s & \text{if} & S_d \le S_m \le S_l \le S_s \\
S_d + (S_m - S_d)\mu_{mls} + (S_s - S_m)\mu_{ls} + (S_l - S_s)\mu_l & \text{if} & S_d \le S_m \le S_s \le S_l \\
S_d + (S_l - S_d)\mu_{mls} + (S_m - S_l)\mu_{ms} + (S_s - S_m)\mu_s & \text{if} & S_d \le S_l \le S_m \le S_s \\
S_d + (S_l - S_d)\mu_{mls} + (S_s - S_l)\mu_{ms} + (S_m - S_s)\mu_m & \text{if} & S_d \le S_l \le S_s \le S_m \\
S_d + (S_s - S_d)\mu_{mls} + (S_l - S_s)\mu_{ml} + (S_m - S_l)\mu_m & \text{if} & S_d \le S_s \le S_l \le S_m \\
S_d + (S_s - S_d)\mu_{mls} + (S_m - S_s)\mu_{ml} + (S_l - S_m)\mu_l & \text{if} & S_d \le S_s \le S_m \le S_l \\
S_l + (S_d - S_l)\mu_{mds} + (S_m - S_d)\mu_{ms} + (S_s - S_m)\mu_s & \text{if} & S_l \le S_d \le S_m \le S_s \\
S_l + (S_d - S_l)\mu_{mds} + (S_s - S_d)\mu_{ms} + (S_m - S_s)\mu_m & \text{if} & S_l \le S_d \le S_s \le S_m \\
S_l + (S_s - S_l)\mu_{mds} + (S_d - S_s)\mu_{md} + (S_m - S_d)\mu_m & \text{if} & S_l \le S_s \le S_d \le S_m \\
S_l + (S_s - S_l)\mu_{mds} + (S_m - S_s)\mu_{md} + (S_d - S_m)\mu_d & \text{if} & S_l \le S_s \le S_m \le S_d \\
S_l + (S_m - S_l)\mu_{mds} + (S_s - S_m)\mu_{ds} + (S_d - S_s)\mu_d & \text{if} & S_l \le S_m \le S_s \le S_d \\
S_l + (S_m - S_l)\mu_{mds} + (S_d - S_m)\mu_{ds} + (S_s - S_d)\mu_s & \text{if} & S_l \le S_m \le S_d \le S_s \\
S_s + (S_m - S_s)\mu_{mdl} + (S_d - S_m)\mu_{dl} + (S_l - S_d)\mu_l & \text{if} & S_s \le S_m \le S_d \le S_l \\
S_s + (S_m - S_s)\mu_{mdl} + (S_l - S_m)\mu_{dl} + (S_d - S_l)\mu_d & \text{if} & S_s \le S_m \le S_l \le S_d \\
S_s + (S_d - S_s)\mu_{mdl} + (S_l - S_d)\mu_{ml} + (S_m - S_l)\mu_m & \text{if} & S_s \le S_d \le S_l \le S_m \\
S_s + (S_d - S_s)\mu_{mdl} + (S_m - S_d)\mu_{ml} + (S_l - S_m)\mu_l & \text{if} & S_s \le S_d \le S_m \le S_l \\
S_s + (S_l - S_s)\mu_{mdl} + (S_m - S_l)\mu_{md} + (S_d - S_m)\mu_d & \text{if} & S_s \le S_l \le S_m \le S_d \\
S_s + (S_l - S_s)\mu_{mdl} + (S_d - S_l)\mu_{md} + (S_m - S_d)\mu_m & \text{if} & S_s \le S_l \le S_d \le S_m
\end{cases}$$

Therefore, with the μ listed above:

$$
\text{Absence of disease-score} = \begin{cases}
S_m + 0.31(S_d - S_m) + 0.15(S_l - S_d) + 0.15(S_s - S_l) & \text{if} \quad S_m \leq S_d \leq S_l \leq S_s \\
S_m + 0.31(S_d - S_m) + 0.15(S_s - S_d) + 0.00(S_l - S_s) & \text{if} \quad S_m \leq S_d \leq S_s \leq S_l \\
S_m + 0.31(S_l - S_m) + 0.15(S_d - S_l) + 0.15(S_s - S_d) & \text{if} \quad S_m \leq S_l \leq S_d \leq S_s \\
S_m + 0.31(S_l - S_m) + 0.15(S_s - S_l) + 0.15(S_d - S_s) & \text{if} \quad S_m \leq S_l \leq S_s \leq S_d \\
S_m + 0.31(S_s - S_m) + 0.15(S_d - S_s) + 0.00(S_l - S_d) & \text{if} \quad S_m \leq S_s \leq S_d \leq S_l \\
S_m + 0.31(S_s - S_m) + 0.15(S_l - S_s) + 0.15(S_d - S_l) & \text{if} \quad S_m \leq S_s \leq S_l \leq S_d \\
S_d + 0.65(S_m - S_d) + 0.15(S_l - S_m) + 0.15(S_s - S_l) & \text{if} \quad S_d \leq S_m \leq S_l \leq S_s \\
S_d + 0.65(S_m - S_d) + 0.15(S_s - S_m) + 0.00(S_l - S_s) & \text{if} \quad S_d \leq S_m \leq S_s \leq S_l \\
S_d + 0.65(S_l - S_d) + 0.44(S_m - S_l) + 0.15(S_s - S_m) & \text{if} \quad S_d \leq S_l \leq S_m \leq S_s \\
S_d + 0.65(S_l - S_d) + 0.44(S_s - S_l) + 0.29(S_m - S_s) & \text{if} \quad S_d \leq S_l \leq S_s \leq S_m \\
S_d + 0.65(S_s - S_d) + 0.29(S_l - S_s) + 0.29(S_m - S_l) & \text{if} \quad S_d \leq S_s \leq S_l \leq S_m \\
S_d + 0.65(S_s - S_d) + 0.29(S_m - S_s) + 0.00(S_l - S_m) & \text{if} \quad S_d \leq S_s \leq S_m \leq S_l \\
S_l + 0.59(S_d - S_l) + 0.44(S_m - S_d) + 0.15(S_s - S_m) & \text{if} \quad S_l \leq S_d \leq S_m \leq S_s \\
S_l + 0.59(S_d - S_l) + 0.44(S_s - S_d) + 0.29(S_m - S_s) & \text{if} \quad S_l \leq S_d \leq S_s \leq S_m \\
S_l + 0.59(S_s - S_l) + 0.29(S_d - S_s) + 0.29(S_m - S_d) & \text{if} \quad S_l \leq S_s \leq S_d \leq S_m \\
S_l + 0.59(S_s - S_l) + 0.29(S_m - S_s) + 0.15(S_d - S_m) & \text{if} \quad S_l \leq S_s \leq S_m \leq S_d \\
S_l + 0.59(S_m - S_l) + 0.15(S_s - S_m) + 0.15(S_d - S_s) & \text{if} \quad S_l \leq S_m \leq S_s \leq S_d \\
S_l + 0.59(S_m - S_l) + 0.15(S_d - S_m) + 0.15(S_s - S_d) & \text{if} \quad S_l \leq S_m \leq S_d \leq S_s \\
S_s + 0.42(S_m - S_s) + 0.15(S_d - S_m) + 0.00(S_l - S_d) & \text{if} \quad S_s \leq S_m \leq S_d \leq S_l \\
S_s + 0.42(S_m - S_s) + 0.15(S_l - S_m) + 0.15(S_d - S_l) & \text{if} \quad S_s \leq S_m \leq S_l \leq S_d \\
S_s + 0.42(S_d - S_s) + 0.29(S_l - S_d) + 0.29(S_m - S_l) & \text{if} \quad S_s \leq S_d \leq S_l \leq S_m \\
S_s + 0.42(S_d - S_s) + 0.29(S_m - S_d) + 0.00(S_l - S_m) & \text{if} \quad S_s \leq S_d \leq S_m \leq S_l \\
S_s + 0.42(S_l - S_s) + 0.29(S_m - S_l) + 0.15(S_d - S_m) & \text{if} \quad S_s \leq S_l \leq S_m \leq S_d \\
S_s + 0.42(S_l - S_s) + 0.29(S_d - S_l) + 0.29(S_m - S_d) & \text{if} \quad S_s \leq S_l \leq S_d \leq S_m
\end{cases}
$$

Where S_m, S_d, S_l and S_s are the scores obtained by a given farm for Measurement *of Mortality*, *Diarrhoea*, *Lameness or impaired movement* and Measurement *of Obviously sick animals* respectively.

μ_m, μ_d, μ_l and μ_s are the capacities of Measurements of *Mortality*, *Diarrhoea*, *Lameness or impaired movement* and of *Obviously sick animals* respectively.

μ_{md} is the capacity of the group made of Measurements from *Mortality* and *Diarrhoea* and so on...

3.3.1.8 Absence of pain induced by management procedures

Two partial scores are calculated, one for Measurement *of Killing methods for pelting of mink* (groups) and one for Measurement *of Killing methods for individual mink*, before being combined into a criterion-score.

Moreover, these two measurements are assessed for the three periods of the production cycle. So a first stage is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_1^p, S_2^p and S_3^p **for Periods 1, 2 and 3 for Measurement** *of Killing methods for pelting of mink*

The score of a farm with regard to Measurement *of Killing methods for pelting of mink* is calculated from the percentages of boxes within each level of the scale used to assess box quality (3 levels here):

Level	0	1	2
% of boxes	P_0	P_1	P_2

The calculation of the sub-score is the same for each period:

In Period 1:

$$\text{Let } I_1 = \left(100 - \frac{\sum_{j=0}^{2} w_j \; p_j}{w_2} \right)$$

with j = 0, 1 or 2 according to the level considered.

Weights	W_0 = 0	W_1 = 2	W_2 = 5

I_1 is computed into a score using I-spline functions (Figure 40) as follows;

Score = a_x + $b_x \times I_1$ + $c_x \times I_1^2$ + $d_x \times I_1^3$

with x = 1 when $I_1 < k$ and x = 2 when $I_1 \geq k$

Criterion 8 - Killing methods for pelting - Period 1			
a_1	0	a_2	-3034.2264904852431754989083856
b_1	0.294248745664943689437365	b_2	-101.98305645438196620489179 62
c_1	-0.0033061656816313280023156	c_2	1.1458771220161836357220864
d_1	0.000109365489093440803 7894	d_2	-0.0041946920649927740484819
k	89		
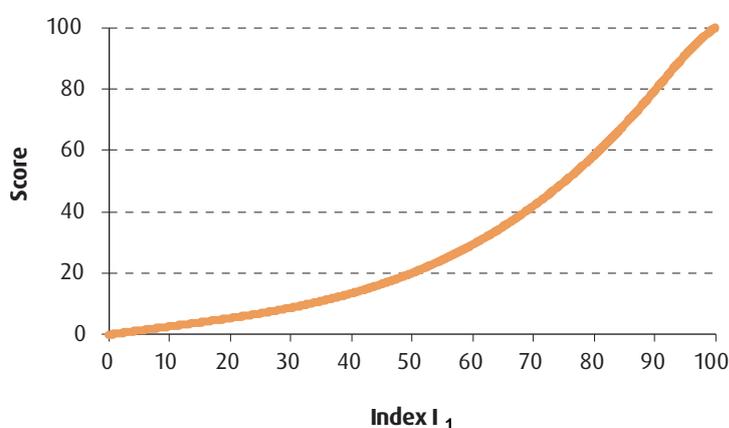
Figure 40 Calculation of the sub-score S_1^p for Measurement **of Killing methods for pelting of mink** according to the percentage of boxes within each level of the scale used to assess box quality in Period 1

In Period 2:

$$\text{Let } I_2 = \left(100 - \frac{\sum\limits_{j=0}^{2} w_j \, p_j}{w_2} \right)$$

with j = 0, 1 or 2 according to the level considered.

Weights	W_0 = 0	W_1 = 2	W_2 = 5

I_2 is computed into a score using I-spline functions (Figure 41) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2^{\,2} + d_x \times I_2^{\,3}$

with x = 1 when $I_2 < k$ and x = 2 when $I_2 \geq k$

Criterion 8 - Killing methods for pelting - Period 2		

a_1	0	a_2	2274.7702266498017706908285618
b_1	0.273368988233811172072725	b_2	-76.404284514429704699781742
c_1	-0.0030715616655500078968632	c_2	0.858475164888845343469702
d_1	0.00010767354902417729641028	d_2	-0.0031190934239440047670566
k	89		
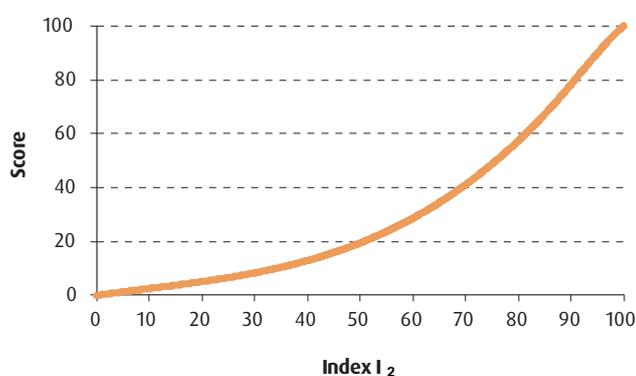
Figure 41 Calculation of the sub-score S_2^p for Measurement **of Killing methods for pelting of mink** according to the percentage of boxes within each level of the scale used to assess box quality in Period 2

In Period 3:

$$\text{Let } I_3 = \left(100 - \frac{\sum\limits_{j=0}^{2} w_j \, p_j}{w_2} \right)$$

with j = 0, 1 or 2 according to the level considered.

Weights	W_0 = 0	W_1 = 6	W_2 = 13

I_3 is computed into a score using *I*-spline functions (Figure 42) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3{}^2 + d_x \times I_3{}^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 8 - Killing methods for pelting - Period 3			
a_1	0	a_2	2.7675535317922310696303612
b_1	0.4584211480706399388651562	b_2	0.1816657948682129097850435
c_1	-0.0137919953559860943709259	c_2	-0.0045668169155147668794581
d_1	0.0002272360188098995921729	d_2	0.0001247340361365666008657
k	30		
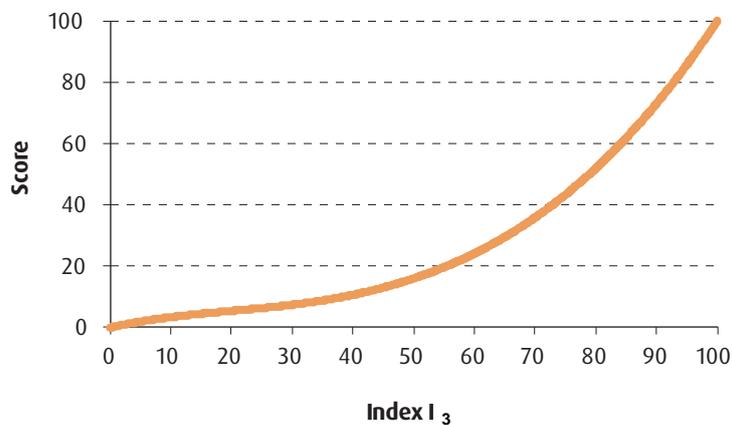
Figure 42 Calculation of the sub-score S_3^p for Measurement of Killing methods for pelting of mink according to the percentage of boxes within each level of the scale used to assess box quality in Period 3

Score S^p for Measurement *of Killing methods for pelting of mink*
The three sub-scores are combined to form the partial score S^p for Measurement *of Killing methods for pelting of mink* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.03			μ_{12}	=	0.07
μ_2	=	0.07			μ_{13}	=	0.57
μ_3	=	0.54			μ_{23}	=	0.61

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^p\text{-score} = \begin{cases} S_1^p + \left(S_2^p - S_1^p\right)\mu_{23} + \left(S_3^p - S_2^p\right)\mu_3 & \text{if} \quad S_1^p \le S_2^p \le S_3^p \\ S_1^p + \left(S_3^p - S_1^p\right)\mu_{23} + \left(S_2^p - S_3^p\right)\mu_2 & \text{if} \quad S_1^p \le S_3^p \le S_2^p \\ S_2^p + \left(S_1^p - S_2^p\right)\mu_{13} + \left(S_3^p - S_1^p\right)\mu_3 & \text{if} \quad S_2^p \le S_1^p \le S_3^p \\ S_2^p + \left(S_3^p - S_2^p\right)\mu_{13} + \left(S_1^p - S_3^p\right)\mu_1 & \text{if} \quad S_2^p \le S_3^p \le S_1^p \\ S_3^p + \left(S_1^p - S_3^p\right)\mu_{12} + \left(S_2^p - S_1^p\right)\mu_2 & \text{if} \quad S_3^p \le S_1^p \le S_2^p \\ S_3^p + \left(S_2^p - S_3^p\right)\mu_{12} + \left(S_1^p - S_2^p\right)\mu_1 & \text{if} \quad S_3^p \le S_2^p \le S_1^p \end{cases}$$

Therefore with the μ listed above:

$$S^p\text{-score} = \begin{cases} S_1^p + 0.61\left(S_2^p - S_1^p\right) + 0.54\left(S_3^p - S_2^p\right) & \textit{if} \quad S_1^p \le S_2^p \le S_3^p \\ S_1^p + 0.61\left(S_3^p - S_1^p\right) + 0.07\left(S_2^p - S_3^p\right) & \textit{if} \quad S_1^p \le S_3^p \le S_2^p \\ S_2^p + 0.57\left(S_1^p - S_2^p\right) + 0.54\left(S_3^p - S_1^p\right) & \textit{if} \quad S_2^p \le S_1^p \le S_3^p \\ S_2^p + 0.57\left(S_3^p - S_2^p\right) + 0.03\left(S_1^p - S_3^p\right) & \textit{if} \quad S_2^p \le S_3^p \le S_1^p \\ S_3^p + 0.07\left(S_1^p - S_3^p\right) + 0.07\left(S_2^p - S_1^p\right) & \textit{if} \quad S_3^p \le S_1^p \le S_2^p \\ S_3^p + 0.07\left(S_2^p - S_3^p\right) + 0.03\left(S_1^p - S_2^p\right) & \textit{if} \quad S_3^p \le S_2^p \le S_1^p \end{cases}$$

Where S^p_1, S^p_2 and S^p_3 are the partial scores obtained by a given farm for Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Sub-scores S_1^P, S_2^k and S_3^k for Periods 1, 2 and 3 for Measurement *of Killing methods for individual mink*
One score is assigned to Measurement *of Killing methods for individual mink* according to a decision tree based on the functioning of the killing equipment in three categories, taking into account the different type of animals and species according to the period considered (Figure 43, Figure 44 and Figure 45).

Period 1

	Level		Score
Access to well functioning efficient means of killing individual mink	0	=	100
Access to not too well functioning or efficient means of killing individual mink or no gas available at the visit	1	=	27
No functioning equipment on the farm for killing individual animals	2	=	0
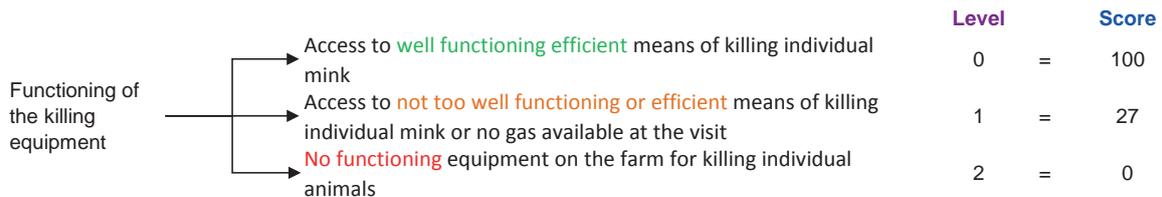
Figure 43 Sub-scores S_1^k assigned to the different types of killing equipments and their functioning in Period 1

Period 2

	Level		Score
Access to well functioning efficient means of killing individual mink	0	=	100
Access to not too well functioning or efficient means of killing individual mink or no gas available at the visit	1	=	25
No functioning equipment on the farm for killing individual animals	2	=	0
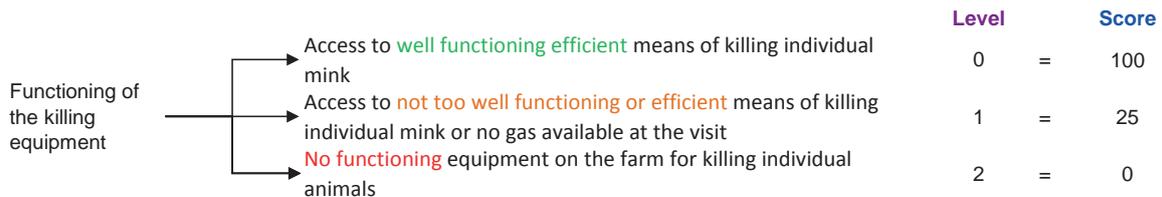
Figure 44 Sub-scores S_2^k assigned to the different types of killing equipments and their functioning in Period 2

		Level		Score
Functioning of the killing equipment	Access to well functioning efficient means of killing individual mink	0	=	100
	Access to not too well functioning or efficient means of killing individual mink or no gas available at the visit	1	=	26
	No functioning equipment on the farm for killing individual animals	2	=	0

Figure 45 Sub-scores S_3^k assigned to the different types of killing equipments and their functioning in Period 3

Since different killing methods may be in use on the farm, we consider the killing device in the worst situation defined by the decision-tree and the final score to be assigned to the farm is the worst score observed (= the one corresponding to the worst killing device used on the farm within each period).

Score S^k for Measurement *of Killing methods for individual mink*

The three sub-scores are combined to form the partial score S^k for Measurement *of Killing methods for individual mink* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.21		μ_{12}	=	0.21
μ_2	=	0.11		μ_{13}	=	0.26
μ_3	=	0.19		μ_{23}	=	0.25

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$
S^k\text{-score} = \begin{cases}
S_1^k + \left(S_2^k - S_1^k\right)\mu_{23} + \left(S_3^k - S_2^k\right)\mu_3 & \text{if} & S_1^k \leq S_2^k \leq S_3^k \\
S_1^k + \left(S_3^k - S_1^k\right)\mu_{23} + \left(S_2^k - S_3^k\right)\mu_2 & \text{if} & S_1^k \leq S_3^k \leq S_2^k \\
S_2^k + \left(S_1^k - S_2^k\right)\mu_{13} + \left(S_3^k - S_1^k\right)\mu_3 & \text{if} & S_2^k \leq S_1^k \leq S_3^k \\
S_2^k + \left(S_3^k - S_2^k\right)\mu_{13} + \left(S_1^k - S_3^k\right)\mu_1 & \text{if} & S_2^k \leq S_3^k \leq S_1^k \\
S_3^k + \left(S_1^k - S_3^k\right)\mu_{12} + \left(S_2^k - S_1^k\right)\mu_2 & \text{if} & S_3^k \leq S_1^k \leq S_2^k \\
S_3^k + \left(S_2^k - S_3^k\right)\mu_{12} + \left(S_1^k - S_2^k\right)\mu_1 & \text{if} & S_3^k \leq S_2^k \leq S_1^k
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^k\text{-score} = \begin{cases}
S_1^k + 0.25\left(S_2^k - S_1^k\right) + 0.19\left(S_3^k - S_2^k\right) & \text{if} & S_1^k \leq S_2^k \leq S_3^k \\
S_1^k + 0.25\left(S_3^k - S_1^k\right) + 0.11\left(S_2^k - S_3^k\right) & \text{if} & S_1^k \leq S_3^k \leq S_2^k \\
S_2^k + 0.26\left(S_1^k - S_2^k\right) + 0.19\left(S_3^k - S_1^k\right) & \text{if} & S_2^k \leq S_1^k \leq S_3^k \\
S_2^k + 0.26\left(S_3^k - S_2^k\right) + 0.21\left(S_1^k - S_3^k\right) & \text{if} & S_2^k \leq S_3^k \leq S_1^k \\
S_3^k + 0.21\left(S_1^k - S_3^k\right) + 0.11\left(S_2^k - S_1^k\right) & \text{if} & S_3^k \leq S_1^k \leq S_2^k \\
S_3^k + 0.21\left(S_2^k - S_3^k\right) + 0.21\left(S_1^k - S_2^k\right) & \text{if} & S_3^k \leq S_2^k \leq S_1^k
\end{cases}
$$

Where S_1^k, S_2^k and S_3^k are the sub-scores obtained by a given farm for Measurement *of Killing methods for individual mink* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Measurement *of Killing methods for individual mink* in Periods 1, 2 and 3 respectively. μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Score for the Criterion of Absence of pain induced by management procedures
The two partial scores are combined to form the overall score for the Criterion of Absence of pain induced by management procedures using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_p \qquad = \qquad 0.34 \qquad\qquad\qquad \mu_k \qquad = \qquad 0.05$$

with p, killing method for pelting and k, killing method for individual mink.

Reminder:

$$\text{Absence of pain induced by management procedures-score} = \begin{cases} S^p + \left(S^k - S^p\right)\mu_k & \text{if} \quad S^p \le S^k \\ S^k + \left(S^p - S^k\right)\mu_p & \text{if} \quad S^k \le S^p \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of pain induced by management procedures-score} = \begin{cases} S^p + 0.05\left(S^k - S^p\right) & \text{if} \quad S^p \le S^k \\ S^k + 0.34\left(S^p - S^k\right) & \text{if} \quad S^k \le S^p \end{cases}$$

Where S^p and S^k are the partial scores obtained by a given farm for Measurement *of Killing methods for pelting of mink* and Measurement *of Killing methods for individual mink* respectively.
μ_n and μ_k are the capacities of Measurements *of Killing methods for pelting of mink* and *Killing methods for individual mink* respectively.

3.3.1.9 Expression of social behaviours

Two partial scores are calculated, one for Measurement *of Social housing* of adult females and juveniles and one for Measurement *of Age and procedures at weaning* , before being combined into a criterion-score. Social housing of adult females and juveniles is assessed separately only during the period 3 of the production cycle and weaning management is assessed in late Period 2-early Period 3 (considered as one period).
So the first step is to calculate sub-scores for Measurement *of Social housing* of adult females and juveniles separately for Period 3, then to aggregate the two sub-scores obtained for the 2 sub-measurements into Measurement *Social housing* sub-score in one part and calculate the sub-score for Measurement *of Age and procedures at weaning* in late Period 2-early Period 3 in the other part.

Sub-scores S_3^d and S_3^j for Period 3 for Measurement *of Social housing*
Measurement of Social housing of adult females:
The score of a farm with regard to Measurement *of Social housing* of adult females in Period 3 is calculated from the percentages of females within each level of the scale used to assess social housing (4 levels here):

Level	0	1	2	3
% of adult females	P_0^d	P_1^d	P_2^d	P_3^d

$$\text{Let } I_3 = \left(100 - \frac{\sum_{j=0}^{3} w_j^d \ p_j^d}{w_3^d} \right) \qquad \text{with } j = 0, 1, 2 \text{ or } 3 \text{ according to the level considered.}$$

Weights	$W_0^d = 0$	$W_1^d = 1$	$W_2^d = 2$	$W_3^d = 17$

I_3 is computed into a score using *I*-spline functions (Figure 46) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3^2 + d_x \times I_3^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 9 - Females' social housing - Period 3			
a_1	0	a_2	-2156.606315800074298749 6778369
b_1	0.0201967934141973858019892	b_2	87.4501826759222353757650126
c_1	0.0201967934141973858019892	c_2	-1.17931018040037116634266 57
d_1	-0.0000173205102819001731883	d_2	0.0053046898414613134070672
k	74		
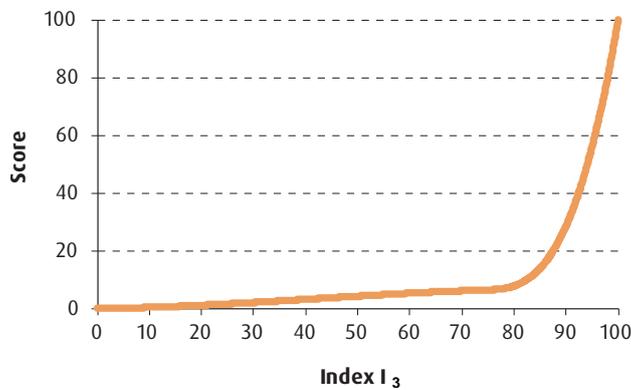
Figure 46 Calculation of the sub-score S_3^f for Measurement of Social housing according to the percentages of adult females within each level of the scale used to assess social housing in Period 3

Measurement of Social housing of juveniles:
The score of a farm with regard to Measurement of Social housing of juveniles in Period 3 is calculated from the percentages of juveniles within each level of the scale used to assess social housing (3 levels here):

Level	0	1	2
% of juveniles	P_0^{jv}	P_1^{jv}	P_2^{jv}

In Period 1:

$$\text{Let } I_1 = \left(100 - \frac{\sum_{j=0}^{2} w_j \ p_j}{w_2} \right)$$

with $j = 0$, 1 or 2 according to the level considered.

Weights	$W_0^{jv} = 0$	$W_1^{jv} = 4$	$W_2^{jv} = 9$

I_3 is computed into a score using *I*-spline functions (Figure 46) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3{}^2 + d_x \times I_3{}^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 9 - Juveniles' social housing - Period 3			
a_1	0	a_2	-797.49582789417377104842886
b_1	0.32970400043590869650991298	b_2	30.235798271139920245786925I
c_1	0.0071858002924484135759409	c_2	-0.36664038633653606I5844679
d_1	-0.0000172892780535187607857	d_2	0.00154031986407048644867333
k	80		
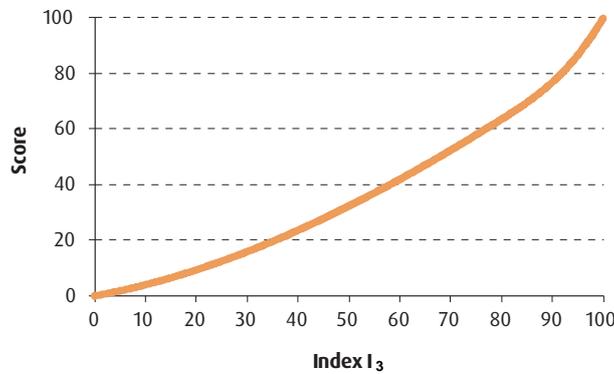
Figure 47 Calculation of the sub-score S_3^{jv} for Measurement of **Social housing** according to the percentages of juveniles within each level of the scale used to assess social housing in Period 3

Score S^h for Measurement of *Social housing*
The two partial scores are combined to form the sub-score S^h for Measurement *of Social housing* using a Choquet integral. The parameters of the Choquet integral are:

μ_f = 0.25 μ_{jv} = 0.36

with f, females' social housing and jv, juveniles' social housing.

Reminder:

$$S^h = \begin{cases} S^f + \left(S^{jv} - S^f\right)\mu_{jv} & \text{if} \quad S^f \leq S^{jv} \\ S^{jv} + \left(S^f - S^{jv}\right)\mu_f & \text{if} \quad S^{jv} \leq S^f \end{cases}$$

Therefore, with the μ listed above:

$$S^h = \begin{cases} S^f + 0.36\left(S^{jv} - S^f\right) & \text{if} \quad S^f \leq S^{jv} \\ S^{jv} + 0.25\left(S^f - S^{jv}\right) & \text{if} \quad S^{jv} \leq S^f \end{cases}$$

Where S^f and S^{jv} are the partial scores obtained by a given farm for Measurement *of Social housing* in adult females and in juveniles respectively.
μ_f and μ_{jv} are the capacities of Measurement *of Social housing* in adult females and in juveniles respectively.

Score S^w for Measurement *of Age and procedures at weaning*

One score is assigned to Measurement *of Age and procedures at weaning* according to a decision-tree combining the age at weaning and the types of weaning and post-weaning managements (Figure 48). If there are various types of weaning management used on a farm, the final score which would be assigned to the farm will be the worst situation (= the one corresponding to the worst score assigned to the different situations found on the farm) observed in at least 15% of the animals.

Situation		Score
1	=	26
2	=	13
3	=	18
4	=	1
5	=	76
6	=	58
7	=	61
8	=	41
9	=	100
10	=	81
11	=	86
12	=	69
13	=	69
14	=	61
15	=	56
16	=	49
17	=	34
18	=	39
19	=	24
20	=	29
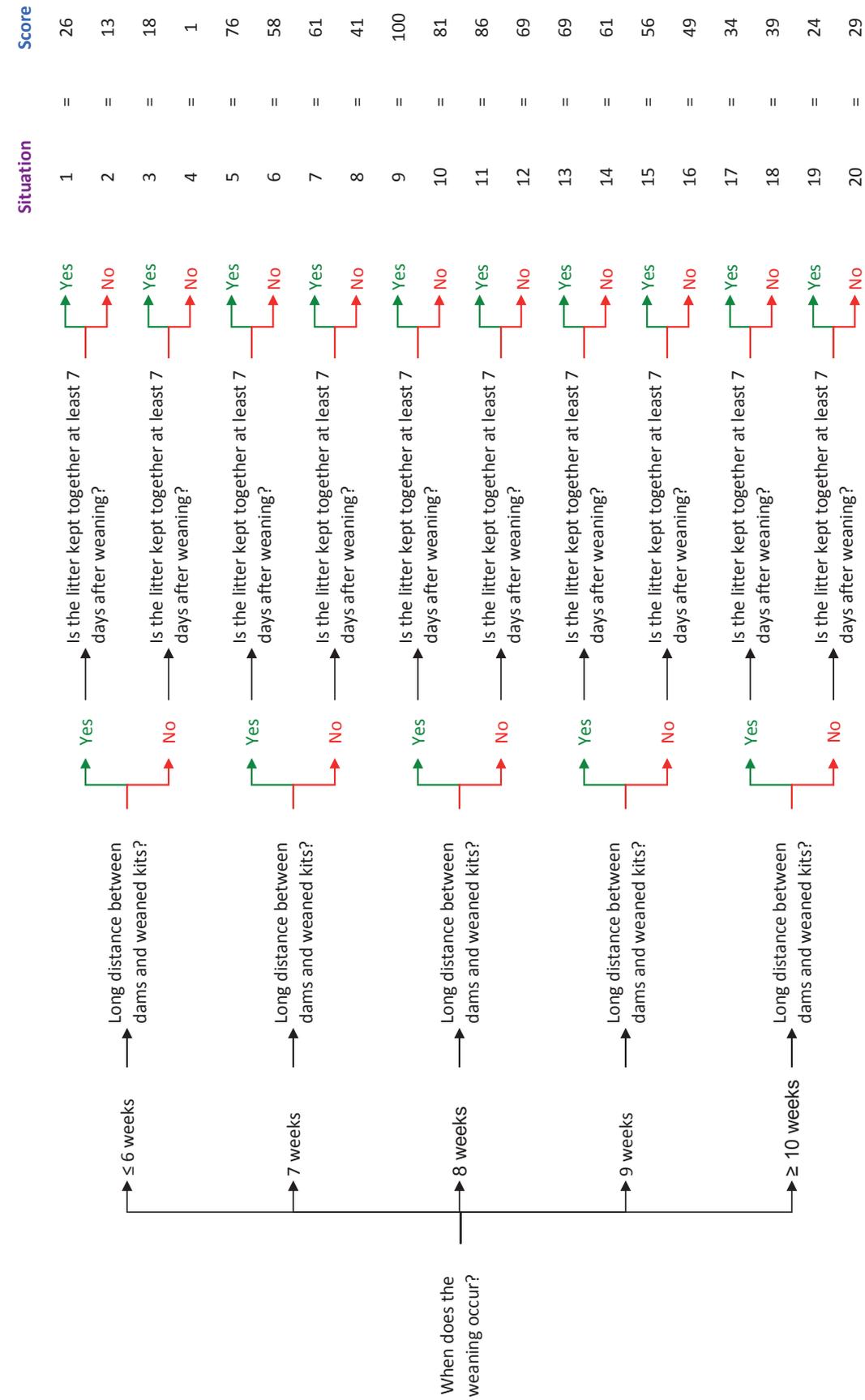
Figure 48 Scores S^w assigned to combinations of answers to questions on Measurement of **Age and procedures at weaning**

Score for the Criterion of *Expression of social behaviours*

The two partial scores are combined to form the sub-score for the Criterion of *Expression of social behaviours* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_h \qquad = \qquad 0.14 \qquad\qquad\qquad \mu_w \qquad = \qquad 0.32$$

with h, social housing and w, weaning management.

Reminder:

$$\text{Expression of social behaviours-score} = \begin{cases} S^h + \left(S^w - S^h \right) \mu_w & \text{if} \quad S^h \leq S^w \\ S^w + \left(S^h - S^w \right) \mu_h & \text{if} \quad S^w \leq S^h \end{cases}$$

Therefore, with the μ listed above:

$$\text{Expression of social behaviours-score} = \begin{cases} S^h + 0.32 \left(S^w - S^h \right) & \text{if} \quad S^h \leq S^w \\ S^w + 0.14 \left(S^h - S^w \right) & \text{if} \quad S^w \leq S^h \end{cases}$$

Where S^h and S^w are the partial scores obtained by a given farm for Measurements *of Social housing* and *Age and procedures at weaning* respectively.

μ_a and μ_b are the capacities of Measurements *of Social housing* and *Age and procedures at weaning* respectively.

3.3.1.10 Expression of other behaviours

Three partial scores are calculated: one for Measurement of *Stereotypic behaviours,* one for Measurement of *Cage enrichments,* and one for Measurement *Fur chewing*, before being combined into a criterion-score.

Moreover, except for Measurement *of Fur chewing* which is assessed only in Periods 1 and 3, these three measurements are assessed at different levels for the three periods of the production cycle. So the first step is to calculate the sub-score for each period considered, then to aggregate the sub-scores obtained in order to have the score covering the production cycle for each of these three measurements.

Sub-scores S_1^p, S_2^s and S_3^s for Periods 1, 2 and 3 for Measurement of *Stereotypic behaviours*

The score of a farm with regard to Measurement of *Stereotypic behaviours* is calculated from the % of mink performing stereotypies.

The calculation of the sub-score is the same for each period:

In Period 1:

Let I_1 = 100 - % of mink performing stereotypic behaviors in Period 1

I_1 is computed into a score using *I*-spline functions (Figure 49) as follows:

Score = a_x + b_x × I_1 + c_x × I_1^2 + d_x × I_1^3

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 10 - Stereotypic behaviour - Period 1			
a_1	0	a_2	-729.386315688250988387153483...
b_1	0.214751950685649561911816...	b_2	27.566739111323624200622362...
c_1	-0.000576856605898348143851...	c_2	-0.342476699799823536274345...
d_1	0.000072896708542028612154...	d_2	0.001497479402516807122508...
k	80		
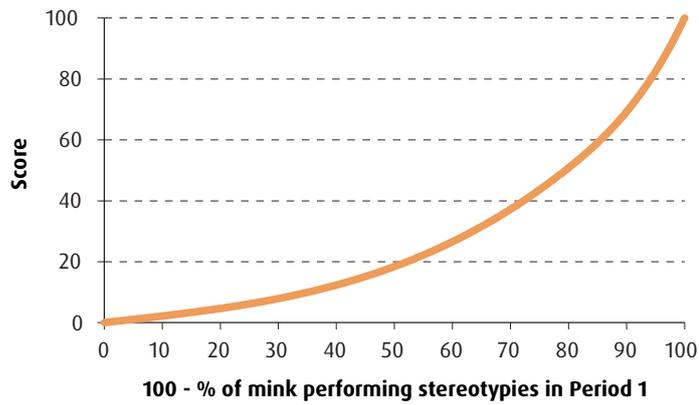
Figure 49 Calculation of the sub-score S_1^s for Measurement of Stereotypic behaviour according to the percentage of mink performing stereotypies in Period 1

In Period 2:

Let I_2 = 100 - % of mink performing stereotypic behaviours in Period 2

Let $J_2 = \dfrac{I_2 - 40}{100 - 40} \times 100$ if $I_2 \geq 40$

$J_2 = 0$ if $I_2 < 40$

J_2 is computed into a score using *I*-spline functions (Figure 50) as follows:

Score = $a_x + b_x \times J_2 + c_x \times J_2^2 + d_x \times J_2^3$

with $x = 1$ when $J_1 < k$ and $x = 2$ when $J_1 \geq k$

Criterion 10 - Stereotypic behaviour - Period 2			
a_1	0	a_2	-5823.712572677466596360318362...
b_1	-0.000000000000180209755611...	b_2	210.495639328675139267943450...
c_1	0.000000000000006688807052...	c_2	-2.536092086671704048939091...
d_1	0.000004996055153933754637...	d_2	0.010235069506185121013253...
k	83		
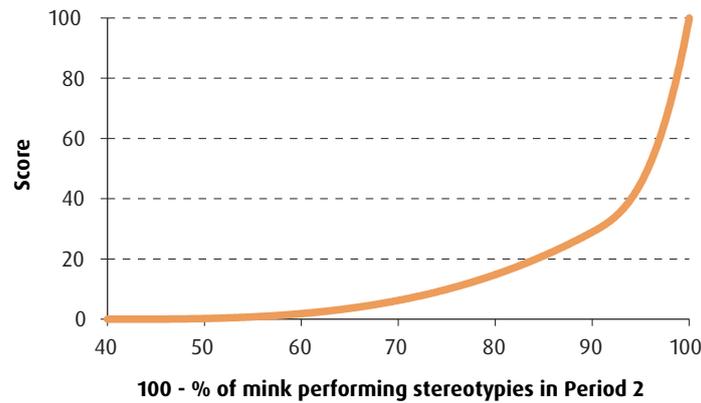
Figure 50 Calculation of the sub-score S_2^s for Measurement of Stereotypic behaviour according to the percentage of mink performing stereotypies in Period 2

In Period 3:

Let I_3 = 100 - % of mink performing stereotypic behaviours in Period 3

Let $J_3 = \dfrac{I_3 - 40}{100 - 40} \times 100$ if $I_3 \geq 40$

$J_3 = 0$ if $I_3 < 40$

J_3 is computed into a score using *I*-spline functions (Figure 51) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 10 - Stereotypic behaviour - Period 3			
a_1	0	a_2	-7056.8110301734886888880282640
b_1	0.0388600537057712455690783	b_2	249.1028112421385571906284895
c_1	-0.0004571771025479985932523	c_2	-2.9306216652445042925023699
d_1	0.0000619041243061400973642	d_2	0.0115527465565232346361713
k	85		
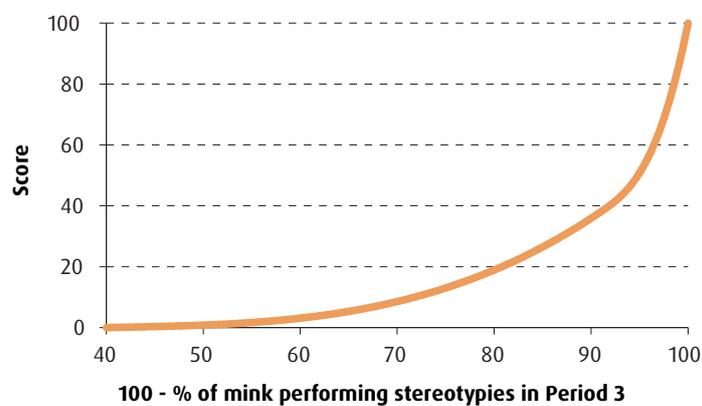
Figure 51 Calculation of the sub-score S_3^s for Measurement of Stereotypic behaviour according to the percentage of mink performing stereotypies in Period 3

Score S^s for Measurement of *Stereotypic behaviour*

The three sub-scores are combined to form the partial score S^s for Measurement of *Stereotypic behaviour* using a Choquet integral. The parameters of the Choquet integral are:

μ_1 = 0.26 μ_{12} = 0.26

μ_2 = 0.15 μ_{13} = 0.27

μ_3 = 0.19 μ_{23} = 0.33

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^s\text{-score} = \begin{cases} S_1^s + \left(S_2^s - S_1^s\right)\mu_{23} + \left(S_3^s - S_2^s\right)\mu_3 & \text{if} & S_1^s \leq S_2^s \leq S_3^s \\ S_1^s + \left(S_3^s - S_1^s\right)\mu_{23} + \left(S_2^s - S_3^s\right)\mu_2 & \text{if} & S_1^s \leq S_3^s \leq S_2^s \\ S_2^s + \left(S_1^s - S_2^s\right)\mu_{13} + \left(S_3^s - S_1^s\right)\mu_3 & \text{if} & S_2^s \leq S_1^s \leq S_3^s \\ S_2^s + \left(S_3^s - S_2^s\right)\mu_{13} + \left(S_1^s - S_3^s\right)\mu_1 & \text{if} & S_2^s \leq S_3^s \leq S_1^s \\ S_3^s + \left(S_1^s - S_3^s\right)\mu_{12} + \left(S_2^s - S_1^s\right)\mu_2 & \text{if} & S_3^s \leq S_1^s \leq S_2^s \\ S_3^s + \left(S_2^s - S_3^s\right)\mu_{12} + \left(S_1^s - S_2^s\right)\mu_1 & \text{if} & S_3^s \leq S_2^s \leq S_1^s \end{cases}$$

Therefore, with the μ listed above:

$$S^s\text{-score} = \begin{cases} S_1^s + 0.33\left(S_2^s - S_1^s\right) + 0.19\left(S_3^s - S_2^s\right) & \text{if} & S_1^s \leq S_2^s \leq S_3^s \\ S_1^s + 0.33\left(S_3^s - S_1^s\right) + 0.15\left(S_2^s - S_3^s\right) & \text{if} & S_1^s \leq S_3^s \leq S_2^s \\ S_2^s + 0.27\left(S_1^s - S_2^s\right) + 0.19\left(S_3^s - S_1^s\right) & \text{if} & S_2^s \leq S_1^s \leq S_3^s \\ S_2^s + 0.27\left(S_3^s - S_2^s\right) + 0.26\left(S_1^s - S_3^s\right) & \text{if} & S_2^s \leq S_3^s \leq S_1^s \\ S_3^s + 0.26\left(S_1^s - S_3^s\right) + 0.15\left(S_2^s - S_1^s\right) & \text{if} & S_3^s \leq S_1^s \leq S_2^s \\ S_3^s + 0.26\left(S_2^s - S_3^s\right) + 0.26\left(S_1^s - S_2^s\right) & \text{if} & S_3^s \leq S_2^s \leq S_1^s \end{cases}$$

Where S^s_1, S^s_2 and S^s_3 are the sub-scores obtained by a given farm for Measurement of *Stereotypic behaviour* in Period 1, in Period 2 and in Period 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Measurement of *Stereotypic behaviour* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Sub-scores S_1^e, S_2^e and S_3^e for Periods 1, 2 and 3 for Measurement of Cage enrichments

One score is assigned to Measurement of *Cage enrichments* according to a decision-tree based on different types and number of enrichments (Figure 52, Figure 53 and Figure 54).
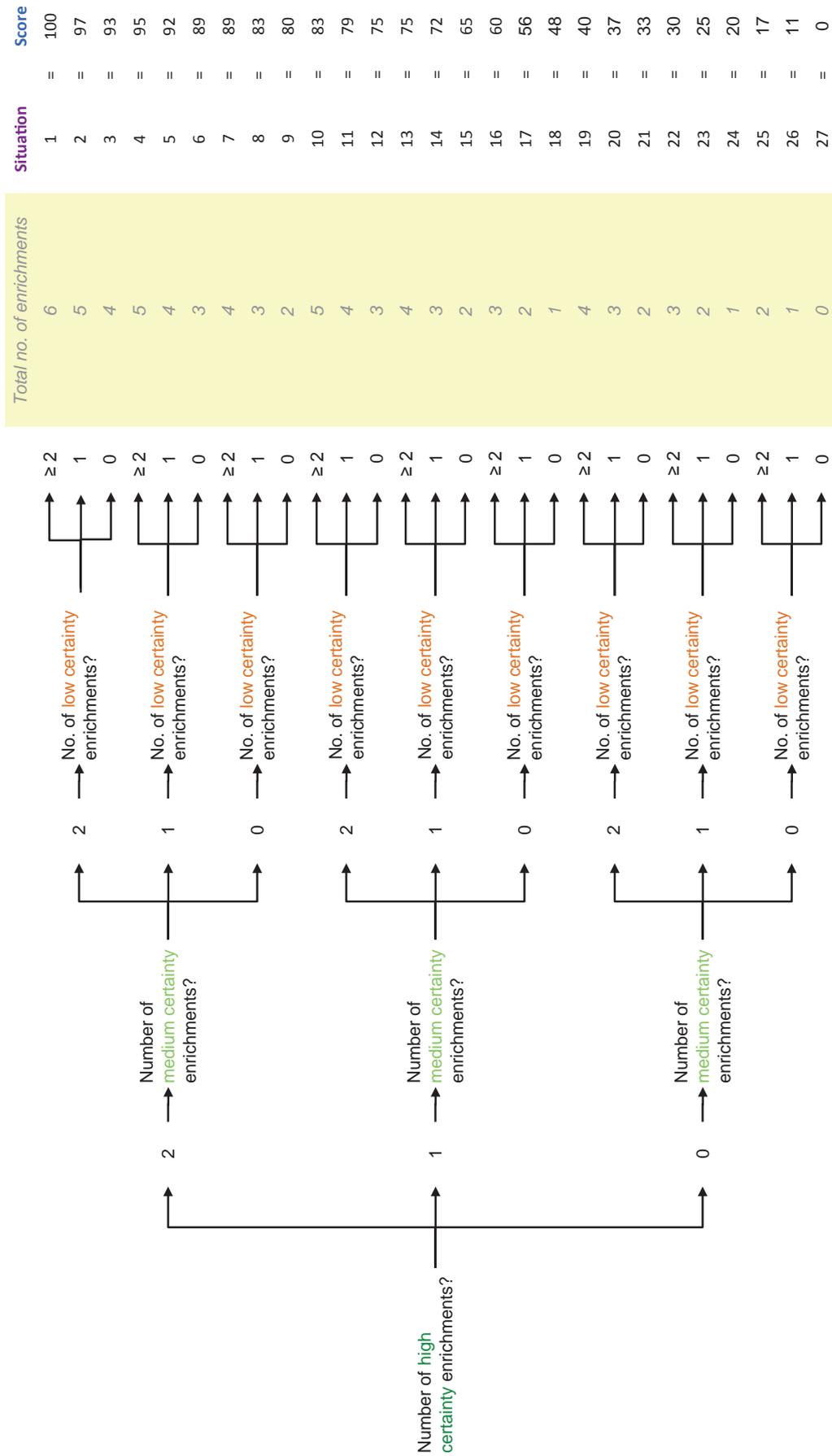
Figure 52 Sub-scores S_1^e assigned to combinations of answers to questions on Measurement of **Cage enrichments** in Period 1
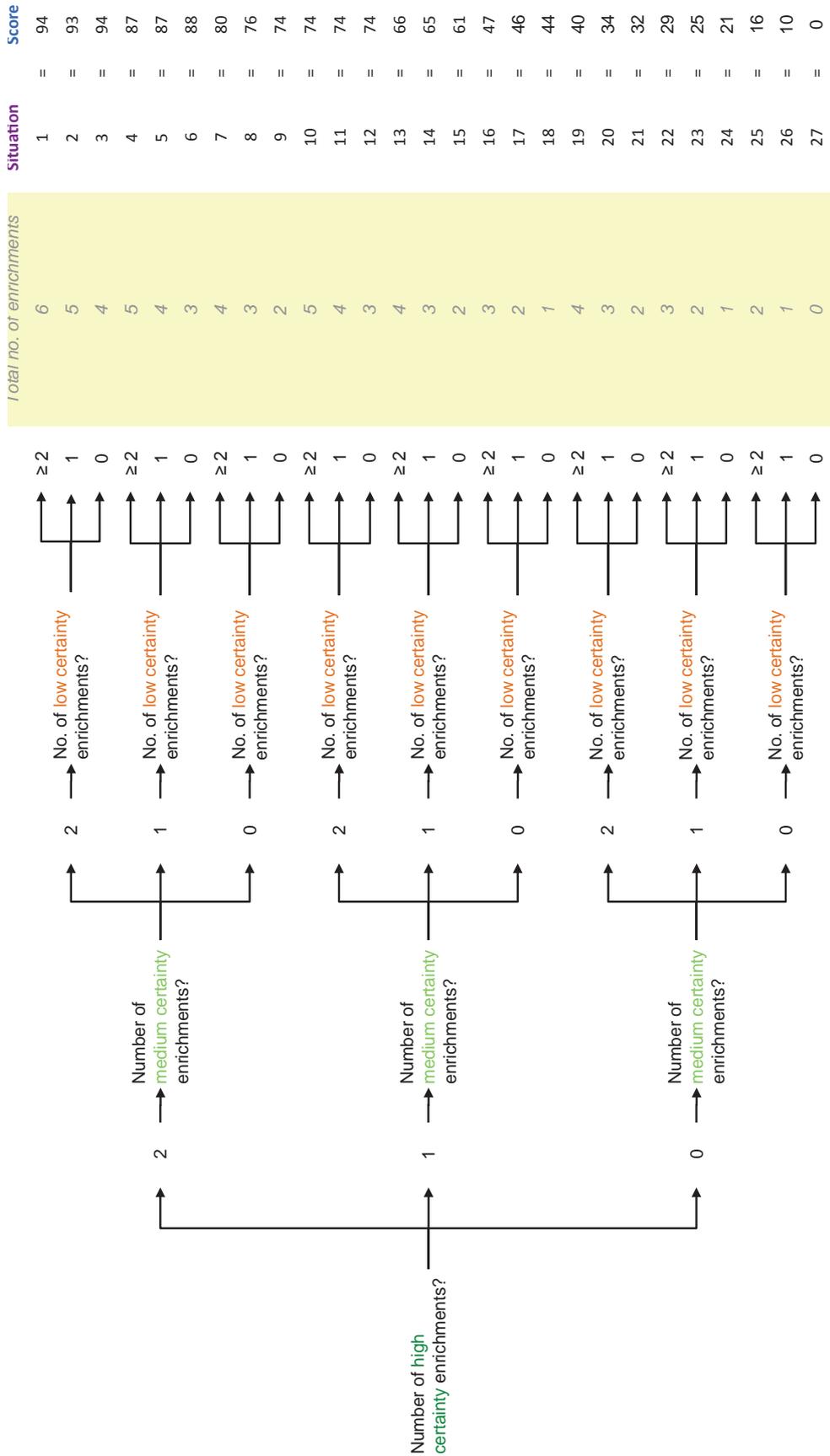
Figure 53 Sub-scores S_2^e assigned to combinations of answers to questions on Measurement of **Cage enrichments** in Period 2
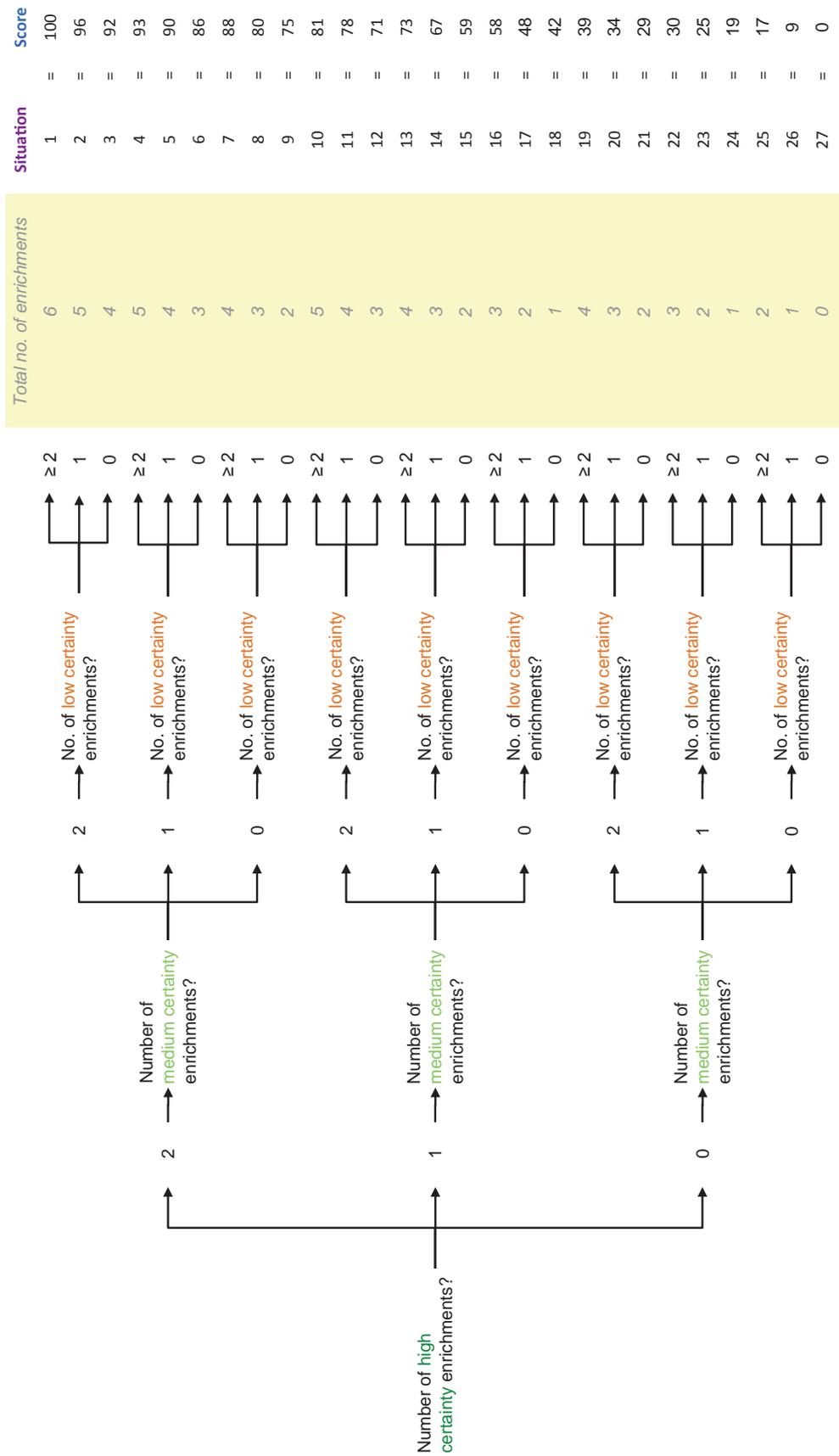
Figure 54 Sub-scores S_3^e assigned to combinations of answers to questions on Measurement of **Cage enrichments** in Period 3

Since animals may be housed with different types and numbers of enrichments, we consider the % of animals in each situation defined by the decision-tree and the final score to be assigned to the farm is the worst score (= the one corresponding to the worst situation found on the farm) observed on at least 6% of the animals.

Score S^e for Measurement of Cage enrichments
The three sub-scores are combined to form the partial score S^e for Measurement of *Cage enrichments* using a Choquet integral. The parameters of the Choquet integral are

μ_1	=	0.14		μ_{12}	=	0.31
μ_2	=	0.05		μ_{13}	=	0.69
μ_3	=	0.29		μ_{23}	=	0.29

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$
S^e\text{-score} =
\begin{cases}
S_1^e + \left(S_2^e - S_1^e\right)\mu_{23} + \left(S_3^e - S_2^e\right)\mu_3 & \text{if} \quad S_1^e \leq S_2^e \leq S_3^e \\
S_1^e + \left(S_3^e - S_1^e\right)\mu_{23} + \left(S_2^e - S_3^e\right)\mu_2 & \text{if} \quad S_1^e \leq S_3^e \leq S_2^e \\
S_2^e + \left(S_1^e - S_2^e\right)\mu_{13} + \left(S_3^e - S_1^e\right)\mu_3 & \text{if} \quad S_2^e \leq S_1^e \leq S_3^e \\
S_2^e + \left(S_3^e - S_2^e\right)\mu_{13} + \left(S_1^e - S_3^e\right)\mu_1 & \text{if} \quad S_2^e \leq S_3^e \leq S_1^e \\
S_3^e + \left(S_1^e - S_3^e\right)\mu_{12} + \left(S_2^e - S_1^e\right)\mu_2 & \text{if} \quad S_3^e \leq S_1^e \leq S_2^e \\
S_3^e + \left(S_2^e - S_3^e\right)\mu_{12} + \left(S_1^e - S_2^e\right)\mu_1 & \text{if} \quad S_3^e \leq S_2^e \leq S_1^e
\end{cases}
$$

Thus, with the μ listed above:

$$
S^e\text{-score} =
\begin{cases}
S_1^e + 0.29\left(S_2^e - S_1^e\right) + 0.29\left(S_3^e - S_2^e\right) & \text{if} \quad S_1^e \leq S_2^e \leq S_3^e \\
S_1^e + 0.29\left(S_3^e - S_1^e\right) + 0.05\left(S_2^e - S_3^e\right) & \text{if} \quad S_1^e \leq S_3^e \leq S_2^e \\
S_2^e + 0.69\left(S_1^e - S_2^e\right) + 0.29\left(S_3^e - S_1^e\right) & \text{if} \quad S_2^e \leq S_1^e \leq S_3^e \\
S_2^e + 0.69\left(S_3^e - S_2^e\right) + 0.14\left(S_1^e - S_3^e\right) & \text{if} \quad S_2^e \leq S_3^e \leq S_1^e \\
S_3^e + 0.31\left(S_1^e - S_3^e\right) + 0.05\left(S_2^e - S_1^e\right) & \text{if} \quad S_3^e \leq S_1^e \leq S_2^e \\
S_3^e + 0.31\left(S_2^e - S_3^e\right) + 0.14\left(S_1^e - S_2^e\right) & \text{if} \quad S_3^e \leq S_2^e \leq S_1^e
\end{cases}
$$

Where $S^e{}_1$, $S^e{}_2$ and $S^e{}_3$ are the sub-scores obtained by a given farm for Measurement of *Cage enrichments* in Period 1, in Period 2 and in Period 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Measurement of *Cage enrichments* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on…

Sub-scores S_1^f and S_3^f for Periods 1 and 3 for *Measurement of Fur chewing*
Since in Period 2, adult females chew their fur in order to make a nest for their kits, the measurement is not considered in this period.

The score of a farm with regard to *Measurement of Fur chewing* is calculated from the percentages of mink within each level of the scale used to assess fur chewing (4 levels here):

Level	0	1	2	3
% of mink	$P^f_{i,0}$	$P^f_{i,1}$	$P^f_{i,2}$	$P^f_{i,3}$

The calculation is the same for each period:

$$\text{Let } I_i = \left(100 - \frac{\sum_{k=0}^{3} w^f_{i,j}\, p^f_{i,j}}{w^f_{i,3}} \right)$$

with i = 1 or 3 according to the period considered and j = 0, 1, 2 or 3 according to the level.

Weights	$W^f_{i,0} = 0$	$W^f_{i,1} = 9$	$W^f_{i,2} = 17$	$W^f_{i,3} = 25$

I_i is computed into a score using I-spline functions (Figure 55) as follows:

Score $= a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ 　　　　i = 1 or 3

with x = 1 when $I_i < k$ and x = 2 when $I_i \geq k$

Criterion 10 - Fur chewing - Periods 1 and 3	
a_1　0	a_2　2.7180080988894204097050533
b_1　0.52479555541860924721930814	b_2　0.25299474431851165512 34159
c_1　-0.016469485935 8541431659795	c_2　-0.0074094589406415055019006
d_1　0.0002467440723956621320169	d_2　0.00014607710578388646968 30
k　30	

Note: The coefficients are the same for the two periods (Periods 1 and 3) since the interpretation in terms of welfare is the same whatever the period considered.
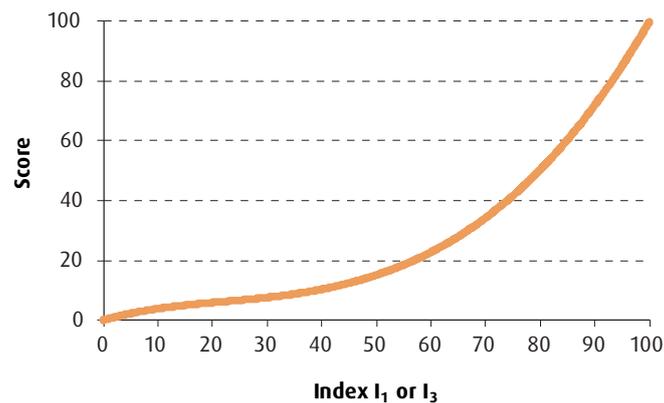
Figure 55 Calculation of the sub-score S^f_i for **Measurement of Fur chewing** according to the percentage of mink within each level of the scale used to assess fur chewing (with i = 1 or 3 according to the period considered)

Score S^f for Measurement of *Fur chewing*
The two sub-scores are combined to form the partial score S^f for Measurement *of Fur chewing* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.14	μ_3	=	0.34

with 1, Period 1 and 3, Period 3

Reminder:

$$S^f\text{-score} = \begin{cases} S_1^f + \left(S_3^f - S_1^f\right)\mu_3 & \text{if} \quad S_1^f \le S_3^f \\ S_3^f + \left(S_1^f - S_3^f\right)\mu_1 & \text{if} \quad S_3^f \le S_1^f \end{cases}$$

Therefore, with the μ listed above:

$$S^f\text{-score} = \begin{cases} S_1^f + 0.34\left(S_3^f - S_1^f\right) & \text{if} \quad S_1^f \le S_3^f \\ S_3^f + 0.14\left(S_1^f - S_3^f\right) & \text{if} \quad S_3^f \le S_1^f \end{cases}$$

Where S^f_1 and S^f_3 are the scores obtained by a given farm for Measurement of *Fur chewing* in Period 1 and in Period 3 respectively.
μ_1 and μ_3 are the capacities of Measurement of *Fur chewing* in Periods 1 and 3 respectively.

Score for the Criterion of *Expression of other behaviours*
The three partial scores are combined to form the overall score for the Criterion of *Expression of other behaviours* using a Choquet integral. The parameters of the Choquet integral are:

μ_s	=	0.37	μ_{se}	=	0.52
μ_e	=	0.19	μ_{ef}	=	0.19
μ_f	=	0.18	μ_{sf}	=	0.55

with s, stereotypic behaviours; e, enrichments; and f, fur chewing.

Reminder:

$$\text{Expression of other behaviours-score} = \begin{cases} S^s + \left(S^e - S^s\right)\mu_{ef} + \left(S^f - S^e\right)\mu_f & \text{if} \quad S^s \le S^e \le S^f \\ S^s + \left(S^f - S^s\right)\mu_{ef} + \left(S^e - S^f\right)\mu_e & \text{if} \quad S^s \le S^f \le S^e \\ S^e + \left(S^s - S^e\right)\mu_{sf} + \left(S^f - S^s\right)\mu_f & \text{if} \quad S^e \le S^s \le S^f \\ S^e + \left(S^f - S^e\right)\mu_{sf} + \left(S^s - S^f\right)\mu_s & \text{if} \quad S^e \le S^f \le S^s \\ S^f + \left(S^s - S^f\right)\mu_{se} + \left(S^e - S^s\right)\mu_e & \text{if} \quad S^f \le S^s \le S^e \\ S^f + \left(S^e - S^f\right)\mu_{se} + \left(S^s - S^e\right)\mu_s & \text{if} \quad S^f \le S^e \le S^s \end{cases}$$

Thus, with the μ listed above:

$$\text{Expression of other behaviours-score} = \begin{cases} S^s + 0.19\left(S^e - S^s\right) + 0.18\left(S^f - S^e\right) & \text{if} \quad S^s \le S^e \le S^f \\ S^s + 0.19\left(S^f - S^e\right) + 0.19\left(S^e - S^f\right) & \text{if} \quad S^s \le S^f \le S^e \\ S^e + 0.55\left(S^s - S^e\right) + 0.18\left(S^f - S^s\right) & \text{if} \quad S^e \le S^s \le S^f \\ S^e + 0.55\left(S^f - S^e\right) + 0.37\left(S^s - S^f\right) & \text{if} \quad S^e \le S^f \le S^s \\ S^f + 0.52\left(S^s - S^f\right) + 0.19\left(S^e - S^s\right) & \text{if} \quad S^f \le S^s \le S^e \\ S^f + 0.52\left(S^e - S^f\right) + 0.37\left(S^s - S^e\right) & \text{if} \quad S^f \le S^e \le S^s \end{cases}$$

Where S^s, S^e and S^f are the sub-scores obtained by a given farm for Measurements of *Stereotypic behaviour, Cage enrichments* and *Fur chewing* in Period 1, in Period 2 and in Period 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Measurements of *Stereotypic behaviour, Cage enrichments* and *Fur chewing* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on…

3.3.1.11 Good human-animal relationship & positive emotional state

As the "Temperament test" could be used to assess the Criteria of *Good human-animal relationship* and *positive emotional state*, we decided to regroup the two criteria into one.
Two partial scores are calculated, one for Measurement of *Temperament test* and one for Measurement of *Frequency and duration of handling and transportation*, before being combined into a criterion-score.
Moreover, these two measurements are assessed for the three periods of the production cycle. So the first stage is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_1^t, S_2^t and S_3^t for Periods 1, 2 and 3 for Measurement of *Temperament test*
The score of a farm with regard to Measurement of *Temperament test* is calculated from the % of mink within each category used to temperament (3 levels here):

Level	0	1	2
% of mink	P_0^t	P_1^t	P_2^t

The calculation of the sub-score is the same for each period:

In Period 1:

$$\text{Let } I_i = \left(100 - \frac{\sum_{k=0}^{3} w_{i,j}\ p_{i,j}}{w_{i,3}} \right) \qquad \text{with } j = 0, 1 \text{ or } 2 \text{ according to the level.}$$

Weights	$W_0^t = 0$	$W_1^t = 3$	$W_2^t = 8$

I_1 is computed into a score using *I*-spline functions (Figure 56) as follows:

$$Score = a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 11&12 - Reaction of the mink to the temperament test - Period 1			
a_1	0	a_2	81.19441037689480822233691821
b_1	1.04193095061480978102963349	b_2	-3.38685506771030997441584994
c_1	-0.018944199102116036220744349	c_2	0.061579183018225173984472349
d_1	0.000229719763769263113058649	d_2	-0.000258300733789430304356049
k	55		
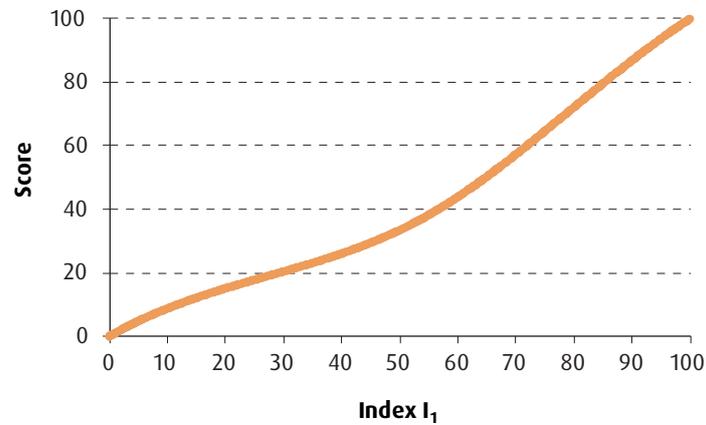
Figure 56 Calculation of the sub-score S_1^t for Measurement of **Temperament test** according to the percentage of mink within each category used to assess temperament in Period 1

In Period 2:

$$Let\ I_2 = \left(100 - \frac{\sum_{j=0}^{2} w_j^t\ p_j^t}{w_2^t} \right)$$

with j = 0, 1 or 2 according to the level.

Weights	W_0^t = 0	W_1^t = 2	W_2^t = 7

I_2 is computed into a score using I-spline functions (Figure 57) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2^2 + d_x \times I_2^3$

with x = 1 when $I_2 < k$ and x = 2 when $I_2 \geq k$

Criterion 11&12 - Reaction of the mink to the temperament test - Period 2		
a_1 0	a_2	57.5423734049022570502529561
b_1 0.8937043708253211704573005	b_2	-1.9834143005400535209048485
c_1 -0.0110782682463961851954126	c_2	0.0368737096245808360084339
d_1 0.0001384618375297363339436	d_2	-0.0001279380395961921229424
k 60		
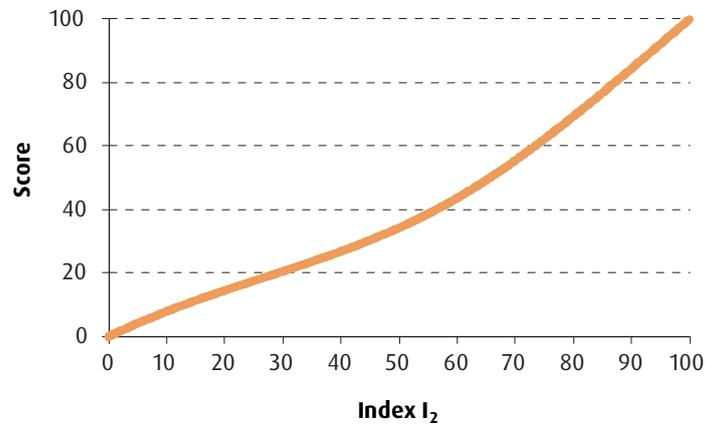
Figure 57 Calculation of the sub-score S_2^t for Measurement of **Temperament** according to the percentage of mink within each category used to assess temperament in Period 2

In Period 3:

$$Let\ I_3 = \left(100 - \frac{\sum_{j=0}^{2} w_j^t\ p_j^t}{w_2^t} \right)$$

with j = 0, 1 or 2 according to the level.

Weights	$W_0^t\ =\ 0$	$W_1^t\ =\ 3$	$W_2^t\ =\ 8$

I_3 is computed into a score using *I*-spline functions (Figure 58) as follows:

Score = a_x + b_x × I_3 + c_x × I_3^2 + d_x × I_3^3

with x = 1 when $I_3 < k$ and x = 2 when $I_3 \geq k$

Criterion 11&12 - Reaction of the mink to the temperament test - Period 3			
a_1	0	a_2	72.2700869700752974722490762
b_1	1.022096434512537621586147	b_2	-2.919908309479644525907815
c_1	-0.018583571536575929639134	c_2	0.053089241992897009958518
d_1	0.0002232090132079228572692	d_2	-0.000211171674859962117546
k	55		
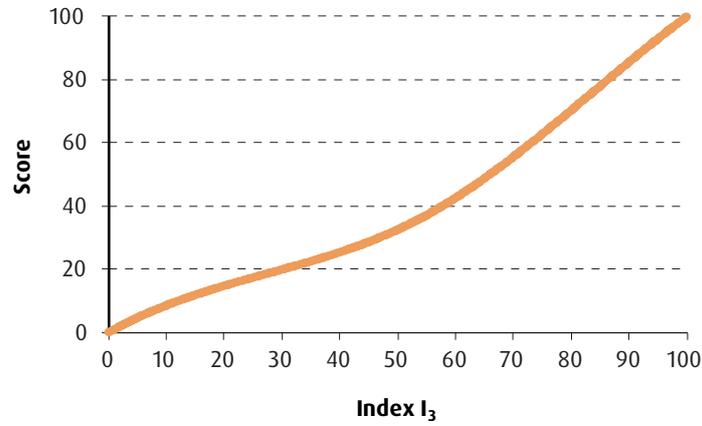
Figure 58 Calculation of the sub-score S_3^t for Measurement of Temperament according to the percentage of mink within each category used to assess temperament in Period 3

Score Sᵗ for Measurement of *Temperament*
The three sub-scores are combined to form the partial score S^t for Measurement of *Temperament* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.12		μ_{12}	=	0.15
μ_2	=	0.15		μ_{13}	=	0.63
μ_3	=	0.50		μ_{23}	=	0.53

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

Reminder:

$$S^t\text{-score} = \begin{cases} S_1^t + \left(S_2^t - S_1^t\right)\mu_{23} + \left(S_3^t - S_2^t\right)\mu_3 & \text{if} \quad S_1^t \le S_2^t \le S_3^t \\ S_1^t + \left(S_3^t - S_1^t\right)\mu_{23} + \left(S_2^t - S_3^t\right)\mu_2 & \text{if} \quad S_1^t \le S_3^t \le S_2^t \\ S_2^t + \left(S_1^t - S_2^t\right)\mu_{13} + \left(S_3^t - S_1^t\right)\mu_3 & \text{if} \quad S_2^t \le S_1^t \le S_3^t \\ S_2^t + \left(S_3^t - S_2^t\right)\mu_{13} + \left(S_1^t - S_3^t\right)\mu_1 & \text{if} \quad S_2^t \le S_3^t \le S_1^t \\ S_3^t + \left(S_1^t - S_3^t\right)\mu_{12} + \left(S_2^t - S_1^t\right)\mu_2 & \text{if} \quad S_3^t \le S_1^t \le S_2^t \\ S_3^t + \left(S_2^t - S_3^t\right)\mu_{12} + \left(S_1^t - S_2^t\right)\mu_1 & \text{if} \quad S_3^t \le S_2^t \le S_1^t \end{cases}$$

Therefore, with the μ listed above:

$$S^t\text{-score} = \begin{cases} S_1^t + 0.53\left(S_2^t - S_1^t\right) + 0.50\left(S_3^t - S_2^t\right) & \text{if} \quad S_1^t \le S_2^t \le S_3^t \\ S_1^t + 0.53\left(S_3^t - S_1^t\right) + 0.15\left(S_2^t - S_3^t\right) & \text{if} \quad S_1^t \le S_3^t \le S_2^t \\ S_2^t + 0.63\left(S_1^t - S_2^t\right) + 0.50\left(S_3^t - S_1^t\right) & \text{if} \quad S_2^t \le S_1^t \le S_3^t \\ S_2^t + 0.63\left(S_3^t - S_2^t\right) + 0.12\left(S_1^t - S_3^t\right) & \text{if} \quad S_2^t \le S_3^t \le S_1^t \\ S_3^t + 0.15\left(S_1^t - S_3^t\right) + 0.15\left(S_2^t - S_1^t\right) & \text{if} \quad S_3^t \le S_1^t \le S_2^t \\ S_3^t + 0.15\left(S_2^t - S_3^t\right) + 0.12\left(S_1^t - S_2^t\right) & \text{if} \quad S_3^t \le S_2^t \le S_1^t \end{cases}$$

Where S^t_1, S^t_2 and S^t_3 are the sub-scores obtained by a given farm for Measurement of *Temperament* in Period 1, in Period 2 and in Period 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Measurement of *Temperament test* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made from the measurements in Periods 1 and 2 and so on...

Sub-scores S^h_1, S^h_2 and S^h_3 for Periods 1, 2 and 3 for Measurement of *Frequency and duration of handling and transportation*

At farm level, we have to deal with 3 items of data: the average number of times mink are caught and handled for less than one minute, the average number of times mink are caught and handled for more than one minute but less than one hour and the average number of times mink are caught and handled for less than one minute.

A reference combination of average number of handlings/mink in categories 1, 2 and 3 representing the worst situation that might be found in production has been previously defined. This means that a score of 0 must be assigned to this situation.

The score of a farm with regard to handling procedures is calculated from the different combinations of average numbers of handlings/mink within each level of the scale used to assess handling procedures (3 levels here):

Level	1	2	3
Number of handlings/mink	n^h_1	n^h_2	n^h_3

The calculation of the sub-score is the same for each period:

In Period 1:

if $\qquad \sum_{j=0}^{2} w^h_j\, n^h_j \quad > \quad 15 \times w^h_1 + 10 \times w^h_2 + 5 \times w^h_3$

$\qquad$ then $\quad I_1 = 0$

with j = 1, 2 or 3 according to the level.

Else, $\quad I_1 = \left(100 - \dfrac{\sum_{j=0}^{2} w^h_j\, n^h_j}{15 \times w^h_1 + 10 \times w^h_2 + 5 \times w^h_3} \right)$

Weights	$W^2_1 \ = \ 1$	$W^2_2 \ = \ 4$	$W^2_3 \ = \ 28$

I_1 is computed into a score using *I*-spline functions (Figure 59) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3^2 + d_x \times I_3^3$

with x = 1 when $I_3 < k$ and x = 2 when $I_3 \geq k$

Criterion 11&12 - Handling procedures - Period 1			
a_1	0	a_2	-128.179349767857331698905 9094
b_1	1.05005968046473951993391 44	b_2	8.04166057867370831502285 00
c_1	-0.01909199419037573355883 99	c_2	-0.14621201054605509339623 38
d_1	0.00011570905570034921265 33	d_2	0.00088613339736018674128 17
k	55		
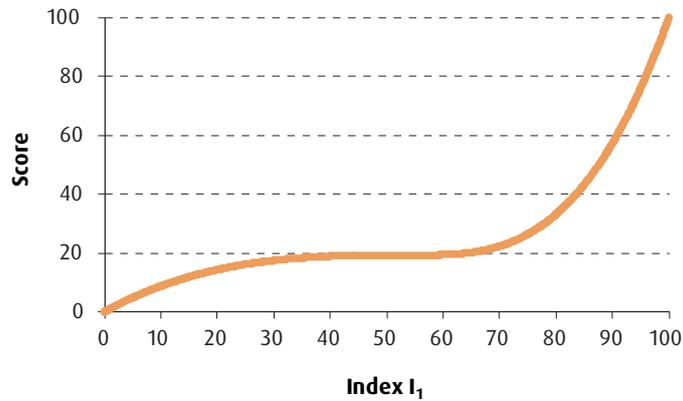
Figure 59 Calculation of the sub-score S_1^h for Measurement of **Frequency and duration of handling** and transportation according to the different combinations of average numbers of handlings/mink within each level of the scale used to assess handling procedures in Period 1

The calculation of the sub-score is the same for each period:

In Period 2:

if $\quad \sum_{j=0}^{2} w_j^h \, n_j^h \quad > \quad 15 \times w_1^h + 10 \times w_2^h + 5 \times w_3^h$

$\qquad\qquad$ then $\quad I_2 = 0$

with j = 1, 2 or 3 according to the level.

Else, $\quad I_2 = \left(100 - \dfrac{\sum\limits_{j=0}^{2} w_j^h \, n_j^h}{15 \times w_1^h + 10 \times w_2^h + 5 \times w_3^h} \right)$

Weights	W_1^2	=	1	W_2^2	=	4	W_3^2	=	19

I_2 is computed into a score using *I*-spline functions (Figure 60) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2{}^2 + d_x \times I_2{}^3$

with x = 1 when $I_2 < k$ and x = 2 when $I_2 \geq k$

Criterion 11&12 - Handling procedures - Period 2			
a_1	0	a_2	-1001.28183735218772199004488853
b_1	0.24651466176025604859489670	b_2	37.79458415213719035818 94003
c_1	-0.00308143327197292872 86825	c_2	-0.47243230860400819981 49276
d_1	0.00009051783559415299 38890	d_2	0.00204614650812004169 11422
k	80		
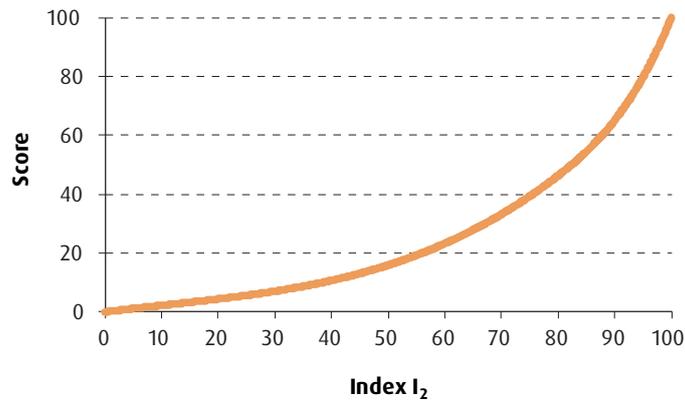
Figure 60 Calculation of the sub-score S_2^h for Measurement of **Frequency and duration of handling and transportation** according to the different combinations of average numbers of handlings/mink within each level of the scale used to assess handling procedures in Period 2

The calculation of the sub-score is the same for each period:

In Period 3:

if $\quad \sum_{j=0}^{2} w_j^h \, n_j^h \quad > \quad 15 \times w_1^h + 10 \times w_2^h + 5 \times w_3^h$

$\qquad$ then $\quad I_3 = 0$

with j = 1, 2 or 3 according to the level.

Else, $\quad I_3 = \left(100 - \dfrac{\sum_{j=0}^{2} w_j^h \, n_j^h}{15 \times w_1^h + 10 \times w_2^h + 5 \times w_3^h} \right)$

Weights	W_1^2 = 2	W_2^2 = 5	W_3^2 = 41

I_3 is computed into a score using I-spline functions (Figure 61) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3{}^2 + d_x \times I_3{}^3$

with x = 1 when $I_3 < k$ and x = 2 when $I_3 \geq k$

Criterion 11&12 - Handling procedures - Period 3			
a_1	0	a_2	-187.5415046458917345262307208
b_1	0.9041978668950754194355568	b_2	10.2812730926123148122997009
c_1	-0.0150699644483112162041127	c_2	-0.1713545514562156424354100
d_1	0.0001047120047299996320510	d_2	0.0009729597099493778435478
k	60		
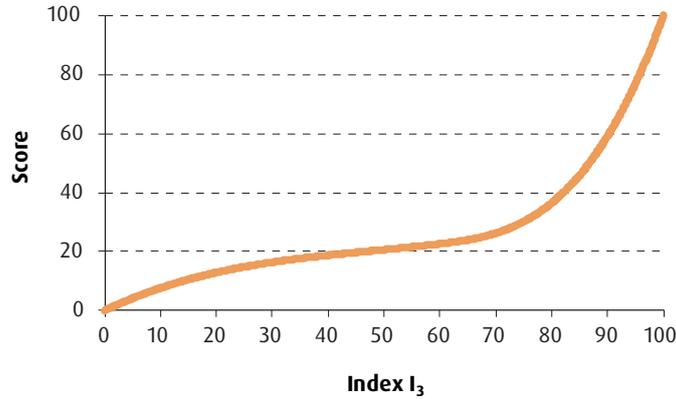
Figure 61 Calculation of the sub-score S_3^h for Measurement of **Frequency and duration of handling and transportation** according to the different combinations of average numbers of handlings/mink within each level of the scale used to assess handling procedures in Period 3

Score S^h for Measurement of *Frequency and duration of handling and transportation*

The three sub-scores are combined to form the partial score S^h for Measurement of *Frequency and duration of handling and transportation* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.06	μ_{12}	=	0.29
μ_2	=	0.29	μ_{13}	=	0.37
μ_3	=	0.25	μ_{23}	=	0.35

with 1 = Period 1, 2 = Period 2 and 3 = Period 3

$$
S^h\text{-score} = \begin{cases}
S_1^h + \left(S_2^h - S_1^h\right)\mu_{23} + \left(S_3^h - S_2^h\right)\mu_3 & \text{if} & S_1^h \le S_2^h \le S_3^h \\
S_1^h + \left(S_3^h - S_1^h\right)\mu_{23} + \left(S_2^h - S_3^h\right)\mu_2 & \text{if} & S_1^h \le S_3^h \le S_2^h \\
S_2^h + \left(S_1^h - S_2^h\right)\mu_{13} + \left(S_3^h - S_1^h\right)\mu_3 & \text{if} & S_2^h \le S_1^h \le S_3^h \\
S_2^h + \left(S_3^h - S_2^h\right)\mu_{13} + \left(S_1^h - S_3^h\right)\mu_1 & \text{if} & S_2^h \le S_3^h \le S_1^h \\
S_3^h + \left(S_1^h - S_3^h\right)\mu_{12} + \left(S_2^h - S_1^h\right)\mu_2 & \text{if} & S_3^h \le S_1^h \le S_2^h \\
S_3^h + \left(S_2^h - S_3^h\right)\mu_{12} + \left(S_1^h - S_2^h\right)\mu_1 & \text{if} & S_3^h \le S_2^h \le S_1^h
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^h\text{-score} = \begin{cases}
S_1^h + 0.35\left(S_2^h - S_1^h\right) + 0.25\left(S_3^h - S_2^h\right) & \text{if} & S_1^h \le S_2^h \le S_3^h \\
S_1^h + 0.35\left(S_3^h - S_1^h\right) + 0.29\left(S_2^h - S_3^h\right) & \text{if} & S_1^h \le S_3^h \le S_2^h \\
S_2^h + 0.37\left(S_1^h - S_2^h\right) + 0.25\left(S_3^h - S_1^h\right) & \text{if} & S_2^h \le S_1^h \le S_3^h \\
S_2^h + 0.37\left(S_3^h - S_2^h\right) + 0.06\left(S_1^h - S_3^h\right) & \text{if} & S_2^h \le S_3^h \le S_1^h \\
S_3^h + 0.29\left(S_1^h - S_3^h\right) + 0.29\left(S_2^h - S_1^h\right) & \text{if} & S_3^h \le S_1^h \le S_2^h \\
S_3^h + 0.29\left(S_2^h - S_3^h\right) + 0.06\left(S_1^h - S_2^h\right) & \text{if} & S_3^h \le S_2^h \le S_1^h
\end{cases}
$$

Where S_1^h, S_2^h and S_3^h are the sub-scores obtained by a given farm for Measurement of *Frequency and duration of handling and transportation* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Measurement of *Frequency and duration of handling and transportation* in Periods 1, 2

and 3 respectively.

μ_{12} is the capacity of the group made from the measurements in period 1 and 2 and so on...

Score for the Criterion of *Good human-animal relationship/Positive emotional state*

The two partial scores are combined to form the overall score for the Criterion of *Good human-animal relationship/ positive emotional state* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_t \qquad = \qquad 0.38 \qquad\qquad\qquad \mu_h \qquad = \qquad 0.19$$

With t, temperament and h, handling procedures.

Reminder:

$$\text{Good H-A relationship/Positive emotional state-score} = \begin{cases} S^h + \left(S^t - S^h\right)\mu_t & \text{if} \quad S^h \leq S^t \\ S^t + \left(S^h - S^t\right)\mu_h & \text{if} \quad S^t \leq S^h \end{cases}$$

Therefore, with the μ listed above:

$$\text{Good H-A relationship/Positive emotional state-score} = \begin{cases} S^h + 0.38\left(S^t - S^h\right) & \text{if} \quad S^h \leq S^t \\ S^t + 0.19\left(S^h - S^t\right) & \text{if} \quad S^t \leq S^h \end{cases}$$

Where S^h and S^t are the partial scores obtained by a given farm for Measurement of *Frequency and duration of handling and transportation* and Measurement of *Temperament test* respectively.

μ_{tp} and μ_t are the capacities of Measures *Frequency and duration of handling and transportation* and *Temperament test* respectively.

3.3.2 Principle-scores

To calculate principles-score in WelFur, we decided to follow the same process as in Welfare Quality®. In Welfare Quality® parameters of the calculation (using Choquet integrals) to aggregate criterion-scores into principle-scores were defined for each animal type under study (*dairy cows, fattening bulls, veal calves, fattening pigs, sows and piglets, broilers and layers*).

An analysis of all of the experts' answers obtained in Welfare Quality® for the 8 types of animal cited above showed that there is no significant difference between the Principle-scores calculated for each type of animal. We therefore decided to calculate WelFur Principle-scores by gathering all animal types experts' answers into only one set of parameters, to be used in Welfare Quality® and in WelFur. We performed analytical work by testing and calculating several ways to combine the answers of the experts for all the animal types in order to achieve a common procedure for all livestock species.

Principle-scores are therefore calculated from the data collected on the eight animal types separately. Hence, we use Choquet integrals in order to form Mink Principle scores by using the mean of each animal type's principle-scores obtained by the combination of criterion-scores assigned by the Welfare Quality® experts.

The parameters of the integrals are given below for each principle.

Principle of Good feeding

$$\mu_1 \qquad = \qquad 0.11 \qquad\qquad\qquad \mu_2 \qquad = \qquad 0.29$$

with 1, Criterion *Absence of prolonged hunger* and 2, the Criterion of *Absence of prolonged thirst*.

Reminder:

Good feeding-score $= \begin{cases} S_1 + (S_2 - S_1)\mu_2 & \text{if} \quad S_1 \leq S_2 \\ S_2 + (S_1 - S_2)\mu_1 & \text{if} \quad S_2 \leq S_1 \end{cases}$

Therefore, with the μ listed above:

Good feeding-score $= \begin{cases} S_1 + 0.29(S_2 - S_1) & \text{if} \quad S_1 \leq S_2 \\ S_2 + 0.11(S_1 - S_2) & \text{if} \quad S_2 \leq S_1 \end{cases}$

Where S_1 and S_2 are the criterion-scores obtained by a given farm for the Criterion of *Absence of prolonged hunger* and the Criterion of *Absence of prolonged thirst* respectively.
μ_1 and μ_2 are the capacities of Criteria *Absence of prolonged hunger* and *Absence of prolonged thirst* respectively.

Principle of *Good housing*

μ_3	=	0.15		μ_{34}	=	0.34
μ_4	=	0.10		μ_{35}	=	0.45
μ_5	=	0.13		μ_{45}	=	0.36

with 3, the Criterion of *Comfort around resting*; 4, the Criterion of *Thermal comfort*; and 5, the Criterion of *Ease of movement*.

Reminder:

Good housing-score $= \begin{cases} S_3 + (S_4 - S_3)\mu_{45} + (S_5 - S_4)\mu_5 & \text{if} \quad S_3 \leq S_4 \leq S_5 \\ S_3 + (S_5 - S_3)\mu_{45} + (S_4 - S_5)\mu_4 & \text{if} \quad S_3 \leq S_5 \leq S_4 \\ S_4 + (S_3 - S_4)\mu_{35} + (S_5 - S_3)\mu_5 & \text{if} \quad S_4 \leq S_3 \leq S_5 \\ S_4 + (S_5 - S_4)\mu_{35} + (S_3 - S_5)\mu_3 & \text{if} \quad S_4 \leq S_5 \leq S_3 \\ S_5 + (S_3 - S_5)\mu_{34} + (S_4 - S_3)\mu_4 & \text{if} \quad S_5 \leq S_3 \leq S_4 \\ S_5 + (S_4 - S_5)\mu_{34} + (S_3 - S_4)\mu_3 & \text{if} \quad S_5 \leq S_4 \leq S_3 \end{cases}$

Therefore, with the μ listed above:

Good housing-score $= \begin{cases} S_3 + 0.36(S_4 - S_3) + 0.13(S_5 - S_4) & \text{if} \quad S_3 \leq S_4 \leq S_5 \\ S_3 + 0.36(S_5 - S_3) + 0.10(S_4 - S_5) & \text{if} \quad S_3 \leq S_5 \leq S_4 \\ S_4 + 0.42(S_3 - S_4) + 0.13(S_5 - S_3) & \text{if} \quad S_4 \leq S_3 \leq S_5 \\ S_4 + 0.42(S_5 - S_4) + 0.15(S_3 - S_5) & \text{if} \quad S_4 \leq S_5 \leq S_3 \\ S_5 + 0.34(S_3 - S_5) + 0.10(S_4 - S_3) & \text{if} \quad S_5 \leq S_3 \leq S_4 \\ S_5 + 0.34(S_4 - S_5) + 0.15(S_3 - S_4) & \text{if} \quad S_5 \leq S_4 \leq S_3 \end{cases}$

Where S_3, S_4 and S_5 are the criterion-scores obtained by a given farm for the Criterion of *Comfort around resting*, the Criterion of *Thermal comfort* and the Criterion of *Ease of movement* respectively.
μ_3, μ_4 and μ_5 are the capacities of Criteria *Comfort around resting*, *Thermal comfort* and *Ease of movement* respectively.
μ_{34} is the capacity of the group made from the Criteria of *Comfort around resting* and *Thermal comfort* and so on...

Principle of *Good health*

μ_6	=	0.08		μ_{67}	=	0.36
μ_7	=	0.22		μ_{68}	=	0.18
μ_8	=	0.12		μ_{78}	=	0.22

with 6, the Criterion of *Absence of injuries*; 7, the Criterion of *Absence of diseases*; and 8, the Criterion of *Absence of pain induced by management procedures*.

Reminder:

$$\text{Good health-score} = \begin{cases} S_6 + \left(S_7 - S_6\right)\mu_{78} + \left(S_8 - S_7\right)\mu_8 & \text{if} \quad S_6 \le S_7 \le S_8 \\ S_6 + \left(S_8 - S_6\right)\mu_{78} + \left(S_7 - S_8\right)\mu_7 & \text{if} \quad S_6 \le S_8 \le S_7 \\ S_7 + \left(S_6 - S_7\right)\mu_{68} + \left(S_8 - S_6\right)\mu_8 & \text{if} \quad S_7 \le S_6 \le S_8 \\ S_7 + \left(S_8 - S_7\right)\mu_{68} + \left(S_6 - S_8\right)\mu_6 & \text{if} \quad S_7 \le S_8 \le S_6 \\ S_8 + \left(S_6 - S_8\right)\mu_{67} + \left(S_7 - S_6\right)\mu_7 & \text{if} \quad S_8 \le S_6 \le S_7 \\ S_8 + \left(S_7 - S_8\right)\mu_{67} + \left(S_6 - S_7\right)\mu_6 & \text{if} \quad S_8 \le S_7 \le S_6 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Good health-score} = \begin{cases} S_6 + 0.22\left(S_7 - S_6\right) + 0.12\left(S_8 - S_7\right) & \text{if} \quad S_6 \le S_7 \le S_8 \\ S_6 + 0.22\left(S_8 - S_6\right) + 0.22\left(S_7 - S_8\right) & \text{if} \quad S_6 \le S_8 \le S_7 \\ S_7 + 0.18\left(S_6 - S_7\right) + 0.12\left(S_8 - S_6\right) & \text{if} \quad S_7 \le S_6 \le S_8 \\ S_7 + 0.18\left(S_8 - S_7\right) + 0.08\left(S_6 - S_8\right) & \text{if} \quad S_7 \le S_8 \le S_6 \\ S_8 + 0.36\left(S_6 - S_8\right) + 0.22\left(S_7 - S_6\right) & \text{if} \quad S_8 \le S_6 \le S_7 \\ S_8 + 0.36\left(S_7 - S_8\right) + 0.08\left(S_6 - S_7\right) & \text{if} \quad S_8 \le S_7 \le S_6 \end{cases}$$

Where S_6, S_7 and S_8 are the scores obtained by a given farm for the Criterion of *Absence of injuries*, the Criterion of *Absence of diseases* and the Criterion of *Absence of pain induced by management procedures* respectively.
μ_6, μ_7 and μ_8 are the capacities of the Criteria of *Absence of injuries*, *Absence of diseases* and *Absence of pain induced by management procedures* respectively.
μ_{67} is the capacity of the group made from the Criteria of *Absence of injuries* and *Absence of diseases* and so on...

Principle of *Appropriate behaviour*

μ_9	=	0.14		μ_{1011}	=	0.16
μ_{10}	=	0.07		μ_{1012}	=	0.20
μ_{11}	=	0.09		μ_{1112}	=	0.27
μ_{12}	=	0.16		μ_{91011}	=	0.48
μ_{910}	=	0.16		μ_{91012}	=	0.56
μ_{911}	=	0.14		μ_{91112}	=	0.53
μ_{912}	=	0.23		μ_{101112}	=	0.51

with 9, the Criterion of *Expression of social behaviours*; 10, the Criterion of *Expression of other behaviours*; 11, the Criterion of *Good human-animal relationship*; 12, the Criterion of *Positive emotional state*.

NB: As Criteria 11 & 12 are considered as a single criterion for mink, the score has to be considered twice in the calculation of the Principle of *Appropriate behaviour*.

Reminder:

$$\text{Appropr. behaviour-score} = \begin{cases}
S_9 + (S_{10} - S_9)\mu_{101112} + (S_{11} - S_{10})\mu_{1211} + (S_{12} - S_{11})\mu_{12} & \text{if} \quad S_9 \leq S_{10} \leq S_{11} \leq S_{12} \\
S_9 + (S_{10} - S_9)\mu_{101112} + (S_{12} - S_{10})\mu_{1112} + (S_{11} - S_{12})\mu_{11} & \text{if} \quad S_9 \leq S_{10} \leq S_{12} \leq S_{11} \\
S_9 + (S_{11} - S_9)\mu_{101112} + (S_{10} - S_{11})\mu_{1012} + (S_{12} - S_{10})\mu_{12} & \text{if} \quad S_9 \leq S_{11} \leq S_{10} \leq S_{12} \\
S_9 + (S_{11} - S_9)\mu_{101112} + (S_{12} - S_{11})\mu_{1012} + (S_{10} - S_{12})\mu_{10} & \text{if} \quad S_9 \leq S_{11} \leq S_{12} \leq S_{10} \\
S_9 + (S_{12} - S_9)\mu_{101112} + (S_{10} - S_{12})\mu_{1011} + (S_{11} - S_{10})\mu_{11} & \text{if} \quad S_9 \leq S_{12} \leq S_{10} \leq S_{11} \\
S_9 + (S_{12} - S_9)\mu_{101112} + (S_{11} - S_{12})\mu_{1011} + (S_{10} - S_{11})\mu_{10} & \text{if} \quad S_9 \leq S_{12} \leq S_{11} \leq S_{10} \\
S_{10} + (S_9 - S_{10})\mu_{91112} + (S_{11} - S_9)\mu_{1112} + (S_{12} - S_{11})\mu_{12} & \text{if} \quad S_{10} \leq S_9 \leq S_{11} \leq S_{12} \\
S_{10} + (S_9 - S_{10})\mu_{91112} + (S_{12} - S_9)\mu_{1112} + (S_{11} - S_{12})\mu_{11} & \text{if} \quad S_{10} \leq S_9 \leq S_{12} \leq S_{11} \\
S_{10} + (S_{11} - S_{10})\mu_{91112} + (S_9 - S_{11})\mu_{912} + (S_{12} - S_9)\mu_{12} & \text{if} \quad S_{10} \leq S_{11} \leq S_9 \leq S_{12} \\
S_{10} + (S_{11} - S_{10})\mu_{91112} + (S_{12} - S_{11})\mu_{912} + (S_9 - S_{12})\mu_9 & \text{if} \quad S_{10} \leq S_{11} \leq S_{12} \leq S_9 \\
S_{10} + (S_{12} - S_{10})\mu_{91112} + (S_{11} - S_{12})\mu_{911} + (S_9 - S_{11})\mu_9 & \text{if} \quad S_{10} \leq S_{12} \leq S_{11} \leq S_9 \\
S_{10} + (S_{12} - S_{10})\mu_{91112} + (S_9 - S_{12})\mu_{911} + (S_{11} - S_9)\mu_{11} & \text{if} \quad S_{10} \leq S_{12} \leq S_9 \leq S_{11} \\
S_{11} + (S_{10} - S_{11})\mu_{91012} + (S_9 - S_{10})\mu_{912} + (S_{12} - S_9)\mu_{12} & \text{if} \quad S_{11} \leq S_{10} \leq S_9 \leq S_{12} \\
S_{11} + (S_{10} - S_{11})\mu_{91012} + (S_{12} - S_{10})\mu_{912} + (S_9 - S_{12})\mu_9 & \text{if} \quad S_{11} \leq S_{10} \leq S_{12} \leq S_9 \\
S_{11} + (S_{12} - S_{11})\mu_{91012} + (S_{10} - S_{12})\mu_{910} + (S_9 - S_{10})\mu_9 & \text{if} \quad S_{11} \leq S_{12} \leq S_{10} \leq S_9 \\
S_{11} + (S_{12} - S_{11})\mu_{91012} + (S_{10} - S_{12})\mu_{910} + (S_{10} - S_9)\mu_{10} & \text{if} \quad S_{11} \leq S_{12} \leq S_9 \leq S_{10} \\
S_{11} + (S_9 - S_{11})\mu_{91012} + (S_{12} - S_9)\mu_{1012} + (S_{10} - S_{12})\mu_{10} & \text{if} \quad S_{11} \leq S_9 \leq S_{12} \leq S_{10} \\
S_{11} + (S_9 - S_{11})\mu_{91012} + (S_{10} - S_9)\mu_{1012} + (S_{12} - S_{10})\mu_{12} & \text{if} \quad S_{11} \leq S_9 \leq S_{10} \leq S_{12} \\
S_{12} + (S_9 - S_{12})\mu_{91011} + (S_{10} - S_9)\mu_{1011} + (S_{11} - S_{10})\mu_{11} & \text{if} \quad S_{12} \leq S_9 \leq S_{10} \leq S_{11} \\
S_{12} + (S_9 - S_{12})\mu_{91011} + (S_{11} - S_9)\mu_{1011} + (S_{10} - S_{11})\mu_{10} & \text{if} \quad S_{12} \leq S_9 \leq S_{11} \leq S_{10} \\
S_{12} + (S_{10} - S_{12})\mu_{91011} + (S_{11} - S_{10})\mu_{911} + (S_9 - S_{11})\mu_9 & \text{if} \quad S_{12} \leq S_{10} \leq S_{11} \leq S_9 \\
S_{12} + (S_{10} - S_{12})\mu_{91011} + (S_9 - S_{10})\mu_{911} + (S_{11} - S_9)\mu_{11} & \text{if} \quad S_{12} \leq S_{10} \leq S_9 \leq S_{11} \\
S_{12} + (S_{11} - S_{12})\mu_{91011} + (S_9 - S_{11})\mu_{910} + (S_{10} - S_9)\mu_{10} & \text{if} \quad S_{12} \leq S_{11} \leq S_9 \leq S_{10} \\
S_{12} + (S_{11} - S_{12})\mu_{91011} + (S_{10} - S_{11})\mu_{910} + (S_9 - S_{10})\mu_9 & \text{if} \quad S_{12} \leq S_{11} \leq S_{10} \leq S_9
\end{cases}$$

Therefore, with the μ listed above:

$$\begin{cases}
S_9 + 0.51(S_{10} - S_9) + 0.27(S_{11} - S_{10}) + 0.16(S_{12} - S_{11}) & \text{if} \quad S_9 \leq S_{10} \leq S_{11} \leq S_{12} \\
S_9 + 0.51(S_{10} - S_9) + 0.27(S_{12} - S_{10}) + 0.09(S_{11} - S_{12}) & \text{if} \quad S_9 \leq S_{10} \leq S_{12} \leq S_{11} \\
S_9 + 0.51(S_{11} - S_9) + 0.20(S_{10} - S_{11}) + 0.16(S_{12} - S_{10}) & \text{if} \quad S_9 \leq S_{11} \leq S_{10} \leq S_{12} \\
S_9 + 0.51(S_{11} - S_9) + 0.20(S_{12} - S_{11}) + 0.07(S_{10} - S_{12}) & \text{if} \quad S_9 \leq S_{11} \leq S_{12} \leq S_{10} \\
S_9 + 0.51(S_{12} - S_9) + 0.16(S_{10} - S_{12}) + 0.09(S_{11} - S_{10}) & \text{if} \quad S_9 \leq S_{12} \leq S_{10} \leq S_{11} \\
S_9 + 0.51(S_{12} - S_9) + 0.16(S_{11} - S_{12}) + 0.07(S_{10} - S_{11}) & \text{if} \quad S_9 \leq S_{12} \leq S_{11} \leq S_{10} \\
S_{10} + 0.53(S_9 - S_{10}) + 0.27(S_{11} - S_9) + 0.16(S_{12} - S_{11}) & \text{if} \quad S_{10} \leq S_9 \leq S_{11} \leq S_{12} \\
S_{10} + 0.53(S_9 - S_{10}) + 0.27(S_{12} - S_9) + 0.09(S_{11} - S_{12}) & \text{if} \quad S_{10} \leq S_9 \leq S_{12} \leq S_{11}
\end{cases}$$

$$\text{Appropr. behaviour-score} = \begin{cases} S_{10} + 0.53\left(S_{11} - S_{10}\right) + 0.23\left(S_9 - S_{11}\right) + 0.16\left(S_{12} - S_9\right) & \text{if} \quad S_{10} \leq S_{11} \leq S_9 \leq S_{12} \\ S_{10} + 0.53\left(S_{11} - S_{10}\right) + 0.23\left(S_{12} - S_{11}\right) + 0.14\left(S_9 - S_{12}\right) & \text{if} \quad S_{10} \leq S_{11} \leq S_{12} \leq S_9 \\ S_{10} + 0.53\left(S_{12} - S_{10}\right) + 0.14\left(S_{11} - S_{12}\right) + 0.14\left(S_9 - S_{11}\right) & \text{if} \quad S_{10} \leq S_{12} \leq S_{11} \leq S_9 \\ S_{10} + 0.53\left(S_{12} - S_{10}\right) + 0.14\left(S_9 - S_{12}\right) + 0.09\left(S_{11} - S_9\right) & \text{if} \quad S_{10} \leq S_{12} \leq S_9 \leq S_{11} \\ S_{11} + 0.56\left(S_{10} - S_{11}\right) + 0.23\left(S_9 - S_{10}\right) + 0.16\left(S_{12} - S_9\right) & \text{if} \quad S_{11} \leq S_{10} \leq S_9 \leq S_{12} \\ S_{11} + 0.56\left(S_{10} - S_{11}\right) + 0.23\left(S_{12} - S_{10}\right) + 0.14\left(S_9 - S_{12}\right) & \text{if} \quad S_{11} \leq S_{10} \leq S_{12} \leq S_9 \\ S_{11} + 0.56\left(S_{12} - S_{11}\right) + 0.16\left(S_{10} - S_{12}\right) + 0.14\left(S_9 - S_{10}\right) & \text{if} \quad S_{11} \leq S_{12} \leq S_{10} \leq S_9 \\ S_{11} + 0.56\left(S_{12} - S_{11}\right) + 0.16\left(S_9 - S_{12}\right) + 0.07\left(S_{10} - S_9\right) & \text{if} \quad S_{11} \leq S_{12} \leq S_9 \leq S_{10} \\ S_{11} + 0.56\left(S_9 - S_{11}\right) + 0.20\left(S_{12} - S_9\right) + 0.07\left(S_{10} - S_{12}\right) & \text{if} \quad S_{11} \leq S_9 \leq S_{12} \leq S_{10} \\ S_{11} + 0.56\left(S_9 - S_{11}\right) + 0.20\left(S_{10} - S_9\right) + 0.16\left(S_{12} - S_{10}\right) & \text{if} \quad S_{11} \leq S_9 \leq S_{10} \leq S_{12} \\ S_{12} + 0.48\left(S_9 - S_{12}\right) + 0.16\left(S_{10} - S_9\right) + 0.09\left(S_{11} - S_{10}\right) & \text{if} \quad S_{12} \leq S_9 \leq S_{10} \leq S_{11} \\ S_{12} + 0.48\left(S_9 - S_{12}\right) + 0.16\left(S_{11} - S_9\right) + 0.07\left(S_{10} - S_{11}\right) & \text{if} \quad S_{12} \leq S_9 \leq S_{11} \leq S_{10} \\ S_{12} + 0.48\left(S_{10} - S_{12}\right) + 0.14\left(S_{11} - S_{10}\right) + 0.14\left(S_9 - S_{11}\right) & \text{if} \quad S_{12} \leq S_{10} \leq S_{11} \leq S_9 \\ S_{12} + 0.48\left(S_{10} - S_{12}\right) + 0.14\left(S_9 - S_{10}\right) + 0.09\left(S_{11} - S_9\right) & \text{if} \quad S_{12} \leq S_{10} \leq S_9 \leq S_{11} \\ S_{12} + 0.48\left(S_{11} - S_{12}\right) + 0.16\left(S_9 - S_{11}\right) + 0.07\left(S_{10} - S_9\right) & \text{if} \quad S_{12} \leq S_{11} \leq S_9 \leq S_{10} \\ S_{12} + 0.48\left(S_{11} - S_{12}\right) + 0.16\left(S_{10} - S_{11}\right) + 0.14\left(S_9 - S_{10}\right) & \text{if} \quad S_{12} \leq S_{11} \leq S_{10} \leq S_9 \end{cases}$$

Where S_9, S_{10}, S_{11} and S_{12} are the scores obtained by a given farm for the Criterion of *Expression of social behaviours*, the Criterion of *Expression of other behaviours*, the Criterion of *Good human-animal relationship* and the Criterion of *Positive emotional state* respectively.

μ_9, μ_{10}, μ_{11} and μ_{12} are the capacities of Criteria *Expression of social behaviours*, *Expression of other behaviours*, *Good human-animal relationship* and *Positive emotional state* respectively.

μ_{910} is the capacity of the group made from the Criteria of *Expression of social behaviours* and *Expression of other behaviours* and so on...

Due to the positive values of the interactions between criterion-scores, the principle-scores are always intermediate between the lowest and the highest values obtained at criterion level and always closer to the minimum value.

Within each principle, some criteria are considered more important than others (and will contribute to a large extent to the principle-score):

- Within the Principle of *Good feeding*, the Criterion of *Absence of prolonged thirst* is considered more important than the Criterion of *Absence of prolonged hunger*.

- Within the Principle of *Good housing*, the Criterion of *Comfort around resting* is considered more important than the Criterion of *Ease of movement* which in turn is considered more important than the Criterion of *Thermal comfort*.

- Within the Principle of *Good health*, the Criterion of *Absence of diseases* is considered more important than the Criterion of *Absence of injuries* which in turn is considered more important than the Criterion of *Absence of pain induced by management procedures*.

- Within the Principle of *Appropriate behaviour*, the Criterion of *Positive emotional state* is considered more important than the Criterion of *Expression of social behaviours* which in turn is considered more important than the Criterion of *Good human-animal relationship* which in turn is considered more important than the Criterion of *Expression of other behaviours*.

Examples of principle-scores resulting from Criterion-scores are provided in Table 5, Table 6, Table 7 and Table 8.

Absence of prolonged hunger	Absence of prolonged thirst	Principle Good feeding
25	75	39
40	60	46
50	50	50
60	40	42
75	25	30

Table 5 Examples of scores for the Principle of Good feeding according to combinations of criterion-scores for the Criteria of **Absence of prolonged hunger** and **Absence of prolonged thirst**.

Comfort around resting	Thermal comfort	Ease of movement	Principle of Good housing
25	50	75	37
25	75	50	37
40	50	60	45
40	60	50	45
50	25	75	39
50	40	60	46
50	50	50	50
50	60	40	44
50	75	25	36
60	40	50	46
60	50	40	45
75	25	50	39
75	50	25	37

Table 6 Examples of scores for the Principle of **Good housing** according to combinations of criterion-scores for the Criteria of **Comfort around resting**, **Thermal comfort** and **Ease of movement**.

Absence of injuries	Absence of diseases	Absence of pain induced by management procedures	Principle of Good health
25	50	75	34
25	75	50	36
40	50	60	43
40	60	50	44
50	25	75	33

50	40	60	_43_
50	50	50	_50_
50	60	40	_46_
50	75	25	_40_
60	40	50	_43_
60	50	40	_44_
75	25	50	_32_
75	50	25	_36_

Table 7 Examples of scores for the Principle of **Good health** according to combinations of criterion-scores for the Criteria of **Absence of injuries, Absence of diseases** and **Absence of pain induced by management procedures**.

Social behaviours	Other behaviours	Good human-animal relationships	Positive emotional state	Principle of Appropriate behaviour
35	35	65	65	_43_
35	50	50	65	_45_
35	50	65	50	_44_
35	65	35	65	_41_
35	65	50	50	_44_
35	65	65	35	_40_
50	35	50	65	_45_
50	35	65	50	_44_
50	50	35	65	_46_
50	50	50	50	_50_
50	50	65	35	_44_
50	65	35	50	_44_
50	65	50	35	_43_
65	35	35	65	_42_
65	35	50	50	_45_
65	35	65	35	_39_
65	50	35	50	_45_
65	50	50	35	_44_
65	65	35	35	_40_

Table 8 Examples of scores for the Principle of **Appropriate behaviour** according to combinations of criterion-scores for the Criteria of **Expression of social behaviours, Expression of other behaviours, Good human-animal relationship** and **Positive emotional state**.

3.3.3 Overall assessment

The synthesis of the four principle-scores into an overall assessment is carried out in a similar way for all animal types in WelFur as well as in Welfare Quality®.

The scores obtained by a farm on all welfare principles are used to assign that farm to a welfare category. How many and what welfare categories are necessary depends on the purposes for which the welfare assessment will be used. According to the range of potential uses of the assessment, four welfare categories have been defined:

Best current practice: the welfare of the animals is of the best current level of practice.
Good current practice: the welfare of animals is of good current practice.
Acceptable current practice: the welfare of animals is at or above minimal requirements for current practice.
Unacceptable practice: the welfare of animals is below current practice and considered unacceptable.

'Aspiration values' are defined for each category. They represent the goal that the farm should try to achieve to be assigned to a given category. The 'best' threshold is set at 80, that for 'good' at 55 and that for acceptability at 20. However, just as criteria do not compensate for each other within a principle (see above), high scores in one principle do not offset low scores in another, so categories cannot be based on average scores. At the same time, it is important that the final classification reflects not only the theoretical acknowledgement of what can be considered as best, good, *etc*., but also what can realistically be achieved in practice.

A farm is considered of 'Best current practice' if it scores more than 55 on all principles and more than 80 on at least two while it is considered of 'Good current practice' if it scores more than 20 on all principles and more than 55 on at least two. Farms with 'Acceptable current practice' levels of animal welfare score more than 10 on all principles and more than 20 on at least three. Farms that do not reach these minimum standards are classified as of 'Unacceptable current practice' (Figure 62). Due to the variability of experts' answers during the different consultations, some uncertainty of the evaluation has to be taken into account. As a consequence, an indifference threshold equal to 5 is applied: for instance, 50 is not considered significantly lower than 55.
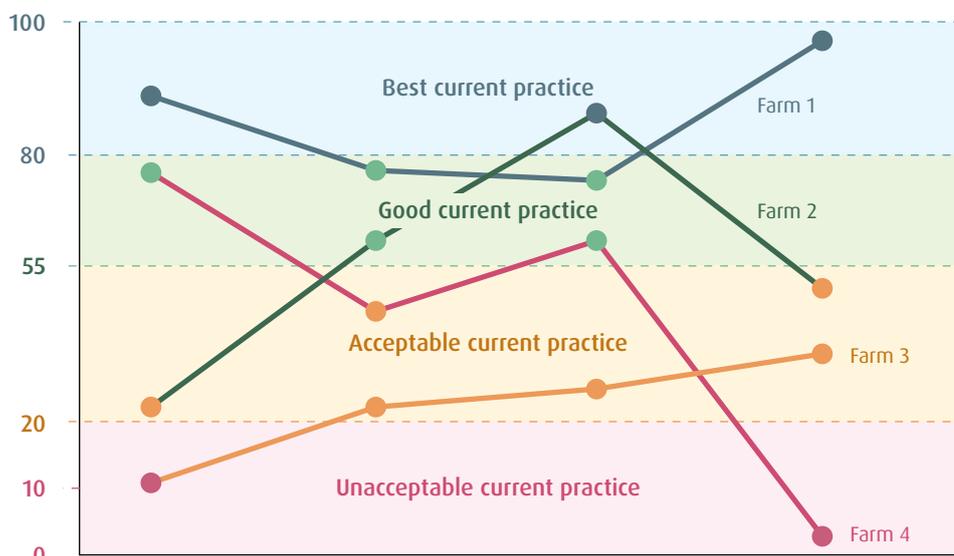
Figure 62 Examples of farms in the four welfare categories

3.4   Annex A: Recording sheets for mink

3.4.1   Blank recording sheets.
(The sheets are under continuous development and have been replaced by a tablet application for on-farm data collection.)

* Information needed for the welfare assessment			Sampling and visit planning information				No. of sections in sample
ONLY for sheds holding animals			**Number of mink**		**Location/shed no.**		
ANIMALS	Breeders	Dams < 1 year old *					
		Dams > 1 year old *					
		Males *					
	Colour type by dams		Dams	(Males)	Dams	(Males)	
	Number of dams in each colour type	1 Brown (BRWN)					
		2 Mahogany (MAHG)					
		3 Standard Black (STD.)					
		4 Pearl (PERL)					
		5 White (WHIT)					
		6 Cross (CROS)					
		7 Silver blue (SILV)					
		8 Others (OTHR)					
SHEDS	Type	Two rows					
		Multi rows					
CAGES	Type	Single/pairs	Type 1				
			Type 2				
		Groups	Type 1				
			Type 2				
	Material (wall)	Wire-mesh					
		Solid					
		Other					
NEST BOXES	Presence	No. of cages without					
	Type	Normal					
		Top nesters					
	Material	Wood					
		Synthetic					
TYPE OF WATERING SYSTEM	Automatic	Frost protection *					
		No frost protection *		Water times a day *			
	Manual	No. of cages *					
FEEDING	Time of feeding						
HEALTH STATUS	Aleutian disease	No					
		Reagents found during eradication programme - to be pelted					
		Chronic - not to be pelted					
	Other notifiable or contagious diseases		No				
			Yes				
	Are sick and injured animals gathered in an 'infirmary' section		No				
			Yes		Where?		

MORTALITY - NO OF DEAD MINK IN THE PERIOD FROM DECEMBER 1ST TO FEBRUARY 28TH					
DAMS		*MALES*		*TOTAL*	
Dead		Dead		Dead	
December					
January					
February					
Total					

HANDLING PROCEDURES FROM DECEMBER 1ST TO FEBRUARY 28TH						
Handling may include e.g.: Vaccination, Weighing, Grading, Moving, Selling	How many times are mink caught, handled and/or moved for less than 1 minute?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than 1 minute but less than an hour?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than an hour?	How many mink (or % of the population) are involved?
Total						

KILLING METHOD		INSPECTION OF KILLING EQUIPMENT/MEANS OF KILLING					
How are animals killed?	**No of killing boxes/ equipment**	Pelting			Individual		
		0: no broken or worn out parts, well functioning gas transfer	**1:** minor destruction, gas transfer is working and/or is insufficient	**2:** old, worn out parts, insufficient gas transfer	**0:** well functioning, efficient means of killing	**1:** not too well functioning	**2:** no functioning equipment

Date | Observer id | Farm id

Animal/cage id				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Nest box	Quality	Fleas	1- yes																									
		Damaged	1- yes																									
		Dirty	1- yes																									
		Wet	1- yes																									
		No access	1- yes																									
Water point		Diarrhoea	1- yes																									
		Not functional	1- yes																									
		Not clean	1- yes																									
Enrichments		No bedding	1- yes																									
		Type(s) 1-9	E.g. 1, 3, 4																									
Fur chewing		Extensive																										
		Severe																										
		Moderate																										
Injuries	Kits	> 30mm 3																										
		< 30mm 2																										
		< 10mm 1																										
Sickness		Lameness																										
		Obviously sick																										
BCS		5 Obese																										
		4 Heavy																										
		3 Ideal																										
		2 Thin																										
		1 Very thin																										
Temperament		Undecided/in nest																										
		Aggressive																										
		Fearful																										
		Exploratory																										
Stereotypy		Stereotypic behaviour																										
		Active																										
Number of dams (F)																												
Number of males (M)																												
Colour type																												
Animal/cage id				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Cage/section number																												
Shed number/colour type																												

Note: 0-no is not noted

						26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Animal/cage id						26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Nest box	Quality	Fleas		1- yes	0-no is not noted																									
		Damaged		1- yes																											
		Dirty		1- yes																											
		Wet		1- yes																											
	No access			1- yes																											
Water point	Diarrhoea			1- yes																											
	Not functional			1- yes																											
	Not clean			1- yes																											
Enrichments	No bedding			1- yes																											
	Type(s) 1-9			E.g. 1, 3, 4																											
Fur chewing	Extensive																														
	Severe																														
	Moderate																														
Injuries	Kits	> 30mm **3**																													
		< 30mm **2**																														
		< 10mm **1**																														
Sickness	Lameness																														
	Obviously sick																														
BCS	5 Obese																														
	4 Heavy																														
	3 Ideal																														
	2 Thin																														
	1 Very thin																														
Temperament	Undecided/in nest																														
	Aggressive																														
	Fearful																														
	Exploratory																														
Stereotypy	Stereotypic behaviour																														
	Active																														
Number of dams (F)																															
Number of males (M)																															
Colour type																															
Animal/cage id						26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Cage/section number																															
Shed number/colour type																															

Date

Observer id

Date

Observer id

Farm id

					Animal/cage id	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Nest box	Quality	Fleas		1- yes																												
		Damaged		1- yes																												
		Dirty	0-no is not noted	1- yes																												
		Wet		1- yes																												
	No access			1- yes																												
Water point	Diarrhoea			1- yes																												
	Not functional			1- yes																												
	Not clean			1- yes																												
Enrichments	No bedding			1- yes																												
	Type(s) 1-9		E.g.	1, 3, 4																												
Fur chewing	Extensive																															
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	Moderate																															
Injuries	Kits	> 30mm 3																														
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Sickness	Lameness																															
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BCS	5 Obese																															
	4 Heavy																															
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Temperament	Undecided/in nest																															
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	Fearful																															
	Exploratory																															
Stereotypy	Stereotypic behaviour																															
	Active																															
Number of dams (F)																															
Number of males (M)																															
Colour type																															
Animal/cage id				51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Cage/section number																															
Shed number/colour type																															

Animal/cage id				76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Nest box	Quality	Fleas	1- yes																										
		Damaged	1- yes																										
		Dirty	1- yes																										
		Wet	1- yes																										
		No access	1- yes																										
Water point		Diarrhoea	1- yes																										
		Not functional	1- yes																										
		Not clean	1- yes																										
Enrichments		No bedding	1- yes																										
		Type(s) 1-9	E.g. 1, 3, 4																										
Fur chewing		Extensive																											
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		Moderate																											
Injuries	Kits	> 30mm **3**																										
		< 30mm **2**																											
		< 10mm **1**																											
Sickness		Lameness																											
		Obviously sick																											
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		2 Thin																											
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Temperament		Undecided/in nest																											
		Aggressive																											
		Fearful																											
		Exploratory																											
Stereotypy		Stereotypic behaviour																											
		Active																											
Number of dams (F)																												
Number of males (M)																												
Colour type																												
Animal/cage id				76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cage/section number																												
Shed number/colour type																												

0-no is not noted

Date

Observer id

Farm id

Observer id | Date

Farm id

Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Nest box – Quality – Fleas (0-no is not noted / 1- yes)																									
Quality – Damaged (1- yes)																									
Quality – Dirty (1- yes)																									
Quality – Wet (1- yes)																									
No access (1- yes)																									
Water point – Diarrhoea (1- yes)																									
Not functional (1- yes)																									
Not clean (1- yes)																									
Enrichments – No bedding (1- yes)																									
Type(s) 1-9 (E.g. 1, 3, 4)																									
Fur chewing – Extensive																									
Severe																									
Moderate																									
Injuries – Kits – > 30mm 3																									
Kits – < 30mm 2																									
Kits – < 10mm 1																									
Sickness – Lameness																									
Obviously sick																									
BCS – 5 Obese																									
4 Heavy																									
3 Ideal																									
2 Thin																									
1 Very thin																									
Temperament – Undecided/in nest																									
Aggressive																									
Fearful																									
Exploratory																									
Stereotypy – Stereotypic behaviour																									
Active																									
Number of dams (F)																									
Number of males (M)																									
Colour type																									
Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Cage/section number																									
Shed number/colour type																									

				Animal/cage id	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Nest box	Quality		Fleas	1- yes																									
			Damaged	1- yes																									
		0-no is not noted	Dirty	1- yes																									
			Wet	1- yes																									
			No access	1- yes																									
Water point			Diarrhoea	1- yes																									
			Not functional	1- yes																									
			Not clean	1- yes																									
Enrichments			No bedding	1- yes																									
		E.g.	Type(s) 1-9	1, 3, 4																									
Fur chewing			Extensive																										
			Severe																										
			Moderate																										
Injuries	Kits		> 30mm 3																										
			< 30mm 2																										
			< 10mm 1																										
Sickness			Lameness																										
			Obviously sick																										
BCS			5 Obese																										
			4 Heavy																										
			3 Ideal																										
			2 Thin																										
			1 Very thin																										
Temperament			Undecided/in nest																										
			Aggressive																										
			Fearful																										
			Exploratory																										
Stereotypy			Stereotypic behaviour																										
			Active																										
Number of dams (F)																													
Number of males (M)																													
Colour type																													
Animal/cage id					126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Cage/section number																													
Shed number/colour type																													

Date   Observer id

Location	Nest box									Cage								
	Size			Thermal comfort						Bottom cage size			Top cage size- if in use			Thermal comfort		
				Insulation			Bed. Mat.		Wind device / covered nest							Protection from Wind		Within comfort zone
				0 - well			0 - sufficient		0 - yes							0 - high		0 - yes
				1 - normal			1 - some		1 - no							1 - medium		1 - no
				2 - no			2 - none/little									2 - low		
	W	L	H							W	L	H	W	L	H			
Farm																		
Shed no.																		
Section no.																		

Date of visit: | **Farm information**

* Information needed for the welfare assessment			Sampling and visit planning information				No. of sections in sample
ONLY for sheds holding animals			**Number of mink**		**Location/shed no.**		
ANIMALS	Breeders	Dams < 1 year old *					
		Dams > 1 year old *					
		Males *					
	Colour type by dams		Dams	(Males)	Dams	(Males)	
	Number of dams in each colour type	1 Brown (BRWN)					
		2 Mahogany (MAHG)					
		3 Standard Black (STD.)					
		4 Pearl (PERL)					
		5 White (WHIT)					
		6 Cross (CROS)					
		7 Silver blue (SILV)					
		8 Others (OTHR)					
SHEDS	Type	Two rows					
		Multi rows					
	Cooling	Means of cooling? *					
CAGES	Type	Single/pairs	Type 1				
			Type 2				
		Groups	Type 1				
			Type 2				
	Material (wall)	Wire-mesh					
		Solid					
		Other					
NEST BOXES	Presence	No. of cages without					
	Type	Normal					
		Top nesters					
	Material	Wood					
		Synthetic					
TYPE OF WATERING SYSTEM	Automatic	Frost protection *					
		No frost protection *		Water times a day *			
	Manual	No. of cages *					
FEEDING	Time of feeding						
HEALTH STATUS	Aleutian disease	No					
		Reagents found during eradication programme - to be pelted					
		Chronic - not to be pelted					
	Other notifiable or contagious diseases	No					
		Yes					
	Are sick and injured animals gathered in an 'infirmary' section	No					
		Yes		Where?			

MORTALITY -NO OF DEAD MINK FROM MARCH 1ST TO JULY 15TH				WEANING		
ADULTS (PELTED MALES ARE NOT INCLUDED)		**KITS**		**AGE AT WEANING**	**DISTANCE OF MOVED FEMALE**	**TRANSITION PERIOD**
Dead		Dead		before or at 6 weeks, 7 weeks, 8 weeks, 9 weeks, 10 weeks or later	Female moved > 20m or housed close to weaned kits	More (≥) or less (<) than 7 days between weaning and final separation
March 1st - May 14th						
May 15th - July 15th						
June 15th - July 15th						
Total in period 2						

HANDLING PROCEDURES FROM MARCH 1ST TO JULY 15TH					
How many times are mink caught, handled and/or moved for less than 1 minute?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than 1 minute but less than an hour?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than an hour?	How many mink (or % of the population) are involved?
March 1st - April 14th					
April 15th - May 14th					
May 15th - July 15th					
Total in period 2					

KILLING METHOD		INSPECTION OF KILLING EQUIPMENT/MEANS OF KILLING					
How are animals killed?	**No of killing boxes/ equipment**	**Pelting**			**Individual**		
		0: no broken or worn out parts, well functioning gas transfer	**1:** minor defects, gas transfer is working and/or is insufficient	**2:** old, worn out parts, insufficient gas transfer	**0:** well functioning, efficient means of killing	**1:** not very well functioning	**2:** no functioning equipment

Date

Observer id

Farm id

					Animal/cage id	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Nest box	Quality		Fleas	1- yes																											
			Damaged	1- yes																											
			Dirty	1- yes																											
			Wet	1- yes																											
		No access		1- yes																											
Water point		Diarrhoea		1- yes																											
		Not functional		1- yes																											
		Not clean		1- yes																											
Enrichments		No bedding		1- yes																											
		Type(s) 1-9		E.g. 1,3, 4																											
Fur chewing		Extensive																													
		Severe																													
		Moderate																													
Injuries	Kits	> 30mm **3**																													
		< 30mm **2**																													
		< 10mm **1**																													
		Adults 1 - 3																													
Sickness	Adults+kits	Lameness																													
		Disease																													
		Sticky kits/diarrhoea																													
BCS		5 Obese																													
		4 Heavy																													
		3 Ideal																													
		2 Thin																													
		1 Very thin																													
Stereotypy	Adults	Stereotypy																													
		Active																													
Female missing																															
Number of kits in cage																															
Colour type																															
Animal/cage id				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Cage/section number																															
Shed number/colour type																															

0-no is not noted

				Animal/cage id	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Nest box	Quality	Fleas	1- yes																										
		Damaged	1- yes																										
		Dirty	1- yes	0-no is not noted																									
		Wet	1- yes																										
		No access	1- yes																										
Water point		Diarrhoea	1- yes																										
		Not functional	1- yes																										
		Not clean	1- yes																										
Enrichments		No bedding	1- yes																										
		Type(s) 1-9	E.g. 1,3, 4																										
Fur chewing		Extensive																											
		Severe																											
		Moderate																											
Injuries	Kits	> 30mm 3																											
		< 30mm 2																											
		< 10mm 1																											
		Adults 1 - 3																											
Sickness	Adults+kits	Lameness																											
		Disease																											
		Sticky kits/diarrhoea																											
BCS		5 Obese																											
		4 Heavy																											
		3 Ideal																											
		2 Thin																											
		1 Very thin																											
Stereotypy	Adults	Stereotypy																											
		Active																											
Female missing																													
Number of kits in cage																													
Colour type																													
Animal/cage id				26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Cage/section number																													
Shed number/colour type																													

Period 2 Sheet 3

Date

Observer id

Farm id

				51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Animal/cage id																												
Nest box	Quality	Fleas	1- yes																									
		Damaged	1- yes																									
		Dirty	1- yes																									
		Wet	1- yes																									
	No access		1- yes																									
Water point	Diarrhoea		1- yes																									
	Not functional		1- yes																									
	Not clean		1- yes																									
Enrichments	No bedding		1- yes																									
	Type(s) 1-9		E.g. 1,3, 4																									
Fur chewing	Extensive																											
	Severe																											
	Moderate																											
Injuries	Kits	> 30mm **3**																										
		< 30mm **2**																										
		< 10mm **1**																										
	Adults 1 - 3																											
Sickness	Adults+kits	Lameness																										
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	3 Ideal																											
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Stereotypy	Adults	Stereotypy																										
		Active																											
Female missing																												
Number of kits in cage																												
Colour type																												
Animal/cage id				51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Cage/section number																												
Shed number/colour type																												

0-no is not noted

				76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Animal/cage id																												
Nest box	Quality	Fleas	1- yes																									
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Water point	Diarrhoea		1- yes																									
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Enrichments	No bedding		1- yes																									
	Type(s) 1-9	E.g.	1,3, 4																									
Fur chewing	Extensive																											
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	Moderate																											
Injuries	Kits	> 30mm **3**																										
		< 30mm **2**																										
		< 10mm **1**																										
	Adults 1 - 3																											
Sickness	Adults+kits	Lameness																										
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	Sticky kits/diarrhoea																											
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Stereotypy	Adults	Stereotypy																										
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Female missing																												
Number of kits in cage																												
Colour type																												
Animal/cage id				76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cage/section number																												
Shed number/colour type																												

Note: 0-no is not noted

Date

Observer id

Farm id

					Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Nest box	Quality	Fleas	1- yes																											
		Damaged	1- yes																											
		Dirty	1- yes	0-no is not noted																										
		Wet	1- yes																											
	No access	1- yes																											
Water point	Diarrhoea	1- yes																											
	Not functional	1- yes																											
	Not clean	1- yes																											
Enrichments	No bedding	1- yes																											
	Type(s) 1-9	E.g. 1, 3, 4																											
Fur chewing	Extensive																											
	Severe																											
	Moderate																											
Injuries	Kits	> 30mm 3																											
		< 30mm 2																											
		< 10mm 1																											
	Adults 1 - 3																											
Sickness	Adults+kits	Lameness																											
		Disease																											
	Sticky kits/diarrhoea																											
BCS	5 Obese																											
	4 Heavy																											
	3 Ideal																											
	2 Thin																											
	1 Very thin																											
Stereotypy	Adults	Stereotypy																											
		Active																											
Female missing																												
Number of kits in cage																												
Colour type																												
Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Cage/section number																												
Shed number/colour type																												

				126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Animal/cage id																											
Nest box	Quality	Fleas	1- yes																									
		Damaged	1- yes																									
		Dirty	1- yes																									
		Wet	1- yes																									
		No access	1- yes																									
Water point		Diarrhoea	1- yes																									
		Not functional	1- yes																									
		Not clean	1- yes																									
Enrichments		No bedding	1- yes																									
		Type(s) 1-9	E.g. 1,3, 4																									
Fur chewing		Extensive																											
		Severe																											
		Moderate																											
Injuries	Kits	> 30mm 3																											
		< 30mm 2																											
		< 10mm 1																											
		Adults 1 - 3																											
Sickness	Adults+kits	Lameness																											
		Disease																											
		Sticky kits/diarrhoea																											
BCS		5 Obese																											
		4 Heavy																											
		3 Ideal																											
		2 Thin																											
		1 Very thin																											
Stereotypy	Adults	Stereotypy																											
		Active																											
Female missing																												
Number of kits in cage																												
Colour type																												
Animal/cage id				126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Cage/section number																												
Shed number/colour type																												

0-no is not noted

Location	Nest box								Cage										
	Size			Thermal comfort					Bottom cage size			Top cage size			Thermal comfort				
	W	L	H	Insulation	Bed. Mat.	Wind device / covered nest			W	L	H	W	L	H	Protection from Wind	Protection from Sun	Means of Cooling	Within comfort zone	
				0 - well	0 - sufficient										0 - high	0 - high			
				1 - normal	1 - some	0 - yes									1 - medium	1 - medium	0 - yes	0 - yes	
				2 - no	2 - none/little	1 - no									2 - low	2 - low	1 - no	1 - no	
Farm																			
Shed no.																			
Section no.																			

Farm id:	Phone number:		Period 3 Sheet 1
Farm information			
Date of visit:	First date of sorting:		First date of pelting:

* Information needed for the welfare assessment			Sampling and visit planning information			
ONLY for sheds holding animals			**Number of mink**		**Location/shed no.**	
ANIMALS	Breeders (> 1 year old)	Dams *				
		Males *				
	Juveniles	Juveniles *				
	Colour type by dams (female breeders)		Dams	Juveniles	Dams	Juveniles
	Number of dams (female breeders) in each colour type	1 Brown (BRWN)				
		2 Mahogany (MAHG)				
		3 Standard Black (STD.)				
		4 Pearl (PERL)				
		5 White (WHIT)				
		6 Cross (CROS)				
		7 Silver blue (SILV)				
		8 Others (OTHR)				
SHEDS	Type	Two rows				
		Multi rows				
	Cooling	Means of cooling? *				
CAGES	Type	Single/pairs	Type 1			
			Type 2			
		Groups	Type 1			
			Type 2			
	Material (wall)	Wire-mesh				
		Solid				
		Other				
NEST BOXES	Presence	No. of cages without				
	Type	Normal				
		Top nesters				
	Material	Wood				
		Synthetic				
WATERING SYSTEM	Automatic	Frost protection *				
		No frost protection *		Water times a day		
	Manual	No. of cages *				
FEEDING	Time of feeding					
HEALTH STATUS	Aleutian disease	No				
		Reagents found during eradication programme - to be pelted				
		Chronic - not to be pelted				
	Other notifiable or contagious diseases	No				
		Yes				
	Are sick and injured animals gathered in an 'infirmary' section	No				
		Yes			Where?	

HOUSING OF ADULT FEMALE DAMS						
	Alone	With 1 male juvenile	With 2 male juveniles	With more juvenile kits (Family)	With other adult male	With other dam
Number of female dams						
Colour type(s)						
Colour type(s)						
Colour type(s)						
Colour type(s)						
Colour type(s)						
In shed number(s)						

HOUSING OF JUVENILES						
	Alone	1 male and 1 female	2 juveniles of the same sex	3 juveniles	4 juveniles	5 or more juveniles
Number of cage						
Colour type(s)						
Colour type(s)						
Colour type(s)						
Colour type(s)						
Colour type(s)						
In shed number(s)						
Preferred sex combination						

	FOR STRATIFICATION ON GROUPING OF MINK:				
In cage	**Mink**	**Cages**	**No. Mink**	**6 blocks**	**Sample no. of**
Alone	Female dams				
	Males				
	Juveniles				
Pairs	Dam + Male				
	Female + Male				
	Other				
Three	Dam + 2 M				
	3 females				
	Other				
Four	2 M + 2 F				
	4 Females				
	Other				
Five or more					
Total					
Divided by					
Reference number of mink per sample unit					

Thereafter distribute the number of cage blocks on colour types, houses and so on

	Mortality - No of dead mink in Period 3 (July 16th – November 30th)					
	ADULTS		**JUVENILES**		**TOTAL**	
	Dead		**Dead**		**Dead**	
July 16th - August 31st						
September 1st - November 30th						
Total in Period 3						

HANDLING PROCEDURES IN PERIOD 3 (JULY 16TH – NOVEMBER 30TH)						
Handling may include e.g.: Vaccination, Weighing, Grading, Moving, Selling	How many times are mink caught, handled and/or moved for less than 1 minute?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than 1 minute but less than an hour?	How many mink (or % of the population) are involved?	How many times are mink caught, handled and/or moved for more than an hour?	How many mink (or % of the population) are involved?
Total in Period 3						

KILLING METHOD		**INSPECTION OF KILLING EQUIPMENT/MEANS OF KILLING**					
How are animals killed?	**No of killing boxes/ equipment**	**Pelting**			**Individual**		
		0: no broken or worn out parts, well functioning gas transfer	**1:** minor defects, gas transfer is working and/or is insufficient	**2:** old, worn out parts, insufficient gas transfer	**0:** well functioning, efficient means of killing	**1:** not very well functioning	**2:** no functioning equipment

Category	Subcategory	Detail	Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Animal/cage id				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Nest box	Quality	Fleas	1 - yes																									
		Damaged																											
		Dirty																											
		Wet																											
		No access	0 - no is not noted																										
Water point		Diarrhoea																											
		Not functional	1 - yes																										
		Not clean																											
Enrichments		No straw																											
		Type(s) 1-9																											
Fur chewing		Extensive																											
		Severe																											
		Moderate																											
Injuries		> 30mm																											
		< 30mm																											
		< 10mm																											
Sickness		Lameness																											
		Disease																											
BCS		Obese																											
		Heavy																											
		Ideal																											
		Thin																											
		Very thin																											
Temperament		Undecided/in nest																											
		Aggressive																											
		Fearful																											
		Exploratory																											
Stereotypy		Stereotypic behaviour																											
		Active																											
Number of females (F)																												
Number of males (M)																												
Colour type																												
Animal/cage id				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Cage/section number																												
Shed number/colour type																												

Period 3   Sheet 3

Date

Observer id

Farm id

				Animal/cage id	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Nest box	Quality		Fleas	1 - yes																								
			Damaged																										
			Dirty	0-no is not noted																									
			Wet																											
			No access																										
Water point			Diarrhoea																										
			Not functional	1 - yes																										
			Not clean																											
Enrichments			No straw																										
			Type(s) 1-9																											
Fur chewing			Extensive																										
			Severe																										
			Moderate																										
Injuries			> 30mm																										
			< 30mm																										
			< 10mm																										
Sickness			Lameness																										
			Disease																										
BCS			Obese																										
			Heavy																										
			Ideal																										
			Thin																										
			Very thin																										
Temperament			Undecided/in nest																										
			Aggressive																										
			Fearful																										
			Exploratory																										
Stereotypy			Stereotypic behaviour																										
			Active																										
Number of females (F)																												
Number of males (M)																												
Colour type																												
Animal/cage id				26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Cage/section number																												
Shed number/colour type																												

Farm id   Observer id   Date

				Animal/cage id	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Nest box	Quality	Fleas	1 - yes																										
		Damaged																											
		Dirty																											
		Wet																											
	No access		0 - no is not noted																										
Water point	Diarrhoea																												
	Not functional		1 - yes																										
	Not clean																												
Enrichments	No straw																												
	Type(s) 1-9																												
Fur chewing	Extensive																												
	Severe																												
	Moderate																												
Injuries	> 30mm																												
	< 30mm																												
	< 10mm																												
Sickness	Lameness																												
	Disease																												
BCS	Obese																												
	Heavy																												
	Ideal																												
	Thin																												
	Very thin																												
Temperament	Undecided/in nest																												
	Aggressive																												
	Fearful																												
	Exploratory																												
Stereotypy	Stereotypic behaviour																												
	Active																												
Number of females (F)																													
Number of males (M)																													
Colour type																													
Animal/cage id				51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Cage/section number																													
Shed number/colour type																													

Date   Observer id   Farm id

Farm id | Observer id | Date | Period 3   Sheet 3

		Animal/cage id	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Nest box	Quality	Fleas																									
		Damaged																									
		Dirty																									
		Wet																									
	No access																										
Water point	Diarrhoea																										
	Not functional																										
	Not clean																										
Enrichments	No straw																										
	Type(s) 1-9																										
Fur chewing	Extensive																										
	Severe																										
	Moderate																										
Injuries	> 30mm																										
	< 30mm																										
	< 10mm																										
Sickness	Lameness																										
	Disease																										
BCS	Obese																										
	Heavy																										
	Ideal																										
	Thin																										
	Very thin																										
Temperament	Undecided/in nest																										
	Aggressive																										
	Fearful																										
	Exploratory																										
Stereotypy	Stereotypic behaviour																										
	Active																										
Number of females (F)																											
Number of males (M)																											
Colour type																											
Animal/cage id			76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Cage/section number																											
Shed number/colour type																											

Quality: 0-no is not noted   1 - yes

Water point: 1 - yes

Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Nest box – Quality – Fleas																									
Damaged																									
Dirty																									
Wet																									
No access																									
Water point – Diarrhoea																									
Not functional																									
Not clean																									
Enrichments – No straw																									
Type(s) 1-9																									
Fur chewing – Extensive																									
Severe																									
Moderate																									
Injuries – > 30mm																									
< 30mm																									
< 10mm																									
Sickness – Lameness																									
Disease																									
BCS – Obese																									
Heavy																									
Ideal																									
Thin																									
Very thin																									
Temperament – Undecided/in nest																									
Aggressive																									
Fearful																									
Exploratory																									
Stereotypy – Stereotypic behaviour																									
Active																									
Number of females (F)																									
Number of males (M)																									
Colour type																									
Animal/cage id	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
Cage/section number																									
Shed number/colour type																									

Nest box Quality: 0 - no is not noted / 1 - yes

Water point: 1 - yes

Date

Observer id

Farm id

Date | Observer id | Farm id

Nest box quality codes: 0-no is not noted / 1-yes. Water point: 1-yes

Animal/cage id	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Nest box Quality — Fleas																									
Damaged																									
Dirty																									
Wet																									
No access																									
Water point Diarrhoea																									
Not functional																									
Not clean																									
Enrichments No straw																									
Type(s) 1-9																									
Fur chewing Extensive																									
Severe																									
Moderate																									
Injuries > 30mm																									
< 30mm																									
< 10mm																									
Sickness Lameness																									
Disease																									
BCS Obese																									
Heavy																									
Ideal																									
Thin																									
Very thin																									
Temperament Undecided/in nest																									
Aggressive																									
Fearful																									
Exploratory																									
Stereotypy Stereotypic behaviour																									
Active																									
Number of females (F)																									
Number of males (M)																									
Colour type																									
Animal/cage id	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Cage/section number																									
Shed number/colour type																									

Nest box / Cage — Resource/management

Location	Size W	Size L	Size H	Thermal comfort – Insulation (0 - well / 1 - normal / 2 - no)	Bed. Mat. (0 - sufficient / 1 - some / 2 - none/little)	Wind device / covered nest (0 - yes / 1 - no)	Bottom cage size W	Bottom cage size L	Bottom cage size H	Top cage size W	Top cage size L	Top cage size H	Thermal comfort – Protection from Wind (0 - high / 1 - medium / 2 - low)	Protection from Sun (0 - high / 1 - medium / 2 - low)	Means of cooling (0 - yes / 1 - no)	Inside comfort zone (0 - yes / 1 - no)
Farm																
Shed no.																
Section no.																

3.4.2   Examples of sheets filled-in for sampling in Period 3

Farm id:	A.A.	Phone number:			

Farm information

Date of visit:	20/10/2012	First date of sorting:	31/10/2012	First date of pelting:	15-11

* Information needed for the welfare assessment			Sampling and visit planning information		
ONLY for sheds holding animals			**Number of mink**		**Location/shed no.**
ANIMALS	Breeders (> 1 year old)	Dams *	2000		1, 3, 13-14
		Males *	50		3
	Juveniles	Juveniles *	11500		2, 4, 5-12
	Colour type by dams		Dams	Juveniles	Dams	Juveniles
	Number of dams in each colour type	1 Brown (BRWN)	1000	6000	1, 2, 3	2, 4,
		2 Mahogany (MAHG)	300	1800	13	5, 6,
		3 Standard Black (STD.)	300	1500	13	7, 8
		4 Pearl (PERL)	0			
		5 White (WHIT)	0			
		6 Cross (CROS)	300	1800	14	9, 10
		7 Silver blue (SILV)	0			
		8 Others (OTHR)	100	400	14	11
SHEDS	Type	Two rows	10		5 - 14
		Multi rows	4		1, 2, 3, 4,
		Means of cooling	Water misters		All sheds
CAGES	Type	Single/pairs — Type 1			
		Single/pairs — Type 2	30*90cm		1, 3, 7 - 14
		Groups — Type 1			
		Groups — Type 2	30*90cm + 2nd floor		2, 4 - 6
	Material (wall)	Wire-mesh	All		
		Solid			
		Other			
NEST BOXES	Presence	No. of cages without	None		
	Type	Normal	30*24cm		
		Top nesters	None		
	Material	Wood	All		
		Synthetic			
WATERING SYSTEM	Automatic	Frost protection *	Circulation		
		No frost protection *		Water times a day	
	Manual	No. of cages *			
FEEDING	Time of feeding		10 - 12 am		
HEALTH STATUS	Aleutian disease	No			X	
		Reagents found during eradication programme - to be pelted			
		Chronic - not to be pelted			
	Other notifiable or contagious diseases	No			
		Yes			
	Are sick and injured animals gathered in an 'infirmary' section	No			
		Yes	X	Where?	11

	HOUSING OF DAMS					
	Alone	**With 1 male juvenile**	**With 2 male juveniles**	**With more juveniles kits (Family)**	**With other adult male**	**With other dam**
Number of female dams	1200	300	500			
Colour type(s)	500 BRW 1	300 MGH 1	500 BRW 2			
Colour type(s)	300 BLK 1					
Colour type(s)	300 CRS					
Colour type(s)	100 OTH					
Colour type(s)						
In shed number(s)	1, 3, 13, 14	13	2			

	HOUSING OF JUVENILES					
	Alone	**1 male and 1 female**	**2 juveniles of the same sex**	**3 juveniles**	**4 juveniles**	**5 or more juveniles**
Number of cage		4450			325	
Colour type(s)		2000 BRW 5			250 BRW 1	
Colour type(s)		900 CRS 2			75 MGH 0	
Colour type(s)		750 BLK 2				
Colour type(s)		600 MGH 1				
Colour type(s)		200 OTH				
In shed number(s)		1, 3, 7 - 14			2, 4 - 6	
Preferred sex combination					4 F	

In cage	**FOR STRATIFICATION ON GROUPING OF MINK:**				
	Mink	**Cages**	**No. Mink**	**6 blocks**	**Sample no. of**
Alone	Dams	1200	1200	1	
	Adult males	50	50		
	Juveniles	0	0		
Pairs	Dam + Male	300	600	1	
	Female + Male	4450	8900	10	
	Other	0	0		
Three	Dam + 2 M	500	1500	2	
	3 females	0	0		
	Other	0	0		
Four	2 M + 2 F	0	0		
	4 Females	325	1300	1	
	Other	0	0		
Five or more					
Total		6825	13550	15	
Divided by			15		
Reference number of mink per sample unit			903		

Thereafter distribute the number of cage blocks on colour types, houses and so on = marked in **red**

3.4.3 Annex B: Contributors to WelFur

WelFur partners	Country
European Fur Breeders' Association, Brussels	Belgium
INRA (National Institute of Agronomic Research), UMR1213 Herbivores, Clermont-Ferrand	France
University of Eastern Finland (UEF, Department of Biology)	Finland
MTT Agrifood Research Finland (MTT, Animal Production Research)	Finland
Aarhus University (AU, Department of Animal Science)	Denmark
Norwegian University of Life Sciences (UMB, Department of Animal and Aquacultural Sciences)	Norway
Swedish University of Agricultural Sciences (SLU, Department of Animal Environment and Health)	Sweden
University of Utrecht (UU, Faculty of Veterinary Medicine, Department of Animals in Science & Society)	The Netherlands
Experts from the original Welfare Quality® project	
Swedish University of Agricultural Sciences (SLU, Department of Animal Environment and Health)	Sweden
University of Guelph (Animal and Poultry Departement of Canada Science)	Canada
University of Birmingham (School of Biosciences)	United-Kingdom

The authors of the mink protocol:
Steen H. Møller (AU), Steffen W. Hansen (AU), Jens Malmkvist (AU), Claudia M. Vinke (UU), Lena Lidfors (SLU), Marion Gaborit (INRA) and Raphaelle Botreau (INRA).

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WelFur

Welfare assessment protocol for foxes

WelFur
Welfare assessment protocol for foxes

Acknowledgement

Foreword

WelFur – Introductory words

Animal welfare is a societal issue which most citizens and consumers are clearly concerned about. For the same reason animal welfare is a key priority in the European fur farming sector. The fur farming sector acknowledges however, that welfare standards on fur farms may not be sufficiently transparent to the general public and other stakeholders, just as the fur farming sector acknowledges that animal welfare standards are not fixed objectives, but the results of dynamic process in which new knowledge and technology must be considered as they appear.

In the preparation of the WelFur protocols for fur-farmed species (mink and foxes), all existing scientific knowledge has been reviewed. Scientific research on animal welfare in farmed mink and fox have been conducted in a number of countries for more than 30 years. Consequently the WelFur protocols can be considered as the latest scientific reference with regard to animal welfare for fur-farmed species.

The overall aims of the WelFur project rest on three principles. 1) WelFur is a reliable and feasible system for animal welfare assessment based on scientifically proven measurements. 2) WelFur is designed to create transparency around the animal welfare standards. 3) WelFur works as a strategic tool for the individual fur farmer to indentify and improve any areas on the fur farm where the welfare standards can potentially be improved.

Background

To promote a more objective and transparent view on the state of animal welfare on European fur farms, the European Fur Breeders' Association (EFBA) currently European Fur Information Center (Fur Europe) initiated the WelFur project in 2009. WelFur is largely inspired by the Welfare Quality® project that the European Commission initiated in 2004 covering pigs, poultry and cattle. Welfare assessment relies on a sequential evaluation process, in which measurements are collected on farms to assess the welfare status of the farm within 12 criteria. Those welfare criteria are then aggregated into four main welfare principles and finally an overall welfare classification is produced.

The objectives of WelFur

The main objective of WelFur is to check the level of animal welfare on European fur farms.

This can form the basis for a solid certification program to cover all European fur farms. Assessments will be carried by third-parties and results will be communicated to the fur farmer in order to encourage the farmer to take the most appropriate steps to improve animal welfare. It must be underlined that the welfare assessment protocols evaluate the actual welfare of the fur animals and not primarily compliance with any national and/or EU legislation.

At present, national authorities carry out controls of fur farms with the objective of insuring compliance with existing legislation on animal welfare. However, the levels of control and the basic legislation differ considerably from one member state to the other. Another potential benefit of the WelFur project is consequently to influence the reform of current controls and legislation on both national and EU levels. The industry proposes that WelFur could serve as an EU-based scientific reference for regulation and control.

WelFur structure and timeline

In 2009, EFBA (currently Fur Europe) appointed a consortium of 7 European universities and institutes (see Annex B 'Contributors to WelFur') to gather existing research in two protocols – one for mink and one for foxes. The senior scientist Dr. Steen Henrik Møller from Aarhus University and Prof. Jaakko Mononen from the University of Eastern Finland, were appointed project co-ordinators for mink and fox species, respectively. To secure the validity and the independence of the research on the protocols, three external reviewers were appointed: Prof. Georgia Mason from Guelph University, Prof. Harry Blokhuis from Swedish

University of Agricultural Sciences and Prof. David Morton from University of Birmingham. The reviewers participated in all the review meetings of the project and have issued a report at the end of the development process.

The scientists identified and evaluated the possible welfare indicators and measurements to be included in the protocols following an in-depth review of the existing welfare research on fur animals. They selected a number of these on the basis of their scientific validity, reliability and feasibility. The description of the selected welfare measurements was finished in early 2011. The researchers decided on 23 measurements to assess the welfare of foxes and 22 measurements for mink. About half of the measurements are animal-based. The goal has never been to have 100% animal-based indicators but instead, to have an overall picture of the farm which includes a combination of animal-based, management-based and resource-based indicators.

With the support of INRA (French National Institute of Agronomic Research) and various consultations with scientists, the scoring of the welfare measurements was accomplished by the end of 2011. WelFur is designed to be implemented directly at the farm. That is why the protocols were then tested in a number of commercial fur farms in Denmark, Finland, The Netherlands, Norway and Sweden during 2011 and 2012, in order to get a first set of farm data covering the 3 periods of the annual production cycle. From these tests, the scientific teams could conclude that the assessments can be performed within one day (approx. 5-7 hours). The tests also showed that the measurements are sensitive enough to demonstrate variation between farms.

Transparency paper

The 22 and 23 specific measurements for mink and foxes respectively, have been chosen by the scientist for their scientific validity, reliability and feasibility. During the development of WelFur several hundred measurements have been considered, and, on completion of the WelFur protocols, the scientist will produce a transparency paper explaining in detail the reason for the final choice of measurements.

WelFur implementation

The WelFur implementation consists of 4 procedures:

- Publishing the WelFur assessment protocols presenting both the measurements and the way calculations are performed up to the final overall classification of farms (present document).

- Development of a software tool to calculate the scores and store the data. This work by INRA started in parallel with the development of the protocols. This tool will be available to both the assessors (for the assessments) and the farmers (for information and improvement purposes).

- Development of the training material for the assessors were started in parallel with the development of the protocols. Training material (e.g. videos, written material, pictures) will be consolidated by the same scientific teams. It should be ready in 2015.

- National implementation action plans will be developed in the course of 2016 with the support of each Fur Europe member association, including the third-party selection to perform the assessments. There will not be a pan-European solution. Instead, each member country will have to develop a solution suited for national circumstances. The implementation of WelFur will be started at the beginning of 2017.

Ethical and societal aspects

WelFur differs from the Welfare Quality® project in that no social scientists were involved when setting the consolidation rules from the welfare criteria to principles and the overall assessment. Therefore, in WelFur, these two steps were extrapolated from the consolidated Welfare Quality® data. This situation is particular and mainly due to the fact that there is a polarisation of views when addressing the welfare of fur animals. Despite this there is general agreement within the scientific community about what represents good animal welfare. This consensus was expressed in the 'Five Freedoms' that Welfare Quality® is based on.

In order to address citizens' concerns regarding the fur farming sector, EFBA (currently Fur Europe) has also launched a number of key initiatives in parallel with WelFur:

· In September 2010, Fur Europe undertook a public survey (conducted by independent market research company Ipsos) regarding fur animals in Belgium, Germany and the Netherlands in order to get a clear understanding of the public's concerns.

· Following this survey, Fur Europe appointed a consortium of three scientists from the fields of bioethics and animal welfare with the purpose of having the consortium reflect on the subject of ethics in fur production. A first scientific publication, framing the ethical debate around animal use and fur farming in particular, is due to be released in the course of 2015.

· Responding to this first paper the future scope of the Ethical Committee is to analyse the ethics in the European fur farming sector. Considering areas like animal welfare, sustainability, the value of animals and various moral views, the Ethical Committee can point out ethical gaps in fur production. Ultimately the European fur farming sector will introduce an Ethical Charter in order to assure the public that

consistent ethical consideration is integrated with European fur production.

· Further analysis of public attitude towards animal use and fur production were undertaken with a second public survey in December 2012 (by independent market research company Ipsos) in Denmark, France, The Netherlands, Poland, Spain and the UK. The outcomes of this survey will be used to further articulate the WelFur implementation plan in member countries.

Future developments

WelFur is a dynamic programme and the welfare assessment protocols for mink and foxes should be considered a first version. We will strive for a 5 year revision cycle, with a view to improving its scientific basis and providing more efficient tests. The revisions will be based on the experiences gained from its implementation process and will include recommendations from external reviewers and ethical experts as well as new research.

Given that WelFur is a farm level certification programme with the objective of demonstrating transparency, Fur Europe will gather and publish annual reports with data from the assessment when the implementation is under way.

Conclusion

The European fur farmers associated with Fur Europe have the same objectives as the general public. The implementation of WelFur, the testing and the controls may well reveal room for some future changes. This is in accordance with the purpose of the programme as Fur Europe recognises the need and the demand for constant improvement. WelFur is scientifically valid and reliable programme that will further develop the welfare of our fur animals, and demonstrate transparency in the European fur farming sector.

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Terms and definitions

Adult: Individual older than 7-8 months. In WelFur terms adult foxes can be present in Periods 1, 2 and 3.

Animal-based measurement: Measurement that is taken directly from the animal.

Assessor: Person collecting data using the WelFur protocol on a farm in order to assess the welfare of foxes.

Cubs: Young foxes from birth to weaning. In WelFur terms cubs are present only in Period 2.

Farm: In this protocol, "farm" is used to designate the animal unit that means the whole or section of a farm that deals with a certain type of animal (*i.e.* foxes).

Farm manager: Person responsible for the farm.

Juvenile: Young fox older than 7-8 weeks and younger than 7-8 months. Consequently, juveniles are found on farms in between the time of weaning and pelting. In WelFur terms, juveniles are present only in Period 3.

Killing method: Techniques that lead to the death of the animal.

Management-based measurement: Measurement that refers to how the farm and the foxes are managed.

Overall assessment of welfare: Synthesis of welfare information, which will then be used to allocate a farm to a welfare category.

Pelting: The humane killing of animals to harvest mature winter pelts. In the northern hemisphere, pelting takes place from November to early January, and defines the end of Period 3.

Resource-based measurement: Measurement that is taken from the environment in which the animals are kept.

Weaning: Mother is removed from her cubs or the cubs are removed from their mother. Usually at 7-8 weeks after the birth of the cubs.

Welfare category: Final categorisation given to a farm that indicates the overall welfare of animals in that particular farm.

Welfare criterion: Represents a specific area of welfare concern that has to be addressed to satisfy good animal welfare.

Welfare measurement: Measurement taken on a farm for assessing a welfare criterion. A welfare measurement may be animal-, resource- or management-based.

Welfare principle: Collection of welfare criteria associated with: feeding, housing, health or behaviour.

Welfare score: Score that indicates the welfare state under a criterion or principle.

WelFur protocol: Description of the measurements that are used to calculate the overall assessment of welfare. The protocol also specifies how the data will be collected.

Photo: © Leena Ahola

1 Scope

This protocol deals with measurements related to the on-farm welfare assessment of foxes. Interpretation of these in terms of fox welfare and their aggregation to produce an overall judgment on the level of welfare on a given farm was performed by experts and calculations deriving from their opinions.

A similar objective of producing on overall score of animal welfare at farm level was dealt with for cattle, pigs and poultry within a European project called Welfare Quality®[1]. In WelFur, even if the general construction procedure is the same as in Welfare Quality®, several characteristics, listed below, have to be taken into consideration in the model construction for farmed fur animals.

Contrary to many other farm animal production systems, the whole production cycle (including breeding, lactation, weaning, growing and finally humane killing for pelting) occurs on the same farm in fur production. As a consequence, it is necessary to take into account, all types of animals (adult males, adult females, cubs and juveniles). In addition, two different species of foxes and their crossbreeds are to be considered: the blue fox (*Vulpes lagopus*) and the silver fox (*Vulpes vulpes*). Consequently, when appropriate, the construction of each criterion needed to be adjusted according to the different animal types so that their differences can be taken into account for the interpretation of the related measurements in terms of welfare.

Moreover, to have an overall view of the whole fur farm, the entire production cycle has to be evaluated. As a consequence, three periods (from pelting to mating / from mating to weaning / from weaning to pelting) were defined and have to be assessed (Figure 1). Depending on the period, the number and types of animals (adult males, adult females, cubs and juveniles) and the resources used differ. This has a direct impact on the time of the visit and on the construction

of the criteria. Moreover, at criterion level the data collected in several periods have to be integrated and this requires specific arrangements for the calculation of scores. Consequently, to build a model for the overall assessment of welfare on a fox farm, it is necessary to combine the results from the three periods.
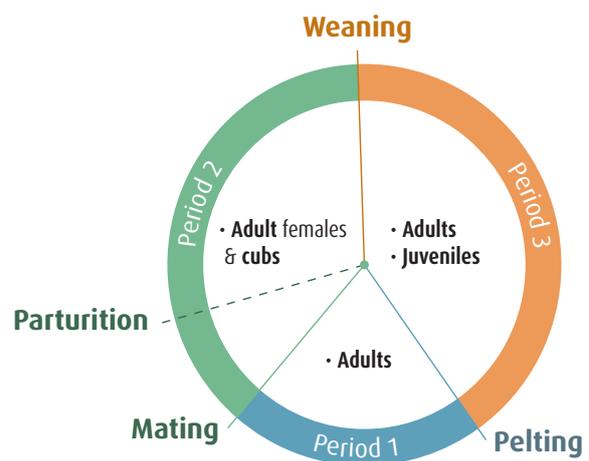
Figure 1 The three periods of the production cycle considered for foxes

Furthermore, the assessment system developed in WelFur should be applicable to all the production systems present in Europe, including variability in regulations (*e.g.* minimum size of cages) and climatic conditions (from Iceland to Greece).

Even if the general procedures presented here might be applicable to other fur animals, such as the Finnraccoon (*Nyctereutes procyonoides ussuriensis*), this protocol cannot be used, before a revision of the procedures for other species than foxes.

1   Welfare Quality® Assessment Protocol for Cattle, 2009, ISBN/EAN 978-90-78240-04-4, 180 pages.
    Welfare Quality® Assessment Protocol for Poultry, 2009, ISBN/EAN 978-90-78240-06-8, 119 pages.
    Welfare Quality® Assessment Protocol for Pigs, 2009, ISBN/EAN 978-90-78240-05-1, 119 pages.

With regard to the implementation procedure - it is suggested by Fur Europe to not run the whole protocol each year but to follow this proposal: the first year a farm is assessed, three visits on the farm are required (one per period); then, one visit per year is necessary, with a different period being assessed each year (Figure 2).
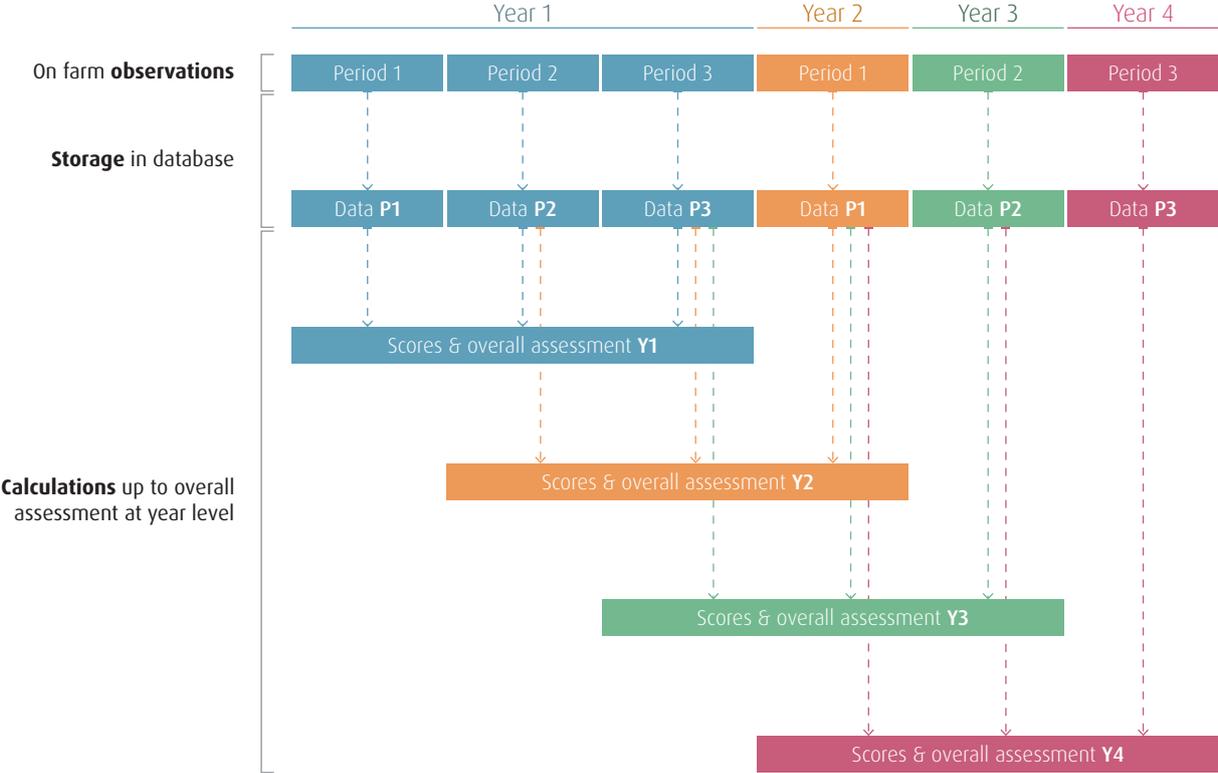
Figure 2 Suggested implementation procedure over several consecutive years

Photo: © Katja Lösönen

2 Background of WelFur protocols

2.1   Overall structure of the WelFur assessment

The objective of the WelFur project was to develop farm-level welfare assessment protocols for the three main fur animal species farmed in Europe (the mink, blue fox and silver fox). As in the Welfare Quality® project, the aim was to build an overall assessment of welfare. Therefore, the results obtained from measurements are synthesised to form such an overall assessment.

The welfare assessment related to a given farm is based on the calculation of welfare scores from the information collected on that farm (Figure 3). An advisor can use the welfare assessment to highlight points requiring the farm manager's attention. The information can also be used to inform consumers about the welfare status of the animals whose fur they buy.

This document contains the protocol for fox. It presents all the measurements relevant for the farm fox and an explanation of what data should be collected and what way.
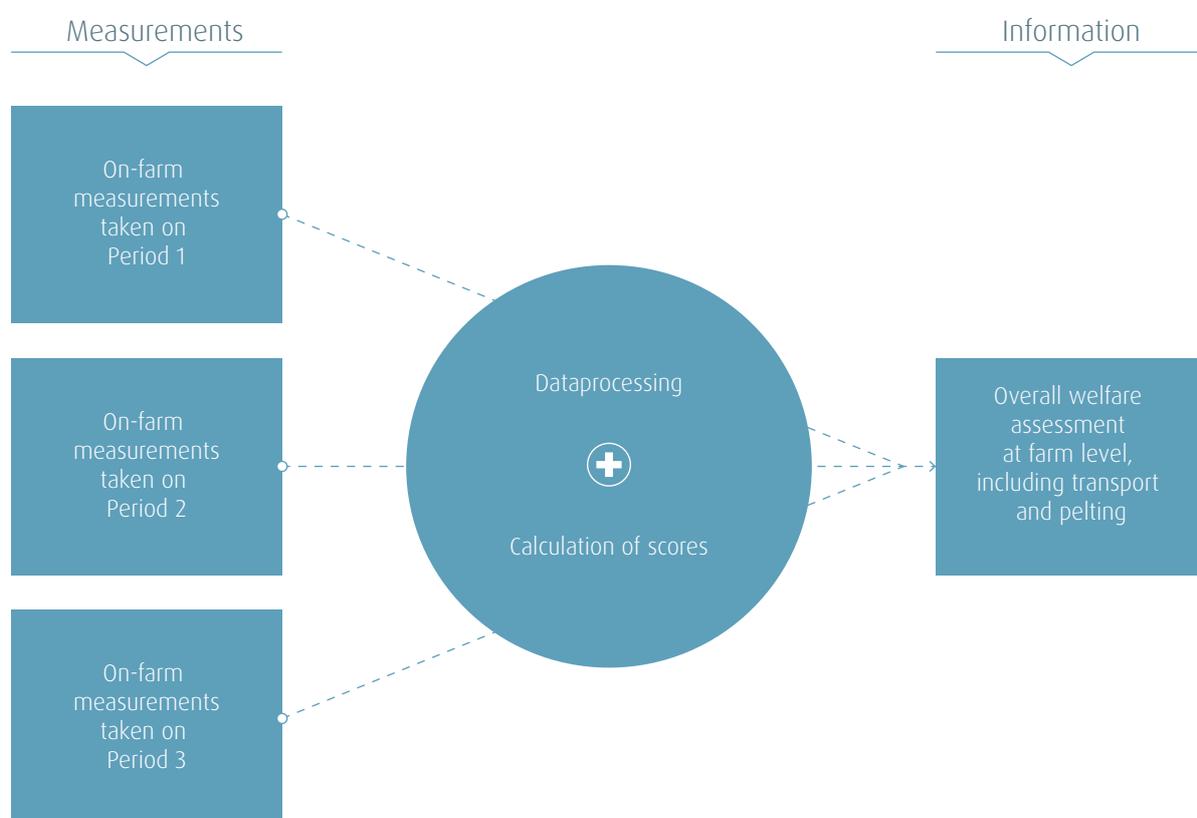
Measurements   Information

On-farm measurements taken on Period 1

On-farm measurements taken on Period 2

On-farm measurements taken on Period 3

Dataprocessing

Calculation of scores

Overall welfare assessment at farm level, including transport and pelting

Figure 3 Structure of the WelFur assessment including the different sources of information.

2.2   Basic principles

2.2.1   Defining welfare principles and criteria

The WelFur project used the welfare principles and criteria defined in Welfare Quality® (Table 1).

Table 1 The principles and criteria that are the basis for the Welfare Quality® and WelFur assessment protocols

Welfare principles	Criterion number	Welfare criteria
Good feeding	1	Absence of prolonged hunger
	2	Absence of prolonged thirst
Good housing	3	Comfort around resting
	4	Thermal comfort
	5	Ease of movement
Good health	6	Absence of injuries
	7	Absence of disease
	8	Absence of pain induced by management procedures
Appropriate behaviour	9	Expression of social behaviours
	10	Expression of other behaviours
	11	Good human-animal relationship
	12	Positive emotional state

The criteria are detailed as follows in the Welfare Quality® protocols:

1. Animals should not suffer from prolonged hunger, *i.e.* they should have a suitable and appropriate diet.

2. Animals should not suffer from prolonged thirst, *i.e.* they should have a sufficient and accessible water supply.

3. Animals should have comfort when they are resting.

4. Animals should have thermal comfort, *i.e.* they should neither be too hot nor too cold.

5. Animals should have enough space to be able to move around freely.

6. Animals should be free of injuries, e.g. skin damage and locomotory disorders.

7. Animals should be free from diseases, *i.e.* farm managers should maintain high standards of hygiene and care.

8. Animals should not suffer from pain induced by inappropriate management, handling, killing or surgical procedures (e.g. castration).

9. Animals should be able to express normal, non-harmful, social behaviours (e.g. grooming).

10. Animals should be able to express other normal behaviours, *i.e.* it should be possible to express species-specific natural behaviours such as observing surroundings.

11. Animals should be handled well in all situations, *i.e.* handlers should promote good human-animal relationships.

12. Negative emotions such as fear, distress, frustration or apathy should be avoided whereas positive emotions such as security or contentment should be promoted.Calculation of scores and consultation process

2.2.2 Calculation of scores and consultation process

As in Welfare Quality®, once all the measurements have been recorded on a farm, a bottom-up approach is followed to produce an overall assessment of animal welfare on that particular farm. First the data collected (*i.e.* the values obtained for the different measurements) on the farm are combined to calculate criterion-scores; then criterion-scores are combined to calculate principle-scores and finally the farm is assigned to one welfare category according to the principle-scores it attained (Figure 4). A mathematical model has been designed to obtain the criteria and principles scores.

Figure 4 Approach defined in Welfare Quality® and therefore in WelFur, to produce an overall assessment of animal welfare

As in Welfare Quality®, animal scientists, including those who developed the measurements were consulted to define formulae to compute data from measurements into criterion-scores (Step 1 in Figure 4).

In Welfare Quality®, these consultations helped to define principle-scores from criterion-scores and to decide of a procedure to synthesise principle-scores into an overall assessment (Steps 2 and 3 in Figure 4). Therefore, in WelFur, these two steps were extrapolated from Welfare Quality® with no further consultation.

Calculation of criterion-scores

The data produced by the measurements relevant to a given criterion are interpreted and synthesised to produce a criterion-score that reflects the compliance of the farm to this criterion. As in Welfare Quality® assessment protocols, this compliance is expressed on a 0 to 100 value scale, in which:

- '0' corresponds to the worst situation one can find on a farm (*i.e.* the situation below which it is considered there cannot be further decrements in welfare).

- '50' corresponds to a neutral situation, the level of welfare is not too bad but not too good.

- '100' corresponds to the best situation one can find on a farm (*i.e.* the situation above which it is considered there cannot be further improvements in welfare).

As in Welfare Quality®, several methods were used to compute data from measurements into criterion-scores[2]:

- When all measurements used to check a criterion are taken at farm level and are expressed in a limited number of categories or when there are more than 4 possible situations at animal level, a decision-tree is produced. An example is provided in Explanation box 1.

- When a criterion is checked by only one or two measurements taken at individual level expressed on an ordinal scale (less than 4 possible situations), this scale generally represents the severity of a problem and, at farm level, the proportion of animals observed in each possible situation can be calculated (e.g. percentage of foxes= with no moving difficulties, percentage of foxes with some moving difficulties, percentage of foxes with major moving difficulties and percentage of foxes that do not move even when disturbed). In that case, a weighted sum is calculated, with weights increasing with the severity of the problem and a non-linear function is then applied. An example is provided in Explanation box 2.

- When the measurements used to check a criterion lead to data expressed on different scales (e.g. percentage of foxes with bent feet, ocular inflammation, with impaired mouth and teeth health in Period 3 and total mortality taking into account the percentage of humanely killed foxes during the last 12 months), data are compared to alarm and warning thresholds defined by field vets. These thresholds represent the limit between what is a serious problem, a moderate problem and an acceptable situation. Then the number of alarms and warnings is used as the measurement value at farm level. This measurement is then processed in a similar way as in the case described just above. An example is provided in Explanation box 3.

Experts from animal sciences were consulted to interpret the data from farms in terms of welfare. Then experts were asked to score virtual farms. In the situations where weighted sums were to be calculated, this consultation was used to define weights that produce the same ranking of farms as the one given by experts.

Experts do not in general follow linear reasoning, I-spline functions were therefore chosen to produce criterion-score. I-spline functions allow calculation of portions of curves (expressed as cubic functions) so as to obtain a smooth increasing representative curve (see Explanation box 2).

Explanation box 1: Decision-tree as applied to the *Measurement Protection from exceptional weather conditions* in Period 3, as part of the Criterion *Thermal comfort* in foxes.

To assess the Criterion *Thermal comfort* on a fox farm in Period 3, one measurement is considered: *Protection from exceptional weather conditions*. To evaluate this measurement, two questions, based on the protection from wind and the possibility of cooling the cages, are used. Four levels of protection from wind and three levels of Possibilities of cooling the cages are considered at cage level (cf. description of the measurement for more details). This led us to propose the following decision tree defining the twelve possible situations combining the two questions:

In period 3 we have two different questions:

1/ Are the cages in use well protected against the wind?

2/ Are there possibilities of cooling the cages during hot weather?

	Situation		Score
High possibility	1	=	100
Medium possibility	2	=	72
Low possibility	3	=	47
High possibility	4	=	84
Medium possibility	5	=	62
Low possibility	6	=	40
High possibility	7	=	56
Medium possibility	8	=	44
Low possibility	9	=	26
High possibility	10	=	23
Medium possibility	11	=	11
Low possibility	12	=	0
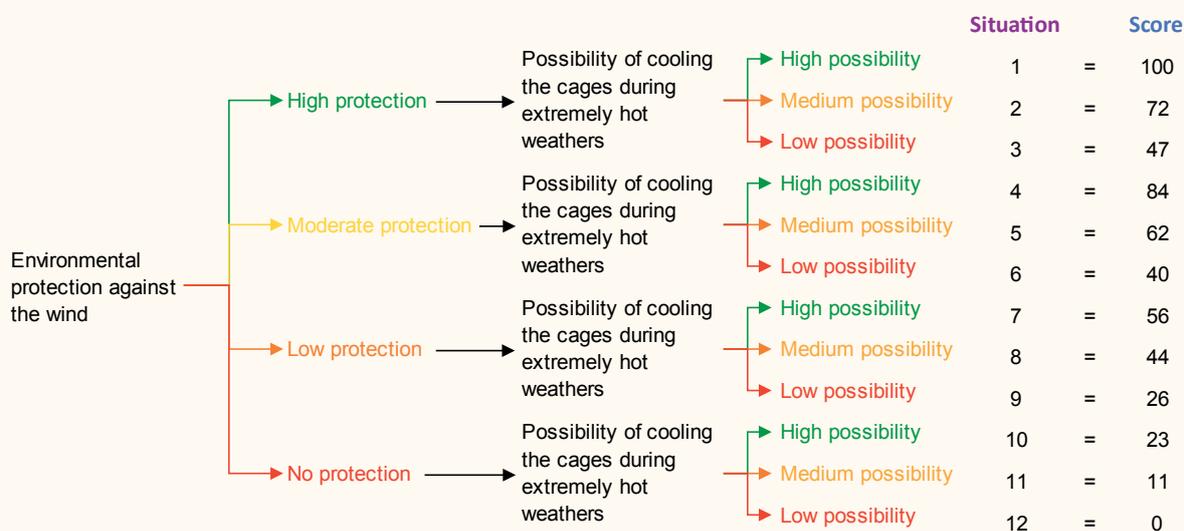
Explanation box 2: Weighted sum and I-spline functions as applied to the Measurement *Difficulties in moving* in Period 3, as part of the Criterion *Absence of injuries* in foxes.

The % of foxes with no moving difficulties, some difficulties in moving, major difficulties in moving and the % of foxes that do not move even when disturbed are combined in a weighted sum, with a weight of 0 for no moving difficulties, 5 for some difficulties, 13 for major difficulties and 22 for percentage of foxes that do not move even when disturbed. This sum is then transformed into an index (I) that varies from 0 to 100:

$$I = \left(100 - \frac{0\left(\% \text{ no difficulties}\right) + 5\left(\% \text{ some difficulties}\right) + 13\left(\% \text{ major difficulties}\right) + 22\left(\% \text{ do not move}\right)}{22} \right)$$

This index is then transformed and computed into a score using I-spline functions:

$$J = \frac{I - 70}{100 - 70} \times 100 \ \text{ if I} \geq 70, \text{ else } \ J = 0$$

When I ≤ 70

then   Score   =   (0.00000000000028438796999449×J) + (0.0033688506524225587425436×J^2)
                                 + (0.0000073122154128390797910×J^3)

When I ≥ 70

then   Score   =   -749.5093239298751086607808247 + (32.1218283364238956778535794×J)
                                 + (-0.4555144133568264641631629×J^2) + (0.0021924706238109705098982×J^3)
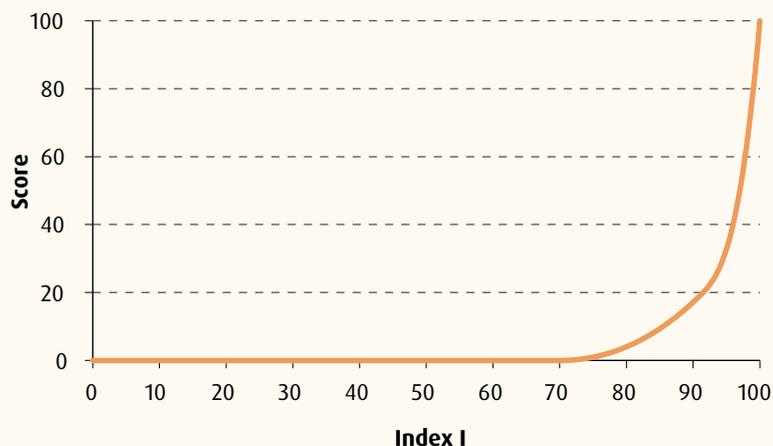
Explanation box 3: Use of alarm and warning thresholds applied to the Criterion *Absence of disease in foxes*:

- during the farm visit: % of foxes with severely bent feet, % of foxes with clear ocular inflammation, % of foxes with impaired mouth and/or teeth health, % of foxes with clear evidence of diarrhoea, % of foxes with clear evidence of reddish/brownish urine, % of obviously sick foxes ;

- from farm records: % of foxes older than 8 weeks recorded dead within the last 12 months, taking into account humanely killed foxes by considering three categories related to the proportion of humanely killed animals out of the total mortality: Mortality when < 25% due to humane killing/Mortality when 25% ≤ mortality < 50% due to humane killing/Mortality when ≥ 50% due to humane killing.

The incidence of each disorder is compared to an alarm and to a warning threshold. The alarm threshold is defined as the incidence above which a health plan is required at farm level. The warning threshold is defined as half the alarm threshold. The number of alarms and warnings detected on a farm are calculated. They are used to calculate a weighted sum finally transformed into a score using *I*-spline functions (as in the example shown in Explanation box 2).

Incidence of each disorder	Alarm threshold
% of foxes with severely bent feet	15.0%
% of foxes with clear ocular inflammation	7.5%
% of foxes with impaired mouth and/or teeth health	3.0%
% of foxes with clear evidence of diarrhoea	15.0%
% of foxes with clear evidence of reddish/brownish urine	2.0%
% of obviously sick foxes	0.5%
% of foxes <u>older than 8 weeks</u> recorded dead within the last 12 months, *taking into account humanely killed animals:*	
Mortality when < 25% due to humane killing	2.75%
Mortality when 25% ≤ mortality < 50% due to humane killing	4.25%
Mortality when ≥ 50% due to humane killing	7.5%

When a criterion was composed of very different measurements which experts found difficult to consider together and/or when a given measurement is assessed at several periods of the production cycle and/or on several animal types (*e.g.* adults *vs.* juveniles), measurement periods or animal types were aggregated using Choquet integrals (see Explanation box 4).

Explanation box 4: Use of the Choquet integral to aggregate sub-scores

Each time sub-scores are to be aggregated (*i.e.* when a measurement is observed during several periods or when several measurements are interpreted independently and need therefore be aggregated to obtain a score at criterion level), we use the Choquet integral. In this explanation box, we will use the Measurement *Body condition score* of the Criterion *Absence of prolonged hunger* as an illustrative example. In that example the three period sub-scores are to be aggregated. The Choquet integral allows fine control of the importance attached to periods in the aggregation but also of the impact of low and high sub-scores on the aggregated one.

Formally, the Choquet integral to aggregate *n* elements (corresponding here to the sub-scores, noted S_i) writes:

$$C(S_1,\ldots,S_n) = \sum_{i=1}^{n}\left[S_{(i)} - S_{(i-1)}\right] \times \mu\left(A_{(i)}\right)$$

with the convention $S_{(0)} = 0 \le S_{(1)} \le S_{(2)} \le \ldots \le S_{(n)}$ $X_{(0)} = 0 \le X_{(1)} \le X_{(2)} \le \ldots \le X_{(n)}$ (*i.e.* the brackets indicate a reordering of the elements, in that example the three periods, depending on the score they obtained, from the lowest to the highest) and $A_{(i)} = \{(i),\ldots,(n)\}$, $A_{(n+1)} = \varnothing$.

μ is a capacity function defined for any subset of periods entering in the composition of the measure-score at year

level. This capacity is a set function subject to the following constraints: $\mu(\varnothing) = 0$, $\mu(\{1,\ldots,n\}) = 1$ and $A \subseteq B \Rightarrow \mu(A) \leq \mu(B)$.

To be somewhat more operational, here are the explanations on how to calculate the score for our example. The scores obtained by a farm for the 3 periods are sorted in increasing order. The difference between the lowest sub-score and the next sub-score is multiplied by the 'capacity' of the group comprising all periods except the one that has the lowest score. Then, the difference between the last but one sub-score and the next sub-score is multiplied by the 'capacity' of the group comprising all periods except the two that have the lowest sub-scores (here, since that there are only 3 elements to be aggregated, it is the capacity of the period that has the highest sub-score). Finally, the measure-score therefore corresponds to the sum of these three terms. This can be written as follows:

$$\text{Measure-score} = \begin{cases} S_1 + (S_2 - S_1)\mu_{23} + (S_3 - S_2)\mu_3 & \text{if} \quad S_1 \leq S_2 \leq S_3 \\ S_1 + (S_3 - S_1)\mu_{23} + (S_2 - S_3)\mu_2 & \text{if} \quad S_1 \leq S_3 \leq S_2 \\ S_2 + (S_1 - S_2)\mu_{13} + (S_3 - S_1)\mu_3 & \text{if} \quad S_2 \leq S_1 \leq S_3 \\ S_2 + (S_3 - S_2)\mu_{13} + (S_1 - S_3)\mu_1 & \text{if} \quad S_2 \leq S_3 \leq S_1 \\ S_3 + (S_1 - S_3)\mu_{12} + (S_2 - S_1)\mu_2 & \text{if} \quad S_3 \leq S_1 \leq S_2 \\ S_3 + (S_2 - S_3)\mu_{12} + (S_1 - S_2)\mu_1 & \text{if} \quad S_3 \leq S_2 \leq S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the sub-scores assigned to the Measurement *Body condition score* in Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on…

The parameters of the Choquet integral used to calculate the Criterion *Absence of prolonged hunger*-score are:

μ_1	=	0.13	μ_{12}	=	0.14
μ_2	=	0.14	μ_{13}	=	0.49
μ_3	=	0.40	μ_{23}	=	0.46

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Thus, with the μ listed above:

$$\text{Absence of prolonged hunger-score} = \begin{cases} S_1 + 0.46(S_2 - S_1) + 0.40(S_3 - S_2) & \text{if} \quad S_1 \leq S_2 \leq S_3 \\ S_1 + 0.46(S_3 - S_1) + 0.14(S_2 - S_3) & \text{if} \quad S_1 \leq S_3 \leq S_2 \\ S_2 + 0.49(S_1 - S_2) + 0.40(S_3 - S_1) & \text{if} \quad S_2 \leq S_1 \leq S_3 \\ S_2 + 0.49(S_3 - S_2) + 0.13(S_1 - S_3) & \text{if} \quad S_2 \leq S_3 \leq S_1 \\ S_3 + 0.14(S_1 - S_3) + 0.14(S_2 - S_1) & \text{if} \quad S_3 \leq S_1 \leq S_2 \\ S_3 + 0.14(S_2 - S_3) + 0.13(S_1 - S_2) & \text{if} \quad S_3 \leq S_2 \leq S_1 \end{cases}$$

The importance of each period is given by the so called Shapley value, which brings for this example:

Period 1 $\quad \Phi(1) = \dfrac{1}{3} \times (1 + \mu_1 - \mu_{23}) + \dfrac{1}{6} \times (\mu_{12} - \mu_2 + \mu_{13} - \mu_3) = 0.24$

Period 2 $\quad \Phi(2) = \dfrac{1}{3} \times (1 + \mu_2 - \mu_{13}) + \dfrac{1}{6} \times (\mu_{12} - \mu_1 + \mu_{23} - \mu_3) = 0.23$

Period 3 $\quad \Phi(3) = \dfrac{1}{3} \times \left(1 + \mu_3 - \mu_{12}\right) + \dfrac{1}{6} \times \left(\mu_{13} - \mu_1 + \mu_{23} - \mu_2\right)$ = 0.53

The calculations are derived from the following general formula of the Shapley Value:

$$\Phi(i) = \sum_{A \subseteq N \setminus \{i\}} \frac{(n-a-1)!\,a!}{n!} \times \left[\mu\left(A \cup \{i\}\right) - \mu(A)\right]$$

The interactions between the scores are given by the interaction indices, higher the index is, more limited are the compensations (*i.e.* one low score is sufficient for the farm to be low):

$I_{12} = \dfrac{1}{2} \times \left(1 - \mu_{13} - \mu_{23} + \mu_3\right) + \dfrac{1}{2} \times \left(\mu_{12} - \mu_1 - \mu_2\right)$ = 0.16

$I_{13} = \dfrac{1}{2} \times \left(1 - \mu_{12} - \mu_{23} + \mu_2\right) + \dfrac{1}{2} \times \left(\mu_{13} - \mu_1 - \mu_3\right)$ = 0.25

$I_{23} = 1 - \mu_{12} - \mu_{13} - \mu_{23} + \mu_1 + \mu_2 + \mu_3$ = 0.21

$I_{123} = 1 - \mu_{12} - \mu_{13} - \mu_{23} + \mu_1 + \mu_2 + \mu_3$ = 0.58

The calculations are derived from the following general formula of the Interaction Index:

$$I_{ij} = \sum_{A \subseteq N \setminus \{i,j\}} \frac{(n-a-2)!\,a!}{(n-1)!} \times \left[\mu\left(A \cup \{ij\}\right) - \mu\left(A \cup \{i\}\right) - \mu\left(A \cup \{j\}\right) + \mu(A)\right]$$

Calculation of principle-scores from criterion-scores

In WelFur project, we averaged the parameters set in Welfare Quality® for the various species (cattle, pigs and poultry) to determine the parameters to be used for fur animals.

Assignment of farms to the welfare categories

We transposed the rules used in Welfare Quality® to produce an overall welfare assessment of farms.
However, contrary to Welfare Quality®, the names of the classes have been changed because we believe that an animal production can never be excellent and that the key reference point is the best current practice according to the experts. Briefly, a farm is classified in one welfare category according to its principle-scores (Figure 5):

- A farm is considered to correspond to **'Best current practice'** if it scores more than 55 on all principles and more than 80 on two of them.

- A farm is considered to correspond to '**Good current practice**' if it scores more than 20 on all principles and more than 55 on two of them.

- A farm is considered to correspond to '**Acceptable current practice**' if it scores more than 20 on three principles and more than 10 on the remaining principle.

- Other farms are considered to correspond to '**Unacceptable current practice**'.

In addition, an indifference threshold equal to 5 is applied: For instance, a score of 50 is not considered to be significantly different from one of 55.

Note: The rules to assign a farm to a given welfare category may be subject to modifications once a sufficient number of commercial farms have been inspected.
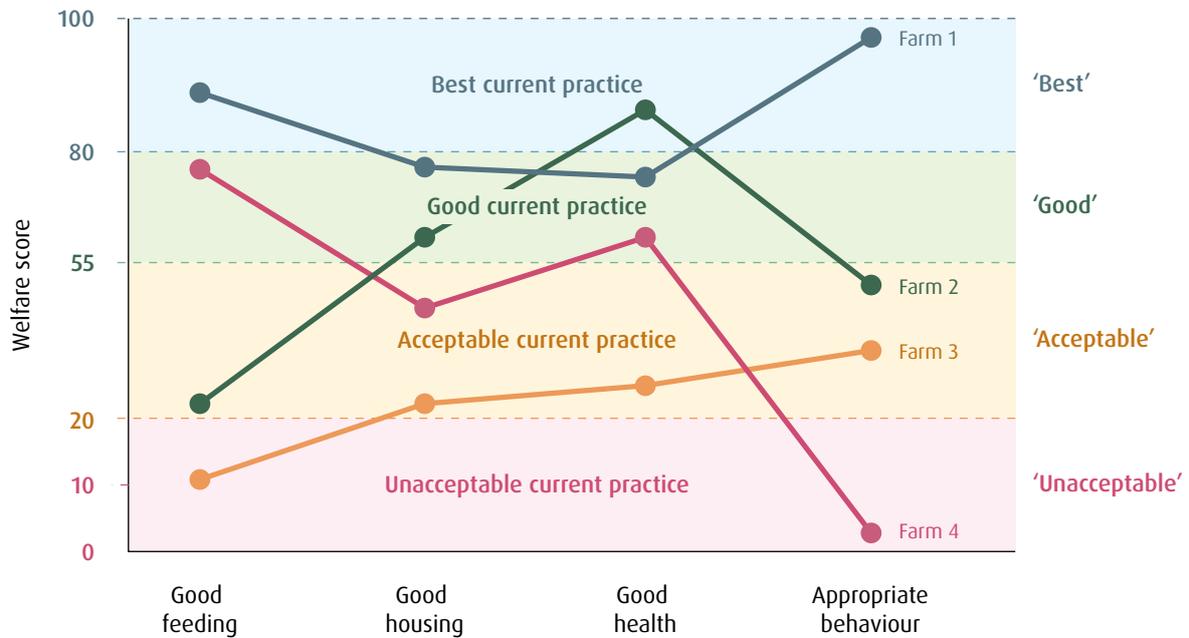
Figure 5 Examples of farms in the four welfare categories

Final comments

In this protocol the reader will find all the necessary information to understand what is made in WelFur to produce an overall welfare assessment of foxes at farm level. However, for the data collection, specific training is required to ensure the relevance and the reliability of the observations. The development of the training material for the assessors started in parallel with the development of the protocol, training material (e.g. videos, pictures, farm visit, etc.) will be consolidated.

A software package has been developed to calculate welfare scores and to produce the overall assessment of farms. For more information, contact the partners of the WelFur project, represented by the Fur Europe office.

The following chapters are specific to the two fox species. They are structured to present firstly the measurements collected on farms and the sampling strategy to be adopted and secondly the calculation of scores needed for the overall assessment.

Photo: © Paula Martiskainen

3 Welfare assessment protocol for foxes

The assessment of welfare should be a multi-disciplinary process since only the assessment of a variety of different parameters can provide a comprehensive assessment of an animal's welfare in any given system. To this end, the WelFur project utilizes physiological, health and behavioural aspects as well as the more traditional input based aspects of housing and management, to assess the welfare of foxes on farms.

In this chapter, a description of each measurement for foxes is given, followed by additional information about the sampling strategy to be adopted and the order in which the different measurements should be carried out during a farm visit.

Before commencing farm visits, assessors need to be fully trained in all the measurements that are to be assessed, by using photographs, video clips and practical 'on-farm' training. For some of the health measurements, this training will involve recognition of certain conditions/ diseases; however, it is imperative that this document is not used as a diagnostic tool to identify individual health conditions but rather as a tool to highlight the presence of health problems affecting the welfare of animals. The assessor should not enter into discussions with the farm manager on the prevalence or severity of different diseases on the farm; this is a matter for the farm manager and the herd veterinarian. Additionally, in general, the role of the assessor is to assess and not to advise directly. The farm manager should, however, be advised if serious health problems are observed.

Trained assessors will use animal-based, management-based and resource-based measurements to achieve a representative assessment of foxes' welfare of each farm. In this chapter, the same protocol describes the three periods of the production cycle considered for foxes. However, how each measurement applies to each period is specified in the data collection descriptions while section 3.2.5 *Guidelines for a visit to a farm* and Annex A *Recording sheets for foxes* will have a set of descriptions for each period. Moreover, for the on-farm assessment, it is impossible to evaluate all the animals present on the farm according to the time needed to assess all the measurements. Therefore, stratified samples of foxes are defined at the beginning of the farm visit in order to have a representative number of the different types of animals and species for all measurements.

The majority of the measurements are scored according to either a two-point scale (0/1) or a three-point scale (0/1/2). The assessment scale has been selected so that, as a general rule, score 0 is awarded where welfare is good and a score 1 (and 2 or 3 in case of three and four-point scales) is awarded where welfare is poor or unacceptable. In some cases, a cardinal scale (e.g. cm or m^2) is used.

3.1   An introduction to fox production

3.1.1   The origin of the farmed foxes

Two fox species, the blue fox (*Vulpes lagopus*, formerly *Alopex lagopus*) and the silver fox (*Vulpes vulpes*) and their crossbreeds are farmed for their fur. The blue fox type foxes originate from different colour types of the arctic fox which live in arctic circumpolar areas. The term silver fox refers to several different colour variants that originate from the red fox.

In the wild, arctic foxes live mainly solitary outside the breeding season, whereas red foxes may live solitary or in small family groups throughout the year. Both fox species breed in spring or early summer. The cubs are nursed by the female in a den, which is typically a complex underground structure. Also the male may make some effort to care for and feed the cubs. Juvenile foxes will disperse within the first year of life, though some may remain or return later to the natal area.

In the wild, both fox species eat small mammals, birds, eggs, amphibians and carrion, and they also use some vegetable food sources like berries and seeds. In urban areas both fox species may visit garbage. The diet varies according to the season and availability of various food sources.

3.1.2   Fox farming and the annual cycle of production

Fox farming was first started in Canada in the late 19th century. The first European fox farms were established in the 1910s. The current fox population on today's fox farms originates from those foxes captured for farming approximately 100 years ago and foxes have been domesticated to farming conditions thereafter. In 2014, the worldwide production of fox pelts was 7,3 million, out of which 30 % was produced in Europe.

Under production conditions, European farmed foxes are generally housed in wire mesh cages in outdoor sheds or in unheated barns under natural light conditions. European recommendations as well as national legislations lay the minimum requirements for housing conditions of farmed foxes. These documents stipulate minimum cage dimensions, guidelines for enrichment, as well as other requirements for the care and handling of foxes.

Fox production is characterised by a strict annual cycle. The annual production cycle of a fox farm starts in February-April with the breeding season. At that time, the adult breeding males and females are housed singly. According to current farming practices, the majority of the females are artificially inseminated and natural mating is used less often. The gestation lasts for 52-54 days, thus the cubs are born in April-June. Typically a week or two weeks before expected whelping, the females are provided with a nest box where they are allowed unrestrictive delivery and nursing of the cubs. The cubs weighing 60-110g are born with only poor thermoregulation and without the ability to see or hear. The cubs start to move outside the nest box approximately at the age of four weeks and at that time

they also start to eat some solid food. Lactation starts to cease at the cubs' age of five or six weeks. Females nurse their cubs for around eight weeks after which the cubs are separated from their mother, *i.e.* weaned. After weaning of the cubs, the females are once again housed singly whereas the litters are split up and the juvenile foxes are housed in pairs or small groups throughout their growing period, *i.e.* autumn. After maturation of the winter coat, in late autumn-early winter, all foxes, but those selected as breeding animals, are pelted. Consequently, after pelting time, only old breeding animals and younger, future breeding animals are present on the farm. Crossbreed foxes are sterile and therefore, they are not kept as breeding animals.

The foxes are fed once or twice a day with feed consisting mainly on slaughterhouse offal, fish and cereals. Water is provided through an automatic watering system or manually once or twice a day.

The housing conditions allow for efficient daily inspection of health and behaviour of farmed foxes. They are left intact, *i.e.* they are not subjected to physical mutilations of the body or surgical procedures (no identification marking, castration or other management procedures are used) at any stage of their life.

The foxes typically live their entire life on one farm, the one where they were born, *i.e.* they are not systematically transported at any stage of their life. The foxes are also humanely killed on the natal farm at pelting time.

3.1.3   Building the WelFur assessment protocol for foxes

This protocol has been built for the assessment of the welfare of foxes on a farm to be assessed by doing three one-day visits of 6-7 hours each:

- In the winter between the pelting and breeding seasons when there are only breeding males and females on the farm.

- In the spring or summer before weaning when the breeding females nurse their cubs

- In the autumn when there are breeding males and females and juveniles on the farm.

WelFur is built on the available scientific literature and the knowledge within the project group on behaviour, health, management and housing conditions of the farmed foxes. The welfare assessment protocol evaluates the actual welfare of the foxes and not primarily the compliance with legislation. This is partly because there is not necessarily a relationship between the scientific knowledge and

legislation and partly because the actual legislation differs between European countries, although the legal framework for fox production is based on the Council of Europe recommendations.

By reviewing the literature over 200 potential welfare measurements for foxes were identified. Each measurement was evaluated according to:

- Validity: does the measurement reflect some aspect of the actual welfare of the fox relative to the criteria

- Reliability: acceptable inter- and intra-observer reliability and robustness to external factors (e.g. time of day or weather conditions)

- Feasibility: is the measurement possible and practical to apply in practice on a fox farm with reasonable effort and costs

The review for each of the 12 assessment criteria led to an assessment of the validity, reliability and feasibility of the measurements based on a three point scale:

0. High certainty: Solid and complete data available; strong evidence in multiple references with most authors coming to the same conclusion

1. Medium certainty: Some or only incomplete data available; evidence provided in a small number of references; authors' conclusions vary from one to the other; solid and complete data available from other species which can be extrapolated to the species considered

2. Low certainty: Scarce or no data available; evidence provided in unpublished reports or based on personal observations or communications; authors' conclusions vary considerably between the reports

A total of 23 welfare measurements passed this evaluation and are included in the protocol. Consequently, the majority of the recognised measurements were excluded due to lack of scientific knowledge of validity or reliability or due to lack of feasibility. However, on-going scientific research may refine measurements so that the validity and feasibility of new measurements will be high enough for inclusion in the protocol at a later stage.

Another aspect of the WelFur protocol is that it should be applicable in all European countries. Unforeseen situations may appear during application and therefore it is planned that the WelFur protocol will be updated in a 5 year revision cycle in the light of new scientific knowledge as well as a result of the practical experience gained while implementing the WelFur scheme.

3.2 Collection of data for foxes

Categorisation of the foxes:

The instructions on collection of data presented here apply to all colour types of the two farmed fox species, the blue fox (*Vulpes lagopus*) and the silver fox (*Vulpes vulpes*) and their crossbreeds.

Definitions of the periods:

Period 1: Breeding males and females before the breeding season, in winter. Data collection from January 1st to February 28th, after pelting time but before the onset of the breeding season
Period 2: Breeding females during the breeding season, in summer. Data collection from May 1st to July 31st, when the majority of the cubs on the farm are 4-8 weeks old
Period 3: Adult breeding males, and females and juveniles during the growing season, in autumn. Data collection from October 1st to November 30th, before pelting time

3.2.1 Good feeding

3.2.1.1 Absence of prolonged hunger

Title	**Body condition score (BCS)**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	The animal is observed but must not be touched. View the animal from all sides of its body. Pay attention to the flank, abdominal area and face. The animal is scored with regard to its body condition (see photographic illustration).

Body condition scores :
Applied from scoring system by Kempe et al. (2009).

1 = Very thin : General appearance of the animal is pinched and bony. Ribs, shoulder and pelvic bones are easily visible. Abdomen is tucked up when viewed from the side.
2 = Thin : General appearance of the animal is slim. Ribs, shoulder and pelvic bones are visible under a thin fat layer. Abdomen is tucked up when viewed from the side.
3 = Ideal : General appearance of the animal is balanced and normal. Ribs, shoulder and pelvic bones could be felt through a distinctive fat layer. Straight abdominal line.
4 = Heavy : General appearance of the animal is fat. Heavy fat cover in the shoulder and pelvic areas. Waist and abdominal area distended because of fat pad.
5 = Extremely fat : General appearance of the animal is extremely fat, massive and round. Massive fat deposits over ribs, shoulders and pelvic area. Noticeable abdominal distension. Fat deposits in face and limbs.

This BCS scale is simplified to obtain three WelFur scores at individual level:

0 - The body condition of the animal is balanced
1 - The animal is very lean
2 - The animal is extremely fat

The description of these three WelFur scores differ between the periods, both in terms of definition and types of animals concerned:

	Individual level:
	In Period 1: 0 - BCS 3 or 4; 1 - BCS 1 or 2; 2 - BCS 5.
	In Period 2: 0 - BCS 2, 3 or 4; 1 - BCS 1; 2 - BCS 5.
	In Period 3: 0 - BCS 3 or 4; 1 - BCS 1 or 2; 2 - BCS 5.
Classification	**Farm level:**
	Percentage of very lean animals (Score 1)
Additional information	Information concerning the percentage of extremely fat animals (Score 2) is collected for advisory purposes.

BCS 1
Photos: © T. Koistinen UEF

BCS 1
© T. Koistinen UEF

BCS 1
© L. Ahola UEF

BCS 2
© T. Koistinen UEF

BCS 2
Photos: © T. Koistinen UEF

BCS 2
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BCS 3
© T. Koistinen UEF

BCS 3
© T. Koistinen UEF

BCS 3
Photos: © T. Koistinen UEF

BCS 4
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BCS 4
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BCS 5
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3.2.1.2   Absence of prolonged thirst

Four sub-measurements are taken at cage level and combined to the Measurement *Continuous water availability* to assess the Criterion of *Absence of prolonged thirst*. Each sub-measurement leads to a classification at cage level. The classification at farm level results from the combination of these four sub-measurements.

Subtitle	**Type of watering system**
Scope	Resource- and management-based measurement: Periods 1, 2 and 3
Sample size	Farm, confirmed with Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)

| Method description | Consult the farm manager whether the animals are provided with potable water through an automatic watering system or manually. If water is provided manually, ask how many times a day water is provided. During all periods, only water supply systems in use are taken into account.

If various watering systems are used on the farm, check the watering systems according to Sample B.

Cage level:
The type of watering system:
0 – Watering system with automatic water flow throughout the year. The system does not freeze in sub-zero temperatures.
1 – Watering system with automatic water flow. The system freezes, tends to freeze or is not working in subzero temperatures. When the system is not working, then water is supplied manually.
2 – No automatic watering system. Water is provided manually throughout the year.

NB: in Period 2, since the climatic conditions prevent watering system from freezing, all automatic systems are scored 0.

Then, if 1 (not working system) or 2: Frequency of water provision:
0 – Water is provided manually at least twice a day.
1 – Water is provided manually once a day.
2 – Water is provided manually less than once a day. |
|---|---|
| Classification | **Cage level**:
Seven possible situations result from the combination of watering system and watering frequency:
0 – 0
1 – 1 then 0
2 – 1 then 1
3 – 1 then 2
4 – 2 then 0
5 – 2 then 1
6 – 2 then 2 |

Subtitle	**Protection against overheating of drinking water**
Scope	Resource- and management-based measurement: Periods 2 and 3
Sample size	Farm, confirmed with Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Consult the farm manager to identify whether solutions against overheating of the drinking water are used on the farm in extremely hot weather. For preventing overheating, the farm manager can run water in the water pipes or the pipes can be insulated. During all periods, only water supply systems in use are taken into account.

If various watering systems are used on the farm, check the cages for protection against overheating of drinking water according to Sample B.

NB1: The measurement is not considered in Period 1, since the climatic conditions prevent watering systems from overheating. |

NB2: The measurement is not considered if manual water supply is in use.

Cage level:
0 – Watering system is protected against overheating.
1 – Watering system is not protected against overheating.

Classification	**Cage level**: Each cage is scored either 0 or 1.

Subtitle	**Functioning of the water points**
Scope	Resource and management-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Check the functioning of the water points (cups/nipples). Choose the water points to be assessed from separate sheds and as a representative sample from different water supply systems used on the farm. During all periods, only cups/nipples in use are considered.

NB1: The measurement is not considered if manual water supply is in use.

NB2: In Period 1, if the automatic watering system is frozen (*i.e.* Score 1 in the Sub-measurement *Type of watering system*), functioning of the watering system is not considered.

Cage level:
0 – The water point works properly.
1 – The water point does not work properly.

Classification	**Cage level:** Each cage is scored either 0 or 1.

Subtitle	**Cleanliness of the water points**
Scope	Resource- and management-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Check the cleanliness of the water points (cups/nipples). A water point is considered to be dirty if there is organic matter (e.g. algae, feed and/or faeces) in/on it. Choose the water points to be assessed from separate sheds and as a representative sample from different water supply systems used on the farm. During all periods, only cups/nipples in use are considered.

Cage level:
0 – The water point is clean.
1 – The water point is dirty.

Classification	**Cage level:** Each cage is scored either 0 or 1.

Score 0	Score 1	Score 1
Photos: © H. Huuki UEF	© T. Koistinen UEF	© T. Koistinen UEF

Title	**Continuous water availability**

Classification	**Farm level:** Percentage of animals in each of the situations resulting from the combination of the four sub-measurements described above: *Type of watering system, Protection against overheating of drinking water, Functioning of the water points* and *Cleanliness of the water points*. The number of situations differs from one period to another:

Period 1: 16 different situations are relevant

	Continuous	**Overheating**	**Functioning**	**Cleanliness**	**% of animals**
Situation 1	0		0	0	*P1*
Situation 2	0		0	1	*P2*
Situation 3	0		1	0	*P3*
Situation 4	0		1	1	*P4*
Situation 5	1			0	*P5*
Situation 6	1			1	*P6*
Situation 7	2			0	*P7*
Situation 8	2			1	*P8*
Situation 9	3			0	*P9*
Situation 10	3			1	*P10*
Situation 11	4			0	*P11*
Situation 12	4			1	*P12*
Situation 13	5			0	*P13*
Situation 14	5			1	*P14*
Situation 15	6			0	*P15*
Situation 16	6			1	*P16*

Period 2: 14 different situations are relevant

	Continuous	**Overheating**	**Functioning**	**Cleanliness**	**% of animals**
Situation 1	0	0	0	0	*P1*
Situation 2	0	0	0	1	*P2*
Situation 3	0	0	1	0	*P3*
Situation 4	0	0	1	1	*P4*
Situation 5	0	1	0	0	*P5*
Situation 6	0	1	0	1	*P6*
Situation 7	0	1	1	0	*P7*

Situation 8	0	1	1	1	P8
Situation 9	4			0	P9
Situation 10	4			1	P10
Situation 11	5			0	P11
Situation 12	5			1	P12
Situation 13	6			0	P13
Situation 14	6			1	P14

Period 3: 38 different situations are relevant

Period 2	Continuous	Overheating	Functioning	Cleanliness	% of animals
Situation 1	0	0	0	0	P1
Situation 2	0	0	0	1	P2
Situation 3	0	0	1	0	P3
Situation 4	0	0	1	1	P4
Situation 5	0	1	0	0	P6
Situation 6	0	1	0	1	P6
Situation 7	0	1	1	0	P7
Situation 8	0	1	1	1	P8
Situation 9	1	0	0	0	P9
Situation 10	1	0	0	1	P10
Situation 11	1	0	1	0	P11
Situation 12	1	0	1	1	P12
Situation 13	1	1	0	0	P13
Situation 14	1	1	0	1	P14
Situation 15	1	1	1	0	P15
Situation 16	1	1	1	1	P16
Situation 17	2	0	0	0	P17
Situation 18	2	0	0	1	P18
Situation 19	2	0	1	0	P19
Situation 20	2	0	1	1	P20
Situation 21	2	1	0	0	P21
Situation 22	2	1	0	1	P22

Situation 23	2	1	1	0	*P23*
Situation 24	2	1	1	1	*P24*
Situation 25	3	0	0	0	*P25*
Situation 26	3	0	0	1	*P26*
Situation 27	3	0	1	0	*P27*
Situation 28	3	0	1	1	*P28*
Situation 29	3	1	0	0	*P29*
Situation 30	3	1	0	1	*P30*
Situation 31	3	1	1	0	*P31*
Situation 32	3	1	1	1	*P32*
Situation 33	4			0	*P33*
Situation 34	4			1	*P34*
Situation 35	5			0	*P35*
Situation 36	5			1	*P36*
Situation 37	6			0	*P37*
Situation 38	6			1	*P38*

3.2.2   Good housing

3.2.2.1 Comfort around resting

Title	**Cleanliness of the fur**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	The animal is observed but must not be touched. View the animal from all sides of its body. Pay attention to the abdominal area and rear parts of the animal. The animal is scored with regard to the cleanliness of its fur (see photographic illustration): **Individual level:** **0 – Clean**: The fur of the animal is clean. No urine, faeces or feed stains are observable in any part of the animal. **1 – Slightly dirty**: The fur of the animal is dirty in some parts of the body. **2 – Clearly dirty**: The fur of the animal is entirely dirty, wet and/or tangled.
Classification	**Farm level:** Percentage of clearly dirty animals (Score 2)
Additional information	Information concerning the percentage of slightly dirty animals (Score 1) is collected for advisory purposes.

Score 0 **Photos:** © T. Koistinen UEF	Score 1 © T. Koistinen UEF	Score 1 © L. Ahola UEF
Score 1 **Photos:** © T. Koistinen UEF	Score 2 © T. Koistinen UEF	Score 2 © T. Koistinen UEF

Title	**Availability of a platform**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80 to 100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Check the cage for the availability of a platform. The roof of a nest box can be considered as a platform if the fox can rest on its roof. The animal/s in the cage is/are considered to have access to the platform if the platform is unbroken and usable and the minimum distance from the platform (or from the roof of a year-round nest box) to the ceiling of the cage is at least 20 cm. The platform has, however, to be mounted sufficiently high up that the animal/s is/are able to move and lie under the platform. Measure the distance from the platform (or from the roof of the year-round nest box) to the ceiling of the cage. The cage is scored with regard to the availability of an accessible platform. **Cage level:** **0 –** There is a usable platform in the cage. **1 –** There is no usable platform in the cage.
Classification	**Farm level:** Percentage of animals without a usable platform (Score 1)
Additional information	Information concerning the distance from the platform to the cage ceiling is collected also for advisory purposes.

3.2.2.2 Thermal comfort

Title	**Protection from exceptional weather conditions**
Scope	Management- and resource-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details) and the farm

Method description	Check the farm and cages for environmental and inbuilt protection against wind and extremely hot weather. Consult the farm manager to identify whether sprinkling of the animals or roofs of the sheds is used during ambient temperatures above 30 °C.

The cage is scored with regard to protection from wind (Periods 1 and 3) and possibility of cooling the cages during extremely hot weather (Periods 2 and 3).

Cage level:
Protection from wind (Periods 1 and 3):
0 – The animals are housed in solid walled barns or there is a stand of trees or bushes, hills, solid fences or buildings in the immediate vicinity of the outdoor cage, protecting the animal/s from the wind. There is a wind shield in the outer half of the outdoor cage.
1 – The animals are housed in outdoor sheds and there is a stand of trees or bushes, hills, solid fences or buildings in the immediate vicinity of the cage protecting the animal/s from the wind, but there is no wind shield in the cage.
2 – The animals are housed in outdoor sheds and the surroundings of the cage are bare, with no trees, bushes, hills, solid fences or buildings in the immediate vicinity of the cage but there is a wind shield in the outer half of the cage.
3 – The animals are housed in outdoor sheds and the surroundings of the cage are bare, with no trees, bushes, hills, solid fences or buildings in the immediate vicinity of the cage and there is no wind shield in the cage.

NB: Since blue foxes have excellent thermoregulatory capacity in cold weather conditions, they are scored 0 with regard to protection from wind.

Possibility of cooling the cages during extremely hot (≥ 30 °C) weather (Periods 2 and 3):
0 – For the animals housed in solid walled barns, there is a possibility to increase ventilation in the barn, *e.g.* by automatic ventilation or by opening windows or other kinds of openings on the roof or on the low parts of the walls of the barn. As regards the animals housed in outdoor sheds, there is some protection, in addition to eaves, against direct sunlight *e.g.* sun blind or applicable wind shield. In general, cages with outer walls facing north do not need any special protection against direct sunlight. The animals or the roofs of the sheds are sprinkled with water during ambient temperatures above 30 °C.

1 – For the animals housed in solid walled barns, there is a possibility to increase ventilation of the cages in the barn, *e.g.* by automatic ventilation or by opening windows or other kinds of openings on the roof or on the low parts of the walls of the barn. As regards the animals housed in outdoor sheds, there is some protection, in addition to the eaves, against direct sunlight *e.g.* sun blind or appropriate wind shield. In general, cages with outer walls facing north do not need any special protection against direct sunlight. The animals and the roofs of the sheds are not sprinkled with water during ambient temperatures above 30°C.
OR
There are no sun blinds or such in cages with direct sunlight but the animals or the roofs of the sheds are sprinkled with water during ambient temperatures above 30°C.
2 – For the animals housed in solid walled barns, there is no possibility to increase ventilation of the cages. As regards the animals housed in outdoor sheds, there are no sun blinds or similar in cages with direct sunlight and the animals and the roofs of the sheds are not sprinkled with water during ambient temperatures above 30°C.

Classification

Farm level:

In Period 1: Protection from wind: percentage of animals with the Score 0, Score 1, Score 2 and Score 3

In Period 2: Possibility of cooling the cages: percentage of animals with the Score 0, Score 1 and Score 2

In Period 3: Percentage of animals in each of the 12 possible situations resulting from the combination of the 4 scores for Protection from the wind and the 3 scores for Possibility of cooling the cages

Period 3	Protection from the wind	Possibility to cool the cages	% of animals
Situation 1	0	0	P1
Situation 2	0	1	P2
Situation 3	0	2	P3
Situation 4	1	0	P4
Situation 5	1	1	P5
Situation 6	1	2	P6
Situation 7	2	0	P7
Situation 8	2	1	P8
Situation 9	2	2	P9
Situation 10	3	0	P10
Situation 11	3	1	P11
Situation 12	3	2	P12

Solid walled barn
Photos: © L. Ahola UEF

Wind shield
© L. Ahola UEF

Protection against sunlight
© L. Ahola UEF

3.2.2.3 Ease of movement

Title	**Floor area**
Scope	Resource- and management-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	During all periods, only cages in use are considered. Measure the cage length and width in separate sheds. If different-sized cages are used on the farm, measure as many cage types as possible. Note that the regular platform and top nest box are not counted in the floor area but if there are two separate floors in the cage, both floors are counted in the total area,. Only a floor area with ≥ 70 cm cage height is included in the floor area. The cages are scored according to the available floor area (width x length) of the cage, taking into account the period, social conditions and the age of the animals in the cage. **Cage level:** **0** – Clearly above the EU recommendation **1** – According to or slightly above the EU recommendation **2** – Below the EU recommendation
Classification	**Farm level:** Percentages of animals with the Score 0, 1 and 2

Title	**Cage height**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	During all periods, only cages in use are considered. Measure the cage height in separate sheds. If different height-cages are used on the farm, measure as many cage types as possible. The cage height is measured from the place where the cage height is the lowest. The cages are scored according to their height. **Cage level:** **0** – Clearly above the EU recommendation, and considering also that the animal can reach the extra height **1** – Clearly above the EU recommendation **2** – According to or slightly above the EU recommendation **3** – Below the EU recommendation
Classification	**Farm level:** Percentages of animals with the Score 0, 1, 2 and 3

3.2.3 Good health

3.2.3.1 Absence of injuries

Title	**Difficulties in moving**
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	The animal is observed to detect difficulties in its moving. If necessary, the animal can be encouraged to move in the cage. The animal is scored with regard to difficulties in its moving:

Individual level:

0 – No moving difficulties: The animal moves in the cage actively, jumps onto the platform without difficulty and uses all four feet evenly while moving.

1 – Some difficulty in moving: The animal moves in the cage but the locomotion is somehow impaired and/or the animal does not use all four feet evenly while moving.

2 – Major difficulty in moving: The animal remains mainly sitting or lying down in the cage, even when disturbed. The locomotion seems clearly impaired and/or the animal does not use all four feet while moving.

3 – The animal does not move even when disturbed. **NB:** this does not include animals that refuse to move due to an obvious defensive or withdrawal response.

Classification	**Farm level:** Percentage of animals with the Score 0, 1, 2 or 3

Title	Skin lesions and/or other observed injuries to the body
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Skin lesions are defined as dermatitis, clear bite marks, clear hairless spots or any evident bleeding or infectious damage of the skin. Note that areas with broken hair are not interpreted as skin lesions. The animal is observed but must not be touched. View the animal from all sides of its body. Pay special attention to the tail, neck, chest, legs and ears of the animal. The animal is scored with regard to the skin lesions in its body (see photographic illustration): **Individual level**: **0 –** No evidence of obvious skin lesions or other injuries to the body **1 –** Evidence of mild fresh skin lesions or clear hairless spots with a diameter < 3 cm; or evidence of severe old lesions, already healed, *e.g.* notch in the ear or a missing body part, *e.g.* a tail **2 –** Evidence of bleeding and/or infectious skin damage with a diameter > 3 cm
Classification	**Farm level:** Percentage of animals with the Score 1 or 2

Score 0
Photos: © T. Koistinen UEF

Score 1
© T. Koistinen UEF

Score 1
© L. Ahola UEF

Score 1
Photos: © T. Koistinen UEF

Score 2
© L. Ahola UEF

Score 2
© T. Koistinen UEF

3.2.3.2 Absence of disease

Title	**Bent feet**
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Bent feet are defined as carpal laxity leading to a changed carpal joint angle. Bent feet are assessed according to the carpal joint angle of the animal's forelegs. The animal is observed but must not be touched. If necessary, the animal is encouraged to stand up and move. The animal is preferably observed while it is moving. The animal is scored with regard to carpal joint angle of its forelegs (see photographic illustration): **Individual level**: **0 –** No bent feet **1 –** Slightly bent feet **2** – Severely bent feet
Classification	**Farm level:** Percentage of animals with severely bent feet (Score 2)
Additional information	Information concerning the percentage of animals with slightly bent feet (Score 1) is collected for advisory purposes.

Score 0	Score 0	Score 1	Score 2
Photos: © T. Koistinen UEF	© T. Koistinen UEF	© T. Koistinen UEF	© T. Koistinen UEF

Score 0	Score 1	Score 2	Score 2
Photos: © T. Koistinen UEF	© T. Koistinen UEF	© T. Koistinen UEF	© T. Koistinen UEF

Title	**Ocular inflammation**
Scope	Animal-based measurement: Period 3

Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)
Method description	Ocular inflammation is defined as evident purulent discharge from and/or inflammation in one or both eyes. Minor watery discharge from the eyes is not considered. The animal is observed but must not be touched. The animal is scored with regard to the evidence of ocular discharge and/or ocular inflammation (see photographic illustration): **Individual level**: **0 –** No evidence of ocular discharge or inflammation **1** – Clear evidence of purulent ocular discharge and/or inflammation at least in one of the eyes
Classification	**Farm level:** Percentage of animals with clear evidence of ocular discharge and/or inflammation (Score 1)

Score 0
Photos: © T. Koistinen UEF

Score 0
© T. Koistinen UEF

Score 1
© L. Ahola UEF

Score 1
Photos: © L. Ahola UEF

Score 1
© L. Ahola UEF

Score 1
© T. Koistinen UEF

Title	**Impaired mouth and teeth health**
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	Impaired mouth and teeth health is defined as any bleeding, swelling or abnormalities in the mouth or teeth (*e.g.* abnormal bite). The animal is observed but must not be touched. The animal is scored with regard to impaired mouth and teeth health (see photographic illustration): **Individual level**: **0 –** No evidence of impaired mouth and teeth health **1** – Impaired mouth and teeth health

Classification	**Farm level:**
	Percentage of animals with impaired mouth and/or teeth health (Score 1)

Score 0	Score 1	Score 1
Photos: © L. Ahola UEF	© T. Koistinen UEF	© T. Koistinen UEF

Title	**Diarrhoea**
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	Diarrhoea is defined as soft and watery faeces. Diarrhoea can be observed directly on the animal while defecating or from the cage and under the cage.
	Assess the cage and the underneath of the cage for the presence of soft and watery faeces. If there is more than one animal in the cage and there is clear evidence of diarrhoea, the number of ill animals in the cage is "0.5 x the number of animals in the cage". If there is one animal in the cage and there is clear evidence of diarrhoea, the number of ill animals in the cage is one. The cage is scored with regard to evidence of diarrhoea (see photographic illustration):
	Cage level: **0 –** No evidence of diarrhoea **1** – Clear evidence of diarrhoea
Classification	**Farm level:** Percentage of animals with clear evidence of diarrhoea (score 1)
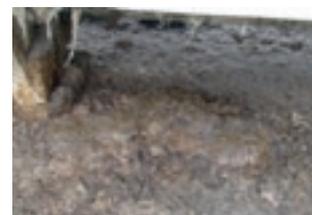
Score 0	Score 0	Score 1
Photos: © L. Ahola UEF	© L. Ahola UEF	© L. Ahola UEF

Title	**Urinary tract infection**
Scope	Animal-based measurement: Period 1
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)

Method description	Urinary tract infection is defined as the presence of reddish and/or brownish urine inside and/or under the cage of the animal(s) or while the animal is urinating.
	Assess fresh urine while the animal is urinating, or urine inside and/or under the cage of the animal/animals for signs of reddish and/or brownish urine. If there is more than one animal in the cage and there is clear evidence of urinary tract infection, the number of ill animals in the cage is "0.5 x the number of animals in the cage". If there is one animal in the cage and there is clear evidence of urinary tract infection, the number of ill animals in the cage is one. The cage is scored with regard to evidence of urinary tract infection (see photographic illustration): **Cage level**: **0 –** No evidence of reddish and/or brownish urine **1** – Clear evidence of reddish and/or brownish urine
Classification	**Farm level:** Percentage of animals with clear reddish/brownish urine (score 1)

Score 0	Score 1	Score 1
Photos: © L. Ahola UEF	© L. Ahola UEF	© L. Ahola UEF

Title	**Obviously sick fox**
Scope	Animal-based measurement: Period 3
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	An obviously sick fox is defined as a fox having obvious signs of poor or reduced health, *i.e.* a fox with signs of disorders not included in the other measurements of the disease criteria, *e.g.* impaired ear health, inflammation in toes/paws, breathing difficulties, unusual head posture or convulsion. The animal is observed but must not be touched. The animal is scored with regard to signs of poor or reduced health: **Individual level**: **0 –** No signs of poor or reduced health **1** – Obvious signs of poor or reduced health **2 –** Obvious signs of stereotypic behaviour during inspection
Classification	**Farm level:** Percentage of animals with obvious signs of poor or reduced health (Score 1)
Additional information	Information concerning the percentage of stereotyping animals during health inspection (Score 2) is collected for advisory purposes

Score 0 **Photos:** © L. Ahola UEF	Score 1 © L. Ahola UEF	Score 1 © L. Ahola UEF
Score 1 **Photos:** © L. Ahola UEF	Score 1 © T. Koistinen UEF	Score 1 © T. Koistinen UEF
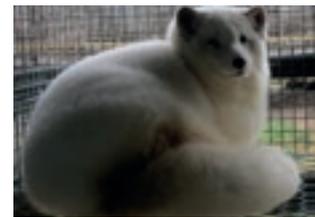
Title	**Mortality**
Scope	Animal-based measurement: All periods (recorded from farm records for the past 12 months at each visit)
Sample size	Farm
Method description	Mortality is defined as uncontrolled deaths (animals that are found dead) and animals that are humanely killed by the farmer due to diseases or injuries outside the actual pelting season out of the total number of animals on the farm. Consult the farm manager about the number of animals, older than 8 weeks, which were found dead or were humanely killed outside the actual pelting season due to diseases or injuries during the last 12 months. Those animals that were pelted because they were found dead or humanely killed due to diseases or injuries close to the pelting season must also be taken into account. The farm is scored with regard to mortality and the percentage of humanely killed animals out of total mortality. Three categories are defined at the **farm level:** **0 –** Humanely killed ≥ 50% of total mortality **1 –** 25% ≤ humanely killed < 50% of total mortality **2 –** Humanely killed< 25% of total mortality
Classification	**Farm level:** Percentage of animals, older than 8 weeks, which were recorded dead during the past 12 months, taking into account the three categories of the percentage of humanely killed animals out of total mortality

3.2.3.3 Absence of pain induced by management procedures

Farmed foxes are not routinely subjected to any kinds of mutilations of their body or surgical procedures, such as castration, trimming, teeth cutting or tail cutting. Therefore, the Criterion *Absence of pain induced by management procedures* includes only evaluation of the killing methods used for the farmed foxes.

Title	**Killing method**
Scope	Resource- and management-based measurement: Periods 1, 2 and 3
Sample size	Farm
Method description	Consult the farm manager about the killing methods used for the animals on the farm. If the animals are humanely killed with electrocution, consult the farm manager about the type and functionality of the device/devices. Ask the manager to show you the killing devices in use on the farm, and inspect the device/devices.
	Since different killing devices may be used on the farm, the farm is scored according to the lowest quality device in use.
	NB: Humane killing methods allowed for foxes and their key parameters are available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF
Classification	**Farm level:**
	0 – Electrocution, the device is in functional state and has a check light or sound
	1 – Electrocution, the device is in functional state but has no check light or sound
	2 – Other allowed humane killing method than electrocution; the device is in functional state
	3 – Absence of a device to kill the animals humanely or the functionality of the device is not acceptable

3.2.4 Appropriate behaviour

3.2.4.1 Expression of social behaviours

Title	**Social housing**
Scope	Management-based measurement: Period 3
Sample size	Sample B (see 3.2.6 *Sampling and practical information* for details)
Method description	Social housing is defined according to the number of foxes housed in a cage. Social housing conditions are scored with regard to the number of animals in the same cage or cage system, taking into account the age of the animals.
	Adult animals:
	0 – There is only one adult animal in the cage.
	1 – There are two or more adult animals in the cage.
	Juvenile animals:
	0 – There are two or more juvenile animals in the cage.
	1 – There is only one juvenile animal in the cage.
Classification	**Farm level:**
	Adult animals: Percentage of adult animals housed in pairs or in groups (Score 1)
	Juveniles animals: Percentage of juveniles housed singly (Score 1)

3.2.4.2 Expression of other behaviours

Title	**Opportunity to use enrichment**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)

	Method description	Enrichment is defined as an object or material inside the cage, or with regard to straw or such material also outside the cage so that it is available for the animal, which allows species-specific manipulation and/or interaction with it, *e.g.* gnawing, carrying or digging.

Method description

Enrichment is defined as an object or material inside the cage, or with regard to straw or such material also outside the cage so that it is available for the animal, which allows species-specific manipulation and/or interaction with it, *e.g.* gnawing, carrying or digging.

Enrichment can be a wooden block, bone, pile of straw, rope, ball, year-round nest box, digging substrate (*e.g.* sand), scratching plate or some other objects or material that are not harmful for the animals. Note that *e.g.* straw and a nest box placed outside the actual cage but accessible for the fox are considered as enrichments.

Check the cage for the availability of any kind of enrichment. The animal is scored with regard to the number of different types of enrichments. Although an item could be interpreted as beneficial to the foxes in several categories, the item is included only in one, *i.e.* the highest possible category.
In the case of a year-round nest box, check that the animal has the access to the nest box.

Categories of enrichment types:
0 – Extremely beneficial: A renewable gnawing object, *i.e.* a bone or wooden block, or a construction with at least one solid wall, increasing environmental complexity, *i.e.* a nest box or concealment screen
1 – Very beneficial: Occupational material for exploration and/or play, *e.g.* a ball, rope, straw or sand
2 – Moderately beneficial: Other types of enrichment, *e.g.* a scratching plate

Classification

Farm level:
Percentage of animals in each of the 27 situations resulting from the combination of the numbers of different types of enrichment in different categories of enrichments.

Period 1, 2 or 3	Number of different enrichments in the category 0	Number of different enrichments in the category 1	Number of different enrichments in the category 2	% of animals
Situation 1	≥ 2	≥ 2	≥ 2	P1
Situation 2	≥ 2	≥ 2	1	P2
Situation 3	≥ 2	≥ 2	0	P3
Situation 4	≥ 2	1	≥ 2	P4
Situation 5	≥ 2	1	1	P5
Situation 6	≥ 2	1	0	P6
Situation 7	≥ 2	0	≥ 2	P7
Situation 8	≥ 2	0	1	P8
Situation 9	≥ 2	0	0	P9
Situation 10	1	≥ 2	≥ 2	P10
Situation 11	1	≥ 2	1	P11
Situation 12	1	≥ 2	0	P12
Situation 13	1	1	≥ 2	P13
Situation 14	1	1	1	P14
Situation 15	1	1	0	P15
Situation 16	1	0	≥ 2	P16
Situation 17	1	0	1	P17

Situation 18	1	0	0	*P18*
Situation 19	0	≥ 2	≥ 2	*P19*
Situation 20	0	≥ 2	1	*P20*
Situation 21	0	≥ 2	0	*P21*
Situation 22	0	1	≥ 2	*P22*
Situation 23	0	1	1	*P23*
Situation 24	0	1	0	*P24*
Situation 25	0	0	≥ 2	*P25*
Situation 26	0	0	1	*P26*
Situation 27	0	0	0	*P27*

Wooden block (Category 0)

Photos: © EFBA

Wooden block and sand
(Category 0, 1)
© P. Martiskainen UEF

Bone, straw and scratching plate
(Category 0,1,2)
© T. Koistinen UEF

Title	**Opportunity to observe surroundings**
Scope	Resource-based measurement: Periods 1, 2 and 3
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	Check the cage for constructions obstructing the animal's view to its surroundings. The animal is interpreted as not being able to observe its surroundings if at least one of the following conditions is fulfilled: a) One of the walls of its cage is completely opaque b) There is an opaque wall of a barn or such (*e.g.* a fence) nearer than 2 m from its cage The animal is scored with regard to its opportunity to observe its surroundings. **Individual level:** **0 –** The animal has opportunity to observe its surroundings. **1 –** The animal has no opportunity to observe its surroundings.
Classification	**Farm level:** Percentage of animals that have no opportunity to observe their surroundings (Score 1)

Title	**Stereotypic behaviour**
Scope	Animal-based measurement: Periods 1, 2 and 3
Sample size	150 to 200 foxes: see *3.2.6 Sampling and practical information* for details
Method description	Stereotypic behaviour is defined as invariant behaviour that is repeated three or more times in a row. Stereotypic behaviour can be, *for example*: Pacing: invariant, repetitive walking along the side of the cage or circling the cage. Jumping: invariant, repetitive jumping against the wall(s) of the cage. Other: any stereotypic behaviour other than pacing and jumping, *e.g.* repetitive gnawing/licking of the cage or repetitive head twirling. Choose the animals to be assessed for stereotypical behaviour from different sheds/barns, on different ends of the sheds/barns and on different locations on the farm. Place yourself in the middle of the aisle in front of the assessed fox's cage, facing towards either end of the shed. Observe (scan) the animals in front of you on both sides of the aisle for one minute. Observe as many animals as you can reliably observe (2-12 animals). Mark whether the animals are resting, active without performing stereotypic behaviour or active and performing stereotypic behaviour. After one minute's observation time, turn slowly 180 degrees and observe the animals in the other direction of the shed for one minute. With regard to activity and resting, the most long lasting behaviour during the one minute observation time is recorded for the animal. If stereotypic behaviour is observed, it is always recorded, regardless of the duration of the occurrence. The animal is considered to be active in all cases where it has been observed to express stereotypic behaviour. Note that there is no need to observe stereotypic behaviour after every animal that are assessed with the measurements included in the Sample B; just be sure that you observe enough animals from different sheds or barns, on different ends of the sheds or barns and on different locations on the farm. Note also that you take a break in observing stereotypic behaviour during the feeding time, *i.e.* the animals should not hear the sound from the feeding machine and/or be eating during the observation of stereotypic behaviour. Assess the occurrence of the following behaviours: **Resting –** The animal is resting in a lying position. **Active –** The animal is sitting, standing or moving. **Stereotypic behaviour –** The animal is expressing stereotypic behaviour. The animal is scored with regard to its behaviour: **Individual level:** **0 –** The animal is resting. **1 –** The animal is active but not expressing stereotypic behaviour. **2 –** The animal expresses stereotypic behaviour.
Classification	**Farm level:** Percentage of animals expressing stereotypic behaviour (Score 2) out of all active animals (Scores 1 and 2)

Title	**Fur chewing**
Scope	Animal-based measurement: Periods 1 and 3
Sample size	Sample B (80-100 foxes: see 3.2.6 *Sampling and practical information* for details)

Method description	Fur chewing is defined as fur chewed by the fox itself or by the cage mate of the fox. Fur can be chewed from all sides of the body, *e.g.* the flanks and the tail of the animal.
	The animal is observed but must not be touched. View the animal from all sides of its body. Pay attention especially to the tail of the animal. The animal is scored with regard to the observed clear signs of chewed fur (see photographic illustration):
	Individual level: **0 –** No fur chewing **1 –** Clear signs of fur chewing
Classification	**Farm level:** Percentage of animals with clear signs of fur chewing (score 1)

Score 0	Score 1	Score 1
Photos: © L. Ahola UEF	© T. Koistinen UEF	© L. Ahola UEF

3.2.4.3 Good human-animal relationship

Title	**Feeding test**
Scope	Animal-based measurement: Period 1
Sample size	Sample A (100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	With the aid of the farm manager, equip yourself with the usual feed used on the farm. Ensure from the farm manager that the chosen animals have not been fed earlier on the testing day.
	You can test simultaneously four singly housed animals that are housed in cages with floor area ≤ 1.2 m². If the cages are substantially larger than 1.2 m², test only two animals at the same time.
	During testing, avoid eye contact with the animals. Deliver some (50 - 100 g) feed manually on the feeding tray. If there is no feeding tray in the cage, place the feed where the animals in the cage are usually fed. In the cages with several feeding plates, place the feed on the plate closest to you. Deliver separate feed portions for each animal in the cages. After the delivery of feed, stay in "the middle" of the cages (at a distance of 0.5 - 0.7 m to each cage) and record whether the animals eat or not within 30 sec, *i.e.* mark 0 ("yes") or 1 ("no") separately for each animal. Eating feed is defined as taking a bite of feed; just sniffing or touching feed is not considered as eating feed. The animal is scored with regard to its reaction:
	Individual level: **0** – The animal eats within 30 sec. **1** – The animal does not eat within 30 sec.
Classification	**Farm level:** Percentage of the animals that eat within 30 sec (Score 0)

3.2.4.4 Positive emotional state

Title	**Temperament test**
Scope	Animal-based measurement: Period 1
Sample size	Sample B (80-100 foxes: see *3.2.6 Sampling and practical information* for details)
Method description	Use a stick made of plastic or wood (length 150 cm, maximum 1.5 cm in diameter). During testing, avoid eye contact with the animal. Approach the cage quietly and insert 30 cm of the stick through the front cage wall (near the corner of the cage) towards the animal. If the cage is constructed from two or several smaller cages connected to each other, insert the stick from the corner of the cage where the animal is staying. The stick must be inserted at the eye level of the fox, (*i.e.* 20 - 25 cm high). Stand at least 1 m from the cage but only at a distance where you can see the animal's reaction to the stick. Observe for 10 secs. Then withdraw the stick from the cage. The animal is scored with regard to its reaction to the stick. **Individual level:** **0 – Explorative** : The animal touches the stick in explorative way. **1 – Passive** : The animal does not touch the stick. The animal is motionless, asleep and/or does not react to the stick. **2 – Fearful or aggressive** : The animal attacks the stick and/or bites it aggressively.
Classification	**Farm level:** Percentage of animals with the Score 0, 1 and 2

Title	**Transport of live foxes**
Scope	Management-based measurement: All periods (recorded for the past 12 months at each visit)
Sample size	Farm
Method description	In traditional farming, fur animals are seldom transported because they are usually killed on the same farm where they were born. Transportation of live animals is therefore considered mainly for artificial insemination, exhibitions or for breeding animal business. Consult the farm manager about the vehicle transport of live animals during the last 12 months, e.g. due to purchase of breeding animals or in order to artificially inseminate or raise animals on a remote or separate farm.
Classification	Farm level: **0** – No systematic vehicle transport of live animals **1** – Vehicle transport of few live animals (less than 10% of the animals on the farm) due to purchase of breeding animals or in order to artificially inseminate or raise animals on a remote or separate farm **2** – Systematic vehicle transport of live animals (more than 10% of the animals on the farm) due to purchase of breeding animals or in order to artificially inseminate or raise animals on a remote or separate farm or transport of a few live animals (even less than 10% of the animals on the farm) due to international animal business (long distance transport)

3.2.5　Guidelines for a visit to a fox farm

Before the farm visit, the assessor needs to inform the farm manager about the purpose of the visit, how it is conducted and what preventive measures are taken against spreading of diseases. In order to be able to stratify the sampling, the assessor needs to get the information of the number of different types of foxes on the farm. The farmer should also be informed about the feeding test (only in Period 1) aimed to be conducted before the feeding of the animals.

The assessor must be aware of the points of the compass in advance or at the latest on arrival at the farm. This information is needed for assessing the need for sun blinds in the Criterion *Thermal comfort*.

The equipment needed on the farm
Note that for the assessment of a fox farm you need the following equipment:

- Instructions
- Tablet/PC or recording sheets, pencils and writing-tablet
- Timer
- Folding ruler or measuring tape for measuring cage dimensions and platform height
- Equipment to test the functioning of water nipples
- A bucket for the feeding test (only in Period 1)

- A wooden or plastic stick for the temperament test (only in Period 1)
- Appropriate clothing (protective, disposable clothing, such as shoe covers)
- Disinfection equipment

Bio-security
Adhere to the individual farm's own bio-security requirements and take care to shower, change clothing and clean and disinfect boots and other non-disposable items after each visit. Make sure to comply with national or regional bio-security regulations. If possible, park the car outside the farm area.

On the farm
On the farm, the assessor should repeat the brief explanation of what is about to be done during the course of the visit, since the person hosting the visit may not be familiar with the assessment. Explain to the farm manager that there will be an assessment of animal-based and resource-based measurements and how long it will approximately take to complete these.

At the end of the visit, thank the farm manager for her/his input to the data collection, inform about your observations that may be of special interest, for example, sick or injured foxes. Explain how the data are treated and when the outcome can be expected.

3.2.6　Sampling and practical information

The assessor should become familiar with the number of sheds and barns occupied by foxes and the number of foxes of different types and species. The number of different types of sheds, animals and species needs to be carefully recorded, since this information is needed when choosing the samples A and B to obtain a representative sample of sheds, species and animal types for the assessment.
When choosing sheds, species and animal types for assessment, the assessor must maintain the same ratio of different kinds of sheds and barns, fox species (including crossbreeds) and different types of animals (*i.e.* age) in the sample as they are present on the farm. Furthermore, also the ratio of singly housed and group-housed foxes, the ratio of foxes housed in different-sized cages and the ratio of foxes housed with various watering systems must be maintained in the same level in the sample as they are present on the farm.

Choose the animals to be assessed from different sheds/barns, at different ends of the sheds/barns and at different locations on the farm. A plan must be made in advance for choosing the animals to be assessed: it should be decided to start from the Xth cage before entering the shed.

There is a specific order in which the different measurements have to be carried out and also which measurements can be carried out simultaneously.

For some of the measurements, input from the farm manager is required (see Table 2). Time must be reserved for discussion with the farm manager.

Table 2 Measurements to be discussed with the farm manager

Measurement	Period 1	Period 2	Period 3
Type of watering system	yes	yes	yes
Protection against overheating of drinking water		yes	yes
Possibility of cooling the cages (sprinkling of the animals or roofs of the shed)		yes	yes
Mortality	yes	yes	yes
Killing method	yes	yes	yes
Transport of live foxes	yes	yes	yes

The animal-based and resource-based measurements are recorded on the farm in the following order:

Sample A (in Period 1)
With the aid of the farm manager, prepare yourself for the feeding test. Select as many groups of animals as is needed to test at least 100 foxes. Allocate 30-60 min for carrying out the feeding test.

Sample B (all periods)
The measurements to be taken in Sample B differ between the three periods (see Table 3). Select every 7th fox in the chosen sheds. Select 10 foxes at the most from one shed if more than eight sheds are occupied by foxes on the farm. Assess at least 80 foxes for sample B but, if possible, assess 100 foxes on a farm housing thousands of foxes in tens of sheds. Allocate 3-5 hours for carrying out the measurements included in the Sample B.

Stereotypic behaviour
Note that stereotypic behaviour is observed, by turns, with the Sample B. After taking the measurements included in the Sample B, observe stereotypic behaviour from the neighbouring foxes. Take care that you do not observe the same animals twice, e.g. by observing stereotypic behaviour only after every fifth animal in Sample B.

Table 3 Sample B: measurements that can be assessed simultaneously. The temperament test must always be performed first in Period 1, otherwise the presented order of the measurements can be considered as a recommendation.

Measurement	Period 1	Period 2	Period 3
Temperament test	yes		
Body condition scoring	yes	yes	yes
Cleanliness of the fur	yes	yes	yes
Difficulties in moving			yes
Skin lesions or other observed injuries to the body			yes
Bent feet			yes
Ocular inflammation			yes
Impaired mouth and teeth health			yes
Diarrhoea			yes
Urinary tract infection	yes		

Obviously sick fox			yes
Fur chewing	yes		yes
Social housing			yes
Continuous water availability			
Type of watering system	yes	yes	yes
Protection against overheating of drinking water		yes	yes
Functioning of the water points	yes	yes	yes
Cleanliness of the water points	yes	yes	yes
Availability of a platform	yes	yes	yes
Space available for moving	yes	yes	yes
Opportunity to use enhancement	yes	yes	yes
Opportunity to observe surroundings	yes	yes	yes
Protection from exceptional weather conditions			
Protection from wind	yes		yes
Possibility of cooling the cages		yes	yes

Photo: © T. Koistinen

3.3   Calculation of scores for foxes

3.3.1   Criterion-scores

From measurements to criterion-scores, up to 3 steps can be necessary. They are briefly presented in Figure 6.
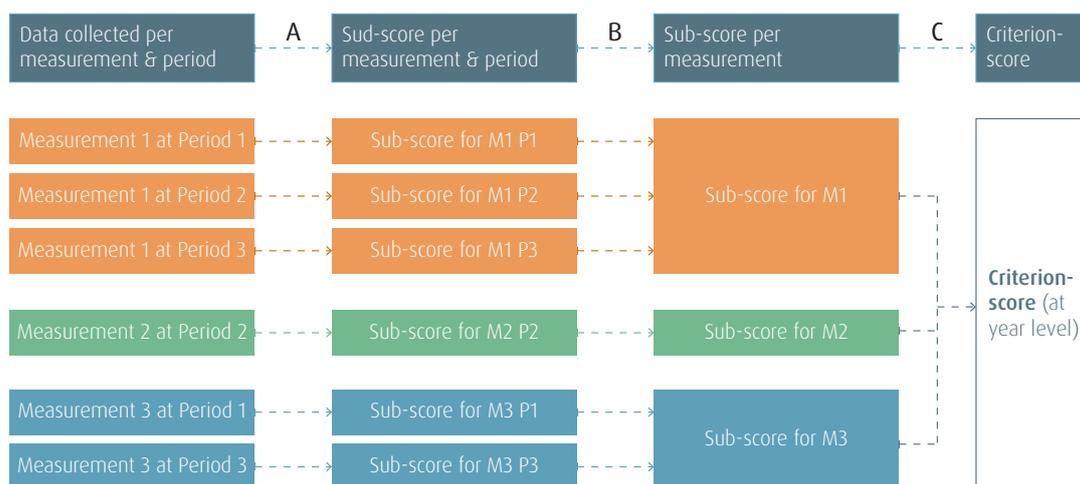
Figure 6 Up to 3 steps (called A, B and C) are necessary to go from raw data collected on the farm to a criterion-score, here presented on a virtual example: A - Interpretation in terms of welfare of data collected for a given measurement at a given period, B - Aggregation of sub-scores obtained for a given measurement on the different periods and C - Aggregation of sub-scores obtained on the different measurements.

To perform those steps, different aggregation tools are used. These are summarised in Table 4.

Table 4 The different types of construction used to assess welfare on fox farms

Spline	% of animals in an impaired welfare state (*e.g.* % of lean foxes) transformed into a score using least-squares spline curve fitting
Decision-tree	Construction of a decision-tree leading to X possible situations, scores directly assigned to each of these X situations
Decision-tree & % Rule	Construction of a decision-tree leading to X possible situations, scores directly assigned to each of these X situations + The worst situation observed on at least Y% of the animals is considered (Y varies with measurements)
Continuous, Index & Spline	Calculation of an index based on a linear combination of the % of animals in the different categories (*e.g.* % of foxes presented cages with an area above/at/below the recommendation), transformed into a score using least-squares spline curve fitting
Ordinal, Index & Spline	Each measurement (*e.g.* % of foxes with diarrhoea) is transformed to an ordinal scale qualifying the severity of the problem at farm level: no/moderate/severe problem; calculation of an index based on a linear combination of the proportions of no, moderate & severe problems, transformed into a score using least-squares spline curve fitting
Choquet	The sub-scores (*e.g.* one per period or one per measurement) are synthesised by using a Choquet integral

More particularly, Table 5 presents the twelve criteria used to assess the welfare of foxes with, for each, the measurements used, the type of measurement (*i.e.* animal or resource-based or taken from farm records), the period(s) concerned and the aggregation tools used.

Criterion number	Measurement	Type of measure-ment*	Period	No. of data	A-Construction at measurement level	B-Aggregation of periods per measurement	C-Aggregation of measurements
C1	Body condition score	A	P1, P2 & P3	1, 1, 1	Spline (% of too lean foxes)	Choquet	no
C2	Continuous water availability	R + M	P1, P2 & P3	3, 4, 4	Decision-tree (27, 14, 38 situations, for P1, P2, P3 respectively) + 2% Rule	Choquet	no
C3	Cleanliness of the fur	A	P1, P2 & P3	1, 1, 1	Spline (% of clearly dirty foxes)	Choquet	Choquet
	Availability of a platform	R	P1, P2 & P3	1, 1, 1	Spline (% of foxes without a platform), different for P1, P2 and P3	Choquet	
C4	Protection from exceptional weather conditions	R + M	P1	1	Index (% of foxes in cages with high/moderate/low/no protection from the wind) & Spline	Choquet	Choquet
			P2	1	Index (% of foxes in cages with high/moderate/low possibility to cool the cages) & Spline		
			P3	2	Decision-tree (12 situations) + 10% Rule		
C5	Space available for moving : Floor area	R + M	P1, P2 & P3	1, 1, 1	Index (% of foxes living in cages with an area above/at/below the recommendation) & Spline, different for P1 & P2 and P3	Choquet	Choquet
	Space available for moving : Cage height	R	P1, P2 & P3	1, 1, 1	Index (% of foxes living in cages with a height largely above/above/at/below the recommendation) & Spline	Choquet	
C6	Difficulties in moving	A	P3	1	Index (% of foxes without injuries / with injuries of category 1 / with injuries of category 2 / with injuries of category 3) & Spline	Choquet	Choquet
	Skin lesions and other injuries to the body	A	P3	1	Index (% of foxes presented cages with no evidence/moderate/severe skin damage) & Spline	Choquet	

Type of measurement: observed on the farm may be animal-based (A), resource-based (R) or management-based (M)

Criterion number	Measurement	Type of measure-ment*	Period	No. of data	A-Construction at measurement level	B-Aggregation of peri-ods per measurement	C-Aggregation of measurements
C7	Bent feet	A	P3	1	% of animals transformed to ordinal (no/moderate/severe problem), Index & Spline	no	no
	Ocular inflammation	A	P3	1			
	Impaired mouth and teeth health	A	P3	1			
	Diarrhoea	A	P3	1			
	Urinary tract infection	A	P3	1			
	Obviously sick fox	A	P3	1			
	Mortality	A	Year	2			
C8	Killing method	R + M	P1, P2 & P3	1, 1, 1	Decision-tree (4 situations)	Choquet	no
C9	Social housing	M	P3 Adults	1	Spline (% of adults breeding animals housed in pairs or groups)	Choquet (to aggregate the two animal-types)	no
			P3 Juveniles	1	Spline (% of juveniles housed singly)		
C10	Stereotypical behaviours (SB)	A	P1, P2 & P3	1, 1, 1	Spline (% of foxes expressing SB out of active animals), different for P1 & P3 and P2	Choquet	Choquet
	Opportunity to use enrichment	R + M	P1, P2 & P3	1, 1, 1	Decision-tree (27 situations) + 10% Rule, different for P1, P2 and P3	Choquet	
	Opportunity to observe surroundings	R	P1, P2 & P3	1, 1, 1	Spline (% of foxes not able to observe their surroundings)	Choquet	
	Fur chewing	A	P1, P2 & P3	1, 1, 1	Spline (% of animals with clear signs of chewed fur)	Choquet	
C11	Feeding Test	A	P1	1	Spline (% of foxes that eat within 30 sec)	no	no
C12	Temperament Test	A	P1	1	Index (% of exploratory/passive/aggressive or fearful foxes) & Spline	no	Choquet
	Transport of live foxes	M	All year	1	Decision-tree (3 situations)	no	

Type of measurement: observed on the farm may be animal-based (A), resource-based (R) or management-based (M)

3.3.1.1 Absence of prolonged hunger

The score of a farm with regard to the Criterion of *Absence prolonged hunger* is calculated from the % of very lean foxes for the three periods of the production cycle. So the first stage is to calculate one sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the criterion-score covering the whole production cycle.

Sub-scores S1, S2 and S3 for Periods 1, 2 and 3
The calculation of the sub-score is the same for each period.
In terms of interpretation, the greater the % of very lean foxes, the lower the criterion-score. As a consequence, the % of very lean foxes is to be transformed into the criterion-score following several calculation steps.

First, the % is, for each period, turned into an intermediate value called index (I).

Let I_1 = 100 - % of very lean foxes in Period 1
I_2 = 100 - % of very lean foxes in Period 2
I_3 = 100 - % of very lean foxes in Period 3

Let $J_i = \dfrac{I_i - 50}{100 - 50} \times 100$ if $I_i \geq 50$
$J_i = 0$ if $I_i < 50$

with I = 1, 2 or 3 according to the period considered while assessing the farm.

Finally, J_i is computed into a score using I-spline functions (Figure 7) as follows:

Score = $a_x + b_x \times J_i + c_x \times J_i^2 + d_x \times J_i^3$ i = 1, 2 or 3

with x = 1 when $J_i < k$ and x = 2 when $J_i \geq k$

Criterion 1 - Body condition score - Period 1, 2 or 3			
a_1	0	a_2	-4884.050716134690446779131893
b_1	0.065686414018179692367452	b_2	183.217598110425910817866793
c_1	-0.000821080175377950950699	c_2	-2.290220088550730892570902
d_1	0.0000253288299019099687713	d_2	0.00956449178942560436500048
k	80		

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
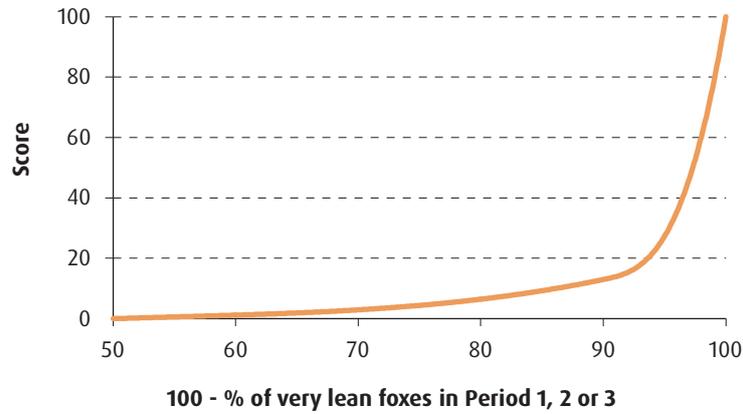
Figure 7 Calculation of the sub-score S_i for the Criterion *Absence of prolonged hunger* according to the percentage of very lean foxes in period *i* (with *i* = 1, 2 or 3 according to the period considered)

Score for absence of prolonged hunger

The three sub-scores are combined to form the overall score for the Criterion *Absence of prolonged hunger* using a Choquet integral:

$$C(a_1,\ldots,a_n) = \sum_{i=1}^{n} \left(a_{(i)} - a_{(i-1)}\right) \mu(\{(i),\ldots,(n)\})$$

With the convention $a_{(0)} = 0 \leq a_{(1)} \leq \cdots \leq a_{(n)}$ *i.e.* a reordering of the periods (or measurements or criteria) depending on the score they obtained, from the worst period (or measurement or criterion) to the best one.

μ(A) is a capacity function defined for any subset A of criteria entering in the composition of the principle. This capacity is subjected to the following constraints:

$$\begin{cases} \mu(\varnothing) = 0 \\ \mu(\{1,\cdots,n\}) = 1 \\ A \subseteq B \Rightarrow \mu(A) \leq \mu(B) \end{cases}$$

The parameters of the Choquet integral used to calculate the Criterion *Absence of prolonged hunger*-score are:

μ_1	=	0.13	μ_{12}	=	0.14
μ_2	=	0.14	μ_{13}	=	0.49
μ_3	=	0.40	μ_{23}	=	0.46

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$\text{Absence of prolonged hunger-score} = \begin{cases} S_1 + (S_2 - S_1)\,\mu_{23} + (S_3 - S_2)\,\mu_3 & \text{if} & S_1 \leq S_2 \leq S_3 \\ S_1 + (S_3 - S_1)\,\mu_{23} + (S_2 - S_3)\,\mu_2 & \text{if} & S_1 \leq S_3 \leq S_2 \\ S_2 + (S_1 - S_2)\,\mu_{13} + (S_3 - S_1)\,\mu_3 & \text{if} & S_2 \leq S_1 \leq S_3 \\ S_2 + (S_3 - S_2)\,\mu_{13} + (S_1 - S_3)\,\mu_1 & \text{if} & S_2 \leq S_3 \leq S_1 \\ S_3 + (S_1 - S_3)\,\mu_{12} + (S_2 - S_1)\,\mu_2 & \text{if} & S_3 \leq S_1 \leq S_2 \\ S_3 + (S_2 - S_3)\,\mu_{12} + (S_1 - S_2)\,\mu_1 & \text{if} & S_3 \leq S_2 \leq S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of prolonged hunger-score} = \begin{cases} S_1 + 0.46\,(S_2 - S_1) + 0.40\,(S_3 - S_2) & \text{if} & S_1 \leq S_2 \leq S_3 \\ S_1 + 0.46\,(S_3 - S_1) + 0.14\,(S_2 - S_3) & \text{if} & S_1 \leq S_3 \leq S_2 \\ S_2 + 0.49\,(S_1 - S_2) + 0.40\,(S_3 - S_1) & \text{if} & S_2 \leq S_1 \leq S_3 \\ S_2 + 0.49\,(S_3 - S_2) + 0.13\,(S_1 - S_3) & \text{if} & S_2 \leq S_3 \leq S_1 \\ S_3 + 0.14\,(S_1 - S_3) + 0.14\,(S_2 - S_1) & \text{if} & S_3 \leq S_1 \leq S_2 \\ S_3 + 0.14\,(S_2 - S_3) + 0.13\,(S_1 - S_2) & \text{if} & S_3 \leq S_2 \leq S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the scores obtained by a given farm during Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

3.3.1.2 Absence of prolonged thirst

The Criterion of *Absence of prolonged thirst* is evaluated with the Measurement *Continuous water availability* considering the Sub-measurements *Type of watering system, Protection against overheating of drinking water, Functioning of the water points* and *Cleanliness of the water points*.

As the weather changes according to the period considered, the daily water availability is assessed by evaluating both a risk of freezing or a risk of overheating depending on the period considered.

For each cage the assessor must answer the following questions:

· Is there continuous access to potable water throughout Period i (including type of water supply and special arrangements against freezing)?

· Is the watering system protected against overheating? (not considered in Period 1)

· Does the water point work properly?

· Is the water point clean?

Since the assessment of the first question (the type of watering system) is different from one period to another, sub-scores are first calculated at farm level for each of the three periods and then, these three sub-scores are combined in order to obtain the Criterion-score covering the three periods of the production cycle.

Sub-scores S_1, S_2 and S_3 for Periods 1, 2 and 3
The score S_i (where i = 1, 2 or 3 according to the period considered) for the Criterion *Absence of prolonged thirst* is assigned to foxes (observed at cage level) according to the answers to the four questions (Figure 8, Figure 9 and Figure 10) as follows:
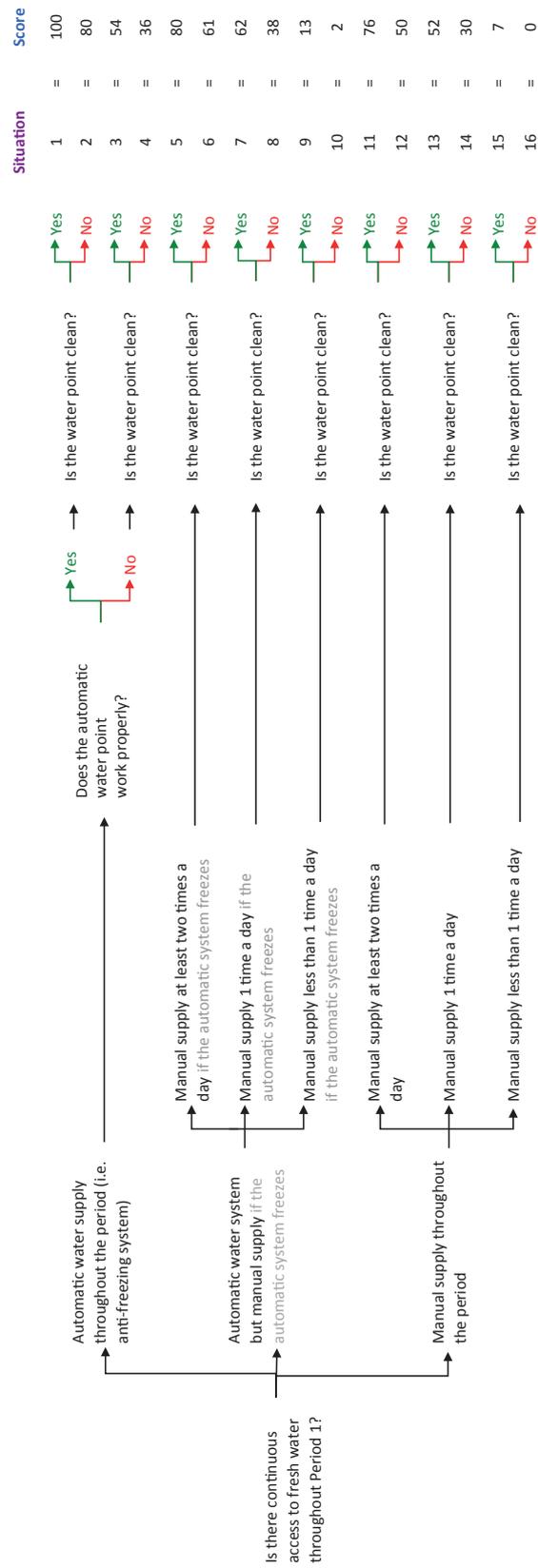
Figure 8 Sub-scores S_i assigned to combinations of answers to questions on the Measurement of *Continuous water availability* in Period 1
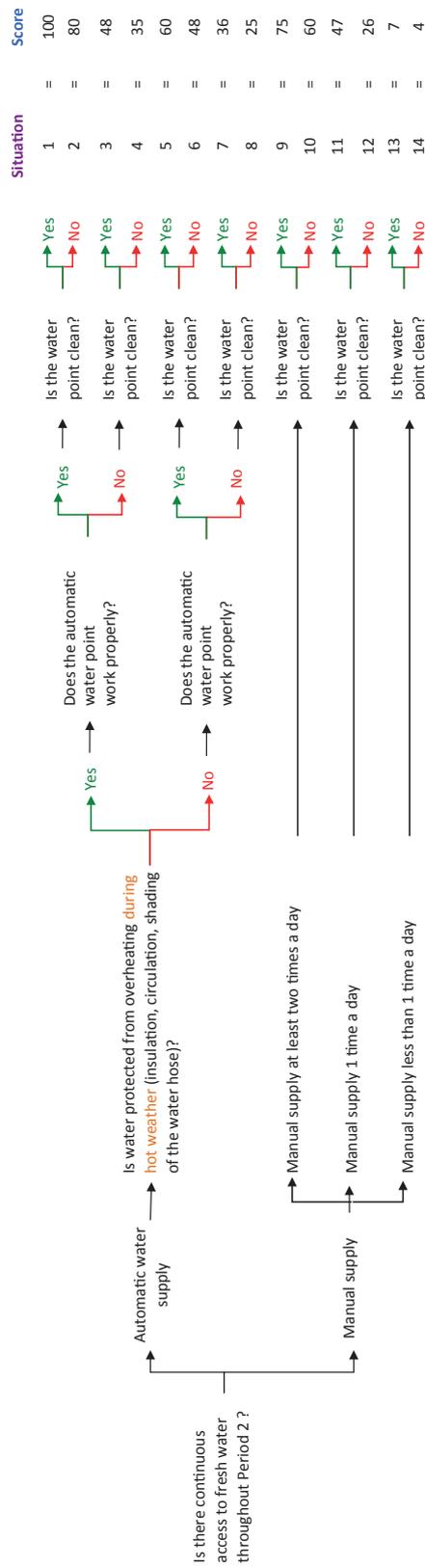
Figure 9 Sub-scores S_2 assigned to combinations of answers to questions on the Measurement of *Continuous water availability* in Period 2

Situation		Score
1	=	100
2	=	80
3	=	48
4	=	35
5	=	60
6	=	48
7	=	36
8	=	25
9	=	75
10	=	60
11	=	47
12	=	26
13	=	7
14	=	4
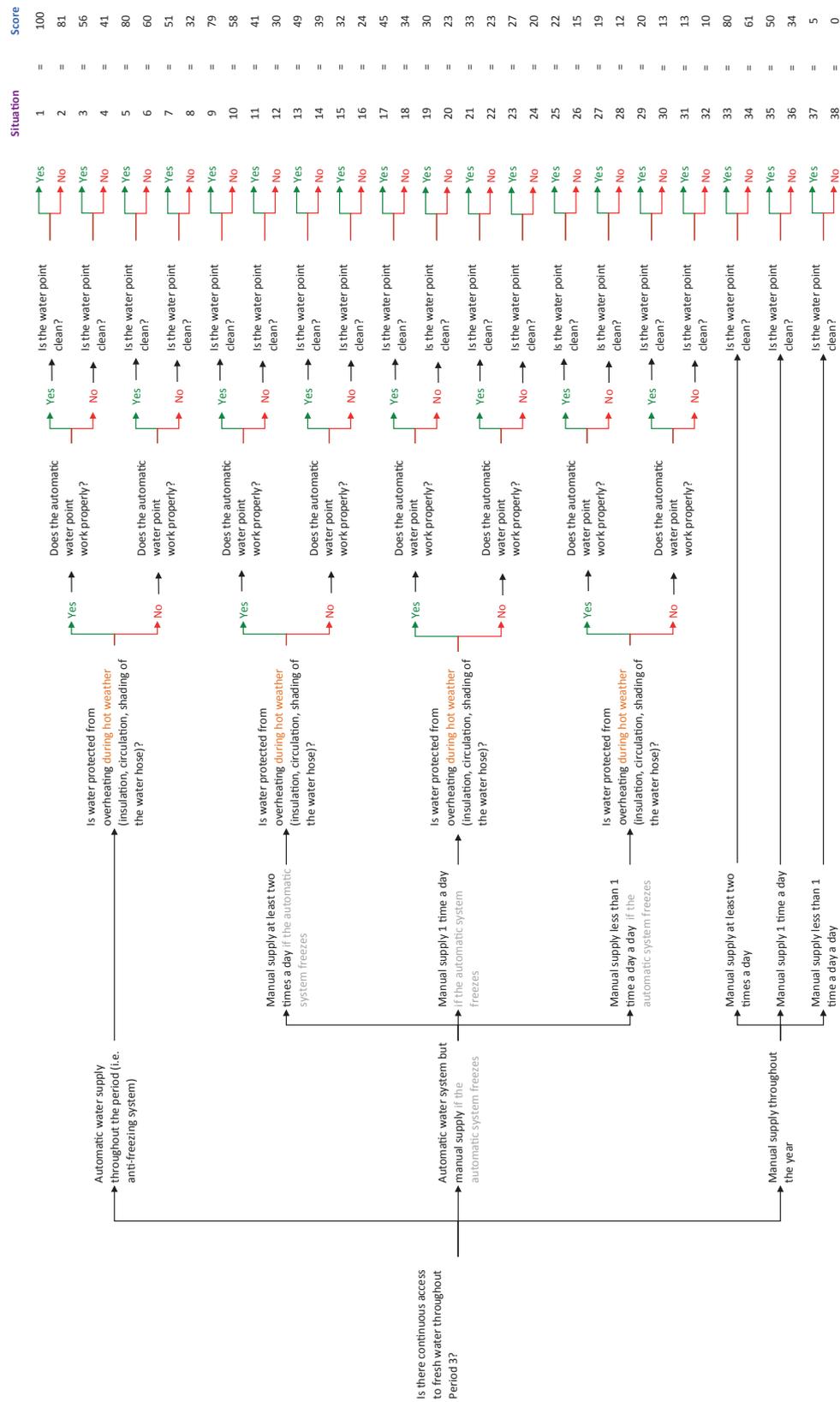
Figure 10 Sub-scores S_3 assigned to combinations of answers to questions on the Measurement of *Continuous water availability* in Period 3

Since animals may be housed with different water provision conditions, we consider the % of animals in each situation defined by the decision-tree. The final score to be assigned to the farm is the worst score (= the one corresponding to the worst situation found on the farm) observed in at least 2% of the animals.

Score for the Criterion *Absence of prolonged thirst*
The three sub-scores are combined to form the overall score for the Criterion *Absence of prolonged thirst* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.12		μ_{12}	=	0.30
μ_2	=	0.30		μ_{13}	=	0.33
μ_3	=	0.27		μ_{23}	=	0.68

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$\text{Absence of prolonged thirst-score} = \begin{cases} S_1 + \left(S_2 - S_1\right)\mu_{23} + \left(S_3 - S_2\right)\mu_3 & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + \left(S_3 - S_1\right)\mu_{23} + \left(S_2 - S_3\right)\mu_2 & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + \left(S_1 - S_2\right)\mu_{13} + \left(S_3 - S_1\right)\mu_3 & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + \left(S_3 - S_2\right)\mu_{13} + \left(S_1 - S_3\right)\mu_1 & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + \left(S_1 - S_3\right)\mu_{12} + \left(S_2 - S_1\right)\mu_2 & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + \left(S_2 - S_3\right)\mu_{12} + \left(S_1 - S_2\right)\mu_1 & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of prolonged thirst-score} = \begin{cases} S_1 + 0.68\left(S_2 - S_1\right) + 0.27\left(S_3 - S_2\right) & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + 0.68\left(S_3 - S_1\right) + 0.30\left(S_2 - S_3\right) & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + 0.33\left(S_1 - S_2\right) + 0.27\left(S_3 - S_1\right) & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + 0.33\left(S_3 - S_2\right) + 0.12\left(S_1 - S_3\right) & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + 0.30\left(S_1 - S_3\right) + 0.30\left(S_2 - S_1\right) & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + 0.30\left(S_2 - S_3\right) + 0.12\left(S_1 - S_2\right) & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the scores obtained by a given farm for Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

3.3.1.3 Comfort around resting

For the Criterion *Comfort around resting,* two partial scores are calculated, one for the Measurement *Cleanliness of the fur* and one for the Measurement *Availability of a platform*, before being combined into a criterion-score for the Criterion *Comfort around resting*.
Moreover, these two measurements are assessed for the three periods of the production cycle. So the first stage, for each measurement, is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_1^f, S_2^f and S_3^f for Periods 1, 2 and 3 for the Measurement *Cleanliness of the fur*
The score of a farm with regard to the Measurement *Cleanliness of the fur* is calculated from the % of foxes which are considered as clearly dirty, observed during the three periods of the production cycle.

Since the interpretation of the Measurement *Cleanliness of the fur* is different in terms of welfare for each period, the interpretation of this measurement is made for each period separately:

Period 1:
Let I_1 = 100 - % of clearly dirty foxes in Period 1

Let $J_1 = \dfrac{I_1 - 95}{100 - 95} \times 100$ if $I_1 \geq 95$

$J_1 = 0$ if $I_1 < 95$

J_1 is computed into a score using *I*-spline functions (Figure 11) as follows:

Score = $a_x + b_x \times J_1 + c_x \times J_1^2 + d_x \times J_1^3$

with x = 1 when $J_1 < k$ and x = 2 when $J_1 \geq k$

Criterion 3 - Cleanliness of the fur - Period 1			
a_1	0	a_2	-719.70269818056294752750545 74
b_1	0.16968820530753261910383 86	b_2	31.92127786917394516308377 21
c_1	-0.00249541478390045328231 15	c_2	-0.46943055737447286768215 80
d_1	0.000003298272525373231099 61	d_2	0.00232188048499675859029 37
k	68		
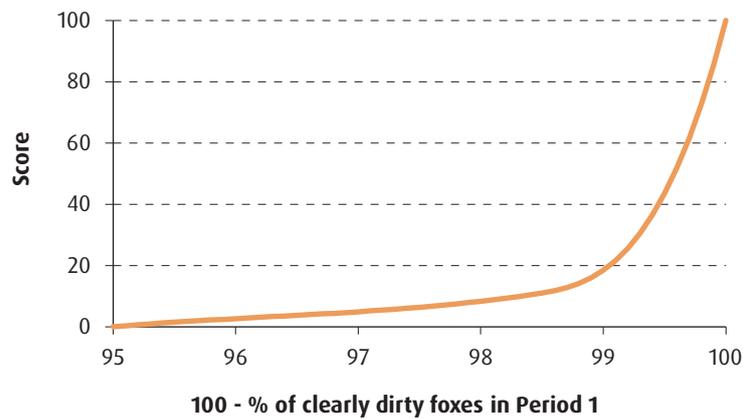
Figure 11 Calculation of the sub-score S_1^f for the Measurement *Cleanliness of the fur according* to the percentage of clearly dirty foxes in Period 1

Period 2:
Let I_2 = 100 - % of clearly dirty foxes in Period 2

Let $J_2 = \dfrac{I_2 - 95}{100 - 95} \times 100$ if $I_2 \geq 95$

$J_2 = 0$ if $I_2 < 95$

J_2 is computed into a score using *I*-spline functions (Figure 12) as follows:

Score = $a_x + b_x \times J_2 + c_x \times J_2{}^2 + d_x \times J_2{}^3$

with $x = 1$ when $J_2 < k$ and $x = 2$ when $J_2 \geq k$

Criterion 3 - Cleanliness of the fur - Period 2			
a_1	0	a_2	-80.1434073108780182792543201
b_1	0.3261485455614704931370795	b_2	5.1347529830409133211333028
c_1	0.0035791371735389228454782	c_2	-0.0925929515588161666794775
d_1	-0.0000485496335376175278315	d_2	0.0005925976245958145677273
k	50		
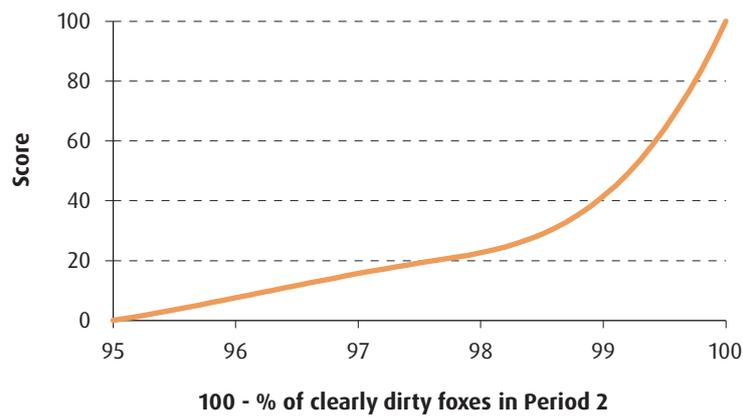
Figure 12 Calculation of the sub-score S_2^f for the Measurement *Cleanliness of the fur* according to the percentage of clearly dirty foxes in Period 2

Period 3:
Let I_3 = 100 - % of clearly dirty foxes in Period 3

$$\text{Let } J_3 = \frac{I_3 - 95}{100 - 95} \times 100 \quad \text{if } I_3 \geq 95$$
$$J_3 = 0 \quad \text{if } I_3 < 95$$

J_3 is computed into a score using *I*-spline functions (Figure 13) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 3 - Cleanliness of the fur - Period 3

a_1	0		a_2	-557.1835965520048148391651921
b_1	0.1062454978244936620868089		b_2	25.82241145482810651401450740
c_1	0.001429008332965919867568		c_2	-0.3942043136018001936449195
d_1	-0.0000119032413159228049853		d_2	0.0020169855871010173263558
k	65			
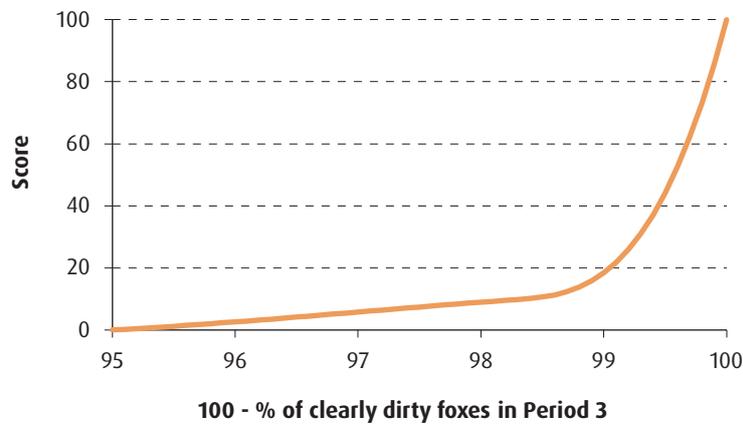
Figure 13 Calculation of the sub-score S_3^f for the Measurement *Cleanliness of the fur according* to the percentage of clearly dirty foxes in Period 3

Score S^f for the Measurement of *Cleanliness of the fur*

The three sub-scores are combined to form the partial score S^f for the Measurement *Cleanliness of the fur* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.20		μ_{12}	=	0.24
μ_2	=	0.24		μ_{13}	=	0.55
μ_3	=	0.47		μ_{23}	=	0.53

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^f\text{-score} = \begin{cases} S_1^f + \left(S_2^f - S_1^f\right)\mu_{23} + \left(S_3^f - S_2^f\right)\mu_3 & \text{if} \quad S_1^f \le S_2^f \le S_3^f \\ S_1^f + \left(S_3^f - S_1^f\right)\mu_{23} + \left(S_2^f - S_3^f\right)\mu_2 & \text{if} \quad S_1^f \le S_3^f \le S_2^f \\ S_2^f + \left(S_1^f - S_2^f\right)\mu_{13} + \left(S_3^f - S_1^f\right)\mu_3 & \text{if} \quad S_2^f \le S_1^f \le S_3^f \\ S_2^f + \left(S_3^f - S_2^f\right)\mu_{13} + \left(S_1^f - S_3^f\right)\mu_1 & \text{if} \quad S_2^f \le S_3^f \le S_1^f \\ S_3^f + \left(S_1^f - S_3^f\right)\mu_{12} + \left(S_2^f - S_1^f\right)\mu_2 & \text{if} \quad S_3^f \le S_1^f \le S_2^f \\ S_3^f + \left(S_2^f - S_3^f\right)\mu_{12} + \left(S_1^f - S_2^f\right)\mu_1 & \text{if} \quad S_3^f \le S_2^f \le S_1^f \end{cases}$$

Therefore, with the μ listed above:

$$
S^f\text{-score} = \begin{cases}
S_1^f + 0.53\left(S_2^f - S_1^f\right) + 0.47\left(S_3^f - S_2^f\right) & \text{if} \quad S_1^f \le S_2^f \le S_3^f \\[4pt]
S_1^f + 0.53\left(S_3^f - S_1^f\right) + 0.24\left(S_2^f - S_3^f\right) & \text{if} \quad S_1^f \le S_3^f \le S_2^f \\[4pt]
S_2^f + 0.55\left(S_1^f - S_2^f\right) + 0.47\left(S_3^f - S_1^f\right) & \text{if} \quad S_2^f \le S_1^f \le S_3^f \\[4pt]
S_2^f + 0.55\left(S_3^f - S_2^f\right) + 0.20\left(S_1^f - S_3^f\right) & \text{if} \quad S_2^f \le S_3^f \le S_1^f \\[4pt]
S_3^f + 0.24\left(S_1^f - S_3^f\right) + 0.24\left(S_2^f - S_1^f\right) & \text{if} \quad S_3^f \le S_1^f \le S_2^f \\[4pt]
S_3^f + 0.24\left(S_2^f - S_3^f\right) + 0.20\left(S_1^f - S_2^f\right) & \text{if} \quad S_3^f \le S_2^f \le S_1^f
\end{cases}
$$

Where S_1^f, S_2^f and S_3^f are the scores obtained by a given farm for the partial score S^f in Periods 1, 2 and 3 respectively. μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively. μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Sub-scores S_2^p, S_2^p and S_3^p for Periods 1, 2 and 3 for the Measurement *Availability of a platform*
The score of a farm with regard to the Measurement *Availability of a platform* is calculated from the % of foxes without a platform for the three periods of the production cycle.

The calculation of the sub-score is the same for each period:
Let I_i = 100 - % of foxes without a platform in period i with i =1, 2 or 3 according to the period considered

Let $J_i = \dfrac{I_i - 50}{100 - 50} \times 100$ if $I_i \ge 50$

$J_i = 0$ if $I_i < 50$

J_i is computed into a score using *I*-spline functions (Figure 14) as follows:

Score = $a_x + b_x \times J_i + c_x \times J_i^2 + d_x \times J_i^3$ i = 1, 2 or 3

with x = 1 when $J_i < k$ and x = 2 when $J_i \ge k$

Criterion 3 - Availability of a platform - Period 1, 2 or 3			
a_1	0	a_2	-5928.4783289651613813475705683
b_1	0.00000000000272355497361248	b_2	216.895527758866961676176282
c_1	-0.00000000000010601032467682	c_2	-2.6450671780618320028111157
d_1	0.0000372926035015176685007	d_2	0.0107895973355339284960319
k	82		

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
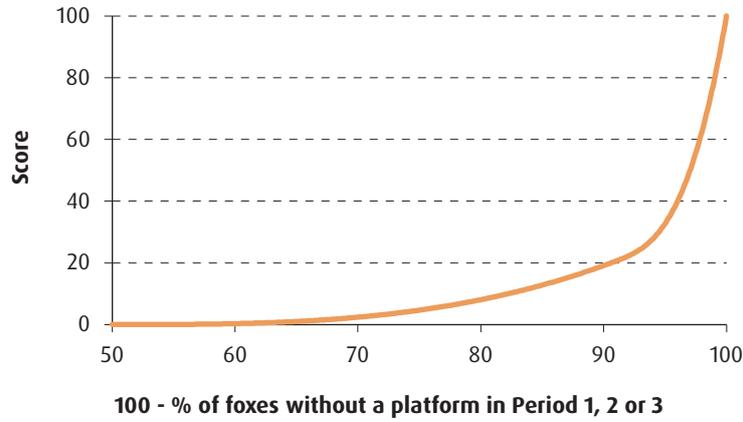
Figure 14 Calculation of the sub-score S_i^p for the Measurement *Availability of a platform* according to the percentage of foxes without a platform (with i = 1, 2 or 3 according to the period considered)

Score S^p for the Measurement *Availability of a platform*
The three sub-scores are combined to form the partial score S^p for the Measurement *Availability of a platform* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.10	μ_{12}	=	0.26
μ_2	=	0.19	μ_{13}	=	0.39
μ_3	=	0.39	μ_{23}	=	0.46

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^p\text{-score} = \begin{cases} S_1^p + \left(S_2^p - S_1^p\right)\mu_{23} + \left(S_3^p - S_2^p\right)\mu_3 & \text{if} & S_1^p \leq S_2^p \leq S_3^p \\ S_1^p + \left(S_3^p - S_1^p\right)\mu_{23} + \left(S_2^p - S_3^p\right)\mu_2 & \text{if} & S_1^p \leq S_3^p \leq S_2^p \\ S_2^p + \left(S_1^p - S_2^p\right)\mu_{13} + \left(S_3^p - S_1^p\right)\mu_3 & \text{if} & S_2^p \leq S_1^p \leq S_3^p \\ S_2^p + \left(S_3^p - S_2^p\right)\mu_{13} + \left(S_1^p - S_3^p\right)\mu_1 & \text{if} & S_2^p \leq S_3^p \leq S_1^p \\ S_3^p + \left(S_1^p - S_3^p\right)\mu_{12} + \left(S_2^p - S_1^p\right)\mu_2 & \text{if} & S_3^p \leq S_1^p \leq S_2^p \\ S_3^p + \left(S_2^p - S_3^p\right)\mu_{12} + \left(S_1^p - S_2^p\right)\mu_1 & \text{if} & S_3^p \leq S_2^p \leq S_1^p \end{cases}$$

Therefore, with the μ listed above:

$$S^p\text{-score} = \begin{cases} S_1^p + 0.46\left(S_2^p - S_1^p\right) + 0.39\left(S_3^p - S_2^p\right) & \textit{if} & S_1^p \leq S_2^p \leq S_3^p \\ S_1^p + 0.46\left(S_3^p - S_1^p\right) + 0.19\left(S_2^p - S_3^p\right) & \textit{if} & S_1^p \leq S_3^p \leq S_2^p \\ S_2^p + 0.39\left(S_1^p - S_2^p\right) + 0.39\left(S_3^p - S_1^p\right) & \textit{if} & S_2^p \leq S_1^p \leq S_3^p \\ S_2^p + 0.39\left(S_3^p - S_2^p\right) + 0.10\left(S_1^p - S_3^p\right) & \textit{if} & S_2^p \leq S_3^p \leq S_1^p \\ S_3^p + 0.26\left(S_1^p - S_3^p\right) + 0.19\left(S_2^p - S_1^p\right) & \textit{if} & S_3^p \leq S_1^p \leq S_2^p \\ S_3^p + 0.26\left(S_2^p - S_3^p\right) + 0.10\left(S_1^p - S_2^p\right) & \textit{if} & S_3^p \leq S_2^p \leq S_1^p \end{cases}$$

Where S^p_1, S^p_2 and S^p_3 are the sub-scores obtained by a given farm for Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

Score for the Criterion of *Comfort around resting*

The two partial scores are combined to form the overall score for the Criterion of *Comfort around resting* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_f = 0.13 \qquad\qquad \mu_p = 0.47$$

with *f*, cleanliness of the fur and *p*, availability of a platform.

Reminder:

$$\text{Comfort around resting-score} = \begin{cases} S^f + \left(S^p - S^f\right)\mu_p & \text{if} \quad S^f \leq S^p \\ S^p + \left(S^f - S^p\right)\mu_f & \text{if} \quad S^p \leq S^f \end{cases}$$

Therefore, with the μ listed above:

$$\text{Comfort around resting-score} = \begin{cases} S^f + 0.47\left(S^p - S^f\right) & \text{if} \quad S^f \leq S^p \\ S^p + 0.13\left(S^f - S^p\right) & \text{if} \quad S^p \leq S^f \end{cases}$$

Where S^f and S^p are the partial scores obtained by a given farm for the Sub-measurements '*f*' and '*p*' respectively.
μ_f and μ_p are the capacities of the Sub-measurements '*f*' and '*p*' respectively.

3.3.1.4 Thermal comfort

For the Criterion *Thermal comfort*, it is assessed if there is any protection from exceptional weather conditions for foxes on the farm. This is considered separately for Periods 1, 2 and 3 due to the changes in weather between the periods. In Period 1, only the Sub-measurement *Protection from wind* is assessed, in Period 2, only the Sub-measurement *Possibility of cooling the cages during extremely hot weather* is assessed and in Period 3 both sub-measurements are assessed.

Since the Measurement *Protection from exceptional weather conditions* is assessed in different ways for the three periods of the production cycle, the first stage is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle *i.e.* the criterion-score.

Sub-scores S$_1$, S$_2$ and S$_3$ for Periods 1, 2 and 3 for the Measurement *Protection from exceptional weather conditions*

In period 1:
The score of a farm with regard to the Measurement *Protection from exceptional weather conditions* is calculated from the % of foxes within each level of the scale used to assess the Sub-measurement of *Protection from wind* (4 levels here):

Level	0	1	2	3
% of foxes	P^1_0	P^1_1	P^1_2	P^1_3

$$\text{Let } I_1 = \left(100 - \frac{\sum_{j=0}^{3} w^1_j \, p^1_j}{w^1_3} \right)$$

NB: As Blue foxes are by nature well protected from the wind, they are systematically assigned to the category "high protection from the wind".

Weights	$w^1_0 = 0$	$w^1_1 = 6$	$w^1_2 = 10$	$w^1_3 = 13$

I_1 is computed into a score using *I*-spline functions (Figure 15) as follows:

Score = $a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 4 - Protection from wind - Period 1			
a_1	0	a_2	-12.126750454832093240042928
b_1	0.7439131711624851206465792	b_2	1.4715181984162497563772831
c_1	0.0115821175946681752255696	c_2	-0.0029699829498613388063799
d_1	-0.0001023392435156076594191	d_2	-0.0000053252398881508965063
k	50		
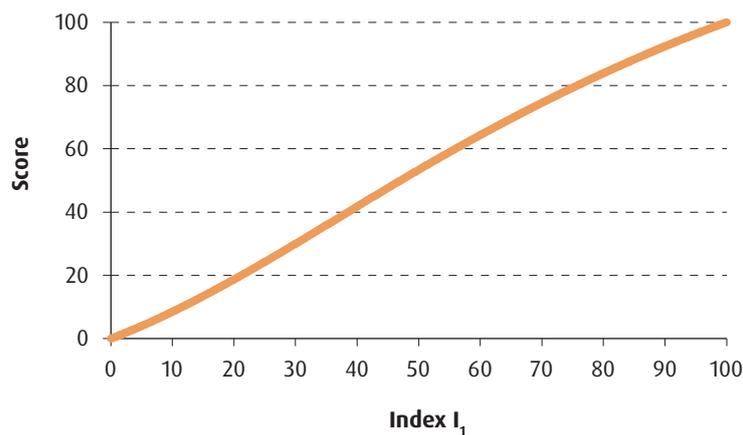
Figure 15 Calculation of the sub-score S1 for the Sub-measurement *Protection from wind* according to the percentage of foxes in each category of protection in Period 1

In Period 2:
The score of a farm with regard to the Measurement *Protection from exceptional weather conditions* is calculated from the % of foxes within each level of the scale used to assess the Sub-measurement *Possibility of cooling the cages during extremely hot weather* (3 levels here):

Level	0	1	2
% of foxes	P_0^2	P_1^2	P_2^2

$$\text{Let } I_2 = \left(100 - \frac{\displaystyle\sum_{j=0}^{2} w_j^2 \; p_j^2}{w_2^2} \right)$$

Weights	$w_0^2 = 0$	$w_1^2 = 1$	$w_2^2 = 4$

I_2 is computed into a score using I-spline functions (Figure 16) as follows:

Score = $a_x + b_x \times I_2 + c_x \times I_2^2 + d_x \times I_2^3$

with $x = 1$ when $I_2 < k$ and $x = 2$ when $I_2 \geq k$

Criterion 4 - Possibility of cooling the cages - Period 2			
a_1	0	a_2	-237.0603387900970346890971996
b_1	0.795484624244607529952587	b_2	10.9552133976389214353730495
c_1	-0.00478507027997405567339182	c_2	-0.149924052366616378240138 4
d_1	0.0000496415143443230475330	d_2	0.00074077952270079367586 01
k	70		
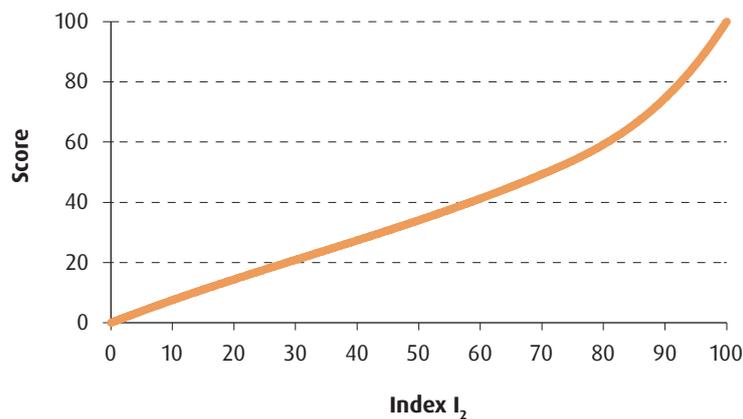
Figure 16 Calculation of the sub-score S_2 for the Sub-measurement *Possibility of cooling the cages during extremely hot weather* according to the percentage of foxes in each category of possibility of cooling the cage in Period 2

In Period 3:
In Period 3, a decision-tree combining the two ordinal sub-measurements leading to 12 possible situations allows to calculate the score for the Measurement *Protection from exceptional weather conditions*. The sub-score S_3 is assigned to foxes submitted to a given combination and is calculated as the mean score assigned by experts to this combination (Figure 17).

NB: As blue foxes are by nature well protected from the wind, they are systematically assigned to the category "high protection from the wind".

The following scores are assigned to each of the situations:

			Situation		Score
		High possibility	1	=	100
High protection	Possibility of cooling the cages during extremely hot weathers	Medium possibility	2	=	72
		Low possibility	3	=	47
		High possibility	4	=	84
Moderate protection	Possibility of cooling the cages during extremely hot weathers	Medium possibility	5	=	62
		Low possibility	6	=	40
		High possibility	7	=	56
Low protection	Possibility of cooling the cages during extremely hot weathers	Medium possibility	8	=	44
		Low possibility	9	=	26
		High possibility	10	=	23
No protection	Possibility of cooling the cages during extremely hot weathers	Medium possibility	11	=	11
		Low possibility	12	=	0

Figure 17 Sub-scores S_3 assigned to combinations of observations on possibility to protect the foxes from the wind and possibility of cooling the cages in Period 3

Since animals may be housed with different environmental protection conditions, we consider, in Period 3, the % of animals in each situation defined by the decision-tree (see Figure 17) and the final score to be assigned to the farm is the worst score (= the one corresponding to the worst situation found on the farm) observed in at least 10% of the animals.

Score for the Criterion *Thermal comfort*
The three sub-scores are combined to form the overall score for the Criterion *Thermal comfort* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.28	μ_{12}	=	0.28
μ_2	=	0.21	μ_{13}	=	0.46
μ_3	=	0.43	μ_{23}	=	0.44

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$\text{Thermal comfort-score} = \begin{cases} S_1 + (S_2 - S_1)\mu_{23} + (S_3 - S_2)\mu_3 & \text{if} \quad S_1 \le S_2 \le S_3 \\ S_1 + (S_3 - S_1)\mu_{23} + (S_2 - S_3)\mu_2 & \text{if} \quad S_1 \le S_3 \le S_2 \\ S_2 + (S_1 - S_2)\mu_{13} + (S_3 - S_1)\mu_3 & \text{if} \quad S_2 \le S_1 \le S_3 \\ S_2 + (S_3 - S_2)\mu_{13} + (S_1 - S_3)\mu_1 & \text{if} \quad S_2 \le S_3 \le S_1 \\ S_3 + (S_1 - S_3)\mu_{12} + (S_2 - S_1)\mu_2 & \text{if} \quad S_3 \le S_1 \le S_2 \\ S_3 + (S_2 - S_3)\mu_{12} + (S_1 - S_2)\mu_1 & \text{if} \quad S_3 \le S_2 \le S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Thermal comfort-score} = \begin{cases} S_1 + 0.44(S_2 - S_1) + 0.43(S_3 - S_2) & \text{if} \quad S_1 \leq S_2 \leq S_3 \\ S_1 + 0.44(S_3 - S_1) + 0.21(S_2 - S_3) & \text{if} \quad S_1 \leq S_3 \leq S_2 \\ S_2 + 0.46(S_1 - S_2) + 0.43(S_3 - S_1) & \text{if} \quad S_2 \leq S_1 \leq S_3 \\ S_2 + 0.46(S_3 - S_2) + 0.28(S_1 - S_3) & \text{if} \quad S_2 \leq S_3 \leq S_1 \\ S_3 + 0.28(S_1 - S_3) + 0.21(S_2 - S_1) & \text{if} \quad S_3 \leq S_1 \leq S_2 \\ S_3 + 0.28(S_2 - S_3) + 0.28(S_1 - S_2) & \text{if} \quad S_3 \leq S_2 \leq S_1 \end{cases}$$

Where S_1, S_2 and S_3 are the scores obtained by a given farm for the Criterion *Thermal comfort* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made of Periods 1 and 2 and so on...

3.3.1.5 Ease of movement

For the Criterion *Ease of movement* two partial scores are calculated, one for the *Floor area* and one for the *Cage height*, before being combined into a criterion-score.

Moreover, these two measurements are assessed for the three periods of the production cycle. So the first stage is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained (*i.e.* one sub-score per period for each measurement separately) in order to have the score covering the production cycle for each of these two measurements.

Sub-scores S_1^a, S_2^a and S_3^a for Periods 1, 2 and 3 for the measurement *Floor area*

The score of a farm with regard to the measurement *Floor area* is calculated from the % of foxes within each level of the scale used to assess floor area (3 levels here), whatever the period considered:

Level	0	1	2
% of foxes	$P_{i,0}^a$	$P_{i,1}^a$	$P_{i,2}^a$

$$\text{Let } I_i = \left(100 - \frac{\sum_{j=0}^{2} w_{i,j}^a \ p_{i,j}^a(x)}{w_{i,2}^a} \right)$$

with i = 1, 2 or 3 according to the Period and j = 0, 1 or 2 according to the level.

In Period 1 or 2:

Weights	$w_{i,0}^a = 0$	$w_{i,1}^a = 1$	$w_{i,2}^a = 9$

I_i is computed into a score using *I*-spline functions (Figure 18) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ $\qquad\qquad$ i = 1 or 2

with $x = 1$ when $I_i < k$ and $x = 2$ when $I_i \geq k$

Criterion 5 - Floor area - Period 1 or 2	
a_1 0	a_2 -20.172775955191980301606236O
b_1 -0.00000000000008962766555362	b_2 1.72909508188753813229254477
c_1 0.0198622485177477395290602	c_2 -0.0295404681079390780962246
d_1 -0.000227834114258244224303O	d_2 0.000242667948845808767O649
k 35	

Note: The coefficients are the same for the two periods (i.e. Periods 1 and 2) since the interpretation in terms of welfare is the same whatever the period considered.
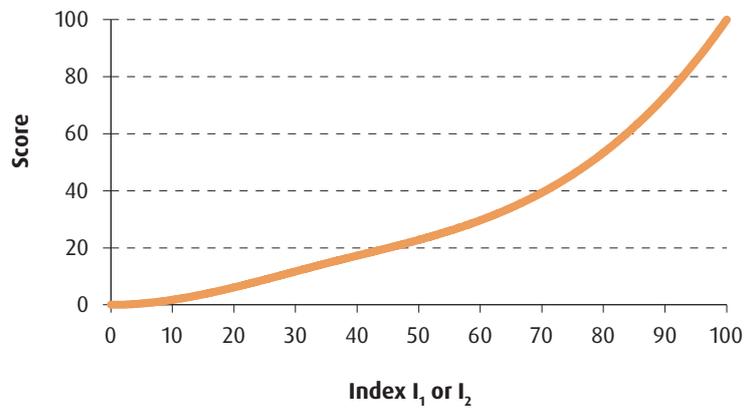
Figure 18 Calculation of the sub-scores S_2^a and S_2^a for the measurement *Floor area* according to the percentage of foxes in each category of floor area in their cages in Period 1 or 2

In Period 3:

Weights	$w_{i,0}^a$ = 0	$w_{i,1}^a$ = 1	$w_{i,2}^a$ = 9

I_3 is computed into a score using *I*-spline functions (Figure 19) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3^2 + d_x \times I_3^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

a_1	0	a_2	-11.0303386354673023106442997
b_1	0.2058298026051619544762872	b_2	0.7149223540593981907065313
c_1	0.0010456732798332190985391	c_2	-0.0067865198073288300617545
d_1	0.0000672382085994379573258	d_2	0.0001074033013031630172168
k	65		
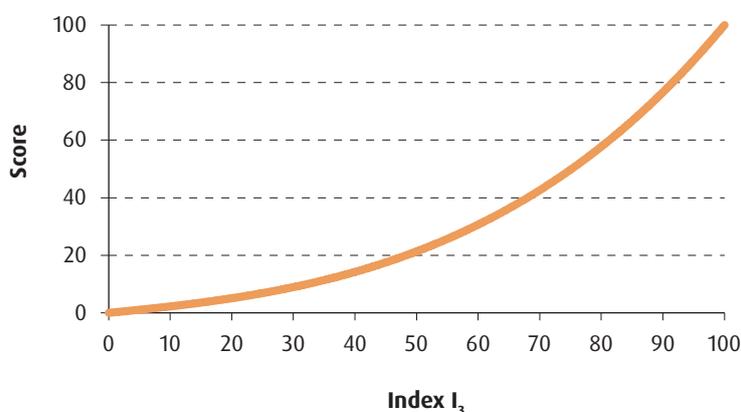
Figure 19 Calculation of the sub-score S_3^a for the measurement *Floor area* according to the percentage of foxes in each category of floor area in their cages in Period 3

NB: The calculation is similar for the three periods but, as the interpretation is different in terms of welfare in Period 3, the measurement was interpreted separately for this period and therefore the coefficients of the curve are different from the ones used for Periods 1 and 2.

Score Sᵃ for the Sub-measurement *Floor area*
The three sub-scores are combined to form the partial score *Sᵃ* for the measurement *Floor area* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.21		μ_{12}	=	0.21
μ_2	=	0.13		μ_{13}	=	0.50
μ_3	=	0.35		μ_{23}	=	0.67

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$
S^a\text{-score} =
\begin{cases}
S_1^a + \left(S_2^a - S_1^a\right)\mu_{23} + \left(S_3^a - S_2^a\right)\mu_3 & \text{if} \quad S_1^a \le S_2^a \le S_3^a \\
S_1^a + \left(S_3^a - S_1^a\right)\mu_{23} + \left(S_2^a - S_3^a\right)\mu_2 & \text{if} \quad S_1^a \le S_3^a \le S_2^a \\
S_2^a + \left(S_1^a - S_2^a\right)\mu_{13} + \left(S_3^a - S_1^a\right)\mu_3 & \text{if} \quad S_2^a \le S_1^a \le S_3^a \\
S_2^a + \left(S_3^a - S_2^a\right)\mu_{13} + \left(S_1^a - S_3^a\right)\mu_1 & \text{if} \quad S_2^a \le S_3^a \le S_1^a \\
S_3^a + \left(S_1^a - S_3^a\right)\mu_{12} + \left(S_2^a - S_1^a\right)\mu_2 & \text{if} \quad S_3^a \le S_1^a \le S_2^a \\
S_3^a + \left(S_2^a - S_3^a\right)\mu_{12} + \left(S_1^a - S_2^a\right)\mu_1 & \text{if} \quad S_3^a \le S_2^a \le S_1^a
\end{cases}
$$

Therefore, with the μ listed above:

$$
S^a\text{-score} =
\begin{cases}
S_1^a + 0.67\left(S_2^a - S_1^a\right) + 0.35\left(S_3^a - S_2^a\right) & \text{if} \quad S_1^a \le S_2^a \le S_3^a \\
S_1^a + 0.67\left(S_3^a - S_1^a\right) + 0.13\left(S_2^a - S_3^a\right) & \text{if} \quad S_1^a \le S_3^a \le S_2^a \\
S_2^a + 0.50\left(S_1^a - S_2^a\right) + 0.35\left(S_3^a - S_1^a\right) & \text{if} \quad S_2^a \le S_1^a \le S_3^a \\
S_2^a + 0.50\left(S_3^a - S_2^a\right) + 0.21\left(S_1^a - S_3^a\right) & \text{if} \quad S_2^a \le S_3^a \le S_1^a \\
S_3^a + 0.21\left(S_1^a - S_3^a\right) + 0.13\left(S_2^a - S_1^a\right) & \text{if} \quad S_3^a \le S_1^a \le S_2^a \\
S_3^a + 0.21\left(S_2^a - S_3^a\right) + 0.21\left(S_1^a - S_2^a\right) & \text{if} \quad S_3^a \le S_2^a \le S_1^a
\end{cases}
$$

Where S_1^a, S_2^a and S_3^a are the sub-scores obtained by a given farm for the measurement Floor area in Periods 1, 2 and 3 respectively.

$\mu 1$, $\mu 2$ and $\mu 3$ are the capacities of the measurement Floor area in Periods 1, 2 and 3 respectively.

$\mu 12$ is the capacity of the group made of the measurements in period 1 and 2 and so on...

Sub-scores S_2^h, S_2^h and S_3^h for Periods 1, 2 and 3 for the measurement *Cage height*
The score of a farm with regard to the measurement *Cage height* is calculated from the % of foxes within each level of the scale used to assess cage height (4 levels here), whatever the period considered:

Level	0	1	2	3
% of foxes	$P_{i,0}^h$	$P_{i,1}^h$	$P_{i,2}^h$	$P_{i,3}^h$
$\text{Let } I_i = \left(100 - \dfrac{\sum\limits_{k=0}^{3} w_{i,j}^h \; p_{i,j}^h(x)}{w_{i,3}^h}\right)$ with i = 1, 2 or 3 according to the period and j = 0, 1, 2 or 3 according to the level				
Weights	$w_{i,0}^h = 0$	$w_{i,1}^h = 3$	$w_{i,2}^h = 10$	$w_{i,3}^h = 64$

I_i is computed into a score using *I*-spline functions (Figure 20) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ *i* = 1, 2 or 3

with $x = 1$ when $I_i < k$ and $x = 2$ when $I_i \ge k$

Criterion 5 - Cage height - Period 1, 2 or 3			
a_1	0	a_2	1633.869298221465214737690852
b_1	0.1642743231225141931073352	b_2	-57.5016923354926774436535197
c_1	-0.0019326390956992806329645	c_2	0.6764904039971841864797852
d_1	0.0001118780732827098176605	d_2	-0.0025486041051774226476323
k	85		

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
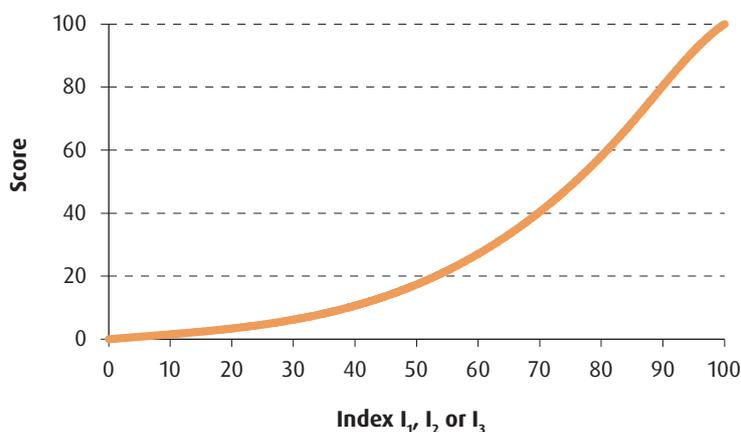
Figure 20 Calculation of the sub-score S_i^h measurement *Cage height* according to the percentage of foxes in each category of cage height (with i =1, 2 or 3 according to the period considered)

Score S^h for the measurement *Cage height*
The three sub-scores are combined to form the partial score S^h for the measurement *Cage height* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.16	μ_{12}	=	0.22
μ_2	=	0.21	μ_{13}	=	0.53
μ_3	=	0.53	μ_{23}	=	0.57

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^h\text{-score} = \begin{cases} S_1^h + \left(S_2^h - S_1^h\right)\mu_{23} + \left(S_3^h - S_2^h\right)\mu_3 & \text{if} \quad S_1^h \leq S_2^h \leq S_3^h \\[4pt] S_1^h + \left(S_3^h - S_1^h\right)\mu_{23} + \left(S_2^h - S_3^h\right)\mu_2 & \text{if} \quad S_1^h \leq S_3^h \leq S_2^h \\[4pt] S_2^h + \left(S_1^h - S_2^h\right)\mu_{13} + \left(S_3^h - S_1^h\right)\mu_3 & \text{if} \quad S_2^h \leq S_1^h \leq S_3^h \\[4pt] S_2^h + \left(S_3^h - S_2^h\right)\mu_{13} + \left(S_1^h - S_3^h\right)\mu_1 & \text{if} \quad S_2^h \leq S_3^h \leq S_1^h \\[4pt] S_3^h + \left(S_1^h - S_3^h\right)\mu_{12} + \left(S_2^h - S_1^h\right)\mu_2 & \text{if} \quad S_3^h \leq S_1^h \leq S_2^h \\[4pt] S_3^h + \left(S_2^h - S_3^h\right)\mu_{12} + \left(S_1^h - S_2^h\right)\mu_1 & \text{if} \quad S_3^h \leq S_2^h \leq S_1^h \end{cases}$$

Therefore, with the μ listed above:

$$S^h\text{-score} = \begin{cases} S_1^h + 0.57\left(S_2^h - S_1^h\right) + 0.53\left(S_3^h - S_2^h\right) & \text{if} \quad S_1^h \leq S_2^h \leq S_3^h \\[4pt] S_1^h + 0.57\left(S_3^h - S_1^h\right) + 0.21\left(S_2^h - S_3^h\right) & \text{if} \quad S_1^h \leq S_3^h \leq S_2^h \\[4pt] S_2^h + 0.53\left(S_1^h - S_2^h\right) + 0.53\left(S_3^h - S_1^h\right) & \text{if} \quad S_2^h \leq S_1^h \leq S_3^h \\[4pt] S_2^h + 0.53\left(S_3^h - S_2^h\right) + 0.16\left(S_1^h - S_3^h\right) & \text{if} \quad S_2^h \leq S_3^h \leq S_1^h \\[4pt] S_3^h + 0.22\left(S_1^h - S_3^h\right) + 0.21\left(S_2^h - S_1^h\right) & \text{if} \quad S_3^h \leq S_1^h \leq S_2^h \\[4pt] S_3^h + 0.22\left(S_2^h - S_3^h\right) + 0.16\left(S_1^h - S_2^h\right) & \text{if} \quad S_3^h \leq S_2^h \leq S_1^h \end{cases}$$

Where S^h_1, S^h_2 and S^h_3 are the sub-scores obtained by a given farm for the measurement *Cage height* in Periods 1, 2 and 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of the measurement *Cage height* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made of the measurements in period 1 and 2 and so on...

Score for the Criterion of *Ease movement*

The two partial scores are combined to form the overall score for the Criterion *Ease of movement* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_a \qquad = \qquad 0.39 \qquad\qquad\qquad \mu_h \qquad = \qquad 0.31$$

with *a*, floor area and *h*, cage height.

Reminder:

$$\text{Ease of movement-score} = \begin{cases} S^a + \left(S^h - S^a\right)\mu_h & \text{if} \quad S^a \leq S^h \\[4pt] S^h + \left(S^a - S^h\right)\mu_a & \text{if} \quad S^h \leq S^a \end{cases}$$

Therefore, with the μ listed above:

$$\text{Ease of movement-score} = \begin{cases} S^a + 0.31\left(S^h - S^a\right) & \text{if} \quad S^a \leq S^h \\[4pt] S^h + 0.39\left(S^a - S^h\right) & \text{if} \quad S^h \leq S^a \end{cases}$$

Where S^a and S^b are the partial scores obtained by a given farm for the measurements *Floor area* and *of Cage height* respectively.

μ_a and μ_b are the capacities of the measurements *Floor area* and *of Cage height* respectively.

3.3.1.6 Absence of injuries

For the Criterion Absence of injuries, two partial scores are calculated, both in Period 3 of the production cycle, one for the Measurement *Difficulties in moving* and one for the Measurement *Skin lesions and/or other observed injuries to the body*, before being combined into a criterion-score.

Score S_3^m for Period 3 for the Measurement *Difficulties in moving*
The score of a farm in regard to the Measurement *Difficulties in moving* is calculated from the % of foxes within each level of the scale used to assess difficulties in moving (4 levels here) in Period 3:

Level	0	1	2	3
% of foxes	P_0^m	P_1^m	P_2^m	P_3^m

$$\text{Let } I_3 = \left(100 - \frac{\sum_{j=0}^{3} w_j^m \, p_j^m(x)}{w_3^m} \right) \qquad \text{with j = 0, 1, 2 or 3 according to the level.}$$

Weights	$w_0^m = 0$	$w_1^m = 5$	$w_2^m = 13$	$w_3^m = 22$

Let $J_3 = \dfrac{I_3 - 70}{100 - 70} \times 100$ if $I_3 \geq 70$

$J_3 = 0$ if $I_3 < 70$

J_3 is computed into a score using *I*-spline functions (Figure 21) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3^2 + d_x \times J_3^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 6 - Difficulties in moving - Period 3			
a_1	0	a_2	-749.50932392987510866607808247
b_1	0.00000000000028438796999449	b_2	32.12182833364238956778535794
c_1	0.0033688506524225587425436	c_2	-0.4555144133568264641631629
d_1	0.0000073122154128390797910	d_2	0.0021924706238109705098982
k	70		
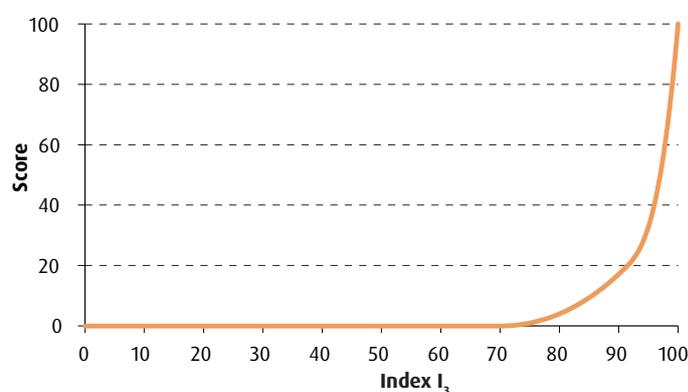
Figure 21 Calculation of the score S_3^m for the Measurement *Difficulties in moving* according to the percentage of foxes in each category of difficulties in moving in Period 3

Score S_3^l **for Period 3 for the Measurement *Skin lesions and/or other observed injuries to the body***

The score of a farm in regard to the Measurement *Skin lesions and/or other observed injuries to the body* is calculated from the % of foxes within each level of the scale used to assess skin lesions (3 levels here) in Period 3:

Level	0	1	2
% of foxes	P_0^l	P_1^l	P_2^l

$$\text{Let } I_3 = \left(100 - \frac{\sum_{j=0}^{2} w_j^l \; p_j^l(x)}{w_2^l} \right) \qquad \text{with } j = 0, 1 \text{ or } 2 \text{ according to the level}$$

Weights	$w_0^l = 0$	$w_1^l = 3$	$w_2^l = 8$

Let $J_3 = \dfrac{I_3 - 40}{100 - 40} \times 100 \quad$ if $I_3 \geq 40$

$J_3 = 0 \quad$ if $I_3 < 40$

J_3 is computed into a score using I-spline functions (Figure 22) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3^2 + d_x \times J_3^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 6 - Skin lesions - Period 3			
a_1	0	a_2	-697.086883009352732187354996
b_1	0.0000000000071587780437504	b_2	30.7538331301633895975555788
c_1	-0.0000000000003355487784559	c_2	-0.4522622526170754775343141
d_1	0.0000273542666953164853702	d_2	0.0022443260961459679699026
k	68		
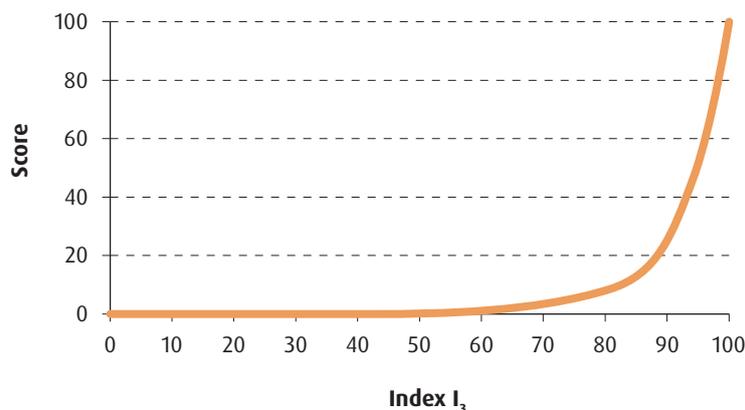
Figure 22 Calculation of the score S_3^l for the Measurement *Skin lesions and/or other observed injuries to the body* according to the percentage of foxes in each category of skin lesions in Period 3

Score for the Criterion *Absence of injuries*

The two partial scores are combined to form the overall score for the Criterion of *Absence of injuries* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_m \quad = \quad 0.39 \qquad\qquad\qquad\qquad \mu_l \quad = \quad 0.19$$

with m, difficulties in moving and l, skin lesions

Reminder:

$$\text{Absence of injuries-score} = \begin{cases} S^m + \left(S^l - S^m\right)\mu_l & \text{if} \quad S^m \le S^l \\ S^l + \left(S^m - S^l\right)\mu_m & \text{if} \quad S^l \le S^m \end{cases}$$

Therefore, with the μ listed above:

$$\text{Absence of injuries-score} = \begin{cases} S^m + 0.39\left(S^l - S^m\right) & \text{if} \quad S^m \le S^l \\ S^l + 0.19\left(S^m - S^l\right) & \text{if} \quad S^l \le S^m \end{cases}$$

Where S^m and S^l are the partial scores obtained by a given farm for the Measurements *of Difficulties in moving* and *Skin lesions, and/or other observed injuries to the body* respectively.
μ_m and μ_l are the capacities of the Measurements *Difficulties in moving* and *Skin lesions and/or other observed injuries to the body*, respectively.

3.3.1.7 Absence of disease

For the Criterion *Absence of disease,* the incidence of health disorders is compared to warning and alarm thresholds. The alarm threshold is the minimum value (percentage of animals) for a decision to set up a health plan at farm level. The warning threshold is half of the alarm threshold. The values chosen for alarm thresholds appear in Table 6.

Table 6 Warning and alarm thresholds for each health disorder and for mortality

Incidence of each disorder	Warning threshold	Alarm threshold
% of foxes with severely bent feet	7.50%	15.00 %
% of foxes with ocular inflammation	3.75%	7.50 %
% of foxes with impaired mouth and teeth health	1.50%	3.00 %
% of foxes with evidence of diarrhoea	7.50%	15.00 %
% of foxes with clear reddish/brownish urine	1.00%	2.00 %
% of obviously sick fox	0.25%	0.50 %

% of foxes older than 8 weeks recorded dead within 12 months, *taking into account humanely killed animals*:

· Mortality when < 25% due to humane killing	1.375%	2.75%
· Mortality when 25% ≤ mortality < 50%% due to humane killing	2.125%	4.25%
· Mortality when ≥ 50% due to humane killing	3.75%	7.5%

The two predefined thresholds, define three categories for each health disorder:

· Acceptable situation: the result of the farm is below the warning threshold

- Moderate problem: the result of the farm is above the warning threshold but below the alarm threshold and therefore a health plan at farm level *could* be undertaken by the farmer

- Serious problem: the result of the farm is above the alarm threshold and therefore a health plan at farm level is highly recommended

According to the period considered, the health disorders taken into account are not the same: In Period 1, measurements *Urinary tract infection* and *Mortality* are considered; in Period 2, only the measurement *Mortality* is considered; whereas in Period 3, all measurements except *Urinary tract infection* are considered.

Once each disorder of the period considered has been categorised, we can calculate the number of disorders in each of the three categories:

- N_0 = number of measurements in the category "Acceptable" (*i.e.* < warning threshold)

- N_1 = number of measurements in the category "Moderate problem" (*i.e.* < alarm threshold and ≥ warning threshold)

- N_2 = number of measurements in the category "Serious problem" (*i.e.* ≥ alarm threshold)

Then, we calculate the criterion-score with a calculation based on the weighted sum of the number of measurements in each category, assigning more weight to more serious problem (and no weight for the category acceptable): $\mathbf{w_0 = 0 < w_1 < w_2}$.

$$\text{Let } I = \frac{100}{N_{tot}} \times \left(N_{tot} - \frac{\sum_{j=0}^{2} w_j N_j}{w_2} \right) \qquad \text{with j, the level considered}$$

Weights	$w_0 = 0$	$w_1 = 1$	$w_2 = 2$

I is computed into a score using *I*-spline functions (Figure 23) as follows:

Score = $a_x + b_x \times I + c_x \times I^2 + d_x \times I^3$

with $x = 1$ when $I < k$ and $x = 2$ when $I \geq k$

Criterion 7 - Absence of disease - Periods 1, 2 and 3			
a_1	0	a_2	-85.053771064857230044 2538108
b_1	0.90939517268994507492 86302	b_2	5.162083731128177532809 7865
c_1	-0.00441554366230250718 01729	c_2	-0.075293686372199075673 7057
d_1	0.00002801480186953413 78720	d_2	0.000421782261671481352 6231
k	60		
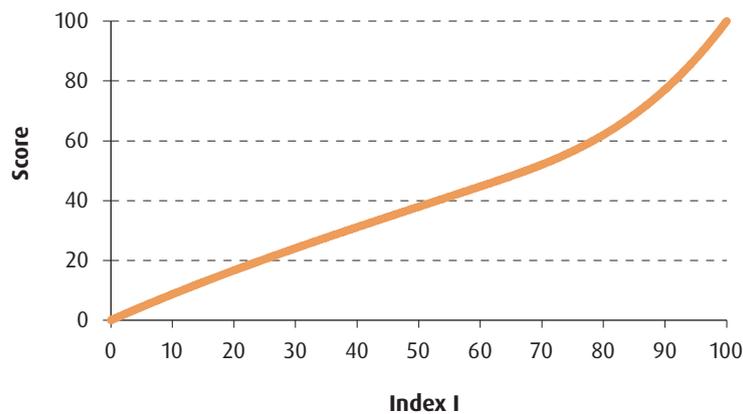
Figure 23 Calculation of the score for the Criterion *Absence of disease* according to the number of measurements in each category of disorders situation

3.3.1.8 Absence of pain induced by management procedures

For the Criterion *Absence of pain induced by management procedures*, the score is calculated, from the Measurement *Killing method*. This measurement is assessed for the three periods of the production cycle. So the first stage is to calculate the sub-score for each period, then to aggregate the three sub-scores obtained for each period in order to have the score covering the production cycle for the Measurement *Killing method*.

Sub-scores S_1^n, S_3^n and S_3^n for Periods 1, 2 and 3 for the Measurement *Killing method*
One score is assigned to the Measurement *Killing method* according to a decision-tree based on the type and functioning of the device (Figure 24).

		Classification		**Score**
	Electrocution, the device with a check light	0	=	99
Type and functioning of the device	Electrocution, no check light in the device	1	=	62
	Other killing method than electrocution	2	=	23
	Absence of device to kill the animals	3	=	0

Figure 24 Sub-scores S_i^k assigned to combinations of answers to questions on killing method (with I = 1, 2 or 3 according to the period considered)

Since different killing devices may be present on the farm, we consider the killing device in the worst situation defined by the decision-tree and the final score to be assigned to the farm is the worst score observed (= the one corresponding to the worst situation found on the farm).

Score for the Criterion *Absence of pain induced by management procedures*
The three sub-scores are combined to form the overall score for the Criterion *Absence of pain due to management procedures* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.01	μ_{12}	=	0.13
μ_2	=	0.07	μ_{13}	=	0.43
μ_3	=	0.43	μ_{23}	=	0.50

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^k\text{-score} = \begin{cases} S_1^k + \left(S_2^k - S_1^k\right)\mu_{23} + \left(S_3^k - S_2^k\right)\mu_3 & \text{if} \quad S_1^k \leq S_2^k \leq S_3^k \\ S_1^k + \left(S_3^k - S_1^k\right)\mu_{23} + \left(S_2^k - S_3^k\right)\mu_2 & \text{if} \quad S_1^k \leq S_3^k \leq S_2^k \\ S_2^k + \left(S_1^k - S_2^k\right)\mu_{13} + \left(S_3^k - S_1^k\right)\mu_3 & \text{if} \quad S_2^k \leq S_1^k \leq S_3^k \\ S_2^k + \left(S_3^k - S_2^k\right)\mu_{13} + \left(S_1^k - S_3^k\right)\mu_1 & \text{if} \quad S_2^k \leq S_3^k \leq S_1^k \\ S_3^k + \left(S_1^k - S_3^k\right)\mu_{12} + \left(S_2^k - S_1^k\right)\mu_2 & \text{if} \quad S_3^k \leq S_1^k \leq S_2^k \\ S_3^k + \left(S_2^k - S_3^k\right)\mu_{12} + \left(S_1^k - S_2^k\right)\mu_1 & \text{if} \quad S_3^k \leq S_2^k \leq S_1^k \end{cases}$$

Therefore, with the μ listed above:

$$S^k\text{-score} = \begin{cases} S_1^k + 0.50\left(S_2^k - S_1^k\right) + 0.43\left(S_3^k - S_2^k\right) & \text{if} \quad S_1^k \leq S_2^k \leq S_3^k \\ S_1^k + 0.50\left(S_3^k - S_1^k\right) + 0.07\left(S_2^k - S_3^k\right) & \text{if} \quad S_1^k \leq S_3^k \leq S_2^k \\ S_2^k + 0.43\left(S_1^k - S_2^k\right) + 0.43\left(S_3^k - S_1^k\right) & \text{if} \quad S_2^k \leq S_1^k \leq S_3^k \\ S_2^k + 0.43\left(S_3^k - S_2^k\right) + 0.01\left(S_1^k - S_3^k\right) & \text{if} \quad S_2^k \leq S_3^k \leq S_1^k \\ S_3^k + 0.13\left(S_1^k - S_3^k\right) + 0.07\left(S_2^k - S_1^k\right) & \text{if} \quad S_3^k \leq S_1^k \leq S_2^k \\ S_3^k + 0.13\left(S_2^k - S_3^k\right) + 0.01\left(S_1^k - S_2^k\right) & \text{if} \quad S_3^k \leq S_2^k \leq S_1^k \end{cases}$$

Where S^k_1, S^k_2 and S^k_3 are the sub-scores obtained by a given farm for the Measurement *Killing method* in Periods 1, 2 and 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of the Measurement of *Killing method* in Periods 1, 2 and 3 respectively.
μ_{12} is the capacity of the group made of the measurements in Periods 1 and 2 and so on...

3.3.1.9 Expression of social behaviours

For the Criterion of Expression of social behaviours, *two* partial scores are calculated, both in Period 3 of the production cycle, one for the Sub-measurement *Social housing of adults* and one for the Sub-measurement of *Social housing of juveniles*, before being combined into a criterion-score.

Sub-score S_3^a for Period 3 for the Sub-measurement *Social housing of adults*
The score of a farm with regard to the Sub-measurement *Social housing of adults* is calculated from the % of adults housed in pairs or in groups in Period 3.

Let I_3 = 100 - % of adults housed in pairs or in groups in Period 3

Let $J_3 = \dfrac{I_3 - 40}{100 - 40} \times 100 \quad$ if $I_3 \geq 40$
$J_3 = 0 \quad$ if $I_i < 40$

J_3 is computed into a score using *I*-spline functions (Figure 25) as follows:

Score = $a_x + b_x \times J_3 + c_x \times J_3{}^2 + d_x \times J_3{}^3$

with $x = 1$ when $J_3 < k$ and $x = 2$ when $J_3 \geq k$

Criterion 9 - Social housing of adults - Period 3			
a_1	0	a_2	-814.5535906061697914992691949
b_1	0.0445918755647997516744496	b_2	35.9807796542361089109363093
c_1	-0.0002207635686155743986146	c_2	-0.5286941127302523524278399
d_1	0.00001286112150765517111444	d_2	0.0026034167524982159726277
k	68		

100 - % of adults housed in pairs or in groups in Period 3
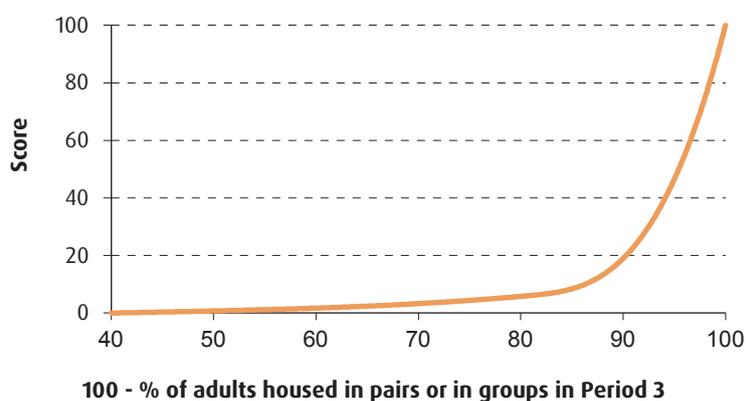
Figure 25 Calculation of the sub-score S_3^a for the Sub-measurement *Social housing of adults* according to the percentage of adults housed in pairs or in groups in Period 3

Sub-score S_3^j for Period 3 for the Sub-measurement *Social housing of juveniles*
The score of a farm with regard to the Sub-measurement *Social housing of juveniles* is calculated from the % of juvenile foxes housed singly in Period 3.

Let I_3 = 100 - % of juvenile foxes housed singly in Period 3

I_3 is computed into a score using *I*-spline functions (Figure 26) as follows:

Score = $a_x + b_x \times I_3 + c_x \times I_3{}^2 + d_x \times I_3{}^3$

with $x = 1$ when $I_3 < k$ and $x = 2$ when $I_3 \geq k$

Criterion 9 - Social housing of adults - Period 3			
a_1	0	a_2	-3.3680219084690250497260422
b_1	0.0000000000000394418377905	b_2	0.4041626290160681422847233
c_1	0.0012947913941676032854172	c_2	-0.0148717137664662827495343
d_1	-0.0000038845054701978376464	d_2	0.0002116688966715256109852
k	25		
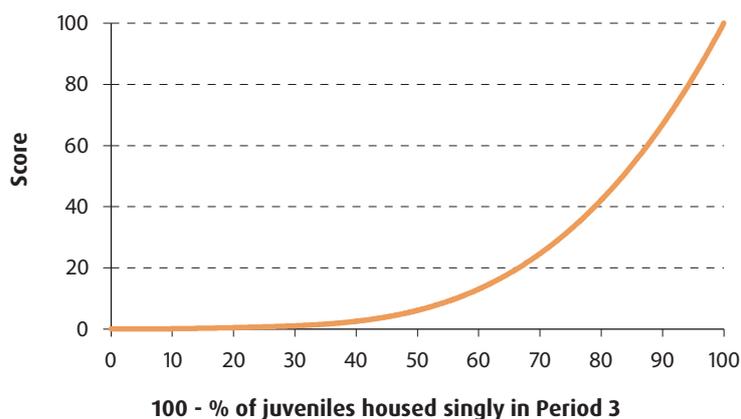
Figure 26 Calculation of the sub-score S_3^j for the Sub-measurement *Social housing of juveniles* according to the percentage of juveniles housed singly in Period 3

Score for the Criterion *Expression of social behaviours*

The two partial scores are combined to form the overall score for the Criterion *Expression of social behaviours* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_j \quad = \quad 0.25 \qquad\qquad \mu_a \quad = \quad 0.32$$

with *j*, juveniles and *a*, adults.

Reminder:

$$\text{Expression of social behaviours-score} = \begin{cases} S^j + \left(S^a - S^j\right)\mu_a & \text{if} \quad S^j \leq S^a \\ S^a + \left(S^j - S^a\right)\mu_j & \text{if} \quad S^a \leq S^j \end{cases}$$

Therefore, with the μ listed above:

$$\text{Expression of social behaviours-score} = \begin{cases} S^j + 0.32\left(S^a - S^j\right) & \text{if} \quad S^j \leq S^a \\ S^a + 0.25\left(S^j - S^a\right) & \text{if} \quad S^a \leq S^j \end{cases}$$

Where S^j and S^a are the partial scores obtained by a given farm for the Measurement *Social housing* in juveniles and in adults respectively.

μ_a and μ_b are the capacities of the Measurement *Social housing* in juveniles and in adults respectively.

3.3.1.10 Expression of other behaviours

For the Criterion *Expression of other behaviours*, four partial scores are calculated, one for the Measurement of *Opportunity to use enrichment*, one for the Measurement *Opportunity to observe surroundings*, one for the Measurement *Stereotypic behaviours* and one for the Measurement *Fur chewing*, before being combined into a criterion-score.

Moreover, except for the Measurement *Fur chewing which* is assessed only in Periods 1 and 3, the remaining three measurements are assessed at different levels for three periods of the production cycle. So the first stage is to calculate, for each measurement, the sub-score for each period considered, then to aggregate the sub-scores obtained for each period in order to have the score covering the production cycle for each of these four measurements.

Sub-scores S_1^e, S_3^e and S_3^e for Periods 1, 2 and 3 for Measurement *Opportunity to use enrichments*
One score is assigned to the Measurement *Opportunity to use enrichments* according to a decision-tree based on different types and number of enrichments with regard to the number of extremely beneficial enrichments as "≥2", "1" and "0" different enrichments (Figure 27 and Figure 28).

In period 1 and 3:
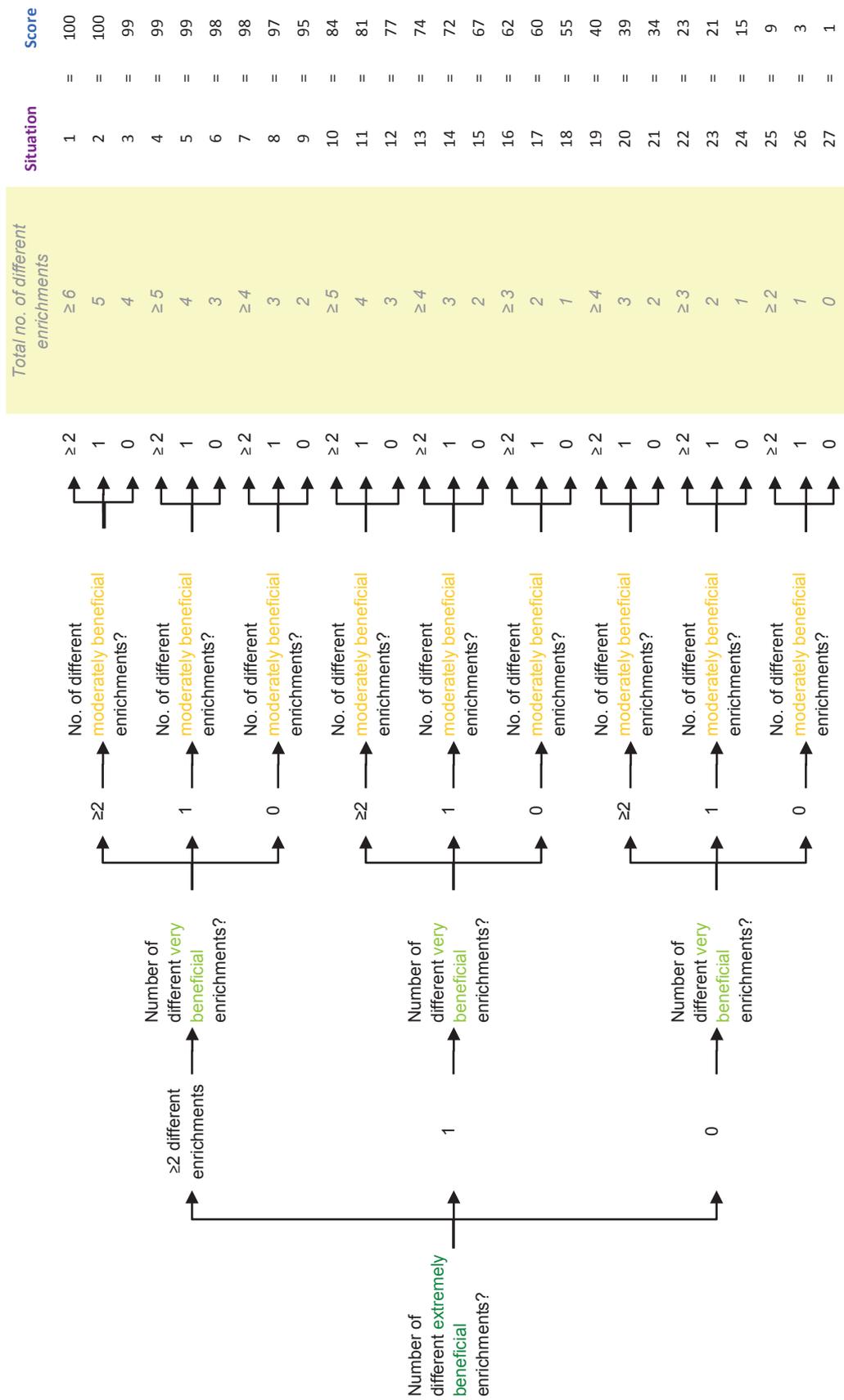
Figure 27 Sub-scores S_3^e and S_3^e assigned to the Measurements *Opportunity to use enrichment* in Periods 1 and 3

Number of different extremely beneficial enrichments?
≥2 different enrichments
1
0

Number of different very beneficial enrichments?

No. of different moderately beneficial enrichments?

Situation	Total no. of different enrichments		Score
1	≥ 6	=	100
2	5	=	100
3	4	=	99
4	≥ 5	=	99
5	4	=	99
6	3	=	98
7	≥ 4	=	98
8	3	=	97
9	2	=	95
10	≥ 5	=	78
11	4	=	75
12	3	=	71
13	≥ 4	=	68
14	3	=	66
15	2	=	61
16	≥ 3	=	56
17	2	=	54
18	1	=	49
19	≥ 4	=	40
20	3	=	39
21	2	=	34
22	≥ 3	=	23
23	2	=	21
24	1	=	15
25	≥ 2	=	9
26	1	=	3
27	0	=	1

Figure 28 Sub-scores S_2^e assigned to the Measurement *Opportunity to use enrichment* in Period 2

Since animals may be housed with different types and numbers of enrichments, we consider the % of animals in each situation defined by the decision-tree and the final score to be assigned to the farm is the worst score (= the one corresponding to the worst situation found on the farm) observed in at least 10% of the animals.

Score Sᵉ for the Measurement *Opportunity to use enrichments*
The three sub-scores are combined to form the partial score S^e for the Measurement *Opportunity to use enrichments* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.19	μ_{12}	=	0.19
μ_2	=	0.12	μ_{13}	=	0.45
μ_3	=	0.31	μ_{23}	=	0.39

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^e\text{-score} = \begin{cases} S_1^e + \left(S_2^e - S_1^e\right)\mu_{23} + \left(S_3^e - S_2^e\right)\mu_3 & \text{if} & S_1^e \le S_2^e \le S_3^e \\ S_1^e + \left(S_3^e - S_2^e\right)\mu_{23} + \left(S_2^e - S_3^e\right)\mu_2 & \text{if} & S_1^e \le S_3^e \le S_2^e \\ S_2^e + \left(S_1^e - S_2^e\right)\mu_{13} + \left(S_3^e - S_1^e\right)\mu_3 & \text{if} & S_2^e \le S_1^e \le S_3^e \\ S_2^e + \left(S_3^e - S_2^e\right)\mu_{13} + \left(S_1^e - S_3^e\right)\mu_1 & \text{if} & S_2^e \le S_3^e \le S_1^e \\ S_3^e + \left(S_1^e - S_3^e\right)\mu_{12} + \left(S_2^e - S_1^e\right)\mu_2 & \text{if} & S_3^e \le S_1^e \le S_2^e \\ S_3^e + \left(S_2^e - S_3^e\right)\mu_{12} + \left(S_1^e - S_2^e\right)\mu_1 & \text{if} & S_3^e \le S_2^e \le S_1^e \end{cases}$$

Therefore, with the μ listed above:

$$S^e\text{-score} = \begin{cases} S_1^e + 0.39\left(S_2^e - S_1^e\right) + 0.31\left(S_3^e - S_2^e\right) & \text{if} & S_1^e \le S_2^e \le S_3^e \\ S_1^e + 0.39\left(S_3^e - S_1^e\right) + 0.12\left(S_2^e - S_3^e\right) & \text{if} & S_1^e \le S_3^e \le S_2^e \\ S_2^e + 0.45\left(S_1^e - S_2^e\right) + 0.31\left(S_3^e - S_1^e\right) & \text{if} & S_2^e \le S_1^e \le S_3^e \\ S_2^e + 0.45\left(S_3^e - S_2^e\right) + 0.19\left(S_1^e - S_3^e\right) & \text{if} & S_2^e \le S_3^e \le S_1^e \\ S_3^e + 0.19\left(S_1^e - S_3^e\right) + 0.12\left(S_2^e - S_1^e\right) & \text{if} & S_3^e \le S_1^e \le S_2^e \\ S_3^e + 0.19\left(S_2^e - S_3^e\right) + 0.19\left(S_1^e - S_2^e\right) & \text{if} & S_3^e \le S_2^e \le S_1^e \end{cases}$$

Where S^e_1, S^e_2 and S^e_3 are the sub-scores obtained by a given farm for the Measurement *Opportunity to use enrichments* in Period 1, in Period 2 and in Period 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of the Measurement *Opportunity to use enrichments* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made of the measurements in Periods 1 and 2 and so on…

Sub-scores S_1^s, S_3^s and S_3^s for Periods 1, 2 and 3 for the Measurement *Opportunity to observe surroundings*
The score of a farm with regard to the Measurement *Opportunity to observe surroundings* is calculated from the % of animals not able to observe their surroundings in Periods 1, 2 and 3.

The calculation of the sub-score is the same for each period:
Let I_i = 100 - % of animals not able to observe their surroundings in period *i* with *i* = 1, 2 or 3 according to the period considered

I_i is computed into a score using I-spline functions (Figure 29) as follows:

Score = $a_x + b_x \times I_i + c_x \times I_i^2 + d_x \times I_i^3$ $i = 1, 2$ or 3

with $x = 1$ when $I_i < k$ and $x = 2$ when $I_i \geq k$

Criterion 10 - Opportunity to observe surroundings - Period 1, 2 and 3			
a_1	0	a_2	-1.2906418585196988146890362
b_1	-0.000000000013216541812676	b_2	0.2037855566203296553418056
c_1	0.000000000002243981227914	c_2	-0.0107255556118641490886967
d_1	-0.0000000000000086740462362	d_2	0.0001881676423151095096410
k	19		

Note: The coefficients are the same for the three periods since the interpretation in terms of welfare is the same whatever the period considered.
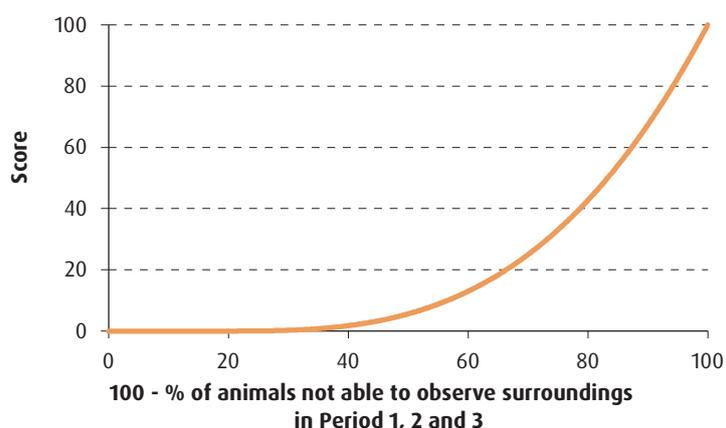
Figure 29 Calculation of the sub-score S_i^s for the Measurement *Opportunity to observe surroundings* according to the percentage of animals not able to observe their surroundings (with $i = 1, 2$ or 3 according to the period considered)

Score S^s for the Measurement *Opportunity to observe surroundings*
The three sub-scores are combined to form the partial score S^s for the Measurement *Opportunity to observe surroundings* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.26		μ_{12}	=	0.30
μ_2	=	0.27		μ_{13}	=	0.45
μ_3	=	0.45		μ_{23}	=	0.46

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^s\text{-score} = \begin{cases} S_1^s + \left(S_2^s - S_1^s\right)\mu_{23} + \left(S_3^s - S_2^s\right)\mu_3 & \text{if} \quad S_1^s \le S_2^s \le S_3^s \\[4pt] S_1^s + \left(S_3^s - S_1^s\right)\mu_{23} + \left(S_2^s - S_3^s\right)\mu_2 & \text{if} \quad S_1^s \le S_3^s \le S_2^s \\[4pt] S_2^s + \left(S_1^s - S_2^s\right)\mu_{13} + \left(S_3^s - S_1^s\right)\mu_3 & \text{if} \quad S_2^s \le S_1^s \le S_3^s \\[4pt] S_2^s + \left(S_3^s - S_2^s\right)\mu_{13} + \left(S_1^s - S_3^s\right)\mu_1 & \text{if} \quad S_2^s \le S_3^s \le S_1^s \\[4pt] S_3^s + \left(S_1^s - S_3^s\right)\mu_{12} + \left(S_2^s - S_1^s\right)\mu_2 & \text{if} \quad S_3^s \le S_1^s \le S_2^s \\[4pt] S_3^s + \left(S_2^s - S_3^s\right)\mu_{12} + \left(S_1^s - S_2^s\right)\mu_1 & \text{if} \quad S_3^s \le S_2^s \le S_1^s \end{cases}$$

Therefore, with the μ listed above:

$$S^s\text{-score} = \begin{cases} S_1^s + 0.46\left(S_2^s - S_1^s\right) + 0.45\left(S_3^s - S_2^s\right) & \text{if} \quad S_1^s \le S_2^s \le S_3^s \\[4pt] S_1^s + 0.46\left(S_3^s - S_1^s\right) + 0.27\left(S_2^s - S_3^s\right) & \text{if} \quad S_1^s \le S_3^s \le S_2^s \\[4pt] S_2^s + 0.45\left(S_1^s - S_2^s\right) + 0.45\left(S_3^s - S_1^s\right) & \text{if} \quad S_2^s \le S_1^s \le S_3^s \\[4pt] S_2^s + 0.45\left(S_3^s - S_2^s\right) + 0.26\left(S_1^s - S_3^s\right) & \text{if} \quad S_2^s \le S_3^s \le S_1^s \\[4pt] S_3^s + 0.30\left(S_1^s - S_3^s\right) + 0.27\left(S_2^s - S_1^s\right) & \text{if} \quad S_3^s \le S_1^s \le S_2^s \\[4pt] S_3^s + 0.30\left(S_2^s - S_3^s\right) + 0.26\left(S_1^s - S_2^s\right) & \text{if} \quad S_3^s \le S_2^s \le S_1^s \end{cases}$$

Where S_1^s, S_2^s and S_3^s are the sub-scores obtained by a given farm for the Measurement *Opportunity to observe surroundings* in Period 1, in Period 2 and in Period 3 respectively.
μ_1, μ_2 and μ_3 are the capacities of the Measurement *Opportunity to observe surroundings* in Periods 1, 2 and 3 respectively. μ_{12} is the capacity of the group made of the measurements in Periods 1 and 2 and so on...

Sub-scores S_1^b, S_3^b and S_3^b for Periods 1, 2 and 3 for the Measurement *Stereotypic Behaviour (SB)*
The score of a farm with regard to the Measurement *SB* is calculated from the % of foxes expressing SB out of active animals in Periods 1, 2 and 3.

NB: The calculation is the same for the three periods but as the interpretation is different in terms of welfare in Period 2, the measurement is interpreted separately for this period and therefore the coefficients of the curve are different from Periods 1 and 3.

For Periods 1 and 3:
Let I_i = 100 - % of animals behaving stereotypically in period i with i = 1 or 3 according to the period considered

Let $J_i = \dfrac{I_i - 50}{100 - 50} \times 100$ if $I_i \ge 50$
$J_i = 0$ if $I_i < 50$

where i = 1 or 3 according to the period considered

J_i is computed into a score using *I*-spline functions (Figure 30) as follows:

Score = $a_x + b_x \times J_i + c_x \times J_i^2 + d_x \times J_i^3$ i = 1 or 3

with x = 1 when $J_i < k$ and x = 2 when $J_i \ge k$

Criterion 10 - SB - Periods 1 and 3

a_1	0	a_2	-1393.7147408514447306515648961
b_1	0.0000000000037569196711099	b_2	55.748589740503575740149247
c_1	-0.0000000000001623106299721	c_2	-0.7433145311260720422552595
d_1	0.0000483809348195561971634	d_2	0.0033520010780433043100224
k	75		

Note: The coefficients are the same for the two periods (Periods 1 and 3) since the interpretation in terms of welfare is the same whatever the period considered.
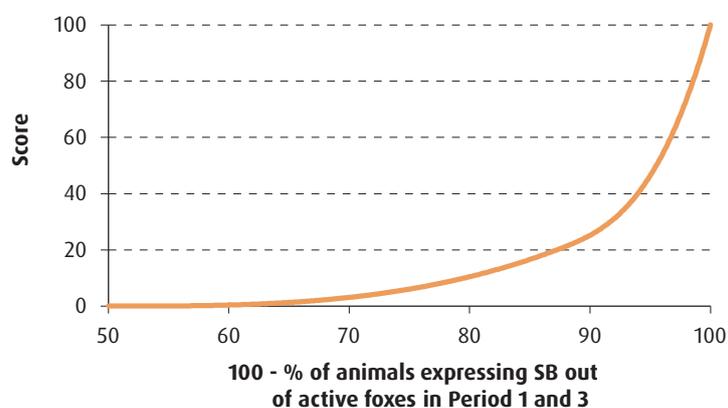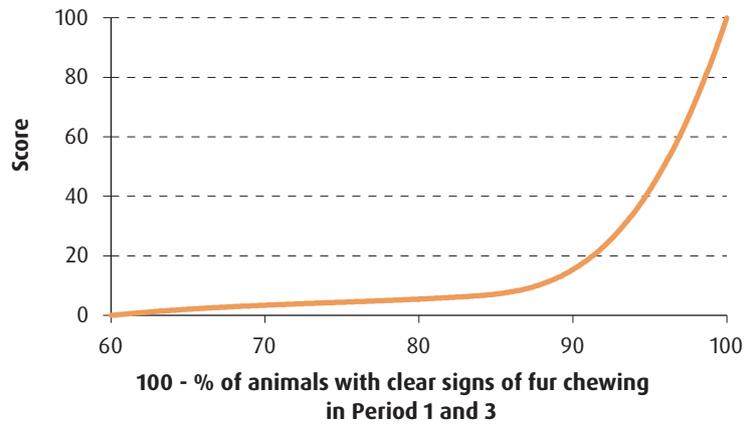

Figure 30 Calculation of the sub-score S_i^b for the Measurement *SB* according to the percentage of foxes expressing SB out of active animals (with *i* = 1 or 3 according to the period considered)

For Period 2:

Let I_2 = 100 - % of foxes expressing SB out of active animals in Period 2

$$\text{Let } J_2 = \frac{I_2 - 70}{100 - 70} \times 100 \quad \text{if } I_2 \geq 70$$
$$J_2 = 0 \quad \text{if } I_2 < 70$$

J_2 is computed into a score using *I*-spline functions (Figure 31) as follows:

Score = $a_x + b_x \times J_2 + c_x \times J_2^2 + d_x \times J_2^3$

with *x* = 1 when $J_2 < k$ and   *x* = 2 when $J_2 \geq k$

Criterion 10 - SB - Period 2

a_1	0	a_2	-188.9431514816900516962050460
b_1	-0.000000000000015242598623863	b_2	9.9443763893776733198137663
c_1	0.000000000000000904039632395	c_2	-0.174462743613342574634069
d_1	0.0000188829862942665374756	d_2	0.0010391329486797256081293
k	57		
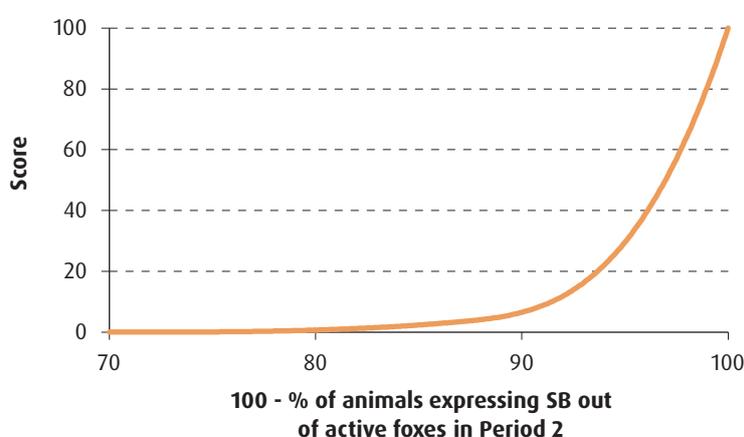
Figure 31 Calculation of the sub-score S_2^b for the Measurement *SB* according to the percentage of foxes expressing SB out of active animals in Period 2

Score S^b for the Measurement *Stereotypic behaviour*

The three sub-scores are combined to form the partial score S^b for the Measurement *Stereotypic behaviour* using a Choquet integral. The parameters of the Choquet integral are:

μ_1	=	0.16		μ_{12}	=	0.32
μ_2	=	0.16		μ_{13}	=	0.37
μ_3	=	0.37		μ_{23}	=	0.47

with 1 = Period 1, 2 = Period 2 and 3 = Period 3.

Reminder:

$$S^b\text{-score} = \begin{cases} S_1^b + \left(S_2^b - S_1^b\right)\mu_{23} + \left(S_3^b - S_2^b\right)\mu_3 & \text{if} \quad S_1^b \leq S_2^b \leq S_3^b \\ S_1^b + \left(S_3^b - S_1^b\right)\mu_{23} + \left(S_2^b - S_3^b\right)\mu_2 & \text{if} \quad S_1^b \leq S_3^b \leq S_2^b \\ S_2^b + \left(S_1^b - S_2^b\right)\mu_{13} + \left(S_3^b - S_1^b\right)\mu_3 & \text{if} \quad S_2^b \leq S_1^b \leq S_3^b \\ S_2^b + \left(S_3^b - S_2^b\right)\mu_{13} + \left(S_1^b - S_3^b\right)\mu_1 & \text{if} \quad S_2^b \leq S_3^b \leq S_1^b \\ S_3^b + \left(S_1^b - S_3^b\right)\mu_{12} + \left(S_2^b - S_1^b\right)\mu_2 & \text{if} \quad S_3^b \leq S_1^b \leq S_2^b \\ S_3^b + \left(S_2^b - S_3^b\right)\mu_{12} + \left(S_1^b - S_2^b\right)\mu_1 & \text{if} \quad S_3^b \leq S_2^b \leq S_1^b \end{cases}$$

Therefore, with the μ listed above:

$$
S^b\text{-score} = \begin{cases}
S_1^b + 0.47\left(S_2^b - S_1^b\right) + 0.37\left(S_3^b - S_2^b\right) & \text{if} \quad S_1^b \le S_2^b \le S_3^b \\
S_1^b + 0.47\left(S_3^b - S_1^b\right) + 0.16\left(S_2^b - S_3^b\right) & \text{if} \quad S_1^b \le S_3^b \le S_2^b \\
S_2^b + 0.37\left(S_1^b - S_2^b\right) + 0.37\left(S_3^b - S_1^b\right) & \text{if} \quad S_2^b \le S_1^b \le S_3^b \\
S_2^b + 0.37\left(S_3^b - S_2^b\right) + 0.16\left(S_1^b - S_3^b\right) & \text{if} \quad S_2^b \le S_3^b \le S_1^b \\
S_3^b + 0.32\left(S_1^b - S_3^b\right) + 0.16\left(S_2^b - S_1^b\right) & \text{if} \quad S_3^b \le S_1^b \le S_2^b \\
S_3^b + 0.32\left(S_2^b - S_3^b\right) + 0.16\left(S_1^b - S_2^b\right) & \text{if} \quad S_3^b \le S_2^b \le S_1^b
\end{cases}
$$

Where S_1^b, S_2^b and S_3^b are the sub-scores obtained by a given farm for the Measurement *Stereotypic behaviour* in Period 1, in Period 2 and in Period 3 respectively.

μ_1, μ_2 and μ_3 are the capacities of the Measurement *Stereotypic behaviour* in Periods 1, 2 and 3 respectively.

μ_{12} is the capacity of the group made of the measurements in Periods 1 and 2 and so on...

Sub-scores S_1^f and S_3^f for Periods 1 and 3 for the Measurement *Fur chewing*

The score of a farm with regard to Measurement *Fur chewing* is calculated from the % of foxes with clear signs of chewed fur in Periods 1 and 3.

Let I_1 = 100 - % of foxes with clear signs of chewed fur in Period 1
Let I_3 = 100 - % of foxes with clear signs of chewed fur in Period 3

$$
\text{Let } J_i = \frac{I_i - 60}{100 - 60} \times 100 \quad \text{if } I_i \ge 60
$$
$$
J_i = 0 \quad \text{if } I_i < 60
$$

with i = 1 or 3 according to the period considered.
J_i is computed into a score using *I*-spline functions (Figure 32) as follows:

Score = $a_x + b_x \times J_i + c_x \times J_i^2 + d_x \times J_i^3$ $\qquad\qquad$ i = 1 or 3

with x = 1 when $J_i < k$ and x = 2 when $J_i \ge k$

Criterion 10 - Fur chewing - Periods 1 and 3			
a_1	0	a_2	-190.63158238166811813696050085
b_1	0.2073197991846223720013853	b_2	10.2405609786771130131910468
c_1	-0.0036371894593936154697900	c_2	-0.1796589645589482253651425
d_1	0.0000337980241642449295305	d_2	0.0010631651301025173313175
k	57		

Note: The coefficients are the same for the two periods (Periods 1 and 3) since the interpretation in terms of welfare is the same whatever the period considered.

Figure 32 Calculation of the sub-score S_i^f for the Measurement *Fur chewing* according to the percentage of foxes with clear signs of chewed fur (with i = 1 or 3 according to the period considered)

Score Sᶠ for the Measurement *Fur chewing*

The two sub-scores are combined to form the partial score S^f for the Measurement *Fur chewing* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_1 \qquad = \qquad 0.24 \qquad\qquad\qquad \mu_3 \qquad = \qquad 0.31$$

with 1, Period 1 and 3, Period 3.

Reminder:

$$S^f\text{-score} = \begin{cases} S_1^f + \left(S_3^f - S_1^f\right)\mu_3 & \text{if} \quad S_1^f \le S_3^f \\ S_3^f + \left(S_1^f - S_3^f\right)\mu_1 & \text{if} \quad S_3^f \le S_1^f \end{cases}$$

Therefore, with the μ listed above:

$$S^f\text{-score} = \begin{cases} S_1^f + 0.31\left(S_3^f - S_1^f\right) & \text{if} \quad S_1^f \le S_3^f \\ S_3^f + 0.24\left(S_1^f - S_3^f\right) & \text{if} \quad S_3^f \le S_1^f \end{cases}$$

Where S^f_1 and S^f_3 are the scores obtained by a given farm for the Measurement *Fur chewing* in Period 1 and in Period 3 respectively.
μ_1 and μ_3 are the capacities of the Measurement *Fur chewing* in Periods 1 and 3 respectively.

Score for the Criterion *Expression of other behaviours*

The four partial scores are combined to form the overall score for the Criterion *Expression of other behaviours* using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_e \qquad = \qquad 0.18 \qquad\qquad\qquad \mu_f \qquad = \qquad 0.19$$

$$\mu_s \qquad = \qquad 0.25 \qquad\qquad\qquad \mu_{es} \qquad = \qquad 0.36$$

$$\mu_b \qquad = \qquad 0.19 \qquad\qquad\qquad \mu_{eb} \qquad = \qquad 0.34$$

$$\mu_{ef} = 0.31 \qquad \mu_{esb} = 0.60$$

$$\mu_{sb} = 0.31 \qquad \mu_{esf} = 0.54$$

$$\mu_{sf} = 0.25 \qquad \mu_{ebf} = 0.53$$

$$\mu_{bf} = 0.19 \qquad \mu_{sbf} = 0.43$$

With *e*, enrichement; *s*, surroundings; *b*, SB and *f*, fur chewing.

$$
\text{Exp. of other behaviours-score} =
\begin{cases}
S_e + (S_s - S_e)\mu_{sbf} + (S_b - S_s)\mu_{fb} + (S_f - S_b)\mu_f & \text{if} \quad S_e \leq S_s \leq S_b \leq S_f \\
S_e + (S_s - S_e)\mu_{sbf} + (S_f - S_s)\mu_{bf} + (S_b - S_f)\mu_b & \text{if} \quad S_e \leq S_s \leq S_f \leq S_b \\
S_e + (S_b - S_e)\mu_{sbf} + (S_s - S_b)\mu_{sf} + (S_f - S_s)\mu_f & \text{if} \quad S_e \leq S_b \leq S_s \leq S_f \\
S_e + (S_b - S_e)\mu_{sbf} + (S_f - S_b)\mu_{sf} + (S_s - S_f)\mu_s & \text{if} \quad S_e \leq S_b \leq S_f \leq S_s \\
S_e + (S_f - S_e)\mu_{sbf} + (S_s - S_f)\mu_{sb} + (S_b - S_s)\mu_b & \text{if} \quad S_e \leq S_f \leq S_s \leq S_b \\
S_e + (S_f - S_e)\mu_{sbf} + (S_b - S_f)\mu_{sb} + (S_s - S_b)\mu_s & \text{if} \quad S_e \leq S_f \leq S_b \leq S_s \\
S_s + (S_e - S_s)\mu_{ebf} + (S_b - S_e)\mu_{bf} + (S_f - S_b)\mu_f & \text{if} \quad S_s \leq S_e \leq S_b \leq S_f \\
S_s + (S_e - S_s)\mu_{ebf} + (S_f - S_e)\mu_{bf} + (S_b - S_f)\mu_b & \text{if} \quad S_s \leq S_e \leq S_f \leq S_b \\
S_s + (S_b - S_s)\mu_{ebf} + (S_e - S_b)\mu_{ef} + (S_f - S_e)\mu_f & \text{if} \quad S_s \leq S_b \leq S_e \leq S_f \\
S_s + (S_b - S_s)\mu_{ebf} + (S_f - S_b)\mu_{ef} + (S_e - S_f)\mu_e & \text{if} \quad S_s \leq S_b \leq S_f \leq S_e \\
S_s + (S_f - S_s)\mu_{ebf} + (S_b - S_f)\mu_{eb} + (S_e - S_b)\mu_e & \text{if} \quad S_s \leq S_f \leq S_b \leq S_e \\
S_s + (S_f - S_s)\mu_{ebf} + (S_e - S_f)\mu_{eb} + (S_b - S_e)\mu_b & \text{if} \quad S_s \leq S_f \leq S_e \leq S_b \\
S_b + (S_s - S_b)\mu_{esf} + (S_e - S_s)\mu_{ef} + (S_f - S_e)\mu_f & \text{if} \quad S_b \leq S_s \leq S_e \leq S_f \\
S_b + (S_s - S_b)\mu_{esf} + (S_f - S_s)\mu_{ef} + (S_e - S_f)\mu_e & \text{if} \quad S_b \leq S_s \leq S_f \leq S_e \\
S_b + (S_f - S_b)\mu_{esf} + (S_s - S_f)\mu_{es} + (S_e - S_s)\mu_e & \text{if} \quad S_b \leq S_f \leq S_s \leq S_e \\
S_b + (S_f - S_b)\mu_{esf} + (S_e - S_f)\mu_{es} + (S_s - S_e)\mu_s & \text{if} \quad S_b \leq S_f \leq S_e \leq S_s \\
S_b + (S_e - S_b)\mu_{esf} + (S_f - S_e)\mu_{sf} + (S_s - S_f)\mu_s & \text{if} \quad S_b \leq S_e \leq S_f \leq S_s \\
S_b + (S_e - S_b)\mu_{esf} + (S_s - S_e)\mu_{sf} + (S_f - S_s)\mu_f & \text{if} \quad S_b \leq S_e \leq S_s \leq S_f \\
S_f + (S_e - S_f)\mu_{esb} + (S_s - S_e)\mu_{sb} + (S_b - S_s)\mu_b & \text{if} \quad S_f \leq S_e \leq S_s \leq S_b \\
S_f + (S_e - S_f)\mu_{esb} + (S_b - S_e)\mu_{sb} + (S_s - S_b)\mu_s & \text{if} \quad S_f \leq S_e \leq S_b \leq S_s \\
S_f + (S_s - S_f)\mu_{esb} + (S_b - S_s)\mu_{eb} + (S_e - S_b)\mu_e & \text{if} \quad S_f \leq S_s \leq S_b \leq S_e \\
S_f + (S_s - S_f)\mu_{esb} + (S_e - S_s)\mu_{eb} + (S_b - S_e)\mu_b & \text{if} \quad S_f \leq S_s \leq S_e \leq S_b \\
S_f + (S_b - S_f)\mu_{esb} + (S_e - S_b)\mu_{es} + (S_s - S_e)\mu_s & \text{if} \quad S_f \leq S_b \leq S_e \leq S_s \\
S_f + (S_b - S_f)\mu_{esb} + (S_s - S_b)\mu_{es} + (S_e - S_s)\mu_e & \text{if} \quad S_f \leq S_b \leq S_s \leq S_e
\end{cases}
$$

Therefore, with the μ listed above:

$$
\text{Exp. of other behaviours-score} = \begin{cases}
S_e + 0.43\left(S_s - S_e\right) + 0.19\left(S_b - S_s\right) + 0.19\left(S_f - S_b\right) & \text{if} \quad S_e \le S_s \le S_b \le S_f \\
S_e + 0.43\left(S_s - S_e\right) + 0.19\left(S_f - S_s\right) + 0.19\left(S_b - S_f\right) & \text{if} \quad S_e \le S_s \le S_f \le S_b \\
S_e + 0.43\left(S_b - S_e\right) + 0.25\left(S_s - S_b\right) + 0.19\left(S_f - S_s\right) & \text{if} \quad S_e \le S_b \le S_s \le S_f \\
S_e + 0.43\left(S_b - S_e\right) + 0.25\left(S_f - S_b\right) + 0.25\left(S_s - S_f\right) & \text{if} \quad S_e \le S_b \le S_f \le S_s \\
S_e + 0.43\left(S_f - S_e\right) + 0.31\left(S_s - S_f\right) + 0.19\left(S_b - S_s\right) & \text{if} \quad S_e \le S_f \le S_s \le S_b \\
S_e + 0.43\left(S_f - S_e\right) + 0.31\left(S_b - S_f\right) + 0.25\left(S_s - S_b\right) & \text{if} \quad S_e \le S_f \le S_b \le S_s \\
S_s + 0.53\left(S_e - S_s\right) + 0.19\left(S_b - S_e\right) + 0.19\left(S_f - S_b\right) & \text{if} \quad S_s \le S_e \le S_b \le S_f \\
S_s + 0.53\left(S_e - S_s\right) + 0.19\left(S_f - S_e\right) + 0.19\left(S_b - S_f\right) & \text{if} \quad S_s \le S_e \le S_f \le S_b \\
S_s + 0.53\left(S_b - S_s\right) + 0.31\left(S_e - S_b\right) + 0.19\left(S_f - S_e\right) & \text{if} \quad S_s \le S_b \le S_e \le S_f \\
S_s + 0.53\left(S_b - S_s\right) + 0.31\left(S_f - S_b\right) + 0.18\left(S_e - S_f\right) & \text{if} \quad S_s \le S_b \le S_f \le S_e \\
S_s + 0.53\left(S_f - S_s\right) + 0.34\left(S_b - S_f\right) + 0.18\left(S_e - S_b\right) & \text{if} \quad S_s \le S_f \le S_b \le S_e \\
S_s + 0.53\left(S_f - S_s\right) + 0.34\left(S_e - S_f\right) + 0.19\left(S_b - S_e\right) & \text{if} \quad S_s \le S_f \le S_e \le S_b \\
S_b + 0.54\left(S_s - S_b\right) + 0.31\left(S_e - S_s\right) + 0.19\left(S_f - S_e\right) & \text{if} \quad S_b \le S_s \le S_e \le S_f \\
S_b + 0.54\left(S_s - S_b\right) + 0.31\left(S_f - S_s\right) + 0.18\left(S_e - S_f\right) & \text{if} \quad S_b \le S_s \le S_f \le S_e \\
S_b + 0.54\left(S_f - S_b\right) + 0.36\left(S_s - S_f\right) + 0.18\left(S_e - S_s\right) & \text{if} \quad S_b \le S_f \le S_s \le S_e \\
S_b + 0.54\left(S_f - S_b\right) + 0.36\left(S_e - S_f\right) + 0.25\left(S_s - S_e\right) & \text{if} \quad S_b \le S_f \le S_e \le S_s \\
S_b + 0.54\left(S_e - S_b\right) + 0.25\left(S_f - S_e\right) + 0.25\left(S_s - S_f\right) & \text{if} \quad S_b \le S_e \le S_f \le S_s \\
S_b + 0.54\left(S_e - S_b\right) + 0.25\left(S_s - S_e\right) + 0.19\left(S_f - S_s\right) & \text{if} \quad S_b \le S_e \le S_s \le S_f \\
S_f + 0.60\left(S_e - S_f\right) + 0.31\left(S_s - S_e\right) + 0.19\left(S_b - S_s\right) & \text{if} \quad S_f \le S_e \le S_s \le S_b \\
S_f + 0.60\left(S_e - S_f\right) + 0.31\left(S_b - S_e\right) + 0.25\left(S_s - S_b\right) & \text{if} \quad S_f \le S_e \le S_b \le S_s \\
S_f + 0.60\left(S_s - S_f\right) + 0.34\left(S_b - S_s\right) + 0.18\left(S_e - S_b\right) & \text{if} \quad S_f \le S_s \le S_b \le S_e \\
S_f + 0.60\left(S_s - S_f\right) + 0.34\left(S_e - S_s\right) + 0.19\left(S_b - S_e\right) & \text{if} \quad S_f \le S_s \le S_e \le S_b \\
S_f + 0.60\left(S_b - S_f\right) + 0.36\left(S_e - S_b\right) + 0.25\left(S_s - S_e\right) & \text{if} \quad S_f \le S_b \le S_e \le S_s \\
S_f + 0.60\left(S_b - S_f\right) + 0.36\left(S_s - S_b\right) + 0.18\left(S_e - S_s\right) & \text{if} \quad S_f \le S_b \le S_s \le S_e
\end{cases}
$$

Where S_e, S_s, S_b and S_f are the scores obtained by a given farm for the Measurement *Opportunity to use enrichments*, Measurement *Opportunity to observe surroundings*, Measurement *Stereotypical behaviour* and Measurement *Fur chewing* respectively.

μ_e, μ_s, μ_b and μ_f are the capacities of the Measurements *Opportunity to use enrichments*, *Opportunity to observe surroundings*, *Stereotypic behaviour* and *Fur chewing* respectively.

μ_{es} is the capacity of the group made of the Measurements *Opportunity to use enrichments* and *Opportunity to observe surroundings* and so on...

3.3.1.11 Good human-animal relationship

The score of a farm with regard to the Criterion *Good human-animal relationship* is calculated from the % of foxes that eat within 30 seconds in the feeding test.

Score for Period 1 for the Criterion *Good human-animal relationship*
Let P_1 = % of foxes that eat within 30 seconds in Period 1

P_1 is computed into a score using *I*-spline functions (Figure 33) as follows:

$$\text{Score} = a_x + b_x \times P_1 + c_x \times P_1^2 + d_x \times P_1^3$$

with $x = 1$ when $P_1 < k$ and $x = 2$ when $P_1 \geq k$

Criterion 11 - Good human-animal relationship - Period 1			
a_1	0	a_2	9.350842651349651646341953
b_1	0.854254723739548804672949	b_2	0.293204164570070979767280
c_1	0.003753210066737585823282	c_2	0.014974221251441559646377
d_1	-0.000013606730384967140304	d_2	-0.000088413471622705483953
k	50		
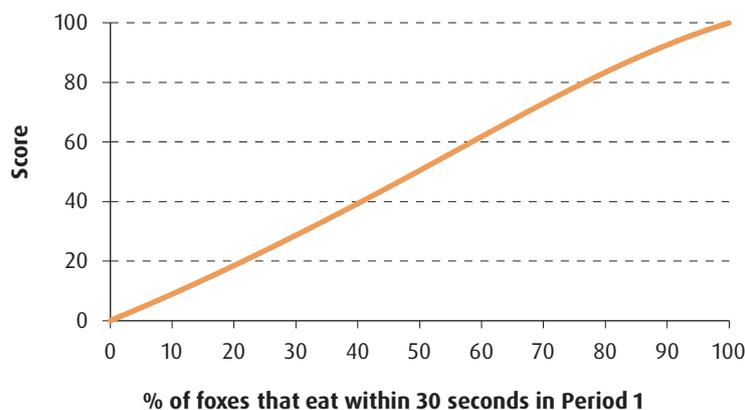
Figure 33 Calculation of the score for the Criterion *Good human-animal relationship* according to the percentage of foxes that eat within 30 seconds in the feeding test in Period 1

3.3.1.12 Positive emotional state

For the Criterion *Positive emotional state*, two partial scores are calculated, one for the Measurement *Temperament test* and one for the Measurement *Transport of live foxes*, before being combined into a criterion-score.
The Measurement *Temperament test* is assessed only in Period 1. So the first stage is to calculate the sub-score for Period 1 and consequently the sub-score at this period is evaluated as the measure-score.
Transportation is assessed at year level, *i.e.* covering the last 12 months.

Sub-score S_1^{tp} for Period 1 for the Measurement *Temperament test*

The score of a farm with regard to the Measurement *Temperament test* is calculated from the % of animals within each category used in the temperament test (3 categories here) in Period 1:

Level	0	1	2
% of foxes	P_0^{TP}	P_1^{TP}	P_2^{TP}
	$$\text{Let } I_1 = \left(100 - \frac{\sum_{j=0}^{2} w_j^{tp} \, p_j^{tp}}{w_2^{tp}} \right)$$		
Weights	$w_0^{TP} = 0$	$w_1^{TP} = 5$	$w_2^{TP} = 9$

I_1 is computed into a score using *I*-spline functions (Figure 34) as follows:

Score = $a_x + b_x \times I_1 + c_x \times I_1^2 + d_x \times I_1^3$

with $x = 1$ when $I_1 < k$ and $x = 2$ when $I_1 \geq k$

Criterion 12 - Temperament test - Period 1			
a_1	0	a_2	41.299124686249655269421 0550
b_1	0.72235089757757098283 26399	b_2	-1.34260533696217065902 08987
c_1	-0.00621407031657285856 27425	c_2	0.02820186692879156006 85235
d_1	0.00010214239109857394 89385	d_2	-0.00008905726027783415 47306
k	60		
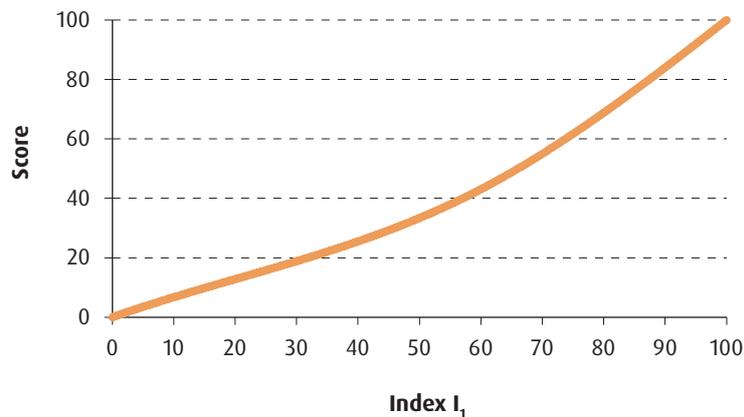
Figure 34 Calculation of the score S_1^{tp} for the Measurement *Temperament test* according to the percentage of foxes in each category of the temperament test in Period 1

Sub-score S^t for the Measurement _Transport of live foxes,_ covering the last 12 months
One score is assigned to the Measurement _Transport of live foxes_ according to a decision-tree (Figure 35) for the last 12 months.

		Classification		Score
	No systematic transportation	0	=	100
Frequency of transportation of live animals	Transportation of a few live animals	1	=	59
	Systematic transportation of live animals or long distance transportation	2	=	0
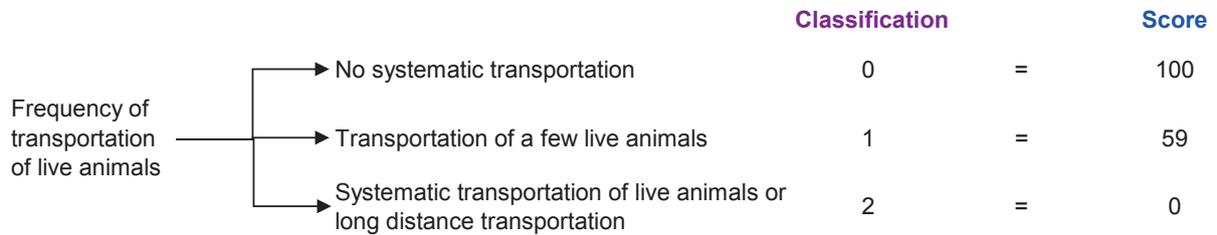
Figure 35 Sub-scores S^t assigned to situations concerning Measurement _Transport of live foxes_

Score for the Criterion _Positive emotional state_
The two partial scores are combined to form the overall score for the Criterion _Positive emotional state_ using a Choquet integral. The parameters of the Choquet integral are:

$$\mu_{tp} \quad = \quad 0.13 \qquad\qquad\qquad \mu_t \quad = \quad 0.47$$

with _tp_, temperament and _t_, transport.

Reminder:

$$\text{Positive emotional state-score} = \begin{cases} S^{tp} + \left(S^t - S^{tp}\right)\mu_t & \text{if} \quad S^{tp} \leq S^t \\ S^t + \left(S^{tp} - S^t\right)\mu_{tp} & \text{if} \quad S^t \leq S^{tp} \end{cases}$$

Therefore, with the μ listed above:

$$\text{Positive emotional state-score} = \begin{cases} S^{tp} + 0.47\left(S^t - S^{tp}\right) & \text{if} \quad S^{tp} \leq S^t \\ S^t + 0.13\left(S^{tp} - S^t\right) & \text{if} \quad S^t \leq S^{tp} \end{cases}$$

Where S^{tp} and S^t are the partial scores obtained by a given farm for the Measurement _Temperament test_ and the Measurement _Transport of live foxes_ respectively.
μ_{tp} and μ_t are the capacities of the Measurements _Temperament test_ and _Transport of live foxes_ respectively.

3.3.2 Principle-scores

To calculate principle-scores in WelFur, we decided to follow the same process as in Welfare Quality®. In Welfare Quality®, parameters of the calculation (using Choquet integrals) to aggregate criterion-scores into principle-scores were defined for each animal type under study (_dairy cows, fattening bulls, veal calves, fattening pigs, sows and piglets, broilers and layers_).

The analysis of the experts' answers obtained in Welfare Quality® for the 8 types of animals cited above showed that there is no significant difference between the principle-scores calculated for each type of animal. We therefore decided to calculate WelFur principle-scores by gathering all animal types experts' answers into only one set of parameters, to be used in WelFur. We performed analytical work by testing and calculating several ways to combine the answers of the experts for all the animal types in order to achieve a common procedure for all livestock species.

Principle-scores are therefore calculated from the data collected on the eight animal types separately. Consequently, we use Choquet integrals in order to form fox principle scores by using the mean of each animal type's principle-scores obtained by the combination of criterion-scores assigned by the Welfare Quality® experts.

The parameters of the integrals are given below for each principle.

The Principle *Good feeding*

μ_1 = 0.11 μ_2 = 0.29

with 1, The Criterion *Absence of prolonged hunger* and 2, the Criterion *Absence of prolonged thirst*.

Reminder:

$$\text{Good feeding-score} = \begin{cases} S_1 + (S_2 - S_1)\mu_2 & \text{if} \quad S_1 \le S_2 \\ S_2 + (S_1 - S_2)\mu_1 & \text{if} \quad S_2 \le S_1 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Good feeding-score} = \begin{cases} S_1 + 0.29(S_2 - S_1) & \text{if} \quad S_1 \le S_2 \\ S_2 + 0.11(S_1 - S_2) & \text{if} \quad S_2 \le S_1 \end{cases}$$

Where S_1 and S_2 are the criterion-scores obtained by a given farm for the Criterion *Absence of prolonged hunger* and the Criterion *Absence of prolonged thirst,* respectively.
μ_1 and μ_2 are the capacities of Criteria *Absence of prolonged hunger* and *Absence of prolonged thirst,* respectively.

The Principle *Good housing*

μ_3 = 0.15 μ_{34} = 0.34

μ_4 = 0.10 μ_{35} = 0.42

μ_5 = 0.13 μ_{45} = 0.36

with 3, Criterion *Comfort around resting*; 4, the Criterion *Thermal comfort*; and 5, the Criterion *Ease of movement*.

Reminder:

$$\text{Good housing-score} = \begin{cases} S_3 + (S_4 - S_3)\mu_{45} + (S_5 - S_4)\mu_5 & \text{if} \quad S_3 \le S_4 \le S_5 \\ S_3 + (S_5 - S_3)\mu_{45} + (S_4 - S_5)\mu_4 & \text{if} \quad S_3 \le S_5 \le S_4 \\ S_4 + (S_3 - S_4)\mu_{35} + (S_5 - S_3)\mu_5 & \text{if} \quad S_4 \le S_3 \le S_5 \\ S_4 + (S_5 - S_4)\mu_{35} + (S_3 - S_5)\mu_3 & \text{if} \quad S_4 \le S_5 \le S_3 \\ S_5 + (S_3 - S_5)\mu_{34} + (S_4 - S_3)\mu_4 & \text{if} \quad S_5 \le S_3 \le S_4 \\ S_5 + (S_4 - S_5)\mu_{34} + (S_3 - S_4)\mu_3 & \text{if} \quad S_5 \le S_4 \le S_3 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Good housing-score} = \begin{cases} S_3 + 0.36(S_4 - S_3) + 0.13(S_5 - S_4) & \text{if} \quad S_3 \le S_4 \le S_5 \\ S_3 + 0.36(S_5 - S_3) + 0.10(S_4 - S_5) & \text{if} \quad S_3 \le S_5 \le S_4 \\ S_4 + 0.42(S_3 - S_4) + 0.13(S_5 - S_3) & \text{if} \quad S_4 \le S_3 \le S_5 \\ S_4 + 0.42(S_5 - S_4) + 0.15(S_3 - S_5) & \text{if} \quad S_4 \le S_5 \le S_3 \\ S_5 + 0.34(S_3 - S_5) + 0.10(S_4 - S_3) & \text{if} \quad S_5 \le S_3 \le S_4 \\ S_5 + 0.34(S_4 - S_5) + 0.15(S_3 - S_4) & \text{if} \quad S_5 \le S_4 \le S_3 \end{cases}$$

Where S_3, S_4 and S_5 are the criterion-scores obtained by a given farm for the Criterion *Comfort around resting*, the Criterion *Thermal comfort* and the Criterion *Ease of movement,* respectively.

μ_3, μ_4 and μ_5 are the capacities of Criteria *Comfort around resting*, *Thermal comfort* and *Ease of movement,* respectively.
μ_{34} is the capacity of the group made of Criteria *Comfort around resting* and *Thermal comfort* and so on...

The Principle *Good health*

μ_6	=	0.08		μ_{67}	=	0.36
μ_7	=	0.22		μ_{69}	=	0.18
μ_8	=	0.12		μ_{78}	=	0.22

with 6, the Criterion *Absence of injuries*; 7, the Criterion *Absence of disease*; and 8, the Criterion *Absence of pain induced by management procedures*.

Reminder:

$$\text{Good health-score} = \begin{cases} S_6 + (S_7 - S_6)\mu_{78} + (S_8 - S_7)\mu_8 & \text{if} & S_6 \le S_7 \le S_8 \\ S_6 + (S_8 - S_6)\mu_{78} + (S_7 - S_8)\mu_7 & \text{if} & S_6 \le S_8 \le S_7 \\ S_7 + (S_6 - S_7)\mu_{68} + (S_8 - S_6)\mu_8 & \text{if} & S_7 \le S_6 \le S_8 \\ S_7 + (S_8 - S_7)\mu_{68} + (S_6 - S_8)\mu_6 & \text{if} & S_7 \le S_8 \le S_6 \\ S_8 + (S_6 - S_8)\mu_{67} + (S_7 - S_6)\mu_7 & \text{if} & S_8 \le S_6 \le S_7 \\ S_8 + (S_7 - S_8)\mu_{67} + (S_6 - S_7)\mu_6 & \text{if} & S_8 \le S_7 \le S_6 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Good health-score} = \begin{cases} S_6 + 0.22(S_7 - S_6) + 0.12(S_8 - S_7) & \text{if} & S_6 \le S_7 \le S_8 \\ S_6 + 0.22(S_8 - S_6) + 0.22(S_7 - S_8) & \text{if} & S_6 \le S_8 \le S_7 \\ S_7 + 0.18(S_6 - S_7) + 0.12(S_8 - S_6) & \text{if} & S_7 \le S_6 \le S_8 \\ S_7 + 0.18(S_8 - S_7) + 0.08(S_6 - S_8) & \text{if} & S_7 \le S_8 \le S_6 \\ S_8 + 0.36(S_6 - S_8) + 0.22(S_7 - S_6) & \text{if} & S_8 \le S_6 \le S_7 \\ S_8 + 0.36(S_7 - S_8) + 0.08(S_6 - S_7) & \text{if} & S_8 \le S_7 \le S_6 \end{cases}$$

Where S_6, S_7 and S_8 are the scores obtained by a given farm for the Criterion *Absence of injuries*, the Criterion *Absence of disease* and the Criterion *Absence of pain induced by management procedures,* respectively.
μ_6, μ_7 and μ_8 are the capacities of the Criteria *Absence of injuries*, *Absence of disease* and *Absence of pain induced by management procedures,* respectively.
μ_{67} is the capacity of the group made of the Criteria *Absence of injuries* and *Absence of disease* and so on...

The Principle of *Appropriate behaviour*

μ_9	=	0.14		μ_{12}	=	0.16
μ_{10}	=	0.07		μ_{910}	=	0.16
μ_{11}	=	0.09		μ_{911}	=	0.14

μ_{912}	=	0.23		μ_{91011}	=	0.48
μ_{1011}	=	0.16		μ_{91012}	=	0.56
μ_{1012}	=	0.20		μ_{91112}	=	0.53
μ_{1112}	=	0.27		μ_{101112}	=	0.51

with 9, the Criterion *Expression of social behaviours*; 10, the Criterion *Expression of other behaviours*; 11, the Criterion *Good human-animal relationship*; 12, the Criterion *Positive emotional state*.

Reminder:

$$\text{Appropr. behaviour-score} = \begin{cases} S_9 + (S_{10} - S_9)\mu_{101112} + (S_{11} - S_{10})\mu_{1211} + (S_{12} - S_{11})\mu_{12} & \text{if} & S_9 \leq S_{10} \leq S_{11} \leq S_{12} \\ S_9 + (S_{10} - S_9)\mu_{101112} + (S_{12} - S_{10})\mu_{1112} + (S_{11} - S_{12})\mu_{11} & \text{if} & S_9 \leq S_{10} \leq S_{12} \leq S_{11} \\ S_9 + (S_{11} - S_9)\mu_{101112} + (S_{10} - S_{11})\mu_{1012} + (S_{12} - S_{10})\mu_{12} & \text{if} & S_9 \leq S_{11} \leq S_{10} \leq S_{12} \\ S_9 + (S_{11} - S_9)\mu_{101112} + (S_{12} - S_{11})\mu_{1012} + (S_{10} - S_{12})\mu_{10} & \text{if} & S_9 \leq S_{11} \leq S_{12} \leq S_{10} \\ S_9 + (S_{12} - S_9)\mu_{101112} + (S_{10} - S_{12})\mu_{1011} + (S_{11} - S_{10})\mu_{11} & \text{if} & S_9 \leq S_{12} \leq S_{10} \leq S_{11} \\ S_9 + (S_{12} - S_9)\mu_{101112} + (S_{11} - S_{12})\mu_{1011} + (S_{10} - S_{11})\mu_{10} & \text{if} & S_9 \leq S_{12} \leq S_{11} \leq S_{10} \\ S_{10} + (S_9 - S_{10})\mu_{91112} + (S_{11} - S_9)\mu_{1112} + (S_{12} - S_{11})\mu_{12} & \text{if} & S_{10} \leq S_9 \leq S_{11} \leq S_{12} \\ S_{10} + (S_9 - S_{10})\mu_{91112} + (S_{12} - S_9)\mu_{1112} + (S_{11} - S_{12})\mu_{11} & \text{if} & S_{10} \leq S_9 \leq S_{12} \leq S_{11} \\ S_{10} + (S_{11} - S_{10})\mu_{91112} + (S_9 - S_{11})\mu_{912} + (S_{12} - S_9)\mu_{12} & \text{if} & S_{10} \leq S_{11} \leq S_9 \leq S_{12} \\ S_{10} + (S_{11} - S_{10})\mu_{91112} + (S_{12} - S_{11})\mu_{912} + (S_9 - S_{12})\mu_9 & \text{if} & S_{10} \leq S_{11} \leq S_{12} \leq S_9 \\ S_{10} + (S_{12} - S_{10})\mu_{91112} + (S_{11} - S_{12})\mu_{911} + (S_9 - S_{11})\mu_9 & \text{if} & S_{10} \leq S_{12} \leq S_{11} \leq S_9 \\ S_{10} + (S_{12} - S_{10})\mu_{91112} + (S_9 - S_{12})\mu_{911} + (S_{11} - S_9)\mu_{11} & \text{if} & S_{10} \leq S_{12} \leq S_9 \leq S_{11} \\ S_{11} + (S_{10} - S_{11})\mu_{91012} + (S_9 - S_{10})\mu_{912} + (S_{12} - S_9)\mu_{12} & \text{if} & S_{11} \leq S_{10} \leq S_9 \leq S_{12} \\ S_{11} + (S_{10} - S_{11})\mu_{91012} + (S_{12} - S_{10})\mu_{912} + (S_9 - S_{12})\mu_9 & \text{if} & S_{11} \leq S_{10} \leq S_{12} \leq S_9 \\ S_{11} + (S_{12} - S_{11})\mu_{91012} + (S_{10} - S_{12})\mu_{910} + (S_9 - S_{10})\mu_9 & \text{if} & S_{11} \leq S_{12} \leq S_{10} \leq S_9 \\ S_{11} + (S_{12} - S_{11})\mu_{91012} + (S_{10} - S_{12})\mu_{910} + (S_{10} - S_9)\mu_{10} & \text{if} & S_{11} \leq S_{12} \leq S_9 \leq S_{10} \\ S_{11} + (S_9 - S_{11})\mu_{91012} + (S_{12} - S_9)\mu_{1012} + (S_{10} - S_{12})\mu_{10} & \text{if} & S_{11} \leq S_9 \leq S_{12} \leq S_{10} \\ S_{11} + (S_9 - S_{11})\mu_{91012} + (S_{10} - S_9)\mu_{1012} + (S_{12} - S_{10})\mu_{12} & \text{if} & S_{11} \leq S_9 \leq S_{10} \leq S_{12} \\ S_{12} + (S_9 - S_{12})\mu_{91011} + (S_{10} - S_9)\mu_{1011} + (S_{11} - S_{10})\mu_{11} & \text{if} & S_{12} \leq S_9 \leq S_{10} \leq S_{11} \\ S_{12} + (S_9 - S_{12})\mu_{91011} + (S_{11} - S_9)\mu_{1011} + (S_{10} - S_{11})\mu_{10} & \text{if} & S_{12} \leq S_9 \leq S_{11} \leq S_{10} \\ S_{12} + (S_{10} - S_{12})\mu_{91011} + (S_{11} - S_{10})\mu_{911} + (S_9 - S_{11})\mu_9 & \text{if} & S_{12} \leq S_{10} \leq S_{11} \leq S_9 \\ S_{12} + (S_{10} - S_{12})\mu_{91011} + (S_9 - S_{10})\mu_{911} + (S_{11} - S_9)\mu_{11} & \text{if} & S_{12} \leq S_{10} \leq S_9 \leq S_{11} \\ S_{12} + (S_{11} - S_{12})\mu_{91011} + (S_9 - S_{11})\mu_{910} + (S_{10} - S_9)\mu_{10} & \text{if} & S_{12} \leq S_{11} \leq S_9 \leq S_{10} \\ S_{12} + (S_{11} - S_{12})\mu_{91011} + (S_{10} - S_{11})\mu_{910} + (S_9 - S_{10})\mu_9 & \text{if} & S_{12} \leq S_{11} \leq S_{10} \leq S_9 \end{cases}$$

Therefore, with the μ listed above:

$$\text{Appropr. behaviour-score} = \begin{cases} S_9 + 0.51(S_{10} - S_9) + 0.27(S_{11} - S_{10}) + 0.16(S_{12} - S_{11}) & \text{if} \quad S_9 \le S_{10} \le S_{11} \le S_{12} \\ S_9 + 0.51(S_{10} - S_9) + 0.27(S_{12} - S_{10}) + 0.09(S_{11} - S_{12}) & \text{if} \quad S_9 \le S_{10} \le S_{12} \le S_{11} \\ S_9 + 0.51(S_{11} - S_9) + 0.20(S_{10} - S_{11}) + 0.16(S_{12} - S_{10}) & \text{if} \quad S_9 \le S_{11} \le S_{10} \le S_{12} \\ S_9 + 0.51(S_{11} - S_9) + 0.20(S_{12} - S_{11}) + 0.07(S_{10} - S_{12}) & \text{if} \quad S_9 \le S_{11} \le S_{12} \le S_{10} \\ S_9 + 0.51(S_{12} - S_9) + 0.16(S_{10} - S_{12}) + 0.09(S_{11} - S_{10}) & \text{if} \quad S_9 \le S_{12} \le S_{10} \le S_{11} \\ S_9 + 0.51(S_{12} - S_9) + 0.16(S_{11} - S_{12}) + 0.07(S_{10} - S_{11}) & \text{if} \quad S_9 \le S_{12} \le S_{11} \le S_{10} \\ S_{10} + 0.53(S_9 - S_{10}) + 0.27(S_{11} - S_9) + 0.16(S_{12} - S_{11}) & \text{if} \quad S_{10} \le S_9 \le S_{11} \le S_{12} \\ S_{10} + 0.53(S_9 - S_{10}) + 0.27(S_{12} - S_9) + 0.09(S_{11} - S_{12}) & \text{if} \quad S_{10} \le S_9 \le S_{12} \le S_{11} \\ S_{10} + 0.53(S_{11} - S_{10}) + 0.23(S_9 - S_{11}) + 0.16(S_{12} - S_9) & \text{if} \quad S_{10} \le S_{11} \le S_9 \le S_{12} \\ S_{10} + 0.53(S_{11} - S_{10}) + 0.23(S_{12} - S_{11}) + 0.14(S_9 - S_{12}) & \text{if} \quad S_{10} \le S_{11} \le S_{12} \le S_9 \\ S_{10} + 0.53(S_{12} - S_{10}) + 0.14(S_{11} - S_{12}) + 0.14(S_9 - S_{11}) & \text{if} \quad S_{10} \le S_{12} \le S_{11} \le S_9 \\ S_{10} + 0.53(S_{12} - S_{10}) + 0.14(S_9 - S_{12}) + 0.09(S_{11} - S_9) & \text{if} \quad S_{10} \le S_{12} \le S_9 \le S_{11} \\ S_{11} + 0.56(S_{10} - S_{11}) + 0.23(S_9 - S_{10}) + 0.16(S_{12} - S_9) & \text{if} \quad S_{11} \le S_{10} \le S_9 \le S_{12} \\ S_{11} + 0.56(S_{10} - S_{11}) + 0.23(S_{12} - S_{10}) + 0.14(S_9 - S_{12}) & \text{if} \quad S_{11} \le S_{10} \le S_{12} \le S_9 \\ S_{11} + 0.56(S_{12} - S_{11}) + 0.16(S_{10} - S_{12}) + 0.14(S_9 - S_{10}) & \text{if} \quad S_{11} \le S_{12} \le S_{10} \le S_9 \\ S_{11} + 0.56(S_{12} - S_{11}) + 0.16(S_9 - S_{12}) + 0.07(S_{10} - S_9) & \text{if} \quad S_{11} \le S_{12} \le S_9 \le S_{10} \\ S_{11} + 0.56(S_9 - S_{11}) + 0.20(S_{12} - S_9) + 0.07(S_{10} - S_{12}) & \text{if} \quad S_{11} \le S_9 \le S_{12} \le S_{10} \\ S_{11} + 0.56(S_9 - S_{11}) + 0.20(S_{10} - S_9) + 0.16(S_{12} - S_{10}) & \text{if} \quad S_{11} \le S_9 \le S_{10} \le S_{12} \\ S_{12} + 0.48(S_9 - S_{12}) + 0.16(S_{10} - S_9) + 0.09(S_{11} - S_{10}) & \text{if} \quad S_{12} \le S_9 \le S_{10} \le S_{11} \\ S_{12} + 0.48(S_9 - S_{12}) + 0.16(S_{11} - S_9) + 0.07(S_{10} - S_{11}) & \text{if} \quad S_{12} \le S_9 \le S_{11} \le S_{10} \\ S_{12} + 0.48(S_{10} - S_{12}) + 0.14(S_{11} - S_{10}) + 0.14(S_9 - S_{11}) & \text{if} \quad S_{12} \le S_{10} \le S_{11} \le S_9 \\ S_{12} + 0.48(S_{10} - S_{12}) + 0.14(S_9 - S_{10}) + 0.09(S_{11} - S_9) & \text{if} \quad S_{12} \le S_{10} \le S_9 \le S_{11} \\ S_{12} + 0.48(S_{11} - S_{12}) + 0.16(S_9 - S_{11}) + 0.07(S_{10} - S_9) & \text{if} \quad S_{12} \le S_{11} \le S_9 \le S_{10} \\ S_{12} + 0.48(S_{11} - S_{12}) + 0.16(S_{10} - S_{11}) + 0.14(S_9 - S_{10}) & \text{if} \quad S_{12} \le S_{11} \le S_{10} \le S_9 \end{cases}$$

Where S_9, S_{10}, S_{11} and S_{12} are the scores obtained by a given farm for the Criterion *Expression of social behaviours*, the Criterion *Expression of other behaviours*, the Criterion *Good human-animal relationship* and the Criterion *Positive emotional state,* respectively.

μ_9, μ_{10}, μ_{11} and μ_{12} are the capacities of the Criteria *Expression of social behaviours*, *Expression of other behaviours*, *Good human-animal relationship* and *Positive emotional state,* respectively.

μ_{910} is the capacity of the group made of the Criteria *Expression of social behaviours* and *Expression of other behaviours* and so on...

Due to the positive values of the interactions between criterion-scores, the principle-scores are always intermediate between the lowest and the highest values obtained at criterion level and always closer to the minimum value.

Within each principle, some criteria are considered more important than others (and will contribute to a large extent to the principle-score):

·   Within the Principle *Good feeding*, the Criterion *Absence of prolonged thirst* is considered more important than the Criterion *Absence of prolonged hunger*.

- Within the Principle *Good housing*, the Criterion *Comfort around resting* is considered more important than the Criterion *Ease of movement* which in turn is considered more important than the Criterion *Thermal comfort*.

- Within the Principle *Good health*, the Criterion *Absence of disease* is considered more important than the Criterion *Absence of injuries* which in turn is considered more important than the Criterion *Absence of pain induced by management procedures*.

- Within the Principle *Appropriate behaviour*, the Criterion *Positive emotional state* is considered more important than the Criterion *Expression of social behaviours* which in turn is considered more important than the Criterion *Good human-animal relationship* which in turn is considered more important than the Criterion *Expression of other behaviours*.

Examples of principle-scores resulting from Criterion-scores are provided in Table 7, Table 8, Table 9 and Table 10

Table 7 Examples of scores for Principle *Good feeding* according to combinations of criterion-scores
for the Criteria *Absence of prolonged hunger* and *Absence of prolonged thirst*

Absence of prolonged hunger	Absence of prolonged thirst	Principle Good feeding
25	75	**39**
40	60	**46**
50	50	**50**
60	40	**42**
75	25	**30**

Table 8 Examples of scores for the Principle Good housing according to combinations of criterion-scores
for the Criteria *Comfort around resting, Thermal comfort* and *Ease of movement*

Comfort around resting	Thermal comfort	Ease of movement	Principle Good housing
25	50	75	**37**
25	75	50	**37**
40	50	60	**45**
40	60	50	**45**
50	25	75	**39**
50	40	60	**46**
50	50	50	**50**
50	60	40	**44**
50	75	25	**36**
60	40	50	**46**
60	50	40	**45**
75	25	50	**39**
75	50	25	**37**

Table 9 Examples of scores for the Principle *Good health* according to combinations of criterion-scores for the Criteria *Absence of injuries, Absence of disease* and *Absence of pain induced by management procedures*

Absence of injuries	Absence of disease	Absence of pain induced by management procedures	Principle Good health
25	50	75	**34**
25	75	50	**36**
40	50	60	**43**
40	60	50	**44**
50	25	75	**33**
50	40	60	**43**
50	50	50	**50**
50	60	40	**46**
50	75	25	**40**
60	40	50	**43**
60	50	40	**44**
75	25	50	**32**
75	50	25	**36**

Table 10 Examples of scores for the Principle *Appropriate behaviour* according to combinations of criterion-scores for the Criteria *Expression of social behaviours, Expression of other behaviours, Good human-animal relationship* and *Positive emotional state*

Expression of social behaviours	Expression of other behaviours	Good human-animal relationships	Positive emotional state	Principle Appropriate behaviour
35	35	65	65	**43**
35	50	50	65	**45**
35	50	65	50	**44**
35	65	35	65	**41**
35	65	50	50	**44**
35	65	65	35	**40**
50	35	50	65	**45**
50	35	65	50	**44**
50	50	35	65	**46**
50	50	50	50	**50**
50	50	65	35	**44**
50	65	35	50	**44**
50	65	50	35	**43**
65	35	35	65	**42**
65	35	50	50	**45**
65	35	65	35	**39**
65	50	35	50	**45**
65	50	50	35	**44**
65	65	35	35	**40**

3.3.3 Overall assessment

The synthesis of the four principle-scores into an overall assessment is carried out in a similar way for all animal types in WelFur as well as in Welfare Quality®.

The scores obtained by a farm on all welfare principles are used to assign that farm to a welfare category. How many and what welfare categories are necessary depends on the purposes for which the welfare assessment will be used. According to the range of potential uses of the assessment, four welfare categories are to be identified:

Best current practice: the welfare of animals is of the best current practice.
Good current practice: the welfare of animals is of good current practice.
Acceptable current practice: the welfare of animals is above minimal requirements for current practice.
Unacceptable current practice: the welfare of animals is below current practice and considered unacceptable.

'Aspiration values' are defined for each category. They represent the goal that the farm should try to achieve to be assigned to a given category. The 'Best' threshold is set at 80, the one for 'Good' at 55 and that for acceptability at 20. However, just as criteria do not compensate for each other within a principle (see earlier), high scores in one principle do not offset low scores in another, so categories cannot be based on average scores. At the same time, it is important that the final classification reflects not only the theoretical acknowledgement of what can be considered as best, good, *etc.*, but also what can realistically be achieved in practice.

A farm is considered 'Best current practice' if it scores more than 55 on all principles and more than 80 on at least two, while it is considered 'Good current practice' if it scores more than 20 on all principles and more than 55 on at least two. Farms with 'Acceptable current practice' levels of animal welfare score more than 10 on all principles and more than 20 on at least three. Farms that do not reach these minimum standards are classified as 'Unacceptable current practice' (Figure 36). Due to the variability of experts' answers during the various consultations, some uncertainty of the evaluation is to be taken into account. As a consequence, an indifference threshold equal to 5 is applied: for instance, 50 is not considered significantly lower than 55.

Note: The rules to assign a farm to a given welfare category may be subject to modifications once a sufficient number of commercial farms have been inspected.
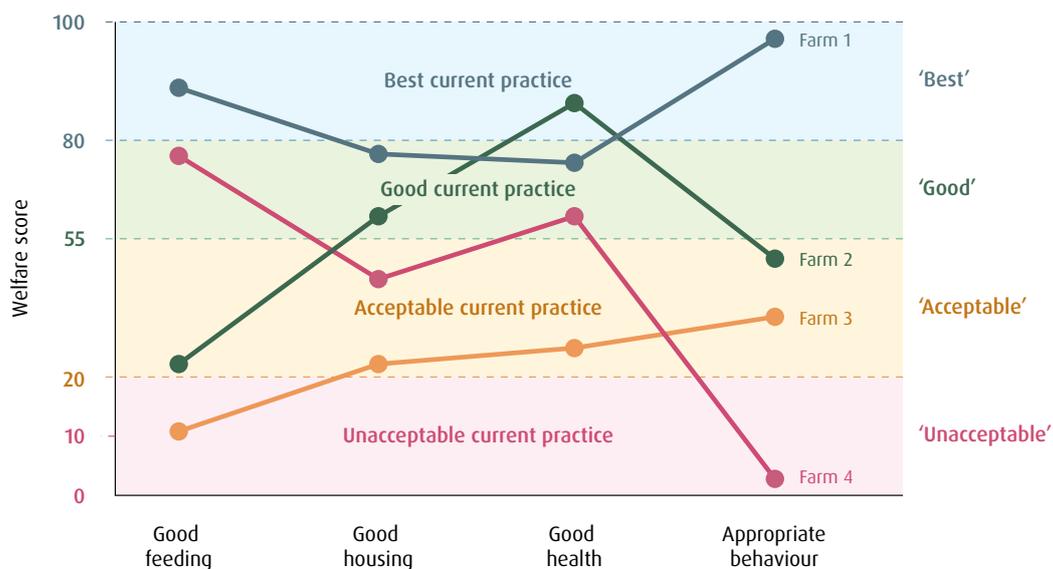
Figure 36 Examples of farms in the four welfare categories

3.4   Annex A: Recording sheets for foxes

Data recording sheets for foxes for Period 1

Arrival time: **Leaving time:**

ONLY for sheds holding foxes			Number of	Location	Foxes in sample		
					A (~100)	B (80-100)	ST (150-200)
SHEDS	Type	Two row					
		Multi row					
FOXES	Blue foxes	Females					
		Males					
	Silver foxes	Females					
		Males					
CAGES	Singly housing	~ 0.8m^2					
		~ 1.2m^2					
		~ 2.4m^2					
	Pair/group housing	~ 1.2m^2					
		~ 2.4m^2					
WATERING SYSTEM	Quality control	Yes					
		No					
	Automatic	Frost protection					
		No frost protection					
	Manual			Water: times a day			
HEALTH	Section for sick and injured animals						
	Are there contagious diseases on the farm?	Yes					
		No					

Coding instructions (Period 1)

Animal codes:
Species: 1= Blue fox, 2 = Silver fox
Sex: 1 = Male, 2 = Female

Feeding test:
Score: 0 = eats within 30 sec, 1 = does not eat within 30 sec

Stereotypic behaviour:

Score	Behaviour	Short description
0	Resting	Laying down, head on the floor or up
1	Activity	Active, *e.g.* sitting, walking, drinking or playing
2	Stereotypy	Repetitive pacing and/or jumping; other stereotypy, *e.g.* licking or biting the cage.

Temperament test:
0 = touches the stick in exploratory way
1 = does not touch the stick
2 = attacks the stick and/or bites the stick aggressively

BCS:
1 = very thin
2 = thin
3 = ideal
4 = heavy
5 = extremely fat

Cleanliness:
0 = clean
1 = slightly dirty
2 = clearly dirty

Urinary tract infection:
0 = no evidence of urinary tract infection
1 = clear signs of urinary tract infection

Fur chewing:
0 = no fur chewing
1 = clear signs of fur chewing

Type of watering system:
0 = watering system with automatic water flow,
    protected from freezing
1 = watering system with automatic water flow, not protected
    from freezing
2 = water is provided manually

Water function:
0 = water point works properly
1 = water point does not work properly

Water cleanliness:
0 = water point is clean
1 = water point is dirty

Platform:
0 = usable platform
1 = no usable platform

Platform (cm):
Measure the distance (cm) from the ceiling to the platform

Cage length (cm):
Measure the cage length (cm) for calculation of cage area

Cage width (cm):
Measure the cage width (cm) for calculation of cage area

Cage height (cm): Measure the cage height (cm)

Number of foxes in the cage:
Mark the number of foxes in the cage for determining cage
area score

Enrichment:
Mark the number of different enrichments in the cage in each
enrichment type category:
    Category 0 = renewable gnawing object (*i.e.* bone or
    wooden block) or a construction with at least one solid
    wall, increasing environmental complexity (*i.e.* nest box or
    concealment screen)
    Category 1 = occupational material for exploration and/or
    play (*e.g.* ball, rope, straw or sand)
    Category 2 = other types of enrichment (*e.g.* scratching plate)

Observing:
0 = opportunity to observe surroundings
1 = no opportunity to observe surroundings

Wind shield:
0 = wind shield in the cage,
1= no wind shield in the cage

Buildings/stand of trees:
0 = buildings, solid fences, hills or a stand of trees in the
    immediate vicinity of the cage,
1 = no buildings, solid fences, hills or a stand of trees in the
    immediate vicinity of the cage

Management questionnaire

MORTALITY (ONLY FOXES OLDER THAN 8 WEEKS ARE CONSIDERED)		
Number of foxes found dead during the last 12 months		individuals
Number of foxes humanely killed during the last 12 months		individuals
Total number of foxes on the farm during the last 12 months		individuals
KILLING METHOD		
What killing method(s) is/are used?		
Check light or sound for verifying the functioning of the device?		YES / NO
Does the killing device work properly?		YES / NO
OPPORTUNITY TO USE ENRICHMENTS		
How often enrichments are renewed		times a year
TRANSPORT OF LIVE FOXES		
Have foxes been bought during the last 12 months?		YES / NO
How many individuals		individuals
How far		distance (km)
Are foxes transported from one farm area to another?		YES / NO
How many individuals		individuals
How far		distance (km)

Comments and observations

Feeding test (Scores: 0 = eats within 30 sec, 1 = does not eat within 30 sec), Sample A (~100 foxes)

Species									
Score									

Species									
Score									

Species									
Score									

Species									
Score									

Species									
Score									

Species									
Score									

Species									
Score									

Total number of foxes tested   _____

Total number of foxes eating in the feeding test   _____

Percentage of foxes eating   _____ %

Animal-based and resource-based measurements, Sample B (80-100 foxes)

Cage or ID											
Species/Sex											
Temperament test $^{0/1/2}$											
BCS $^{1/2/3/4/5}$											
Cleanliness $^{0/1/2}$											
Urinary tract infection $^{0/1}$											
Fur chewing $^{0/1}$											
Type of watering system $^{0/1/2}$											
Water function $^{0/1}$											
Water cleanliness $^{0/1}$											
Platform $^{0/1}$											
Platform (cm)											
Cage length (cm)											
Cage width (cm)											
Cage height (cm)											
No. of foxes in cage											
Number of different enrichments in categories	Cat. 0										
	Cat. 1										
	Cat. 2										
Observing $^{0/1}$											
Wind shield $^{0/1}$											
Build./stand of trees $^{0/1}$											

Stereotypic behaviour: Scores 0 = resting, 1 = active, 2 = stereotypy (100-150 foxes)

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Total number of foxes tested   _____

Number of foxes with Score 0   _____

Number of foxes with Score 1   _____

Number of foxes with Score 2   _____

Number of active foxes (Score 1+2)   _____

Stereotyping foxes out of all active foxes   _____ %

Data recording sheets for foxes for Period 2

Arrival time: **Leaving time:**

ONLY for sheds holding foxes			Number of	Location	Foxes in sample B (80-100)	Foxes in sample ST (150-200)
SHEDS	Type	Two row				
		Multi row				
FOXES	Blue foxes	Females				
		Males				
		Cubs				
	Silver foxes	Females				
		Males				
		Cubs				
	Crossbreeds	Cubs				
CAGES	Singly housing of adults (including vixen with cubs)	~ 0.8m²				
		~ 1.2m²				
		~ 2.4m²				
	Pair/group housing	~ 1.2m²				
		~ 2.4m²				
WATERING SYSTEM	Quality control	Yes				
		No				
	Automatic	Overheating protection				
		No overheating protection				
	Manual			Water: times a day		
HEALTH	Section for sick and injured animals					
	Are there contagious diseases on the farm?		Yes			
			No			

Coding instructions (Period 2)

Animal codes:
Species: 1= Blue fox, 2 = Silver fox, 3 = Crossbreed   **Sex:** 1 = Male, 2 = Female
Age: 1 = Cub, 2 = Adult

Stereotypic behaviour:

Score	Behaviour	Short description
0	Resting	laying down, head on the floor or up
1	Activity	Active, *e.g.* sitting, walking, drinking or playing
2	Stereotypy	Repetitive pacing and/or jumping; other stereotypy, e.g. licking or biting the cage

BCS:
1 = very thin
2 = thin
3 = ideal
4 = heavy
5 = extremely fat

Cleanliness:
0 = clean
1 = slightly dirty
2 = clearly dirty

Type of watering system:
0 = watering system with automatic water flow
2 = water is provided manually

Overheating:
0 = watering system is protected against overheating
1 = watering system is not protected against overheating

Water function:
0 = water point works properly
1 = water point does not work properly

Water cleanliness:
0 = water point is clean
1 = water point is dirty

Platform:
0 = usable platform
1 = no usable platform

Platform (cm):
Measure the distance (cm) from the ceiling to the platform

Cage length (cm):
Measure the cage length (cm) for calculation of cage area

Cage width (cm):
Measure the cage width (cm) for calculation of cage area

Cage height (cm): Measure the cage height (cm)

Number of foxes in the cage:
Mark the number of foxes (adults and cubs) in the cage for determining cage area score

Enrichment:
Mark the number of different enrichments in the cage in each enrichment type category:
    Category 0 = renewable gnawing object (*i.e.* bone or wooden block) or a construction with at least one solid wall, increasing environmental complexity (*i.e.* nest box or concealment screen)
    Category 1 = occupational material for exploration and/or play (*e.g.* ball, rope, straw or sand)
    Category 2 = other types of enrichment (*e.g.* scratching plate)

Observing:
0 = opportunity to observe surroundings
1 = no opportunity to observe surroundings

Sun blinds:
0 = there is some protection, in addition to eaves, against direct sunlight
1 = no protection against direct sunlight

Ventilation (concerns only barns):
0 = ventilation can be increased by an automated ventilation system or by openings *e.g.* windows in the barn
1 = no possibility to increase ventilation.

Management questionnaire

PROTECTION FROM EXCEPTIONAL WEATHER CONDITIONS		
Are the foxes or the roofs of the sheds sprinkled in warm (> 30 ºC) weather		YES / NO
MORTALITY (ONLY FOXES OLDER THAN 8 WEEKS ARE CONSIDERED)		
Number of foxes found dead during the last 12 months		individuals
Number of foxes humanely killed during the last 12 months		individuals
Total number of foxes on the farm during the last 12 months		individuals
KILLING METHOD		
What killing method(s) is/are used?		
Check light or sound for verifying the functioning of the device?		YES / NO
Does the killing device work properly?		YES / NO
OPPORTUNITY TO USE ENRICHMENTS		
How often enrichments are renewed		times a year
TRANSPORT OF LIVE FOXES		
Have foxes been bought during the last 12 months?		YES / NO
How many individuals		individuals
How far		distance (km)
Are foxes transported from one farm area to another?		YES / NO
How many individuals		individuals
How far		distance (km)

Comments and observations

Animal-based and resource-based measurements, Sample B (80-100 foxes)

Cage or ID											
Species/Sex											
BCS $^{1/2/3/4/5}$											
Cleanliness $^{0/1/2}$											
Type of watering system $^{0/1/2}$											
Water overheating $^{0/1}$											
Water function $^{0/1}$											
Water cleanliness $^{0/1}$											
Platform $^{0/1}$											
Platform (cm)											
Cage length (cm)											
Cage width (cm)											
Cage height (cm)											
No. of adults and cubs (x + x) in cage											
Number of different enrichments in categories	Cat. 0										
	Cat. 1										
	Cat. 2										
Observing $^{0/1}$											
Sun blinds $^{0/1}$											
Ventilation $^{* \, 0/1}$											

* Concerns only barns

Stereotypic behaviour: Scores 0 = resting, 1 = active, 2 = stereotypy (100-150 foxes)

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Species										
Score										

Total number of foxes tested _____

Number of foxes with Score 0 _____

Number of foxes with Score 1 _____

Number of foxes with Score 2 _____

Number of active foxes (Score 1+2) _____

Stereotyping foxes out of all active foxes _____ %

Data recording sheets for foxes for Period 3

Arrival time: | **Leaving time:**

ONLY for sheds holding foxes			Number of	Location	Foxes in sample	
					B (80-100)	ST (150-200)
SHEDS	Type	Two row				
		Multi row				
FOXES	Blue foxes	Females				
		Males				
		Juveniles				
	Silver foxes	Females				
		Males				
		Juveniles				
	Crossbreeds	Juveniles				
CAGES	Singly housing	~ 0.8m^2				
		~ 1.2m^2				
		~ 2.4m^2				
	Pair/group housing	~ 1.2m^2				
		~ 2.4m^2				
WATERING SYSTEM	Quality control	Yes				
		No				
	Automatic	Frost protection				
		No frost protection				
	Manual			Water: times a day		
HEALTH	Section for sick and injured animals					
	Are there contagious diseases on the farm?		Yes			
			No			

Coding instructions (Period 3)

Animal codes:

Species: 1= Blue fox, 2 = Silver fox, 3 = Crossbreed   **Sex:** 1 = Male, 2 = Female

Age: 1 = Juvenile, 2 = Adult

Stereotypic behaviour:

Score	Behaviour	Short description
0	Resting	laying down, head on the floor or up
1	Activity	Active, e.g. sitting, walking, drinking or playing
2	Stereotypy	Repetitive pacing and/or jumping; other stereotypy, *e.g.* licking or biting the cage

BCS: 1 = very thin, 2 = thin, 3 = ideal, 4 = heavy, 5 = extremely fat

Cleanliness: 0 = clean, 1 = slightly dirty, 2 = clearly dirty

Moving: 0 = no moving difficulty, 1 = some difficulties in moving, 2 = major difficulties in moving, 3 = does not move even when disturbed

Skin lesions: 0 = no lesions, 1 = mild lesions, 2 = severe lesions

Bent feet: 0 = normal feet, 1 = slightly bent feet, 2= severely bent feet

Eyes: 0 = no ocular discharge or inflammation, 1 = clear evidence of ocular discharge or inflammation

Mouth: 0 = no evidence of impaired mouth and/or teeth health 1 = impaired mouth and/or teeth health

Diarrhoea: 0 = no evidence of diarrhoea, 1 = clear signs of diarrhoea

Obviously sick: 0 = no signs of poor/reduced health, 1= obvious signs of poor/ reduced health, 2 = obvious signs of stereotypic behaviour. Note that score 2 can be recorded simultaneously with 0 or 1

Fur chewing: 0 = no fur chewing, 1 = clear signs of fur chewing

Type of watering system: 0 = watering system with automatic water flow, protected from freezing 1 = watering system with automatic water flow, not protected from freezing 2 = water is provided manually

Overheating: 0 = watering system is protected against overheating, 1 = watering system is not protected against overheating

Water function: 0 = water point works properly, 1 = water point does not work properly

Water cleanliness: 0 = water point is clean, 1 = water point is dirty

Platform: 0 = usable platform, 1 = no usable platform

Platform (cm): Measure the distance (cm) from the ceiling to the platform

Cage height (cm): Measure the cage height (cm)

Number of foxes in the cage: Mark the number of foxes (adults and juveniles) in the cage for determining cage area and social housing scores

Enrichment: Mark the number of different enrichments in the cage in each enrichment type category:

Category 0 = renewable gnawing object (*i.e.* bone or wooden block) or a construction with at least one solid wall, increasing environmental complexity (*i.e.* nest box or concealment screen)

Category 1 = occupational material for exploration and/or play (*e.g.* ball, rope, straw or sand)

Category 2 = other types of enrichment (*e.g.* scratching plate)

Observing: 0 = opportunity to observe surroundings, 1 = no opportunity to observe surroundings

Wind shield: 0 = wind shield in the cage, 1= no wind shield in the cage

Buildings/stand of trees: 0 = buildings, solid fences, hills or a stand of trees in the immediate vicinity of the cage, 1= no buildings, solid fences, hills or a stand of trees in the immediate vicinity of the cage

Sun blinds: 0 = some protection, in addition to eaves, against direct sunlight, 1= no protection against direct sunlight

Ventilation (concerns only barns): 0 = ventilation can be increased by an automated ventilation system, or by opening e.g. windows in the barn, 1= no possibility to increase ventilation.

Management questionnaire

PROTECTION FROM EXCEPTIONAL WEATHER CONDITIONS		
Are the foxes or the roofs of the sheds sprinkled in warm (> 30 º C) weather		YES / NO
MORTALITY (ONLY FOXES OLDER THAN 8 WEEKS ARE CONSIDERED)		
Number of foxes found dead during the last 12 months		individuals
Number of foxes humanely killed during the last 12 months		individuals
Total number of foxes on the farm during the last 12 months		individuals
KILLING METHOD		
What killing method(s) is/are used?		
Check light or sound for verifying the functioning of the device?		YES / NO
Does the killing device work properly?		YES / NO
OPPORTUNITY TO USE ENRICHMENTS		
How often enrichments are renewed		times a year
TRANSPORT OF LIVE FOXES		
Have foxes been bought during the last 12 months?		YES / NO
How many individuals		individuals
How far		distance (km)
Are foxes transported from one farm area to another?		YES / NO
How many individuals		individuals
How far		distance (km)

Comments and observations

Animal-based and resource-based measurements, Sample B (80-100 foxes)

Cage or ID											
Species/Age/Sex											
BCS $^{1/2/3/4/5}$											
Cleanliness $^{0/1/2}$											
Moving $^{0/1/2/3}$											
Skin lesions $^{0/1/2}$											
Bent feet $^{0/1/2}$											
Ocular inflammation $^{0/1}$											
Mouth/teeth health $^{0/1}$											
Diarrhoea $^{0/1}$											
Obviously sick $^{0/1*/2}$											
Fur chewing $^{0/1}$											
Type of watering system $^{0/1/2}$											
Water overheating $^{0/1}$											
Water function $^{0/1}$											
Water cleanliness $^{0/1}$											
Platform $^{0/1}$											
Platform (cm)											
Cage length (cm)											
Cage width (cm)											
Cage height (cm)											
No. of foxes in cage											
Number of different enrichments in categories	Cat. 0										
	Cat. 1										
	Cat. 2										
Observing $^{0/1}$											
Wind shield $^{0/1}$											
Build./stand of trees $^{0/1}$											
Sun blinds $^{0/1}$											
Ventilation ** $^{0/1}$											

* Please fill the observed symptoms

** Concerns only barns

Notes :

Cage/ID	

Stereotypic behaviour: Scores 0 = resting, 1 = active, 2 = stereotypy (100-150 foxes)

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Species/age									
Score									

Total number of foxes tested _____

Number of foxes with Score 0 _____ %

Number of foxes with Score 1 _____ %

Number of foxes with Score 2 _____ %

Number of active foxes (Score 1+2) _____

Stereotyping foxes out of all active foxes _____ %

3.5 Annex B: Contributors to WelFur

WelFur partners	Country
European Fur Information Center (Fur Europe), Brussels	Belgium
INRA (National Institute of Agronomic Research), UMR1213 Herbivores, Clermont-Ferrand	France
University of Eastern Finland (UEF, Department of Biology)	Finland
MTT Agrifood Research Finland (MTT, Animal Production Research)	Finland
Aarhus University (AU, Department of Animal Science)	Denmark
Norwegian University of Life Sciences (NMBU, Department of Animal and Aquacultural Sciences)	Norway
Swedish University of Agricultural Sciences (SLU, Department of Animal Environment and Health)	Sweden
University of Utrecht (UU, Faculty of Veterinary Medicine, Department of Animals in Science & Society)	The Netherlands
University of Guelph (Animal and Poultry Department of Science)	Canada
University of Birmingham (School of Biosciences)	United-Kingdom
Experts from the original Welfare Quality® project	

The authors of the fox protocol (in alphabetical order):
Leena Ahola (UEF), Raphaëlle Botreau (INRA), Marion Gaborit (INRA), Anne Lene Hovland (UMB), Tarja Koistinen (UEF) and Jaakko Mononen (UEF and MTT).

De: Côté Isabelle (DSABEA) (Québec) <Isabelle.Cote@mapaq.gouv.qc.ca>
Envoyé: 15 mars 2023 12:12
À: Garneau Josiane (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user4aaf309f]; Thorn Caroline (DGDSI) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user60d1ab3b]
Cc: Laflamme Lysandre (DADS) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user0cbddc68]; Lessard Marie-Ève (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: 2023-03-15 Rencontre HSI-Fermes fourrure.docx
Pièces jointes: 2023-03-15 Rencontre HSI-Fermes fourrure.docx; L'e´levage d'animaux a` fourrure au Que´bec.pdf; Vets and Virologists Letter May 2021 CANADA.pdf

Indicateur de suivi: Assurer un suivi
État de l'indicateur: Marqué

Bonjour,

Voici le résumé de la rencontre avec HSI pour les fermes de fourrure et les documents complémentaires qui ont été envoyés par courriel. Caroline, est-ce que cela convient comme format ou si tu as besoin d'une fiche ou autre?

Un gros merci à Lysandre pour la prise de notes!

--Isabelle

Rencontre avec Humane Society international
2023-03-03 10h00-10h25 par Teams

Humane Society international :
- Amélie Martel : Responsable de campagne sénior (amartel@hsi.org)
- Kelly Butler : Responsable de la campagne faune (kbutler@hsi.org)
- Michael Bernard : Directeur adjoint (mbernard@hsi.org)

DSABEA :
- Josiane Garneau, directrice
- Lysandre Laflamme, technicienne en santé animale
- Isabelle Côté, conseillère en bien-être animal

Humane society international (HSI) est un organisme de protection des animaux présent dans plus de 50 pays. Ils ont une campagne pour l'interdiction des fermes à fourrure au Québec et s'intéressent aussi au dossier dans les autres provinces canadiennes et au niveau fédéral.

Arguments présentés en faveur d'une interdiction :
- Industrie en déclin à travers le monde depuis de nombreuses années et ayant une acceptabilité sociale faible :
  - 25 pays ont restreint significativement ou interdit les fermes à fourrure;
  - selon un sondage 76% des Québécois étaient en faveur d'une interdiction;;
  - plusieurs partis politiques se sont prononcés pour l'interdiction lors des dernières élections provinciales (PQ, PLQ, QS, PCQ).
- Conditions de garde horribles pour les animaux :
  - petites cages au fond grillagé;
  - les animaux sont confinés de manière permanente;
  - les visons sont des animaux semi aquatique et ne sont pas capable d'exprimer leur comportement naturel en lien avec l'eau;
  - enjeux de salubrité en raison de l'accumulation des fèces sous les cages.
- Évasions possibles des animaux des fermes qui posent des risques pour la population et animaux de la faune.

Selon HSI l'enjeu le plus important serait pour la santé publique. Il y aurait eu au moins 400 éclosions de Covid-19 dans des fermes de visons à travers le monde dont 3 en Colombie-Britannique. Le grand nombre d'animaux entassé dans un endroit restreint amène des conditions parfaites pour la propagation de la maladie et l'émergence de nouveaux variants. Les visons sont aussi susceptibles à l'influenza et des cas de H5N1 ont été rapportés.

Selon HSI il y a présentement un Momentum et une opportunité d'agir. Ils craignent que des fermes étrangères ou de d'autres provinces viennent s'établir au Québec. Il y aurait eu par exemple une ferme de Norvège qui s'est établit à l'Île du Prince-Edward.

HSI voulait savoir si le ministère envisage d'agir sur cette pratique et si oui, quelles mesures devraient être prises légalement par rapport à l'élevage de fourrure.

Il leur a été mentionner que nous étions en mode écoute et que nous ne pouvions pas nous positionner encore par rapport à ce que le ministère envisage.

HSI a envoyé des informations complémentaires par courriel.

Note de synthèse : plaidoyer en faveur de l'interdiction de l'élevage d'animaux à fourrure au Québec

Depuis des dizaines d'années, des groupes de protection des animaux œuvrent pour mettre un terme à l'élevage d'animaux à fourrure au Canada en raison des conditions particulièrement mauvaises pour le bien-être des animaux et des répercussions de ces pratiques. Dans les élevages d'animaux à fourrure, des animaux sauvages sont confinés dans de petites cages vides, sans pouvoir satisfaire leurs besoins les plus essentiels, à savoir se nourrir correctement, s'abreuver, bénéficier de soins vétérinaires et exprimer leurs comportements naturels, tels que vagabonder, creuser ou encore nager[1]. Des vétérinaires et des spécialistes de la vie sauvage dénoncent régulièrement la nature inhumaine de cette activité[2].

Aujourd'hui, le monde entier a pris conscience du fait que les conditions inhumaines qui règnent dans les élevages d'animaux à fourrure **font de ces établissements des bombes à retardement propices à la propagation de maladies zoonotiques mortelles.** À ce jour, plus de **400 épidémies de COVID-19 ont été enregistrées dans des fermes d'élevage de visons** à travers le monde, dont trois en Colombie-Britannique[3]. Même si les épidémies documentées dans les élevages d'animaux à fourrure ont jusqu'alors été limitées aux visons, les renards sont également sensibles à la COVID-19 et peuvent excréter le virus[4]. Certaines autorités de santé ont prévenu que **les élevages d'animaux à fourrure pouvaient représenter des réservoirs de COVID-19** et d'autres coronavirus, ce qui pourrait entraîner des conséquences catastrophiques pour les humains et les autres animaux sauvages à l'avenir[5].

Récemment, une information est parue au sujet **d'un élevage de visons en Espagne touché par une épidémie de H5N1 (grippe aviaire), décrite par les expert·e·s comme** *« extrêmement préoccupante », « une sonnette d'alarme »* **et** *« un mécanisme qui peut de toute évidence déclencher une pandémie de H5 ».*[6] Il s'agit d'un point significatif pour le Québec, où la grippe aviaire circule à une vitesse alarmante[7]. La propagation de la grippe aviaire parmi les visons pourrait favoriser l'évolution du virus jusqu'à ce qu'il se propage à la population humaine et se transforme en une pandémie mortelle pour celle-ci.

Plus de 25 pays ont déjà mis fin à l'élevage d'animaux à fourrure au sein de leurs frontières ou ont restreint cette pratique, et de nombreux autres envisagent d'adopter des mesures similaires[8]. En 2021, compte tenu des préoccupations en matière de santé publique et de bien-être animal, la Colombie-Britannique a été la première province canadienne à interdire l'élevage de visons, une

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[1] https://www.furfreealliance.com/wp-content/uploads/2017/09/Factsheet_Animal-welfare-problems-in-fur-farming.pdf

[2] https://www.hsi.org/wp-content/uploads/assets/pdfs/letter-vets-experts-fur.pdf; https://www.furfreealliance.com/wp-content/uploads/2017/09/Factsheet_Animal-welfare-problems-in-fur-farming.pdf

[3] https://www.who.int/europe/publications/i/item/WHO-EURO-2023-6616-46382-67849

[4] https://pubmed.ncbi.nlm.nih.gov/35830965/

[5] https://www.woah.org/fr/declaration-de-loie-sur-le-covid-19-chez-les-visons/

[6] https://www.science.org/content/article/incredibly-concerning-bird-flu-outbreak-spanish-mink-farm-triggers-pandemic-fears

[7] https://montrealgazette.com/news/local-news/unprecedented-winter-outbreaks-of-avian-flu-rattle-quebec-poultry-farmers#:~:text=Quebec,Unprecedented%20winter%20outbreaks%20of%20avian%20flu%20rattle%20Quebec%20poultry%20farmers,pathogenic%20avian%20influenz

[8] https://www.furfreealliance.com/fur-bans/

mesure qui, dans les faits, a marqué la fin du secteur de l'élevage d'animaux à fourrure dans son ensemble, puisque la C.-B. ne compte actuellement pas d'élevages de renards[9].

Humane Society International/Canada demande instamment au gouvernement du Québec de suivre les exemples donnés par d'autres régions et d'interdire l'élevage d'animaux à fourrure, pour des raisons de santé publique.

L'élevage d'animaux à fourrure au Québec

L'élevage d'animaux à fourrure est en déclin dans le monde entier. Le Québec ne fait pas exception : alors qu'en 1982, le Québec comptait 226 établissements d'élevage d'animaux à fourrure, aujourd'hui, il en reste seulement trois (1 élevage de renards et 2 élevages de visons).

L'élevage d'animaux à fourrure n'est pas viable économiquement au niveau mondial, en raison de la dégringolade des prix et du fait que les fourrures se vendent souvent moins cher que leur coût de production[10]. Une enquête de Radio-Canada a révélé qu'entre 2014 et 2020, plus de 100 millions de dollars provenant des caisses des gouvernements fédéral et provincial avaient été utilisés pour subventionner les élevages d'animaux à fourrure[11].

Selon un sondage réalisé en 2022, 76 % de la population québécoise étaient en faveur de l'interdiction nationale des élevages d'animaux à fourrure[12], soit le deuxième taux de soutien le plus élevé en faveur d'une interdiction nationale, juste derrière la Colombie-Britannique (81 %), où l'élevage de visons est déjà interdit depuis 2021.

En vue des élections provinciales de 2022, le Parti conservateur du Québec, le Parti libéral du Québec, le Parti québécois et Québec solidaire se sont tous engagés à interdire l'élevage d'animaux à fourrure dans la province au cours d'un débat[13]. Ces engagements surviennent quelques jours seulement après la diffusion de photos bouleversantes obtenues par We Animals, qui a documenté les conditions de vie des animaux dans deux élevages d'animaux à fourrure au Québec[14], des images qui ont entraîné le dépôt d'une plainte par Animal Justice, une organisation canadienne de défense des droits des animaux.

L'interdiction de l'élevage d'animaux à fourrure dans le monde

À ce jour, plus de 25 pays ont interdit ou restreint l'élevage d'animaux à fourrure. Au lendemain de la pandémie, les ONG (dont HSI/Canada) reçoivent un nombre impressionnant de demandes de renseignements sur le processus d'abolition de l'élevage d'animaux à fourrure dans les juridictions du monde entier.

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[9] https://news.gov.bc.ca/releases/2021AFF0066-002112
[10] Ibid.
[11] https://www.cbc.ca/news/canada/nova-scotia/mink-farming-canada-agristability-boom-bust-1.5495165
[12] https://thefurbearers.com/blog/3-4-of-canadians-support-a-ban-on-fur-farming/
[13] https://www.spca.com/quatre-partis-sengagent-a-interdire-les-fermes-a-fourrure/
[14] https://weanimalsmedia.org/2022/09/08/an-expose-of-fur-farming-in-quebec/

Les juridictions qui ont interdit ou restreint l'élevage d'animaux à fourrure sont énumérées dans le tableau ci-après[15] :

Pays (date d'entrée en vigueur)	Détails sur l'interdiction
Royaume-Uni (2000)	Interdiction totale de l'élevage d'animaux à fourrure
Autriche (2005)	Interdiction totale de l'élevage d'animaux à fourrure
Japon (2006)	Interdiction d'établir de nouveaux élevages de visons; le dernier élevage a fermé en 2016
Suisse (2008)	Lois sur le bien-être animal qui ont mis fin à l'élevage d'animaux à fourrure
Danemark (2009, 2011)	Interdiction de l'élevage de renards, interdiction d'établir de nouveaux élevages de chiens viverrins
Slovénie (2013)	Interdiction totale de l'élevage d'animaux à fourrure
Nouvelle-Zélande (2013)	Interdiction d'importer des visons
Macédoine (2014)	Interdiction totale de l'élevage d'animaux à fourrure
Suède (2014)	Lois sur le bien-être animal qui interdisent les élevages de renards et de chinchillas
Croatie (2017)	Interdiction totale de l'élevage d'animaux à fourrure
Luxembourg (2018)	Interdiction totale de l'élevage d'animaux à fourrure
Serbie (2019)	Interdiction totale de l'élevage d'animaux à fourrure
République tchèque (2019)	Interdiction totale de l'élevage d'animaux à fourrure
Hongrie (2020)	Interdiction de l'élevage de visons et de renards
France (2021)	Interdiction de l'élevage d'espèces non domestiques pour leur fourrure
Irlande (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Malte (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Italie (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Allemagne (2022)	Lois sur le bien-être animal qui ont mis fin à l'élevage d'animaux à fourrure
Belgique (2023)	Interdiction totale de l'élevage d'animaux à fourrure
Pays-Bas (2024)	Interdiction totale de l'élevage d'animaux à fourrure
Slovaquie (2025)	Interdiction totale de l'élevage d'animaux à fourrure
Norvège (2025)	Interdiction totale de l'élevage d'animaux à fourrure
Estonie (2026)	Interdiction totale de l'élevage d'animaux à fourrure
Lettonie (2028)	Interdiction totale de l'élevage d'animaux à fourrure
Bosnie-Herzégovine (2028)	Interdiction totale de l'élevage d'animaux à fourrure

Bien que d'autres juridictions aient pris des mesures pour interdire l'élevage d'animaux à fourrure au niveau fédéral, il est important de souligner qu'au Canada, cette interdiction doit être instaurée au niveau provincial (comme l'a fait la Colombie-Britannique) étant donné que la législation relative à la production agricole, qui comprend l'élevage d'animaux à fourrure, relève de la compétence territoriale des provinces.

Certaines juridictions ont mis en place des programmes de transition en parallèle d'une interdiction de l'élevage d'animaux à fourrure. Par exemple, les éleveurs et éleveuses d'animaux à fourrure au Danemark peuvent demander des subventions et une aide du gouvernement pour se tourner vers une nouvelle activité. Parmi les nouvelles activités vers lesquelles se tournent ces éleveur·euse·s, on

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[15] https://www.furfreealliance.com/fur-bans/

trouve des brasseries, des fermes de production de fraises ou encore des boulangeries[16]. Le gouvernement de la Colombie-Britannique a également mis en place des programmes visant à aider les éleveurs et éleveuses à se lancer dans de nouvelles carrières plus en phase avec la vision agricole de la province. Les éleveur·euse·s d'animaux à fourrure en C.-B. peuvent en effet soumettre leur candidature à des formations de reconversion en paysagisme et en horticulture.[17]

Fait inquiétant, certain·e·s éleveur·euse·s d'animaux à fourrure et opportunistes issu·e·s de juridictions qui ont interdit l'élevage d'animaux à fourrure cherchent à importer des animaux dans des juridictions qui ne l'ont pas encore interdit. Nous avons déjà pu le constater sur l'Î.-P.-É. : en février 2022, un courriel obtenu dans le cadre de demandes d'accès à l'information a révélé qu'un importateur cherchait à faire entrer des renards de Norvège sur l'Î.-P.-É. avec une aide financière du gouvernement de cette province.

Les juridictions qui n'ont pas encore interdit l'élevage d'animaux à fourrure devraient envisager de toute urgence de le faire de manière proactive au lieu de compter uniquement sur l'économie pour y mettre fin. Interdire purement et simplement cette pratique permettrait de prévenir l'importation d'animaux à fourrure, la croissance subséquente de cette industrie et les risques associés à la pratique dans son ensemble.

Infections de COVID-19 et de H5N1 dans des élevages d'animaux à fourrure jusqu'à aujourd'hui

Depuis le mois d'avril 2020, lorsque le premier cas de COVID-19 chez un vison américain a été confirmé dans un élevage aux Pays-Bas, cette maladie zoonotique n'a cessé de faire des ravages dans les troupeaux de visons d'élevage du monde entier. À ce jour, des épidémies de COVID-19 ont été répertoriées dans plus de 400 élevages d'animaux à fourrure dans le monde, notamment au Canada, au Danemark, aux États-Unis, en Espagne, en France, en Grèce, en Italie, en Lituanie, aux Pays-Bas, en Pologne et en Suèdet[18], entraînant la mise à mort de plus de 20 millions d'animaux. Trois de ces épidémies sont survenues au Canada, dans des élevages d'animaux en Colombie-Britannique[19], où de nombreux·euses travailleur·euse·s et visons ont été touché·e·s et où un élevage a euthanasié ses 1 000 visons restants[20].

Des **mutations potentiellement dangereuses du virus, susceptibles de compromettre les avancées en matière de vaccination**, sont apparues au cours de ces épidémies. À ce jour, au moins sept mutations uniques de la protéine Spike du SRAS-CoV-2 ont été identifiées parmi les variants qui co-circulent chez les visons et les humains, et on a pu confirmer qu'au moins l'une d'entre elles réduisait l'effet neutralisateur des anticorps et était donc plus résistante aux vaccins et à la réponse immunitaire de l'organisme[21].

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[16] https://www.thestar.com.my/lifestyle/people/2023/01/15/from-bakers-to-brewers-after-covid-cull-danish-mink-farmers-find-new-careers

[17] https://news.gov.bc.ca/releases/2022SDPR0019-000604

[18] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/events-in-animals/

[19] https://globalnews.ca/news/7541651/second-bc-mink-farm-covid/

[20] https://www.cbc.ca/news/canada/british-columbia/mink-farmer-destroys-1000-animals-covid-1.5862606

[21] https://pubmed.ncbi.nlm.nih.gov/33857422/#:~:text=Here%2C%20we%20report%20that%20mutations,converting%20enzyme%202%20(ACE2)

Le 4 novembre 2020, en réponse à la mutation d'une souche de SRAS-CoV-2 provenant d'un élevage de visons au Danemark, le gouvernement danois a ordonné l'abattage de tous les visons des élevages d'animaux à fourrure restants, soit 17 millions d'animaux, et a suspendu toute activité d'élevage de visons dans le pays[22]. Le Centre européen de prévention et de contrôle des maladies a déclaré qu'entre juin 2020 et janvier 2021, **le Danemark avait rapporté plus de 1 000 cas humains de contamination par un variant du virus issu du vison. Les estimations danoises vont même jusqu'à 4 000 cas humains causés par des variants issus de cet animal.** Des rapports suggèrent que l'industrie du vison au Danemark (l'une des plus importantes dans le monde) ne se relèvera jamais, ce qui remet en question l'avenir de l'industrie de la fourrure à l'échelle internationale[23].

Certaines autorités de santé ont prévenu que les élevages d'animaux à fourrure pouvaient représenter des réservoirs de COVID-19 et d'autres coronavirus, ce qui pourrait entraîner des conséquences catastrophiques pour les humaines et les autres animaux sauvages à l'avenir[24].

En 2020, le département de l'Agriculture des États-Unis (USDA) a confirmé la première infection répertoriée du SRAS-CoV-2 chez un « vison sauvage en liberté » dans l'Utah, dans le cadre de la surveillance de la faune sauvage aux alentours des élevages touchés par l'infection[25]. Cette observation a démontré que les épidémies dans les élevages d'animaux à fourrure pouvaient bel et bien se propager aux populations sauvages. Ce phénomène entraîne un risque supplémentaire, à savoir la création d'un réservoir viral dans les populations sauvages, qui pourrait engendrer des contaminations catastrophiques chez les humains ou chez d'autres animaux sauvages.

En octobre 2022, un élevage de visons en Espagne a été touché par une épidémie de H5N1 (grippe aviaire), décrite par les expert·e·s comme *« extrêmement préoccupante », « une sonnette d'alarme »* **et** *« un mécanisme qui peut de toute évidence déclencher une pandémie de H5 ».* Les quelques 50 000 visons de l'élevage ont dû être tués et leurs cadavres détruits. Les élevages de visons sont propices aux mutations du virus H5N1 et à son adaptation aux mammifères, ce qui pourrait provoquer une pandémie mortelle de H5N1 au sein de la population humaine.

Réponse et recommandations des autorités de santé

Le 12 novembre 2020, l'évaluation rapide des risques : détection de nouveaux variants du SARS-CoV-2 liés au vison du Centre européen de prévention et de contrôle des maladies a été publiée. Ce rapport reconnaît clairement que **l'évolution du virus chez le vison peut avoir des répercussions sur le diagnostic, le traitement et le développement du vaccin contre la COVID-19**, notamment en ce qui concerne l'efficacité de futurs vaccins pour les humains.

Le même jour, l'Organisation mondiale de la Santé animale (anciennement l'OIE) publiait une déclaration reconnaissant que **les troupeaux d'animaux sensibles, notamment de renards,**

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[22] https://www.foedevarestyrelsen.dk/Nyheder/Aktuelt/Sider/Pressemeddelelser%202020/Smittede-minkbes%C3%A6tninger-skal-sl%C3%A5s-ned.aspx; https://www.foedevarestyrelsen.dk/Nyheder/Aktuelt/Sider/Nyheder%202020/Alle-mink-skal-aflives-som-f%C3%B8lge-af-COVID-19.aspx

[23] https://www.bbc.com/news/business-55017666

[24] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/events-in-animals/

[25] https://www.aphis.usda.gov/aphis/newsroom/stakeholder-info/sa_by_date/sa-2020/sa-08/sare-cov-2-mink

pouvaient devenir des réservoirs de SARS-CoV-2 et poser un risque pour la santé publique, ce qui pourrait entraîner des conséquences catastrophiques pour les humains[26].

L'Organisation mondiale de la Santé défend l'approche « Une seule santé », qui place les animaux au centre de la politique publique visant à créer de meilleures conditions de santé[27], tandis que **le Programme des Nations Unies pour l'environnement a listé « l'utilisation et l'exploitation accrues de la vie sauvage » comme l'un des sept facteurs responsables de l'émergence de maladies zoonotiques[28]**.

Problèmes liés au bien-être animal dans les élevages d'animaux à fourrure

Au-delà des inquiétudes concernant la santé publique, l'élevage d'animaux à fourrure implique un niveau inimaginable de cruauté et de souffrance animales, auquel la grande majorité de la population canadienne est opposée[29].

Les espèces les plus largement exploitées pour leur fourrure, à savoir le vison et le renard, sont des prédateurs carnivores très curieux et actifs dont la vie sociale est d'une grande complexité. Ce sont des espèces territoriales qui, lorsqu'elles vivent en liberté dans la nature, consacrent beaucoup d'efforts à la défense de leur territoire. Comme nous le soulignerons ci-dessous, ces animaux ne sont absolument pas adaptés à des conditions d'élevage et de reproduction intensives.

Élevage de visons

À l'état sauvage, les visons sont extrêmement actifs et solitaires. Ils peuvent parcourir de très grands territoires et de nombreux kilomètres pour chasser en suivant des pistes olfactives et pour créer des tanières et des terriers qu'ils explorent et où ils installent. En tant que mammifères semi-aquatiques, leurs territoires englobent des lacs et des rivières où ils adoptent des comportements clés comme nager et plonger pour trouver des proies.

La vie à laquelle sont condamnés les visons dans les élevages d'animaux à fourrure contraste violemment avec cette description. L'énergie débordante de ces animaux est confinée dans des espaces que le Conseil national pour les soins aux animaux d'élevage (CNSAE) fixe au minimum à 8 po/20 cm de large sur 15 po/40 cm de haut. En tant qu'animaux de nature solitaire, le stress lié au fait de devoir vivre dans des cages avec leurs frères et sœurs et en proximité étroite avec des visons totalement étrangers entraîne souvent des batailles et des blessures allant même parfois jusqu'au cannibalisme et à la mort.

Des comportements stéréotypés (tels que des allers-retours répétés le long des murs de leur cage ou le fait de tourner en rond de façon répétitive) et l'automutilation sont observés au quotidien chez les visons en captivité. Ces comportements indiquent un stress excessif et un bien-être animal complètement bafoué.

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[26] https://www.woah.org/fr/declaration-de-loie-sur-le-covid-19-chez-les-visons/
[27] https://www.who.int/fr/news-room/questions-and-answers/item/one-health
[28] https://www.cbd.int/doc/c/084c/e8fd/84ca7fe0e19e69967bb9fb73/unep-sa-sbstta-sbi-02-en.pdf
[29] https://researchco.ca/2022/04/08/animals-canada-2/

Élevage de renards

Le domaine vital des renards sauvages s'étend de 20 à 30 km^2, et ils peuvent migrer sur des centaines de kilomètres chaque saison. Leur habitat est riche et varié, ce qui permet à leurs comportements clés de s'exprimer, comme la chasse, l'établissement de territoire et la construction de repaires, la socialisation et l'accouplement. À l'opposé, les renards qui vivent en élevage sont confinés dans des cages en batterie dont la taille minimale a été fixée par le CNSAE à 36 po/90 cm de largeur sur 36 po/90 cm de hauteur. Ces espaces ne satisfont en rien les besoins physiologiques et comportementaux de ces animaux.

Ces cages en batterie sont constituées de fils de fer et, dans certains cas, comportent une étagère en métal ou un objet dédié à être rongé. Le manque continu de stimulations significatives et variées et l'impossibilité d'exprimer leurs comportements normaux entraînent souvent des comportements stéréotypés comme des mouvements répétés, qui indiquent un état mental compromis. Des blessures peuvent également survenir entre compagnons de cage, ce qui résulte également du stress d'être confinés.

Les renardes reproductrices des élevages sont inséminées chaque année. Après avoir donné naissance à leurs petits, ceux-ci leur sont arrachés pour être placés dans leurs propres cages en fer. Ils ne revoient ensuite jamais leur mère. Ce cycle se répète chaque année jusqu'à ce que les renardes ne puissent plus produire de petits, auquel cas elles sont alors mises à mort. Conformément aux normes du Conseil national pour les soins aux animaux d'élevage, la pratique approuvée pour tuer les renards d'élevage au Canada est l'électrocution par voie anale[30].

Figure 1 : renard confiné dans une cage dans un élevage d'animaux à fourrure en 2022

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[30] https://www.nfacc.ca/codes-de-pratiques/renards-delevage-code

Un faible niveau de bien-être augmente la sensibilité aux maladies infectieuses

Les conditions de vie dans les élevages d'animaux à fourrure, où les animaux sont confinés en étroite proximité les uns avec les autres et à des densités élevées, bafouent tous les besoins les plus fondamentaux des animaux en matière de bien-être. Non seulement ces animaux sauvages captifs sont extrêmement stressés et donc immunodéprimés, mais ils sont également « entassés » les uns sur les autres, en contact étroit avec les sécrétions respiratoires et les excréments des autres animaux.

Les élevages d'animaux à fourrure ne disposent pas toujours de facteurs d'atténuation naturels, tels que la variabilité génétique et le respect d'une distance saine entre les animaux. Ces animaux sont confinés dans des petites cages de fer sous lesquelles s'accumulent de la litière et des matières fécales sèches[31]. Pour ces raisons, les élevages d'animaux à fourrure présentent de nombreux vecteurs potentiels de propagation des maladies d'un animal à l'autre, ainsi que des conditions dans lesquelles les virus risquent de se combiner génétiquement pour former des variants potentiellement virulents pour l'homme.

Le niveau de mortalité parmi les animaux captifs dans ces élevages est déjà inacceptable. Le risque est qu'on ne détecte pas que les décès sont dus à des maladies infectieuses. Par ailleurs, en raison de la forte densité d'animaux dans les élevages d'animaux à fourrure, il est difficile pour les travailleur·euse·s de surveiller fréquemment la santé de chaque animal. Les animaux qui présentent des symptômes de maladies infectieuses peuvent donc passer inaperçus.

Conclusion

Compte tenu des crises sanitaires, économiques et sociales dévastatrices causées par la pandémie de COVID-19, le risque de mutation du virus qui compromettrait l'efficacité des vaccins chez les humains ne peut être négligé. Une chose est certaine : ce risque ne peut être toléré au nom d'une industrie marginale et cruelle qui n'existe que pour la confection de produits de mode inutiles. Des scientifiques ont prévenu que la prochaine pandémie pourrait venir ou proliférer à cause de cette pratique inutile qui consiste à exploiter les animaux pour la production de fourrure. Le gouvernement du Québec doit de toute urgence prendre des mesures appropriées pour prévenir les risques de voir se former des réservoirs de SARS-CoV-2 qui mettraient en péril l'efficacité des vaccins en cours d'élaboration et qui pourraient entraîner ou faire proliférer de nouvelles pandémies.

HSI/Canada recommande donc sans équivoque au gouvernement du Québec d'interdire proactivement et de toute urgence l'élevage d'animaux à fourrure.

La fermeture des élevages d'animaux à fourrure au Québec n'aurait que de très faibles répercussions économiques sur un groupe restreint d'individus. Une mesure supplémentaire pourrait être envisagée pour soutenir financièrement les exploitant·e·s de ces élevages *exclusivement* pour couvrir les coûts de démantèlement des opérations d'élevage d'animaux à fourrure, de reconversion professionnelle et d'aide pour se tourner vers d'autres activités. Des aides similaires ont déjà été offertes dans d'autres juridictions.

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[31] https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099(20)30912-9.pdf

Une chose est claire : afin de protéger la santé publique et de garantir le bien-être animal, le gouvernement du Québec doit immédiatement mettre un terme à l'élevage d'animaux à fourrure dans la province.

The Rt. Hon Justin Trudeau P.C., M.P.
Prime Minister of Canada
Langevin Block
Ottawa, Ontario
K1A 0A2

cc: The Honourable Marie-Claude Bibeau, P.C., M.P. Minister of Agriculture, House of Commons,
        Ottawa, Ontario, K1A 0A6

May 27th 2021

Dear Prime Minister Trudeau,

Fur farming and pandemic disease risk

As veterinary surgeons, virologists, epidemiologists, infectious disease specialists and animal behaviourists, we believe that outbreaks of SARS-CoV-2, the virus that causes COVID-19, on mink fur farms in multiple countries across Europe as well as in North America, present another compelling reason for governments around the world to consider ending the farming of animals for fur.

Outbreaks of the virus on mink fur farms have been officially documented thus far in the Netherlands, Denmark, Poland, Lithuania, Greece, Spain, Sweden, France, Italy, Latvia, the United States and Canada. This is deeply concerning both from an animal health and public health perspective. Research using whole genome sequencing has concluded that a significant number of people working on fur farms have become infected with SARS-CoV-2 by mink in rare, but concerning, cases of animal to human disease transmission. It has further been shown that infection in mink can lead to mutations of the spike-proteins which, if transmitted to human populations, could potentially risk undermining the efficacy of vital vaccines.

It is clear that fur farms have the potential to act as reservoirs of SARS-CoV-2. Mink are certainly highly susceptible to this virus, but another fur-farmed species - raccoon dogs - is also capable of contracting it. Some scientists have postulated that fur farms in China, the largest fur producer in the world, could yet be implicated as having played a role in the early transmission of the virus in China, as a potential missing link. Given the scale of the industry in China, and the conditions for the animals on farms, it is at least a plausible source.

Mink are particularly susceptible to respiratory diseases. Additionally, the intensive breeding conditions typical on fur farms – animals unnaturally crowded together, poor hygiene, stress, injuries and low genetic diversity – are ideal for the creation and spread of novel pathogens. Footage taken on fur farms in countries all over the world consistently expose evidence of poor welfare conditions, and we note that fur industry certification schemes do not meaningfully improve animal welfare, nor satisfactorily address disease risk potential for live or dead animals.

Severe animal welfare deficiencies are inherent to factory fur farming, and the trade creates potential for the many tens of millions of animals on fur farms to act as immediate, intermediate or amplifier

hosts for viral pathogens. Even if the immediate threat of SARS-CoV-2 abates at a later date, such as through the development of a vaccine for these species, the low welfare and high-density nature of fur farming makes this industry susceptible to other pathogens in the future. As such, the next global pandemic could well find its origins or be spread through the exploitation of animals for the production of fur. To risk jeopardising our ability to control and end this or future global coronavirus pandemics, for the sake of fur fashion production, would seem imprudent.

We therefore support the call by Humane Society International for a permanent global end to the breeding, keeping and killing of animals for the purposes of fur production, and the sale of fur.

Yours sincerely,

1. Marc Abraham BVM&S MRCVS, UNITED KINGDOM
2. Inês Ajuda, DVM, MSc, Programme Leader Farmed Animals, Eurogroup for Animals, BELGIUM
3. Bo Algers, Professor emeritus, Swedish University of Agricultural Sciences, SWEDEN
4. Professor Michael C. Appleby OBE, University of Edinburgh, UNITED KINGDOM
5. Dr Sandra Baker, BSC (Hons) DPhil, Research Fellow, Department of Zoology, University of Oxford, UNITED KINGDOM
6. Juan Miguel Barros Dios, PhD, Professor of Preventive Medicine and Public Health, Director of the Radon Laboratory of Galicia, Center for Biomedical Research in Epidemiology and Public Health Network (CIBERESP), SPAIN
7. Professor Matthew Baylis, Chair of Veterinary Epidemiology, University of Liverpool, UNITED KINGDOM
8. Professor Diana Bell, Professor of Conservation Biology, School of Biological Sciences, University of East Anglia, Norwich, UNITED KINGDOM
9. Dr Helen Bolter MRCVS, UNITED KINGDOM
10. Vanessa Carli Bones, Post-Doc, PhD, MSc., Veterinary Surgeon, BRAZIL
11. Dr Ciara Clarke BSc Hons, BVSc, MRCVS Veterinary Surgeon, UNITED KINGDOJM
12. Claire Coupaud Mellado BVSc MRCVS, UNITED KINGDOM
13. Prof. Dr. Gonçalo Da Graça Pereira, DVM, MsC, PhD, Dip ECAWBM (BM), Dip ECAWBM (AWSEL), European Veterinary Specialist in Behavioural Medicine (Companion Animals), PORTUGAL
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15. Dr Ankush Dhariwal, Infectious Diseases/ Microbiology doctor, FRCPath, DTMH, MRCP, MBChB, BSc, UNITED KINGDOM
16. Ilaria di Silvestre, BVSc MSc on Animal Behaviour and Ecology, BELGIUM
17. Professor Cathy Dwyer, BSc, PhD, Professor of Animal Behaviour and Welfare, SRUC and Director of the Jeanne Marchig International Centre for Animal Welfare Education, UNITED KINGDOM
18. Prof Sarah Edwards, Professor of Bioethics, University College London, UNITED KINGDOM
19. Dr. Dwight Ferris, MD, FRCPC, infectious diseases consultant, clinical assistant professor, University of British Columbia, CANADA
20. Bruce Fogle MBE DVM MRCVS, President of the RSPCA Sussex Chichester & District Branch, UNITED KINGDOM
21. Dr Luke Gamble BVSc DVM&S FRCVS, Chief Executive at Worldwide Veterinary Service and Mission Rabies, UNITED KINGDOM

22. Magnus Gisslén, Professor of Infectious Diseases, The Sahlgrenska Academy at University of Gothenburg, SWEDEN

23. Dr. Pete Goddard, BVetMed PhD DipECSRHM DipECAWBM (AWSEL) MRCVS, EBVS European Veterinary Specialist in Animal Welfare Science, Ethics and Law, UNITED KINGDOM

24. Nellie Goetz, DVM, MPH, Executive Director of Altered Tails Barnhart Clinic, Arizona, and former Clinical Assistant Professor of Shelter Medicine at Midwestern University, Arizona, UNITED STATES

25. Emma Goodman Milne BVSc MRCVS, FRANCE

26. James Greenwood, BVSc MRCVS, UNITED KINGDOM

27. Jan Hajek MD FRCPC, Infectious Diseases Specialist, Clinical Assistant Professor of Medicine, University of British Columbia, CANADA

28. Gail R. Hansen, DVM MPH, former state epidemiologist and state public health veterinarian for the Kansas Department of Health and Environment, UNITED STATES

29. Lauren Henderson, DVM, MPH, UNITED STATES

30. Cat Henstridge BVSc MRCVS, UNITED KINGDOM

31. Dr. Kathrin Herrmann, PhD, DipECAWBM (AWSEL), Veterinary Specialist in Animal Welfare Science, Ethics and Law; Animal Protection Commissioner of Berlin, GERMANY, and Faculty Senior Associate, Johns Hopkins University, UNITED STATES

32. Dr Joanna Hockenhull BSc (hons) MSc PhD member of the Animal Welfare and Behaviour Research Group, UNITED KINGDOM

33. Dr Mark Jones BVSc MSc (Stir) MSc (UL) MRCVS, UNITED KINGDOM

34. Dr Laura Kahn MD, MPH, MPP, Research Scholar, Program on Science and Global Security, Princeton University, and Co-Founder of One Health Initiative, UNITED STATES

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Envoyé: 21 juillet 2023 13:55
À: Lessard Marie-Ève (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: TR: [EXTERNE] L'élevage des animaux à fourrure au Québec
Pièces jointes: Vets and Virologists Letter May 2021 CANADA.pdf; L'e´levage d'animaux a` fourrure au Que´bec.pdf

Tel que discuté

De : Kelly Butler
Envoyé : 8 mars 2023 17:14
À : Garneau Josiane (DSABEA) (Québec) ; Côté Isabelle (DSABEA) (Québec) ; Laflamme Lysandre (DADS) (Québec)
Cc : Amélie Martel
Objet : [EXTERNE] L'élevage des animaux à fourrure au Québec

> *** ATTENTION : Ce courriel provient de l'extérieur du MAPAQ.**
> Si vous doutez de l'authenticité du courriel, évitez de cliquer sur des liens ou d'ouvrir une pièce jointe et communiquez verbalement avec l'expéditeur.

Bonjour,

Merci beaucoup d'avoir pris le temps de nous rencontrer la semaine dernière.

Vous trouverez ci-joint les informations détaillées concernant l'élevage d'animaux à fourrure au Québec, ainsi qu'une lettre envoyée au gouvernement fédéral en 2021 qui indique la nécessité de mettre fin à l'élevage d'animaux à fourrure en tant qu'enjeu de santé publique. Cette lettre a été signée par 67 spécialistes des maladies infectieuses et vétérinaires.

N'hésitez pas à me contacter si vous avez des questions ou pour toute information supplémentaire.

Je suis impatiente de poursuivre cette discussion avec vous,

Kelly Butler
Wildlife Campaign Manager / Responsable de campagne de la faune
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The Rt. Hon Justin Trudeau P.C., M.P.
Prime Minister of Canada
Langevin Block
Ottawa, Ontario
K1A 0A2

cc: The Honourable Marie-Claude Bibeau, P.C., M.P. Minister of Agriculture, House of Commons,
        Ottawa, Ontario, K1A 0A6

May 27th 2021

Dear Prime Minister Trudeau,

Fur farming and pandemic disease risk

As veterinary surgeons, virologists, epidemiologists, infectious disease specialists and animal behaviourists, we believe that outbreaks of SARS-CoV-2, the virus that causes COVID-19, on mink fur farms in multiple countries across Europe as well as in North America, present another compelling reason for governments around the world to consider ending the farming of animals for fur.

Outbreaks of the virus on mink fur farms have been officially documented thus far in the Netherlands, Denmark, Poland, Lithuania, Greece, Spain, Sweden, France, Italy, Latvia, the United States and Canada. This is deeply concerning both from an animal health and public health perspective. Research using whole genome sequencing has concluded that a significant number of people working on fur farms have become infected with SARS-CoV-2 by mink in rare, but concerning, cases of animal to human disease transmission. It has further been shown that infection in mink can lead to mutations of the spike-proteins which, if transmitted to human populations, could potentially risk undermining the efficacy of vital vaccines.

It is clear that fur farms have the potential to act as reservoirs of SARS-CoV-2. Mink are certainly highly susceptible to this virus, but another fur-farmed species - raccoon dogs - is also capable of contracting it. Some scientists have postulated that fur farms in China, the largest fur producer in the world, could yet be implicated as having played a role in the early transmission of the virus in China, as a potential missing link. Given the scale of the industry in China, and the conditions for the animals on farms, it is at least a plausible source.

Mink are particularly susceptible to respiratory diseases. Additionally, the intensive breeding conditions typical on fur farms – animals unnaturally crowded together, poor hygiene, stress, injuries and low genetic diversity – are ideal for the creation and spread of novel pathogens. Footage taken on fur farms in countries all over the world consistently expose evidence of poor welfare conditions, and we note that fur industry certification schemes do not meaningfully improve animal welfare, nor satisfactorily address disease risk potential for live or dead animals.

Severe animal welfare deficiencies are inherent to factory fur farming, and the trade creates potential for the many tens of millions of animals on fur farms to act as immediate, intermediate or amplifier

hosts for viral pathogens. Even if the immediate threat of SARS-CoV-2 abates at a later date, such as through the development of a vaccine for these species, the low welfare and high-density nature of fur farming makes this industry susceptible to other pathogens in the future. As such, the next global pandemic could well find its origins or be spread through the exploitation of animals for the production of fur. To risk jeopardising our ability to control and end this or future global coronavirus pandemics, for the sake of fur fashion production, would seem imprudent.

We therefore support the call by Humane Society International for a permanent global end to the breeding, keeping and killing of animals for the purposes of fur production, and the sale of fur.

Yours sincerely,

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Note de synthèse : plaidoyer en faveur de l'interdiction de l'élevage d'animaux à fourrure au Québec

Depuis des dizaines d'années, des groupes de protection des animaux œuvrent pour mettre un terme à l'élevage d'animaux à fourrure au Canada en raison des conditions particulièrement mauvaises pour le bien-être des animaux et des répercussions de ces pratiques. Dans les élevages d'animaux à fourrure, des animaux sauvages sont confinés dans de petites cages vides, sans pouvoir satisfaire leurs besoins les plus essentiels, à savoir se nourrir correctement, s'abreuver, bénéficier de soins vétérinaires et exprimer leurs comportements naturels, tels que vagabonder, creuser ou encore nager[1]. Des vétérinaires et des spécialistes de la vie sauvage dénoncent régulièrement la nature inhumaine de cette activité[2].

Aujourd'hui, le monde entier a pris conscience du fait que les conditions inhumaines qui règnent dans les élevages d'animaux à fourrure **font de ces établissements des bombes à retardement propices à la propagation de maladies zoonotiques mortelles.** À ce jour, plus de **400 épidémies de COVID-19 ont été enregistrées dans des fermes d'élevage de visons** à travers le monde, dont trois en Colombie-Britannique[3]. Même si les épidémies documentées dans les élevages d'animaux à fourrure ont jusqu'alors été limitées aux visons, les renards sont également sensibles à la COVID-19 et peuvent excréter le virus[4]. Certaines autorités de santé ont prévenu que **les élevages d'animaux à fourrure pouvaient représenter des réservoirs de COVID-19** et d'autres coronavirus, ce qui pourrait entraîner des conséquences catastrophiques pour les humains et les autres animaux sauvages à l'avenir[5].

Récemment, une information est parue au sujet **d'un élevage de visons en Espagne touché par une épidémie de H5N1 (grippe aviaire), décrite par les expert·e·s comme** *« extrêmement préoccupante », « une sonnette d'alarme »* **et** *« un mécanisme qui peut de toute évidence déclencher une pandémie de H5 ».*[6] Il s'agit d'un point significatif pour le Québec, où la grippe aviaire circule à une vitesse alarmante[7]. La propagation de la grippe aviaire parmi les visons pourrait favoriser l'évolution du virus jusqu'à ce qu'il se propage à la population humaine et se transforme en une pandémie mortelle pour celle-ci.

Plus de 25 pays ont déjà mis fin à l'élevage d'animaux à fourrure au sein de leurs frontières ou ont restreint cette pratique, et de nombreux autres envisagent d'adopter des mesures similaires[8]. En 2021, compte tenu des préoccupations en matière de santé publique et de bien-être animal, la Colombie-Britannique a été la première province canadienne à interdire l'élevage de visons, une

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[1] https://www.furfreealliance.com/wp-content/uploads/2017/09/Factsheet_Animal-welfare-problems-in-fur-farming.pdf

[2] https://www.hsi.org/wp-content/uploads/assets/pdfs/letter-vets-experts-fur.pdf; https://www.furfreealliance.com/wp-content/uploads/2017/09/Factsheet_Animal-welfare-problems-in-fur-farming.pdf

[3] https://www.who.int/europe/publications/i/item/WHO-EURO-2023-6616-46382-67849

[4] https://pubmed.ncbi.nlm.nih.gov/35830965/

[5] https://www.woah.org/fr/declaration-de-loie-sur-le-covid-19-chez-les-visons/

[6] https://www.science.org/content/article/incredibly-concerning-bird-flu-outbreak-spanish-mink-farm-triggers-pandemic-fears

[7] https://montrealgazette.com/news/local-news/unprecedented-winter-outbreaks-of-avian-flu-rattle-quebec-poultry-farmers#:~:text=Quebec,Unprecedented%20winter%20outbreaks%20of%20avian%20flu%20rattle%20Quebec%20poultry%20farmers,pathogenic%20avian%20influenz

[8] https://www.furfreealliance.com/fur-bans/

mesure qui, dans les faits, a marqué la fin du secteur de l'élevage d'animaux à fourrure dans son ensemble, puisque la C.-B. ne compte actuellement pas d'élevages de renards[9].

Humane Society International/Canada demande instamment au gouvernement du Québec de suivre les exemples donnés par d'autres régions et d'interdire l'élevage d'animaux à fourrure, pour des raisons de santé publique.

L'élevage d'animaux à fourrure au Québec

L'élevage d'animaux à fourrure est en déclin dans le monde entier. Le Québec ne fait pas exception : alors qu'en 1982, le Québec comptait 226 établissements d'élevage d'animaux à fourrure, aujourd'hui, il en reste seulement trois (1 élevage de renards et 2 élevages de visons).

L'élevage d'animaux à fourrure n'est pas viable économiquement au niveau mondial, en raison de la dégringolade des prix et du fait que les fourrures se vendent souvent moins cher que leur coût de production[10]. Une enquête de Radio-Canada a révélé qu'entre 2014 et 2020, plus de 100 millions de dollars provenant des caisses des gouvernements fédéral et provincial avaient été utilisés pour subventionner les élevages d'animaux à fourrure[11].

Selon un sondage réalisé en 2022, 76 % de la population québécoise étaient en faveur de l'interdiction nationale des élevages d'animaux à fourrure[12], soit le deuxième taux de soutien le plus élevé en faveur d'une interdiction nationale, juste derrière la Colombie-Britannique (81 %), où l'élevage de visons est déjà interdit depuis 2021.

En vue des élections provinciales de 2022, le Parti conservateur du Québec, le Parti libéral du Québec, le Parti québécois et Québec solidaire se sont tous engagés à interdire l'élevage d'animaux à fourrure dans la province au cours d'un débat[13]. Ces engagements surviennent quelques jours seulement après la diffusion de photos bouleversantes obtenues par We Animals, qui a documenté les conditions de vie des animaux dans deux élevages d'animaux à fourrure au Québec[14], des images qui ont entraîné le dépôt d'une plainte par Animal Justice, une organisation canadienne de défense des droits des animaux.

L'interdiction de l'élevage d'animaux à fourrure dans le monde

À ce jour, plus de 25 pays ont interdit ou restreint l'élevage d'animaux à fourrure. Au lendemain de la pandémie, les ONG (dont HSI/Canada) reçoivent un nombre impressionnant de demandes de renseignements sur le processus d'abolition de l'élevage d'animaux à fourrure dans les juridictions du monde entier.

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[9] https://news.gov.bc.ca/releases/2021AFF0066-002112

[10] Ibid.

[11] https://www.cbc.ca/news/canada/nova-scotia/mink-farming-canada-agristability-boom-bust-1.5495165

[12] https://thefurbearers.com/blog/3-4-of-canadians-support-a-ban-on-fur-farming/

[13] https://www.spca.com/quatre-partis-sengagent-a-interdire-les-fermes-a-fourrure/

[14] https://weanimalsmedia.org/2022/09/08/an-expose-of-fur-farming-in-quebec/

Les juridictions qui ont interdit ou restreint l'élevage d'animaux à fourrure sont énumérées dans le tableau ci-après[15] :

Pays (date d'entrée en vigueur)	Détails sur l'interdiction
Royaume-Uni (2000)	Interdiction totale de l'élevage d'animaux à fourrure
Autriche (2005)	Interdiction totale de l'élevage d'animaux à fourrure
Japon (2006)	Interdiction d'établir de nouveaux élevages de visons; le dernier élevage a fermé en 2016
Suisse (2008)	Lois sur le bien-être animal qui ont mis fin à l'élevage d'animaux à fourrure
Danemark (2009, 2011)	Interdiction de l'élevage de renards, interdiction d'établir de nouveaux élevages de chiens viverrins
Slovénie (2013)	Interdiction totale de l'élevage d'animaux à fourrure
Nouvelle-Zélande (2013)	Interdiction d'importer des visons
Macédoine (2014)	Interdiction totale de l'élevage d'animaux à fourrure
Suède (2014)	Lois sur le bien-être animal qui interdisent les élevages de renards et de chinchillas
Croatie (2017)	Interdiction totale de l'élevage d'animaux à fourrure
Luxembourg (2018)	Interdiction totale de l'élevage d'animaux à fourrure
Serbie (2019)	Interdiction totale de l'élevage d'animaux à fourrure
République tchèque (2019)	Interdiction totale de l'élevage d'animaux à fourrure
Hongrie (2020)	Interdiction de l'élevage de visons et de renards
France (2021)	Interdiction de l'élevage d'espèces non domestiques pour leur fourrure
Irlande (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Malte (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Italie (2022)	Interdiction totale de l'élevage d'animaux à fourrure
Allemagne (2022)	Lois sur le bien-être animal qui ont mis fin à l'élevage d'animaux à fourrure
Belgique (2023)	Interdiction totale de l'élevage d'animaux à fourrure
Pays-Bas (2024)	Interdiction totale de l'élevage d'animaux à fourrure
Slovaquie (2025)	Interdiction totale de l'élevage d'animaux à fourrure
Norvège (2025)	Interdiction totale de l'élevage d'animaux à fourrure
Estonie (2026)	Interdiction totale de l'élevage d'animaux à fourrure
Lettonie (2028)	Interdiction totale de l'élevage d'animaux à fourrure
Bosnie-Herzégovine (2028)	Interdiction totale de l'élevage d'animaux à fourrure

Bien que d'autres juridictions aient pris des mesures pour interdire l'élevage d'animaux à fourrure au niveau fédéral, il est important de souligner qu'au Canada, cette interdiction doit être instaurée au niveau provincial (comme l'a fait la Colombie-Britannique) étant donné que la législation relative à la production agricole, qui comprend l'élevage d'animaux à fourrure, relève de la compétence territoriale des provinces.

Certaines juridictions ont mis en place des programmes de transition en parallèle d'une interdiction de l'élevage d'animaux à fourrure. Par exemple, les éleveurs et éleveuses d'animaux à fourrure au Danemark peuvent demander des subventions et une aide du gouvernement pour se tourner vers une nouvelle activité. Parmi les nouvelles activités vers lesquelles se tournent ces éleveur·euse·s, on

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[15] https://www.furfreealliance.com/fur-bans/

trouve des brasseries, des fermes de production de fraises ou encore des boulangeries[16]. Le gouvernement de la Colombie-Britannique a également mis en place des programmes visant à aider les éleveurs et éleveuses à se lancer dans de nouvelles carrières plus en phase avec la vision agricole de la province. Les éleveur·euse·s d'animaux à fourrure en C.-B. peuvent en effet soumettre leur candidature à des formations de reconversion en paysagisme et en horticulture.[17]

Fait inquiétant, certain·e·s éleveur·euse·s d'animaux à fourrure et opportunistes issu·e·s de juridictions qui ont interdit l'élevage d'animaux à fourrure cherchent à importer des animaux dans des juridictions qui ne l'ont pas encore interdit. Nous avons déjà pu le constater sur l'Î.-P.-É. : en février 2022, un courriel obtenu dans le cadre de demandes d'accès à l'information a révélé qu'un importateur cherchait à faire entrer des renards de Norvège sur l'Î.-P.-É. avec une aide financière du gouvernement de cette province.

Les juridictions qui n'ont pas encore interdit l'élevage d'animaux à fourrure devraient envisager de toute urgence de le faire de manière proactive au lieu de compter uniquement sur l'économie pour y mettre fin. Interdire purement et simplement cette pratique permettrait de prévenir l'importation d'animaux à fourrure, la croissance subséquente de cette industrie et les risques associés à la pratique dans son ensemble.

Infections de COVID-19 et de H5N1 dans des élevages d'animaux à fourrure jusqu'à aujourd'hui

Depuis le mois d'avril 2020, lorsque le premier cas de COVID-19 chez un vison américain a été confirmé dans un élevage aux Pays-Bas, cette maladie zoonotique n'a cessé de faire des ravages dans les troupeaux de visons d'élevage du monde entier. À ce jour, des épidémies de COVID-19 ont été répertoriées dans plus de 400 élevages d'animaux à fourrure dans le monde, notamment au Canada, au Danemark, aux États-Unis, en Espagne, en France, en Grèce, en Italie, en Lituanie, aux Pays-Bas, en Pologne et en Suèdet[18], entraînant la mise à mort de plus de 20 millions d'animaux. Trois de ces épidémies sont survenues au Canada, dans des élevages d'animaux en Colombie-Britannique[19], où de nombreux·euses travailleur·euse·s et visons ont été touché·e·s et où un élevage a euthanasié ses 1 000 visons restants[20].

Des **mutations potentiellement dangereuses du virus, susceptibles de compromettre les avancées en matière de vaccination**, sont apparues au cours de ces épidémies. À ce jour, au moins sept mutations uniques de la protéine Spike du SRAS-CoV-2 ont été identifiées parmi les variants qui co-circulent chez les visons et les humains, et on a pu confirmer qu'au moins l'une d'entre elles réduisait l'effet neutralisateur des anticorps et était donc plus résistante aux vaccins et à la réponse immunitaire de l'organisme[21].

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[16] https://www.thestar.com.my/lifestyle/people/2023/01/15/from-bakers-to-brewers-after-covid-cull-danish-mink-farmers-find-new-careers

[17] https://news.gov.bc.ca/releases/2022SDPR0019-000604

[18] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/events-in-animals/

[19] https://globalnews.ca/news/7541651/second-bc-mink-farm-covid/

[20] https://www.cbc.ca/news/canada/british-columbia/mink-farmer-destroys-1000-animals-covid-1.5862606

[21]https://pubmed.ncbi.nlm.nih.gov/33857422/#:~:text=Here%2C%20we%20report%20that%20mutations,converting%20enzyme%202%20(ACE2)

Le 4 novembre 2020, en réponse à la mutation d'une souche de SRAS-CoV-2 provenant d'un élevage de visons au Danemark, le gouvernement danois a ordonné l'abattage de tous les visons des élevages d'animaux à fourrure restants, soit 17 millions d'animaux, et a suspendu toute activité d'élevage de visons dans le pays[22]. Le Centre européen de prévention et de contrôle des maladies a déclaré qu'entre juin 2020 et janvier 2021, **le Danemark avait rapporté plus de 1 000 cas humains de contamination par un variant du virus issu du vison. Les estimations danoises vont même jusqu'à 4 000 cas humains causés par des variants issus de cet animal.** Des rapports suggèrent que l'industrie du vison au Danemark (l'une des plus importantes dans le monde) ne se relèvera jamais, ce qui remet en question l'avenir de l'industrie de la fourrure à l'échelle internationale[23].

Certaines autorités de santé ont prévenu que les élevages d'animaux à fourrure pouvaient représenter des réservoirs de COVID-19 et d'autres coronavirus, ce qui pourrait entraîner des conséquences catastrophiques pour les humaines et les autres animaux sauvages à l'avenir[24].

En 2020, le département de l'Agriculture des États-Unis (USDA) a confirmé la première infection répertoriée du SRAS-CoV-2 chez un « vison sauvage en liberté » dans l'Utah, dans le cadre de la surveillance de la faune sauvage aux alentours des élevages touchés par l'infection[25]. Cette observation a démontré que les épidémies dans les élevages d'animaux à fourrure pouvaient bel et bien se propager aux populations sauvages. Ce phénomène entraîne un risque supplémentaire, à savoir la création d'un réservoir viral dans les populations sauvages, qui pourrait engendrer des contaminations catastrophiques chez les humains ou chez d'autres animaux sauvages.

En octobre 2022, un élevage de visons en Espagne a été touché par une épidémie de H5N1 (grippe aviaire), décrite par les expert·e·s comme *« extrêmement préoccupante », « une sonnette d'alarme »* et *« un mécanisme qui peut de toute évidence déclencher une pandémie de H5 ».* Les quelques 50 000 visons de l'élevage ont dû être tués et leurs cadavres détruits. Les élevages de visons sont propices aux mutations du virus H5N1 et à son adaptation aux mammifères, ce qui pourrait provoquer une pandémie mortelle de H5N1 au sein de la population humaine.

Réponse et recommandations des autorités de santé

Le 12 novembre 2020, l'évaluation rapide des risques : détection de nouveaux variants du SARS-CoV-2 liés au vison du Centre européen de prévention et de contrôle des maladies a été publiée. Ce rapport reconnaît clairement que **l'évolution du virus chez le vison peut avoir des répercussions sur le diagnostic, le traitement et le développement du vaccin contre la COVID-19**, notamment en ce qui concerne l'efficacité de futurs vaccins pour les humains.

Le même jour, l'Organisation mondiale de la Santé animale (anciennement l'OIE) publiait une déclaration reconnaissant que **les troupeaux d'animaux sensibles, notamment de renards,**

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[22] https://www.foedevarestyrelsen.dk/Nyheder/Aktuelt/Sider/Pressemeddelelser%202020/Smittede-minkbes%C3%A6tninger-skal-sl%C3%A5s-ned.aspx; https://www.foedevarestyrelsen.dk/Nyheder/Aktuelt/Sider/Nyheder%202020/Alle-mink-skal-aflives-som-f%C3%B8lge-af-COVID-19.aspx

[23] https://www.bbc.com/news/business-55017666

[24] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/events-in-animals/

[25] https://www.aphis.usda.gov/aphis/newsroom/stakeholder-info/sa_by_date/sa-2020/sa-08/sare-cov-2-mink

pouvaient devenir des réservoirs de SARS-CoV-2 et poser un risque pour la santé publique, ce qui pourrait entraîner des conséquences catastrophiques pour les humains[26].

L'Organisation mondiale de la Santé défend l'approche « Une seule santé », qui place les animaux au centre de la politique publique visant à créer de meilleures conditions de santé[27], tandis que **le Programme des Nations Unies pour l'environnement a listé « l'utilisation et l'exploitation accrues de la vie sauvage » comme l'un des sept facteurs responsables de l'émergence de maladies zoonotiques[28].**

Problèmes liés au bien-être animal dans les élevages d'animaux à fourrure

Au-delà des inquiétudes concernant la santé publique, l'élevage d'animaux à fourrure implique un niveau inimaginable de cruauté et de souffrance animales, auquel la grande majorité de la population canadienne est opposée[29].

Les espèces les plus largement exploitées pour leur fourrure, à savoir le vison et le renard, sont des prédateurs carnivores très curieux et actifs dont la vie sociale est d'une grande complexité. Ce sont des espèces territoriales qui, lorsqu'elles vivent en liberté dans la nature, consacrent beaucoup d'efforts à la défense de leur territoire. Comme nous le soulignerons ci-dessous, ces animaux ne sont absolument pas adaptés à des conditions d'élevage et de reproduction intensives.

Élevage de visons

À l'état sauvage, les visons sont extrêmement actifs et solitaires. Ils peuvent parcourir de très grands territoires et de nombreux kilomètres pour chasser en suivant des pistes olfactives et pour créer des tanières et des terriers qu'ils explorent et où ils installent. En tant que mammifères semi-aquatiques, leurs territoires englobent des lacs et des rivières où ils adoptent des comportements clés comme nager et plonger pour trouver des proies.

La vie à laquelle sont condamnés les visons dans les élevages d'animaux à fourrure contraste violemment avec cette description. L'énergie débordante de ces animaux est confinée dans des espaces que le Conseil national pour les soins aux animaux d'élevage (CNSAE) fixe au minimum à 8 po/20 cm de large sur 15 po/40 cm de haut. En tant qu'animaux de nature solitaire, le stress lié au fait de devoir vivre dans des cages avec leurs frères et sœurs et en proximité étroite avec des visons totalement étrangers entraîne souvent des batailles et des blessures allant même parfois jusqu'au cannibalisme et à la mort.

Des comportements stéréotypés (tels que des allers-retours répétés le long des murs de leur cage ou le fait de tourner en rond de façon répétitive) et l'automutilation sont observés au quotidien chez les visons en captivité. Ces comportements indiquent un stress excessif et un bien-être animal complètement bafoué.

[26] https://www.woah.org/fr/declaration-de-loie-sur-le-covid-19-chez-les-visons/
[27] https://www.who.int/fr/news-room/questions-and-answers/item/one-health
[28] https://www.cbd.int/doc/c/084c/e8fd/84ca7fe0e19e69967bb9fb73/unep-sa-sbstta-sbi-02-en.pdf
[29] https://researchco.ca/2022/04/08/animals-canada-2/

Élevage de renards

Le domaine vital des renards sauvages s'étend de 20 à 30 km^2, et ils peuvent migrer sur des centaines de kilomètres chaque saison. Leur habitat est riche et varié, ce qui permet à leurs comportements clés de s'exprimer, comme la chasse, l'établissement de territoire et la construction de repaires, la socialisation et l'accouplement. À l'opposé, les renards qui vivent en élevage sont confinés dans des cages en batterie dont la taille minimale a été fixée par le CNSAE à 36 po/90 cm de largeur sur 36 po/90 cm de hauteur. Ces espaces ne satisfont en rien les besoins physiologiques et comportementaux de ces animaux.

Ces cages en batterie sont constituées de fils de fer et, dans certains cas, comportent une étagère en métal ou un objet dédié à être rongé. Le manque continu de stimulations significatives et variées et l'impossibilité d'exprimer leurs comportements normaux entraînent souvent des comportements stéréotypés comme des mouvements répétés, qui indiquent un état mental compromis. Des blessures peuvent également survenir entre compagnons de cage, ce qui résulte également du stress d'être confinés.

Les renardes reproductrices des élevages sont inséminées chaque année. Après avoir donné naissance à leurs petits, ceux-ci leur sont arrachés pour être placés dans leurs propres cages en fer. Ils ne revoient ensuite jamais leur mère. Ce cycle se répète chaque année jusqu'à ce que les renardes ne puissent plus produire de petits, auquel cas elles sont alors mises à mort. Conformément aux normes du Conseil national pour les soins aux animaux d'élevage, la pratique approuvée pour tuer les renards d'élevage au Canada est l'électrocution par voie anale[30].

Figure 1 : renard confiné dans une cage dans un élevage d'animaux à fourrure en 2022

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[30] https://www.nfacc.ca/codes-de-pratiques/renards-delevage-code

Un faible niveau de bien-être augmente la sensibilité aux maladies infectieuses

Les conditions de vie dans les élevages d'animaux à fourrure, où les animaux sont confinés en étroite proximité les uns avec les autres et à des densités élevées, bafouent tous les besoins les plus fondamentaux des animaux en matière de bien-être. Non seulement ces animaux sauvages captifs sont extrêmement stressés et donc immunodéprimés, mais ils sont également « entassés » les uns sur les autres, en contact étroit avec les sécrétions respiratoires et les excréments des autres animaux.

Les élevages d'animaux à fourrure ne disposent pas toujours de facteurs d'atténuation naturels, tels que la variabilité génétique et le respect d'une distance saine entre les animaux. Ces animaux sont confinés dans des petites cages de fer sous lesquelles s'accumulent de la litière et des matières fécales sèches[31]. Pour ces raisons, les élevages d'animaux à fourrure présentent de nombreux vecteurs potentiels de propagation des maladies d'un animal à l'autre, ainsi que des conditions dans lesquelles les virus risquent de se combiner génétiquement pour former des variants potentiellement virulents pour l'homme.

Le niveau de mortalité parmi les animaux captifs dans ces élevages est déjà inacceptable. Le risque est qu'on ne détecte pas que les décès sont dus à des maladies infectieuses. Par ailleurs, en raison de la forte densité d'animaux dans les élevages d'animaux à fourrure, il est difficile pour les travailleur·euse·s de surveiller fréquemment la santé de chaque animal. Les animaux qui présentent des symptômes de maladies infectieuses peuvent donc passer inaperçus.

Conclusion

Compte tenu des crises sanitaires, économiques et sociales dévastatrices causées par la pandémie de COVID-19, le risque de mutation du virus qui compromettrait l'efficacité des vaccins chez les humains ne peut être négligé. Une chose est certaine : ce risque ne peut être toléré au nom d'une industrie marginale et cruelle qui n'existe que pour la confection de produits de mode inutiles. Des scientifiques ont prévenu que la prochaine pandémie pourrait venir ou proliférer à cause de cette pratique inutile qui consiste à exploiter les animaux pour la production de fourrure. Le gouvernement du Québec doit de toute urgence prendre des mesures appropriées pour prévenir les risques de voir se former des réservoirs de SARS-CoV-2 qui mettraient en péril l'efficacité des vaccins en cours d'élaboration et qui pourraient entraîner ou faire proliférer de nouvelles pandémies.

HSI/Canada recommande donc sans équivoque au gouvernement du Québec d'interdire proactivement et de toute urgence l'élevage d'animaux à fourrure.

La fermeture des élevages d'animaux à fourrure au Québec n'aurait que de très faibles répercussions économiques sur un groupe restreint d'individus. Une mesure supplémentaire pourrait être envisagée pour soutenir financièrement les exploitant·e·s de ces élevages *exclusivement* pour couvrir les coûts de démantèlement des opérations d'élevage d'animaux à fourrure, de reconversion professionnelle et d'aide pour se tourner vers d'autres activités. Des aides similaires ont déjà été offertes dans d'autres juridictions.

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[31] https://www.thelancet.com/pdfs/journals/laninf/PIIS1473-3099(20)30912-9.pdf

Une chose est claire : afin de protéger la santé publique et de garantir le bien-être animal, le gouvernement du Québec doit immédiatement mettre un terme à l'élevage d'animaux à fourrure dans la province.

De: Laflamme Lysandre (DADS) (Québec) <Lysandre.Laflamme@mapaq.gouv.qc.ca>
Envoyé: 18 septembre 2023 15:24
À: Lessard Marie-Ève (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange
Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: TR: Codes de pratique animaux à fourrure - réponse pour OMVQ

PTI

De : Côté Isabelle (DSABEA) (Québec)
Envoyé : 21 mars 2023 17:26
À : Garneau Josiane (DSABEA) (Québec)
Cc : Pelletier Émilie (DSABEA) (Granby)
Objet : RE: Codes de pratique animaux à fourrure - réponse pour OMVQ

Suggestion :

Au Québec, tout comme dans d'autres provinces canadiennes, les Codes de Pratiques pour le soin et la manipulation des animaux d'élevage, publiés par le Conseil national pour les soins aux animaux d'élevage, sont utilisés pour l'application de la réglementation en matière de bien-être animal notamment à titre de règles généralement reconnues en matière de garde pour les différentes espèces d'animaux d'élevage.

La situation est notablement complexe avec l'élevage d'animaux à fourrure, car, contrairement à la plupart des autres espèces animales élevées pour consommation humaine, ils sont des carnivores généralement considérés comme étant solitaires. De plus, les méthodes d'abattage doivent permettre la récupération de la fourrure. Ces variables font qu'il peut être difficile de respecter le bien-être de ces animaux dans un contexte d'élevage intensif.

Le ministère est au fait de ces enjeux et évalue présentement les pistes d'actions possibles pour assurer que le bien-être des animaux élevés pour leur fourrure ne soit pas compromis. Des inspections ont notamment lieu dans les sites d'élevage et les suivis requis sont effectués.

Agriculture, Pêcheries
et Alimentation
Québec

Isabelle Côté DMV, PhD | Médecin vétérinaire
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Toute situation inacceptable concernant la santé, la sécurité ou le bien-être des animaux peut être dénoncée en toute confidentialité en communiquant avec le MAPAQ : MAPAQ - Plaintes - Sécurité et bien-être des animaux (gouv.qc.ca)

De : Garneau Josiane (DSABEA) (Québec) <Josiane.Garneau@mapaq.gouv.qc.ca>
Envoyé : 21 mars 2023 15:10
À : Côté Isabelle (DSABEA) (Québec) <Isabelle.Cote@mapaq.gouv.qc.ca>
Objet : Codes de pratique animaux à fourrure - réponse pour OMVQ

Bonjour Isabelle

lors de la dernière rencontre du groupe de pilotage de la SQSBEA, Gaston Rioux cherchait à savoir si le respect des codes de pratique pour l'élevage de ces animaux assurait le respect du bien-être animal.

Peux-tu préparer un projet de réponse politiquement correct?

Josiane Garneau, M. Sc., MBA │**Directrice p.i.**
Direction de la salubrité alimentaire et du bien-être des animaux
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De: Chiasson Rachel (DSABEA) (Québec) <Rachel.Chiasson@mapaq.gouv.qc.ca>
Envoyé: 2 octobre 2023 13:15
À: Garneau Josiane (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange
Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user4aaf309f]
Cc: Lessard Marie-Ève (DSABEA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange
Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: Demande de contact - Équipe DSA (Animaux à fourrure)
Pièces jointes: 2022-11-13 Fourrure état de situation.docx

Bonjour,

Suite à mes discussions avec Émilie et Marie-Ève, il a été convenu qu'il serait pertinent de consulter la Direction santé animale (équipe de Nathalie Canac-Marquis) afin d'évaluer s'il existe des dispositions dans la loi P-42 qui permettraient d'interdire l'élevage d'animaux à fourrure. Pour ce faire, je vous transmets notre courriel qui met en contexte la problématique et qui requiert leur aide. Voici :

Bonjour,

Nous aimerions vous consulter dans le cadre de notre mandat actuel visant à évaluer la possibilité d'interdire l'élevage des animaux à fourrure (voir en pièce jointe l'état de la situation produit l'année dernière).

L'industrie est en déclin, présente une acceptabilité sociale très faible et n'assure pas le bien-être de ces animaux. Le ministre a aussi mentionné à un journaliste que ce ne sont pas des pratiques encouragées par le ministère. Nous n'avons pas les habilitations requises dans la Loi sur le bien-être et la sécurité de l'animal pour interdire l'élevage pour le commerce de la fourrure par règlement. Une modification législative serait requise. Selon vous, est-ce qu'il y aurait des opportunités en passant par la loi P-42?

Nous sommes aussi ouverts à d'autres suggestions. Votre collaboration sur ce dossier nous permettra d'identifier les possibilités qui s'offrent à nous pour trouver une solution la plus rapide et efficace possible.

N'hésitez pas si vous avez des questions. Ma collègue Marie-Ève Lessard et moi sommes également disponibles pour d'éventuelles rencontres afin d'échanger sur le sujet.

Merci beaucoup et bonne journée,

Agriculture, Pêcheries
et Alimentation
Québec 🔲🔲

Rachel Chiasson, agr., M. Sc. |Conseillère en règlementation – bien-être animal et encadrement des chiens
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Élevage des animaux à fourrure: état de situation

Quelles sont les espèces animales élevées pour la fourrure au Québec (productions primaires VS secondaires) et nombre d'élevage par espèce
Le nombre d'éleveurs d'animaux à fourrure est en diminution autant au Canada qu'au Québec. En 2016 il y avait 228 fermes au Canada, ce nombre n'était que de 125 en 2018 (source Statistiques Canada) et aurait encore diminué depuis.

Il y aurait présentement au Québec :
- Vison :1 éleveur et 1 propriétaire de 2-3 animaux
  - Le propriétaire ne fait plus de reproduction depuis plusieurs années.
  - L'éleveur a mentionné aux services d'inspection du MAPAQ vouloir cesser ses activités après la période d'abattage de décembre 2022.
- Renards : possiblement aucun éleveur pour de la fourrure
  - Il y aurait 3 éleveurs selon les fiches d'enregistrement de 2014, pour un total de 133 têtes.
  - Selon les chiffres de Statistique Canada il y avait 90 renards élevés au Québec en 2020.
  - Toutefois, la plainte de Animal Justice rapporte qu'il n'y aurait qu'une seule ferme de renards en activité au Québec (données de 2021 de Statistiques Canada). Lors de la visite des services d'inspection en 2022, il n'y avait que des renards arctiques sur place et ceux-ci étaient ''*élevés pour des zoos*'' et non pour la fourrure. La plainte a donc été transféré au MFFP.
- Chinchilla : 1 éleveur (source fiche d'enregistrement).

Il est à noter que l'Association professionnelle des producteurs de fourrure du Québec a déposé un avis de dissolution au registraire des entreprises le 2022-10-15[1]

Nombre de plainte dans les dernières années en lien avec ces types d'élevage
Nombre d'interventions du service d'inspection, ANC, RI, jugement de culpabilité (si extraction possible)
Nous n'avons aucune information dans la banque de données concernant les élevages de renards, visons et chinchillas. Aucun établissement n'a été enregistré sous le TE 07-44 - VISONNIERE - RENARDIERE. De plus, les codes de produit 1476-RENARD et 1479-VISON n'ont pas été utilisés dans le cadre d'une plainte ou d'une mesure coercitive.

À notre connaissance l'intervention d'octobre 2022 était la première des services d'inspection du MAPAQ dans ces établissements.

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[1] Registraire des entreprises - État de renseignements d'une personne morale au registre des entreprises (gouv.qc.ca)

En 2017, dans une communication avec le MFFP ils mentionnaient avoir retracé 7 rapports d'inspection à la suite de plaintes depuis 2011. Ils ajoutaient aussi ''*Ce n'est pas le genre de plainte qu'on a souvent puisque ces animaux sont gardés dans des endroits qui ne sont pas accessibles au public. En plus, les visons sont habituellement élevés dans des bâtiments, et ils ne sont donc pas visibles de l'extérieur pour des gens qui passeraient à proximité des lieux.*''.

Conditions de garde par espèces
Des codes de pratiques existent pour les 2 espèces et ont été mis à jour récemment 2021 pour les visons[2] et 2018 pour les renards[3].

De façon générale, il semble que les animaux soient gardés dans des cages individuelles au plancher grillagé. L'environnement est très appauvri.

Intérieur d'une ferme d'élevage de vison   Cage à renard

Source : Portrait de la production des animaux à fourrure | BAnQ numérique

Chez les visons, la nourriture, sous forme de bouillie épaisse, est déposée sur le grillage supérieur de la cage, les conditions d'hygiène se détériorent donc rapidement. Les fèces et l'urine s'accumule sous les cages pour les 2 espèces.

L'abattage se fait par inhalation pour les visons et par électrocution rectale pour les renards. Cette méthode est considérée « non cruelle » par le code de pratique renards car elle conduit à une perte de conscience rapide lorsqu'elle est bien effectuée. Cependant, le stress et la douleur subis par l'animal dans les minutes précédant cette perte de conscience apparaissent comme très élevés[4].

Est-ce que les conditions de garde semblent répondre aux impératifs biologiques des animaux

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[2] https://www.nfacc.ca/codes-de-pratiques/visons
[3] https://www.nfacc.ca/codes-de-pratiques/renards-delevage
[4] Marion Desmarchlier rapport-conditions-de-garde.pdf (spca.com)

Non, les conditions de gardes ne répondent pas aux impératifs biologiques des animaux, notamment :

- Les visons et les renards sont des animaux solitaires. Dans les conditions d'élevage ils sont gardés en groupe.
- Les visons sont des animaux semi-aquatiques, l'environnement d'une ferme ne leur donne aucunement la possibilité d'exprimer des comportements normaux en lien avec l'eau.
- L'environnement est très appauvri et ne peut répondre aux besoins de stimulation de prédateurs intelligents.
- L'accumulation de fèces et autres odeurs présente un irritant olfactif constant.
  - Les renards et les visons ont un sens aigu de l'odorat qui dans la nature les aide à localiser des proies, communiquer entre eux et éviter des prédateurs.
  - Un portrait de l'élevage des animaux en fourrure publié en 2007 mentionne que les élevages doivent être éloignés des populations humaines pour que les odeurs et les bruits (jappements) ne dérange pas la population. [5]. Le sens de l'odorat et de l'ouïe de ces animaux est pourtant plus développé que celui des personnes.
  - Chez le chat le respect du sens de l'odorat est d'ailleurs reconnu comme un pilier essentiel du bien-être[6].
- La conception des cages des renards ne leur permet pas de se cacher. Dans la nature les renards sont des mésoprédateurs, ils sont à la fois des prédateurs et des proies. La possibilité de se cacher est importante pour leur sentiment de sécurité

Enjeux de ce type de production sur les animaux:
- Prédateurs très intelligents gardés dans un environnement appauvri
- Animaux solitaires gardés en groupe
- Garde sur plancher entièrement grillagés dans des conditions d'hygiène pauvres
- Impossibilité pour les animaux d'exprimer des comportements normaux
- Les bâtiments ne sont pas chauffés ce qui peut rendre l'accès à l'eau difficile en hiver.

Autre enjeux possibles :
- Normes environnementales pour les bruits et les odeurs (Ministère de l'environnement et MRC)

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[5] Portrait de la production des animaux à fourrure | BAnQ numérique
[6] AAFP and ISFM Feline Environmental Needs Guidelines - Sarah L H Ellis, Ilona Rodan, Hazel C Carney, Sarah Heath, Irene Rochlitz, Lorinda D Shearburn, Eliza Sundahl, Jodi L Westropp, 2013 (sagepub.com)

- Disposition des carcasses : Comme l'abattage des animaux à fourrure s'effectue surtout en décembre, l'enfouissement sécuritaire et à peu de frais des carcasses pose des problèmes, l'incinération étant jugée trop coûteuse[7].
- L'élevage des animaux à fourrure étant une activité pratiquée à temps partiel par une majorité d'éleveurs, très peu d'entre eux ont le souci de tenir des registres qui leur permettraient de connaître le potentiel de leurs animaux et d'accroître la productivité et la rentabilité de l'exploitation. Les registres, chez ceux qui en tiennent, sont majoritairement tenus manuellement et de façon très sommaire[8]
- L'industrie est très petite et n'a pas la masse critique pour être viable en terme de ressources externes (soins vétérinaires, fournisseurs de nourriture etc..).

Règlementation au Québec

La loi sur le bien-être et la sécurité de l'animal couvre les renards roux, renards arctique et visons d'Amériques gardés dans un but de commerce de la fourrure. L'article 18 sur les permis d'élevage de ces animaux n'est pas en vigueur.

La production de fourrure est reconnue comme une activité agricole notamment dans le texte de l'entente ASAQ et dans divers programmes d'aide financière du ministère.

Législation canadienne

La Colombie Britannique a décrété l'élimination progressive de l'élevage de visons pour des raisons de santé publique en lien avec la covid-19[9] soit :
- Interdiction permanente de la reproduction de vison
- Interdiction d'avoir des visons vivants sur les fermes d'ici avril 2023
- Toutes les peaux doivent être vendues d'ici 2025

Cette décision n'affecte toutefois pas les autres espèces qui pourraient être élevées pour leur fourrure.

Législation internationale

Plusieurs pays ont interdit l'élevage d'animaux pour la fourrure tout en donnant une période de transition à l'industrie dans certains cas. Le Luxembourg a interdit l'élevage alors qu'aucune ferme de fourrure ne se trouvait sur son territoire. Cette interdiction permet toutefois d'éviter que de telles fermes n'y voient le jour.

Pratique interdite (liste partielle) :
- Autriche (2005)[10]

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[7] État de la situation de l'élevage des animaux à fourrure au Québec [conception, recherche et rédaction, Michel Flamand] | BAnQ numérique

[8] État de la situation de l'élevage des animaux à fourrure au Québec (agrireseau.net)

[9] Mink farming phase out planned in B.C. | BC Gov News

[10] Fur Farming in the European Union : pdf (europa.eu)

- Belgique (2015 Wallonie, 2017 Bruxelles, 2018 Flandres). La dernière ferme a fermé ses portes en 2022 soit en avance sur l'échéancier prévu de 2023[11]
- Croatie (adopté en 2006 suivi d'une période de transition de 10 ans)[12]
- France (2021)[13]
- Irlande (2022). La loi prévoit des mesures de compensation pour la fermeture des 3 dernières fermes de visons d'élevage[14].
- Italie (2021)[15]
- Japon. Suite à l'acte sur les espèces exotiques envahissantes de 2006 l'importation de vison était interdite. La dernière ferme de visons a fermé ses portes en 2016[16].
- Luxembourg (2018)[17].
- Royaume-Unis (2000)[18]
- Serbie (adopté en 2009 suivi d'une période de transition de 10 ans)[19]
- Slovénie (adopté en 2013 suivi d'une période de transition, les fermes étaient toutes fermées après 3 ans).
- Plusieurs pays sont présentement en transition vers une interdiction complète : Estonie, Norvège, Bosnie et Herzégovine, Slovaquie…

Le Danemark a procédé à l'abattage préventif de ses fermes de visons en lien avec la pandémie de Covid-19. Les visons étant susceptibles au virus et pouvant permettre l'émergence de nouveau variant. Sur 1259 éleveurs seulement 13 ont demandé une compensation qui leur permettraient potentiellement de continuer l'élevage. Les autres ont appliqué pour une compensation pour terminer leur élevage de visons.

Acceptabilité sociale
- L'acceptabilité sociale est limitée pour la fourrure, selon un sondage de Research.co, 74% des Québécois seraient contre le commerce de la fourrure.
- Plusieurs grandes marques de mode dont Versace, Michael Kors, Gucci et Dolce & Gabbana ont renoncé à utiliser de la fourrure dans leurs collections.
- En septembre 2022, la SPCA de Montréal a lancé une campagne pour interdire l'élevage d'animaux à fourrure [20]

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[11] Fin des élevages de fourrure en Belgique - rtbf.be
[12] AFC - 01/02/17 Fur farming ban (prijatelji-zivotinja.hr)
[13] LOI n° 2021-1539 du 30 novembre 2021 visant à lutter contre la maltraitance animale et conforter le lien entre les animaux et les hommes (1) - Légifrance (legifrance.gouv.fr)
[14] Fur farming ban signed into law by President Higgins (rte.ie)
[15] In an historic vote, Italy to ban fur farming and shut down all mink farms within six months - Humane Society International (hsi.org)
[16] Japan makes an end to fur farming - Fur Free Alliance
[17] Au Luxembourg – Vers l'interdiction de la vente de vraie fourrure? - L'essentiel (lessentiel.lu)
[18] Fur Farming (Prohibition) Act 2000 (legislation.gov.uk)
[19] Serbia starts 2019 off right by outlawing fur farms - Fur Free Alliance
[20] Interdisons les fermes à fourrure - SPCA de Montréal

Mesures d'atténuation possible pour améliorer le BEA de ces animaux: accompagnement, aide financière, animoconditionalité, augmentation de l'inspection (i.e les inspections sont fait uniquement sur plainte, serait-ce bénéfique d'effectuer des inspections régulières), besoin en règlementation, interdiction, etc....

- Aucune mesure n'est possible en fonction des impératifs biologiques des animaux. Ces animaux ne peuvent pas être gardés dans un contexte d'élevage intensif en respectant leur bien-être.

Recommandations sur la meilleure mesure d'atténuation à prendre

- Il n'y a de facto plus d'élevage de fourrure au Québec. Le moment serait tout à fait indiqué pour interdire cette pratique avec des conséquences économiques nulles pour l'industrie.
- Cette interdiction permettrait de prévenir l'ouverture de nouvelles fermes dans le futur.
- Avec une telle décision le MAPAQ positionnerait le Québec comme un chef de fil en bien-être animal en Amérique du Nord et poserait un geste politique fort.

- Sous réserve d'un avis de la DAJ, le MAPAQ pourrait :
    1) Interdire l'élevage à des fins de production de fourrure de carnivores par règlement.
    OU
    2) Interdire indirectement de l'élevage en enlevant les renards et les visons des espèces couvertes par la LBSA. Le renard et le vison étant des espèces indigènes, la possession serait alors encadrée par le Règlement sur les animaux en captivité qui découle de la Loi sur la conservation et la mise en valeur de la faune (C-61.1) qui ne permet pas l'élevage à des fins de production de fourrure.

- Il y aurait aussi lieu de cesser immédiatement de promouvoir cette industrie notamment via des programmes d'aide financières (espèces couvertes par ASAQ par exemple) ou dans les communications ministérielles. Ainsi la page sur la fourrure de Québec.ca devra être mise à jour[21].
- La situation de l'élevage de Chinchilla enregistré comme producteur agricole au MAPAQ se doit d'être évaluée.

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[21] https://www.quebec.ca/agriculture-environnement-et-ressources-naturelles/agriculture/industrie-agricole-au-quebec/productions-agricoles/elevage-animaux-fourrure-renard-vison/msg/3?cHash=669e2d52e67f2567812539238f30289e#c34503

De: Lessard Marie-Ève (DSABEA) (Québec)
Envoyé: 17 octobre 2023 15:23
À: Lelièvre, Frédérick (DEFTHA)[Frederick.Lelievre@mffp.gouv.qc.ca]
Objet: Question animaux à fourrure

Bonjour Frédérick,

On explore les avenues légales qui nous permettraient d'interdire l'élevage d'animaux à fourrure et j'aurais quelques questions pour toi. Serais-tu disponible pour une courte rencontre (15-30 minutes) la semaine prochaine?

Merci beaucoup,

Marie-Eve

De: Chiasson Rachel (DSA) (Québec) <Rachel.Chiasson@mapaq.gouv.qc.ca>
Envoyé: 1 février 2024 08:15
À: Gagné-Fortin Claudia (DADS) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user11bce964]; Pelletier Émilie (DSA) (Granby)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user1651df8d]
Cc: Lessard Marie-Ève (DSA) (Québec)[EX:/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=user8f85dd56]
Objet: RE: LogIC 2024-01-31-015-01 - Fiche vision
Pièces jointes: Courriel décision animaux à fourrure_2.docx

Bonjour Claudia,

Voici la dernière fiche décision transmise à Josiane, puis à toi et Nathalie Canac-Marquis afin d'avoir une orientation pour la suite. Je n'ai pas de problème pour mettre la fiche à jour en y ajoutant la structure habituelle. Est-ce que je peux te transmettre une convocation demain pour discuter de tes attentes?

Merci beaucoup et bonne journée,

Agriculture, Pêcheries et Alimentation **Québec** ✚✚ ✚✚	**Rachel Chiasson, agr., M. Sc.** │**Conseillère en réglementation – bien-être animal et encadrement des chiens** Direction adjointe à la règlementation Direction de la santé et du bien-être des animaux Sous-ministériat à la salubrité alimentaire, à l'inspection et à la santé animale Ministère de l'Agriculture, des Pêcheries et de l'Alimentation 200, chemin Sainte-Foy, 11e étage Québec (Québec) G1R 4X6 Téléphone : 418-380-2100 poste 3173 rachel.chiasson@mapaq.gouv.qc.ca

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De : Gagné-Fortin Claudia (DADS) (Québec)
Envoyé : 1 février 2024 07:36
À : Pelletier Émilie (DSA) (Granby) ; Chiasson Rachel (DSA) (Québec)
Objet : Fwd: LogIC 2024-01-31-015-01 - Fiche vision

Bonjour mesdames,

Je n'avais pas encore eu le temps de me rendre là dans mes lectures, mais a-t-on déjà une fiche sur les animaux à fourrure? Si oui, il faudrait la mettre à jour. Sinon il faudra en produire une. Pourras-tu t'en charger Rachel?

Je suis dans le bus, mais on peut se parler au besoin quand j'arrive au bureau.

À +
Claudia

De : Canac-Marquis Nathalie (DSA) (Québec) <Nathalie.Canac-Marquis@mapaq.gouv.qc.ca>
Envoyé : Wednesday, January 31, 2024 7:59:32 PM
À : Gagné-Fortin Claudia (DADS) (Québec) <Claudia.Gagne-Fortin@mapaq.gouv.qc.ca>
Cc : Asselin Geneviève (DSA) (Québec) <Genevieve.Asselin@mapaq.gouv.qc.ca>
Objet : TR: LogIC 2024-01-31-015-01 - Fiche vision

Bonjour Claudia,
Comme discuté ce matin, le ministre questionnait sur les animaux à fourrure hier lors de notre rencontre P-42, est-ce possible de faire la MAJ de la Fiche ?

Merci!
Nathalie

De : Chraibi Siham (DGLSA) (Montréal) <Siham.Chraibi@mapaq.gouv.qc.ca>
Envoyé : 31 janvier 2024 15:55
À : Canac-Marquis Nathalie (DSA) (Québec) <Nathalie.Canac-Marquis@mapaq.gouv.qc.ca>
Cc : Asselin Geneviève (DSA) (Québec) <Genevieve.Asselin@mapaq.gouv.qc.ca>; Lévesque Isabelle (DGLSA) (Saint-Hyacinthe) <Isabelle.Levesque@mapaq.gouv.qc.ca>
Objet : TR: LogIC 2024-01-31-015-01 - Fiche vision
Importance : Haute

Bonjour, Nathalie.

Échéance : 14-02-2024

Demande : Requête du Ministre afin de déterminer ce qui arrive aux animaux à fourrure en lien avec le bien-être animal

Comme précisé, ci-dessous, pas de pièce jointe au dossier.

Merci et bon après-midi!

Siham Chraibi, adjointe administrative
Direction générale de l'expertise en santé et bien-être des animaux
Sous-ministériat à la salubrité alimentaire, à l'inspection et à la santé animale
201, boulevard Crémazie Est
Montréal (Québec) H2M 1L4
siham.chraibi@mapaq.gouv.qc.ca

AUCUNE PIÈCE JOINTE!

Bonjour, Siham.

Je te transmets le lien pour avoir accès au dossier.

Je te remercie pour ta collaboration.

Gisèle Vézina | Technicienne en administration
Sous-ministériat à la salubrité alimentaire, à
l'inspection et à la santé animale
Ministère de l'Agriculture, des Pêcheries et de
l'Alimentation
200, chemin Sainte-Foy, 12ᵉ étage
Québec (Québec) G1K 4S6
Tél. : 418 380-2100 poste 6604
Gisele.vezina@mapaq.gouv.qc.ca

Lien vers la requête : https://appls.mapaq/logic/Int/requete.aspx?idReq=192126

Veuillez prendre connaissance de l'information ci-dessous :

[ ] Urgent
[X] Nouveau mandat
[ ] Collaborateur
[ ] Copie conforme
[ ] Échéance révisée
[ ] Mandat complété
[ ] Nouvelle action

[ ] Nouveau document déposé
[ ] Documents finaux déposés
[ ] Retour pour modifications ou corrections

Merci!

Fiche décision destinée à Josiane Garneau

Sujet : Interdire l'élevage des animaux à fourrure (visons et renards)
Date : 21-11-23

SOLUTIONS EXPLORÉES

Solutions explorées pour interdire l'élevage des animaux à fourrure :

1- Dispositions dans la loi P-42.

Selon Julie Ferland (DSA), qui en a discuté avec la DAJ, il ne serait pas possible d'interdire l'élevage d'animaux à fourrure via P-42 car il ne s'agit pas d'une activité en lien avec la santé ou la protection sanitaire.

2- Interdire indirectement l'élevage en retirant les renards et les visons des espèces couvertes par la loi B-3.1.

La garde de renard et de vison serait alors encadrée par le Règlement sur les animaux en captivité, qui découle de la Loi sur la conservation et la mise en valeur de la faune (C-61.1). Cette Loi ne permet pas l'élevage à des fins de production de fourrure. Cette stratégie impliquerait de modifier la LBSA et le r1. Selon les discussions que nous avons eues avec Frédéric Lelièvre, le MAPAQ aurait l'appui du MELCCFP s'il souhaitait aller en ce sens. Cependant, il faudrait valider si la DAJ appuie cette option (interdiction indirecte).

3- Questionner le député fédéral responsable du projet C-247 (Loi visant à interdire l'élevage d'animaux à fourrure) pour en connaître l'état d'avancement.

Solution explorée pour décourager l'élevage des animaux à fourrure :
4- Rendre les élevages des animaux à fourrure inadmissibles à nos programmes d'aide financière.

Une rencontre avec Ibrahima Thiongane (DCPSC), analyste expert aux programmes, nous a permis de déterminer trois options qui s'offrent dans ce cas :
   a. Rendre cette clientèle inadmissible aux programmes (enjeux juridiques potentiels);
   b. Ajouter la condition d'inspection dans les critères d'admissibilité (mais il faudrait le faire pour les autres productions aussi);
   c. Utiliser la clause sur l'intégrité déjà existante pour refuser l'aide financière.

L'ensemble des solutions explorées exigent une analyse de la DAJ afin de valider leur faisabilité d'un point de vue légal.

PROCHAINES ÉTAPES

À ce stade, deux options s'offrent à nous :
   1- **Contacter directement la DAJ** pour valider chaque option, avant de faire une fiche décision pour la SMA.
   2- **Produire une fiche pour la SMA** afin d'obtenir une orientation pour savoir si le ministre veut interdire les animaux à fourrure et si oui, transmettre le dossier à la DAJ pour faire un travail d'évaluation des solutions proposées et des autres véhicules législatifs disponibles (si c'est le cas).

Porte-parole : **NA**

Collaborateur interne : Émilie Pelletier

Collaboration SMSAIA :

Échéancier DGDSI : 2021-05-28, 9h30

Demande :

La Semaine Verte prépare une heure de reportage sur le bien-être animal et se demande pourquoi la récente loi sur le bien-être animal a exclu les animaux d'élevage avec cet article?

Extrait de la loi: "

7. *Les articles 5 et 6 ne s'appliquent pas dans le cas d'activités d'agriculture, de médecine vétérinaire, d'enseignement ou de recherche scientifique pratiquées selon les règles généralement reconnues.*

Les activités d'agriculture comprennent notamment l'abattage ou l'euthanasie d'animaux ainsi que leur utilisation à des fins agricoles ou lors d'expositions ou de foires agricoles."

Lignes de presse

-   Le Ministère de l'Agriculture, des Pêcheries et de l'Alimentation est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal (LBSA) pour tous les animaux domestiques, qu'ils soient de compagnie ou d'élevage. Cette Loi permet d'assurer leur bien-être et leur sécurité tout au long de leur vie.

-   En vertu de l'article 7 de la LBSA, les activités d'agriculture ne sont pas visées par les articles 5 et 6, **à la condition qu'elles soient pratiquées selon les règles généralement reconnues.** Lorsque les activités ne sont pas pratiquées conformément à ses règles, les articles 5 et 6 de la LBSA s'appliquent.

-   Pour l'application de sa loi en matière de bien-être animal pour les animaux d'élevage, le Ministère s'appuie principalement sur les différents Codes de pratique émis par le Conseil national pour les soins aux animaux d'élevage à titre de référence pour les règles généralement reconnues.

-   Les Codes de pratiques sont des lignes directrices qui visent à favoriser les bonnes pratiques de régie du troupeau et de gestion du bien-être des animaux; elles renferment des

recommandations et des exigences en ce qui concerne les conditions de logement, la gestion, le transport, l'abattage et les autres pratiques relatives à l'élevage des animaux.

- L'utilisation de ces codes de pratiques comme référence pour l'application de la LBSA est notamment motivée par les raisons suivantes :
  - o Ils font consensus à l'échelle nationale;
  - o Ils représentent la conception des besoins et des pratiques recommandées en matière de soins aux animaux au Canada;
  - o Ils sont élaborés de façon collaborative. Ainsi, l'industrie, les médecins vétérinaires, les organismes de protection des animaux et les membres du gouvernement précisent les exigences minimales de façon concertée afin de faire progresser le bien-être des animaux;
  - o Les Codes sont révisés régulièrement pour tenir compte de l'évolution des connaissances.

Informations complémentaires

B- 3.1 (extrait)

CHAPITRE II
OBLIGATION DE SOINS ET ACTES INTERDITS

5. Le propriétaire ou la personne ayant la garde d'un animal doit s'assurer que le bien-être ou la sécurité de l'animal n'est pas compromis. Le bien-être ou la sécurité d'un animal est présumé compromis lorsqu'il ne reçoit pas les soins propres à ses impératifs biologiques. Ces soins comprennent notamment que l'animal:
1° ait accès à une quantité suffisante et de qualité convenable d'eau et de nourriture;
2° soit gardé dans un lieu salubre, propre, convenable, suffisamment espacé et éclairé et dont l'aménagement ou l'utilisation des installations n'est pas susceptible d'affecter son bien-être ou sa sécurité;
3° ait l'occasion de se mouvoir suffisamment;
4° obtienne la protection nécessaire contre la chaleur ou le froid excessifs, ainsi que contre les intempéries;
5° soit transporté convenablement dans un véhicule approprié;
6° reçoive les soins nécessaires lorsqu'il est blessé, malade ou souffrant;
7° ne soit soumis à aucun abus ou mauvais traitement pouvant affecter sa santé;

Pour l'application du paragraphe 1° du premier alinéa, la neige et la glace ne sont pas de l'eau.

2015, c. 35, a. 7.

6. Nul ne peut, par son acte ou son omission, faire en sorte qu'un animal soit en détresse.

Pour l'application de la présente loi, un animal est en détresse dans les cas suivants:

1° il est soumis à un traitement qui causera sa mort ou lui fera subir des lésions graves, si ce traitement n'est pas immédiatement modifié;

2° il est soumis à un traitement qui lui cause des douleurs aiguës;

3° il est exposé à des conditions qui lui causent une anxiété ou une souffrance excessives.

2015, c. 35, a. 7.

7. Les articles 5 et 6 ne s'appliquent pas dans le cas d'activités d'agriculture, de médecine vétérinaire, d'enseignement ou de recherche scientifique pratiquées selon les règles généralement reconnues.

Les activités d'agriculture comprennent notamment l'abattage ou l'euthanasie d'animaux ainsi que leur utilisation à des fins agricoles ou lors d'expositions ou de foires agricoles.

LIGNES DE PRESSE – DSABEA

2021-11-03

Porte-parole : **Émilie Pelletier**

Collaborateurs internes : Émilie Pelletier, Hugo Tremblay, Francis Roberge

Échéance DSABEA : 5 novembre, 11 h (échéancier révisé)

Demande : Camille Lopez, journaliste indépendante (vu sur Noovo entre autres)

Mise à jour d'un article du magazine Protégez-Vous, qui date de 2010, portant sur la viande d'élevage et le bien-être des animaux : https://www.protegez-vous.ca/sante-et-alimentation/viande-heureuse

Faire le point sur le côté législatif :
- Règlements provinciaux : Quelles sont les responsabilités provinciales (QC) en matière de bien-être animal?
- Les règlements fédéraux
- Application de la LBSA et mises à jour (rapport d'application déposé le 23 mars)

Lignes de presse

LOIS ET RÈGLEMENTS EN MATIÈRE DE SANTÉ ET DE BIEN-ÊTRE DES ANIMAUX

- 3 gouvernements partagent des responsabilités en matière de bien-être animal :

    1) Gouvernement fédéral : Cruauté à l'égard d'un animal et transport des animaux

    2) Gouvernement provincial : Bien-être et sécurité

    3) Municipalités (au Québec) : Nuisance, licences et permis, nombre et types d'animaux pouvant être gardés

- La règlementation en matière de bien-être animal est abondante. Principalement, le bien-être des animaux d'élevage pour fin d'abattage est encadré par :

    - la Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1), aussi appelée LBSA, de leur naissance jusqu'à leur sortie de l'élevage;

    - le Règlement sur la santé des animaux (C.R.C., ch. 296), partie XII, la LBSA et le Règlement sur les aliments (RLRQ c. P 29 r.1), pour leur transport;

    - la LBSA et le Règlement sur les aliments (RLRQ c. P-29 et P-29 r.1),, de leur arrivée à l'abattoir jusqu'à l'abattage.

APPLICATION DE LA LOI SUR LE BIEN-ÊTRE ET LA SÉCURITÉ DE L'ANIMAL (LBSA)

- Le ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal (LBSA) pour tous les animaux domestiques, qu'ils soient de compagnie ou d'élevage. Cette Loi permet d'assurer leur bien-être et leur sécurité tout au long de leur vie.

- Le MAPAQ traite toutes les plaintes et les achemine à son service d'inspection pour procéder à leur analyse. Lorsque la santé, la sécurité ou le bien-être de l'animal est compromis, le service d'inspection se rend rapidement sur les lieux.

- Lors des interventions, les inspecteurs vérifient entre autres l'aménagement des installations (p. ex. : cages, enclos, niches, etc.) et des bâtiments, la présence d'eau et de nourriture, l'état des animaux ainsi que les soins de santé qui leur sont prodigués.

- Pour l'application de sa loi en matière de bien-être animal pour les animaux d'élevage, le Ministère s'appuie principalement sur les différents Codes de pratiques émis par le Conseil national pour les soins aux animaux d'élevage à titre de référence.

- Les Codes de pratiques sont des lignes directrices qui visent à favoriser les bonnes pratiques de régie du troupeau et de gestion du bien-être des animaux; elles renferment des recommandations et des exigences en ce qui concerne les conditions de logement, la gestion, le transport, l'abattage et les autres pratiques relatives à l'élevage des animaux.

- Pour de plus amples informations sur la LBSA et son application, consultez le [Guide d'application de la Loi sur le bien-être et la sécurité de l'animal (gouv.qc.ca).](#)

- [Le rapport d'application de la LBSA a été déposé le 24 mars 2021.](#) Ce rapport et l'analyse des données disponibles permettent de cerner les grands enjeux liés à l'application de la LBSA. Il s'en dégage des éléments qui font présentement l'objet d'une analyse ou de travaux en vue de soumettre au gouvernement des propositions d'amélioration de nature administratives ou règlementaires, selon les cas.

TRANSPORT DES ANIMAUX

- Le transport des animaux est principalement encadré par le Règlement sur la santé des animaux (C.R.C., ch. 296) de juridiction fédérale.

- D'autres exigences règlementaires de responsabilité provinciale en lien avec le transport des animaux sont contenues dans le Règlement sur les aliments (RLRQ c. P-29 r.1) et la Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1).

BIEN-ÊTRE ANIMAL EN ABATTOIR

- Deux gouvernements règlementent le bien-être animal en abattoir. Au niveau fédéral, le bien-être animal en abattoir est encadré par le Règlement sur la salubrité des aliments (RSAC-DORS/2018-108), tandis qu'au niveau provincial, c'est par la Loi sur les produits alimentaires et Règlement sur les aliments (RLRQ c. P-29 et P-29 r.1) et la Loi sur le bien-être et la sécurité de l'animal (RLRQ c. B-3.1).

DISPOSITIONS PÉNALES

- Le montant des amendes prévu dans la LBSA varie selon la gravité objective de chacune des infractions et peut aller de 250 $ jusqu'à un maximum de 125 000 $ pour une personne physique et 250 000 $ pour une personne morale pour une première infraction.

- Les montants minimal et maximal des amendes prévues dans la LBSA sont portés au double pour une première récidive et au triple pour toute récidive additionnelle.

- Le juge peut imposer, outre ces montants, une peine d'emprisonnement qui ne peut excéder 6 mois s'il s'agit d'une première récidive ou 12 mois dans le cas d'une récidive additionnelle.

SIGNALEMENT D'UNE SITUATION INACCEPTABLE

- La LBSA impose l'obligation aux agronomes ainsi qu'aux médecins vétérinaires de signaler au MAPAQ les situations d'abus ou de mauvais traitements envers un animal et celles impliquant un animal en détresse.

- Le bien-être animal est une responsabilité collective. En plus des interventions du service d'inspection, l'action citoyenne permet d'assurer un principe de surveillance collective. Le Ministère augmente donc la probabilité de détecter des cas potentiellement problématiques.

- Toute situation inacceptable concernant la santé, la sécurité ou le bien-être des animaux peut être dénoncée en toute confidentialité en communiquant avec le MAPAQ au 1-844-ANIMAUX (1-844-264-6289).

Information complémentaire

SANTÉ ET DE BIEN-ÊTRE DES ANIMAUX

1) Gouvernement fédéral : Cruauté à l'égard d'un animal et transport des animaux

- Articles 444 à 447.1 du Code criminel (L.R.C. [1985], ch. C-46) concernant la cruauté animale
- *Loi sur la santé des animaux* (L.C. 1990, ch. 21) et le règlement correspondant : *Règlement sur la santé des animaux* (C.R.C., ch. 296), partie XII (« transport des animaux »)
- *Loi sur la salubrité des aliments et le règlement correspondant:* Règlement sur la salubrité des aliments au Canada (justice.gc.ca)
- Certains articles du Règlement de 1990 sur l'inspection des viandes *Règlement de 1990 sur l'inspection des viandes* (DORS/90-288) (Articles 61 à 80), maintenant abrogés et actualisés (*Loi sur la salubrité des aliments au Canada*), sont toujours applicables selon les dispositions du Règlement sur les aliments

2) Gouvernement provincial : Bien-être et sécurité

- *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1)
- *Loi sur la protection sanitaire des animaux* (L.R.Q., ch. P-42), en particulier la section IV « De la vente aux enchères d'animaux vivants »
- Règlements découlant de la *Loi sur la protection sanitaire des animaux*, notamment :

  → le *Règlement sur la vente aux enchères d'animaux vivants*
  → le *Règlement sur la sécurité et le bien-être des chats et des chiens*
- *Loi sur les produits alimentaires* (L.R.Q., ch. P-29) ainsi que les règlements qui en découlent, entre autres le *Règlement sur les aliments*
- Le *Règlement sur les animaux en captivité* de la *Loi sur la conservation et la mise en valeur de la faune* (L.R.Q., ch. C-61.1)

3) Municipalités (au Québec) : Nuisance, licences et permis, nombre et types d'animaux pouvant être gardés

- La *Loi sur les cités et villes* (L.R.Q. ch. C-19), le Code municipal du Québec (L.R.Q., ch. C-27.1) et la *Loi sur les compétences municipales* (L.R.Q., ch. C-47.1), de même que les règlements s'y rapportant, ne traitent pas expressément du bien-être animal, mais comprennent des éléments pouvant y avoir trait.

- Au niveau de l'abattoir, le Règlement sur les aliments prévoit certains articles concernant notamment des exigences de locaux et d'équipement permettant d'assurer le bien-être des animaux avant l'abattage, la contention, l'insensibilisation ainsi que la saignée de façon à satisfaire les normes fédérales.

APPLICATION DE LA LOI SUR LE BIEN-ÊTRE ET LA SÉCURITÉ DE L'ANIMAL (LBSA)

- Sur la base des faits observés durant une visite d'inspection, un rapport est produit et remis au propriétaire ou au gardien de l'animal.

- Pour les situations jugées non conformes, une gradation de moyens est habituellement utilisée :
    o des recommandations seront émises dans le rapport;
    o un avis de non-conformité avec indication du délai octroyé pour corriger la situation sera remis au propriétaire si la situation l'exige;
    o un rapport d'infraction sera déposé au ministère de la Justice si la situation n'est pas corrigée;
    o éventuellement une saisie des animaux peut être effectuée.

- Cette gradation peut ne pas être respectée, en particulier pour les cas jugés urgents ou très graves. Le but premier d'une inspection est d'amener le propriétaire des animaux à se conformer à la Loi et à assurer leur bien-être.

- L'utilisation des codes de pratiques comme référence pour l'application de la LBSA est notamment motivée par les raisons suivantes :
    o Ils font consensus à l'échelle nationale;
    o Ils représentent la conception des besoins et des pratiques recommandées en matière de soins aux animaux au Canada;
    o Ils sont élaborés de façon collaborative. Ainsi, l'industrie, les médecins vétérinaires, les organismes de protection des animaux et les membres du gouvernement précisent les exigences minimales de façon concertée afin de faire progresser le bien-être des animaux;
    o Les Codes sont révisés régulièrement pour tenir compte de l'évolution des connaissances.

TRANSPORT DES ANIMAUX

- Le chapitre 6.8 du Règlement sur les aliments (RLRQ c. P-29 r.1) concerne le transport des animaux, des viandes ou des produits carnés et est appliqué par les inspecteurs du MAPAQ.

- La Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1) contient des dispositions pour encadrer le transport des animaux de ferme (article 10) et le MAPAQ est responsable de son application.

- Le MAPAQ applique aussi le Règlement sur la santé des animaux (C.R.C., ch. 296), qui encadre le transport des animaux au Canada, par l'intermédiaire d'une entente avec le gouvernement fédéral.

- La Loi P-42 sur la protection sanitaire des animaux n'encadre pas spécifiquement le transport des animaux, mais pourrait l'interdire dans certaines circonstances, notamment lorsque des animaux sont atteints d'une maladie contagieuse ou parasitaire, ou d'un agent infectieux ou d'un syndrome.

BIEN-ÊTRE ANIMAL EN ABATTOIR

- Il existe trois types d'abattoirs sur le territoire québécois :
  - o **Abattoirs sous inspection permanente par l'ACIA** : Les viandes provenant de ces abattoirs peuvent être vendues à l'intraprovincial, l'interprovincial et l'international.
  - o **Abattoirs sous inspection permanente par le MAPAQ** : Les viandes provenant de ces abattoirs ne peuvent pas être vendues à l'extérieur du Québec.
  - o **Abattoirs de proximité** : Les viandes sont destinées exclusivement à approvisionner l'atelier de vente au détail (boucherie) du titulaire ou permettre l'abattage d'animaux à forfait pour la consommation personnelle de consommateurs.

- Les abattoirs sous inspection permanente bénéficient de la présence d'inspecteurs et de médecins vétérinaires tout au long des activités d'abattage.
- Les inspecteurs de l'ACIA appliquent le Règlement sur la salubrité des aliments (RSAC-DORS/2018-108) dans les abattoirs fédéraux sous inspection permanente.

- Pour les deux autres types d'abattoirs, les inspecteurs du MAPAQ appliquent la réglementation québécoise (Loi et règlement sur les aliments, RLRQ c. P-29 et P-29 r.1) et la Loi sur le bien-être et la sécurité des animaux, RLRQ c. B-3.1). Les inspecteurs provinciaux sont également, pour certains aspects, habiletés à appliquer la réglementation fédérale (ex. : gestion des matières à risque spécifique, étiquetage).

Le service d'inspection du MAPAQ se réfère au Manuel des méthodes d'inspection des abattoirs (provincial):
  - o Le Manuel des méthodes d'inspection des abattoirs est un outil de référence pour une application uniforme des bonnes pratiques d'hygiène et des procédures d'abattage et d'inspection des animaux dont la viande est destinée à l'alimentation humaine.
  - o Il présente des lignes directrices concernant l'application de la Loi sur les produits alimentaires et de ses règlements (P-29 et P-29 r.1) ainsi que de la Loi sur le bien-être et la sécurité de l'animal et de ses règlements.
  - o Il précise les responsabilités des exploitants et du personnel d'inspection et décrit la manière de se conformer à la Loi sur les produits alimentaires et au Règlement sur les aliments (P-29 et P-29 r.1) ainsi qu'à la Loi sur le bien-être et la sécurité de l'animal (B-3.1).

ACTION PROACTIVE DU MINISTÈRE POUR AMÉLIORER LE BIEN-ÊTRE ANIMAL

- Le MAPAQ a mis en place un plan de soutien de 95 M$ aux investissements en agriculture notamment pour la mise en conformité aux normes en matière de bien-être animal.

- La nouvelle Politique bioalimentaire 2018-2025 du Ministère engagera les partenaires dans la mise en œuvre des pistes de travail suivantes :

  - o Soutenir la mise en œuvre des pratiques recommandées pour la santé et le bien-être des animaux;
  - o Augmenter la responsabilisation de toutes les personnes (citoyens, acteurs du secteur bioalimentaire) envers les animaux.

- Vous pouvez consulter la Politique bioalimentaire à l'adresse suivante :

- Le MAPAQ coordonne la Stratégie québécoise de santé et de bien-être des animaux (SQSBEA), dont la mission est l'amélioration de la santé et du bien-être des animaux au Québec.
  - o Elle prend vie par les actions et les efforts des nombreux partenaires d'un peu partout au Québec.
  - o Elle s'appuie donc sur la concertation, mais aussi sur la prévention et la détection pour atteindre ses objectifs.
  - o Elle vise à favoriser l'adoption de modes d'élevage qui concilient les attentes de la population et les exigences de l'industrie bioalimentaire, notamment sur le plan du bien-être animal et en vertu de considérations économiques.

Lignes de presse liées a l'article du Devoir, du 13 janvier 2023

7. Les articles 5 et 6 ne s'appliquent pas dans le cas d'activités d'agriculture, de médecine vétérinaire, d'enseignement ou de recherche scientifique pratiquées selon les règles généralement reconnues.

Les activités d'agriculture comprennent notamment l'abattage ou l'euthanasie d'animaux ainsi que leur utilisation à des fins agricoles ou lors d'expositions ou de foires agricoles."

- Les Codes de pratiques sont des lignes directrices qui visent à favoriser les bonnes pratiques de régie du troupeau et de gestion du bien-être des animaux; elles renferment des recommandations et des exigences en ce qui concerne les conditions de logement, la gestion, le transport, l'abattage et les autres pratiques relatives à l'élevage des animaux.

- L'utilisation de ces codes de pratiques comme référence pour l'application de la LBSA est notamment motivée par les raisons suivantes :
    o Ils font consensus à l'échelle nationale;
    o Ils représentent la conception des besoins et des pratiques recommandées en matière de soins aux animaux au Canada;
    o Ils sont élaborés de façon collaborative. Ainsi, l'industrie, les médecins vétérinaires, les organismes de protection des animaux et les membres du gouvernement précisent les exigences minimales de façon concertée afin de faire progresser le bien-être des animaux;
    o Les Codes sont révisés régulièrement pour tenir compte de l'évolution des connaissances.

- Le ministère demeure attentif aux attentes sociétales et utilise différents leviers pour accompagner l'industrie vers de meilleures pratique.

- Bien que du chemin reste à faire, le Québec se positionne d'ores et déjà avantageusement dans le monde en matière de bien-être animal. Le ministère encourage l'achat local par diverses initiatives ce qui est, de façon générale, bénéfique pour le bien-être animal.

LIGNES DE PRESSE DM – Le Devoir MAPAQ juge et parti

DSABEA 13-06-2023

Relativement au mandat de protection du bien-être animal attribué au MAPAQ :

- Le MAPAQ détient des ressources professionnelles compétentes en matière de bien-être animal, dont des médecins vétérinaires.
- Le MAPAQ détient aussi les pouvoirs de faire des enquêtes, mais compte sur des pouvoirs d'inspection et dispose d'inspecteurs chevronnés qui ont à cœur le bien-être animal.
- La LBSA donne des pouvoirs d'inspection et des pouvoirs d'enquête aux inspecteurs du MAPAQ et de ses mandataires. L'inspection permet de vérifier si la Loi et ses Règlements sont respectés. L'enquête permet de collecter des preuves pour appuyer une poursuite ou justifier une saisie suite aux observations réalisées lors de l'inspection.
- Le MAPAQ a conclu des ententes avec des mandataires pour optimiser ses interventions, mais les mandataires ne sont pas les seuls à faire des interventions sur le terrain.
- Toute personne qui constate qu'un animal d'élevage se trouve dans une situation inacceptable ou qu'il reçoit des soins inappropriés qui nécessitent une intervention, peut faire une plainte au MAPAQ.
- Les inspecteurs agissent dans l'intérêt du bien-être animal et font les actions qui s'imposent dans le respect des rôles octroyés au sein du ministère.
- Si une activité d'agriculture **n'est pas** pratiquée selon les règles généralement reconnues en matière de bien-être animal, les principales dispositions de la Loi sur le bien-être et la sécurité de l'animal s'appliquent.
- Lorsque le propriétaire ou gardien ne s'est pas conformé malgré les interventions du service d'inspection ou omet de respecter d'autres normes prévues dans la LBSA et ses règlements, un rapport d'infraction général est déposé au Directeur des poursuites criminelles et pénales pour poursuites pénales.
- Lorsqu'il y a poursuite, c'est ultimement le juge qui rendra le verdict de culpabilité et qui décidera de la pénalité selon les modalités prévues dans la Loi, le cas échéant.

- **Lignes politiques possibles :** Que ce soit en matière de salubrité alimentaire ou BEA, le ministère a des rôles très clairs à travers ses différentes directions afin que, d'un côté, les entreprises soient accompagnées dans leur développement, et ce dans le respect des normes établies, et de l'autre côté que le service d'inspection fasse les interventions requises pour corriger les situations inacceptables et amener les exploitants à se conformer de façon durable.

Codes de pratiques

- Le ministère de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ) est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal (LBSA) pour tous les animaux domestiques, qu'ils soient de compagnie ou d'élevage, ainsi que les animaux sauvages élevés pour la fourrure ou pour les produits alimentaires. Cette Loi permet d'assurer leur bien-être et leur sécurité tout au long de leur vie.

- Pour l'application de sa loi en matière de bien-être animal pour les animaux d'élevage, le Ministère s'appuie principalement sur les différents Codes de pratiques émis par le Conseil national pour les soins aux animaux d'élevage à titre de référence pour les règles généralement reconnues.

- Les Codes de pratiques sont des lignes directrices qui visent à favoriser les bonnes pratiques de régie du troupeau et de gestion du bien-être des animaux; elles renferment des recommandations et des exigences en ce qui concerne les conditions de logement, la gestion, le transport, l'abattage et les autres pratiques relatives à l'élevage des animaux.

- Les Codes de pratiques pour le soin et la manipulation des animaux d'élevage sont élaborés ou modifiés à l'échelle canadienne de façon collaborative. De nombreux groupes participent à leur élaboration ou à leur révision : éleveurs, organismes de défense du bien-être animal, vétérinaires, chercheurs en bien-être animal, gouvernements, transformateurs, entreprises alimentaires et autres acteurs soucieux du soin et du bien-être des animaux d'élevage.

- Tous les groupes impliqués dans l'élaboration ou la modification d'un Code de pratiques précisent les exigences minimales de façon concertée afin de faire progresser le bien-être des animaux et de représenter la conception des besoins et des pratiques recommandées en matière de soins aux animaux au Canada.

- Le bien-être animal, qui est basé sur la science, est évolutif dans le temps en fonction de l'avancement des connaissances scientifiques. Afin de suivre son évolution, les Codes de pratiques sont mis à jour régulièrement.

- Par exemple : Le Code de pratiques pour le soin et la manipulation des porcs exige que la taille de la queue, le cas échéant, soit effectuée en ayant recours à des analgésiques afin d'atténuer les douleurs post-opératoires. Le Code exige également « d'examiner régulièrement les porcs pour vérifier la présence de morsures de la queue et prendre des mesures pour remédier à la situation (ex : évaluer les facteurs contributifs possibles; retirer le porc responsable; ajouter du matériel qui favorise le fouissement ou des objets d'enrichissement). »

INITIATIVES DE L'INDUSTRIE

- Pour faire progresser le bien-être animal, plusieurs associations d'éleveurs au Québec exigent que leurs membres adhèrent à des programmes de certification basés sur le respect des Codes de pratiques pour mettre en marché leurs produits. C'est le cas, entre autres pour le porc, le lait, le poulet, le dindon, les œufs de consommation et les œufs d'incubation. Lorsqu'un Code de pratiques est mis à jour, les associations ajustent les critères de leur certification obligatoire.

- La certification est émise par les associations à la suite d'inspections à la ferme. Elle garantit que l'élevage ou les produits d'un éleveur sont conformes aux lois, aux politiques et aux codes en vigueur. Elle atteste également que la qualité des produits est uniforme à l'échelle nationale.

Réponses pour la centrale de signalement :

- Bonjour,

Le bien-être des chèvres domestiques est encadré par la Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1). Vous trouverez le texte officiel de la loi au lien suivant :

http://legisquebec.gouv.qc.ca/fr/showdoc/cs/B-3.1

Le Code de Pratiques pour le soin et la manipulation des Chèvres, publié par le Conseil national pour les soins aux animaux d'élevage, établit les règles généralement reconnues en matière de garde pour cette espèce animale, qu'elle soit gardée pour la production ou pour la compagnie. Vous trouverez ce Code à l'adresse suivante : http://www.nfacc.ca/codes-de-pratiques

...

- Le ministère de l'Agriculture, des Pêcheries et de l'Alimentation (MAPAQ) est responsable de l'application de la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, ch. B-3.1) ou *LBSA,* pour tous les animaux domestiques, qu'ils soient de compagnie ou d'élevage, ainsi que les animaux sauvages élevés pour la fourrure, la viande ou autres produits alimentaires et qui sont désignés par règlement. Cette Loi permet d'assurer leur bien-être et leur sécurité tout au long de leur vie.

Pour l'application de sa loi en matière de bien-être animal pour les animaux d'élevage, le Ministère s'appuie principalement sur les différents Codes de pratiques émis par le Conseil national pour les soins aux animaux d'élevage (CNSAE) à titre de référence pour les règles généralement reconnues. En ce qui a trait à l'élevage des chèvres laitières, le MAPAQ se réfère au *Code de pratiques pour le soin et la manipulation des chèvres* (2022). Pour l'instant, le Ministère ne prévoit pas de projet de règlement spécifique au secteur des chèvres.

...

- La présente fait suite à votre courriel du [date] dernier par lequel vous souhaitez savoir si la macération est une procédure légale au Québec et au Canada.

La macération est une procédure normalement effectuée au Canada. Au regard des exigences du Code de pratiques pour le soin et la manipulation des œufs d'incubations, reproducteurs, poulets et dindons du Conseil National de Soins aux Animaux d'Élevage, la macération peut être effectuée au Québec et au Canada sous certaines conditions en raison de l'efficacité éprouvée de cette méthode.

La Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1) prévoit que les activités d'agriculture sont exemptées des articles 5 (normes minimales de garde) et 6 (interdiction de causer de la détresse) de la loi, lorsque ces activités sont pratiquées en respect des règles généralement reconnues pour le secteur de production concerné. Les activités d'agriculture comprennent notamment l'abattage ou l'euthanasie d'animaux ainsi que leur utilisation à des fins agricoles. Les codes de pratiques élaborés par le Conseil national pour les soins aux animaux d'élevage (CNSAE) sont un exemple de règles généralement reconnues.

Vous trouverez le Code de pratique d'intérêt pour votre question à l'adresse suivante : http://www.nfacc.ca/pdfs/codes/poultry_code_FR.pdf

- Bonjour,

Le MAPAQ est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal. Vous trouverez le texte officiel de la loi au lien suivant : http://legisquebec.gouv.qc.ca/fr/showdoc/cs/B-3.1

La Loi B-3.1 prévoit que les activités d'agriculture sont exemptées de certaines dispositions législatives lorsque ces activités sont pratiquées en respect des règles généralement reconnues. Les règles généralement reconnues, dont font partie les divers codes de pratiques élaborés par le Conseil national pour les soins aux animaux d'élevage, sont établies à la suite de discussions entre les divers groupes impliqués (ex. : producteurs agricoles, médecins vétérinaires, agronomes, organismes de protection des animaux, gouvernements). Le Code de Pratiques pour le soin et la manipulation des bovins laitiers, publié par le Conseil national pour les soins aux animaux d'élevage, établit les règles généralement reconnues en matière de garde pour cette espèce animale. Vous trouverez ce Code à l'adresse suivante : http://www.nfacc.ca/codes-de-pratiques . Veuillez noter que ce code est présentement en cours de révision et qu'il y aura une période de commentaires publics d'octobre 2020 à janvier 2021.

Selon le code, il existe des avantages à loger les veaux dans des niches (huches) ou des enclos individuels, entre autres, au niveau de la prévention des maladies et de l'alimentation. Le code exige toutefois que les veaux disposent d'un espace de repos confortable, isolé, chaud, sec et avec une surface de plancher démontrant de l'adhérence. Les veaux doivent pouvoir se lever, se coucher et se retourner avec aisance, adopter des postures de repos naturelles et avoir un contact visuel avec d'autres veaux. Les huches à veau constituent donc une option de logement acceptable. Elles procurent la protection nécessaire en hiver pour les intempéries et réduisent également les courant d'air. S'ils sont regroupés, les veaux doivent avoir suffisamment d'espace pour se coucher tous en même temps. Elles doivent aussi être pourvues de suffisamment de litière pour les garder propres et au sec, tout en procurant une surface confortable et agir à titre d'isolant thermique.

…

- Merci d'avoir communiqué avec le Sous-ministériat à la santé animale et à l'inspection des aliments. Le Code de Pratiques pour le soin et la manipulation des Équidés, publiés par le Conseil national pour les soins aux animaux d'élevage, établit des règles généralement reconnues en matière de garde pour les équidés **et sert de référence pour l'application de la Loi sur le bien-être et la sécurité de l'animal**. La section 6.1 stipule que « les chevaux doivent faire de l'exercice ou être mis en liberté à moins d'être confinés au box pour des raisons médicales, ou parce que les conditions extérieures sont très mauvaises et empêchent temporairement les sorties.» Le Code recommande aussi de « permettre aux chevaux de faire de l'exercice ou les mettre en liberté tous les jours, idéalement à l'extérieur, avec la possibilité de brouter ». **Ainsi, il n'est pas acceptable de garder un cheval confiné au box en tout temps**. Par ailleurs le Règlement sur le bien-être et la sécurité des animaux domestiques de compagnie et des équidés a été édicté en août dernier et sera en vigueur à compter de février 2024. Ce règlement prévoit que tout

propriétaire ou gardien d'un équidé aura l'obligation de se conformer aux exigences contenues dans le Code de pratiques.

…

- Le bien-être des chevaux est actuellement encadré par la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1), ou LBSA. Au Québec, tout comme dans d'autres provinces canadiennes, les *Codes de pratiques pour le soin et la manipulation des animaux d'élevage*, publiés par le Conseil national pour les soins aux animaux d'élevage, sont utilisés pour l'application de la réglementation en matière de bien-être animal, notamment à titre de règles généralement reconnues en matière de garde pour les différentes espèces d'animaux d'élevage.

Le Code de pratiques pour le soin et la manipulation des équidés exige qu'un « plan de mesures d'urgence devrait être préparé pour les urgences pouvant survenir dans votre région ». Ce plan devrait prévoir des procédures d'évacuation des animaux. Il y est également recommandé de « consulter le service d'incendie local pour des conseils spécifiques sur la prévention contre les incendies, plus particulièrement avant de procéder à des rénovations ou de construire un nouveau bâtiment ». On recommande également de « construire ou rénover les installations en prévoyant la possibilité d'une évacuation rapide des chevaux (p. ex., une porte menant à un couloir sécuritaire et clôturé par où seront évacués les chevaux, plutôt que d'avoir à les sortir individuellement au licou) »

…

- L'identification des chèvres n'est pour le moment pas encore obligatoire au Canada. Cependant, lorsqu'elle est effectuée, la méthode utilisée ne doit pas aller à l'encontre du bien-être de l'animal. Le tatouage fait partie des méthodes acceptables d'identifier une chèvre.

Au Québec, le bien-être des chèvres est encadré par la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1). L'article 7 de cette loi indique que les activités d'agriculture doivent être pratiquées selon les règles généralement reconnues. *Le Code de Pratiques pour le soin et la manipulation des chèvres,* publié l'an dernier par le *Conseil national pour les soins aux animaux d'élevage* (CNSAE), constitue un bon exemple de règles généralement reconnues pour cette espèce animale et sert de référence pour l'application de la Loi.

Ainsi, on y indique dans la section 5.5 sur l'identification que celle-ci est essentielle au succès d'une ferme caprine, entre autres pour la santé des animaux. L'identification peut être faite à l'aide d'étiquettes approuvées sur les oreilles ou la palmure de la queue, de bagues à la patte ou de tatouage. On y indique aussi que « L'étiquetage ou le tatouage sont douloureux pour la chèvre dans l'immédiat, mais ne sont pas susceptibles de lui causer de la douleur à long terme, sauf si le site est lésé ou devient infecté. Par conséquent, il est important de s'assurer que les applicateurs, les étiquettes, les oreilles, la palmure de la queue et les mains du préposé sont propres et secs avant l'intervention ». Il est d'ailleurs exigé que « [l]es préposés aux animaux [utilisent] du matériel d'identification en bon état, et entretenu selon les directives du fabricant. [Ils] doivent employer de bonnes pratiques d'hygiène pour réduire le potentiel d'infection et veiller à ce que les sites d'étiquetage infectés ou les déchirures soient traités comme il se doit ».

…

- Le MAPAQ est responsable de l'application de la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1) dont le Guide d'application peut être consulté ici : Guide d'application de la Loi sur le bien-être et la sécurité de l'animal (quebec.ca). Il est indiqué à la page 23 du Guide que « [le] paragraphe 4° de l'article 5 indique que les animaux doivent, en fonction de leurs impératifs biologiques, notamment bénéficier de la protection nécessaire contre : la chaleur excessive (canicule); le froid excessif (froid rigoureux); le vent violent; la pluie intense, surtout lorsqu'il fait très froid; la neige, surtout lorsqu'elle est accompagnée de vent (tempête); la grêle; le verglas. La protection contre la chaleur ou le froid est obligatoire au cours d'une canicule ou d'une vague de froid rigoureux. Elle doit être offerte pendant toute sa durée. Une protection est également requise lors des intempéries. Il n'est pas obligatoire qu'une protection soit offerte en tout temps. Par exemple, un propriétaire peut faire entrer ses animaux à l'intérieur d'un bâtiment s'il pleut et que les circonstances l'exigent. La protection peut être naturelle (ex. : arbres nombreux et suffisamment fournis) ou artificielle (ex. : abri brise-vent, grange accessible en tout temps) pour autant qu'elle protège l'animal des conditions auxquelles il est soumis au moment concerné (la protection nécessaire peut être différente selon les saisons). La protection doit permettre à tous les animaux de s'abriter en même temps [notre soulignement] ».

De plus, le Conseil national pour les soins aux animaux d'élevage (CNSAE) produit des codes de pratiques pour les plusieurs espèces d'animaux d'élevage, dont le *Code de pratiques pour le soin et la manipulation des équidés.* Ce code est utilisé comme l'une des références pour l'application de la Loi B-3.1. La section 2.1.2 du Code traite des exigences en matière d'ombrage et d'abris extérieurs. L'une de ces exigences stipule que « [l]es chevaux doivent avoir accès à un abri (construit ou naturel) qui les protège des effets nuisibles des conditions climatiques extrêmes. ». Il y est également recommandé de « prévoir suffisamment d'espace abrité pour loger tous les chevaux dans un enclos ou un pâturage donné en même temps ».

On y indique aussi à titre d'information que « [p]our un abri à façade ouverte hébergeant plus d'un cheval : prévoir 120 pi^2 (11,1 m^2) pour chacun des deux premiers chevaux et 60 pi^2 (5,6 m^2) pour chaque cheval additionnel gardé en pâturage ou en paddock ».

Notez également que le propriétaire ou le gardien d'un animal doit néanmoins respecter l'ensemble de la réglementation qui lui est applicable.

Finalement, nous vous informons qu'un nouveau règlement, le *Règlement sur le bien-être et la sécurité des animaux domestiques de compagnie et des équidés* (RLRQ, ch. B-3.1, r.0.1) entrera en vigueur le 10 février 2024. Ce règlement rendra obligatoire le respect des exigences du *Code de pratiques pour le soin et la manipulation des équidés* du CNSAE, sauf les exigences relatives à la tenue de registres et aux reçus des traitements administrés, de celles relatives à la mise en place d'un programme antiparasitaire et de celles relatives à l'élaboration d'un plan écrit de biosécurité et de gestion des maladies. Le règlement y ajoute cependant une exigence voulant que dans un lieu de confinement pour équidé, la litière doit être en quantité suffisante pour absorber l'urine et encourager l'animal à se coucher.

- Au Québec, le bien-être des équidés est assuré par la *Loi sur le bien-être et la sécurité de l'animal* (RLRQ, chapitre B-3.1), en vigueur depuis 2015, dont le MAPAQ est responsable de l'application. Le Guide d'application de la loi peut être consulté ici : Guide d'application de la Loi sur le bien-être et la sécurité de l'animal (quebec.ca). On trouve dans le guide des informations

pertinentes sur l'interprétation des articles de la loi. L'article 6 dont vous faites mention est expliqué à partir de la page 25.

De plus, le Conseil national pour les soins aux animaux d'élevage (CNSAE) produit des codes de pratiques pour les plusieurs espèces d'animaux d'élevage, dont le *Code de pratiques pour le soin et la manipulation des équidés.* Ce code est utilisé comme l'une des références pour l'application de la Loi B-3.1. Vous y trouverez d'ailleurs au point 6.3 des exigences concernant les principes d'entraînement et de théorie de l'apprentissage.

Enfin, nous vous informons qu'un nouveau règlement, le *Règlement sur le bien-être et la sécurité des animaux domestiques de compagnie et des équidés* (RLRQ, ch. B-3.1, r.0.1) entrera en vigueur le 10 février 2024. Ce règlement rendra obligatoire le respect des exigences du *Code de pratiques pour le soin et la manipulation des équidés* du CNSAE, sauf les exigences relatives à la tenue de registres et aux reçus des traitements administrés, de celles relatives à la mise en place d'un programme antiparasitaire et de celles relatives à l'élaboration d'un plan écrit de biosécurité et de gestion des maladies. Le règlement y ajoute cependant une exigence voulant que dans un lieu de confinement pour équidé, la litière doit être en quantité suffisante pour absorber l'urine et encourager l'animal à se coucher.

Ainsi, toutes les pratiques auxquelles un équidé est soumis doivent être faites conformément à la législation en vigueur. Les disciplines de reining et de course sous harnais, si elles sont pratiquées convenablement, ne sont pas interdites au Québec.

…

- Le MAPAQ est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal. Vous trouverez le texte officiel de la loi au lien suivant :

http://legisquebec.gouv.qc.ca/fr/showdoc/cs/B-3.1

La Loi B-3.1 prévoit que les activités d'agriculture doivent être pratiquées en respect des règles généralement reconnues. Les règles généralement reconnues, dont font partie les divers codes de pratiques élaborés par le Conseil national pour les soins aux animaux d'élevage, sont établies à la suite de discussions entre les divers groupes impliqués (ex. : producteurs agricoles, médecins vétérinaires, agronomes, organismes de protection des animaux, gouvernements). Le Code de Pratiques pour le soin et la manipulation des bovins laitiers, publié par le Conseil national pour les soins aux animaux d'élevage, établit les règles généralement reconnues en matière de garde pour cette espèce animale. Vous trouverez ce Code à l'adresse suivante : http://www.nfacc.ca/codes-de-pratiques . Veuillez noter qu'une version révisée du code a été publié le 30 mars 2023 et entrera en vigueur le 1er avril 2024.

Le nouveau Code **exige** que le logement (tant intérieur qu'extérieur) des vaches en lactation et taries leur permette de se lever et de se coucher avec aisance, d'adopter des positions de repos naturelles, de faire leur toilette et d'être en contact visuel et physique avec d'autres bovins. À

compter du 1er avril 2027, les vaches ne devront plus être attachées continuellement durant tout leur cycle de production (d'un vêlage à l'autre) — elles devront avoir des possibilités suffisamment fréquentes de se mouvoir librement pour favoriser leur bien-être. Les étables nouvellement construites doivent permettre quotidiennement une liberté de mouvement sans attaches et des interactions sociales, à l'année.

Le Code **recommande** de fournir aux vaches environ 50 heures d'accès à l'extérieur au cours d'une période de 4 semaines, lorsque la météo et les conditions le permettent, et de construire une cour d'exercice couverte, surtout si l'on est dans une région très pluvieuse. Il s'agit toutefois de recommandations et non d'exigences.

- Le Ministère est responsable de l'application de la Loi sur le bien-être et la sécurité de l'animal. Vous trouverez le texte officiel de la loi au lien suivant : http://legisquebec.gouv.qc.ca/fr/showdoc/cs/B-3.1

La Loi B-3.1 prévoit que les activités d'agriculture doivent être pratiquées en respect des règles généralement reconnues. Les règles généralement reconnues, dont font partie les divers codes de pratiques élaborés par le Conseil national pour les soins aux animaux d'élevage (CNSAE), sont établies à la suite de discussions entre les divers groupes impliqués (ex. : producteurs agricoles, médecins vétérinaires, agronomes, organismes de protection des animaux, gouvernements). Le *Code de Pratiques pour le soin et la manipulation des bovins laitiers*, publié par le CNSAE, établit les règles généralement reconnues en matière de garde pour cette espèce animale. Une version révisée du code a été publiée le 30 mars 2023 et **entrera en vigueur le 1er avril 2024.**

Ce nouveau Code *exigera à partir du 1er avril 2027* que le logement des vaches leur permette de se lever et de se coucher avec aisance, d'adopter des positions de repos naturelles, de faire leur toilette et d'être en contact visuel et physique avec d'autres bovins. Les vaches ne devront plus être attachées continuellement durant tout leur cycle de production — elles devront avoir des possibilités suffisamment fréquentes de se mouvoir librement pour favoriser leur bien-être. Les étables nouvellement construites doivent permettre quotidiennement une liberté de mouvement sans attaches et des interactions sociales, à l'année. De plus, le nouveau Code *recommande* de fournir aux vaches environ 50 heures d'accès à l'extérieur au cours d'une période de 4 semaines, lorsque la météo et les conditions le permettent, et de construire une cour d'exercice couverte.

…

- Au Québec, le MAPAQ est responsable d'assurer le bien-être des animaux par le moyen de l'application de la Loi sur le bien-être et la sécurité de l'animal (RLRQ, ch. B-3.1) et de ses règlements. Pour mieux comprendre cette loi, vous pouvez consulter le Guide d'application de la Loi sur le bien-être et la sécurité de l'animal.

En ce qui concerne le bien-être des chevaux en particulier, les propriétaires ou gardiens d'équidés doivent s'assurer de leur fournir les soins obligatoires. De plus, il est interdit à quiconque de leur causer de la détresse. Si les équidés sont utilisés dans des activités d'agriculture, ils doivent l'être en respectant les règles généralement reconnues. Le Code de

pratiques pour le soin et la manipulation des équidés produit par le Conseil national pour les soins aux animaux d'élevage (CNSAE) est une référence de règles généralement reconnues.

Il n'y a pas de limite légale au nombre de chevaux que peux détenir une personne. Cependant, pour assurer le bien-être de ceux-ci, il faut entre autres leur fournir un espace suffisant, et leur donner l'occasion de se mouvoir suffisamment.

Notez qu'à compter du 10 février 2024, le Règlement sur le bien-être et la sécurité des animaux de compagnie et des équidés (RLRQ, ch. B-3.1, r.0.1) entrera en vigueur. Il rendra obligatoire le respect des exigences du Code de pratiques pour le soin et la manipulation des équidés. Le Code contient notamment des exigences plus précises concernant l'espace minimal à fournir aux équidés, ainsi que d'autres sur la mise en liberté et l'exercice. Vous trouverez des renseignements supplémentaires concernant le Règlement sur le bien-être et la sécurité des animaux domestiques de compagnie et des équidés en consultant son Guide d'application.

- Au Québec, la Loi sur le bien-être et la sécurité de l'animal (RLRQ, chapitre B-3.1) indique que les activités d'agriculture doivent être pratiquées selon les règles généralement reconnues. Le Code de pratiques pour le soin et la manipulation des œufs d'incubation, reproducteurs, poulets et dindons du Conseil national pour les soins aux animaux d'élevage (CNSAE) constitue un exemple de règles généralement reconnues. Il y est expliqué que « Le chaponnage est la procédure consistant à enlever les testicules des coqs de manière à influencer leur croissance et la qualité résultante de leur chair. Étant donné que les testicules de l'oiseau sont internes, la castration est une procédure chirurgicale, habituellement effectuée sans anesthésie. Il s'agit donc d'un procédé invasif et douloureux. Cette procédure n'est pas normalement pratiquée au Canada ». Il y est aussi exigé que « les coqs ne doivent pas être chaponnés sauf sous la supervision d'un vétérinaire et avec un moyen de contrôle de la douleur ».