Changes in the welfare of mink (*Neovison vison*) with date of assessment in the winter and growth periods have limited effects on the overall WelFur categorisation

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Abstract

In this study we investigated the robustness of the WelFur welfare assessment system for farmed mink (*Neovison vison*) to date of assessment in the winter and growth assessment periods. The prevalence of occurrences of certain measurements was hypothesised to increase with date of assessment (too thin, fur-chewing and stereotypic behaviour in the winter period and injuries, diarrhoea and exploratory mink in the growth period). The welfare was assessed on eight Danish mink farms according to the WelFur-Mink protocol. Each farm was assessed once in the nursing period (to be able to calculate WelFur-Mink scores), four times in the growth period and three times in the winter period. WelFur scores were calculated based on the assessments in the three periods: one calculation for each assessment in the winter and growth periods. The odds of fur-chewing increased with date of assessment in the winter period, and the odds of injuries, diarrhoea and exploratory mink increased with date of assessment in the growth period. The odds of too thin mink in the winter period decreased, ie the change was in the opposite direction to what was expected. The effect of these changes on the aggregated WelFur scores on the higher levels was limited, but could potentially lead to changes in the overall welfare categorisation of farms if the principle scores were close to a threshold between two categories. A potential way to eliminate the effect of date of assessment could be to develop a correction factor for the measurements that can be expected to change within each assessment period.

Keywords: animal welfare, feasibility, mink production, reliability, welfare assessment, WelFur

Introduction

In any animal welfare assessment system, robustness to external factors, such as time of day and weather conditions, is important in order to ensure that the assessment is reliable and feasible. In seasonal production systems, such as mink production, animals at different stages of production (eg lactation stage or age) cannot be separated from the date of the assessment. As different stages of production may be related to different welfare risk factors, date of assessment may affect the outcome of the assessment. In this study, the robustness of the WelFur-Mink welfare assessment system for farmed mink (*Neovison vison*) to date of assessment is investigated.

WelFur-Mink was developed based on the concept of the EU project Welfare Quality® (Mononen et al 2012). An equivalent system was developed simultaneously for farmed foxes (blue fox [*Vulpes lagopus*] and silver fox [*V vulpes*] and their crossbreeds). In WelFur-Mink, the welfare is assessed at farm level based on a range of measurements taken on the farm (Møller et al 2015). All measurements are relevant to some aspect of the 12 animal welfare criteria that constitute the four principles for good animal welfare that were defined within the Welfare Quality® project (Botreau et al 2007). Due to the seasonal production system, a full WelFur-Mink assessment is based on three assessments: one in each of the three main production seasons. The on-farm assessment periods are the winter period from 1 January to 20 February, the nursing period from 5 May to 1 July and the growth period from 23 September to 30 November. In practice, the beginning and end of each assessment period are affected by the onset of events, such as flush-feeding (short period of restricted feeding followed by *ad libitum* feeding) in the winter period, average date of birth and onset of weaning in the nursing period, and onset of sorting and pelting in the growth period. A representative sample of the mink on the farm in each assessment period is used for the assessment of all measurements, except a few mainly management-based measurements taken at farm level. After the three assessments, each farm is assigned one of four welfare categories. The categorisation is based on a transformation of each measurement result into a standardised score on a scale from 0–100 followed by a step-wise aggregation of the