The reliability of welfare assessment according to the WelFur-protocol in the nursing period of mink (*Neovison vison*) is challenged by increasing welfare problems prior to weaning

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**Abstract**

The objective of this study was to test the hypothesis that the body condition of the mink dam, the frequency of dirty nests, frequency of injuries and diarrhoea change significantly with the day of assessment, post-partum, within the data collection period from parturition to weaning, influencing the scores of WelFur at criteria level, but not at principal level or the overall category of mink (*Neovison vison*) welfare according to the WelFur-Mink protocol. Data from a representative sample of around 120 dams and litters on four farms were collected three to four times in the period stipulated by the WelFur-Mink protocol. WelFur-scores between 0 (worst) and 100 (best) were calculated, aggregated and compared at criteria and principal level. The score for the criterion, 'Absence of prolonged hunger' dropped from 86 to 38 after about five weeks of lactation, affecting the principal score 'Good feeding', but not by enough to affect the estimated welfare classification. The score for the three other measures also varied with date of assessment but not enough to affect the classification. However, the observed change in the four measures we focused on indicates that a change in the overall WelFur classification can occur if these or other measures change a little more for the better or worse. Possible solutions to this could be reducing the time window for assessment, development of a valid correction factor or to stratify the visits into an early, middle and late visit on a farm within the three registration periods.

**Keywords**: animal welfare, body condition score, diarrhoea, housing, injuries, mink production

**Introduction**

WelFur is an on-farm welfare assessment system for foxes (*Vulpes* spp) and mink (*Neovison vison*) based on the principles developed in Welfare Quality® (Mononen et al 2012). Welfare Quality® has set up 12 criteria, covering four principles for good animal welfare (Table 1). The protocol for mink is based on 22 measures taken on breeders, during lactation and in late growth in order to cover all phases of production. Mink are strictly seasonal and these phases of production take place therefore in three different periods of the year. The measures are aggregated into scores across the three production periods, then for 12 criteria, four principles and an overall classification per farm (Botreau et al 2012). Due to the seasonal production, all kits are born within a few weeks of each other in late April/early May (Møller et al 2003). Therefore, the time window for assessment of welfare during the nursing period (period 2) is limited to approximately seven weeks from parturition to weaning, and the date of assessment is highly correlated with age of the kits. Mink kits grow from 10–11 g at birth to 520–655 g at weaning after about eight weeks (Hansen 1997). This requires a very high milk yield from the dam and a successful transition of the kits to solid food and to the drinking water system. Lack of success in this critical and demanding period, with great changes both for the mother and the kits, increases the risk of health problems and aggression between the mink (Møller 1993; Brink & Jeppesen 2005). Therefore, we expect a number of potential welfare problems in this period to be age-dependant, potentially implying a dependency on the date of assessment of welfare of both the dam and the kits. The data collection period in WelFur-Mink in the reproduction period is between May 5th and July 1st, or to when weaning begins. When WelFur-Mink is applied in practice, such an age-dependency, due to changes in management and biology of the mink during lactation, is a challenge to the reliability of the welfare assessment.

The dependency of the date of assessment is mainly expected within the following four welfare criteria.

**Absence of prolonged hunger**

Due to the high milk production, the dam loses bodyweight during the lactation period. That is especially pronounced after four weeks of lactation, when the dam reaches an upper limit for feed consumption and starts mobilising body reserves to produce milk for her kits (Hansen 1999), increasing the risk of very thin dams.