

Broken Mouth-Like Syndrome* in Moose on the Seward Peninsula, Alaska: A Case Review 1990–2000

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Early tooth wear and loss in domestic ruminants is associated with impaired mastication and results in poor utilization of feed, unthriftiness and a high, premature replacement rate. Abnormal incisor wear and breakage have been observed in moose (*Alces alces*) on the Seward Peninsula since 1980. Severe overbrowsing of the winter range in Game Management Units 22B and 22D was documented in the 1980s. Moose populations in those areas subsequently declined by 35–50% following severe winters in the late 1980s and early 1990s. Current range conditions are considered good yet population recovery has not occurred and declines have continued in western Unit 22B and eastern 22D. We present a retrospective analysis of moose tooth-wear data collected from harvested moose by the Alaska Department of Fish and Game.

Incisor teeth were scored on a scale of 1–5 for wear and breakage. Additional harvest-related data collected included age, sex, and harvest location. Mean age of harvested moose was 3.9 ± 0.3 years ($n=617$). Data were analyzed using regression analysis and ANOVA and are expressed as mean \pm SEM. Morphologically, teeth had brown–black discoloration, a network of transverse fracture lines on the lingual faces and vertical fracture lines on the labial faces, irregular wear and breakage patterns and, hence, irregular tooth surfaces and exposed roots in extreme cases. Tooth wear and breakage increased with age of the tooth and damage was bilateral (no difference between left and right score). Mean tooth wear score was 3.4 ± 0.3 ; 29% had a score of zero. This analysis included a large number of yearlings and thus can be considered a conservative analysis.

Gross morphology of the dental lesions and the rapid tooth-wear is suggestive of dental fluorosis. Dental fluorotic lesions have been reported in other cervids with only one instance in moose in Scandinavia. Severe bilateral damage to teeth is apparent at a young age, similar to cattle and deer with fluorosis. Excessive dental attrition is a main cause of low productivity and early death in domestic grazers in semi-intensive agricultural systems. Poor protein nutrition is known to exacerbate dental fluorosis. If this is true in moose, tooth damage and limited winter range may be contributing factors in the absence of recovery and, in some areas, continued decline of moose on the Seward Peninsula. A better understanding of the effects of tooth damage on the population dynamics of moose may be necessary to determine appropriate management policies and to effectively manage this population.

*Broken Mouth Syndrome: A sheep is described as “Broken Mouthed” when part of its permanent incisors are lost, or some of the incisor teeth have fallen out or become badly worn and irregular.



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