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## HIGH-RESOLUTION COMPUTED TOMOGRAPHIC ASSESSMENT OF DENTAL MORPHOLOGY IN GERMAN WOLVES (*CANIS LUPUS*)

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Inbreeding depression in natural populations is usually substantial enough to affect both individual and population performance, with severe impact on birth weight, survival, reproduction ), resistance to disease, and predation as well environmental stress ). More recent studies of inbreeding in wild animals use genetic procedures ), but other approaches are also employed ). The European wolf populations went through a bottleneck during the 1960's and 1970's resulting in loss of genetic diversity. In this respect, the increased occurrence of vertebral and dental congenital anomalies in Scandinavian wolves (*Canis lupus*), going up from 13 % to 40 % over the study period of 32 years, was associated with inbreeding or some form of genetic deterioration ).

The present study attempts to address the question if the German wolf population exhibits some kinds of dental anomalies and what is its frequency in the sampled population. To this end, we performed computed tomographic (CT) examinations on 52 wild wolves, employing a 128-slice CT scanner (Aquilion CX, Toshiba, Japan) and a dedicated, multi-software workstation (ViTREA® 2 version 4.0 medical diagnostic software; Vital Images Inc., Minnetonka, MN, USA). Each wolf was assessed for the presence of the following dental anomalies: supernumerary dentition, hypodontia, oligodontia, microdontia, rotated teeth, persistent deciduous teeth, and deviations from the normal dental formula for wolves: I3C1Pm4M2/ I3C1Pm4M3 (I = incisor, C = canine, Pm = premolar, M = molar). The final number of wolves used for data analysis was 45. Five wolves that had severe comminuted skull fractures and two juvenile wolves with deciduous dentition were excluded from analysis.

Analysis of CT images revealed: (a) thirty-seven wolves (82.2 %) had complete dental formula; (b) five wolves (11.1 %) had hypodontia (bilateral in two wolves); (c) four wolves (8.8 %) had supernumerary dentition; (d) three wolves (6.6 %) presented fractured teeth. The following anomalies were detected in one wolf (2.2 %) each: (e) microdontia (mandibular first premolar, right side); (f) dental malposition (intra-alveolar horizontal mandibular third molar); (g) dental avulsion (maxillary second incisor). Congenital absent teeth included mandibular third molar (n = 4), followed by maxillary first (n = 1) and second (n = 1) premolars and maxillary second molar (n = 1). Supernumerary dentition was represented by retained deciduous teeth (mandibular first premolar, mandibular first incisor) but also by an unusual first premolar, with a single dental root.

This study shows that congenital dental anomalies in German wolves have a low frequency in the wild populations, traumatic lesions being more prevalent. Nevertheless, future studies of congenital anomalies in European wolves are required for better population evaluation and conservation strategies.