

THE  
FOSSIL  
WEEK

ABSTRACT BOOK

5<sup>TH</sup> INTERNATIONAL  
PALAEOONTOLOGICAL  
CONGRESS

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# Bone histology and growth of deer: preliminary results from bone histology

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Over the last decades, data from bone tissue and skeletochronology begin to improve our knowledge of life histories of both extinct and extant vertebrates. To date, the majority of studies are biased towards dinosaurs and extant reptiles, while relatively few research focuses on mammals. This is mostly due to the common view that the growth of endotherms is continuous until maturation. However, it has been demonstrated that changes in bone types and growth arrest marks are also present in mammals because of life history events and seasonal changes in their physiology. Hitherto, only few bone histology studies addressed the family Cervidae, mostly focusing on extinct genera, and we know relatively little about extant deer. Accordingly, the aim of this work is to fill this gap by providing new data on the growth and life history of deer using bone histology of the genus *Cervus*. Here, we collected information about epiphyseal closure, eruption pattern and growth marks in long limb bones of different aged captive (with known life history data) and wild *Cervus elaphus* to create a basis for correct interpretation of life histories in fossil cervids. Our results indicate that skeletal maturity in females is reached earlier than in males (3.5 and 4.5-5.5 years, respectively) and, that at this age, epiphyseal fusion and dental eruption are completed, and tissue patterns in long bones change importantly. Our results also show that the attainment of sexual maturity in *C. elaphus* is attained slightly earlier than skeletal maturity, in accordance with the growth vs. reproduction trade-off. These data yield for the first time key information about life history and growth in extant deer, and provide the basis for a better understanding of the life histories of extinct deer and its variations over evolutionary time.

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