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ABSTRACTS & EXCURSION-GUIDE

Gernot Rabeder & Nadja Kavcik (eds.)

Populations Variations in Extant and Fossil Spotted Hyenas (*Crocuta crocuta*)

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The fossil cave hyena from Europa is known to be larger and more robust than its closest relative the extant spotted hyena from Africa. Morphological differences have been discussed on a species as well as subspecies level, without consent among the various authors. Genetic investigations from Rohland et al. (2005) indicate no differentiation on a species level but argued for a complex phylogeography with multiple immigrations to Europe and Asia, which led to different fossil populations. Although the fossil hyena has been found in numerous sites through Europe, only few caves yielded enough specimens to undertake a thorough morphological investigation answering the question whether these populations show anatomical differences as well.

The Teufelslucke in Austria is one of these few sites and comparison with genetically tested material from other localities revealed small differences, which have been interpreted as intra-species morphological variations so far. New investigations focused on the sinus and brain size development as well as on the classical differences in tooth morphology. Brain size seems to be positively correlated with skull size. The variation in sinus volumes compared to brain size and skull size, respectively is more complex and some samples show more than 20% divergence from average.

The main difference in the tooth morphology is the strong lower fourth premolar. This well-known feature in bone cracking animals concludes with genetic results. Fossil members similar to the Southern extant hyena population (clade C according to Rohland et al., 2005) display slightly different p4 proportions than the ones similar to the Northern population (clade B), very well represented in the Teufelslucken cave. New investigations by Dodge et al. (2012) place the hyena material from the specimens from the Creswell Crags near York (England) into clade B as well. Sheng et al. (2014) now presented a back to Africa theory for *Crocuta crocuta*, proposing a Eurasian differentiation around 90 kyr into the two mentioned clades.

Dodge, RD, Bouwman, AS, Petitt, PB, Brown, T, 2012. Mitochondrial DNA haplotypes of Devensian hyaenas from Creswell Crags, England. — Archaeological Anthropological Science, **4**:161 – 166.

Rohland, N, Pollack, JL, Nagel, D, Beauval, CÉ, Airvaux, J, Pääbo, S, Hofreiter, M, 2005. The population history of extant and extinct hyenas. — Molecular Biology and Ecology, **22**:2435 – 2445.

Sheng, GL, Soubrier, J., Liu, JY, Werdelin, L, Llamas, B, Thomson, VA, Tuke, J, Wu, LJ, Hou, XD, Chen, QJ, Lai, Xl, Copper, A, 2014. Pleistocene Chinese cave hyenas and the recent Eurasian history of the spotted hyena, *Crocuta crocuta*. — Molecular Ecology, **23**(**3**):522 – 533.

The Fossil Gauerblick Cave Fauna – First Scientific Results of the High-Alpine Fauna from the Gauerblick Cave in the Rætikon Mountains (Vorarlberg, Austria)

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The fossils that were discovered in 2007 lied on the bottom of a deep shaft and in summer 2013 a spectacular salvage campaign of these cave bear remains took place. This campaign and its preliminary results have been presented already during the same year at the 19th ICBS in Semriach (Laughlan & Rabeder, 2013). Further results of the examination and laboratory results are now available and will be presented. The found species and salvaged material:

***Ursus spelaeus* cf. *ladinicus* Rabeder et al. 2004**: 453 bone and tooth elements, MNI (minimal individual number) = 15, the percentage of juvenile elements is around 50%.
***Canis lupus* L.**: 9 bones and bone fragments. MNI = 1
***Vulpes vulpes* (L.)**: 1 maxillary fragment and one scapula fragment, MNI = 1
***Martes foina* (Erxleben 1777)**: 1 Radius, MNI = 1
***Rupicapra rupicapra* (L.)**: 7th vertebra cervicalis, MNI = 1

Taxonomic position of cave bear remains – Based on the smaller size of the teeth and extremities the attribution to *Ursus speleaus eremus* or *Ursus* (*speleaus*) *ladinicus* can be assumed and the *Ursus ingressus* can be excluded. The amount of suitable teeth for the morphodynamic analysis is not enough for a reliable determination. The relatively high value of m2-Enthypoconid-Index (212.50), but only from four exemplars give a hint that also the bears of the Gauerblick could belong to the "ladinic bear". A combination of primitive and progressive traits on one maxilla fragment (GB25417/39): with P3-alveolus, P4 has a high developed morphotype D/F). The **DNA-analysis** gave no results, because the examined bone samples contained too little of the needed collagen.

Chronology – Only two from four bone samples that were in the VERA-Laboratory, had enough collage for Dating with the AMS-Method, and one of the cave bear sample from the year 2007 gave an age result of >55,000 BP and the remains of the wolf found during the summer 2013 gave with the ultrafiltration kDa fraction method an age result of >52,600 BP. Thereby a conformance in the geological age with the bears of the Apollo cave exists (Rabeder, 1994, 1995, 1997, 2004).

Bite marks – Numerous cave bear bones have clear bite marks that were most probably caused by a wolf (Laughlan & Rabeder, 2013).

Laughlan, L. & Rabeder, G. 2013. The Gauerblick Cave. A new high alpine bear cave in the Raetikon mountains (Vorarlberg, Austria). — 19th International Cave Bear Symposium Semriach (Styria, Austria). Abstracts & Excursions:12.
Rabeder G. 1994. Die Bärenhöhlen in der Sulzfluh, Rhätikon. — Höhlenpost, Organ d. Ostschweiz. Ges. Höhlenforsch., **32**, **95**:5 – 13, Zürich.
Rabeder G., 1995. Les grottes à ours dans la région de la Sulzfluh (Rhétie). Die Bärenhöhlen in der Sulzfluh, Rhätikon. — Stalactite, **45**, **1**:36 – 43.
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Rabeder, G. 2004. Die Höhlenbären der Sulzfluh-Höhlen. — Vorarlberger Naturschau, **15**:103 – 114, Dornbirn.

Neanderthal Man, Territoriality and Religion

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Über eine mögliche Religion/Religiosität des Neandertalers ist in der Forschung oft – mehr oder weniger gut begründet – spekuliert worden, zunächst bereits in Zusammenhang mit ersten Funden in der Frühzeit der Neandertaler-Forschung, dann im Rahmen spektakulärer Fundsituationen (z.B. Moula Guercy) und bei Nachuntersuchungen von Neandertalerskeletten, zuletzt auch im Rahmen religionsgeschichtlicher Forschungen zum Religionsursprung.

Aufsehen erregten vor allem Meldungen über deutliche Bearbeitungsspuren am Skelettmaterial in Zusammenhang mit offensichtlichen Begräbnissen. Im Gegensatz zu bisherigen Deutungen der Ritzungen als Spuren von Anthropophagie oder gar als Ergebnis von Sekundärbestattungen schlagen wir vor, die Manipulationen einschließlich Schädeldeponierungen und Bestattungen als Zeichen von Territorialverhalten aufzufassen und darin den Ursprung von Religion zu sehen.

On the religion or religiosity of Neanderthal men, numerous speculations appeared in literature – some of them well argumented, some of them poorly argumented. It was in the very first phase of Neanderthal-research, that first speculations on this subject popped up, later on, they reappeared in the course of more spectacular findings (e.g. Moula Guercy), and lately also during theological research dealing with the origins of religion itself.

Obvious traces of manipulations on bone material of Neanderthal men, even in connection with real burials, attracted the attention of a wider public. In contrary to the common interpretation of these diagnostic findings as traces of anthropophagy or even as traces of secondary burials, we propose another interpretation: these bone-modifications and depositions of skulls are primarily an indicator for territorial behavior, which seems to be the root of religion.