Edible Insects and Human Evolution by Julie J. Lesnik

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graphic history of *Smilodon*. The biogeography of *Smilodon* needs further study, particularly with respect to timing of dispersal events and factors limiting dispersal.

A surprising and interesting aspect of the book for me as a nonspecialist on Pleistocene carnivorans is Werdelin and Flink's chapter on the phylogenetic context of *Smilodon*. The historic reliance on characters of the skull, mandible, and dentition for phylogenetic analyses is notable, and the relative uncertainty of the relationships within Machairodontinae surprised me given the extensive attention this group has received in both scientific and popular literature.

Multiple chapters highlight the fact that there is an amazing amount of fossil material known for this taxon, yet we still have much to learn. One stark realization I gleaned from the volume is just how much the immense collection of fossil material from Rancho La Brea contributes to (or might skew) our understanding of *Smilodon*. As researchers continue to identify new sites and specimens from other localities, it will be interesting to see if observed evolutionary trends apply broadly across the known distribution of the taxon (e.g., did a "macroevolutionary ratchet" occur in synchrony across time and space?).

I always look for "next steps" when I read research papers, and this publication did a good job of providing context for future work (e.g., the need for inclusion of data on postcrania in both phylogenetic analyses and for evaluating morphological trends through time). Complete consensus is still lacking on how *Smilodon* took prey and on the sociality of the species, as different chapters offer slightly novel perspectives. The topic of extinction was not a strong theme in any single paper, and the volume overall does more to emphasize how *Smilodon* lived. This book does a very good job of summarizing our current understanding of the natural history of an extinct taxon while laying a foundation for additional research.

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BEHAVIOR

EDIBLE INSECTS AND HUMAN EVOLUTION.

By Julie J. Lesnik. Gainesville (Florida): University Press of Florida. \$79.95. xix + 184 p.; ill.; index. ISBN: 9780813056999. 2018.

The title of this book is in itself attractive and I immediately started to consider how edible insects and human evolution are connected. The author is an anthropologist at Wayne State University. She has a

keen interest to combine so-called traditional anthropology with biology. She indicates that she wanted to avoid portraying insects as disgusting, and she aimed to decolonize anthropology. I fully agree with her prerequisites, for example, as she mentions the term "entomophagy" should best be avoided since it can be perceived as being influenced by the Western attitude of other people doing something unusual (to us). Lesnik consistently uses terms such as "insect eating" instead. Interestingly, language and perception of terms in the case of insects are associated with cultures. In English (especially American English), the term "bug" is used as a taxonomic term to describe certain species of the insect order Hemiptera, but the same term is also used as a general descriptor of any small, unpleasant, disgusting arthropod. The same is not the case in my own language (Danish) and, therefore, her discussion about the term "bug" and how it influences our perception (Chapter 2), is probably mostly relevant for English-speaking countries. In her ethnographic overview of the global pattern of insect eating (Chapter 3) she provides a broad range of examples; several of which were new to me. Further, it includes a critical view on limitations on such observations.

In Chapter 4, the author moves into an exciting area, namely the connection between nutritional needs of males versus females (especially during pregnancy and lactating periods) and how insect diets fit. She underpins that although we have archaeological findings (such as bones) that show how our ancestors have eaten vertebrates, remnants of insects from meals on the same localities are not preserved. This may lead to a bias in our understanding about quantities and importance of different food sources in prehistoric times. Can we just look at current non-human primates? According to Lesnik, we can learn from these but need to be careful here, and in Chapter 5 she gives examples. In Chapters 6 and 7, she aims to reconstruct the role of insects in the diets of early hominins. Based on the previous chapters, this is not an easy task, but several valid issues are raised. For example: Did the variety of insect species eaten expand due to innovations such as axes? Did Neanderthal hominins eat insects at all? Probably modern scientific methods can help elucidate such questions. Finally, in Chapter 8, the author suggests some hypotheses to be tested, including if female hominins ate more insects than their male counterparts did.

In summary, this is a well-written book looking into insect eating from an evolutionary perspective. As a scientist who studies insects as human food and animal feed, this volume gave me much inspiration and a desire to dig further into the perspectives.

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