

## BOOK REVIEW

The zooarchaeology of the Late Neolithic Strymon River Valley. The case of the greek sector of Promachon-Topolnica in Macedonia, Greece. B.A.R. (International Series) 2908. ISBN 978-1407-31658-1. 198 pages. G. Kazantzis (2018).

This monograph derives from a 2015 University of Sheffield (UK) PhD that, from the standpoint of animal remains, covers a poorly documented period from a region bridging the gap between the Northern Balkans and northern Greece. The data serve to fill a void existing in the zooarchaeology of southeast Europe, a region deemed critical for understanding the spread of the Neolithic economies into Western Europe thus the work has broader implications than those deriving from a “conventional” site report and one must welcome it as a far-reaching contribution to existing scholarship.

The monograph incorporates eight chapters of very different length of which Chapter 5 (“*Results*”) represents ca. two thirds of the text, and together with Chapter 6 (“*Contextualizing Promachon*”) reaches to ca. 85%. Given that additional material is available online and that the quality of the information is outstanding for the most part due to the good preservation of the remains, this corpus should turn into a seminal resource for the region in the years to come.

Promachon is an open-air (“flat-extended”) settlement located on the border between Greece and Bulgaria. The name, in fact, refers to the portion of the site located in Greece, as its Bulgarian sector, originally known as Kremeniča, changed its name in the mid-1990s to Topolnica. Given that the subject of this monograph is the Greek sector, the subtitle of the monograph might sound a bit misleading.

Chapter 1 (“*Prologue*”) serves as a preliminary provider of context, incorporating an introduction to the Neolithic and to its research in Macedonia. One wonders whether Chapter 3 (“*State of the art*”), the introduction to zooarchaeological research in Greece and Macedonia and the place where the aims of the research are detailed, should have merged with that first chapter.

Chapter 2 (“*The site*”) provides the archaeological overview of the settlement. In addition to the history and details of the excavations, this includes data on the material culture. The animal remains derive from 11 Late Neolithic layers grouped into three habitation stages, Phases I and II dating back to LN I (5320-4700 cal. BC), and Phase III to LN II (4460-4250 cal. BC). Semi-subterranean structures (“pit-houses”) and Akropotamous-type ceramics set apart Phase I from Phase II, that features timber-framed above-ground structures and Strumsko-type ceramics. In addition to household structures, both phases feature a large building. In the case of Phase I, such construction (Structure 4) incorporates intact bucrania covered by ochre and high-quality (luxury) vessels that suggest its function as a symbolic place. Household pottery throughout the sequence links Promachon with neighbouring sites in Macedonia, Thessaly, Thrace and eastern Serbia.

Except for a few cursory remarks on the strategic location of the site and its river plain, no data on the topography, landscape, vegetation, climate and soil are provided in this chapter. Given that one major aim of the study is to understand the economy, scale of animal husbandry and the nature of the human-animal relations, such absence along with a lack of palaeobotanical studies, hinders the framing of the faunal record. Likewise, absence of ethnographical data on modern day stockbreeding practices also complicates the inference of subsistence practices. Although Chapters 6 and 7 provide sparse details on climate, precipitation and ethnography, and the presence of ruminants on the settlement is postulated on account of unpublished dung analyses (p.166), the interpretation of the faunal assemblages comes to rest mostly on the shoulders of the animal bones. Retrieval of remains by hand does not help improve things.

Chapter 4 (“*Methods*”) highlights some of the problems that zooarchaeological research currently faces. Given that taphonomy constitutes such a relevant part of this zooarchaeological research at large and this study in particular, the very informative details having to do with preservation, fragmentation and retrieval biases scattered throughout Chapter 5 (“*Results*”), should have been included here under a specific heading.

Except for identification, protocols of all sorts now exist for measuring bones, estimating age or quantifying taxa. In this way, some authors use NISP as the abundance estimator, others MNI, some calculate age-at-death from bone fusion data alone –thus are unable to specify cohorts within the “adult” category–, others add data on tooth replacement and/or wear, etc. Each researcher decides which protocols best suit the aims of her/his study but by so doing, one recurrent problem that surfaces throughout the later chapters of this study is that sample comparability is not always warranted. This is seen at the both local level, when Promachon faunas are compared with those from Structure 4 and Topolniča (Iliev & Spassov, 2007), and when looking for trends at a regional scale.

The Results chapter incorporates 11 sections dealing with just about every aspect of the animal remains. The text is clear and supported by a wealth of informative tables and figures. The outstanding presentation of the agents affecting the bone assemblages evidences an underrepresentation of caprines and pigs as opposed to cattle, and a size-mediated fragmentation that is significantly higher in the bovid. This presumably reflects marrow extraction focusing mainly on cattle. Butchery marks are comparatively scarce although their frequency rises in the last stage of the occupation. All Phases are almost monopolistically dominated (95-98%) by the domestic “triad”, with a slight increase of caprines in the Phase III at the expense of cattle, since pig frequencies remain fixed. Metrical analyses fail to detect aurochs yet uncover a non-negligible number of wild boar. Age-at-death profiles, extremely well elaborated and carried out independently for sheep and goat, reveal a dominance of sub-adult and young adult ruminants, and of pigs below two years. Though not dismissing secondary products, this suggests that meat was the main target of the stockbreeding strategy. Given the hand retrieval of remains, one wonders to what extent is the infrequency of young ruminants real or the result of biases, including attrition by dogs, even though the

incidence of gnawing in Promachon is relatively low. In connection with this it is noteworthy that Structure 4, the only area of Promachon where sieving took place, ca. 20% of the cattle remains represent animals below 6 months, for this strongly suggests dairy production. In general, it seems a bit baffling that meat was the main product for more than a millennium, when already by Early Neolithic times milk and draught were well documented commodities throughout the Near East. Could the agricultural sector hold some of the answers to this question? Another peculiar item of the age-at-death analyses in cattle is the higher frequency of late-fusing vs. middle-fusing bones that hint at the import of adult animals into the site. As for the thorough and insightful metrical analyses, these mostly reflect stasis, the size and robustness of cattle, goat and sheep remaining essentially similar through time despite sheep hinting at an increase in robusticity during Phase III. Metrical analyses of the pig remains, in turn, reveal more bimodality of postcranial bones than teeth, implying that wild boar heads were left at the kill site, as already documented at some Italian sites from this period (Albarella, 1999).

Chapter 6 (“*Contextualizing Promachon*”) places the site’s data in wider perspective. As said, the attempt is not devoid of problems since the animal collections from the various sites are not strictly comparable due to methodological choices. Still, some patterns do seem pervasive.

One such pattern would be the almost monopolistic dominance of domestic stocks on most sites. Although a few Macedonian sites such as Aggitis and Kryonery, harbor substantial numbers of red deer and wild boar went probably underrepresented due to a lack of detailed metrical analyses, hunting was not apparently a prevalent activity. Pervasive also seem the increasing abundances of cattle towards the northern Balkans and caprines towards the more southern sites, with Promachon taking an intermediate position. A lot of speculation on the causes of this phenomenon exist but, cultural issues aside, it seems clear that as precipitation increases, so does the amount of cattle and pig. Indeed, it is in the context of this discussion that one feels how crucial data on former crops and landscapes must have been for an appropriate framing of phenomena. Another recurrent trend is that the age-at-death profiles, with few exceptions, suggest that meat was the main target of the stockbreeding strategy for all species. Although, as in

Promachon, this should not dismiss an occasional targeting of secondary products, neither the abundance of young cattle in Structure 4 nor the fact that, among caprines, 24-30% of the animals were above 6 years are dealt with in detail. The idea of self-sustaining communities, suggested for Promachon, seems also compelling on other settlements. The archaeological evidence for connections and trade, as inferred from ceramics and building structures, and from an import of adult cattle into Promachon, should have been entertained in this context.

The end section of Chapter 6 (6.4.2 *Contemplating the size of domestic ruminants and pigs during the Late Neolithic of Macedonia and Thessaly*) explores the reasons behind size differences amongst the various stocks. It introduces the old debate of a local domestication of cattle first proposed by Bökönyi (1986) at Sitagroi that palaeogenetic studies nowadays question (e.g. Bollongino *et al.*, 2008), and concludes by highlighting the great variation in livestock size among sites from these regions at those times. Despite constituting the most interesting part of the monograph, this discussion, along with a lot of what appears on Chapters 7 (“*Synthesis*”) and 8 (“*Epilogue*”) is, in the opinion of this reviewer, a bit speculative and questionable.

Indeed, as is so often the case in zooarchaeology the problem of interpretation, in essence, revolves around multi-causality and the difficulties of specifying what phenomenon, or precise combination of phenomena, explain the faunal data in the absence of adequate context. The synthesis here introduces theories and models that explain phenomena such as the nature of the animal husbandry in the region (i.e. small-scale and sedentary herding vs. large-scale and transhumant), why hunting was prevalent (i.e. risk-buffering choice vs. elite activity), etc. Though these proposals often fall short of alternatives (e.g. why not semisedentary herding? why not hunting to protect crops or as a side effect of clearing woodlands to make room for agricultural land? etc.)\*, they do at least provide a background (i. e. null hypotheses, *sensu* Popper) against which one can try to frame results.

\* Increase of hunting during the Late Neolithic appears to be a prevalent and recurrent phenomenon throughout western Europe, from Iberia to the Balkans, for which the need to clear land for agriculture is the most often cited cause (REFS).

The discussion in these last 14 pages of the monograph makes it clear that non-faunal data are crucial to settle a good many of the issues discussed. Failure to incorporate these data generates narrow-focused, speculative, proposals. Take size. In general, Kazantzis considers that size increase reflects “*a high degree of expertise*” of the agricultural system “*permitting...better quality fodder*” or, alternatively, “*highly proficient feeding regime*”, indicating that settlements could “*overcome...environmental constraints through cooperation*” (p.176). In the absence of data on the kind of soils present, crops people were growing and changes taking place in the landscape and climate through time, these proposals are weak. The author implicitly admits this by making recurrent use of the conditional tense since attributing size increase solely to human/cultural agencies is questionable. Alternatives to these explanations, including Kazantzis’ proposal that pigs could occasionally crossbreed with wild boar, require knowledge about stockbreeding regimes in the area nowadays. Even without invoking backcrossing with the agriotype, plenty of data exist evidencing that when one allows cattle and caprines to roam “free” into undisturbed ecosystems, livestock sizes often skyrocket (Reitz & Wing, 2008). The issue here is not so much whether regional ecosystems qualified as undisturbed lands during the Late Neolithic, or whether or not they fostered size increases without the need of human agency, as is the fact that, in addition to decisions to set the animals “free”, environmental constraints of various kinds must have played their role in determining size increase.

This line of argument one could apply to the shifting frequencies of stocks through space and time. Take cattle. Without a thorough knowledge of what the landscape or the climate was like, it is risky to explain high frequencies of cattle in terms of economic choice, cultural links, environmental constraints or combinations of these and other agents. One simply does not know. Likewise, the increase of caprines that the short-lived Phase III documents after an abandonment episode, is taken to reflect that: “... *the people who reoccupied Promachon... brought different ideas, new subsistence methods, and new methods in husbandry practices*” (p. 172). Could be. However, that increase of caprines could merely reflect a decrease in precipitation, or even methodological constraints (i.e. the younger age of the deposits granting the smaller sized bones a

lower chance of being fragmented, thus higher chances of retrieval by hand). Again, one lacks the appropriate contextual frame to favor one alternative over others. Occasionally, the author mentions environmental features as relevant, yet in these cases the return to the original, strictly cultural, position is often instantaneous. The paragraph on page 173 is illustrative:

*“The high frequency of cattle from Promachon can plausibly be attributed to the geomorphology, the environment, the vegetation and the climate in the region which may have significantly favored the keeping and breeding of these animals.*

*However, the high frequency of cattle in Promachon cannot be attributed solely to the favorable conditions of the area. The evidence from the pottery decoration and the structural features from Promachon, indicate that the site was culturally linked with contemporary communities from the Balkan region, in which cattle had an important role”* (emphasis added).

This is a *non-sequitur* of sorts, isn't it? Although it is nowhere specified what “...the geomorphology, the environment, the vegetation and the climate in the region...” were like the author considers them “favourable” yet not the sole reason for the abundance of cattle. Why not? The cultural connection argument –which seems evident here– would not imply that a uniform stockbreeding strategy was part of a given cultural tradition. A better framing of issues would require granting alternative datasets more weight in the discussion.

One last contentious issue is the correlation made between low frequencies of butchery marks reflecting communal feeding and low ones reflecting household feeding.

In terms of “biogeographical *minutiae*”, an issue this study provides data concerns the presence of beech marten (*Martes foina*). Though the species is reported in Western Europe as early as the Magdalenian (MIS 2) this putative native of the European fauna entered the subcontinent in the wake of the Neolithic expansion (Llorente *et al.*, 2011). At present, the oldest calibrated <sup>14</sup>C date from the Iberian site of Cova Fosca (5310-5010 cal BC) is one millennium older than the tibia recorded on Phase III (i.e. 4460-4250 cal B.C; a mandible was also identified in the mixed deposits) (Llorente *et al.*, 2011). One could take this as evidence for the maritime dispersal of the species, a questionable proposition in view of the size and aggressiveness of the mustelid.

A second species of interest would be the domestic cat (*Felis catus*) for which no evidence exists at Promachon despite the oldest European finds now being those in the Early Neolithic Romanian site of Icoana (7700 cal. BC; Schela Cladovei culture) (Ottoni *et al.*, 2017).

From a larger perspective, one last issue caught my attention when reading this monograph. If one concedes that the number of Macedonian Neolithic occupations run parallel with the number of published faunal assemblages, Table 3.1 (p.15) hints on a rather striking pattern. Indeed, both the Early Neolithic (900 years; 6700-5800 cal. BC) and the Final Neolithic (1,200 years; 4500-3300 cal. BC) document 5 occupational sequences each. This translates into an average of one site documented per every 200 (Early Neolithic) or 300 years (Final Neolithic). In contrast, the Middle Neolithic (400 years; 5800-5400 cal. BC) features seven occupational sequences (i.e. one per every 85 years) and the Late Neolithic (900 years; 5400-4500 cal. BC) seventeen (i.e. one per every 50 years). Although 21 sites do not seem to be much, the zig-zagging trend, with a x3-x6 increase in the number of occupied sites at the start and end of the Neolithic as opposed to the Middle and Late Neolithic, seems remarkable. Certainly, not a progressive trend in any sense. A coincidence, then? Perhaps, were it not for the fact that one major, unsuspected, well documented yet distant human population *driver* might have been involved in this case. We are referring to the filling of the Black Sea basin. The most recent research evidences that water discharge from the lower Bosphorus Strait was insignificant during the time interval from 9400 to 8400 years ago (i.e. 7400-6400 BC). At the start of the Neolithic, discharge quickly rose to about 700 km<sup>3</sup>/year, the halocline postulated to reach 100 m depth and a sea level close to the present-day one at about 7200 years ago (5200 BC) (Esin *et al.*, 2016). For 1200 years, an uninterrupted displacement of farming communities out of the basin must have existed, creating a stressful demographic pressure on its periphery. Although the repercussions of human migrations at this scale must have been traumatic for farming communities settled around the present day Black Sea shores, the phenomenon was probably felt much further away. Evidences have thus far passed unnoticed because no one has taken care to look at the archaeological record from this standpoint. I therefore would like to conclude this review by noting that the drastic increase in the

number of occupied settlements of the Macedonian Middle and Late Neolithic, as opposed to the Early and Final Neolithic, could be a result of the filling of the Black Sea basin. When confirmed, the results of such intensification process would be of far-reaching consequences, their effects instrumental for determining settling strategies and agro-pastoral practices alike. Future research will evidence if the time to re-consider some of what has been postulated in this monograph for Promachon and for Macedonia in the light of this contingency has arrived.

ARTURO MORALES-MUÑIZ

Laboratorio de Arqueozoología.

Depto. Biología. Universidad Autónoma de Madrid.

email: arturo.morales@uam.es

## REFERENCES

- ALBARELLA, U. 1999: The animal economy after the eruption of the Avellino pumice: the case of La Starzza (Avellino, Southern Italy). In: Avore Livadie, C. (ed.): *L'Eruzione Vesuviana delle "Pomici di Avellino" e la facies culturale di Palma Campania (bronzoantico)*: 317-330. Edipuglia, Bari.
- BÖKÖNYI, S. 1986: Faunal remains. In: Renfrew, C.; Gimbutas, M. & Elster, S. (eds.): *Excavations at Sitagroi: a prehistoric village in northeastern Greece, Volume 1 (Monumenta Archaeologica, 13)*: 63-132. Institute of Archaeology, University of California, LA.
- BOLLONGINO, R.; ELSNER, J.; VIGNE, J.D. & BURGER, J. 2008: Y-SNPs do not indicate hybridization between European Aurochs and domestic cattle. *PLoS ONE* 3(10): e3418.
- ESIN, N.V.; ESIN, N.I. & YANKO-HOMBACH, V. 2016: The Black Sea basin filling by the Mediterranean salt water during the Holocene. *Quaternary International* 409: 33-38.
- ILIEV, N. & SPASSOV, N. 2007: Promachon-Topolnica: comparative study of the domestic and wild animals from sector Topolnica. In: Todorova, H.; Stefanovic, M. & Ivanov, G. (eds.): *The Struma/Strymon river valley in Prehistory. Proceedings of the International Symposium "Strymon Praehistoricus"*: 509-521. Gerda Henkel Stiftung, Sophia.
- LLORENTE, L.; MONTERO, C. & MORALES, A. 2011: Earliest occurrence of the beech marten (*Martes foina* Erxleben, 1777) in the Iberian Peninsula. In: Brugal, J.P.; Gardeisen, A. & Zucker, A. (eds.): *Prédateurs dans tous leurs états. Actes de les XXXI<sup>e</sup> Rencontres Internationales d'Archéologie et d'Histoire d'Antibes*: 189-209. Editions APCDA, Juan-les-Pins.
- OTTONI, C.; VAN NEER, W.; DE CUPERE, B.; DALIGALT, J.; GUIMARAES, S.; PETERS, J.; SPASSOV, N.; PRENDERGAST, M.; BOVIN, N.; MORALES-MUÑIZ, A.; BĂLĂȘESCU, A.; BECKER, C.; BENECKE, N.; BORONENANT, A.; BUITENHUIS, H.; CHAHOUD, J.; CROWTHER, A.; LLORENTE, L.; MANASERYAN, N.; MONCHOT, H.; ONAR, V.; OSYPIŃSKA, M.; PUTELAT, O.; STUDER, J.; WIERER, U.; DECORTE, R.; GRANGE, T. & GEIGL, E.M. 2017: Of cats and men: the paleogenetic history of the dispersal of cats in the ancient world. *Nature Ecology and Evolution* 1: 0139 (2017) | DOI: 10.1038/s41559-017-0139
- REITZ, E.J. & WING, E.S. 2008: *Zooarchaeology*. Cambridge University Press, Cambridge.

