

The domesticated horses from the submerged prehistoric village of Urdoviza (Kiten) on the Bulgarian Black Sea coast – among the oldest known

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Abstract: Published is the result of a preliminary study of horse bones from the sunken prehistoric village Urdoviza (Bulgaria) dated from the Early Bronze age. Large number of horse remains (about 450 ones) were determined among the rich bone sample of wild and domestic animals from the sunken prehistoric village Urdoviza. The data from the bone sample indicate that the bones must be from domestic horses. The skeleton (metatarsal, n = 2) characteristics reveal a rather robust habitus and small (129 cm of height) to medium (137 cm) size for the Urdoviza horses. Thus *Equus germanicus* could be a more probable wild ancestor of the domestic horses from Urdoviza than *Equus ferus*. The radiocarbon calibrated dates for a sample of horse bones obtained in the Oxford laboratory (Oxford Radiocarbon Accelerator Unit) show that the age of the bone remains falls at the end of the fourth and the transition of the third millennium (3340 – 2740 BC, at an average of ca 3100 BC). This age put the Urdoviza horses among the earliest domesticated horses.

Key words: earliest horse domestication; Bronze Age settlement of Urdoviza; Bulgaria;

Introduction

The earliest horse domestication problem

The question about the time and the place of horse domestication, a process, which had huge impact on the progress of the civilizations, is disputable. The horse was probably domesticated rather late and the opinion about an early domestication in the 5th millennium B.C. (Sredniy Stog culture, Derievka) is recently strongly contested. According to the recent data, the domestication has happened probably in the western part of the Eurasian steppe, between the Northern Black Sea region, Iran and Kazakhstan. It seems that this process was developed not earlier than the first half, and most probably during the middle (even the last third) of the fourth millennium BC (from ~ 5.5 kya) (WARMUTH *et al.*, 2012; PETERSEN *et al.* 2013). That is why the question about the mass horse bone remains from the sunken early Bronze age village of Urdoviza, which have been found together with large number of other domestic and wild animal remains (RIBAROV 1991), is a matter of special interest.

The archaeological site of Urdoviza and the animal bones' material

The underwater excavations, started at 1986 at about 30 km south of Sozopol, headed by Dr. M. Lazarov, Dr. K. Porojanov and V. Popov, reveal a sunken prehistoric settlement from the early Bronze Age on the shore of Urdoviza peninsula, at the periphery of Kiten (POROJANOV, 1991). Ceramics, tools and large number of bones of wild and domesticated animals have been found there. Our data show (N. ILIEV, N. SPASSOV – unpublished till now) that the following wild mammals and domesticated forms could be listed among the analyzed 12 800 animal remains: aurochs, wild boar, roe deer, European red deer, fallow deer, beaver, hare, fox, wolf, brown bear, badger, wild cat, beech marten/ European pine marten, harbour porpoise, common bottlenose dolphin, Mediterranean monk seal, cattle, sheep, goat, domestic dog, domestic horse.



Fig. 1. Horse bones from Urdoviza: 1 – skull FM 3460, male; 2 – occlusal view of the check teeth of skull FM 3460; 3 – humerus FM 3445; 4 – metatarsus FM 3432; 5 – metatarsus FM 3431

About 70% of the bones are from wild animals, among which the ones of red deer, aurochs and wild boar are prevailing. The small ruminants predominate among the bones of the domestic animals.

The horse bones' material

Of special interest are the numerous horse bones (about 450 bones/bone fragments) from individuals of different ontogenetic stages – from foals to old-adults. The large number of diverse horse bones from Urdoviza and the early age of the archaeological site (keeping in mind the data about the earliest horse domestication) could make this settlement a crucial object for studying the domestication of this so important for the development of the human civilisations animal. The precise dating of the horse bones was very important - not only because of the assumption that they could be among the oldest domesticated horses, but because of other reason: there are data about the presence during the 19 century of a stud farm in the area, which brought the doubts that the underwater horse bones accumulation could be a result of throwing recent horse carcasses close or above the archaeological site.

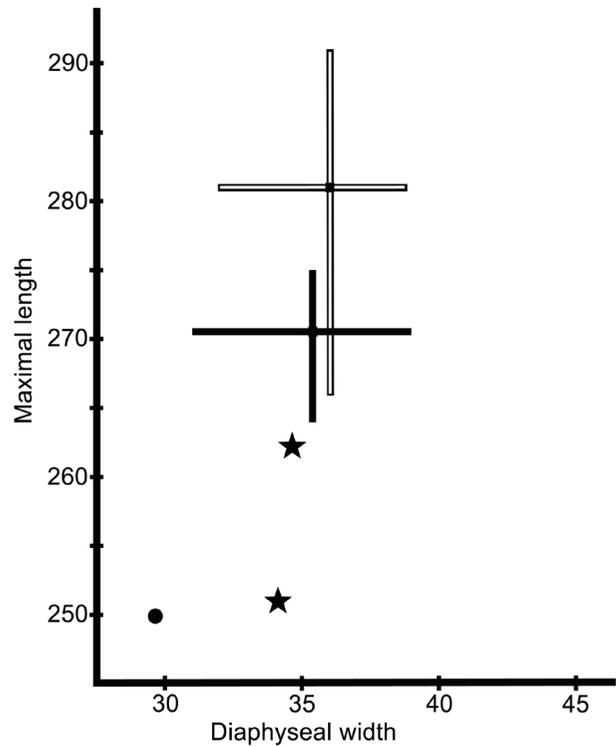


Fig. 2. Comparison of the maximal metatarsal length vs. diaphyseal width of wild horses and the horses from Botai and Urdoviza. The crossed lines represent the variation of the length and width for the samples from Botai, Kazakhstan (black line) and *E. germanicus* from the late Pleistocene of Kostenki, Ukraine (hollow line). The squares at the cross point present the mean values; black circle – the value for *E. ferus* from the Holocene of Ukraine (paralectotype); asterisks – the values for the metapodials from Urdoviza (metric data for wild horses and Botai from KUZMINA, 1997; Urdoviza – original data)

Methods. Radiocarbon dating of horse bones

The radiocarbon dating of bone samples from 5 bones have been done at Oxford Radiocarbon Accelerator Unit (ORAU) (England). The methodology of the sample processing is explained at the works of BROCK *et al.* (2010) and RAMSEY *et al.* (2004). For calibration of the obtained results was used the software Oxcal (v4.2.4 и v. 4.3.2) of C. BRONK RAMSEY (2013), and the calibration curve used to preform the calibrations – the software IntCal 13 (REIMER *et al.*, 2013) (Table 1, Fig. 3).

Results and discussion

The radiocarbon calibrated dates for the sample of horse bones from Urdoviza, obtained in the Oxford laboratory (Oxford Radiocarbon Accelerator Unit) show that the age of the bone remains falls at the end of the fourth and the transition of the third millennium (3340 – 2740 BC, at an average of ca 3100 BC).

Table 1. Absolute dating of the horse bones from Urdoviza

Sample	Lab number	Date BP	Calibrated data BC
humerus FM 3450	OxA-35213	4449,31	3139 - 3010
humerus FM 3451	OxA-35214	4471,32	3340 - 3205
radius FM 3452	OxA-35215	4398,34	3104 - 2911
metacarpus III FM 3453	R_combine OxA-35216 и OxA-35217	4449,24	3128 - 3017
femur FM 3454	OxA-35218	4221,33	2814 - 2740

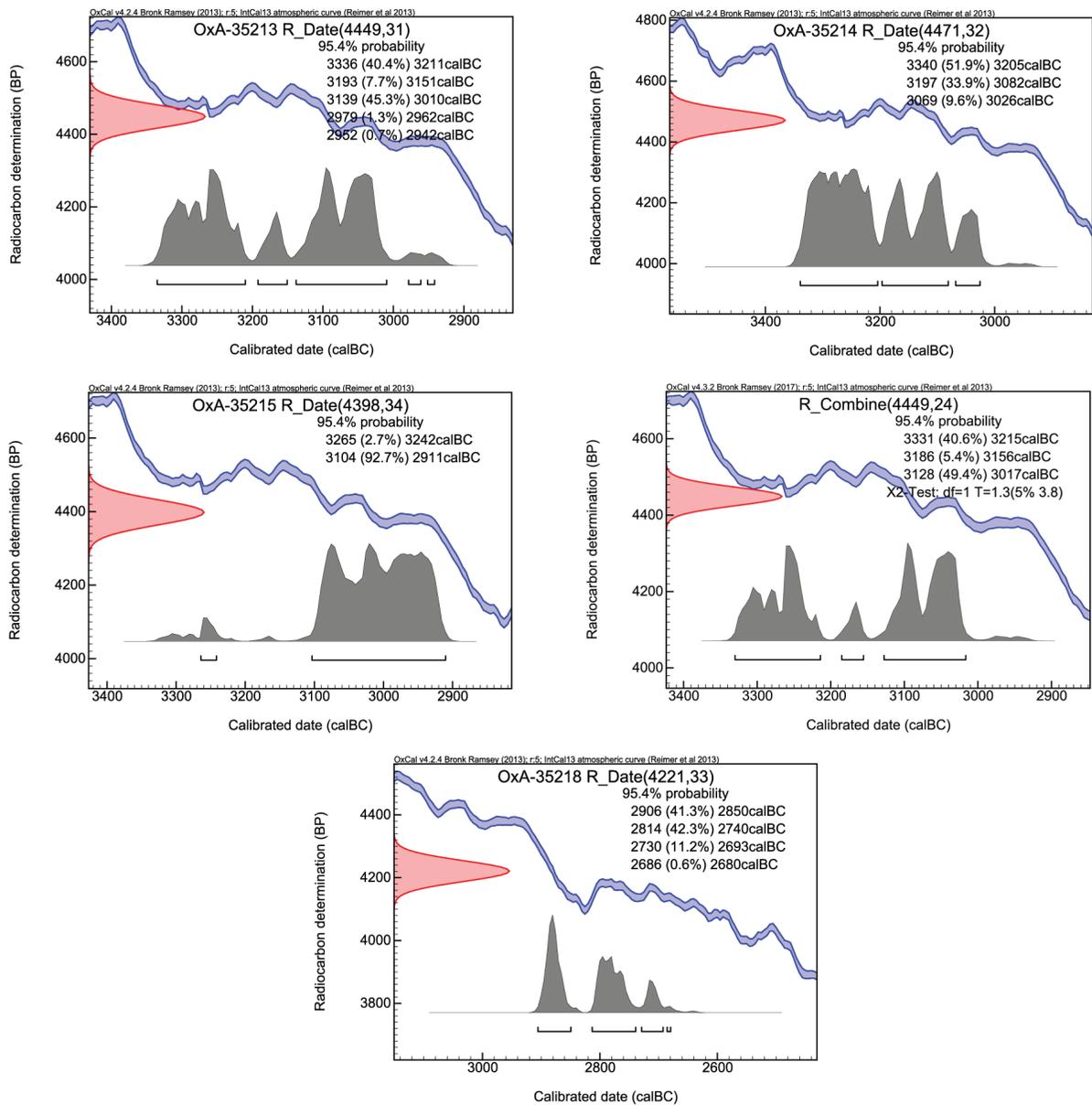


Fig. 3. Calibrating curves for the bone samples from Urdoviza

The horse bone remains from the site are from all parts of the skeleton. As it was noted above they represent individuals from all ontogenetic stages. Some of the bones bear traces of butchering and thermal treatment. The male animals dominate among the skull remains. This is the most impressive amount

of horse bones found at prehistoric site in Bulgaria. Their significant number is a sign that they represent domestic, not wild horses, which is supported also by the metric comparison (Fig. 2) with wild horses and with the Botai horse, considered as the probably old domesticated horse (OUTRAM et al. 2009). The wild

horses have been found with single finds only (as a rare and hard for hunting objects) in small number of prehistorical (Holocene) sites from Bulgaria and from some other localities in Europe (SPASSOV & ILIEV, 1997; 1998). The estimated height at the shoulder (according to the tables of O. VIT) of the horses from Urdoviza, after two complete metatarsals, one radius and one tibia varies rather strongly (which is typical for domestic, primitive breeds of horses): 137 cm, 129 cm, 128 cm and respectively – 132 cm. The size of 137 cm fall among the medium sized horses, and all other – among less than medium sized horses after the classification of O. VIT (VIT, 1952). The Browner index (BRAUNER, 1916), calculated on the two fully preserved metatarsals (13.24 and 13.55), classify the horses as “with semi-massive-leggs” after his classification. Horses with slender legs (“narrow-hoofed”) after the values of this index are such horses as the Arabian one (value of the index ~ 11.0) and other recent saddle horses of Eastern origin, as well as the wild horse of the East European steppe – the so called tarpan (*Equus ferus*) (index value – 11.9 after GROMOVA, 1949). This is an indication for affinities and probable origin from another than *Equus ferus* wild ancestor, survived the Pleistocene – the broad hoofed

Equus germanicus (see SPASSOV & ILIEV, 1997; 1998; RIBAROV, 1991). This conclusion is supported also by the metric comparison (Fig. 2)

Conclusions

The average age of the bones fall at the end of fourth and the transition toward the third millennium BC, (i.e. about the end of the first phase of the classical Bronze age: prof. V. Nikolov, pers. comm. The presence of the first phase in Urdoviza was only supposed, till now, after archaeological data: M. Hristov: pers. comm.). Therefore we could say that the horse bones from Urdoviza could belong to domesticated horses, and probably represent a strongly diminishing in size, (in the domestication process) population, which has its origin from the broad-hoofed wild horse *Equus germanicus*. The Urdoviza horses are among the oldest domesticated horses known, and the oldest known to the west of the Northern peri-Pontic area.

Acknowledgements: This investigation is supported by the project The Thracians of the Bulgarian academy of Sciences and is realized in the frames of the subproject Domestic and Wild Animals from Prehistoric time to Thracian epoch, led by the National Museum of Natural History of the Bulgarian Academy of Sciences.

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