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Fox Hunting in Poland

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1. Introduction

Spadzista is an extensive site located on a limestone shelf along the flank of the Bronislawa Hill which dominates the confluence of the Rudawa and Vistula Rivers. The situation, a hill flank saddle, which provided some protection against dominant winds and a wide overview of the valley, is comparable to that of a number of other Gravettian sites of Central Europe. The site was discovered in 1966 and the first series of excavations, between 1967 and 1971, concentrated on the area most immediately adjacent to the encampment (Spadzista B). There, several concentrations of mammoth bone, interpreted as the remains of dwellings (Kozłowski *et al.*, 1974), were uncovered in the course of the excavations. In 1972–73 and 1980, several trenches (locality C1 and C2) opened to the east of locality B uncovered zones of lithic workshops and hearths (Kozłowski & Sobczyk, 1987). A block excavation (locality E) was excavated in 1987 to the south of locality B in another area of lithic workshop. In 1989, a 5 m × 4 m block next to locality E was excavated jointly by teams from the Jagellonian University and the University of Kansas with a grant from the National Science Foundation International programs. Locality F is a marginal area at the edge of the lithic workshops. It contained remnants of hearths and/or hearth clearing debris washed down the platform slope by solifluction. Here, as in locality C1 and C2, displacement was sufficient to blur the original contour of habitation features but not long enough to affect the lithic artefacts which remained fresh and unmarked (perhaps 10–20 m). The faunal samples presented in this study come from localities E and F. The combined blocks represent only a small portion, about 50 m^2, of a site that covers about 100 m × 150 m surface area, and which lies outside of the main concentration of mammoth bones.

The stratigraphic sequence consists of a series of loess deposits separated by paleosols and erosion surfaces (see Kozłowski, 1974, 1987). In localities E and F, as in C, archaeological layers formed by concentrations of lithic and faunal debris were found: 1) at the base of bed 5, a yellowish loess; 2) within bed 6, greyish silts affected by solifluction, and 3) at the top of the lower loess, bed 7. Archaeological layers within bed 7 have been attributed to an Aurignacian phase and dated about 32000 B.P. (Kozłowski, 1987). Occupation levels within bed 6 are attributed to Gravettian phases ranging from Pavlovian, estimated at 28000 B.P. to Kostienkian, dated between 23000 and 24000 B.P. according to dates obtained from charcoal samples. Archaeological materials recovered from bed 5 are attributed to more recent phases of the Gravettian; a date of 17400 was obtained from bone collagen (Kozłowski, 1987). Samples from the 1987 and 1989 excavations include materials from bed 5 and 6 and therefore represent the remains of a series of human occupations spread over a period of several thousand years during which there were marked climatic and environmental changes. The length of occupation, the nature of activities performed, the time of year during which the site was occupied may well have changed in the course of a period.

Although Spadzista has been called "a camp of specialised mammoth hunters", other species of animals, reindeer, bear, fox, horse, wolf and woolly rhino, adapted to the tundra-steppe biome have been identified from the site (Kubiak & Zakrzewska, 1974). Excavations during 1987/1989 recovered bones and/or teeth of bear, woolly rhino, wolf and immature mammoth, but all were very fragmentary and in very poor condition. While in the past studies have given precedence to mammoth over smaller mammals (Kubiak & Zakrzewska, 1974), this study hopes to reveal that smaller animals, such as the arctic fox played significant roles in the ways of life of ancient inhabitants at Spadzista.

2. Observations/Interpretations

A total of 146 bones of arctic fox, representing a minimum number of 13 individuals, were identified from the 1987 and 1989 excavations. An MNI of 12 individuals, represented by 139 bones, were recovered from bed 6 while an MNI of 1, represented by 7 bones, were recovered from bed 5. The number and MNI (calculated from left mandibles) of foxes recovered from Spadzista are comparable to the number of remains recovered from several sites on the Central Russian Plain (table 1; adapted from Soffer, 1985).

Site	Bones	
	Number	MNI
Bendyzh	n.d.	1
Chulatovo I	42	6
Chulatovo II	n.d.	17
Dobranichevka	64	7
Eliseevichi	15,374	278
Gontsy	68	12
Khotylevo II	191	2
Mezhirich	146	11
Mezin	1,842	112
Novgorod-Severski	169	23
Pushkari I	93	4
Suponevo	27	1
Timonovka I	n.d.	2
Timonovka II	78	6
Yudinovo	147	25
Zhuravka	2	1
Spadzista	146	13

Table 1 — Number of bones and minimum number of individuals of arctic fox recovered from the Upper Paleolithic sites of the Central Russian Plain compared with Spadzista (adapted from Soffer 1985:130–131, Table 2:7).

While numerous bones of fox have been recovered from Eliseevichi and Mezin, fox counts and MNI from Mezhirich compare favourably with those from Spadzista. Excavations of sites such as Bendyeh, Chulatova I, Suponevo, Timinovka and Zhuravka recovered far less fox than excavations at Spadzista. This difference may be due to: 1) differential recovery methods, 2) variations in amount of area excavated, 3) differing seasons of occupancy of the sites, 4) cyclicity in fox populations throughout time, 5) differing migration routes of foxes resulting in differential accessibility of fox across areas, or 6) a combination of two or more of these five factors.

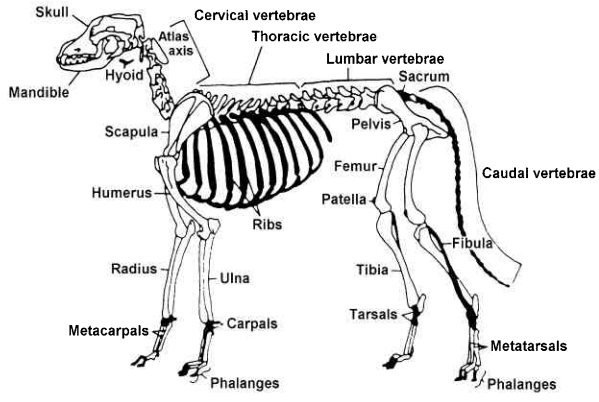

Fig. 1 — Generalized canine skeleton illustrating bones present (white) and bones absent (black) of arctic fox from Spadzista excavations 87/89 (adapted from Davis 1987:54).

At Spadzista, numbers of individual bone elements of fox varied widely (fig. 1–2). The most frequently occurring bones recovered during excavations were those of the mandible (n = 26), followed by the humerus, radius/ulna, and metacarpus (fore leg); the crania and vertebrae; followed by the tibia (hind-leg) in descending abundance. Relatively few remains of the caudal vertebrae of the tail are represented in the assemblage but distal phalanges (claws) are lacking. When the numbers of bones recovered are divided by the actual number of bones found in one fox skeleton, the pattern becomes clearer (fig. 3). This bone element pattern suggests bones of disposed carcasses once the pelt was removed. The skinning process very likely began by making an incision from the chin of the animal down its ventral side to between the hind legs. The skin of each may have been split along the ventral surface and the skin peeled away from the underlying fascia and muscle. The skin could have been easily pulled from each leg much like pulling off the arms of one's coat with the fur of each leg turning in on itself as the hide was released from the musclea commonly practised method of skinning according to Thor Holmes (Museum of Natural History, K.U.). The number of metacarpals and metatarsals indicate that ankles and wrists were not left on the skin, but that the pelt was rolled to the extremity of the appendages and only then was cut or ripped away. The relatively few proximal phalanges and absence of claws suggest that the extremities of the foot and claw were attached to the pelt as it was lifted away from the carcass. The pelt, once released from the legs, could have been easily pulled over the head and released from the skull in the eye and ear area by slitting

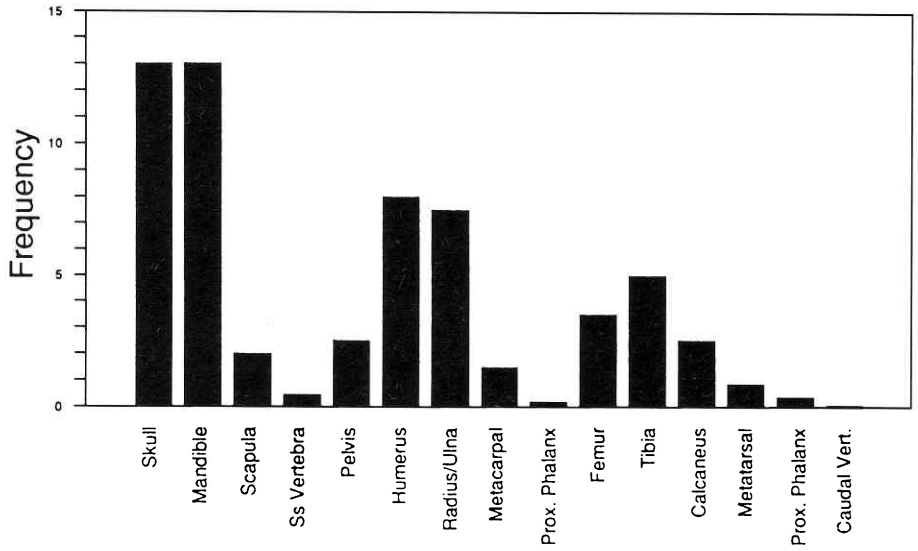

Fig. 2 — Histogram showing numbers of definitive elements of arctic fox recovered from Spadzista excavations 87/89.

the skin. The pelt, with bushy tail and its accompanying caudal vertebrae, was probably tanned and worn while the rest of the meat bearing portion of the carcass was eaten or discarded.

Forequarters are more abundant than hindquarters. This may indicate that haunches were utilised for their meat. However, fox, small sized animals, very likely would have been cooked as whole body units minus the head and jaw. Therefore, the identified bone elements would indicate that the carcass was discarded after the skin was removed. Oddly, no ribs or carpals and tarsals except the calcaneus were discovered during the analysis. Presently, there is no explanation for the absence of these bones in the archaeological assemblage. Absence of the these bones may be due to differential taphonomic destruction or use of certain bones as gaming pieces of tools, but such arguments are highly speculative.

Soffer (1985:312–313) noted: "Hare, fox, marmot, and wolf bones were extensively used in the manufacture of bone tools and jewellery; long bones of these taxa were especially favoured in tool making. Such use of long bones effectively removed these elements from inventories and left behind, at least at some sites,

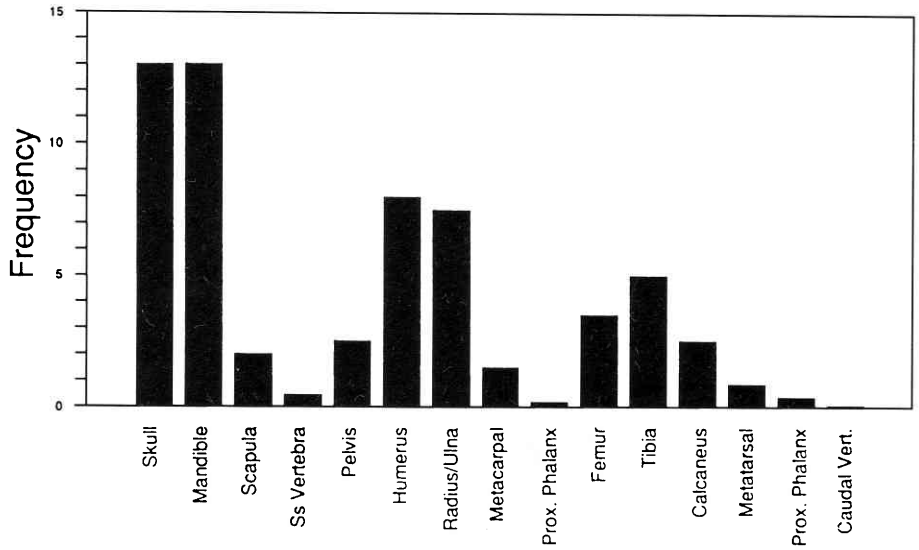

Fig. 3 — Histogram showing numbers of definitive elements of arctic fox divided by numbers of elements found in one skeleton of fox.

a disproportionately large number of highly diagnostic elements such as crania, mandibles, teeth, scapulae, pelvises, and metapodials and phalanges".

The data do not reflect such bones manufactures and use occurring at Spadzista. Bones of the fore and hind limbs outnumber the scapula, pelvis and phalanges. In summary, the bones recovered from excavations represent the main carcass of the fox once the skin had been removed. Caudal vertebrae and claws were removed with the pelt.

Three bones of arctic fox (Sp/87-M5) a right pelvis (ischium), left pelvis (ilium), and right calcaneus possess a reddish hue which may indicate that ochre was applied to them. Ochre has been found at other mammoth sites. Mammoth bones painted with ochre were recovered at Mezhirich and Mezin and ochre was used in burials at the Sungir and Kostenki sites (Soffer, 1985:369). Ochre staining of fox bones may have had economic or even ritualistic significance at Spadzista.

The fox bones recovered from Spadzista represent fully adult individuals. Of all fox bones analysed in this study, no epiphyses, epiphyseal lines, or immature teeth were observed. The structural characteristics of bone tissue are related to its rate of attrition. Because of its loosely constructed nature, cancellous bone disintegrates faster than cortical bone (Brain, 1969; Binford & Bertram, 1977). While bones of immature creatures are more cancellous in nature it is possible that young, and necessarily more friable, bones were completely destroyed by taphonomic processes (mildly acidic conditions and possible solifluction abrasion could be particularly devastating to bones of young individuals). However, it is likely that fully adult foxes were hunted in winter when their coats would have been the most fully developed. Dolukhanov (1982) noted that as early as the Mousterian in the Russian Plain, fur bearing animals would have been hunted in winter, and Soffer (1985) stated that all remains of fox found in all Upper Paleolithic sites in the Russian Plain were fully adult, indicating they were hunted in winter. Born in the spring, foxes grow throughout summer and fall, becoming fully adult in winter. During winter months when their coats are the most luxuriant, foxes would have been the most appealing to inhabitants at Spadzista. Also, during winter, foxes may have been the most accessible to the hunter. According to Soffer (1985:199) foxes follow specific migration routes along river valleys as they seek game. Fox population densities "varied seasonally, being significantly greater after pupping and during periods along the migration routes", when they favoured river valleys and "early winter would have been optimal for harvesting arctic foxes". For the sake of practicality, the fox, that "most weary of all furbearers" (The Trapper's Handbook, 1923:24) would have been most easily captured by snares or deadfalls in winter months when freshly fallen snows would conceal any human scent. Wintertime pelt procurement strategies may have also been advantageous for the economic benefits of tanning. Skins acquired in warms seasons must be necessarily tanned quickly as hair tends to fall from rapidly deteriorating carcasses. On the other hand, pelts will not as readily loose their hair if the fox is killed in winter when the body cools relatively rapidly (Larry Martin, Museum of Natural History, K. U., pers. comm.).

The larger number of bones was found in level 6 where the largest concentrations of artefacts as well as mammoth bones were recovered. Fox bones are lacking from other levels where occupations which were probably brief and oriented more toward acquisition of lithic raw materials.

3. Conclusion

In summary, disproportionate numbers of bones of the head, axial skeleton and legs compared to a paucity or absence of tail bones and claws in the Spadzista carnivore assemblage would indicate that pelt procurement activities were occurring at the site. Absence of bones of young animals would indicate: 1) that fox hunting occurred in winter when fur quality was at its height and population densities of fox, along river valleys, were high, and 2) that inhabitants at Spadzista were living at the site during winter months. Other traces on fox bones may indicate some economic activity associated with hide tanning or possible ritualistic purposes.

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