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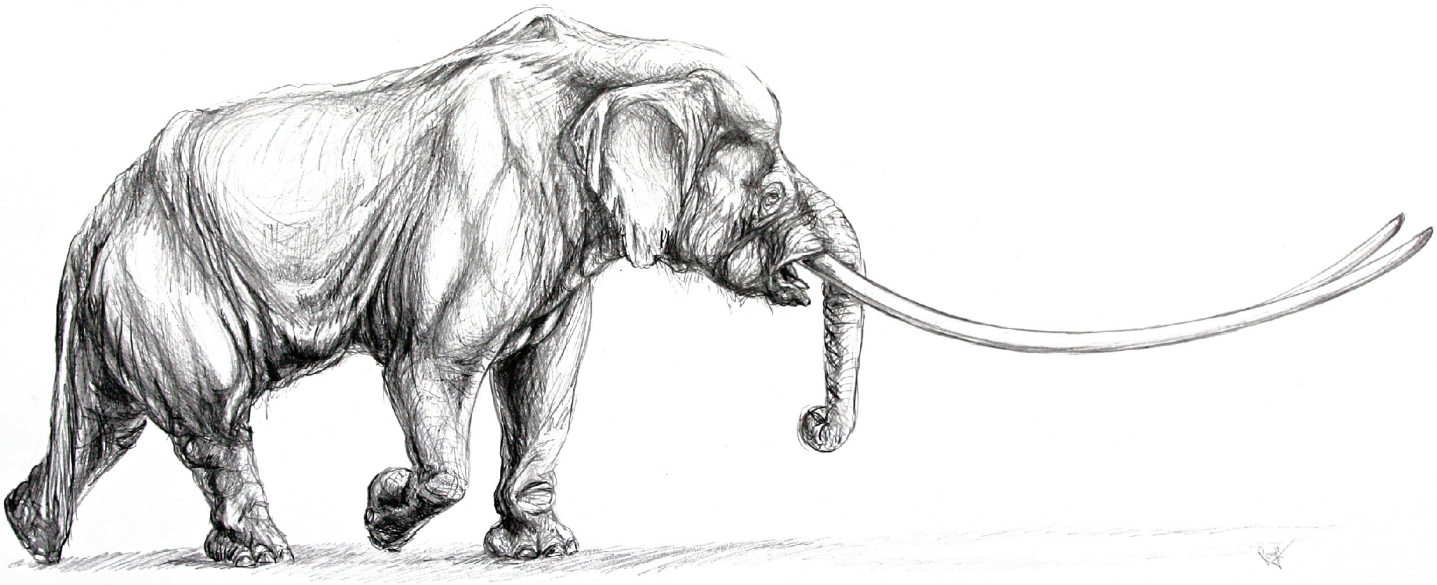

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ABSTRACT BOOK

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The latest recorded bison of West Beringia

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A partial carcass of an ancient bison (*Bison priscus* Boj.) was found in 2012 at the mouth of the Rauchua River (Chukotka, Russia, 69° 30' N, 166° 40' E). The remains consist of the croup with both hind limbs and a big piece of skin (Fig. 1), the bones of fore limbs with soft tissues, vertebrae, broken ribs, the pelvis, fur and gastric contents. Some bones have signs of intense gnawing by a large predator, most probably by a wolf. Primary sex characteristics are not preserved. Based on Bedord's (1978) method of sexing metacarpalia the carcass most probably belongs to a female. The same result, but with less confidence, was obtained if the technique by Lewis et al. (2005) was applied. The metacarpal bone of the specimen from the Rauchua is characterized by unusual proportions with relatively narrow diaphysis (49.4 mm), small width of the distal end (80.0) but large total length (238.0) the latter exceeding known values of metacarpal length in both males and females of the late Pleistocene-Holocene Beringian bisons. The ^{14}C age determined based on a skin was 8030 ± 70 BP (SPb-743). AMS-dating based on a rib produced an age of 9497±92 (AA101271). This is the latest record of the ancient bison, at least for Chukotka.

The coat consists of several groups of hairs of different length, hardness, thickness and color. For the first time SEM-investigation of the primeval bison's hair has been conducted. Several types and categories of hairs have been distinguished: guard hairs, wavy zigzag hairs of three categories and wavy wooly hairs of two categories. The primeval bison had thicker guard and zigzag hairs but thinner wooly hairs compared with those of the recent aurochs (*Bison bonasus*) and bison (*B. bison*), i.e. it had a thicker hair coat, especially underfur, which ensured better heat insulating and damping properties of the coat. The structure of the coat suggests a warm period of the year, when the moult has been completed, and new winter hair has not yet formed.

Changes in the isotopic compositions of C and N along the floccus hairs length allow making cautious assumptions about the death season of the animal. Quite sharp increase in $\delta^{15}N$ and some decrease in $\delta^{13}C$ values near the base of hairs can indicate changes in the diet or seasonal stress. The isotopic composition of the body hairs correspond to that of the distal part of the floccus hairs. It suggests that the floccus hairs length increased by at least 10 cm since the last molting. Bisons have a single late-spring molting and the floccus hair growth rate of large herbivores amounts to about 1 mm per day. It follows that the death occurred at least 100 day after the last molt.

A gastric content has been studied by several paleobotanical methods. Plant macrofossils of grasses, sedge and motley herbs prevail; shrubs and mosses are present, too. *Polytrichum* sp. Betulaceae (*Duschekia*

Fig. 1. Carcass of Holocene bison from the Rauchua River. Scale bar equals 10 cm.

fruticosa, *Betula* sect. Nana, Betulaceae), Salicaceae (*Salix* sp.), Cyperaceae (*Carex* sp.), Poaceae, Brassicaceae, Caryophyllaceae (*Moehringia* sp.), Ranunculaceae (*Ranunculus* cf. *hyperboreus*), Rosaceae (*Comarum palustre*, *Rubus arcticus*), Vacciniaceae (*Vaccinium vitis-idaea*), Menyanthaceae (*Menyanthes trifoliata*) have been identified.

According to the results of biomorphic analysis, the remains of mosses (*Polytrichum, Drepanocladus, Aulacomnium, Hylocomium*) and meadow grasses (*Poa* sp., *Bromus* sp.) dominate; a proportion of sedges and grasses is considerable. Some fragments of conductive fabrics and remnants of the herb epidermis were identified. *Sphagnum mosses*, wood forms, shrubs and forest grasses were not found. More than 20 morphotypes of phytoliths were defined. Most have a small size, rarely exceeding 50 microns, which implies low growth of plants.

Grasses (Poaceae) predominate in the pollen spectrum. Single pollen grains of sedges (Cyperaceae), wormwoods (*Artemisia*), composite family (Asteraceae), as well as birches (*Betula* sp. and *Betula* sect. Nana) and bush alder (*Duschekia fruticosa*) have been found. Single spores of Bryales and Sphagnum mosses have been identified. The pollen of conifers were not been found.

The co-occurrence of pollen of Poaceae and seeds of Cyperaceae can be explained by different blossoming and fruits ripening periods of these families' representatives. In the Arctic region the sedges blossoming is observed from the end of April till the beginning of July and seed ripening occurs within the period of blossoming of grasses from June till August. The combination of ripe seeds of sedges with a large amount of grasses pollen thus points to the second half of summer. The growth level of phytoliths confirms this suggestion. Consequently, in accordance with the paleobotanic data the last pasturage period and the death of the bison occurred in the second half of summer.

It is important to note the presence of a large amount of mosses remains in the stomach contents. Mosses were also found in the gastrointestinal tract of a Late-Pleistocene bison of the middle reach of the Indigirka River (Ukraintseva et al., 1978). The mosses which form the lowest storey of the vegetation cover are of low nutritive value for herbivores. They could be eaten together with herbal plants if bison bit the grass off near the soil surface and/or if the eaten plants were dwarfish (which is confirmed by small sizes of phytoliths).

The composition of plant remains prove that before its death the animal grazed generally on mesophytic meadows with a domination of sedges and grasses as well as on relatively drained lands with vegetation consisting of miscellaneous grasses and dwarf shrubs (*Rubus arcticus, Vaccinium vitis-idaea*) and in shrubberies of willows, dwarf birches and sedges. On the whole the nutrition spectrum of an ancient bison form the Rauchua River mouth concurs with the summer nutrition spectrum of the present wood bison (*Bison bison athabascae*) in Canada and Alaska.

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