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Pleistocene Faunal Fossils from Bayangol I Site, Bulgan Aimag, Mongolia

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Abstract

During excavation of the Bayan-gol I Palaeolithic site in the Bulgan Aimag, Mongolia, some faunistic remains were recovered attributable to Aves (two species), Anura (two species), and mammals (three species). The fossil remains bear a considerable similarity to the corresponding species of today in Mongolia.

Key words: fossil, mammals, birds, Anura, Palaeolithic, Mongolia, Late Pleistocene

Introduction

The Palaeolithic Bayan-gol I Site is an open site located on a terrace of the Eg river (the Selenge river drainage basin) in the Bulgan Aimag, northern Mongolia (fig. 1). The excavations were carried out in 2010 as a part of the joint Mongolian-Japanese archaeological expedition.

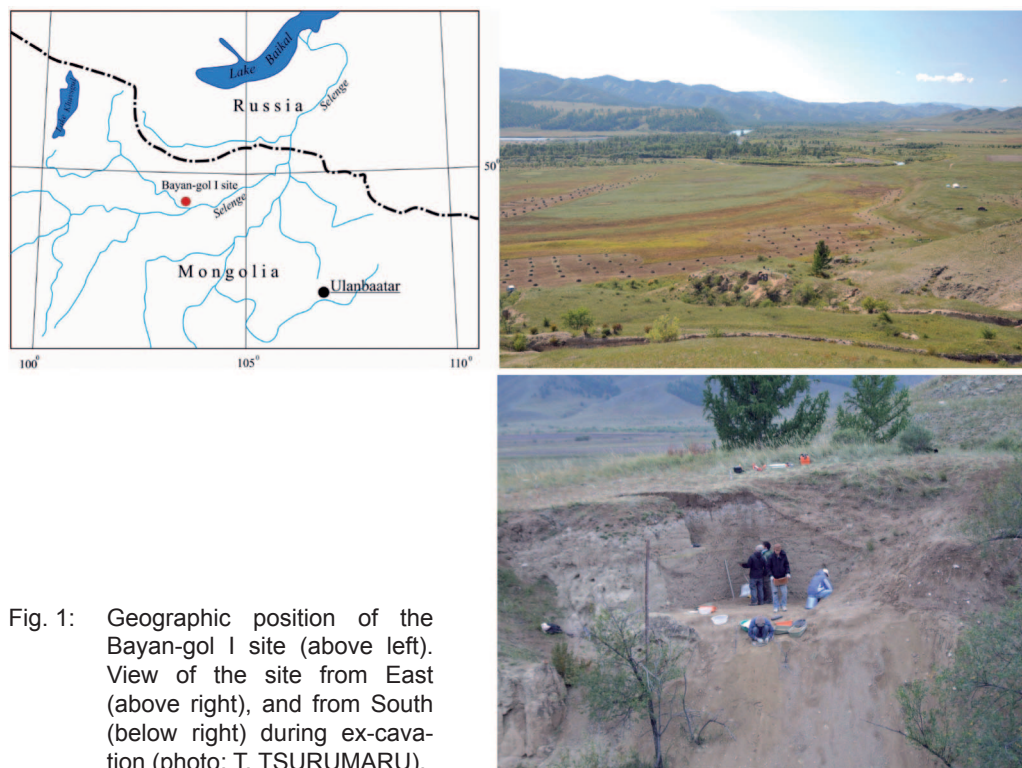


Fig. 1: Geographic position of the Bayan-gol I site (above left). View of the site from East (above right), and from South (below right) during ex-cavation (photo: T. TSURUMARU).

Only one cultural layer has been identified in the site (fig. 2). Among lithic artefacts recovered from this layer there are side-scrapers, end-scrapers, blade cores and flakes belonging to the blade industry (fig. 3).

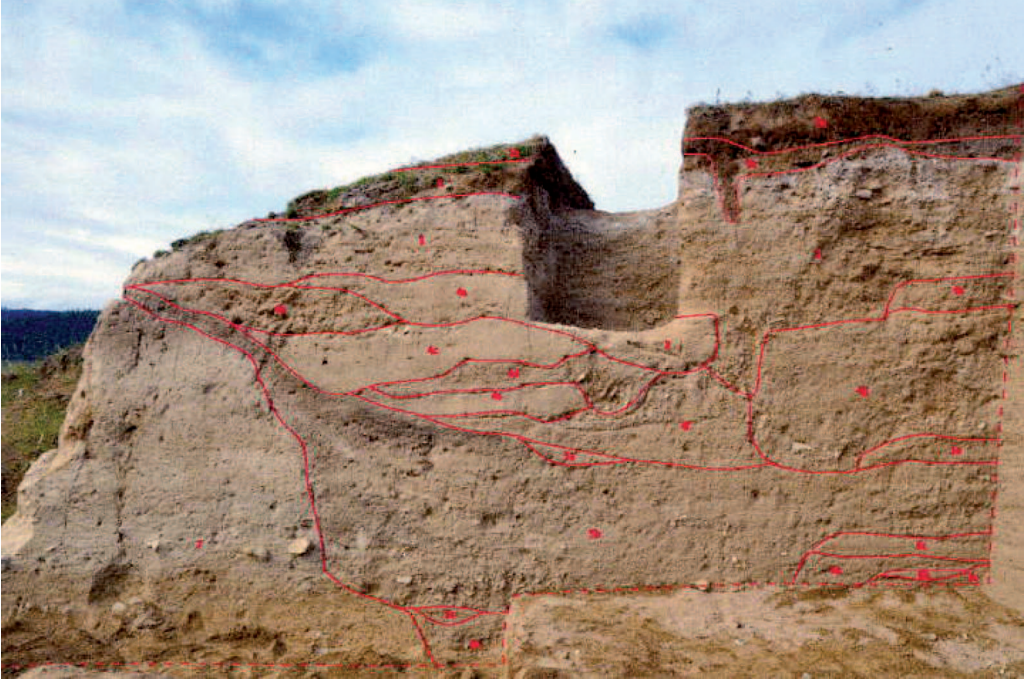


Fig. 2: The section of the Bayan-gol I Palaeolithic site. Cultural horizon is signed red (photo: T. TSUSUMARU).

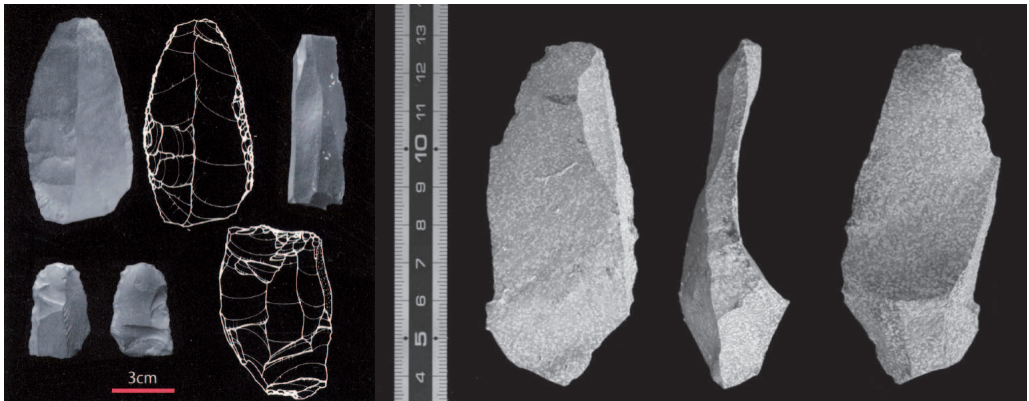


Fig. 3: Some artefacts from the Bayan-gol I Site (photo: T. TSURUMARU).

The 2010 excavation of the Bayan-gol I Site recovered a total of 208 faunal remains. Only 38 of these were large enough to be recognized by the naked eye (fig. 4), and these were taken up after being assigned an identification number; the rest were collected by sifting the soil through a mesh screen. Most of the microfaunal fossils were collected using this method, and examined and identified using a digital microscope with a 230 x maximum zoom. With this procedure we were able to identify two frog species, two bird species, and three mammal species.



Fig. 4: Bone fragments from the Bayan-gol I site (left) and view over the material concentration in the cultural level (right); photo: T. TSURUMARU.

Faunal fossil assemblage

Frogs (Anura)

Bone fragments included those of toad, *Bufo* sp., and of a tree frog *Hyla* sp., the latter being represented by a single fragment of the sacral bone. Twenty of the 24 frog fossil specimens were determined to be *Bufo* sp. Judging from their size and shape, they probably belong to the Siberian sand toad, *Bufo* cf. *raddei* (Strauch, 1876), or to some similar species (fig. 5).

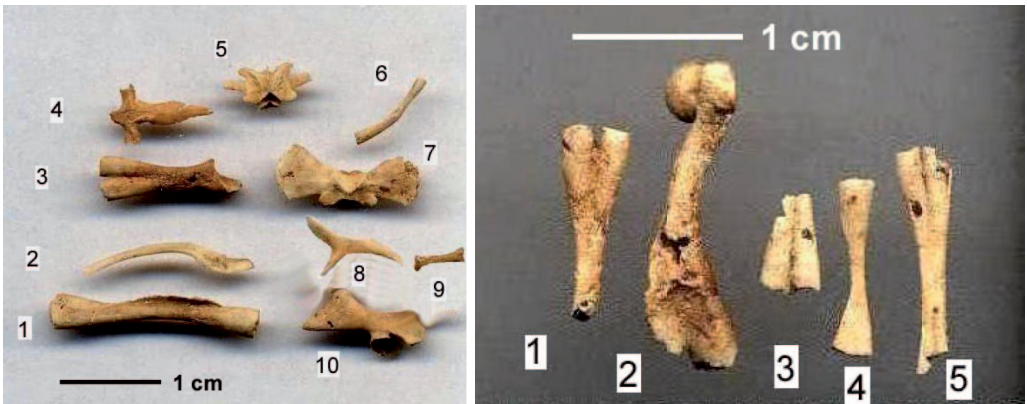


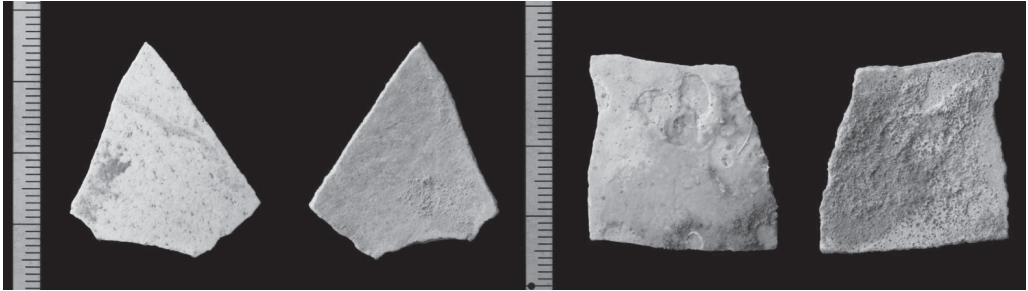
Fig. 5: Bone remains of *Bufo* cf. *raddei* Strauch, 1876 from the Bayan-gol I Site.
 Left: 1 – humerus dex., 2 – hipbone (ilium) dex., 3 – zeugopodium, 4 – fragment of cranium (quadratojugale or parasphenoideum), 5 – vertebra, 6 – phalange digitorum ?, 7 – rump (sacrum), 8 – fragment of cranium (pterygoideum), 9 – phalange digitorum, 10 – scapula;
 right: 1 – zeugopodium dex., 2 – humerus dex., 3 – fragment of zeugopodium, 4 – basipodium, 5 – fragment of zeugopodium (photo F. KHENZYKHENOVA & N. SCHEPINA).

Birds (Aves)

The only conclusively identified bird bone was a single fragment of the right humerus shaft of a small bird the size of a Brown-eared Bulbul (fig. 6, left). We were able to collect 16 bird eggshell fragments. The fragments were too badly broken to enable identification by morphological characteristics. However, a considerable thickness of the shells suggests the eggs belonging to an ostrich *Struthio camelus* (Linnaeus, 1758) or to another large bird (fig. 6, below).



Fig. 6: The bird remains from the Bayan-gol I site: humerus dex. of a small bird (left) and fragments of the eggshell of ostrich *Struthio camelus* (below); (photo: T. TSURUMARU).



Mammals (Mammalia)

Small mammal remains included bone fragments of pika, *Ochotona* sp. (6 fragments) and of a vole species (14 fragments). A thorough examination of the recovered bones suggests the possibility that each group of the named remains belonged to a single individual. The pika remains are tentatively identified as the Daurian pika, *Ochotona daurica* (Pallas, 1776) (fig. 7), which is known to have been widely spread over the Transbaikalian area in the Pleistocene (KHENZYKHENOVA et al. 2011). As for the vole bones, at least two fragments have been definitely identified as those of Brandt's vole, *Lasiopodomys brandti* (RADDE, 1852) (fig. 8). The other fossils determined as belonging to the subfamily Arvicolinae are also probably of the same or a similar species.



Fig. 7: Remains of *Ochotona* sp. from the Bayan-gol I site, left – premaxilla sin. (photo: T. TSURUMARU), right – fragment of maxilla sin. with M¹-M² (photo: T. SATO)

Regarding larger mammals, 18 fossils clearly recognized as large mammal bones were all severely fragmented and in poor condition. Of these, seven were identified as fragments of the cheek teeth of horses *Equus* sp. (fig. 9). For the other bones it appeared impossible to guess their precise skeletal position with confidence. There is, however, one large mammal bone fragment exhibiting slice marks which may have been inflicted during butchering and dismembering of the carcass. Such specimens are important because they provide definite proof of human activity at the site.

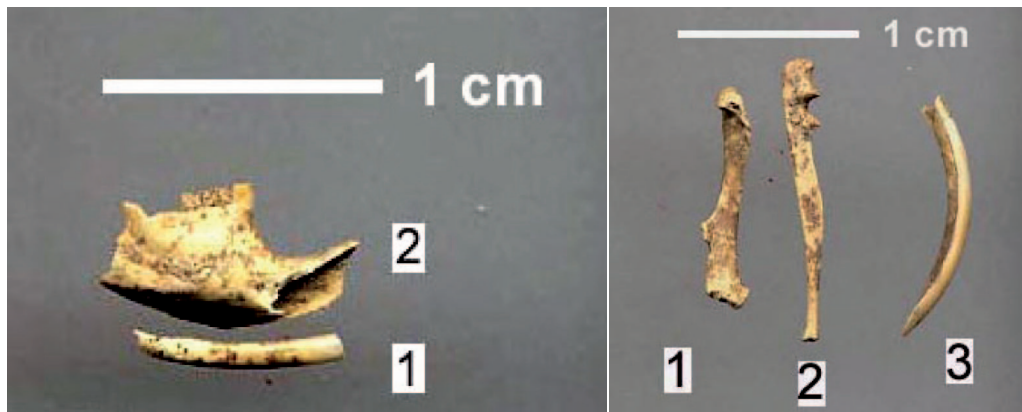


Fig. 8: Bone remains of Brandt' vole *Lasiopodomys brandti* Radde; left: 1 – fragment of I_1 , 2 – fragment of the mandible sin. with M_1 ; right: 1 – fragment of humerus sin., 2 – ulna sin., 3 – I_1 (photo: F. KHENZYKHENOVA & N. SCHEPINA).

Conclusion

The presence of frog bones of the order Anura is significant. Within that toads of the genus *Bufo* inhabit a wide range of environments, living in forests and grasslands of both low-lying and mountain terrains.

Also, many frogs of the genus *Hyla* prefer wetlands and near-water habitats, and a number of them are adapted to arboreal life. The presence of these Anura forms we can explain by the location of this site in the river valley.

The number of fossils recovered during the excavation is insufficient to make any conclusive inference. However, the fossils of mammals such as pika, vole, and horse found together strongly suggest the environments of forest-steppe with water bodies in the Late Pleistocene.

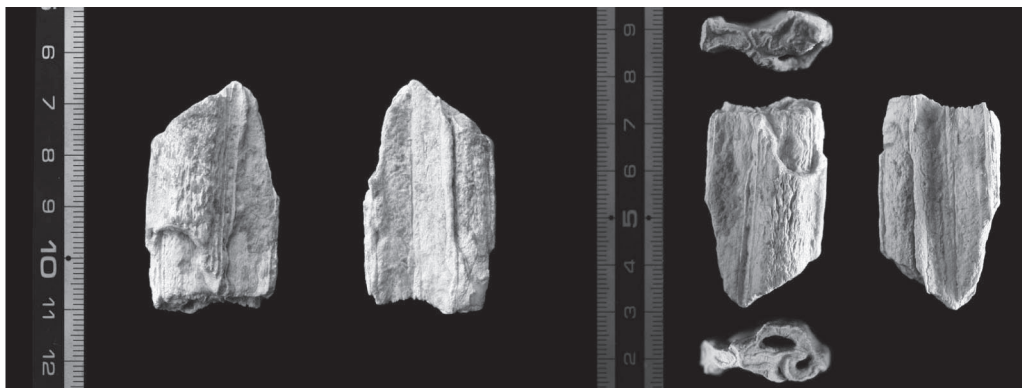


Fig. 9: Bone remains of horse *Equus* sp. (photo: T. TSURUMARU).

It is hoped that future excavations would add more details to the archeo-faunal record and would enable us to reconstruct in more details the Pleistocene paleoenvironments of the site and the activity of the Paleolithic man dwelling there.

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