4.6.5 Paleontological studies

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Paleontological studies of the Pleistocene and Holocene deposits at the Olenek - Anabar coast include collecting and determination of large and small fossil mammal remains. For the first time, special paleontological studies were carried out in this region as a part of the multidisciplinary research program. Unpublished Russian geological reports include data on a few mammal bones which were found by previous researchers.

All of the found bones and bone fragments were registered in order to obtain a complete statistic of species composition as during previous expeditions. During our work we were studying deposits a 4 km long section of the Olenek - Anabar coast – the Mamontov Klyk outcrop. We collected 501 bones and their fragments of large mammals (Appendix 4-7). Typically for permafrost regions, most bones (more than 90%) were found at the shore. The greatest part of bone fossils was collected on a small place on the shore near the mouth of the Nuchcha-Dzhiele River. Only 20% of the material was found at the Mamontov Klyk exposure itself and on the shore in front of it. The main difference of the collection from the Olenek - Anabar coast to our previous collections is the absence of complete big limb bones of woolly mammoth, horse, bison and of mammoth' teeth.

The collected bones were divided into groups by found place (location type). The group "a" contains 8 bones they were found strictly *in situ* in Ice Complex deposits. Three of them - samples O-476, O-477 and O-478 are remains probably from the one skeleton of *Mammuthus primigenius*. All big samples from this group we sent to the Radiocarbon Laboratory of the Geological Institute RAS for conventional ^{14}C dating. Next two groups ('b" and "c") include bone found within the exposure. For 10 bones (group "b") we know the altitude of found – the level of minimum height of the original position of the bones. It gives possibility to define the area where the bones come from. Among this group there are three fragments of the upper jaw of *Equus sp.* with teeth (O-98, O-99, O-100) from one skeleton and two metapodiales (Mt III and Mt IV) of *Equus sp.* belong to another skeleton (O-102, O-103. 9 bones (group "c") were found at the exposure on or in the scree debris.

Group "d" (69 specimens) includes the bones which were collected on the shore under the Mamontov Klyk exposure. Remains of reindeer and horse are predominant, evidently reindeer remains were presented as fossil as recent bones whereas all horse bones are fossil.

Most of the material (group "e", 395 specimens) have been collected on the small part of shore near the mouth of the Nuchchaa-Dzhiele River. Remains of reindeer and horse are predominant too. Several bones of *Phoca sp.* in this group are probably recent. The last two groups ("f" and "g") include bones (1 and 9 specimens) that were collected in various other areas. For example three

cervical vertebrates of *Equus sp.* from one individual were collected on the shore of middle reaches of Urasalakh River (O-161, O-162, O-163).

Table 4.6.5-1. List of mammal taxa identified in the Olenek-Anabar Region collection.

Class MAMMALIA
- Order Lagomorpha
  - *Lepus sp.* (hare)
- Order Carnivora
  - Family Canidae
    - *Alopex lagopus (L.)* (polar fox)
    - *Canis sp.* (wolf)
- Order Proboscidea
  - *Mammuthus primigenius* (Blum.) (woolly mammoth)
- Order Perissodactyla
  - Family Equidae
    - *Equus sp.* (horse)
- Order Artiodactyla
  - Family Cervidae
    - *Rangifer tarandus* (L.) (reindeer)
  - Family Bovidae
    - *Ovibos moschatus Zimm.* (muskox)
    - *Bison priscus (Boj.)* (Pleistocene bison)
- Order Pinnipedia
  - Family Phocidae
    - *Phoca sp.* (hair seals)

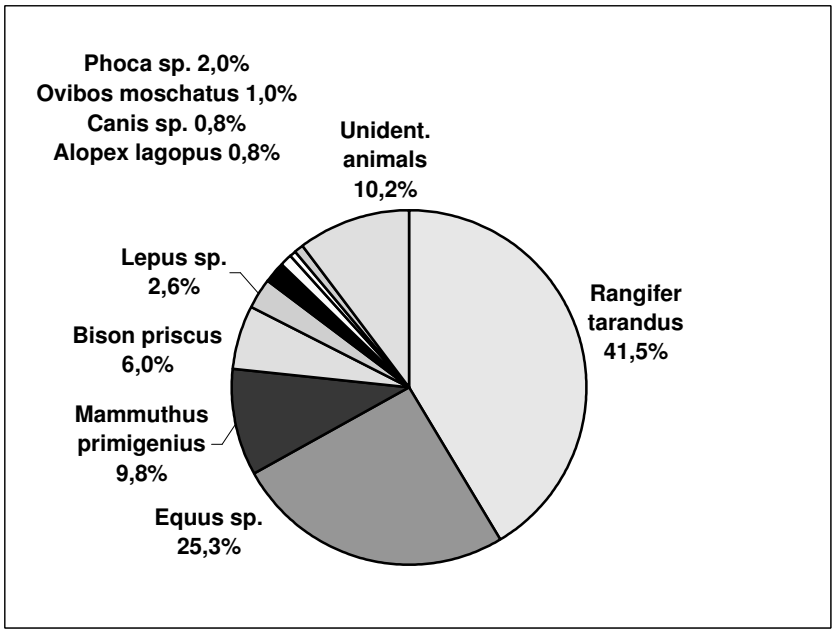

Figure 4.6.5-1: Composition on mammal bones collection from Olenek-Anabar Region, 2003, total number: 501 specimens.

In total the taxonomic composition of the collection from the Olenek-Anabar region (Table 4.6.5-1) is close to the Late Pleistocene “Mammoth” fauna from other Arctic Siberia Region. Reindeer (41.5%), horse (25.3%) and Woolly Mammoth (9.8%) fossils dominate, then followed by bison (6.0%). Muskox and wolf each (about 1%) of the whole collection (Figure 4.6.5-1) Unusually high numbers of reindeer remains can be explained by the presence of modern bones in collection. More interesting is the predominance of horse remains compare to mammoth ones. Possibly, this depends on taphonomic factors and doesn’t correspond to the composition of animal population during the Late Pleistocene in this region. Remains of polar fox and hair seals in collection are probably modern. The preservation of bones is typical for Ice Complex sites and fossil bones are not easy to distinguish from recent ones on the shore.