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*A foto of bronze artifacts found in hoards in the hill fort „Tabulová
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ETHNOARCHAEOLOGY OF NENETS CAMPSITES, CASES OF YANGANA PE AND OKTYABERSKAYA (POLAR URAL MTS., NORTHWEST SIBERIA)

ETNOARCHEOLOGIE NĚNECKÝCH TÁBOŘIŠŤ, JANGANA PE A OKT'ABERSKAJA (POLÁRNÍ URAL, SEVEROZÁPADNÍ SIBIŘ)

Jiří Svoboda, Pavel A. Kosintsev, Sandra Sázelová, Vlasta Jankovská, Martin Holub

Abstract

As a part of an investigation of Nenets settlement patterns (Yamalo-Nenets Autonomous Region, Northwest Siberia) in summer 2009, we documented active summer campsites at lakes and abandoned winter and spring campsites in open tundra (mountain ridge of Yangana Pe) and forest tundra (Oktyaberskaya, north of Labytnangi). Discussion of the floristic and zoological potentials of tundra, forest tundra, and forest for nutriture shows that plant resources and fish are available predominantly in summer while reindeer occur in these regions during fall, winter and spring, as they return from summer pastures further to the north. Movements of the individual Nenets families depend on ownership of sufficient reindeer. Missing components of the nutriture are substituted by purchasing consumer products. The documented camps are structured along discrete zones such as interior living areas (including children's playgrounds), exterior areas with evidence of woodworking, processing reindeer, and other activities, peripheral toss zones, and dispersed activity remains in the surrounding landscape (some of which may have ritual meaning). Certain variation recorded in the individual camps is caused by distances between camps, to the nearest shop and to communication networks, by demographic structure of the site, by activities of the inhabitants and their financial potential (after selling some of the reindeer in winter, for example). The scope of these comparisons is enriched by Upper Paleolithic evidence from central European hunters' settlements which display a basically similar camp structure and zonality but include (of course) different types of objects and activities.

Keywords

Ethnoarchaeology, Siberia, Polar Ural, Nenets, natural resources, activities, settlement structure, settlement zonality

1. Introduction: The ethnoarchaeological approach

Incorporating current ethnological analogies into the reconstructions of past human behavior in the Pleistocene is a technique as old as the beginning of Paleolithic research itself, and it goes back to the 19th century (Mortillet 1883). However a methodology based on systematic creation and usage of maps and plans of actual hunter-gatherers' campsites was introduced considerably later, with the development of more scientific approaches in archaeology during 1960s and 1970s. At present, we have a series of documents, publications, and methodological issues concerning the spatial distribution of actual sites and objects within a variety of geographic zones and environments (Yellen 1977; Binford 1978; 1987; Gamble, Boismier, eds. 1991, with refs.).

Upper Paleolithic settlement archaeology provided a wealth of databases and related information on mobile settlement strategies and resource exploitation in the Last Glacial landscape (Peterkin, Price, eds. 2000; Vasil'ev *et al.*, eds. 2003). The reindeer-and-horse-based Magdalenian sites in the Paris Basin served as a classic case in all these efforts (Leroi-Gourhan, Brézillon 1972; Stappert 1989; Ciesla 1990). In Central Europe, the literature rightfully emphasizes the geographic role of the Moravian Gate as one of the most important European passages, both for animals and their hunters. Between 49.5°



Fig. 1. Polar Ural showing location of reindeer summer pastures at the Kara sea, Yangana Pe campsites (upper arrow), and Oktyaberskaya campsite (lower arrow).

Obr. 1. Polární Ural s vyznačením letních sobích pastvišť u Karského moře, táborů na Jangana Pe (horní šipka) a tábora Okt'aberskaja (spodní šipka).

and 50° of northern latitude, the 70 km long bottleneck of the Moravian Gate and the adjacent corridors composed of narrow plains between the Bohemian Massif and the western Carpathians, opens a passage in excess of 300 km long between the plains of northeastern Europe and the Danube valley to the southwest. One of the aims of Moravian Upper Paleolithic archaeology is to explain how this landscape and its potentials were used and exploited by a variety of cultural entities (cf. papers published in *Přehled výzkumů* 47, 2006, with refs.). Having our previous field experience from the European Last Glacial sites in mind, we present here examples from polar and subpolar latitudes, with expectations that these will be a more preferable comparative sample than others. During our summer stay in the Polar Ural Mts. in 2009, we observed active Nenets summer camps on the Lake Taunto, as well as remains of temporarily abandoned winter and spring camps in the open tundra at Yangana Pe mountain ridge (the Valley camps and the Slope camps), and in the forest tundra west of the Ob River near Labytnangi (Oktyaberskaya campsite). We recorded spatial distribution of objects, listed their inventories according to zones, created photographic documentation and recorded its GPS locations.

2. The Nenets annual cycle

The Nenets, as typical nomadic people of the tundra, base their traditional economy on reindeer exploitation (Golovnev 1993; Chomich 1995) and their economic cycle coincides with annual reindeer migrations. During summer, the open tundra offers more resources and some protection against mosquitoes, whereas in winter nutrition is better accessible in the forest and forest-tundra zones. Therefore, reindeer spring migrations are oriented northwards to the open tundra zone and their fall migrations take them back to the forest zone. A complete Nenets family, or 2–3 related families, migrate repeatedly along the same route, males together with females, children, “chums”, and equipment. To practice this lifestyle, a family needs minimally 80–100 reindeer. Families that do not own enough animals send their reindeer northwards with larger herds, stay at rivers and lakes along the border of forest tundra and open tundra, and live there from fishing and occasional hunting. In winter, majority of the Nenets stay in the forest and live there from hunting and some fishing, but few families who own large enough reindeer herds may stay in the tundra over the year. Basing on the number of reindeer, one may separate the Nenets families into four groups: those who migrate annually between forest and tundra (majority of families); those who migrate within tundra throughout the year (small number of families), those who move from forest just to the borderland of forest tundra and tundra and stay there (small number), and those who do not migrate at all (small number).

3. East of the Polar Ural Mts.: Region, plants, animals and people

3.1. Geography and botany

In the Yamal-Nenets Autonomous Region, the north-south oriented principal mountain chain of the Polar Ural



Fig. 2. View from Yangana Pe ridge towards surrounding open tundra, with lakes and Nenets settlements.

Obr. 2. Pohled z hřebene Jangana Pe do okolní otevřené tundry, s jezery a něneckými tábory. Foto S. Sázelová.

Mts. is paralleled in the east by one of the traditional migration corridors, periodically frequented by reindeer herds moving along the mountains from plains around the Kara Sea, where they spend the summer, towards their winter locations around the Labytnangi–Kharp railway. On this journey, about 250–300 km long, the landscape grades from open tundra through to dwarf shrub tundra, to forest tundra (Fig. 1). The flat or partly elevated tundra of the southern Yamal is formed by mosaics of lakes, brooks, small rivers, and various marshes. The banks are lined with willow shrubs dominated by *Salix lanata*, *S. glauca*, *S. lapponum* and *S. phylicifolia*. In the aquatic biotopes of the numerous peat bogs and wet meadows, we regularly encounter various species of *Carex* and *Eriophorum* (most frequently *E. scheuchzeri*, *E. russolum*, *E. vaginatum*, *E. polystachion*) together with *Rubus chamaemorus*, *Polygonum bistorta*, *Menyanthes trifoliata*, *Comarum palustre*, *Myosotis* cf. *asiatica*, *Pedicularis* sp., *Thalictrum* sp. and others. Shallow waters are inhabited by *Arctophila fulva* and *Sparganium* cf. *hyperboreum*. At favourable, not completely marshy biotopes, the vegetation is enriched by *Valeriana capitata*, *Trientalis europaea*, *Saxifraga hirculus*, *Cerastium* sp., *Melampyrum* sp., *Euphrasia frigida*, *Salix nummularia*, *Salix reticulata*, *Salix polaris* and other herbs, mosses and lichens.

In the northern latitude of 67°, Polar Ural Mts. are joined by an east-west oriented limestone ridge named Yangana Pe (289 a.s.l.) and adjacent metamorphic ridge of Nyava Pe (236 a.s.l.). Yangana Pe represents a unique phenomenon of the southern Yamal Peninsula due to its floristically rich vegetation cover, influenced by the calcareous subsoil, and attractive for aboriginal hunting, fishing and pastoralism (Fig. 2). It recalls the role of the limestone Pavlov Hills during the Upper Pleistocene in the Danubian basin (in the Czech Republic). Yangana Pe shows structured geomorphology with mountain chains, isolated hillrock, broad valleys, and gorges, and allowing a general overview of the surrounding flat tundra of southern Yamal Peninsula. Yangana Pe and

Nyava Pe also protect the basins and lakes along their southern foothills against winds from the sea, and create the northernmost shelter area for limited extension of dwarf trees and shrubs. A more favourable climatic regime in the southern foothills is supported by reflection of the whitish limestone cliffs. Towards the higher elevations of western Yangana Pe, the subzone of southern tundra grades into mountain tundra, comparable to vegetation of the Polar Ural Mts. In the low vegetation cover on top of the hills we encounter a variety of plants such as *Rhodiola quadrifida*, *Delphinium middendorffii*, *Saxifraga aizoides*, *Papaver lapponicum*, *Saussurea alpina*, *Saxifraga spinulosa* and others. *Boschniakia rossica* from the family *Orobanchaceae* is a plant without chlorophyll which parasitizes on *Alnus fruticosa* and was recorded on several occasions.

Yangana Pe intersects the traditional reindeer migration route approximately in the middle of the pathway. In the past, strategic passes crossing the rocky ridge were certainly good places for reindeer ambushes and kills. Although reindeer bones, skulls, and antler are found dispersed throughout the whole landscape, they concentrate in such passes more frequently than elsewhere (Fig. 3).

The Oktyaberskaya camp is located 150 km south, in the forest-tundra vegetation zone of southernmost Yamal peninsula, with *Larix sibirica* as the most important tree and *Betula nana* as the most frequent shrub. This zone expands longitudinally from the eastern slopes of Polar Ural Mts. to the left banks of Ob River mouth. Geological subsoil is formed by a fluvial gravel-and-sand deposit of the Ob River in the east, whereas the western part is predominantly formed by fluvioglacial sediments with higher proportions of larger-sized gravel. Depending on geomorphology, hydrology, exposure and other abiotic factors, the vegetation composition varies both on micro- and mesoscales. Such versatile mosaic patterns are typical for a natural landscape not yet influenced by large-scale anthropogenic impacts.

Relatively dense forests of the northern taiga type with *Larix sibirica* and a higher representation of *Picea obovata* and *Betula pubescens* are directly associated with typical forest tundra wherever protected and favourable mesoclimatic biotopes appear. Species of *Salix* such as *S. phylicifolia*, *Alnus fruticosa* and the less commonly occurring *Rosa acicularis* represent the dominant shrubs. Dwarf shrubs form a closed cover of *Ledum palustre* and *Vaccinium uliginosum*, sporadically *Vaccinium myrtillus*, in open places with *V. vitis-idaea*, *Linnaea borealis*, *Trientalis europaea*, *Rubus arcticus*, *R. chamaemorus*, *Melampyrum* cf. *sylvaticum* and others. Mosses and lichens are very common, with dominance of various species of *Sphagnum*, *Hylocomium splendens*, *Dicranum* sp. and *Polytrichum* spec. div. Species of the genus *Cladonia* and *Cetraria* also occur.

Along brooks, the moist biotopes are rich in plant communities. The shrub cover is dominated by willows (*Salix lanata*, *S. glauca*, *S. lapponum*, *S. phylicifolia*), together with *Salix myrtilloides*. Amongst herbs we encounter species *Carex* and *Eriophorum* (*E. polystachion*, *E. vaginatum*, *E. scheuchzeri*), and *Cirsium heterophyllum*, *Trollius* cf. *asiaticus*, *Sanguisorba officinalis*, *Polemonium*



Fig. 3. Strategic passes crossing Yangana Pe were places for reindeer catches and kills. Reindeer skeletal remains are concentrated here more frequently than elsewhere in the landscape even in contemporary times.

Obř. 3. Strategické průsmyky přetínající hřeben Jangana Pe byly vhodnými místy pro odchyt a zabíjení sobů. Ještě v současnosti se zde kosterní pozůstatky sobů koncentrují více než ve volné krajině. Foto J. Svoboda.

acutiflorum, *Polygonum bistorta*, *Parnassia palustris*, *Comarum palustre*, *Menyanthes trifoliata*, *Rubus chamaemorus*, *Rubus arcticus*, *Veratrum lobelianum*, *Petasites frigidus*, *Angelica decurrens*, etc. Mosses are dominated by *Sphagnum* sp. accompanied by *Meesia triquetra*, *Paludella squarrosa*, *Aulacomnium turgidum* and others.

Vegetation on the steep left banks of the Ob River, protected by a favourable mesoclimate of this large river, is enriched by presence of *Sorbus aucuparia*, *Betula pubescens* is more common, and at footslopes by *Lonicera altaica*, *Ribes glabellum* and various communities of tall herbs. Eroded surfaces of the sandy subsoil are occupied by *Arctostaphylos uva-ursi*, *Rosa acicularis* and other pioneer vegetation. Surprisingly, this vegetation is accompanied also by *Ledum palustre* and *Rubus chamaemorus*, growing directly on the sand, and otherwise recorded in marshy biotopes.

3.2. People and plants

Although data from preliminary field research are still restricted, it may be concluded that aboriginal human impact on this vegetation is minor and reflects simple human occupation within a settled area rather than larger structural changes. In contrast, radical vegetation changes occur around the camps of Russian geological, mining, and

Tab. 1. Review of dating, based on expire dates printed on industrial products and the state of bone preservation. VC – Valley camp, SC – Slope camp, OC – Oktyaberskaya camp; letters refer to site zones.

Tab. 1. Přehled datací na základě dat vytištěných na průmyslových produktech a podle zachovalosti kostí. VC – Údolní tábor, SC – Svahový tábor, OC – Okt'aberskaja; písmena odpovídají zónám.

Location	Object	Dating
VC01_C	Tetracycline liniment paper wrapper	2001–2004
VC02_D	unspecified tin	consumption up to March 2009
VC03_D	beer tin	consumption between April–October 2009
VC04_G	pieces of newspaper from a Saturday	16th February (it could be 2002 or 2008)
VC05_H, I	reindeer bones	spring 2009; some older than 1 year
VC06_J, K	reindeer bones	more than 1 year
SC01_I	milk tin	2002
SC02_C	milk tin	2003
SC03_C	milk tin	consumption up to 15th July 2003
SC04_A	milk tin	consumption up to October 2007
SC05_A	milk tin	consumption up to 7th May 2008
SC06_A	reindeer bones	spring 2009
SC07_D	reindeer bones	1–2 years; more than 3 years
SC08_I	reindeer bones	more than 5 years
OC01_B	pieces of newspapers (Sever OK)	7.9. 2006
OC02_A	pieces of newspapers (Sever OK)	28.3. 2007
OC03_D	wrapper from a Czech chocolate stick	13.11. 07–12.11. 08
OC04_E	paper wrapper from flour	16.3. 2008
OC05_A	biscuit wrapper	July 2008–July 2009
OC06_A	caviar jar	11.11. 2008–11.5. 2009
OC07_A	pickles jar	6.9. 2008–6.9. 2011

biological expeditions. Here, *Chamaenerion latifolium* is being introduced as an important synanthropic taxon, accompanied by *Chamaenerion angustifolium*, which nevertheless also indicates human intervention into the forest tundra biotopes. Both are associated with areas of former “gulags” along the railway from the Komi Republic to Labytnangi, for example.

In Yangana Pe, introduction of *Tanacetum bipinnatum* likely indicates another anthropic impact, and, surprisingly for a botanist from Central Europe, even *Rubus chamaemorus* occurs here as a “pioneer” plant in areas impacted by humans. This plant, generally considered a peat-bog element, occupies clearly edaphically dry biotopes on sands, gravels, and other extreme biotopes. Peat-bog biotopes, when disturbed by wheels of large vehicles (“vezdekhods”) are precisely copied by *Eriophorum scheuchzeri* and, less frequently, by *Parnassia palustris*.

Northern ethnics collect and use a variety of plant resources (Sinclair 1953; Owen 2005). Along the Polar Ural Mts., the plants most frequently collected for nutriture are *Vaccinium uliginosum* (bog bilberry) and *Vaccinium vitis-idaea* (cranberry). Both are used to produce very sweet

“vareniye” jam to substitute sugar in tea, or as an addition to vodka and other alcohols, or to produce a drink “napi-tok”. *Vaccinium myrtillus* (blueberry) is a scarcer type, used for jam in cakes and, again, for “napi-tok”.

On peat-bogs, another collected plant is *Oxycoccus quadripetalus* (mooseberry) with larger and tastier fruits, especially when freeze-dried. It is also used for jam and “napi-tok”. A highly valued plant is *Rubus chamaemorus* (cloudberry) offering orange fruit and used for “vareniye” preserves, compotes and alcoholic drinks. *Lonicera altaica* (Altaic honeysuckle) is a medium-sized shrub following mainly water streams. The fruits are small, difficult to collect but good for “vareniye” and used for cakes or as a tea sweetener. *Allium schoenoprasum* (chive) is being collected and used fresh or preserved (probably in salt). Wherever the sporadic shrubs of *Ribes rubrum* (red currant) are found, the fruit is consumed directly.

A highly valued component of any plant available in the tundra and forest tundra is its sugar content. Sugar also acts as a preservative, without further cooking, because the region is cold and without microbes.

Mushrooms are usually not consumed in this region, but *Amanita muscaria* may have been used for ritual



Fig. 4. Actual summer “chum”, occupied by one family, lake Taunto.

Obr. 4. Současný letní čum, obývaný jednou rodinou, jezero Taunto. Foto J. Svoboda.

(shamanistic) purposes and “chaga” (a mushroom parasitizing on birches) is used to produce a heavy, dark liquid for drinking.

3.3. Animals of Polar Ural Mts

Animal composition in the Polar Urals changes radically throughout the year (Dobrinskiy, ed. 1995; Kosintsev 2005). Animals present over the year include reindeer (*Rangifer tarandus*), wolf (*Canis lupus*), glutton (*Gulo gulo*), ermine (*Mustela erminea*), mountain hare (*Lepus timidus*), lemmings (*Dicrostonyx torquatus*, *Lemmus sibiricus*), voles (*Microtus gregalis*, *M. middendorffii*, *M. oeconomus*, *Arvicola terrestris*), willow ptarmigan (*Lagopus lagopus*), and raven (*Corvus corax*). In lakes and rivers we encounter 20 fish species, but most important for human nutriture are whitefish (*Coregonus nasus*, *C. lavaretus*, *C. sardinella*, *C. peled*), pike (*Esox lucius*), and burbot (*Lota lota*). Arctic fox (*Alopex lagopus*) appears in winter and elk (*Alces alces*) appears in summer. In spring, more than 80 bird species arrive, and most of them stay until fall. For humans, the most important birds are Arctic loon (*Gavia arctica*), whooper swan (*Cygnus cygnus*), two species of geese (*Anser albifrons*, *A. fabalis*) and six species of ducks (*Anas penelope*, *A. clypeata*, *A. crecca*, *A. acuta*, *Authya fuligula*, *Clangula hyemalis*). Mosquitoes, namely the northern house mosquito (*Culex pipiens*), black fly, and black gnats, represent the most important insect species, especially between June and September.

3.4 People and animals

Throughout the year, fishing and hunting of reindeer, mountain hare, and willow ptarmigan is possible in the Polar Ural region, whereas water fowl is hunted in summer. However the economically important animals become most numerous in spring and fall, when large flocks of water fowl pass through the region. In early winter and early spring, mountain hares and willow ptarmigans migrate and may be hunted with snares. Hunting and fishing can provide nutrition for people only from spring

to fall, whereas in winter, only people owning reindeer can survive in this region. From July to September both people and animals suffer from mosquitoes.

During the past few winters, reindeer were no longer pastured at Yangana Pe so wolves (*Canis lupus*) left the area as a result. Bones left by humans in the campsites are not destroyed and the collected bones represent complete assemblages, only partly gnawed or eaten by dogs.

While determining the bone assemblages, in each camp we investigated the accumulation period of the complex (according to organic decomposition on the bone surfaces and remains of muscles, fat, and ligaments); the season (according to individual age); composition of bone types; composition of skeletal elements of each type; individual age structure; patterns of bone fragmentation; and post-mortem changes.

3.5. Active summer camp at the Taunto Lake in 2009

Whereas the Upper Paleolithic occupations in Europe represent independent cultural and economical systems, the subpolar populations of Siberia were exposed to effects of political and economical centralisation. Collectivisation and construction of villages since the 1920s and 1930s introduced intensification with stress upon maximum possible herd sizes, and upon increase in number of females used for reproduction compared to males used for transport. Human movements also became centralized, gravitating around villages instead of adapting optimally to the natural potential of each region. Overgrazing of some areas was one of the results. The discovery of Yamal gas field in the 1960s resulted in the loss of large tracts of land to mining, infrastructure, and associated regimes that pushed increasing number of reindeer into smaller areas of pasture (Potapova, Levina 1956; Chomich 1966; Forbes 1999; Rees *et al.* 2003; Krasovskaya, Tikunov 2006).

Actually, these general tendencies were no more observed in our region of study. An episodically frequented north-south oriented communication axis, consisting of a field road, a parallel railway, and a shop, runs east of Yangana Pe and Nyava Pe. Laborovaya, the nearest village, serves as another center for shopping, basic medical care, and administration. Both the road and the village do not affect substantially the life and economies in the adjacent tundra. Reindeer pastoralism is not the dominant activity over the year, and it is seasonally replaced by fishing and occasional hunting. In summer, Nenets families who do not own enough reindeer to accompany them to northern pastures, stay in place and send their reindeer together with the larger herds. While awaiting the return of their reindeer, they settle on the lake shores south of the Yangana Pe ridge, practice systematic fishing and occasional hunting. The natural resources, of course, are being supplemented by nutriture from the nearest shops. During winter, as the lakes freeze and fishing is not viable, Nenets families move higher to the protected valleys and slopes of Yangana-Pe, while others follow reindeer herds further south towards the railway and the forest.



Fig. 5. Sledges with furs and other materials prepared for the winter “chum” are kept near the “chum” or in the open tundra, lake Taunto.

Obr. 5. Kolem čumu nebo ve volné tundře jsou umístěny saně s kožešinami a dalším materiálem pro zimní čum, jezero Taunto. Foto S. Sázelová.

During our stay in August 2009, we met the Nenets in four family “chums”, in groups of two, located on shores of the lakes south of Yangana Pe (Fig. 4). The dwelling and the surrounding landscape represent the base for spatial thinking of all northern ethnics. “Chum” with a central hearth and an axis determined by the entrance creates an ideal circle, reflecting the structure of the world. The “chum” as a whole is considered a female zone, while the surrounding tundra is a male zone. This arrangement certainly does not prevent the other family members or guests to enter such zones, but activities in a given spatial context are always the initiative of the respective sex. In addition, the “chum’s” interior is also divided into a male and female zone, but the women nevertheless move preferentially around the central hearth, whereas the more distant zone opposite the entrance, is strictly a male zone (Golovnev 1995; 2004; Sokolova 2007).

The summer “chum” is constructed by females with canvas and these constructions take about 0,5–1 hour to build (the winter “chum” is of reindeer skin and takes 1,5–2 hours). No alignment of larger objects was visible along the margins, be it a stabilizing part of construction (the “teepee-rings” of North America) or result of long-term accumulation of objects on the peripheries (the Yamana model, Svoboda 1999). Around the “chum” are located sledges with furs and other materials prepared for the winter “chum” (Fig. 5; Boukal 2003). The Nenets behave in the landscape as freely as urban dwellers in their apartments. The sledges will be parked wherever it is comfortable, given the plans for the next season, the fishing nets will be left at the lake shore for subsequent use, and vessels or prepared cut up wood for the next camp will be left at favourable camping spots in the landscape.

4. The abandoned “Valley camps” (VC)

The two valley camps are located about 80 m from each other, in a secluded valley of Yangana Pe oriented towards

the SW, and in a strategic position on two platforms elevated high above the valley.

4.1. The inside-camp vegetation

Vegetation covers only about 60% of the site’s surface and predominantly includes low herbs. *Dryas punctata* is most common, at places accompanied by *Vaccinium uliginosum* ssp. *microphyllum*, *Ledum decumbens* and *Empetrum hermafroditum*. Scattered, but in regular spacings, appears *Astragalus subpolaris* (*A. alpinus* ssp. *arcticus*), *Luzula* sp. div., *Equisetum arvense* / *boreale*, *Oxytropis sordida*, *Polygonum viviparum*, *Campanula rotundifolia*, *Dianthus repens*, *Arctous alpina*, with isolated occurrences of *Rosa acicularis*. Low bushes of *Salix lapponum* also appear rarely.

4.2. Vegetation in direct vicinity

The valley bottom on both sides of the brook is densely covered by bush willows (*Salix lanata*, *S. glauca*, *S. lapponum*, *S. phylicifolia*) with moist herbal vegetation covering the floor level (*Polygonum bistorta*, *P. viviparum*, *Cirsium heterophyllum*, *Calamagrostis langsdorffii*, *Rubus chamaemorus*, *R. arcticus*, *Caltha palustris*, *Saxifraga hirculus*, etc.).

In protected biotopes on the slope with a predominantly SE exposure dense patches of *Alnus fruticosa* occur, with “tall herb” communities in between (*Polemonium acutiflorum*, *Aconitum* cf. *baicalense*, *Trollius* cf. *asiaticus*, *Dianthus superbus*, *Veratrum lobelianum*, *Angelica decurens*, *Lamium album*, *Veronica longifolia*, *Geranium silvaticum* (= *Geranium krylovii*), *Petasites frigidus*, *Parnassia palustris*, *Valeriana capitata*, *Rubus chamaemorus*, *R. arcticus*, *Viola biflora*, *Pedicularis* cf. *oederii*, etc.).

4.3. Reindeer remains

See Tabs. 1–3.

The bone assemblages accumulated during several different deposition periods. The Upper VC assemblage includes one antler (*cornu*) fragment and 3 complete *metacarpalia* III from minimally 2 adult reindeer. The epiphyses of metapodia are fused. Because the bones do not show remains of muscles and fat and only very few ligaments, the assemblage is more than 1 year old. Two or three (dog) gnaw marks are visible on lower extremities of two metacarpals.

The bone assemblage of Lower VC, area H, includes fragments of: 1 *scapula*, 2 *vertebrae*, 5 *humeri*, 2 *radii*, 1 *femur*, and 1 *tibia*; 2 complete *ulnae* + *radii*, complete *humerus*, *calcaneus*, 2 *metacarpalia* III, 7 *phalanges* I, 5 *phalanges* II and 1 *phalanx* III; fragments of *humerus*, *radius*, *femur* and *tibia* from minimally 2 adult reindeer. One *tibia* belongs to a pre-born individual and 1 *metatarsus* III belongs to a new-born individual. Almost all bones display remains of muscles, fat and a larger amount of ligaments. A fragment of *tibia* and *calcaneus*, as well as 2 *metacarpalia* III and *phalanges* I, II, III are connected by ligaments.

First calves are being born in the second half of April in the Yamal region (Podkorytov 1995), and the presence

Tab. 2. Valley camps (VC), reindeer bone assemblages from selected areas.

Tab. 2. Údolní tábory, složení sobích kostí z vybraných ploch.

Site	Bones	Side	Damages
Upper "VC", area J–K	<i>cornu</i> , fr.		broken
	2 <i>metacarpalia</i> III, complete	dex	1 gnawed
	<i>metacarpus</i> III, complete	sin	gnawed
Lower "VC", area H	<i>vertebra cervicalis</i> , 2 fr.		chopped
	<i>scapula</i> , fr., central part	sin	gnawed
	<i>humerus</i> , complete	dex	gnawed
	<i>humerus</i> , distal end	dex	broken, gnawed
	<i>humerus</i> , distal end	sin	broken, gnawed
	<i>humerus</i> , distal end	sin	broken
	<i>humerus</i> , fr. of diaphysis	dex	broken
	<i>humerus</i> , fr. of diaphysis	dex	broken
	<i>ulna</i> + <i>radius</i> , complete	dex	gnawed
	<i>ulna</i> + <i>radius</i> , complete	sin	gnawed
	<i>ulna</i> + <i>radius</i> , upper half	sin	broken, gnawed
	<i>radius</i> , fr. of diaphysis	dex	broken
	<i>femur</i> , fr. of diaphysis	sin	broken
	<i>tibia</i> , lower end + <i>calcaneus</i>	sin	broken, gnawed
	<i>tibia</i> , newborn	dex	gnawed
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 1 <i>phalanx</i> III, complete	sin	gnawed
	<i>ph.</i> II & <i>ph.</i> III & <i>metacarpus</i> III + 2 <i>phalanges</i> I, complete	sin	gnawed 2 <i>ph.</i> I
	<i>metatarsus</i> III, complete, embryo	dex	gnawed
	<i>phalanx</i> I + <i>phalanx</i> II, posterior, complete	sin	
Lower "VC", area I	<i>cranium, os frontalis</i> , complete, newborn	sin	
	<i>mandibula</i> , complete, newborn	dex	
	<i>costa</i> , upper half	dex	gnawed
	<i>costa</i> , caput	sin	gnawed
	<i>scapula</i> , fr., anterior half	dex	gnawed
	<i>scapula</i> , fr., central part	dex	gnawed
	<i>humerus</i> , complete, newborn	dex	
	<i>humerus</i> , complete, embryo	sin	gnawed
	<i>ulna</i> , complete, newborn	dex	gnawed
	<i>radius</i> , complete, newborn	sin	gnawed
	<i>radius</i> , fr. of diaphysis	sin	broken, gnawed
	<i>radius</i> , fr. of diaphysis	sin	broken
	<i>tibia</i> , lower half + <i>talus</i> + <i>calcaneus</i>	dex	broken, gnawed
	<i>tibia</i> , lower end + <i>talus</i> + <i>calcaneus</i>	sin	broken, gnawed
	<i>tibia</i> , upper end	sin	broken
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	dex	
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	dex	
	<i>metacarpus</i> III + <i>phalanx</i> I + <i>phalanx</i> II, complete	dex	gnawed 1 <i>ph.</i> II
	<i>metacarpus</i> III, complete	dex	
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	sin	
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	sin	
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II, complete	sin	gnawed 1 <i>ph.</i> I & 2 <i>ph.</i> II
	<i>metacarpus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II, complete	sin	gnawed 2 <i>ph.</i> II
	<i>metacarpus</i> III + <i>phalanx</i> I + <i>phalanx</i> II + <i>phalanx</i> III, complete	sin	gnawed 1 <i>ph.</i> II
	<i>metacarpus</i> III + <i>phalanx</i> I + <i>phalanx</i> II, complete	sin	gnawed 1 <i>ph.</i> II
	<i>metatarsus</i> III + <i>phalanx</i> I + <i>phalanx</i> II + <i>phalanx</i> III, complete	dex	
	<i>metatarsus</i> III + <i>phalanx</i> I + <i>phalanx</i> II + <i>phalanx</i> III, complete	dex	
	<i>metatarsus</i> III + <i>phalanx</i> I, complete	dex	
	<i>metatarsus</i> III, complete	dex	
	<i>metatarsus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	sin	
	<i>metatarsus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + 2 <i>phalanges</i> III, complete	sin	gnawed 1 <i>ph.</i> II & 1 <i>ph.</i> III
	<i>metatarsus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II + <i>phalanx</i> III, complete	sin	gnawed 2 <i>ph.</i> II
	<i>metatarsus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II, complete	sin	gnawed 2 <i>ph.</i> II
	<i>metatarsus</i> III + 2 <i>phalanges</i> I + 2 <i>phalanges</i> II, complete	sin	gnawed 2 <i>ph.</i> II

Tab. 3. Valley camps, individual skeletal segments of reindeer (*Rangifer tarandus*) from selected areas.**Tab. 3.** Údolní tábory, jednotlivé části sobích skeletů (*Rangifer tarandus*) z vybraných oblastí.

Bones	Upper "VC", area J–K		Lower "VC", area H		Lower "VC", area I	
	NISP	%	NISP	%	NISP	%
<i>cornu</i>	1	25	0	0	0	0
<i>cranium</i>	0	0	0	0	0	0
<i>vertebrae, costae</i>	0	0	2	7	2	2
<i>scapula, coxae</i>	0	0	1	4	2	2
<i>humerus, ulna + radius, femur, tibia</i>	0	0	12	44	5	5
<i>carpalia, tarsalia</i>	0	0	1	4	4	4
<i>metapodia</i>	3	75	2	7	21	19
<i>Phalanges I, II, III</i>	0	0	9	33	77	69
Total	4	100	27	100	111	100

Tab. 4. Material composition of objects in the abandoned Valley camps. A–I: Lower camp, J–K: Upper camp.**Tab. 4.** Tab. 4: Složení materiálu v Údolních táborech. A–I: spodní, J–K: svrchní.

Material	A	B	C	D	E	F	G	H	I	J	K	Total	%
wood	(-)	(-)	3	2	2	3	17	1	7	4	3	42	10.17
ash	1	1	(-)	1	(-)	(-)	(-)	1	(-)	(-)	(-)	4	0.97
bone	8	11	4	9	(-)	10	31	9	77	2	1	162	39.23
antler	(-)	(-)	(-)	(-)	(-)	(-)	1	(-)	(-)	1	(-)	2	0.48
hoof	(-)	(-)	(-)	(-)	(-)	(-)	(-)	2	11	(-)	(-)	13	3.15
fur	1	(-)	2	1	(-)	(-)	10	13	1	(-)	(-)	28	6.78
straw	(-)	(-)	1	1	(-)	2	2	1	1	(-)	(-)	8	1.94
stone	(-)	(-)	2	11	(-)	(-)	(-)	(-)	(-)	7	(-)	20	4.84
paper	(-)	(-)	2	4	1	1	7	4	1	(-)	(-)	20	4.84
glass	(-)	1	(-)	(-)	(-)	(-)	(-)	1	(-)	7	6	15	3.63
porcelain	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1	(-)	(-)	(-)	1	0.24
plastic	(-)	2	3	8	3	4	27	6	2	(-)	1	56	13.56
metal	1	(-)	(-)	5	(-)	(-)	(-)	10	(-)	3	1	20	4.84
textile	2	(-)	2	10	(-)	(-)	1	1	1	(-)	3	20	4.84
TetraPak	(-)	(-)	(-)	(-)	(-)	(-)	1	1	(-)	(-)	(-)	2	0.48
Total	13	15	19	52	6	20	97	51	101	23	15	413	100.00
%	3,14	3,73	4,60	12,59	1,50	4,84	23,48	12,34	24,46	5,56	3,73	100	100.00

of pre-born and newborn individuals in this assemblage thus indicates accumulation during spring (late April–early May) of 2009. Only three fragments of *humerus* (1 distal end and 2 fragments of diaphysis) and one fragment of *femur* (from diaphysis) seem to be older than 1 year. A special character of this assemblage is given by the absence of skull bones and trunk (no ribs and only two vertebral fragments present). A larger proportion of the fragments are broken bones, smashed *vertebrae*, and majority of bones (about 60%) show gnawing marks from dogs.

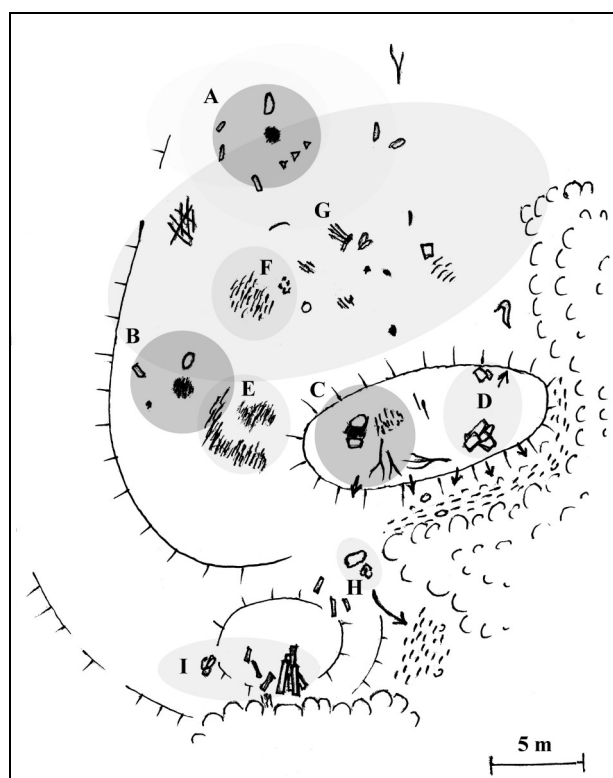
The bone assemblage from Lower VC, area I, includes fragments of 2 *costae*, 2 *scapulae*, 2 *radii*, 3 *tibiae*; complete 2 *calcanei*, 2 *tali*, 10 *metacarpalia* III, 11 *metatarsalia* III, 30 *phalanges* I, 29 *phalanges* II, and 16 *phalanges* III as a minimum of 7 adult reindeer. Part of *cranium*, 1 *mandibula*, 1 *humerus*, 1 *ulna*, 1 *radius* and 1 *metatarsus* III belong to new-born individual, and 1 *humerus* belongs to a pre-born individual. All bones show remains of muscles, fat and a large amount of ligaments. Fragments of *tibia*, *calcaneus* and *talus*, as well as 9 *metacarpalia* III, 9 *metatarsalia* III and *phalanges* I,

II, III are connected by ligaments. As in area H, bones of skull and trunk are almost absent (no *vertebrae* and only 2 ribs); aspects of bone fragmentation and gnaw marks are the same.

In conclusion, bones collected in the Lower VC (areas H and I) belong to a unique assemblage, formed in spring of 2009. The structure is specific, always dominated by metapodia and phalanges, whereas skulls and trunks are almost completely missing. Epiphyses of all bones (except embryos and new-born individuals) are fused. Another characteristic is that all *metapodia*, *phalanges* and part of the long bones are not split. This is uncommon since marrow is highly sought after by the Nenets and appears as a delicacy in traditional nutriture (Evladov 1992). The ratio of complete bones (excluding antler and bone of the new-born individuals) makes up only 15%. Larger part of *metapodia* and *phalanges* (75%) are connected by ligaments. The skin is scraped off; it is called “kamus” and is valued as a material for dressing. Only 4 *metapodia* (14%), 22 *phalanges* (27%), and 20 other bones (61%) display gnawing marks from dogs.

Tab. 5. Types of food in the abandoned Valley camps. A–I: Lower camp, J–K: Upper camp.**Tab. 5.** Složení potravy v Údolních táborech.. A–I: spodní, J–K: svrchní.

Nutrition	A	B	C	D	E	F	G	H	I	J	K	Total	%
bone – edible species	8	11	3	9	(-)	10	31	9	77	2	1	162	76.06
cereals	(-)	(-)	(-)	1	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1	0.46
instant	(-)	(-)	(-)	(-)	(-)	(-)	(-)	3	(-)	(-)	(-)	3	1.41
milk	(-)	2	1	2	(-)	(-)	1	8	(-)	1	1	16	7.51
candy	(-)	(-)	2	(-)	(-)	(-)	2	(-)	(-)	(-)	(-)	4	1.88
preserves	(-)	(-)	(-)	(-)	(-)	(-)	(-)	2	(-)	8	(-)	10	4.69
alcohol	(-)	(-)	1	2	(-)	(-)	(-)	1	(-)	1	6	11	5.16
juice/limo	(-)	(-)	(-)	2	(-)	(-)	2	2	(-)	(-)	(-)	6	2.81
Total	8	13	7	16	(-)	10	36	25	77	12	8	213	100.00
%	3,80	6,10	3,27	7,51	0	4,69	16,90	11,74	36,2	5,63	3,80	100	100.00

**Fig. 6.** Yangana Pe, plan of the Valley camp–lower, facing north. Dark circles A–C: interior domestic areas (“chums”), light-colored zones D–G: exterior activity areas, H–I: peripheral toss areas.

Obr. 6. Jangana Pe, plán Údolního tábora–spodní část, orientace k severu. Tmavé kruhy A–C: interiérové sídlení zóny (čumy), světlé kruhy D–G: exteriérové zóny aktivit, H–I: periferní odpadové zóny.

The bone assemblage from the Upper VC is similar in composition to the Lower VC. Both are formed by 3 groups of bones. The first group includes shoulder-bones, *vertebrae*, ribs, and long bones, as remains of nutriture. The second group includes *metapodia* and *phalanges*, as remains of working processes, namely production of “kamus”. Fragments of antler may be added to this group. The third group is formed by embryos and newborn individuals.

**Fig. 7.** Valley camp – lower. View from a hearth with two cooking stones towards the site periphery.

Obr. 7. Údolní tábor – spodní část, pohled od ohniště se dvěma kameny pro vaření směrem k periférii sídliště. Foto J. Svoboda.

4.4. Structure of the Lower Valley camp

See Fig. 6, Tabs. 4–6.

Structure of the lower platform may be separated into domestic areas A–C, possibly “chums”, activity areas D–G, and depository and toss zones H–I. The total dimension of the occupied area is approximately 35 × 25 m in size. Two hearths with circular domestic areas around, and a pile of wood nearby, are located on the platform (A, B). Adjacent are two circular activity areas of 5 m and 3 m in diameter with wood splinters (E, F) and additional objects were scattered over the surrounding area (G).

On the elevation at the southern promontory, there is another domestic area (a “chum”?) containing a hearth with two flat stones used for cooking, with wood splinters and sticks around (C). An adjacent activity area (D) included a pile of stones and individual stones around. Below the promontory lies a depository of wooden planks and a toss zone of discarded objects (reindeer bones), and two piles of toss (H–I).

Tab. 6. Types of objects in the abandoned Valley camps. A–I: Lower camp, J–K: Upper camp.**Tab. 6.** Složení předmětů v Údolních táborech. A–I: spodní, J–K: svrchní.

Nutrition	A	B	C	D	E	F	G	H	I	J	K	Total	%
wood as fuel	(-)	(-)	3	1	1	3	17	1	1	4	2	33	16.41
stone	(-)	(-)	2	11	(-)	(-)	(-)	(-)	(-)	7	(-)	20	9.95
ash	1	1	(-)	1	(-)	(-)	(-)	1	(-)	(-)	(-)	4	1.99
insulation	(-)	(-)	1	3	3	3	20	(-)	(-)	(-)	1	31	15.42
cord/rope	(-)	(-)	(-)	2	(-)	(-)	1	(-)	(-)	(-)	1	4	1.99
wooden object	(-)	(-)	(-)	(-)	1	(-)	(-)	(-)	6	(-)	(-)	7	3.48
textile covers	2	(-)	1	6	(-)	(-)	1	(-)	(-)	(-)	(-)	10	4.98
domestic equipm.	(-)	(-)	(-)	(-)	(-)	(-)	3	4	(-)	(-)	(-)	7	3.48
shaving	(-)	(-)	(-)	1	(-)	(-)	2	(-)	(-)	(-)	1	4	1.99
clothes	(-)	(-)	1	3	(-)	(-)	(-)	3	1	(-)	2	10	4.98
hygiene/medicine	(-)	1	1	(-)	(-)	(-)	(-)	1	(-)	(-)	(-)	3	1.49
bone non-edible species/hoof/antler	(-)	(-)	1	(-)	(-)	(-)	1	2	11	1	(-)	16	7.96
fur	1	(-)	2	1	(-)	(-)	10	11	1	(-)	(-)	26	12.94
straw	(-)	(-)	1	1	(-)	2	2	1	1	(-)	(-)	8	3.98
packing	(-)	(-)	1	3	1	2	4	1	2	(-)	(-)	14	6.97
newspaper	(-)	(-)	(-)	1	(-)	(-)	1	(-)	(-)	(-)	(-)	2	0.99
others	1	(-)	(-)	1	(-)	(-)	(-)	(-)	(-)	(-)	(-)	2	0.99
Total	5	2	14	35	6	10	62	25	23	11	7	201	100.00
%	2,48	1	6,97	17,41	2,99	4,98	30,85	12,44	11,44	5,47	3,48	100	100.00

4.5. Structure of the Upper Valley camp

Occupation remains on the higher platform (J–K), adjacent to the east, and measuring 50×25 m, are less clear. A pile of stones dominates on the plateau promontory, an accumulation of ashes and objects is dispersed on the surface. Nevertheless we expect that domestic and activity areas existed here as well.

5. The abandoned “Slope camps” (SC)

One of the shallow valleys crossing the southern slopes of Yangana Pe, formed by a brook surrounded by bushes, shows intensive and variable traces of human activities. There is a larger lower camp and a smaller upper camp.

5.1. The inside-camp vegetation

The species structure on the both slope camps concurs with that of the valley camps. Dwarf shrubs (*Ledum decumbens*, *Dryas punctata* and *Empetrum hermafroditum*) and low forms of *Betula nana*, *Salix lapponum*, *S. glauca* and *S. phylicifolia* are among the dominating taxa. At some climatically exposed areas we observed the typical frost boil soils, deprived of vascular plants on the surface and thus open to erosion by water, wind and frost. Initial stages of these rough soils, prepared for possible future coverage by vascular plants, are characterized by algae (*Chlorophyta*, *Cyanophyceae*) and by sporadic juvenile stages of lichens and bryophytes.

5.2. Vegetation in the direct vicinity

Again, the vegetation structure recalls the valley camps, but the overall landscape physiognomy is closer to mountain tundra. Larger areas of shrub vegetation with domi-

nating *Alnus fruticosa* are restricted to protected sections of the slope and to shallow depressions. *Salix* (especially *S. lanata*) covers larger areas around peat-bogs and along brooks. The herbs are dominated by the family *Cyperaceae* (*Carex* sp. div., *Eriophorum* sp. div.) and by various tall herbs.

5.3. Reindeer remains

See Tabs. 7–8.

The bone assemblage from Lower SC, area D, includes two parts given the time of origin. The first part includes fragments of 1 *cornu*, 1 *cranium*, 1 *mandibula*, 2 *coxae*, 2 *humeri*, 1 *radius*, 2 *femori*, 2 *tibii*, 2 *metatarsalia* III and 4 fragments of diaphysis of indeterminate long bones; whole – 2 *vertebrae*, 1 *tibia*, 2 *calcanei*, 2 *tali*, 1 *os tarsale centrale*, 1 *os malleolare*, 2 *ossa carpi*, 1 *metacarpus* III, 4 *metatarsalia* III, 7 *phalanges* I, 5 *phalanges* II, 2 *phalanges* III and 2 *ossa sesamoidea*. The bones belong to a minimum of 5 adults and 1 juvenile reindeer, and the *mandibula* belongs to a newborn. Presence of the newborn places the accumulation period in spring (Podkorytov 1990). The bones show no traces of fat and muscles, whereas ligaments, preserved on almost all of the bones, are dry. This suggests that the bones were accumulated 1–2 years ago. The second part includes fragments of 1 *cornu*, 1 *coxa* and 1 *humerus*. Since no traces of ligaments are present and the surfaces are covered by moss, these bones were deposited more than 3 years ago. Of importance is the lack of trunk bones (no ribs and only two *vertebrae*). Almost all bone fragments are due to breakage, only one skull and one rib are cut. The complete bones make up 62% of the assemblage, with dominance

Tab. 7. Slope camps (SC), reindeer bone assemblages from selected areas.

Tab. 7. Svahové tábory, složení sobích kostí z vybraných ploch.

Site	Bones	Side	Damages
Antler accumulation	2 <i>cornu</i> , dex. and 2 <i>cornu</i> , sin. from 2 individuals; 1 <i>cornu</i> , dex.; complete; detached from the skulls		3 of the dex have cut the anterior antler
	1 <i>cornu</i> and 1 <i>cornu</i> from 1 individual; complete; casts	dex & sin	1 of the dex have cut the anterior and posterior antlers
	3 <i>cornu</i> from 3 individuals; complete; casts	dex	
	1 <i>cornu</i> ; complete; casts	sin	cut the anterior antler
Upper Slope camp	<i>cornu</i> , fr. <i>cornu</i> , fr.; dropped <i>cranium</i> , fr. <i>os frontalis</i> & <i>ossa parietalia</i> <i>cranium</i> , fr. <i>os frontalis</i> , <i>ossa parietalia</i> & <i>os occipitalis</i>		sawed off, gnawed gnawed chopped chopped
Lower Slope camp, area A	<i>cornu</i> , fr.		broken
	<i>maxilla</i> , complete, semiadultus	dex	broken
	2 <i>costae</i> , fr., upper half	dex & sin	gnawed
	<i>costa</i> , fr., middle part	sin	gnawed, broken
	<i>ulna</i> + <i>radius</i> , upper half	sin	gnawed, broken
	5 <i>metacarpalia</i> III, fr. of diaphysis		gnawed, broken
	6 <i>metatarsalia</i> III, fr. of diaphysis		gnawed, broken
Lower Slope camp, area C–F	<i>cornu</i> , fr.		gnawed
	<i>cornu</i> , fr.; dropped		
	<i>cranium</i> , 3 fr. <i>os frontalis</i> & <i>ossa parietalia</i> from 1 individual		chopped
	<i>maxilla</i> , 2 fr. from 1 individual, adultus	dex & sin	broken
	mandibula, 2 fr. from 1 individual, newborn	dex	gnawed
	<i>vertebrae cervicales</i> , 2 specimens from 1 individual, complete, juvenile		gnawed
	<i>coxae</i> , 2 fr. from 1 specimen	sin	gnawed
	<i>coxa</i> , fr.	dex	gnawed, chopped
	<i>humerus</i> , distal end	dex	broken
	<i>humerus</i> , fr. of diaphysis	dex	broken
	<i>humerus</i> , fr. of diaphysis	sin	gnawed, broken
	<i>ulna</i> , fr. of diaphysis	dex	gnawed, broken
	<i>femur</i> , lower half	dex	gnawed, broken
	<i>femur</i> , fr. of diaphysis	dex	gnawed, broken
	<i>tibia</i> , complete	dex	
	<i>tibia</i> , 2 lower half	dex & sin	broken
	2 <i>tali</i> + 2 <i>calcanei</i> , complete	dex & sin	
	<i>os tarsale centrale</i>	dex	gnawed
	<i>os malleolare</i> , complete	dex	
	2 <i>ossa carpi</i> , complete	sin	
	2 <i>metacarpalia</i> III, complete	dex & sin	
	4 <i>metatarsalia</i> III, complete	dex	1 gnawed
	<i>metatarsus</i> III, fr. of diaphysis	dex	gnawed, broken
	<i>metatarsus</i> III, complete	sin	
	5 <i>phalanges</i> I, anterior, complete		1 gnawed
	2 <i>phalanges</i> I, posterior, complete		
	3 <i>phalanges</i> II, anterior, complete		1 gnawed
	2 <i>phalanges</i> , posterior, complete		
	2 <i>phalanges</i> III + <i>sesamoid</i> , posterior, complete		
	Long bones – 4 fr. of diaphysis		gnawed, broken

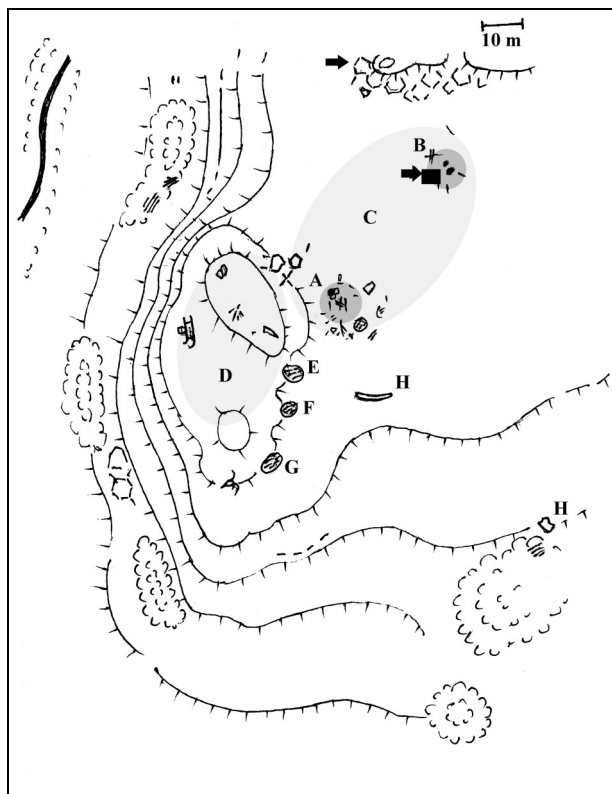


Fig. 8. Yangana Pe, plan of the Slope camp – lower, facing north. Dark circles A, B: interior domestic areas (“chums”), light zones C–D: exterior activity areas, E–G: peripheral toss areas, H: periphery. The arrows point to the upper rock (with a large bottle inserted in a fissure) and an interior children’s playground (black square inside B).

Obr. 8. Jangana Pe, plán Svahového tábora – spodní část, orientace k severu. Tmavé kruhy A, B: interiérové sídlení zóny (čumy), světlé ovály C–D: exteriérové zóny aktivit, E–H: periferní odpadové zóny. Šipky ukazují horní skalisko (s velkou lahví vsunutou do skalní pukliny) a interiérovou dětskou zónu (černý čtverec uvnitř B).



Fig. 9. Slope camp – lower section, with sledges in front.

Obr. 9. Svahový tábor – spodní část, v popředí sáně. Foto M. Holub.

of *metapodia* and *phalanges*. About 40% of the bones were gnawed by dogs.

The bone assemblage from Lower SC, area A, includes fragments of 1 *cornu*, 1 *cranium*, 3 *costae*, 1 *radius* and *ulna*, 5 fragments of diaphys of *metacarpus* III and 6 frag-

ments of diaphys of *metatarsus* III, belonging to at least 1 sub-adult reindeer. Another *maxilla* belongs to an individual of about 2 years old, probably killed here in spring (Klevežal 2007). All bones show traces of fat and ligaments, suggesting that the bones were accumulated during the last spring (2009). Bones from all parts of the skeleton are present. All bones are fragmented and the majority (about 90%) show gnaw marks from dogs.

The bone assemblage scattered within the Upper SC includes fragments of 2 *cornu* and 2 *crania*, from a minimum of 2 adult individuals. One fragment of antler is sawn off, another skull fragment has cut off antlers. Both skull fragments are cut in order to get to the brain. They are covered by moss, show no ligament remains, and were accumulated more than 3 years ago.

A separate antler accumulation on the highest top of the Upper SC included 11 pieces, 7 right and 4 left, originating from 8 adult individuals. These include three couples from three individuals and single pieces from 5 individuals. 8 pieces are naturally discarded, while 5 pieces were broken off from skulls of three individuals before the natural discard. This suggests that these antlers were intended to be assembled. Some pieces are covered by moss and lichen, suggesting that the accumulation period may have exceeded 5 years. Possibly, one or both antlers of one individual were added into the cache each year. All distal parts of the branches show gnawing by reindeer, and one left antler shows branch breakage. Some antlers have various branches sawn-off by humans. Reindeer males discard antler in winter, females do so 4–7 days after birthgiving (Podkorytov 1995), that means in spring, but it is difficult to determine male and female antler in this case. Anyhow, given the fact that Nenets families stay in this region in spring, summer, and fall, these pieces were probably collected and deposited in the cache in spring. Nenets usually deposit antler at sacred places (Chomich 1995), and the Upper SC may be one such location of a migrating family.

In conclusion, bones from the Lower and Upper SC compose three assemblages of various ages: spring 2009 (Lower SC, area A), 1–2 years ago (larger part of Lower SC, area D), and more than 3 years ago (3 bones of Lower SC, area D, and Upper SC). The two assemblages from Lower SC are large enough for a characterisation, showing that bones of the trunk are very rare (vertebrae, ribs), whereas distal parts of the legs are much more numerous (such as *metapodia*, *phalanges*, *ossa carpi* and *ossa tarsi*). Lower SC, area A, includes one juvenile reindeer, whereas area D includes minimum of 5 adults and 1 juvenile reindeer. No complete bones were recovered from area A, whereas in area D they make up more than half the assemblage. Dog gnawing is visible on almost all bones from area A, whereas in area D they make up less than a half.

In terms of taphonomy, bones from the Lower SC, area A, constitute one complex – all are food remains. Bones from area D may be separated into three groups. The first group includes a skull, vertebrae, ribs and long bones, as food remains. The second group includes metapodia, phalanges, and antler fragments as remains of a technological process, namely the production of „kamus“. The third group includes remains of a newborn

Tab. 8. Slope camps, individual reindeer bones (*Rangifer tarandus*) from selected areas.**Tab. 8.** Svahové tábory, jednotlivé části sobích skeletů (*Rangifer tarandus*) z vybraných ploch.

Bones	Lower “SC, area C–F”		Lower “SC, area A”	
	NISP	%	NISP	%
<i>cornu</i>	1	2	1	6
<i>cranium</i>	5	10	1	6
<i>vertebrae, costae</i>	2	4	3	17
<i>scapula, coxae</i>	2	4	0	0
<i>humerus, ulna+radius, femur, tibia</i>	8	16	1	6
<i>carpalia, tarsalia, sesamoidea</i>	10	20	0	0
<i>metapodia</i>	8	16	11	65
<i>phalanges</i> I, II, III	14	28	0	0
Total	50	100	17	100

Tab. 9. Material composition of objects in the abandoned Slope camps. A–H: Lower camp, I: Upper camp.**Tab. 9.** Složení materiálu ve Svahových táborech. A–H: spodní, I: svrchní.

Material	A	B	C	D	E	F	G	H	I	Total	%
wood	42	7	1	6	18	14	7	11	3	109	23.95
ash	1	(-)	(-)	(-)	(-)	(-)	2	(-)	(-)	3	0.67
bone	17	8	18	3	12	17	5	4	14	98	21.54
antler	1	(-)	(-)	1	(-)	(-)	(-)	4	11	17	3.74
fur	3	11	1	(-)	(-)	(-)	2	3	(-)	20	4.39
straw	4	1	(-)	(-)	(-)	(-)	(-)	(-)	1	6	1.32
paper	3	7	(-)	(-)	1	(-)	4	8	4	27	5.93
glass	4	9	(-)	(-)	2	12	(-)	2	2	31	6.81
porcelain	(-)	1	(-)	(-)	(-)	(-)	(-)	2	(-)	3	0.67
plastic	17	4	(-)	(-)	3	2	1	5	10	42	9.23
metal	6	8	(-)	(-)	3	7	(-)	1	8	33	7.25
textile	18	10	2	1	8	1	3	10	1	54	11.86
TetraPak	3	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	3	0.67
others	4	(-)	(-)	(-)	(-)	(-)	(-)	4	1	9	1.97
Total	121	66	22	12	47	53	24	54	55	455	100.00
%	26,59	14,50	4,83	2,64	10,33	11,64	5,27	11,86	12,08	100	100.00

baby. Bones from the Upper SC result from several taphonomic complexes, with skull fragments as food remains, an antler fragment as remains of a technological process, and the antler accumulation as a specific case of deposition, possibly symbolic.

5.4. Structure of the Lower Slope camp

See Fig. 8, Tabs. 9–11.

The lower camp is larger (100 m × 70 m) and may be divided into several zones. The upper (northern) margin is marked by a rock formation, the southern margin by an oval-shaped elevation dominating above the brook valley. Pentagonal sorted circles are developed below the upper rock as well as on the slope below the site. On the plain connecting the rock and the elevation, two circular domestic areas, possibly “chums”, were recorded. The first one (A) has no visible hearth, but a relatively high concentration of objects (wood, bones, cans, textiles, cordage, straw). The second one (B) has traces of a hearth in the center, and a children’s area inside (paper images of animals, a child’s ring). The plateau between these fea-

tures (C) yielded individual dispersed objects, but discrete activity areas could not be distinguished.

On the top of the southern promontory (D) is an accumulation of bottles, complete sledges with a pot on them were observed on the plateau below, and animal bones were dispersed all around. Three restricted toss accumulations (E–G) were deposited along the eastern margin of this elevation.

Isolated objects are located on the peripheries (H), including parts of sledges, a reindeer skin, and other objects discarded on the slope. The remarkable rock above the camp has a fissure with a large bottle inserted inside. In the bushes surrounding the camp and along the brook between the lower and upper camps, we recorded several small cleared areas from woodcutting.

5.5. Structure of the Upper Slope camp

See Figs. 10–11.

The upper camp (I) occupies the top of an oval-shaped elevation, about 20 m × 12 m in size. On the highest part of the plateau is an accumulation of reindeer antler, pos-

Tab. 10. Types of food in the abandoned Slope camps. A–H: Lower camp, I: Upper camp.

Tab. 10. Složení potravy na Svahových táborech. A–H: spodní, I: svrchní.

Nutrition	A	B	C	D	E	F	G	H	I	Total	%
bone – edible species	17	8	18	3	12	17	5	4	14	98	55.68
cereals/pasta	(-)	1	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1	0.57
instant	(-)	(-)	(-)	(-)	(-)	(-)	1	2	(-)	3	1.69
milk	3	2	(-)	(-)	2	2	(-)	(-)	5	14	7.95
candy	2	(-)	(-)	(-)	(-)	(-)	(-)	2	7	11	6.25
preserves	4	2	(-)	(-)	(-)	13	(-)	1	2	22	12.50
alcohol	2	9	(-)	(-)	(-)	3	(-)	1	(-)	15	8.53
juice/limo	3	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1	4	2.27
cigarettes	2	(-)	(-)	(-)	(-)	(-)	(-)	3	(-)	5	2.84
vegetables	2	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	2	1.13
others	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	1	1	0.57
Total	36	22	18	3	14	35	6	13	30	176	100.00
%	20,45	12,50	10,23	1,69	7,95	19,89	3,40	7,37	17,04	100	100.00

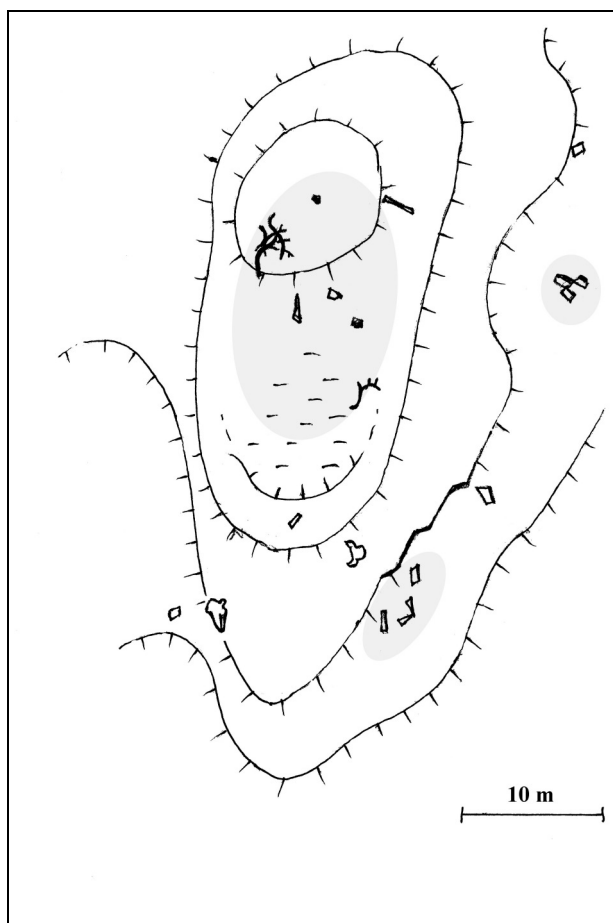


Fig. 10. Yangana Pe, plan of the Slope camp – upper section, facing north.

Obr. 10. Jangana Pe, plán Údolního tábora – horní část, orientace k severu.

sibly of ritual significance, the lower part is moist. Individual objects dispersed over the plateau include additional pieces of antler, reindeer skulls, fragments of sledges, pieces of textiles, and bottles. Several accumulations of discarded objects are deposited on the slope along the eastern margin of the elevation.



Fig. 11. Slope camp – upper section, the antler deposit at the highest elevation, possibly has a symbolic meaning.

Obr. 11. Údolní tábor, horní část, akumulace parohů na nejvyšším místě, zřejmě symbolického významu. Foto J. Svoboda.

6. The abandoned Oktyaberskaya campsite

See Figs. 12–13.

About 150 km further south, near the city of Labytnangi and the railway, we explored another type of winter camp, closer to civilisation. The Nenets brought their reindeer almost to the city periphery and sold some of the animals, while others were evidently killed on the spot.

6.1. The inside-camp vegetation

This camp is located on the edge of a sparse *Larix sibirica* forest tundra. The shrub layer is dominated by *Betula nana*, sporadically by *Salix phylicifolia*, and very rarely by *Juniperus sibirica*. Among the dwarf shrubs, species of families *Ericaceae* and *Vacciniaceae* (*Empetrum hermafroditum*, *Ledum* cf. *palustre*, *Vaccinium uliginosum*, *V. vitis-idaea* and *Arctous alpina*) dominate. As rare occurrences we noted *Rubus chamaemorus* and *Luzula* sp.

Among lichens we regularly recorded *Cladonia* cf. *rangiferina*, *C.* cf. *silvatica*, *C.* cf. *pyxidata*, *Cetraria islandica*, *Cetraria alpestris*, *Peltigera* cf. *aphtosa* and

Tab. 11. Types of objects in the abandoned Slope camps. A–H: Lower camp, I: Upper camp.**Tab. 11.** Složení předmětů ve Svahových táborech. A–H: spodní, I: svrchní.

Utilities	A	B	C	D	E	F	G	H	I	Total	%
wood as fuel	35	4	1	6	17	13	6	6	1	89	31.9
ash	1	(-)	(-)	(-)	(-)	(-)	2		(-)	3	1.08
cord/rope/wire	15	1	(-)	(-)	4	1	3	1	(-)	25	8.96
wooden object	5	3	(-)	(-)	1	1	(-)	4	2	16	5.73
textile covers	5	5	1	1	4	1	(-)	6	(-)	23	8.24
domestic equipm.	2	7	(-)	(-)	(-)	(-)	(-)	2	(-)	11	3.94
game/toy	1	(-)	(-)	(-)	(-)	(-)	4	3	(-)	8	2.87
shaving	2	(-)	(-)	(-)	(-)	(-)	1	1	(-)	4	1.43
clothes	8	3	1	(-)	3	(-)	(-)	4	1	20	7.17
hygiene/medicine	2	6	(-)	(-)	2	2	(-)	(-)	4	16	5.73
bone non-edible	1	(-)	(-)	1	(-)	(-)	(-)	4	11	17	6.09
species/hoof/antler	2	11	1	(-)	(-)	(-)	1	3	(-)	18	6.45
fur	4	1	(-)	(-)	(-)	(-)	(-)		1	6	2.15
straw	2	1	(-)	(-)	1	(-)	1	2	1	8	2.87
packing	3	2	(-)	(-)	1	(-)	(-)	5	4	15	5.38
others											
Total	88	44	4	8	33	18	18	41	25	279	100.00
%	31,54	15,77	1,43	2,86	11,82	6,45	6,45	14,7	8,96	100	100.00

others, among mosses *Hylocomium splendens*, *Dicranum* sp., *Enthodon schreberi*, *Ptilidium ciliare*, *Polytrichum* cf. *strictum*, *Sphagnum* sp. div., *Pogonatum* sp. dominate but many other taxa are present.

6.2. Vegetation in close vicinity

The tree level is formed by light cover of *Larix sibirica* with individual and mostly juvenile exemplars of *Picea obovata* and *Betula pubescens*. Sporadically and mostly in groups is represented *Alnus fruticosa*, exemplars of *Salix phylicifolia*, groups of *Salix lapponum*, *S. glauca*, and *Betula tortuosa*. The dominant shrub is clearly *Betula nana*, forming the so-called “yerniks”, together with *Ledum* cf. *palustre* and *Empetrum hermaphroditum*, of the *Ericaceae*, and with *Vaccinium uliginosum* of the *Vacciniaceae*. The lowermost level is formed by mosses, bog moss and lichens, and a small club moss *Sellaginella selaginoides*. Of a different character are areas with biotopes exposed to frost, wind, and solifluction, without a compact vegetation cover, scattered here and there inside the larch forest tundra. These form polygons of frost boil soils, in center of which are species such as *Andromeda polifolia*, *Salix polaris*, *Tofieldia pusilla*, *Diapensia lapponica*, *Pinguicula alpina* and *Polygonum viviparum*. The polygon margins are populated by *Loiseleuria procumbens*, *Dryas* cf. *octopetala* and *Arctous alpina*, mosses are represented by *Ptilidium ciliare*, *Rhacomitrium lanuginosum*, *Hylocomium splendens*, *Enthodon* cf. *schreberi*, and depressions are populated by *Aulacomnium turgidum*, *Dicranum* sp., *Polytrichum* sp. etc. Lichens are represented by the tundra species *Dactylina arctica*, *Thamnolia vermicularis* and frequently *Cetraria islandica*, *C. nivalis*, *C. deliseii*, *Cetraria mitis*, *C. spec. div.*, *Cladonia rangiferina*, *C. pyxi-*

data, *C. sylvatica*, *C. alpestris* and others, precisely undetermined mosses and lichens.

6.3. Structure of the camp

See Fig. 12, Tabs. 12–14.

The site is located between a shallow valley with open tundra in the south and a sparse larch forest in the north. It forms an irregular circle, the core of which measures 35 m in diameter, the periphery 65 m in diameter, and individual objects are scattered even further into the tundra, beyond the camp boundaries.

The core area is composed by two domestic areas, possibly “chums” (A, B), with directly adjacent woodcutting areas, a conus and a pile of cut up wood (F), and an area of reindeer bone scatter, possibly of one individual (G). One of the “chums” (A) included interior childrens’ playground (paper cutout, a pencil, a gum).

The frontal (southern) periphery opened towards tundra and consists of woodcutting activity areas with reserve piles of cut up wood (C–E), accumulations of various objects and bones and two scatters of reindeer remains (bones and skins). Extended areas of reindeer excrements and hair are located along the SW periphery, where the animals were obviously kept.

The back (northern) periphery along the forest margin consists of about 8 toss accumulations with discarded bottles, cans, paper boxes, 2–3 ash accumulations, reindeer skins and a reindeer carcass.

Compared to the northern sites, the structure of Oktyaberskoye shows standard character, but the prepared wood piles left at place were larger and cut by a chainsaw (petrol or kerosene canister was left at the site). Cut tree trunks are visible in the nearby forest. There is an evident change in toss structure: the discarded bottles of honey

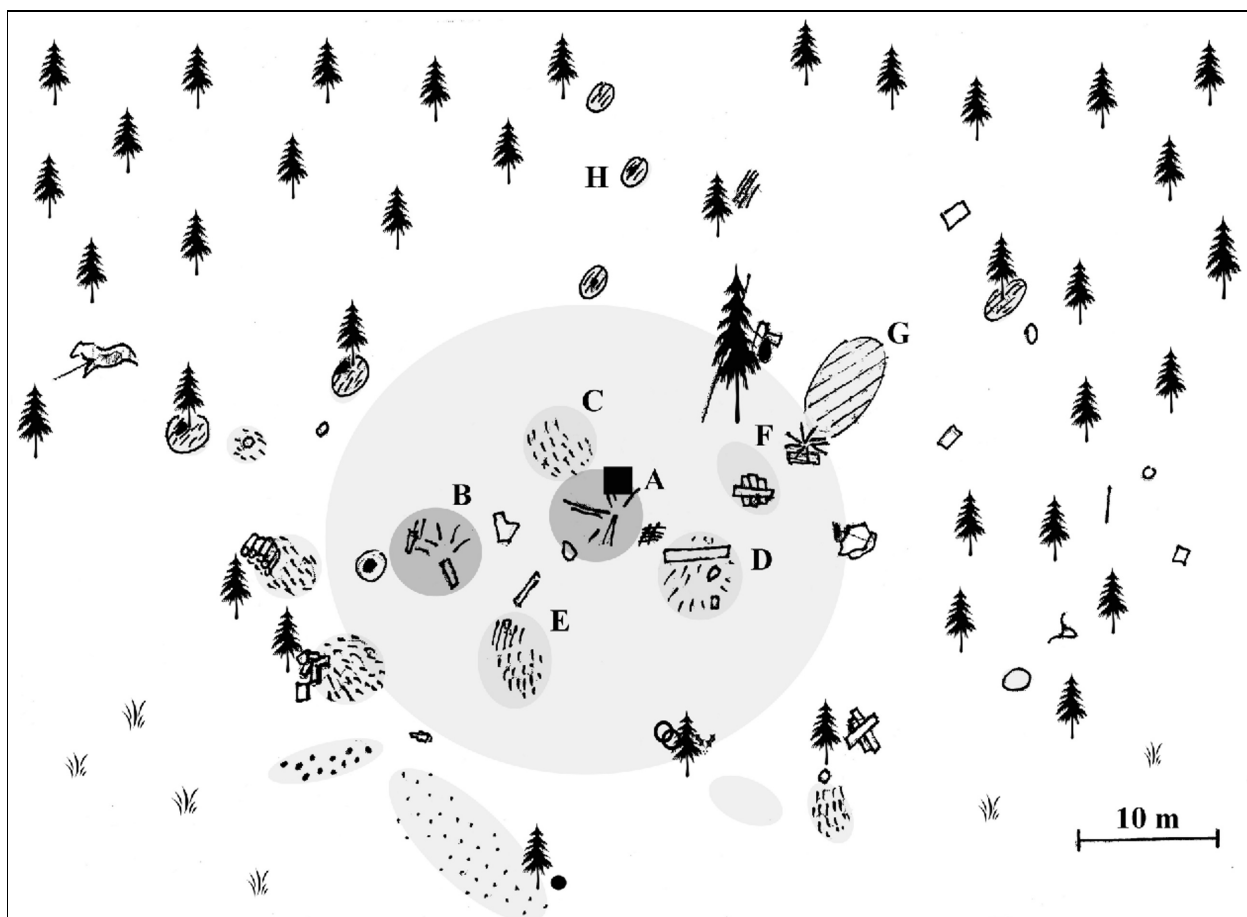


Fig. 12. Plan of the Oktyaberskaya camp, facing north. Dark circles A, B: domestic areas (“chums”), light zones C–F: activity areas, G: dispersed reindeer bones, H: toss areas. Black dots: dispersal of reindeer excrements, light dots: dispersal of reindeer hair, black square inside A: interior children’s playground.

Obr. 12. Okt’aberskaja, plán tábora, orientovaný k severu. Tmavé kruhy A, B: interiérové sídlení zóny (čumy), světlé zóny C–F: exteriérové zóny aktivit, G: rozptýlené kosti soba, H: periferní odpadové zóny. Černé body: rozptýl sobích exkrementů, světlé body: rozptýl sobí srsti, černý čtverec uvnitř A: dětská zóna.

or preserves, predominating in the north, are now being replaced by bottles of vodka and boxes of champagne. The preference for alcohol suggests that the site was dominated by adults, although the identified children’s playground demonstrates their presence.

6.4. Dispersed human traces in the surrounding landscape

In the surrounding forest tundra, we recorded areas of intensive woodcutting by chainsaw. Antler, cans or other vessels, belts and a variety of other objects, possibly symbolic, were attached to individual trees.

7. Interpreting the inventories of abandoned campsites

The catalogue of objects from each camp has been examined based on several criteria. First, we determined the proportions of natural and imported materials (Fig. 17). Second, we categorized several groups according to presumable functions, be it nutriture, architecture, clothing, a variety of indoor and outdoor activities, and related them to the spatial structure at each camp (Fig. 18).

7.1. Nutrition

Basic component of the animal nutriture are the bones of edible animals, dominated generally by reindeer, and only in the VC supplemented by bones of hares. Fishing represents an important activity in summer, but since these are winter camps more distant from the lakes, evidence of fishing was absent. In addition, fish remains are given to dogs and disappear from the record. The lack of evidence also concerns the plant resources which were substituted by imported goods.

Bone remains from the Valley camps and Slope camps show several common patterns. Only a small portion of items are *vertebrae* and *costae* (3% and 8%, respectively), a large proportion belongs to bones of distal parts of the extremities (*carpalia*, *tarsalia*, *metapodia*, *phalanx* I, II, III; 89% and 64%, respectively), all *phalanges* are complete, a large amount of complete *metapodia* occur (100% and 41%, and similar proportions occur in case of other long bones), a large part of fragments is due to breakage instead of cutting (88% and 83%, respectively), and both assemblages include newborn individuals. There are differences in the frequency of dog gnawing (52% in VC, and 29% in SC). Taphonomy of these assem-

Tab. 12. Material composition of objects in the abandoned Oktyaberskaya Camp.**Tab. 12.** Složení materiálu v táboře Okt'aberskaja.

Material	A	B	C	D	E	F	G	H	Total	%
wood	10	14	1	48	12	77	(-)	1	163	27.3
ash	1	(-)	(-)	2	(-)	(-)	(-)	(-)	3	0.5
bone	17	2	1	22	5	9	54	5	115	19.26
hoof	2	1	(-)	(-)	(-)	(-)	(-)	(-)	3	0.5
antler	5	(-)	(-)	1	23	(-)	(-)	(-)	29	4.86
fur	1	3	1	2	(-)	2	2	1	12	2.01
straw	1	1	(-)	2	(-)	(-)	(-)	1	5	0.84
paper	9	18	(-)	33	6	1	9	2	78	13.07
glass	(-)	2	(-)	1	(-)	(-)	(-)	9	12	2.01
plastic	10	31	(-)	24	1	7	(-)	13	86	14.41
metal	1	4	(-)	7	(-)	1	2	1	16	2.68
textile	5	9	(-)	18	4	2	(-)	(-)	38	6.36
others	7	12	1	13	3	1	(-)	(-)	37	6.2
Total	69	97	4	173	54	100	67	33	597	100.00
%	11,56	16,25	0,67	28,98	9,05	16,74	11,22	5,53	100	100.00

Tab. 13. Types of food in the abandoned Oktyaberskaya camp.**Tab. 13.** Složení potravy v táboře Okt'aberskaja.

Nutrition	A	B	C	D	E	F	G	H	Total	%
bone – edible species	17	2	1	22	5	9	54	5	115	48.94
cereals/pasta	(-)	(-)	(-)	(-)	1	(-)	(-)	(-)	1	0.43
instant	2	6	(-)	1	1	(-)	(-)	1	11	4.68
candy	7	13	(-)	9	(-)	2	1	11	43	18.3
preserves	1	2	(-)	(-)	(-)	(-)	(-)	3	6	2.55
alcohol	(-)	5	(-)	7	1	(-)	(-)	4	17	7.23
juice/limo	(-)	2	(-)	2	(-)	(-)	(-)	(-)	4	1.7
cigarettes	9	7	1	13	3	1	(-)	(-)	34	14.47
vegetables	(-)	(-)	(-)	1	1	(-)	(-)	(-)	2	0.85
others	(-)	(-)	(-)	1	(-)	(-)	(-)	1	2	0.85
Total	36	37	2	56	12	12	55	25	235	100.00
%	15,32	15,74	0,85	23,83	5,11	5,11	23,4	10,64	100	100.00

**Fig. 13.** Oktyaberskaya campsite, general view.

Obr. 13. Okt'aberskaja, celkový pohled na tábořiště. Foto J. Svoboda.

**Fig. 14.** Straw bunch, multifunctional, Slope camp.

Obr. 14. Slaměný věchet, multifunkční, Svahový tábor. Foto S. Sázelová.

Tab. 14. Types of objects in the abandoned Oktyaberskaya camp.**Tab. 14.** Složení předmětů v táboře Okt'aberskaja.

Utilities	A	B	C	D	E	F	G	H	Total	%
wood as fuel	9	14	1	24	9	76	(-)	1	134	37,02
ash	1	(-)	(-)	2	(-)	(-)	(-)	(-)	3	0,83
cord/rope/wire	1	(-)	(-)	5	(-)	1	(-)	(-)	7	1,93
wooden object	1	(-)	(-)	23	3	1	(-)	(-)	28	7,73
textile covers	1	5	(-)	6	1	1	(-)	(-)	14	3,87
domestic equipm.	(-)	1	(-)	6	(-)	(-)	(-)	(-)	7	1,93
game/toy	(-)	11	(-)	(-)	(-)	(-)	(-)	(-)	11	3,04
shaving	(-)	(-)	(-)	1	(-)	(-)	(-)	(-)	1	0,28
clothes	2	2	(-)	11	3	(-)	(-)	(-)	18	4,97
hygiene/medicine	(-)	6	(-)	5	(-)	1	4	1	17	4,7
bone non-edible species/hoof/antler	7	1	(-)	1	23	(-)	(-)	(-)	32	8,84
fur	1	3	1	2	(-)	2	2	1	12	3,31
straw	1	1	(-)	2	(-)	(-)	(-)	1	5	1,38
packing	6	9	(-)	16	1	3	1	4	40	11,05
newspaper, etc.	1	3	(-)	10	2	(-)	5	(-)	21	5,8
other	2	4	(-)	3	(-)	3	(-)	(-)	12	3,31
Total	33	60	2	117	42	88	12	8	362	100,00
%	9,12	16,57	0,55	32,32	11,6	24,31	3,31	2,21	100	100,00

blages is similar, as both include three complexes: food remains (*cranium*, *vertebrae*, *costae*, and long bones), remains of technological processes that relate to subchapter 7.7 (antler, *metapodia*, *phalanges*, the last ones suggesting „kamus“ production), and remains of newborn babies. Although marrow is highly appreciated in the traditional Nenets nutriture (Evladov 1992), majority of *metapodia* and *phalanges* from both locations show no traces of breakage. Preserves represent an important group in all recorded inventories, including jars from pickled cucumbers (all camps), several jars from jams, especially strawberry, peach, apricot and an apple (VC, SC) and ketchup bottles (VC, OC). Since all Nenets are fond of sweets, we recorded at all camps wrappings from various kinds of caramels, fruit caramels, confectioneries, burley sugars, etc. and plastic sticks from lollipops. Variability of candies, chocolates or biscuits increased considerably at the Oktyaberskaya camp, whereas at Yangana Pe, candies are replaced by milk (including tins from condensed sweet milk, two sacks of dried milk and two crucibles from yoghurt). This evidence, together with other indications, suggests that an older child (4–7 years) lived at Oktyaberskaya camp and at least one small child (0–3 years) lived at the camps of Yangana Pe. In addition, the category of beverages includes paper boxes and sacks of black tea, non-alcoholic drinks such as lemonades and juices and alcoholic drinks, such as tins of local beer (*Arsenalnoe*, *Baltika*), bottles or fee stamp from vodka, wine and champagne. Again, the concentration of alcohol increased radically at the Oktyaberskaya camp. Frequently, the packings from Tetra Pak boxes, plastic bottles or tins from beverages were cut in center and worn out to be reutilized as vessels. The last group includes personal habits artifacts, and it includes cigarettes (SC, and especially OC), individual matches, boxes of matches, and a lighter (OC).



Fig. 15. Wooden snow knife, found on the shores of lake Taunto.
Obr. 15. Dřevěný nůž na sněhu, nález na břehu jezera Taunto.
 Foto S. Sázelová.

The following differences between the individual camps were recorded. At Valley camp we have found a tin from marine *algae* and a sack from buckwheat, at Slope camp there was a jar from honey, a sack from pasta and from instant noodle soup and in the toss zone were two mouldy onions and a margarine tub. More special objects were counted at Oktyaberskaya, such as a small caviar jar, a flour paper bag, two plastic dishes of “Byznysmen” instant food, two potato purée bags and an instant noodle soup, one bottle from Tchibo coffee, one boxboard of sect, one mayonnaise tub, chewing gum packaging, and a sack from lemons.

7.2. Architecture

Reindeer and hare furs were used with the winter coats preferred. The remains recorded vary from complete reindeer skins at SC and OC to individual bunches of hair.



Fig. 16. Child's fur shoe, Valley camp.

Obr. 16. Dětská kožešinová botka, Údolní tábor. Foto S. Sázelová.

Traces of sewing are visible on certain pieces, and some were transformed to products such as a child boot (plus one fragment) from the VC. However reindeer furs also serve as cover for winter “chums” and the Nenets always prefer two layers, one of them with trimmed hair. Several tufts of trimmed hairs and a piece of fur with cut hair was also recorded at SC, where the context suggests that it was a part of children's play. In case of the summer “chums”, coverage of rough canvas is used (same as sledge covers). Parts of canvas sometimes have felt loops along edges.

The collection of cords, ropes, and wires, including hand-knitted cords and ropes from polyethylene fibers of various colors, may be related either to “chum” construction or to load fastening on sledges. However, we cannot exclude that some of these cords or ropes were used during manipulation with reindeer (even if the lasso for catching reindeers, “tinžjan”, is traditionally knitted from reindeer skins). Cords and ropes occur at all camps, whereas parts of wires were sporadically observed at SC and OC only. Several wooden posts (VC) or pegs (SC, OC) might be connected with the architecture or with activities associated with breeding reindeer or dogs.

The skeleton of “chum” is composed by approximately 25–30 wooden poles (one of them was leaning against a larch at OC). On both sides of the hearth, the Nenets first place several wooden planks on the ground (found on periphery of the VC), than straw over it and finally a layer of reindeer furs. Here, women perform their everyday activities and the whole family sleeps on it at night. During winter, the open fire in the center is replaced with a stove (we have found an iron desk with nails from it at SC, and a pipe from a stove's chimney at OC). In the area opposite to “chum's” entrance (in front of the zone forbidden to women) is a small table and boxes with dishes.

Location of the central hearth in an abandoned camp is sometimes difficult to identify due to ash being discarded at the camp peripheries. Some of the associated objects, however, were recorded at all camps: parts of a table cover with a sunflower pattern, a broken vessel and a broken cup at VC, a pot with drilled holes on each side, through which a wire was inserted, fastened on sledges at SC, a boiler of 10 litre capacity, an aluminium kettle of 20 litre capacity,

a crock from a cup with a flowery pattern, and a broken saucer, all at SC. At OC we photographed a kettle for preparing tea, and a metal bowl with a flowery pattern (not included in the record).

Specific features were recorded in the VC, with two piles of stones (one of 7 pieces and the other of 11 pieces), all of sandstone. Two similar stones were present in the domestic zone, showing traces of burning and remaining ash in between – an *in situ* cooking facility from a hearth. As individual occurrences we recorded pieces of insulation and a part of linoleum at VC, chipboard at SC, and a part of wooden box pallet, one hacked bunch with an engraving IIM, and one box from post at OC.

7.3. Clothing

The Nenets clothes for cold seasons are traditionally produced from furs, whereas the warmer season dresses are usually purchased. This includes female clothing articles, for example, skirts or blouses with flowery patterns, documented by fragments found at all camps (some of these items were re-used and their strings were twisted into a thin cord). Other garment parts encountered in all camps include pieces of utility gloves with nonskid adjustment on the surface, some with traces of technical oil. The last group of clothes belong to children, such as two boots sewn from reindeer fur, discovered in the VC toss zone, part of a green track suit plus sweat shirt, a terry glove with pink stripes, a white child's sock (SC), knickers belonging to a girl of 4–7 years old, a pink hair ribbon, and a used child's sock (OC).

At SC there were fragments of various textiles of blue and white colour or white with blue stripes, and pieces of jumper or mat. At OC, we recorded a tie from jeans, a paper cover from socks (men 23–31), an appending label from clothes, one handkerchief, and female underwear (“bloomers”).

7.4. Hygiene, medicine

In the toss zones at all camps, residues of toilet paper, napkins (VC, SC), and a sanitary towel (SC) were discarded. However, straw plus dried mosses were traditionally used for hygienic purposes, as documented at all camps. At VC, we recorded a bottle of cologne; at SC there was a white terry towel with a red stripe, a paper box from tooth paste. At OC we recorded a yellow plastic soap box, a piece of polyporus (which could be used as tinder or for healing) an elastic band on hairs. Medicaments are represented by baled linen as finger-bandage, a grouting point and its cover, capping strip and two ampoules – one with a pellucid solution and the other with white powder (both without any legend) at SC, and three tablets of Paracetamol (two 200 mg for children), a tablet Baralgin M, a tube from Fastum Gel, and box from Dirotom (Lisinopril, 10 mg) at OC. However, paper boxes could be also reused for mailing, as indicated by addresses visible on some of them.

7.5. The children's zones

At two camps, SC and OC, we identified children's zones with remains of games. At Slope camp, this zone



Fig. 17. “Ngali” – reindeer neck pendant, prevents the animal from escaping. Found on the upper plateau of Yangana Pe.

Obr. 17. “Ngali” – závěšek na sobí krk, zabraňuje zvířeti v útěku. Nalezen na náhorní plošině Jangana Pe. Foto S. Sázelová.

included a part of blue plastic toy, a sprig with a tied rope, several cutouts in the shape of reindeers with cuttings, several white beads on an elastic band (ring?) and two fragments of reindeer fur—one of them with a green dot from felt tip and other with cut hairs and several hair tufts. At Oktyaberskaya camp, the children’s zone included a rubber in the paper with unspecified drawings, part of softened yellow plastic with a pierced hole and traces from human nails on surface, several cutouts in the shape of triangles (“chums”?) from candy packaging, a plastic letter Я and two pencils.

7.6. Woodworking

As fuel for the hearths, collecting wood (especially from larch and alder) in nearby bushes is a typically female activity (Fig. 19). Only at Oktyaberskaya camp, we expect that males cut the larger larch trunks as they were cut using a chainsaw, whereas further preparation of fuel from it was again left to women and girls. At these areas, pieces of birch-bark and dried moss, which could be used as tinder, are usually present in association. A typical feature at all camps are circular concentrations of shavings from reparation of various kinds of wooden objects, especially sledges (at all camps, broken sledge parts were present). These shavings could be also used for heating or placed on the “chum” floors.

7.7. Bone of non-edible species/hoofs/antlers

This group includes complete reindeer hooves and antlers. Hooves were usually joined to the limb bones and placed in toss zones as butchering waste. The otherwise common habit of using reindeer hooves and phalanges as symbols of complete animals in children’s games (museum collections in Salekhard and Sos’va) found no support in our study. At all camps we recorded a mixture of naturally dropped reindeer antlers and antlers cut away from the skulls (and skulls with cut-off antlers were dispersed on slopes and valleys of Yangana Pe), part of them

showing traces of gnawing by reindeer or carnivores, in search for minerals.

7.8. Various activities

Two woolly tassels (VC, OC) and scarce fragments of wool of a variety of colours (all camps) might be linked to decoration of human dress or reindeer harness. Various kinds of wrappings (of paper, aluminium, polythene, cellophane etc.) cannot be related to specific activities. Pieces of newspapers were dispersed at all camps. In addition four 1,5 V batteries – Panasonic, Toshiba, Kosmos and Enerljuks and two tins from kerosene or petrol were situated at SC and OC. At VC, there was also a fired shot gun 12/70 (a very cheap model) cartridge, at SC we have found a part of tarry and two handmade patches. A piece of sello tape, part of plastic stake (as from a party tent), several pins, and anti-slip trundle from a scooter were located at OC.

7.9. Symbolic activities

Symbolic meaning may be attributed to an antler cache deposited on a remarkable elevation at the Upper Slope camp (Fig. 11), and in cases of various objects attached to trees in the forest tundra, north of Labytnangi (Fig. 20).

8. Comparisons and conclusions

There is a range of differences between Upper Paleolithic Central Europe, where cultural systems functioned independently, and the contemporary Polar Ural, influenced politically and economically by modern-day civilization centers. In addition, we compare semi-nomadic early hunters with nomadic pastoralists, fishers and hunters. In living camps, “structures évidentes” and “structures latentes” of classical French paleoethnology cannot be separated as clearly as in archaeological sites: the context is systemic, and both structures and objects may be removed from central areas towards peripheral toss zones.

The camps documented in the actual tundra and forest tundra were inhabited in winter or early spring, when the society concentrates on reindeer and when the other natural resources (available in summer) were to a large extent substituted by imported items purchased from shops. There are general similarities in structure of the objects recorded in the three camps, whereas certain variation could be caused by distance from camp to camp and from the nearest shop, by demographic structure of the site and by habits of its occupants (Figs. 18, 19). Compared to the camps at Yangana Pe, the Oktyaberskaya campsite displays a remarkable difference in structure of the recorded objects, because of its location close to a railway and the city of Labytnangi where reindeer are being sold and a massive influx of imported goods was recorded. Other differences might be caused by the demographic structure of the camp inhabitants, their economic status (after selling reindeers) or by their personal habits (for example, smoking cigarettes at Slope camp or Oktyaberskaya).

Of what nature are the ethnoarchaeological analogies, if any? Theoretically, both the past hunters’ camps and ac-

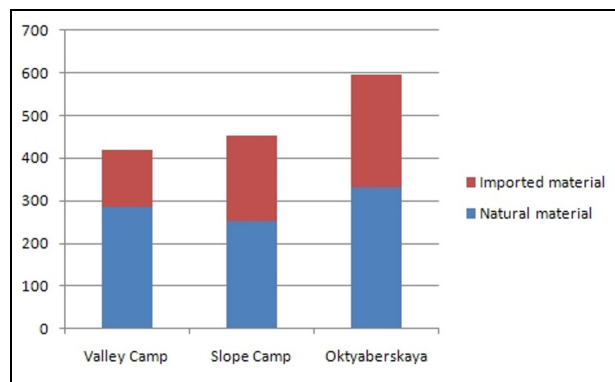


Fig. 18. Graph showing proportion of natural and imported materials in the individual campsites.

Obr. 18. Graf znázorňuje vztah přírodních a importovaných materiálů na jednotlivých tábořištích.

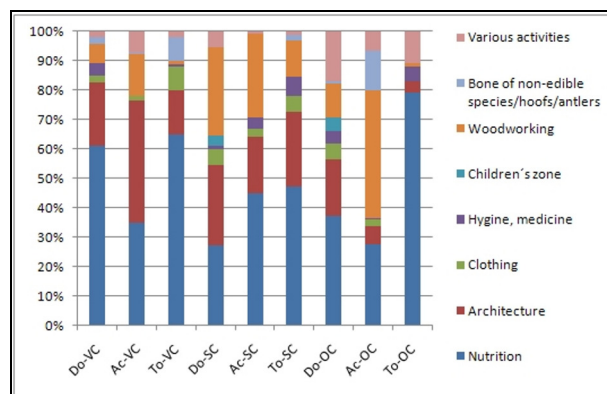


Fig. 19. Graph showing structure of objects in relationship to zonality of the individual campsites.

Obr. 19. Graf znázorňuje strukturu předmětů ve vztahu k zonalitě tábořišť.



Fig. 20. Woodcutting area near the campsites (typically a female task), usually does not exceed 3×3 m, to allow easy regeneration of the shrubs.

Obr. 20. Těžba dřeva nedaleko táborů (typicky ženská práce) většinou nepřesáhne prostor 3×3 m, což umožňuje snadnou regeneraci křovin. Foto J. Svoboda.



Fig. 21. Oktyaberskaya, objects attached to a tree near the campsite, possibly of symbolic significance.

Obr. 21. Okt'aberskaja, předměty zavěšené na stromě u tábořiště, zřejmě symbolického významu. Foto J. Svoboda.

tual pastoralists' camps are structured into discrete zones: the interior living areas, exterior activity areas, inner peripheral zones and outer peripheral zones, and dispersed objects and activity traces in the adjacent landscape.

8.1. The interior living areas

The dynamics of human behavior creates obstacles to a clear-cut separation of the individual zones. The hearths, the location of which is considered basic at archaeological sites (Leroi-Gourhan, Brézillon 1972; Stapert 1989; Cziesla 1991), are rarely preserved in their original position at the ethnologically documented sites. Rather, we encounter here areas of ash redeposition on the peripheries. When preserved in its original position, a hearth is usually equipped with two flat stones for cooking. Area around such a hearth ideally corresponds to a "chum",

and the scarce inventory includes fragments of textiles or cords, bone fragments, wood splinters and twigs, straw and straw wisps. The area boundaries are difficult to define, however.

At Slope camp and Oktyaberskaya camp, we localized children's zones inside the presumed "chums", with several paper cutouts, a pencil or a gum, and associated objects. This evidence suggests at least one child approximately 0–3 years old and another one around 5 years old at Slope camp, and one child 4–7 years old at Oktryaberskaya. Although we were unable to identify a children's zone in the interior living area at Valley camp, children could have been present at this site as well, and the evidence just discarded into toss. Napkins and a fur shoe (Fig. 16) belonged to a child approximately 0–3 years old, and another one around 5 years old. Presence of children is also recorded by Binford (1991, 43) at the fall site

at Kongumuvuk. Locating interior children's play zone in fall, winter and spring camps is natural, because children do not run around as in summer camps, and they tend to play in groups inside.

8.2. The exterior activities areas

Activity zones expand in front of the „chums“ and between them. Especially wooden wood splinters and shavings are being dispersed in circular shapes, as a relict of woodcutting or construction of sledges. In addition, there are fragmented reindeer bones, while complete body parts in anatomical position are rare (and tend to be moved to site peripheries). Some trends were observed in activity zones of the individual sites. At Oktyaberskaya, woodworking using chainsaws markedly predominates over other activities; at this same site, we may reconstruct reindeer butchering within the activities areas, whereas in the other camps such remains were usually discarded. At the lower Slope camp, a higher concentration of medications may be related to treating reindeer during breeding. At upper Slope camp, we identified an accumulation of 11 antler pieces at the highest spot of the camp (Fig. 11). In the Polar Ural region, antler is being offered to the Matress of the Mountains, Pe-ervne (Lar, Kharyuchi, Okotetto 2007). Large accumulations of antler are deposited at various places in Yamal, and especially on Beliy Island. Caches of discarded antler were also recorded at several Upper Paleolithic sites of North Eurasia, as in the Medvezhya Cave in Northern Ural, and the open-air sites of Mal'ta, Buret' and Mezin.

8.3. The inner and outer peripheries

The toss zones lie in the rear peripheral zone or on adjacent slopes just below the camp. There are accumulations of bottles, cans, pieces of paper or fur, and straw. Expiry dates on cans may indicate the date of the occupation or of repeated stays during the past few years (Table 1). The following trends were observed on the peripheries: at Oktyaberskaya, there is a huge accumulation of purchased food packaging; in peripheries of the Valley camp and the Slope camp, toss zones may overlap spatially with objects conserved for further usage; and, even if traces of woodworking do not enter the toss zones normally, one such case was recorded in the Slope camp.

8.4. Open landscape around

In the tundra surrounding the Slope and Valley camps, we observed restricted areas of manual woodcutting, always limited to zones of about 3 × 3 m, to enable easy regeneration of the shrubs (Fig. 20). In the forest tundra around Oktyaberskaya, a chainsaw was used to cut down larch trees. Individual objects dispersed in the surrounding tundra or forest-tundra may either be prepared at location for subsequent use (sledges, boats, fishing nets), or represent items of ritual and/or symbolic significance (objects attached to individual trees, antler depositions on the ground), or be just randomly discarded objects (Fig. 21).

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References

- Binford, L. R. 1978:** *Nunamiut ethnoarchaeology*. Academic Press, New York.
- Binford, L. R. 1987:** Researching ambiguity: Frames of reference and site structure. In: S. Kent ed., *Method and Theory for Activity Area Research*. New York: Columbia University Press, 449–512.
- Binford, L. R. 1991:** When the going gets tough, the tough get going: Nunamiut local groups, camping patterns and economic organisation. In: C. Gamble, W. A. Boismier (eds.): *Ethnoarchaeological Approaches to Mobile Campsites*. International Monographs in Prehistory, Ann Arbor, 25–137.
- Boukal, T. 2003:** *Torava – Lovci severozápadní Sibiře, příroda a lidé*. Praha: Dauphin.
- Chomich, L. V. 1995:** *Nenci. Ocherki tradiciyonnoy kul'tury*. Sankt Peterburg.
- Cziesla, E. 1990:** *Siedlungsdynamik auf Steinzeitlichen Fundplätzen*. Bonn: Holos.
- Dobrinskiy, L. N. (ed.) 1995:** *Priroda Yamala*. Ekaterinburg: Nauka.
- Evladov V. P. 1992:** *Po tundram Yamala k Belomu os-trovu*. Tyumen: Institut problem osvoeniya severa.
- Forbes, B. C. 1999:** Land use and climate change on the Yamal Peninsula of north-west Siberia: some ecological and socio-economic implications. *Polar Research* 18, 367–373.
- Gamble, C., Boismier, W. A. (eds.) 1991:** *Ethnoarchaeological Approaches to Mobile Campsites*. International Monographs in Prehistory, Ann Arbor.
- Golovnev, A. V. 1995:** *Govoryashchie Kultury: Tradicii Samodijcev i Ugrov*. Ekaterinburg: Rossijskaja Akademija Nauk.
- Golovnev, A. V. 2004:** *Kochevniki Tundry: Nency i ikh Folklor*. Ekaterinburg: Rossijskaja Akademija Nauk.
- Gould, R. 1980:** *Living archaeology*. Cambridge: Cambridge University Press.
- Jordan, P. D. 2003:** *Material culture and sacred landscape: The anthropology of Siberian Khanty*. Walnut Creek: AltaMira Press.
- Klevezal', G. A. 2007:** *Printsipy i metody opredeleniya vozrasta mlekopitayushchih*. Moskva: Tovarishestvo nauchnyh izdaniy KMK.
- Kosintsev, P. A. 2005:** *Ekologiya srednevekovogo naseleniya severa Zapadnoy Sibiri: istochniki*. Ekaterinburg–Salekhard: Izdatelstvo Uralskogo universiteta.
- Krasovskaya, T. M., Tikunov, V. S. 2008:** Mapping of nature management of the territory of the Nenets

- Autonomous Okrug. *Geography and Natural Resources* 29, 84–87.
- Kroll, E. M., Price, T. D. (eds.) 1991:** *The Interpretation of Archaeological Spatial Patterning*. New York–London: Plenum Press.
- Lar, Kharyuchi, Okotetto 2007:** Opisanie svyashchennykh mest. In: O. Murashko (ed.): *Znachenie okhrany svyashchennykh mest Arctici: issledovaniya korennnykh narodov severa Rossii*, 59–67. Assotsyatsyya korennnykh i malochislennykh narodov Severa, Sibiri i Dalnego Vostoka Rossiyskoy Federatsyi, Moskva.
- Leroi-Gourhan, A., Brézillon, M. 1972:** *Fouilles de Pincévent*. Paris: CNRS.
- Mortillet, G. de 1883:** *Le Préhistorique: antiquité de l'homme*. Paris: Reinwald.
- Owen, L. R. 2005:** *Distorting the past. Gender and the division of labour in the European Upper Paleolithic*. Tübingen: Kerns Verlag.
- Peterkin, G. I., Price, H. A. (eds.) 2000:** *Regional Approaches to Adaptation in Late Pleistocene Western Europe*. BAR 896, Oxford.
- Podkorytov, F. N. 1995:** *Olenevodstvo Yamala. Yamal'skaya sel'skokhozyaistvennaya stanciya*, Salekhard.
- Potapova L. P., Levina M. G. 1956:** *Narody Sibiri*. Izdadelstvo Akademii Nauk SSSR, Moskva–Leningrad: Izdadelstvo Akademii Nauk SSSR.
- Rees, W. G., Williams, M., Vitebsky, P. 2003:** Mapping land cover change in a reindeer herding area of the Russian Arctic using Landsat TM and ETM+ imagery and indigenous knowledge. *Remote Sensing and Environment* 85, 441–452.
- Sinclair, H. M. 1953:** The diet of Canadian Indians and Eskimos. *Proceedings of the Nutrition Society* 12, 69–82.
- Sokolova, Z. P. 2007:** *Narody Zapadnoy Sibiri*. Etnograficheskiy al'bom. Moskva: Nauka.
- Stapert, D. 1989:** Rings and sectors: Intrasite spatial analysis of Stone Age sites. *Palaeohistoria* 31, 25–99.
- Svoboda, J. 1999:** Etnoarheologický výzkum v Lanashuhaia (Ohňová země, Argentina). *Přehled výzkumů* 39, 479–481.
- Vasil'ev, S. A., Soffer, O., Kozłowski, J. K. (eds.) 2003:** *Perceived Landscapes and Built Environments*. BAR 1122, Oxford.
- Yellen, J. 1977:** *Archaeological approaches to the present*. Academic Press, New York.

Resumé

Využití etnologických analogií je od počátku součástí paleolitického výzkumu, rekonstrukce a interpretace, ale teprve od 60. a 70. let 20. století se s takovými analogiemi pracuje systematicky, s použitím planigrafie tábořišť a prostorové distribuce předmětů a aktivit (Yellen 1977; Binford 1978; 1987; Gamble a Boismier, eds. 1991). V létě 2009 jsme v rámci výzkumu německých sídelních strategií (Jamalo-německá autonomní oblast, SV Sibiř) jsme dokumentovali aktivní letní tábory u jezer a opuštěné zimní a jarní tábory v otevřené tundře (horský hřeben Jangana Pe) a v lesotundře (Okt'aberskaja, severně od Labyt-nangi). Z přehledu rostlinných i živočišných zdrojů těchto krajinných typů vyplývá, že požitelné rostliny a ryby jsou dostupné spíše v létě, zatímco sobi přicházejí jako hlavní potravinový zdroj na podzim, po návratu z letních pastvišť výše na severu, a část jich zůstává až do jara. Chybějící součásti stravy doplňují Němci nákupy. Míra mobility jednotlivých rodin závisí na tom, zda vlastní dostatečný počet sobů.

Dokumentované tábory jsou strukturovány do určitých zón, což jsou interiérové sídelní prostory (včetně dětských zón), exteriérové zóny s doklady zpracování dřeva, sobích těl a dalších běžných aktivit, na periferii sídliště zóny odpadu a v krajině kolem rozptýlené stopy aktivit (těžba dřeva) a jednotlivé předměty (z nichž některé mohou mít symbolický význam). Ale „evidentní“ a „latentní“ struktury ve smyslu francouzské paleoetnologie tu lze těžko rozlišit: pevné struktury nevznikají, vše je v pohybu, s tendencí směřovat od centrálních zón k periferním odpadistům.

Rozdíly mezi tábořišti lze vysvětlit prostředím (tundra–lesotundra), vzdáleností mezi tábory navzájem, vzdáleností od nejbližšího obchodu a komunikační sítě, demografickou strukturou lokality, aktivitami obyvatel a jejich finančními možnostmi (například po prodeji části sobů v zimě). Pokud záběr našich komparací rozšíříme o údaje z mladopaleolitických loveckých sídlišť střední Evropy, lze konstatovat, že mají v zásadě podobnou strukturu a zonalitu, přestože výživa, aktivity i předměty jsou samozřejmě podstatně odlišné.