DOI: 10.17746/1563-0110.2020.48.1.041-051

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Stages in the Late Pleistocene and Holocene Peopling of Lake Bolshoye Ushkovskoye Shore, Kamchatka

This article outlines the findings from excavations at the Ushki sites (four multi-layered and one single-layered), near Lake Bolshoye Ushkovskoye, on the Kamchatka Peninsula. The sites were discovered and excavated by N.N. Dikov and M.A. Dikova in 1961–1990. Multidisciplinary studies conducted at Ushki V in 2004–2011 by Northeastern State University extended our knowledge of the Late Pleistocene and Holocene peopling of the peninsula. Information about the chronology of the site and the technological and typological characteristics of lithics are provided. The results suggest that the habitation history of the sites included at least eight stages. Each one is described, and their absolute dates are provided: early stage of the Paleolithic to Neolithic transition (~13,320–12,022 cal BP), late stage of the Paleolithic to Neolithic transition (12,225–10,131 cal BP), Initial Neolithic (~8608–8297 cal BP), Early Neolithic (~6679–4406 cal BP), Middle Neolithic (~2809–1516 cal BP), Late Neolithic (~1059–996 cal BP, or 960–1020 AD), First Old Itelmen Period (~806–597 cal BP, or 1200–1400 AD), and Second Old Itelmen Period (~564–55 cal BP, or 1650–1700 AD). Lithics from the first habitation stage are bifacial arrowheads and stemmed projectile points, those of the second stage are tools on microblades, made with the Yubetsu technique. In the Initial Neolithic, tools on blades appear, inserts become common, and, possibly, dogs begin to be bred as draft animals. The distinctive traits of the Early Neolithic are pottery, prismatic and conical cores, and projectile points and burins on blades. The Tarya culture of the Middle and Late Neolithic is marked by trihedral arrowheads and wooden vessels; crude unifacial adzes give way to polished ones, and labrets appear. The seventh and eighth stages represent the Old Itelmen culture. The findings suggest that the earliest inhabitants of Ushki played an important role in the migratory processes connecting Northeast and Southeast Asia with northwestern America. On the basis of more accurate dates, a new nomenclature for stages 1–4 of Ushki is proposed.

Keywords: *Kamchatka, Paleolithic–Neolithic transition, Neolithic, Tarya culture, Old Itelmen culture.*

Introduction

The Ushki sites are considered to be the reference for establishing the chronology of the archaeological cultures in Kamchatka. These sites are located in the central part of the Peninsula, on the southern shore of Lake Bolshoye Ushkovskoye, on the edge of the pedestal of a large and high cone-shaped volcanic structure of the Klyuchi group of volcanoes, covered by fluvioglacial and proluvial loose sediments (Fig. 1). The thickness of the soil-pyroclastic cover, which is a part of sheet formations, can be dated to the Upper Pleistocene to Holocene (Titov, Kazakova, 1985). The sites are located at an altitude of 37 m above sea level and 3–5 m above river level.

In 1961–1990, four multi-layered sites and one single-layered site of Ushki were explored by N.N. Dikov (1977, 1979, 1993) and M.A. Dikova

Archaeology, Ethnology & Anthropology of Eurasia 48/1 (2020) 41–51 E-mail: Eurasia@archaeology.nsc.ru

(Goebel, Waters, Dikova, 2003). On the basis of his findings, Dikov identified seven habitation stages on this territory. These stages correspond to the Early Ushki Upper Paleolithic culture (13,600 ± 250 BP (GIN), 14,300 ± 200 BP (GIN 167)), Late Paleolithic stage (10,360 ± 350 BP (MO 345), 10,760 BP (MAG 219)), "Final Paleolithic" stage (8790 ± 150 BP (MAG 231)), first Ushki "Mesolithic" and Early Neolithic culture (4200 ± 100 BP (MAG 132)), the Tarya culture of the Middle Neolithic (2070 ± 190 BP (MO 354), 2160 ± 290 BP (MAG 5), 2440 ± 80 BP (RUL 607)), Late Neolithic stage (1052 ± 25 BP (MAG 32)) and "vestigial" stage (220 ± 140 BP (MO 353), 235 ± 145 BP (MO), 675 ± 80 BP (LE 70)) (Dikov, 1977: 43–44, 65, 73, 75, 242, 244).

In 2004–2011, the expedition of Northeastern State University (Magadan) conducted comprehensive studies of the Ushki V site, which have made it possible to obtain additional information on the peopling of the peninsula in the Late Pleistocene to Holocene period (Dikov, 1977, 1979, 1993; Ponomarenko, 2014; Goebel, Waters, Dikova, 2003: 502), distinguish four habitation stages at that site, and clarify the periodization of all Ushki sites and specific features of the stages, taking into account the data obtained by Dikov (1977, 1979, 1993).

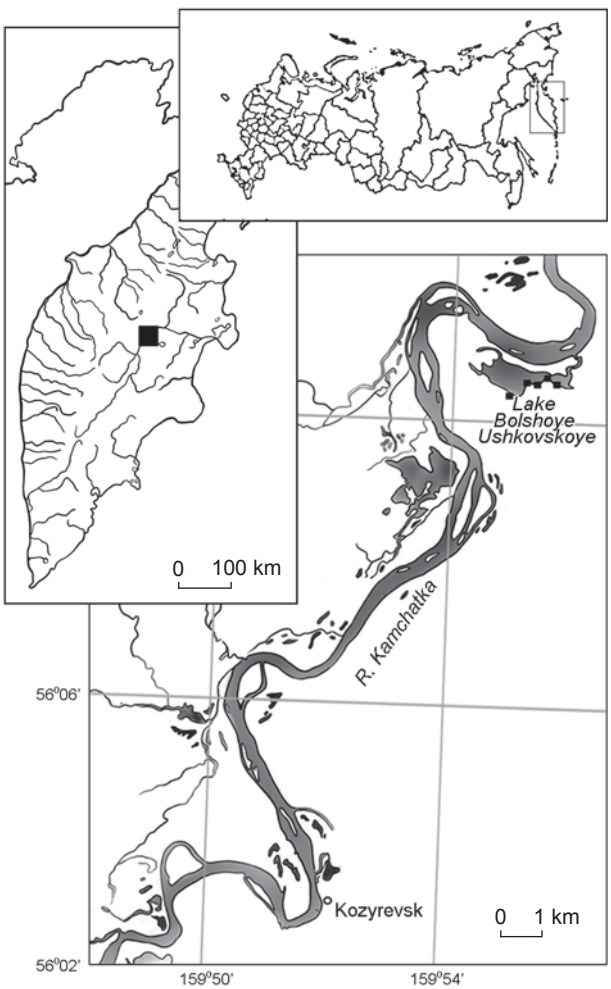

Fig. 1. Location of the Ushki sites.

Material and methods

Deposits at the Ushki V site have been unearthed over an area of 148 m^2; over 12,000 artifacts have been found, and 30 stratigraphic profiles have been studied. In the Late Pleistocene deposits, in cultural layer VII, a dwelling, with a hearth, entrance, and working area, were identified. This layer contained lithic inventory, personal ornaments (pendants, beads), a shovel made of bone, fragments of animal and fish bones, a plant seed, pine nut shell, and gastroliths. In cultural layer VI, the space between dwellings has been explored, revealing wedge-shaped cores, blades, bladelets and microblades, flakes, technical spalls, bifacial arrowheads and knives, retouched blades, side-scrapers, micro-end-scrapers, combination tools, and a hammerstone. In cultural layer V, a dwelling (?) pit 4 × 3 m has been studied, containing prismatic cores, flakes, blades, obsidian end-scrapers on blades and flakes, technical spalls, a pebble tool, etc. In cultural layer IV, three dwelling (?) pits have been discovered, yielding: prismatic and conical macro- and microcores, flakes, spalls, blades and their fragments, retouched points on blades, side-scraper-like tools of obsidian and basalt, burins, hammers of sandstone, pottery, amulets, as well as dwarf-pine nuts and numerous fragments of animal bone.

The data resulting from the tephrochronological studies of the soil-pyroclastic cover have made it possible to reconstruct the history of volcanic deposits at Ushki V. The detailed tephrochronology of Kamchatka, based on hundreds of radiocarbon dates, was "superimposed" on archaeological profiles (Braitseva, Melekestsev, Ponomareva et al., 1997; Ponomareva, 2010; Ponomareva et al., 2016). Eighteen ash layers have been found in the soil-pyroclastic cover at Ushki V; twelve of these have been correlated with specific volcanic eruptions. The ages of ash markers (Braitseva, Ponomareva, Sulerzhitsky et al., 1997) and ^{14}C dates obtained for the samples from cultural layers (Table 1) were taken into account while compiling the chronostratigraphic scale.

This study followed traditional scholarly methods (planigraphic, descriptive, and technological), as well as methods of relative and absolute dating (stratigraphic, tephrochronological, and radiocarbon analyzes, calibration of radiocarbon dates). When summarizing the data, the problem-oriented and chronological methods were used.

Stages of peopling of the Ushki sites

In the Late Pleistocene, Lake Bolshoye Ushkovskoye was a part of a vast ancient glacial reservoir between the modern channels of the Kozyrevka and Kamchatka rivers, formed ca 25,000–20,000 BP (Braitseva et al., 1968). The first peopling of this area probably occurred not earlier than 13,300 BP. The charcoal date from the Pleistocene deposits (supposedly of volcanic ash from an unknown source, which we conventionally named "rusty ash") 2–3 cm thick at Ushki V, lying below the earliest cultural layer VII, was 11,196 ± 59 BP (KIA 40603) or ca 13,000 cal BP.

Transition from the Paleolithic to Neolithic

The chronological range of the initial habitation stage corresponds to the period of transition from the Late Pleistocene to Holocene. According to ^{14}C, the beginning of the Holocene in Kamchatka is dated to 9800–10,000 BP or 12,000–11,000 cal BP (Pevzner, 2015: 10). Pollen spectra from the Ushki deposits indicate that during the time preceding the Holocene, the climate was dry and cold; tundra steppes were predominant (Egorova, 2008). Typical representatives of the tundra grass-shrub communities were alder, birch, meadow rue, madder vegetation, green moss, and ferns (Lozhkin, Matrosova, Korzun, 2004). The fauna of this period was represented by bisons, bighorn sheep, Pleistocene horses, lemmings, reindeer and elk, as well as birds (probably ducks), salmon (coho salmon and other varieties), hares, and gophers (Vereshchagin, 1979: 18–19; Zheleznov-Chukotsky, Chastukhina, 2005), and possibly the mammoths whose bones were found in the Kamchatka valley.

In that period, people settled at two different times on the shore of the reservoir.

The early habitation stage corresponds to cultural layer VII. Radiocarbon dates (Table 1) suggest that this stage lasted from 11,330 ± 50 to 10,350 ± 50 BP or from 13,320 to 12,022 cal BP (Table 2). At that time, these were mainly seasonal fishing and hunting camps, with single- and two-chamber ground dwellings, containing open hearths without stone placement, workshops for the manufacture of stone tools and personal ornaments, and burials. Lithic artifacts included tools for hunting and processing hunting products (bifacial arrowheads and stemmed projectile points, end-scrapers and side-scrapers, piercing-tools, adze-like tools, and knives for carving carcasses). Flakes and laminar spalls without secondary processing, as well as shovels made of bone, were used for household purposes. Symmetric and asymmetric leaf-shaped bifacial tools were used for processing wood, bone, and stone, cutting fish, and making ornaments. Bifacial arrowheads and stemmed projectile points (Fig. 2, *8*), as well as stone ornaments (pendants, beads), are considered to be the markers of this period. As a rule, chalcedony and flint (less often, obsidian and basalt) were used as raw materials. Burials with inventory in dwellings are known; the presence of ocher and ornaments in them indicates the performance of rituals during the burial. Microscopic analysis of ornaments has revealed traces of paints, probably of organic origin (Ponkratova, Gubar, Lbova, 2019).

The late habitation stage at Ushki, corresponding to the Paleolithic to Neolithic transition, lasted from 10,240 ± ± 75 to 9485 ± 275 BP or from 12,225 to 10,131 cal BP (Table 2). It is represented by the finds from cultural layer VI. At that time, probably, a new population came to the territory of Lake Bolshoye Ushkovskoye, which differed in its traditions from the previous one. The area of stationary settlements increased (over 40 dwellings with the population of at least 100–150 persons), designs of dwellings and appearance of lithic inventory changed. The first evidence of dog domestication and works of art in the form of stone polyiconic images and graffiti pertain to this period. Dwelling structures were of three types: dug into the ground (0.3–0.5 m deep), mushroom-shaped, with an area of 12–48 m^2, entrance corridor and a covered hearth; ground dwellings with an area of 8–16 m^2, without entrance corridor, with hearths with slab-lining; and ground dwellings with an area of 40–140 m^2, of irregularly oval, rounded, or sub-trapezoidal shapes, with one or several fire places. Lithic inventory included bifacial arrowheads of willow-like, laurel-like, or drop-like shape, single-edged scrapers on massive flakes, micro-endscrapers, microcores and microblades, symmetrical bifaces, and flakes. Stone was processed using hammerstones—elongated oval pebbles. Markers of this period are traces of microblade reduction—the Yubetsu technique (Fig. 2, *7*). The raw materials were mainly obsidian and flint. This stage is distinguished by beliefs in the afterlife (burials contained grave goods and ocher) and totemic beliefs (a geoglyph of fish sculpted of red ocher on the earthen floor has been discovered), and ritual activities.

The economic life of the inhabitants of the sites in the Paleolithic to Neolithic transitional period was based on procuring various species of animals and birds, fishing, and gathering.

Initial Neolithic

In the history of the Ushki V site, this period is manifested by the evidence from cultural layer V and lasted from 7705 ± 38 to 7642 ± 81 BP or from 8608 to 8297 cal BP (Table 2). This was the time of landscape changes: tundra steppes were replaced by marshy tundra; a mild humid climate dominated (Lozhkin, Matrosova, Korzun, 2004). The first floodplain terrace, with cover sediments

Table 1. **Chronostratigraphic scale of the Ushki sites**

Period	Cultural layer, code, and marker of the age of volcanic eruption*	^{14}C-date, BP	Lab code	Calibrated date, BP ±2σ	Source
Time of the Old Itelmen culture	I b	220 ± 140 235 ± 145	MO-353 MO	266–55 564–122	Dikov, 1977: 65, 75, 242 Ibid.
Time of the absence of inhabitants	SH_1	250 ± 60 (250)	No data	317–305	Ponomareva, 2010: 33
Time of the Old Itelmen culture	I a	675 ± 80	LE-70	806–597	Dikov, 1977: 65, 242
Time of the absence of inhabitants	SH_2	965 ± 16 (950)	No data	938–893	Braitseva, Ponomareva, Sulerzhitsky et al., 1997: 129
Late Neolithic	II	1052 ± 25	MAG-32	1059–996	Dikov, 1977: 73
Time of the absence of inhabitants	SH_3	1404 ± 27 (1400)	No data	1419–1356	Braitseva, Ponomareva, Sulerzhitsky et al., 1997: 129
	OP	1478 ± 18 (1500)	No data	1468–1388	Ibid.
	KS	1806 ± 16 (1800)	No data	1866–1771	Ibid.
	BZ	2300	No data	No data	Braitseva, Ponomareva, Sulerzhitsky et al., 1990: 8
Middle Neolithic	III	2070 ± 190 2160 ± 290 2440 ± 80	MO-354 MAG-5 RUL-07	2491–1562 2809–1516 2723–2346	Dikov, 1977: 84 Ibid. Ibid.
Time of the absence of inhabitants	SH^5	2553 ± 46 (2550)	No data	2645–2487 2758–2647	Braitseva, Ponomareva, Sulerzhitsky et al., 1997: 129 Ibid.
Early Neolithic	IV	4055 ± 75 4200 ± 100 4382 ± 79 5725 ± 90	BINP NSU-1400 MAG-132 BINP NSU-1398 BINP NSU-1399	4828–4406 4971–4498 5090–4836 6679–6315	Data of the author of this article Dikov, 1977: 242 Data of the author of this article "
Time of the absence of inhabitants	KS_2	6007 ± 38 (6000)	No data	6944–6747	Braitseva, Ponomareva, Sulerzhitsky et al., 1997: 129
	IA_B^5	6500	No data	No data	Pevzner, 2015: 132
	KHG	6957 ± 30 (6900)	No data	7853–7694	Braitseva, Ponomareva, Sulerzhitsky et al., 1997: 129
Initial Neolithic	V	7642 ± 81 7645 ± 94 7705 ± 38	AA-457212 BINP NSU-1401 KIA-35662	8598–8316 8608–8297 8557–8413	Goebel et al., 2003: 503 Data of the author of this article "
Time of the absence of inhabitants	SH_{8300}	8340 ± 120 (8300)	No data	9073–9529	Ponomareva, 2010: 33
	PL	8610 ± 60 (8600)	No data	9703–9486	Ponomareva et al., 2013: 1678
Paleolithic to Neolithic transition	VI	9485 ± 275 10,240 ± 75	AA-41387 AA-41386	11,643–10,131 12,225–11,700	Goebel et al., 2003: 502 Ibid.
	VII	10,350 ± 50 10,810 ± 50 10,960 ± 50 11,005 ± 115 11,060 ± 25 11,320 ± 30 11,330 ± 50	GrA-37279 GrA-37278 GrA-37277 AA-41388 SR-7175 UCIAMS-32199 SR-7173 UCIAMS-32198 SR-5810	12,406–12,022 12,856–12,582 12,979–12,654 13,125–12,645 13,098–12,759 13,299–13,117 13,320–13,109	Data of the author of this article " " " " " "
Younger Dryas	"Rusty ash"	11,195 ± 60	KIA-40603	13,267–12,888	Data of the author of this article

Note: ^{14}C-date for the ashes is rounded. For the calendar age, the Calib Radiocarbon Calibration Program (Stuiver, Reimer, 1993; Reimer et al., 2009) was used. Periodization of the geological time was developed using the Blytt-Sernander sequence (Neishtadt, 1982).

*Roman numerals indicate the cultural layer, capital letters without super- or subscript indicate the code, capital letters with superscript or subscript indicate the marker of the age of the volcanic eruption.

Table 2. **Habitation stages at the Ushki sites**

Period	Habitation stage	Cultural layer	Geological time	Climatic periods	Date, BP	
					^{14}C	calibrated
Time of the Old Itelmen culture	Eighth	I b	Late Holocene	Subatlantic	235 ± 145 to 220 ± 140	564–55
	Seventh	I a			675 ± 80	806–597
Late Neolithic	Sixth	II			1052 ± 25	1059–996
Middle Neolithic	Fifth	III			2440 ± 80 to 2070 ± 190	2809–1516
Early Neolithic	Fourth	IV	Middle Holocene	Subboreal	5725 ± 90 to 4055 ± 75	6679–4406
Initial Neolithic	Third	V	Early Holocene	Atlantic	7705 ± 38 to 7642 ± 81	8608–8297
Paleolithic to Neolithic transition	Second	VI	Late Pleistocene to Initial Holocene	Boreal and preboreal	10,240 ± 75 to 9485 ± 275	12,225–10,131
	First	VII			11,330 ± 50 to 10,350 ± 50	13,320–12,022

and volcanic ash, was formed in the area under study (Titov, Kazakova, 1985). As compared to the previous stage, the areas of the sites decreased. Dwellings in the form of ground tent-huts, with hearths without slab-lining but with several stones near the hearth, have been found (Dikov, 1993: 21–22). Lithic industry included products of primary reduction (prismatic cores for producing knife-shaped blades; flakes, and blades), and tools (bifaces, retouched flakes and blades, end-scrapers, pebble tools, etc.). Markers of this stage are obsidian end-scrapers on blades and flakes (Fig. 2, *6*). Obsidian, quartzite, flint, basalt, and sandstone were used as raw materials. According to the tephrochronological findings, a catastrophic eruption and powerful ashfall from the Khangar volcano happened at that time (6900 BP).

Early Neolithic

The period between ca 7400 and 5000 BP was the warmest in the Holocene of Kamchatka (Dirksen, 2017: 35). It was characterized by the spread of alder and birch forests with abundant standing grass (Lozhkin, Matrosova, Korzun, 2004). About 5000 BP, the mild climate changed into cold and dry one, which caused a decrease in the biological productivity of ecosystems (Dirksen, 2017: 35). There is a ^{14}C-date of 4200 ± 100 BP for the Ushki I site (Dikov, 1977: 242). In the Early Neolithic cultural layer IV of Ushki V, finds were located between the ashes of volcanoes KS_2 and SH_5. Radiocarbon dates (see Table 1) suggest that this stage lasted from 5725 ± 90 to 4055 ± 75 BP or from 6679 to 4406 cal BP (see Table 2)*. Dwellings were built on the ground, in the form of tents or huts, with hearths without slab-lining. The settlements had workshop areas and utility pits. The lithic inventory of Neolithic appearance includes: cores (prismatic and conical removals of knife-shaped blades), products of primary reduction (flakes, bladelets), tools (retouched points on blades; bladelets and blades used as knives; fragments of blades with traces of wear, used in insert tools; side-scraper-like tools made of obsidian and basalt, burins, hammers made of sandstone), and fish figurines. Noteworthy are knives in the form of blades with notches, for cutting fish (Fig. 2, *5*). Obsidian, flint, basalt, and rarely jasper served as raw materials. Totemic beliefs were mainly associated with the cult of fish, which was later widespread in the Tarya culture of the Itelmens of Kamchatka (Ponomarenko, 2014). Pottery should be considered the most important innovation of this period. The subsistence strategy of society was based on hunting, fishing, and gathering, as evidenced by the faunal complex, dwarf-pine nuts, etc.

Middle Neolithic (the first stage of the Tarya culture)

As compared to the previous stage, this period in Kamchatka was distinguished by an even cooler climate, and the second (small) maximum in the distribution of forests (ca 2200–1700 BP) (Dirksen, 2017: 36). The chronological framework of that stage is 2440 ± 80 to 2070 ± 190 BP or 2809–1516 cal BP. The inhabitants of the sites of Ushki I–III lived in ground dwellings with an area of about 50 m^2, and in dugouts with wooden walls and roofs, and hearths without slab-lining. Lithic inventory consists of cores (prismatic removals of knife-like blades), products of primary reduction (knife-like blades of various sizes without retouching, with retouching along the edge, and with retouching on both sides), tools (completely retouched inserts, laminar stemmed arrowheads, leaf-shaped bifacial knives, pointed

*The data were obtained using the accelerative mass spectrometer at the Budker Institute of Nuclear Physics of SB RAS.

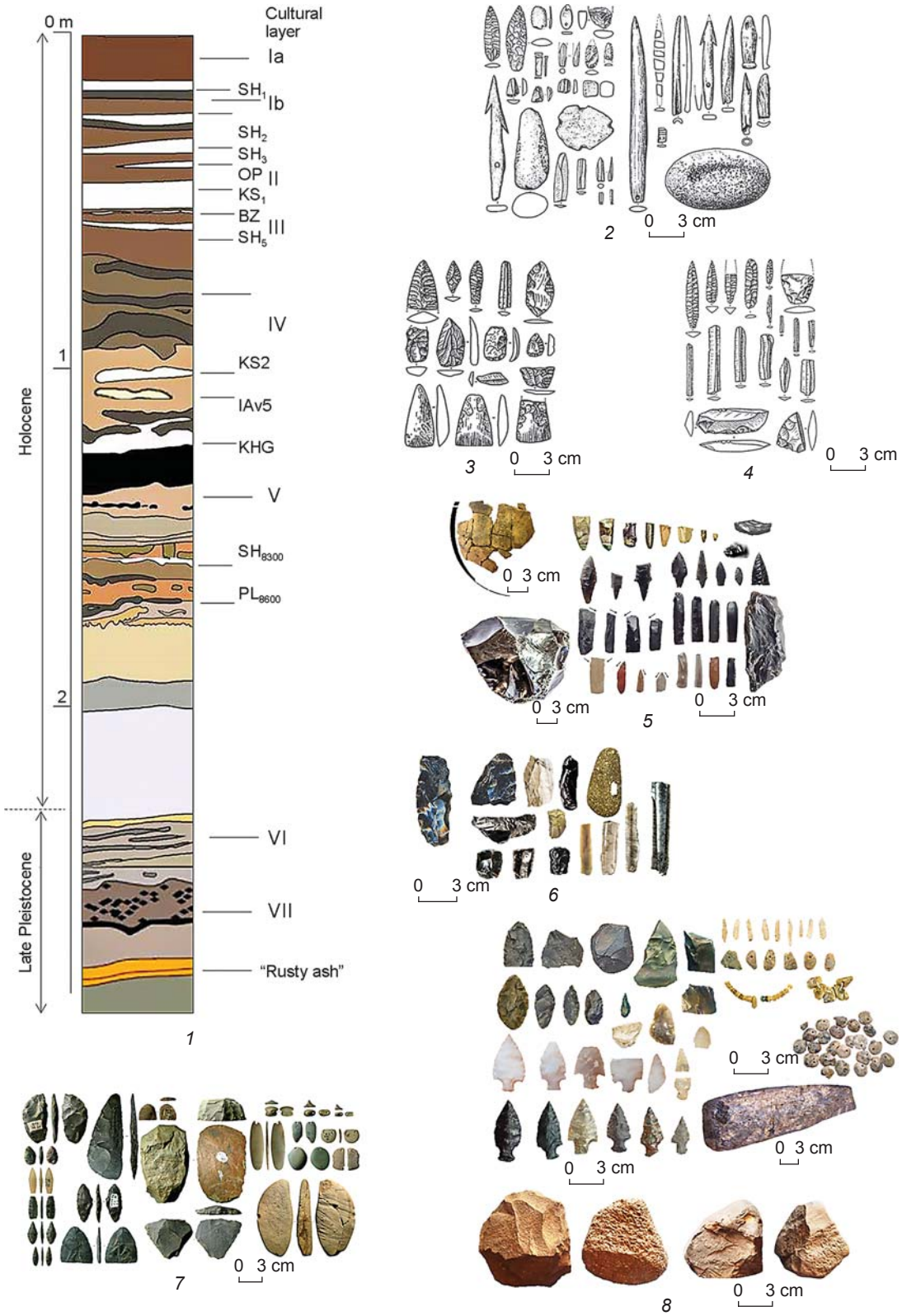

Fig. 2. Consolidated tephrostratigraphy with the markers and indices of volcanic eruptions and cultural layers (*1*); artifacts from cultural layers (*2–8*) of the Ushki sites.

2 – layer I (Dikov, 1977: 272, pl. 10; p. 279, pl. 20); *3* – layer II (Ibid.: 278, pl. 19); *4* – layer III (Ibid.: 277, pl. 17); *5* – layer IV (evidence from the excavations by the author); *6* – layer V (evidence from the excavations by the author); *7* – layer VI (Gómez Coutouly, Ponkratova, 2016: 323, 325, 326); *8* – layer VII (evidence from the excavations by the author).

knives on blades, retouched on one side, end-scrapers with the convex blade, crudely trimmed unifacial convex adzes, piercing tools, side burins on bladelets, and sinkers) (Fig. 2, *4*). Trihedral points with or without tangs, and wooden dishware became widespread. The subsistence strategy of the population during this period was based on hunting, fishing, and gathering (Dikov, 1977: 84; 1979: 113–119).

Late Neolithic (the second stage of the Tarya culture)

This stage (1052 ± 25 BP or 1059–996 cal BP) (see Table 2) corresponds to ground dwellings, possibly *balagans** of the "Itelmen type". Stone trihedral and laminar stemmed arrowheads, side burins, knife-like blades, double-sided retouched inserts, leaf-shaped bifacial knives, polished adzes, end-scrapers with the convex blade, piercing tools, and labrets (Fig. 2, *3*) continued to be used. Unusual cup-shaped rounded pits, lined with four layers of birch-bark, have been found at Ushki I. The paleoeconomy of the population was based on hunting, fishing, and gathering (Dikov, 1977: 61–62, 72–74; 1979: 113–119).

Time of the Old Itelmen culture

According to the chronological model by Dikov (1977: 43), during the existence of the Old Itelmen culture, the Uski I, II sites were populated twice: 675 ± 80 BP or 806–597 cal BP (cultural layer Ia) and 235 ± 145 to 220 ± 140 BP or 564–55 cal BP (cultural layer Ib). The boundary between the two habitation stages is marked by the ash of the Shiveluch volcano's eruption 250 ± 60 BP or ca 1700 AD. These dates suggest that the second peopling of the sites at this stage happened ca 1650–1700 AD. Dwellings with an area of about 120 m^2 were seasonal (winter) structures of the dugout type, and had the side corridor and smoke hole in the roof of the "Itelmen type", which served as entrance, as well as the sacrificial structure and utility pits for food storage. The inventory includes bone knives, a double-sided serrated bone tip of a simple harpoon, leaf-shaped bilaterally processed knives, end-scrapers, prismatic cores, knife-like bladelets, and fishing sinkers with recesses made of pebbles (Fig. 2, *2*). The subsistence strategy of the population at this time was based on hunting, fishing, and gathering. Their totemic beliefs were associated with fishing (Dikov, 1977: 62–65, 74–75).

*A *balagan* is a pile-supported structure suitable for the storage of sun-dried fish and products of gathering in the winter, and winter-time utensils (winter clothing, dog-harness, etc.) in the summer (Istoriya…, 1990: 16, 37–38).

Dwellings whose remains have been found in cultural layer Ia were likely damaged by volcanic eruption. The people who came to this territory (cultural layer Ib) were apparently familiar with the Russian Cossacks. The first Cossack fort was built in 1649 by F. Popov on the Okhotsk coast of Kamchatka; and in 1703, V. Atlasov founded Fort Nizhnekamchatsk in the lower reaches of the Kamchatka River (Alekseev, 1982). The assumption that the local population interacted with the Cossacks is supported by a copper item found in the upper layer of the Ushki II site (Dikov, 1977: 279, pl. 20, 6), as well as by ethnographic descriptions that mention the Ushki locality and the Us Kyg River*, renamed by the Cossacks into Ushki (Krasheninnikov, 1994: 17).

Discussion

Comparative analysis of the inventory under discussion and assemblages from the adjacent territories

The evidence from the Ushki sites, which goes back to the Paleolithic to Neolithic transition, is the earliest testimony on the peopling of Kamchatka. Stemmed points similar to the Ushki artifacts, which are specific chronological and cultural markers of this period, have been found in a number of Late Pleistocene assemblages from the areas south of Kamchatka. These are assemblages of the Suyange site (layer 4, 15,410–15,350 BP) (Lee Yung-Jo, Kim Ju-Yong, 2010) and Kosanri site (Lee H.W., 2010: 42) on the Korean Peninsula; Pirika I on Hokkaido Island in Japan (see (Vasilevsky, 2008: 351)); and Ogonki-5 site (horizon 1, 13,000–11,000 BP) on Sakhalin Island (Ibid.: 140, 353). The evidence from these sites reflect the similarity in adaptation strategies of their inhabitants (predominance of seasonal fishing and hunting camps, combined economy, orientation to fishing, and use of both local raw materials and high-quality ones brought from remote sites). To the north of the area under discussion, the Upward Sun River Site in Alaska (ca 11,500 cal BP) shows similarity to the Ushki sites. Parallels can be seen in lithic inventory (bifaces), the subsistence system of the population (focused on fishing), and burials (burial in dwellings) (Potter et al., 2011: 1061, fig. 4, F, G, H). Stemmed points similar to those from Ushki have also been found in the archaeological complexes of the Arctic zone of Northern America (cultures of the Aleuts, Athabasks, Tuktu/Palis, etc.) dated to 6000–200 BP (Projectile…, (s.a.)).

Some parallels with stone tools from cultural layer VI of the Ushki site (tools made with the Yubetsu technique)

*The name *Us Kyg* is derived from Itelmen *us* or *uskh* 'field, forest meadow', and *kykh* 'sea, big water'.

have been found in materials from Yakutia (the Dyuktai Upper Paleolithic complex, 17,000–13,000 cal BP) (Gómez Coutouly, 2016), the Far East (Amur region, Osipovka culture, 13,000–10,000 BP) (Shevkomud, 2005: 5–10), Sakhalin Island (the Sokol and Olympia-5 sites, 13,000–9000 BP) (Vasilevsky, 2008: 115–121), and Alaska (Swan Point CZ4, 14,000 cal BP) (Gómez Coutouly, 2012)). The earliest stone industries using the Yubetsu technique are known in Japan on Hokkaido Island (Pirika I, Kashiwadai I), and Korea (Suyanggae I, Hopyeong-dong) (Lee Yung-Jo, Kim Ju-Yong, 2010; Gómez Coutouly, Ponkratova, 2016). Parallels between the Ushki finds and assemblages from the above territories suggest that the stone industry of the second habitation stage at Ushki was associated with a vast East Asian-American cultural tradition. The closest proximity of the Ushki evidence from that layer to the earlier assemblages of the Amur region and Japan may have resulted from their genetic unity.

Tools on blades and flakes (end-scrapers, insert tools) from the third habitation stage at Ushki (Initial Neolithic) show similarities to the artifacts of the Novopetrovka culture of the Western Amur region (12,630–8590 BP) (Kuzmin, Nesterov, 2010: 105, 107), and also to the evidence discovered on Sakhalin Island (Ogonki-5, horizon 1, 13,000–11,000 BP, Kostromskoye site, Early Neolithic) (Vasilevsky, 2008: 104, 315, 362) and Zhokhov island (7450 ± 220 BP (LE 4534), 8200 ± 40 BP (GIN 6399), 7940 ± 170 BP (LU 4533a), 7930 ± 40 BP (GIN 6400) (Girya, Lozovsky, 2014; Makeev, Pitulko, Kasparov, 1992)). Taking into account the radiocarbon dates of the assemblages from these sites, it can be assumed that in that period, the territory of the Far East was populated by the groups of people who were most likely moving from the west or south. According to the historical data, in the 18th century, Kamchatka and Yakutia were connected by the Yakutsk-Okhotsk and Okhotsk-Petropavlovsk roads, with a total length of over 2600 km (Kazaryan, 2012). It is possible that this road was known to the local population even earlier. The inhabitants of the territory near Lake Bolshoye Ushkovskoye might have left the site trying to escape from the eruption of the Khangar volcano, and headed north towards Zhokhov Island. They moved from the Ushki sites to Zhokhov Island (about 2250 km in a direct line) most likely by dog sleds. This version is confirmed by dog bones and canine coprolites, as well as fragments of dog sleds, found in a hunting camp on Zhokhov Island (Pitulko et al., 2019). It is possible that the emergence of draft dog breeding in Kamchatka can be dated to the Initial Neolithic, ca 8500 cal BP.

The assemblage from the fourth habitation stage at Ushki finds parallels in the archaeological assemblages of the Sumnagin culture (9th–5th millennium BC) and the early stages of the Early Neolithic Syalakh culture (4870 ± 170 to 3490 ± 150 BC) in Yakutia, containing ceramic vessels of rounded shape, with through holes under the rim, and notches, and showing wide occurrence of arrowheads and burins on blades; the economy was based mainly on fishing (Alekseev, Dyakonov, 2009). Some similarities with the Ushki evidence have been manifested by the Early Neolithic assemblages with tools on blades and flakes, and pottery of the Gromatukha culture of the Middle Amur region (Shevkomud, 2005: 10–11), Mariinskoye culture of the Lower Amur region (Medvedev, 2008), sites on Sakhalin Island (Slavnaya-5, Pugachevo-1, Punkt 3; Starodubskoye-3 (Early Neolithic); Slavnaya-4, etc.) (Vasilevsky, 2008; Grishchenko, 2011). The pottery from the Arctic regions of Northern America, where its emergence was dated to ca 2800–2500 BP, coinciding with the development of an economy specializing in seafood production (Anderson, Tushingham, Buonasera, 2017), may also show parallels to the Ushki evidence.

Dikov suggested searching for parallels to the artifacts of the Tarya culture (Middle and Late Neolithic) found at the Ushki sites, in the assemblages from the sites of Northern and Southern Kamchatka, Chukotka, the Sea of Okhotsk, the Kuril Islands, Sakhalin, Eastern Siberia, Yakutia, and Japan, which, in his opinion, were connected with the ancestors of the Itelmens (1979: 126–127). The sites of the Tarya culture were explored by A.K. Ponomarenko, who observed the continuity of the Tarya culture from 5200 ± 100 BP to the 17th–18th centuries, and identified its local stages and variants (2014: 138–144).

On the names of habitation stages at Ushki

The analysis of new evidence has made it possible to clarify the features in the habitation stages at the Ushki sites, and suggest some new names for these stages.

"The transitional period from the Paleolithic to Neolithic". This renaming (formerly "the Upper Paleolithic" (Dikov, 1977: 47; 1979: 31, 54; 1993)) is based on refined data on the sites of the Final Pleistocene to Early Holocene. Such sites were located on the outskirts of the pedestal of volcanic structure of the Klyuchi group of volcanoes, and not on high terraces, like the Paleolithic sites in the adjacent territories. The lower part of the soil-pyroclastic cover with cultural layers VII and VI is dated to the Upper Pleistocene, for which new definitions of 13,000–10,000 cal BP have been obtained. The lithic industry manifests the emergence of skills in manufacturing and using arrowheads, spears, and adzes, as well as polishing and drilling techniques, corresponding to the Paleolithic to Neolithic transition in the adjacent territories. At that time, people created pit structures (cultural layer VI), probably used floating

devices while transporting raw materials from distant sources; had beliefs concerning the afterlife, performed rituals associated with totemic beliefs, and produced special dyes (cultural layer VII). The subsistence strategy of the population was based on fishing. It is possible that the name of the stage should be clarified with the accumulation of new evidence.

"Initial Neolithic" (formerly "Final Paleolithic" (Dikov, 1977: 58; 1979: 76; 1993)). This renaming is based on the fact that cultural layer V, containing the artifacts from that stage, overlies the deposits of the previous stage. Innovative features include the appearance of tools on blades (end-scrapers, knives) and the spread of insert technology. Draft dog breeding might have emerged at that time, and became typical of the subsequent periods in Kamchatka, where the domestication of dogs probably occurred in ca 11,000–12,000 BP (cultural layer VI) (Dikov, 1979: 60). Later, the use of dogs in harness became widespread among the Itelmens (Istoriya…, 1990: 21).

"Early Neolithic". Dikov (1979: 106) proposed introducing this term. We suggest abandoning the term "Mesolithic", since the data obtained do not correlate with the present-day concepts of the Mesolithic of coastal areas, islands, and peninsulas of the Far East (Vasilevsky, 2008).

"Old Itelmen culture". We suggest abandoning the outdated term "vestigial Neolithic", because during that period, the Itelmen culture already had the features of an ideologically consolidated community (Ibid.).

Conclusions

The comprehensive study of the Ushki V site has shown that peopling of the territory adjacent to Lake Bolshoye Ushkovskoye happened at least eight times in the period between the Pleistocene and Holocene. Identification of criteria for each habitation stage has made it possible to propose their periodization: Paleolithic to Neolithic transition (early (ca 13,320–12,022 cal BP) and late (12,225–10,131 cal BP) periods); Initial (ca 8608–8297 cal BP), Early (ca 6679–4406 cal BP), Middle (ca 2809–1516 cal BP), and Late (ca 1059–996 cal BP or 960–1020 AD) Neolithic; and time of the Old Itelmen culture (ca 806–55 cal BP or 1200–1700 AD). Lithics from the first habitation stage are bifacial arrowheads and stemmed projectile points, those of the second stage are tools on microblades, made with the Yubetsu technique. In the Initial Neolithic, tools on blades appear, inserts become common, and, possibly, dogs begin to be bred as draft animals. The distinctive traits of the Early Neolithic are pottery, prismatic and pencil-shaped cores, and projectile points and burins on blades. The Tarya culture of the Middle and Late Neolithic is marked by trihedral arrowheads and wooden vessels; crude unifacial adzes give way to polished ones, and labrets appear. The seventh and eighth stages are distinguished by the material complex of the Old Itelmen culture.

Parallels with the evidence from the neighboring territories suggest that migration processes that took place in the northeast of the Asian and northwest of the American continents in the Late Pleistocene and Holocene, did not occur simultaneously. The paces and directions of the migrations must have been different in different periods, with the composition of the migrating population. However, the ancient inhabitants of the Kamchatka Peninsula, who left traces of distinctive cultures on the shores of Lake Bolshoye Ushkovskoye, also played an important role in these processes.

Acknowledgements

I would like to thank T. Goebel and M. Waters (USA), P. Grootes (Germany), J. Plicht (the Netherlands), Y.V. Kuzmin (Russia), E.V. Parkhomchuk (Russia), V.V. Parkhomchuk (Russia), and S.A. Rastigeev (Russia) for their help in obtaining radiocarbon dates; and V.V. Ponomareva, M.M. Pevzner, and I.V. Melekestsev for their consultations on identifying volcanic ashes. Special thanks to I. Klausen, M. Weber, and A. Sigloff (Germany) for the joint work in the field and in the laboratory.

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Received March 20, 2019.
Received in revised form March 23, 2019.