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## **Pakul Fort and Problem of Distinguishing of Ladeyskaya Culture**

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*The article carries in scientific turn information about history and culture of medieval tribes of Krasnoyarsk forest steppe which was received in the course of field work in 2008. Authors characterize the results, define cultural and chronological attribute of materials, and reconstruct aspects of economic life of population of ladeyskaya culture.*

*Keywords: archaeology, Siberia, Krasnoyarsk forest steppe, Middle Ages, fort, ladeyskaya culture, economy.*

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### **Introduction**

Insufficiency of writing and ethnographic materials about medieval history of Krasnoyarsk forest-steppe does not allow reconstructing ethnic and cultural processes which happened on this territory without attraction of archaeological sources. For the region little number of archaeological sites with closed complexes is known. It is explained by both specific of soil accumulation in the area, absence of special investigations of medieval sites and destruction of known objects (for example, Ladeyskoye, Yermolayevskoye, Yesaulskoye forts and others). By this reason many problems of medieval archaeology of Krasnoyarsk forest-steppe stay unsolved including the problem of distinguishing of ladeyskaya culture which was put by V. G. Kartsov as far back as 1929 (Kartsov, 1929b). So discovery of each new medieval site containing closed complexes has important scientific significance.

In the article new materials about ladeyskaya culture of medieval population of Krasnoyarsk forest-steppe which was received for excavations of Pakul fort are carries in scientific turn. The fort was found by P. V. Mandryka and I. A. Lysenko in 2004<sup>1</sup>. In 2006 reconnaissance works<sup>2</sup> and in 2008 stationary excavations were made in the course of which 160 square meters were excavated<sup>3</sup>.

### **Materials and methods**

The fort is situated on cape-shape remain of 9-11-metre terrace of left bank of Verhnyaya Podyemnaya river in 3 km to north-east of Pakul village of Bolshemurtinskiy district of Krasnoyarsk range. From northern side the fort is bordered by breakaway to the river and from the east and southern ones – by slope to flood plain (Fig. 1). From western side the cape unites with fundamental bank and its surface fluently rises to 16 meters. Here after the war state farm dug two deep trenches for cattle crossing that let to destruction of part of fort defensive system.

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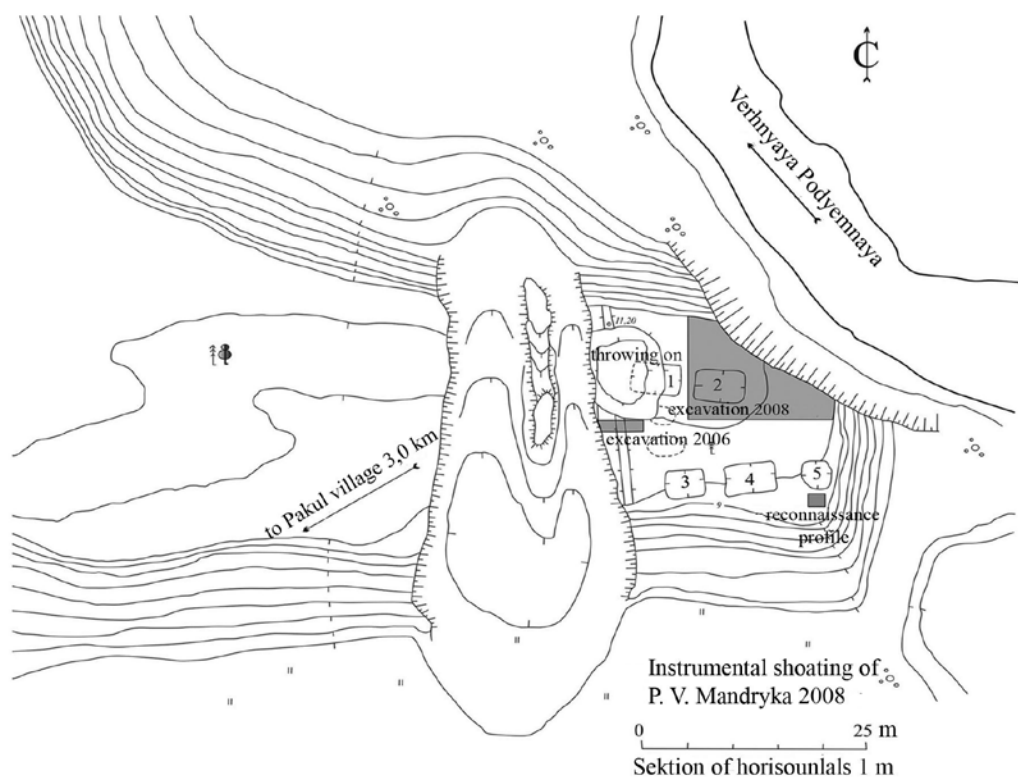


Fig. 1. Topographical plan of Pakul fort with indication of archaeological excavations

However from terrace side in 25 meters from cape edge earth bank 25 meters by the length, 0,4 meters by the high, 0,3 meters by the depth has been fixed. The bank width has not been fixed because of destruction. General number of defensive lines of the fort also has not been defined; it is possible they had been two.

General size of the fort is 25x23 meters; its square is 575 square meters. Five dwelling's pits have been tracked visually on work platform. They are situated along terrace edges by two lines. Two pits have been marked in northern line; three ones have been marked in southern line. All pits have rectangular form with sizes of 3,0-4,0x5,0 meters and 0,1-0,25 meters by high.

Central part of fortification construction and northeast third part of internal fort square where dwelling N2 had been situated were studied with excavations. Two cultural layers were revealed in result of works. There were medieval materials of

the fort in the first layer. They were found in dark-grey sandy loam under the sod. The second cultural layer was fixed in contact of dark and light sandy loam. It contained finds which beforehand have been referred to Nizhneporozhinskaya culture of Early Iron Age (Mandryka, 2008a:163).

### Results

Defensive construction of the fort is deformed bank and ditch. A depth of the ditch was about 1,4 meter. It was filled mixed soil with loam. The bank consisted mixed sandy loam (Fig. 2). Its width was about 3 meters and high was about to 0,4 meters. Small oval pit N 1 with 18x30 cm by size and 10 cm by depth was fixed on western side of bank from side of ditch. Dust of sloping wood with 15 cm by diameter saved in center of the pit which was filled friable dark-brown sandy loam with inclusion of charcoal and pieces of burnt clay. Foundation of wood

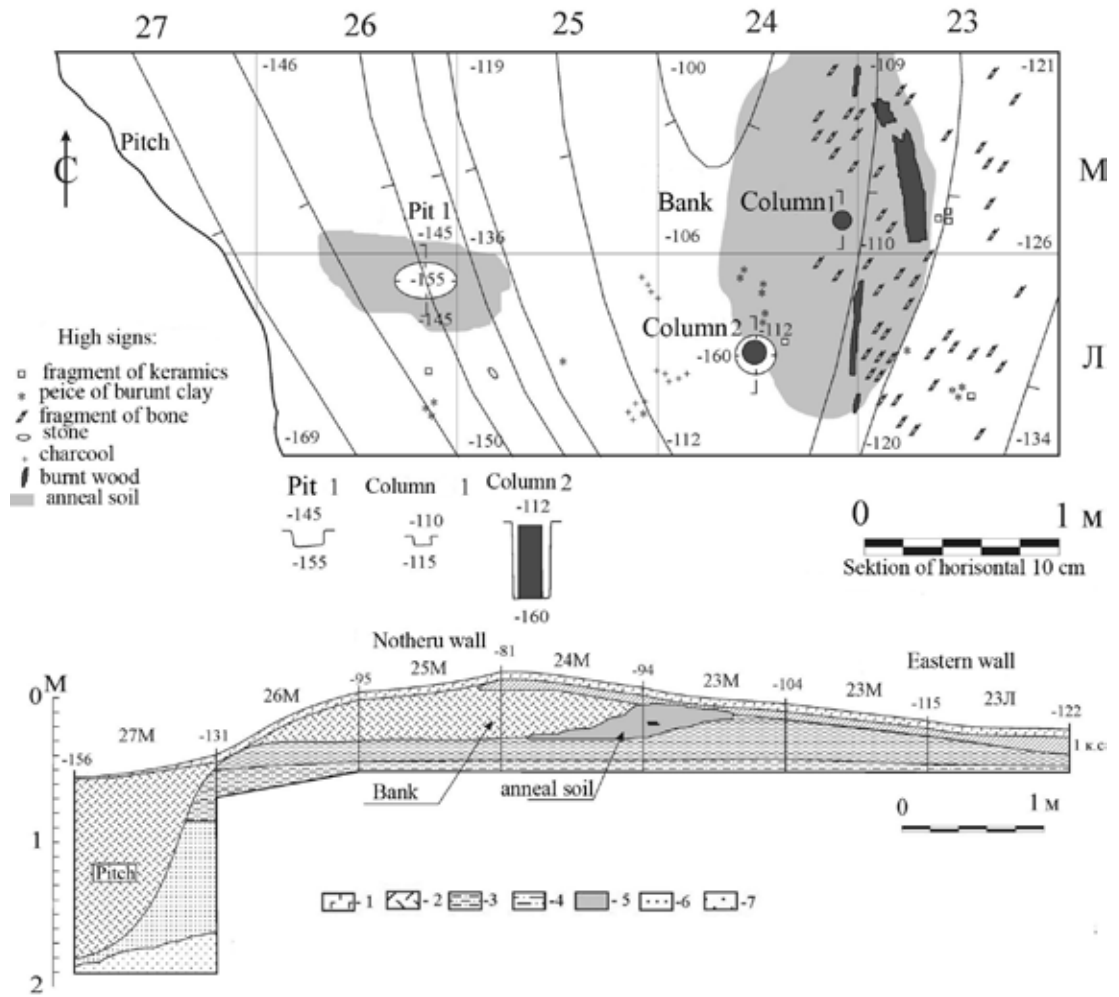


Fig. 2. Plan and section of excavated part of fortification system of Pakul fort. Figures on profile mark: 1 – sod, 2 – mixed sandy loam, 3 – dark sandy loam, 4 – light sandy loam, 5 – annealed red soil, 6 – sand, 7 – loam

column which had been dug in pit of 25 cm by diameter and 50 cm by depth with even bottom was cleared on ridge of the bank among separate charcoals and pieces of clay. Wood column of 12-15 cm by diameter saved in center of the pit on all its depth. The pit was filled mixed light sand. Big number of finds was fixed in foundation of the bank along all its excavated length. Moreover they lay in spot of annealed soil of dark and red color. Western border of finds concourse was sharp. Burnt wood boards standing on ribs were marked there. Length of saved wood fragments was from 10 to 60 cm. Pit with rammed on depth of 15 cm column with 12 cm by diameter was also fixed there. Fragments of split and burnt bones of large domestic animals, fragments of ceramics without ornament, fragments of birch bark were met there. Probably these artifacts are indicative as rubbish which had been thrown out under the fort wall.

Therefore cape fort Pakul from terrace side had been defended by bank and ditch. Small high of the bank and fragments of wood columns on its ridge allow confirming about existence of system of fortification and logs which had been main element of defense. It is impossible to talk about wall construction exactly, but probably it had been palling (Mandrika P. V., Senotrusova P. O., 2007:208). However it is impossible to exclude existence of two lines of defense as it was noted on Ladeyskoye fort (Kartsov, 1929).

The dwelling was remains of deepened pit of sub-rectangular shape 3,8x3,5 by size that corresponds to square about 13 square meters. Walls of the building had been orientated on cardinal points. Depth of the pit was 0,3 meter. Floor of the dwelling was revealed on even bottom of the pit according to density of soil and level of lying of finds and hearth. Entry to the dwelling was not defined. Probably it was on the ground and had been made in passage of wall through threshold. Column pits and remains of wood

overlapping also were not fixed. Ground from the pit in time of its digging had been thrown out to different sides behind dwelling perimeter by ancient builders. Field observations shown perhaps roofing had leaned on horizontal lying logs as it had been in felling. Lower ends of the felling had been poured with soil.

The hearth was round shape 50x50 cm by size. It situated on ground bottom of the pit. Comparatively dwelling walls it had been displaced from center to north. In section the hearth was lens of annealed soil to 3 cm by thickness. Filling of the hearth was dark-grey sandy loam with inclusion of small charcoals, annealed clay and burnt bones. Small fragments of burnt bones and iron peg of 1.1x0.4x0.1 cm by size probably fragments of awl were found for washing of soil from the hearth.

16 fragments of ceramics without ornament which was similar to rest ware found on the site and iron arrowhead were fixed in the dwelling. The sub-rhombus shape arrowhead was flat. It had been chopped of iron list. The sharpest edge of form had been shaft. It saved torn outlines. The edge of feather had been sharpened because of forging. Sizes of the arrowhead are 1.2x4.8x0.1 cm (Fig. 4 d). Fragments of bones of roe deer and large ungulate animal (horse?) and some small pebbles among which certain ones had been split by fire were also noted in the dwelling. Small round pebble 2.4x2.1x0.5 cm by size could be used as tool (Fig. 4 m). Whole perimeter of the stone has traces of intensive polishing which could form in result of using it as polisher. There were more finds behind the dwelling on level of cultural layer (Fig. 3). They are compared with artifacts from the dwelling well. Two surges from the hearth which were noted on annealed soil were also fixed there.

The surge N 1 was fixed in east part of excavation, to the north from dwelling N 5

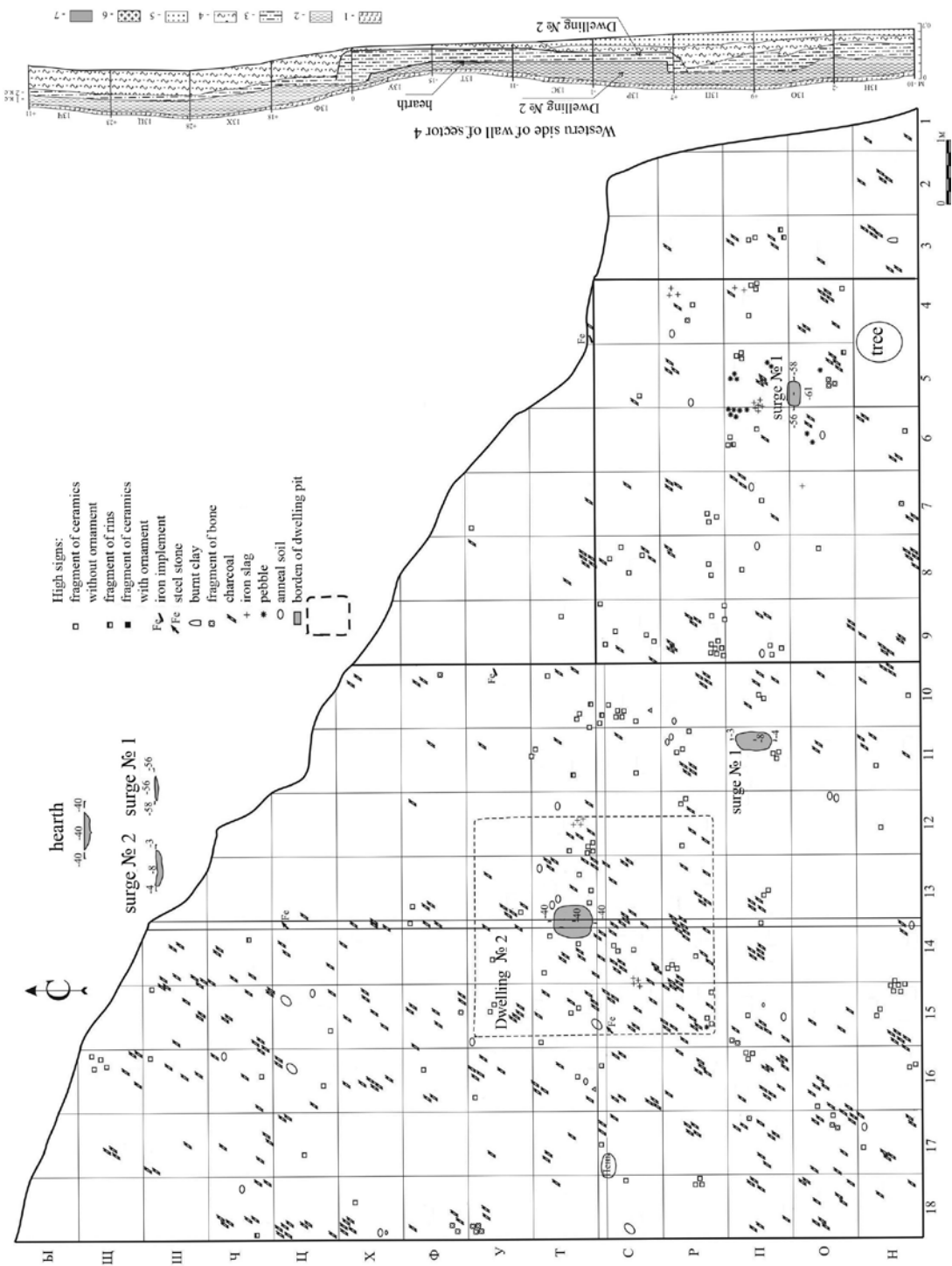


Fig. 3. Plan of the finds of the layer on excavated part of internal square of Pakul fort

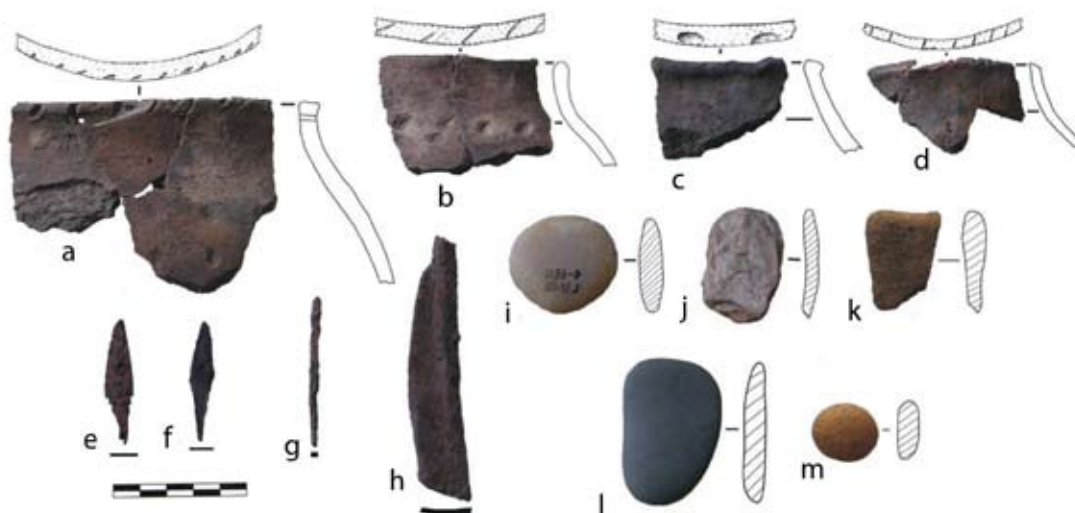


Fig. 4. Finds from Pakul fort: a-d – fragments of ceramics; e, f – iron arrowheads; g, h – iron implements; i, j, l, m – tools for hide treatment; k – steel

where probably it had derived from. Size of oval annealed spot was 45x30 cm. Its section was lens-shape about 7 cm by thickness. Filling was lumpy. It consisted of red-brown loam with inclusion orange and light-brown spots, small burnt bones and charcoals. Small fragment of some iron item 2.0x0.4x0.2 cm by size was found among small burnt fragments undeterminable bones for washing of the filling.

The surge N 2 was cleared near south-east corner of dwelling N 2. It was round form 80x75 cm by size. Thickness of annealed lens was about 15 cm. Pieces of burnt clay and small charcoals were noted in lens-shape sandy loam filling of red and brown color.

Iron implements were noted in the layer. One of them was small peg 6.1x0.5x0.3 cm by size perhaps fragment of awl. The implement had been heavily corroded but its square section was defined (Fig. 4 g). Iron plate with raised plane also has unknown function. Its size is 10.8x2.8x0.6 cm (Fig. 4 h). Arrowhead with flat feather of asymmetrical triangular shape and with broken of end is interesting. Shaft is separated from the feather by three small ledge-thorns. End of

the shaft is bended a little. Edges of the shaft had not been treated and saved torn outlines of chopping from list. Plane of feather is smooth, edges had been sharpened. Size of the implement is 5.1x1.5x0.2 cm (Fig. 4 e).

Ceramic of the layer is presented by 124 fragments. Majority of them (81 %) is without ornament. Found 10 fragments of rims demonstrate 4 vessels. They had been modeled by hand. Sand and grog had been in dough. Traces of rubbing with grass are noticeable on external surface of few vessels. Ware had been burnt on fire in oxidizing ambience. Ceramic is thick, brown. Sometimes black layer is defined in break-in.

Form of the vessels is closed. Body is wide. Bottom according to some fragments had been round. Edges of rims are straight, round or cocked outward. Certainly its plane had been decorated with notches, nail pricks or finger pressing. Shoulder of the vessels also had been decorated mainly horizontal rows of rare finger pressing inside of which nail print had been made (Fig. 4 a-d). Hypothetically diameter of the vessels had not been more than 22 cm.

30 small fragments of clay daub to 3.5x3.2x2.0 cm by size were found in the excavation. And 15 pieces have traces of slag. Their sizes are to 3.7x2.5x0.9 cm. In one case they lay in one place perhaps they were remains of part of clay wall of oven for melting of iron.

Stone tools of the layer are divided in two categories: for hide treatment and metal treatment. Three oval flat pebble without additional treatment fall into first group. Their sizes are 4.0x3.8x0.8 cm, 2.8x4.5x0.4 cm and 5.6x3.6x0.4 cm (Fig. 4 i, j, l). Tracological analysis shown they had been used as polishers for hide treatment (Mandryka et al., 2009). Moreover rectangular steel fragment of small grainsize sandstone of 3.5x2.7x1.2 cm by size was found in fort layer (Fig. 4 k). It saved traces of intensive use-ware. Three saved edge had been wiped very much, have a lot of furrows and scratches. Probably it had been used for sharpening and repairing of blade of cutting metallic implements. Both planes of the stone saved traces of typical polishing and could be used as abrasive for polishing of planes of metallic implements. Traces of polishing on metallic arrowhead found in the dwelling obliquely show on it.

Osteological collection demonstrates presence of broken bones of domestic and wild animals. Bones lay in each square of the excavation. They were found in layer and on floor of the dwelling. Herewith set of them did not differ from one fixed behind the dwelling that is in cultural layer of the fort.

Absolute majority of bones fragments from the layer had belonged to wild animals. There had been roe deer (713 fragments of tubular bones, skulls, teeth of no less than two specimens), beaver (1 bone), and water-vole (fragments of skull) among them. Bone remains of domestic animals had fallen into horse (22 fragments of tubular bones and teeth of no less than two specimens – old and young) and sheep (2 teeth). 64 bones

fragments of large ungulate animal (perhaps horse) also were found in the layer. Similar set of bones remains was found in the dwelling (general number is 194). Majority of them had belonged to roe deer (166 fragments, minimum of two specimens) and 15 bones perhaps had been sheep's. Typical percent correlation of animals bones from whole site is presented in the Fig. 5.

### Discussion

Foundation for determination of cultural and chronological attribute is analysis of received materials. As a whole artifacts which would allow dating the fort was not found. But analysis of all available data and radiocarbon dating allow to determinate time of fort existence within IX-XIII centuries.

Stratigraphical location of the layer in 10-15 cm lower than ground surface shows on it. Presence of flat arrowheads made of sheet iron analogues of which are found in taiga of West Siberia on sites from end of the first millennium A. D. to ethnographic modernity does not contradict such dating (Solovyev, 1987:38). It is known that Selkups have closest arrowheads but larger sizes (Gumuyev et al., 1989: 53). Radiocarbon date which was received with wood from column from the fort bank, 990±80 (SBAS-6786) confirms the age of the fort. It shows that true calendar age after calibration lies within 892-1218.

Cultural attribute of the fort is defined by ceramics since available subject set had been wide-spread in ambience of medieval population of forest-steppe and taiga regions. Ceramics of the fort finds close analogues with materials of Ladeyskaya culture (VII-XIV centuries) in which V. G. Kartsov included Ladeyskoye, Yermolayevskoye and Achinskoye forts (Kartsov, 1928:562). Exactly ceramics from these sites became foundation for allocating the culture. According to works of V. G. Kartsov vessels of closed shape with grading neck dominated.

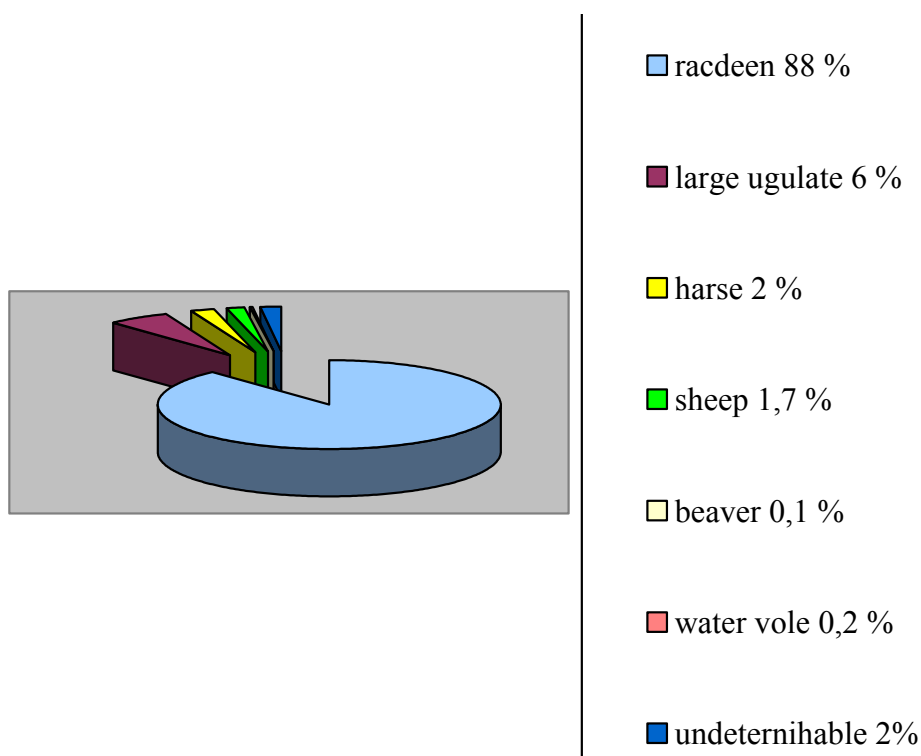


Fig. 5. Typical percent correlation of animals bones which were found in Pakul fort

Vessels had been decorated on edge of rim, neck and shoulders but no ornamented wares are known too. Main elements of ornament had been finger and nail pricks, prints of large-jagged comb, pit pressings and scratched lines<sup>4</sup>. Similar vessels with grading neck decorated with nail and finger pricks were fixed on other sites in Krasnoyarsk and Achinsk forest-steppe, for example, on settlement Ladeyskoye-2 (Mandryka, 1998:71), Karatanova street (Tarasov, Fokin, 2005:65), in Birusinskaya cave, on forts Simonovskoye, Berezovskoye and others (Belikova, 1996:132; Fokin, 2007). Analogues of such ware are known on sites adjacent territories on Kansk forest-steppe and Yenisey Priangarye.

V. G. Kartsov considered characteristic type of sites of ladeyskaya culture in forest-steppe areas was settlement complexes including forts. He noted foundation of economy had been hunting on roe deer and pasture cattle breeding with small part of fishing. Iron, bone, antler and bronze had

been used widely. Formation of the culture was involved by V. G. Kartsov with southern nomads (Kartsov, 1929b:46).

Almost all scientists note significant influence of nomadic nations (kyrgyzs) on culture of aboriginal population of forest-steppe but degree and character of the influence are considered differently. So D. G. Savinov distinguished Krasnoyarsk and Kansk variant of culture of Yenisey kyrgyzs. Herewith penetration of southern nomads on territory of forest-steppe he referred to X century and imputed it to tuvinian population (Savinov, 1989:146). S. M. Fokin keeps other standpoint. He considers penetration of kyrgyzs to northern areas had begun from IX century (Fokin, 2007:145). By main marker of Kyrgyz presence in Krasnoyarsk forest-steppe scientists consider existence of burials with rite of cremation, and also subjects of arms, horse harness and bronze facing of belts with plant ornament (Nikolaev, 1982). Unlike of this



opinion S. G. Skobelev and O. A. Mitko consider it is possible to involve spreading of cremation not only with kyrgyz's expansion but with participation of native population of forest-steppe in military campaigns of kyrgyzs as dependent tribes (Skobelev, Mitko, 2007:217).

As a whole in Kyrgyz time change of ethnic situation in region had led to rise of military tension. In turn it had contributed of appearance of forts which there had not been on the territory. At present Pakul fort is one known fortification settlement which is situated not on Yenisey bank but on its tributary. Herewith layer of the fort contains pure complex of ladeyskaya culture.

Taking into account small size of cultural layer it is possible to suggest the settlement had been seasonal or inhabited in small period of time. It should be noted some particularities of the material which define purpose and character of activity of fort inhabitants. By square the settlement had not been big. It had consisted of five dwellings to 13 square meters. Because of this it is possible to suggest number of its inhabitants had not exceeded 20 people. The place for building of the fort had been chosen very successfully: on the cape surrounded by steep lowering from three sides. Whole free from the forest open wide valley of the river had been looked through from the cape. The fort had been built by ladeysk people in encirclement of accustomed for them steppe space. It is possible to consider that situated on the most northern periphery of the culture area the fort had been outpost for defense of territories of encroachment of northern taiga neighbors.

Arrowheads are interesting. They had been made carelessly as if it had been in a hurry. They had been cut of iron list and only feather that is their striking penetrating part had been treated. It can be explained that deficit of arrowheads had been experienced and insufficiency of arsenal had need its fast renewing in time of military actions. Way out had been found in making arm

(arrowheads) of available materials which had become forged iron list. Flat arrowhead could be easily cut of it but hurry had not given time for correction the form and care of base polishing. The time had been only for sharpening of the feather and making sharp edges of penetrate part. Such arrowheads had been effective in hunting. In that case hurry of making arrowheads can be explained by short limited periods of hunting, for example, in the period of roe deer migration when hunting on it had been more effective.

Hunting of roe deer had occupied significant place in life of the fort population. Prevalence of bones of that animal on the site is shown it. It is explained roe deer had been not only wide-spread wild ungulate animal but the most convenient object of hunting. According to data of zoologists round-up hunting in which not less than ten hunters take part is the most effective way of roe deer catching (Timofeeva, 1985:204). It is confirmed by ethnographic materials where round-up hunting of kachints, sagayts and beltir was shown. In result to 100 specimens it could be killed. Moreover such hunting could last for 3-4 weeks (Potapov, 1957:186). It is important to notice that roe deer had played big role in life of native population of Krasnoyarsk forest-steppe in all times up to ethnographical modernity. Kachints had had special arrows with iron head of chisel-shape «kii ok» for hunting on this animal (Potapov, 1957:184). According materials of G. F. Miller meet of roe deer had been main feeding ration of kachints. They had sewed clothes, shoes and made utensil of its hides (Potapov, 1957-190). Important place of roe deer in economy of tribes of ladeyskaya culture is confirmed by archaeological materials. Significant number of bones of that animal was found on Ladeyskoye fort (Kartsov, 1929:46). Moreover finds of roe deer antlers with traces of treatment are known on settlements of the culture: on Karatanova street (Tarasov, Fokin, 2005:60), in Cholpon

grotto (Mandryka, 1992:133), on Ladeyskoye fort (Fokin, 2007:182, tab. 9).

Except hunting on roe deer cattle breeding had played important role in economy system of population of Pakul fort. Finds of sheep's and horse's bones are shown on it. Valley of Verhnyaya Podyemnaya River is good pasture land. It is covered by wet flood plane meadows grass of which is big feeding ration for cattle. These places are still being used by local inhabitants for free cattle herding and mowing. According to information of G. F. Miller settlement of arints had been situated on big meadow near Podyemnoye village (Miller, 2005:183). They had bred horses, sheep and large-horned cattle (Dolgih, 1960:229). Obviously possibility of breeding had attracted here and more ancient karasuk population whose sites are also known here (Mandryka, 2008b). Therefore the valley of Verhnyaya Podyemnaya River had been available for pasture breeding since antiquity and ladeysk population had used this ecological niche. And it had been convenient to control replacing of cattle around the wide flood plane from situated on the high cape Pukul fort.

Traces of fishing on the fort were not fixed. It can be explained that the river is not rich by fish and the fort inhabitants had not considered fish important source of food. Such cultural particularities are noticed for some nomadic cattle breeders, for example, kachints who had not eaten the fish considering it «bad» food (Potapov, 1957:186).

There are not direct witnesses of collecting in materials of Pakul fort. It could play secondary role like, for example, kachints and arints had used cedar nuts, roots of lilies (Potapov, 1957:186).

Question about occupation of population of ladeyskaya culture metallurgy stays unsolved. Had it been local melting of iron or external coming of used iron implements? Melting ovens were not found in time of excavations of Pukul fort, but

presence in the layer pieces of burnt clay daub and iron slag allows suggesting skill of ladeysk people to make iron. Fragment of the steel and treated metallic implements talk about skills of hot and cold treatment of finished iron subjects.

From handicrafts of the fort inhabitants it should be noticed treatment of hides with pebble scrapers, hand modeling of ware and wood treatment.

### **Conclusion**

Therefore economy of ladeysk population of Pakul fort had differed complex system of providing. It had combined producing and appropriating kinds of economy. Base of providing had been cattle breeding and hunting on middle ungulates (roe deer). Moreover they had taken up collecting, hide and wood treatment, used metallic implements and ware. This system of economy had been greatly accommodated to local conditions and met main needs of resettled from forest-steppe area breeding population.

It is important to notice that excavations of Pakul fort for the first time allow studying of settlement of ladeyskaya culture. Received materials allow increasing area of known sites of ladeyskaya culture, completing existence ideas about cultural genesis and economy of that population lived in Krasnoyarsk forest-steppe in Middle Ages.

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#### *Abbreviation:*

LA SFU – Laboratory of archaeology, ethnography and history of Siberia of Siberian federal university

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