

Archaeological and ethnographic data for fishing structures from northeastern Europe to Siberia and the evidence from Zamostje 2, Russia

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ABSTRACT: Finds of prehistoric fish-traps are well-known from the large territory of the former USSR, from the Baltic region up to the Ural mountains. These finds are closely linked with areas of intensive archaeological investigation of sites in wet conditions: in Baltic region – Sarnate, Apora, Shvjantoji 1A, 2B, 9; in Central Russia – Sakhtysh 2, Lugovskoyi torfjanik; in Northern Russia – Vis. All these finds are dated to the period from Middle/Late Neolithic to Bronze Age. The types of construction were in general the same: conical-shaped basket from split pine pieces, fixed by bands of bast. Inside the first large basket was usually a smaller basket with open entrance. The archaeological context of fish-trap positions on the sites shows large differentiation. On some sites, fish-traps were found in former river courses; in other places they occur on the habitation area near dwellings or other structures. However, according to ethnographic data from the forest zone of European Russia, the fish-traps were only one part of the complete system. This consisted of one or two lines of piles in the bed of the river. The fish-traps were mounted on gates left in the lines. Such lines of piles were found on the Shvjantoji 9 site, but the fish-traps were destroyed. The excavation of the newly-found site Zamostje (Upper Volga region, Central Russia) has produced this type of construction. Another distinctive feature of this find is that the fish-traps were found in two samples lying close to each other. The internal part of fish-traps was full of fish skeletons. Archaeological material as well as ¹⁴C dates these finds to final Mesolithic times: 7200BP.

Introduction

The remains of fishing structures (fish-trap, fish-fence) within the border of the former USSR have been found over a large territory from the Urals to the Baltic region: in Latvia – sites Zvidze, Sarnate, Apora; in Lithuania – numerous sites near Shvjantoyi village; northern part of Russia – sites Sakhtish and Podzorovo. The chronological range of these sites is wide too: from the beginning of the Neolithic till the beginning of the Iron Age. (Zvelebil 1981 provides an English-language background for some of these sites – Eds)

However the study and interpretation of these finds very often has a lot of problems owing to a number of reasons such as severe damage, movement of objects from their original position, etc. In some cases it is quite possible to mistake the results of animal activity for artificial constructions. One way to help avoid possible mistakes over the newly-found fishing constructions at Zamostje 2 is by careful analysis of archaeological and ethnographical evidence. This analysis allows us to find the common features of fishing constructions of ancient and modern hunter-fishermen.

Latvia

SITE ZVIDZE, EASTERN LATVIA, LAKE LUBANA VALLEY: On this site remains of fish-fence and fish-traps were discovered by I.A. Loze (Loze 1986). The site is located in the periphery of a moraine plain on the western slope of the ancient Lubana Lake, where the surface of the undulating plain gradually passes over to the flat Lubana lowland. By ¹⁴C-dating (6535±60 BP (TA-862); 6350±60 BP (TA-1746)) and pollen analysis the cultural layer with fishing structures is dated to the early Neolithic period.

The remains of a fish-fence were found 1.2m from the surface in a layer of decaying organic matter which penetrated in the early Neolithic cultural layer (peat with charcoal) 60cm thick. The fish-fence was built 6m away from the ancient shore-line of the boggy lake Zvidzes, in shoal-water. Loze suggests that the fish-fence stretched for several dozens of metres along the coastal zone of the lake and was set up in spring season during pike spawning. The components of the fish-fence consist of horizontally lying poles and vertical pegs. On both sides of the fish-fence lie fish-

traps made from pine splinters (i.e. split roundwood) and willow twigs. The frame of the fish-fence consists of three rows of pegs vertically driven into silt. The diameter of pegs was from 5 to 8cm. Loze thinks that two rows of pegs were actually the walls of the fence, and the third one supported the complete construction. Between the rows the builders laid four layers of long poles made from elm and willow. The separate splinters and bunches of twigs were driven through the poles at a slight angle. The remains of nets and wooden hooks were also found during recovery of the poles.

The preservation of fish-traps was quite different, namely they were represented by concentrations of splinters. The remains of four fish-traps were recovered on the site, but only one was in good state. This fish-trap was partly destroyed and consisted of two parts, which the author thinks formed the entrance part of a fish-trap consisting of the body made from splinters and internal funnel made from thin twigs of 1-2cm diameter. The body consisted of 10 rows of splinters and one row of twigs. The upper layer of splinters overlay the row of twigs. The dimensions of splinters ranged from 1 to 2cm with rectangular and square cross-section.

A large number of fish vertebrae and gills (pike) were found among the splinters. In one of these fish-traps the bones of 16 pike were found (Loze 1986, 44).

SITE SARNATE, WESTERN LATVIA, C.2.5KM FROM BALTIC SEA SHORE LINE: This site was excavated by L.V. Vankina just after World War 2. The site is located in the boggy valley of lake Sembas. During the excavations the remains of 20 dwellings and 6 fish-traps were found. The site is dated to the middle Neolithic period.

All the fish-traps were made from splinters of 1-2cm wide and 0.5cm thickness. Only two were well preserved. The first one made from splinters 2.5m long and laid near one of the dwellings. The splinters were bound by bast in three places. Fish-traps were of conical shape, one narrow end bound by bast and the other a wide open entrance.

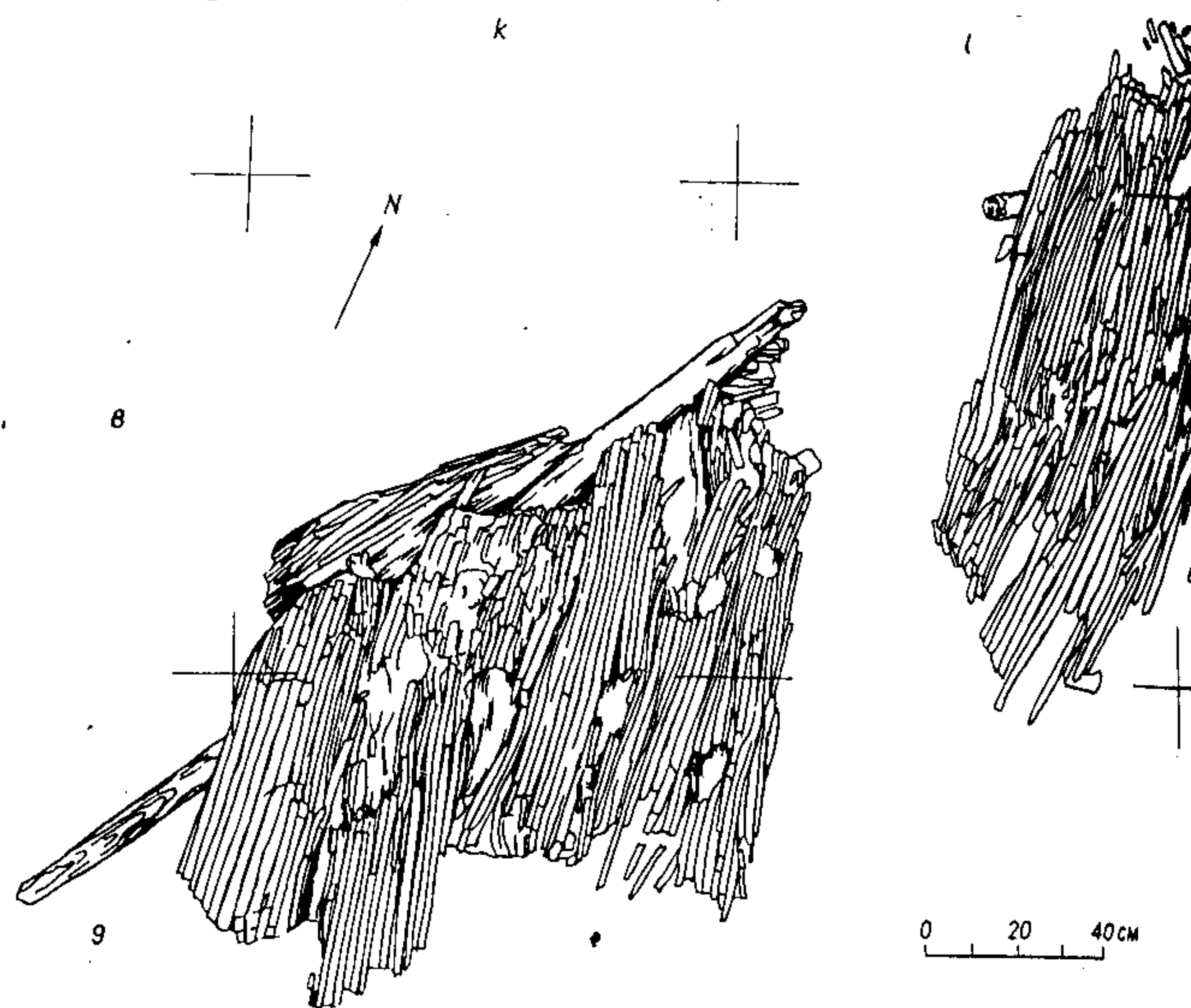
The second fish-trap, located near the first one, was broken into two parts. A wide band of bast linked the splinters of the biggest piece in two places. Probably this object had an internal funnel, because outside the wide band of splinters there was another one, more narrow and linked by bast also (Vankina 1970, 93-94).

SITE ABORA, EASTERN LATVIA, LAKE LUBANA VALLEY: This site was excavated by I.A.Loze in 1964-1971. The site lies on the right bank of river Abora (Lubana lake lowland), on the ancient slope of the hill. The cultural layer dates to the late Neolithic period (3870±70BP LE-671; 3860±100BP LE-749); (Loze 1979, 121).

The remains of three fish-traps were found 1m deep in peat and layers of decaying organic matter, as three clusters of splinters bound by bast. The first was 0.80-1.15m long and consisted of splinters laid in three layers, between which a sharpened peg of 1.88m length lay together with broken pieces of another. The splinters of the second horizon lay perpendicular to those from the first and third horizons. All splinters were bound by bast in distance 13-18cm (fig.24.1).

The remains of the second and third fish-traps were found on the same part of slope to the east from the first one and had dimensions of 1.5 x 0.75m and 0.6 x 0.5m. They were also made from bound splinters.

It is suggested that all three pieces of fish-trap were originally part of one construction and only later, because of natural reasons, was this destroyed and the pieces moved from their original position (Loze 1979, 21).



Lithuania

SITE SHVJANTOJI (SVENTOJI): The finds of fishing structures and traps in the territory of Lithuania concentrate on the sites investigated by R.K. Rimantene near the village of Shvjantoji on the Baltic coast of Lithuania. In Neolithic and Early Bronze periods the sites were located along the shore of a maritime lake or lagoon. Excavations have shown that this region was settled during the Neolithic and the beginning of the Bronze Age (Rimantene 1979; Rimantiené 1992).

Fig.24.
fish-traps
Abora
1979.

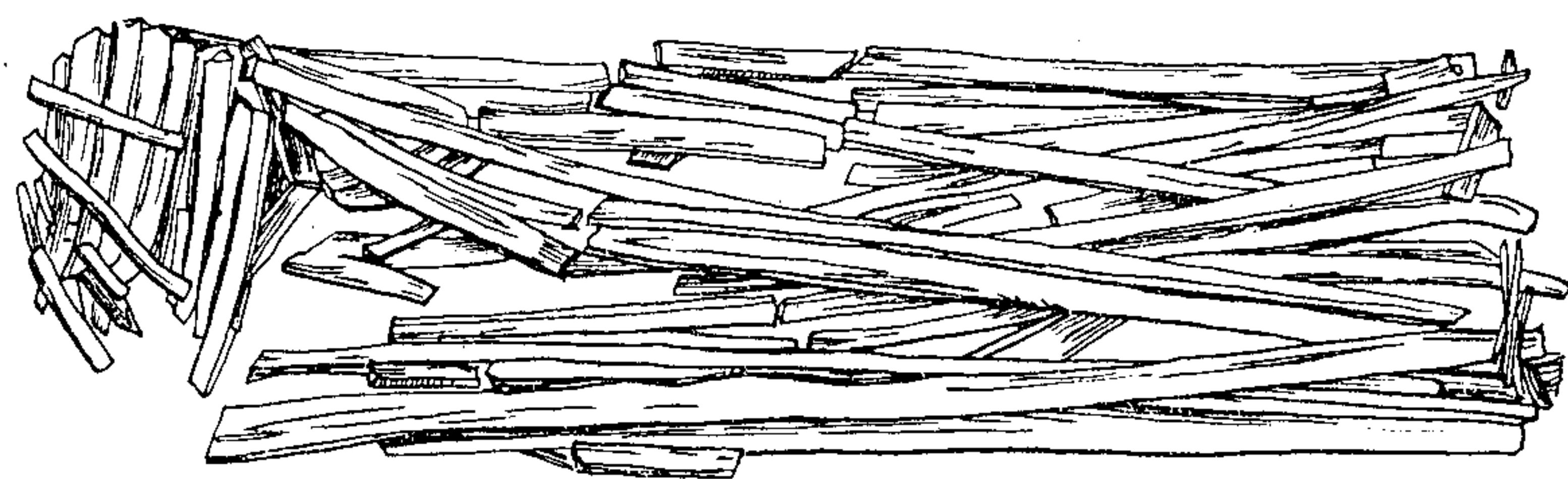


Fig.24.2: Remains of fish-traps from site Shvjantoji 2B. From Rimantene 1979.

All finds of fish-traps were divided into two groups: 1) Fish-traps from pine splinters of 2-3cm width bound by bast (fig.24.2). These objects were usually made with a narrow end, which was covered by a special lid. 2) Fish-traps made from nets with a wooden frame (fig.24.3). The first type is represented on the early Neolithic site Shvjantoji 2B. Here the remains of fish-traps from splinters had a lid of 10cm in diameter on the narrow end (fig.24.2). Site Shvantoiy 1A (Late Neolithic-Early Bronze Age) has revealed the remains of a fence surrounding the internal part of the settlement. Three fish-traps were found near the fence. The first trap (80cm length and 20cm width) consisted of two layers with a flat pebble of 5cm diameter between them, which probably covered the end of the trap. The second and third objects were seriously damaged and had the same structure as the first one (Rimantene 1991, 79).

On site Shvjantoji 9 (Late Neolithic-Early Bronze Age) on the place where the former lake connected with the sea through a small river, a complete system of fish-fences was discovered. The common length of construction was about 40m, the shape slightly arched. The fish-fence began from the northern shore of the ancient channel and reached its centre. In the middle of the construction, gates

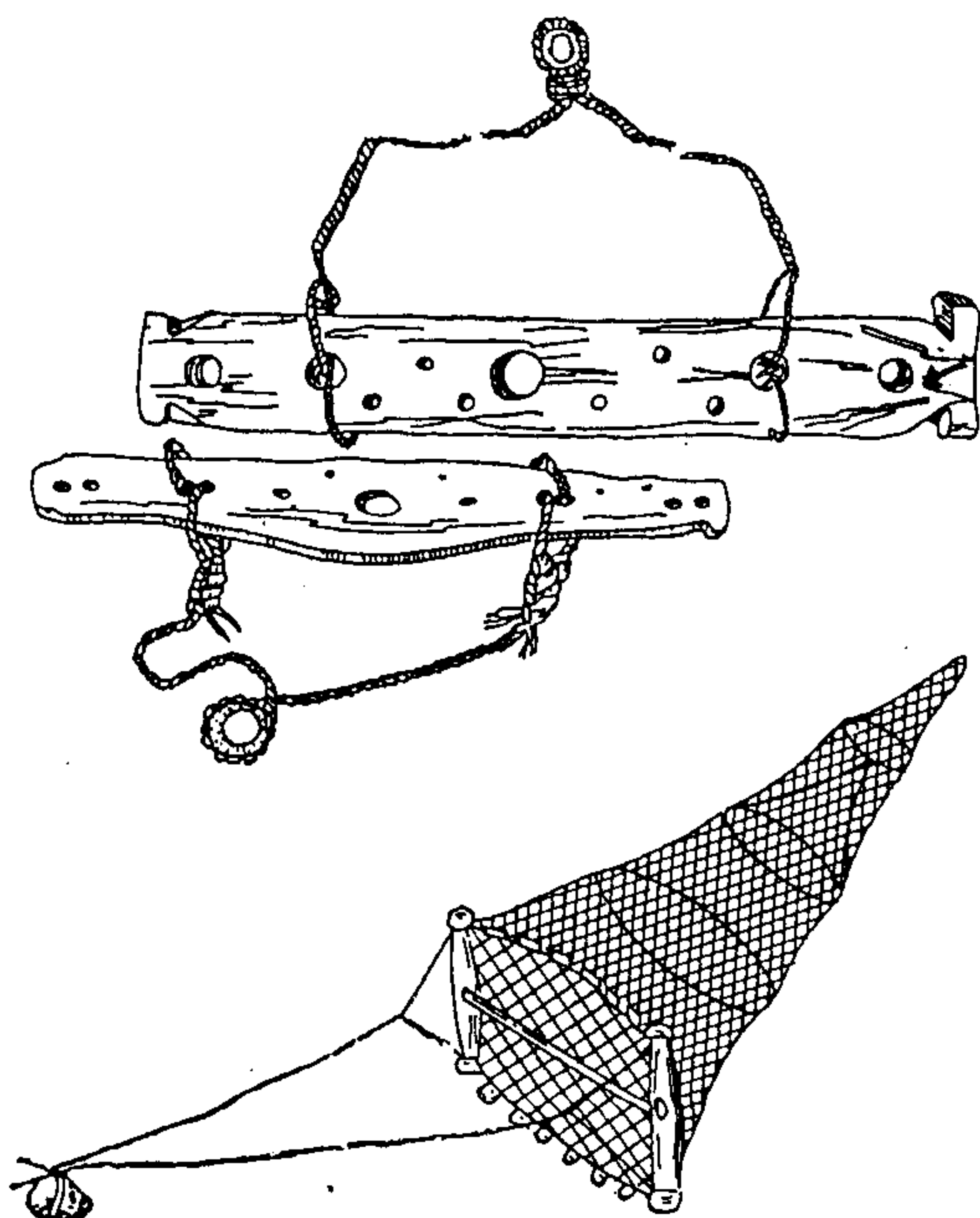


Fig.24.3: Example of fish-traps from nets with wooden frame. From Rimantene 1979.

for fish-traps were left. The components of a fish-fence consisted of two rows of pegs driven into the channel bottom with the pegs located close to each other in the central part and more rare to the ends. The internal space of the fish-fence in the central part was filled up by big pieces of bark, and to the ends long thin poles replaced bark pieces. The pegs (8-10cm diameter) were of different lengths, 1.20-1.47m, however their tops were on the same level. For better fixing of the pegs they were linked with long (2.60m) transverse beams, supported by planks. Near the central gates of the system a number of transverse thin twigs and bunches of splinters were found, possibly the remains of fish-traps (Rimantene 1980, 74).

Fish traps of the second type were found on the site Shvjantoji 2B (two examples). The frames to hold open the mouth of the traps were made from twigs 1.5cm thickness. The net from lime bast was bound directly on the ribs of the frame by fisherman's knot (Rimantene 1991, 79).

North European Russia

SITE VIS 2, RIVER VICHEGDA BASIN is situated on the peat-bog of that name in Lake Sindor lowland. Here G.M.Burov discovered the remains of a fish-fence made from a large number of poles. The construction was built in a former lake and consisted of pegs driven vertically into the lake bottom, supported by transverse planks fixed between pegs. The materials from the excavation dated this site to the early Iron Age period, in the second millennium BC (Burov 1969, 133).

SITE MARMUGINO (RIVER UG NEAR THE CITY UST'UG VELIKY): Excavations of two peat-bogs by Burov revealed the remains of fish-fences in deposits of clay and decaying organic matter at a depth of 2.8-3.5m from surface. Both constructions were built from hurdle structures made from three layers of split rods 2.20m length bound by bast. This site has been dated by ^{14}C analysis to 2570 ± 60 cal.BC (Burov 1969, 132-134).

Central Russia

LUGOVSKOI PEAT-BOG SITE (UPPER PART OF SVIJAGA RIVER, NEAR CITY ULJANOVSK): Here a large number of sharpened pegs made from elm and alder were found at a depth of 2.45-2.50m in peat sediment (fig.24.4). The pegs were laid in a horizontal position with direction NW-SE. Only one sample was driven into the bottom at a slight angle (Burov 1972, 34-40).

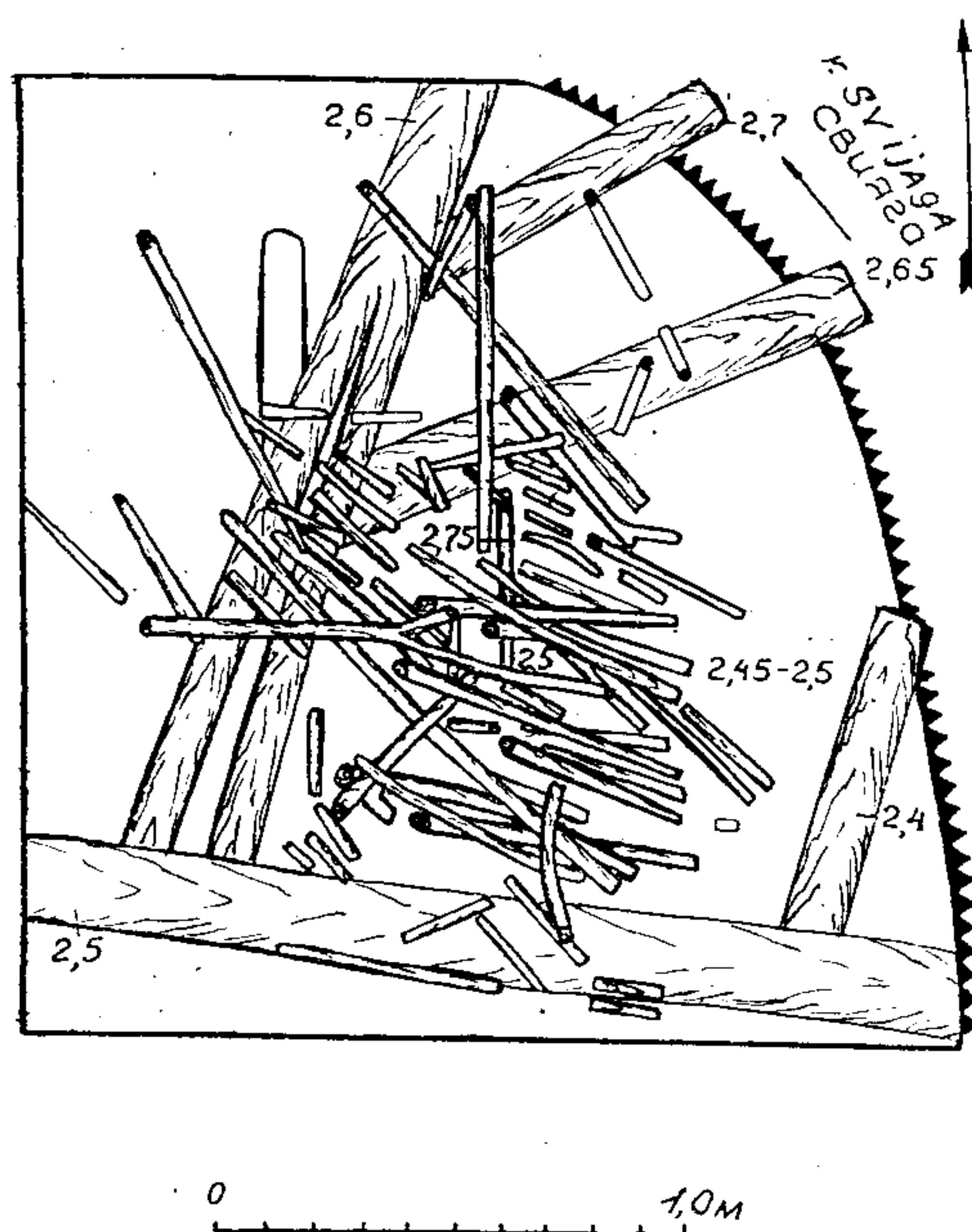
SITE SAKHTISH, UPPER VOLGA BASIN (NEAR THE LAKE SAKHTISH) has been excavated over a long period by D.A.Krajnov. The excavations of the site revealed a large specialized dwelling with exit direct to the local river, and fish traps located near and inside the dwelling. The site and the dwelling are dated to the Middle and Late Neolithic periods; however, the finds of fish-traps are linked with the Late Neolithic.

The first fish-trap made from rectangular splinters was found near the exit from the dwelling (1.30-1.40m deep from surface), length 1.50m, width of trap entrance 0.50m and on the narrow end 0.20m. The direction was from south-west to north-east. The second one, partly destroyed, lay in the north-east corner of the dwelling near the exit. The length of preserved piece was 0.78m, and width 0.40m. The body of the trap was made from rectangular splinters bound transversally. The third object found in the south-west corner of the dwelling had a length of 2m. But the excavator thinks that probably it was a rush mat (Krajnov 1991, 149).

SITE PODZOROVO, UPPER COURSE OF VORONEZH RIVER, Late Neolithic Period. On site at a depth of 2.2m, V.O.Levenok has excavated a cluster of parallel pine splinters. These remains had dimensions of 2.50 x 3.00m. Each splinter was of 1cm width and 0.5cm thickness and was separate from the next by 0.5-1cm. As the author wrote 'this construction is very similar to the side detail of the modern fish-fence' (Levenok 1969, 88).

General traits

The above examples allow us to determine the common features in the finds of ancient fishing structures. First of all, all fish-traps were made from splinters of coniferous trees (namely pine). In some cases the conical shape of the objects could be discerned although the vast bulk of materials consisted of shapeless artefacts. Sites Zvidze, Shvjantoji and Sakhtish revealed traps where splinters were bound by bast or fixed by transverse splinters. Only three objects from Shvjantoji sites had lids on the top part of traps. Another remarkable feature was revealed on the traps from Abora site, where sharpened pegs lay under the rows of splinters that could be explained if the traps were tied to these pegs. The presence of large amounts of fish bones inside some of the traps (Zvidze site) could be regarded as direct evidence of the fishing character of the objects.



The second essential point to show the character of the objects is their position on site. It is obvious that these finds should be linked with river or lake sediments. Two cases (site Zvidze and Shvjantoji 9) show this situation, which is augmented by the direct links with fish-fences. On these sites the complete system consisting of fish-fence and fish-traps was traced. The construction features of both fish-fences are almost the same: two-three rows of vertical pegs infilled with horizontal poles, twigs and pieces of bark. Probably the same type of fish-fence was found on the sites Vis 2 and Marmugino. The discovery of traps near dwellings (sites Sarnate and Sakhtish 1) could be explained as repairs or uncompleted works.

A separate question is the possibility of mistakes in the interpretation of such objects. Thus, during the excavations of peat-bog sites some scholars (V.V.Sidorov and S.V.Oshibkina) have observed an interesting phenomenon when, under the pressure of sediments, complete pieces of pine roundwood have split into a number of thin splinters. Such bundles of splinters give the impression of an artificial construction. In our opinion the same case was met by V.P.Levenok on the site Podzorovo, where the studied remains were found without any binding or other links between the splinters. The find interpreted as a fish-trap inside the dwelling on the site Sakhtish is doubtful also. But the author had the same doubts as to the interpretation (Krajnov 1991, 149).

The second possible mistake happens when we regard as artificial objects the results of animal activity. Foremost is the confusion caused by the construction activity of beavers,

which for raising the water in a river build a real dam. In this case the wood used by beavers has similar sharpened points as the wood used by man. In our opinion this mistake was probably made during the excavations on the Lugovskoi peat-bog, where the cluster of sharpened poles without the distinctive features of fish-fences were regarded as a construction of ancient man. (Editors' note: beaver facets can, however, be distinguished from those left by a stone or metal axe-blade.)

Ethnographic evidence

Ethnographic sources show that fishing with fish-traps and fish-fences was widespread all over the territory of European Russia and Siberia (fig.24.5). Thus, in the book of the famous Russian researcher D.K.Zelenin *East Slavonic Ethnography* we can find the following description of fish-traps: 'they make from thin twigs or net. They consist of two cones: the big one and another smaller which put into the big one. The tools of this type differ each other by the details and materials. Some of them produced from willow twigs...North Russian fishermen sometimes cover the internal surface of fish-trap by bait for fish...But the most popular is another method when in the river they put a fence with gate in the centre for fish-traps...' (Zelenin 1991, 103).

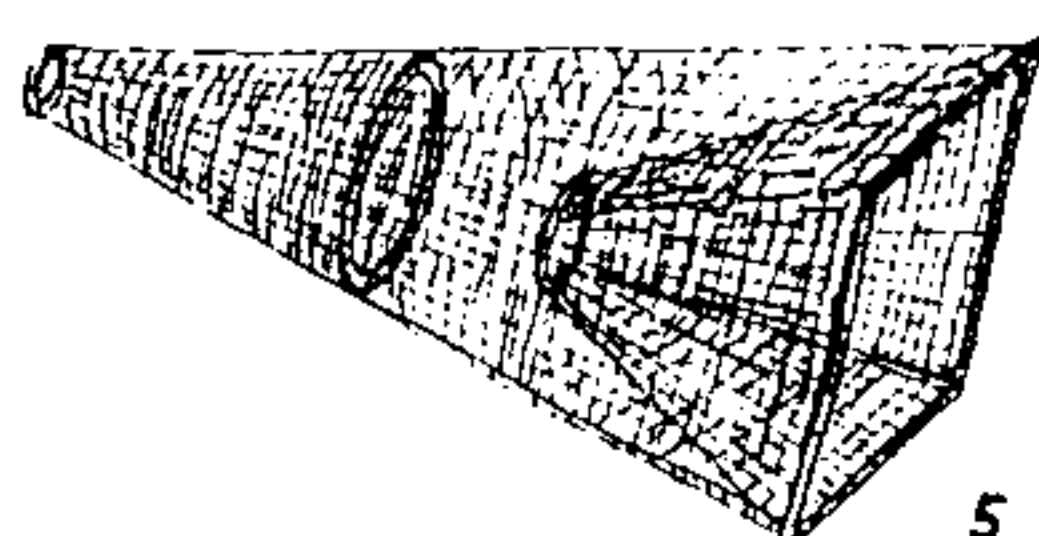
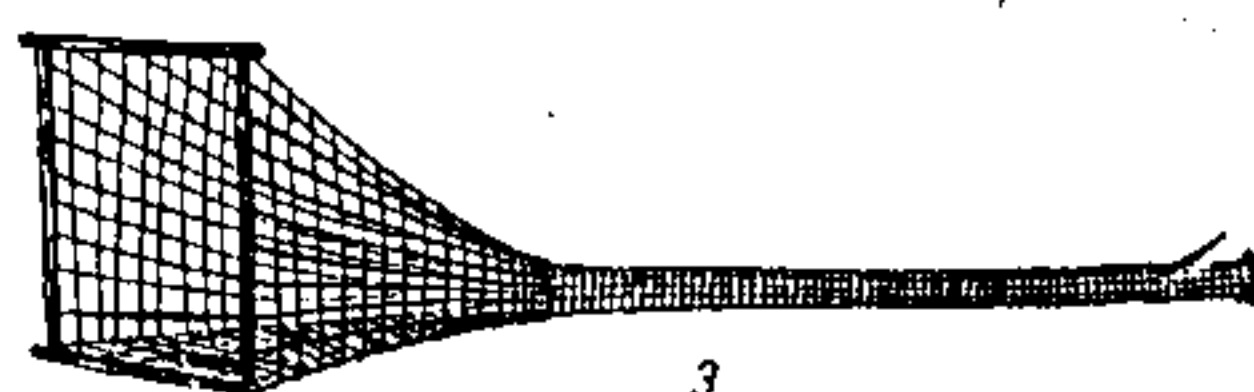
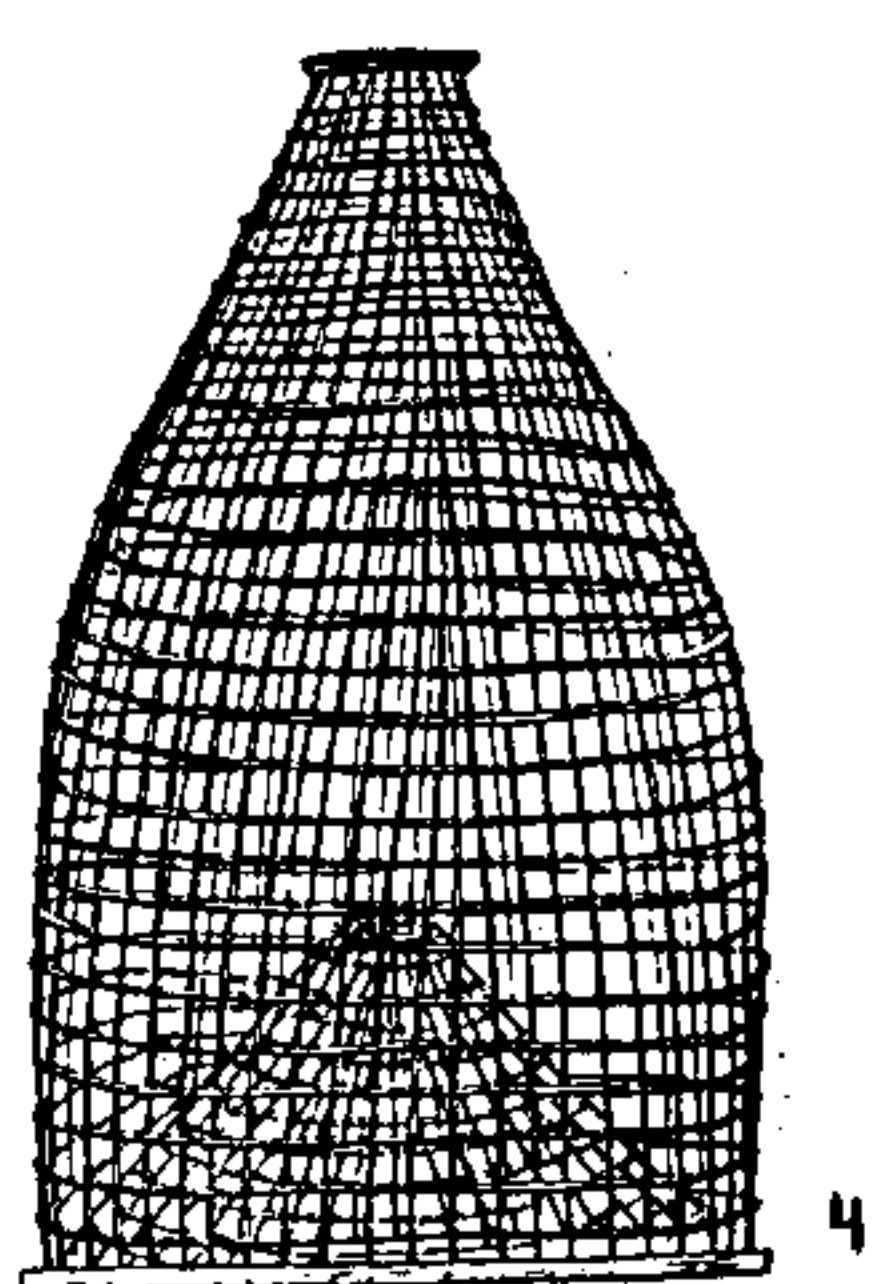
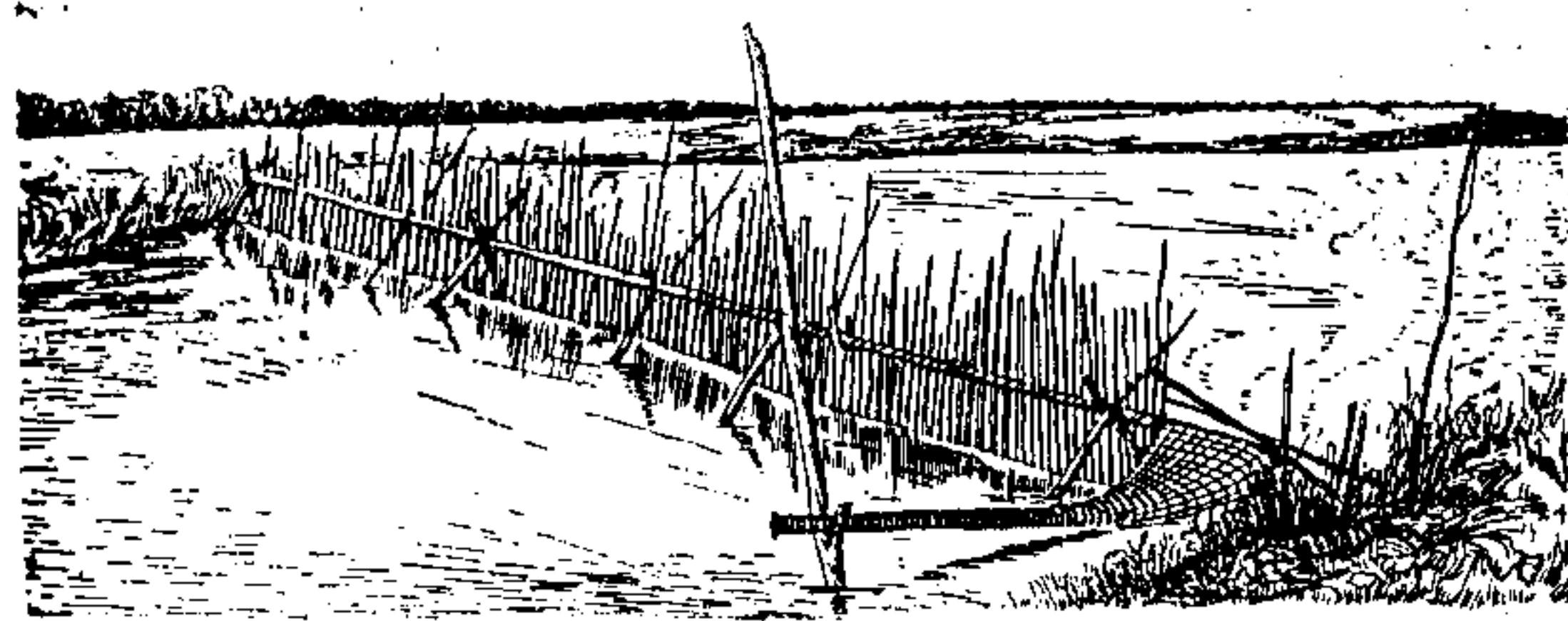
For our analysis, a great interest lies in the construction of fish trap, which in general is very traditional: make a big cone and put inside a smaller cone, and in the materials used for

its making. The outer rim of the fish-trap entrance was often of oval or square shape. Ethnographic sources show that as material for traps people usually used thin twigs (willow, elm, etc). More rarely we found the use of splinters. Thus in Siberia the Korjaki used fish-traps made from narrow splinters (Tolstov 1956, 956). The Komi (Finno-Ugrian population), in the later nineteenth and early twentieth centuries, for making fish-traps used pieces of pine of 0.4-0.7m length. The wood was split in several parts, then kept in water for several hours and finally split in small splinters by annual rings (Kondakov 1983, 135-141). All the sources which describe fish-traps and their use point out the necessary attribute of this method of fishery, i.e. building of fish-fence from logs, pegs, poles, etc. across the river or near the lake shore.

Zelenin distinguished two types of these objects: 1) light construction made from thin planks, rush or twigs, 2) hard and strong construction from thick poles, which could be left standing during spring ice drifting (Zelenin 1991, 103). The same difference in the types of fish-fence can be seen among the ethnographic materials from Siberia. Thus, West Siberian Tatars built across small rivers fences made from thin twigs bound by rope. On one of the ends near the bank they left a space for fish-traps (Tolstov 1956, 477). The Nentsies dammed the river by pegs driven into the bottom. In the gates of this construction they put fish-traps made from twigs. The fishery with this construction used to be in winter period also (Tolstov 1956, 615). However, more often we find the structure made from two rows of pegs driven into the bottom, the internal space filled by twigs, as for the Komi, the Ukagiri and the Korjaki (Tolstov 1956, 889, 956).

In some cases for this aim of building a fishery dam, very unexpected materials were used. Thus Tuva peoples sometimes made such fish-fences from stones, in the central part of which they put a fish-trap (Tolstov 1956, 435). Similar dams were used in Central Russia region, in Ivanovo District (Krajnov 1991, 150). Sometimes fish-fences were used without fish-traps. Thus the fence of Ob Ugrians consisted of hurdles made from twigs. In this case the fish looking for a way through got stuck in the hurdle (Vasil'ev 1962, 139).

However these cases are exceptions from the common rule. Most nationalities of Siberia (Komes, Shrotses, Selkups, Kets, Evenks,



West Siberian Tatars, Nentses, Ukagirs, Koryaks etc.) used the standard scheme of river dammed by fish-fence with gates for fish-traps. The position of fish-traps was not the same: sometimes they put traps in the centre of construction (Russians), sometimes near one of the banks (Khants, West Siberian Tatars). As a rule the ends of the traps were fixed to a peg driven into the river bottom or held by the weight of stones.

The structural components of fish-fences did not change through time. The examples mentioned above show that fish-fences consisted from two to three rows of vertical pegs with poles, twigs or pieces of bark. There is great similarity of basic elements of fish-traps and fish-fences revealed from archaeological and ethnographical data. Only one serious difference was found in the materials used for fish-trap making from ancient sites, namely the use of splinters from coniferous trees.

The above analysis allows us to define the basic characteristics of ancient and modern fishery constructions. On the basis of these conclusions we can evaluate the newly found fish-trap on the site Zamostje 2.

Fishing structures on the site Zamostje 2

At present the site Zamostje 2, Moscow region, Sergiev-Posad District, is situated in the boggy valley of the modern course of the Dubne River. In prehistory all this valley was covered by a number of lakes, which were connected to each other by small rivers. Ancient inhabitants chose to settle the spot between two lakes on the bank of the small river. During several digging campaigns on the Zamostje settlement about 2300 square metres were excavated along the modern river course. Two fish-traps and a fish-fence were discovered during the first year of excavations (fig.24.6).

The character of sediments of the Mesolithic period allows us to reconstruct the excavated area of the settlement as being on the river's edge. Thus, the northern part of this area revealed the habitation zone, but the southern showed a clear presence of river sediments with fishery constructions. The remains of two fish-traps of conical shape were made from long splinters of rectangular cross

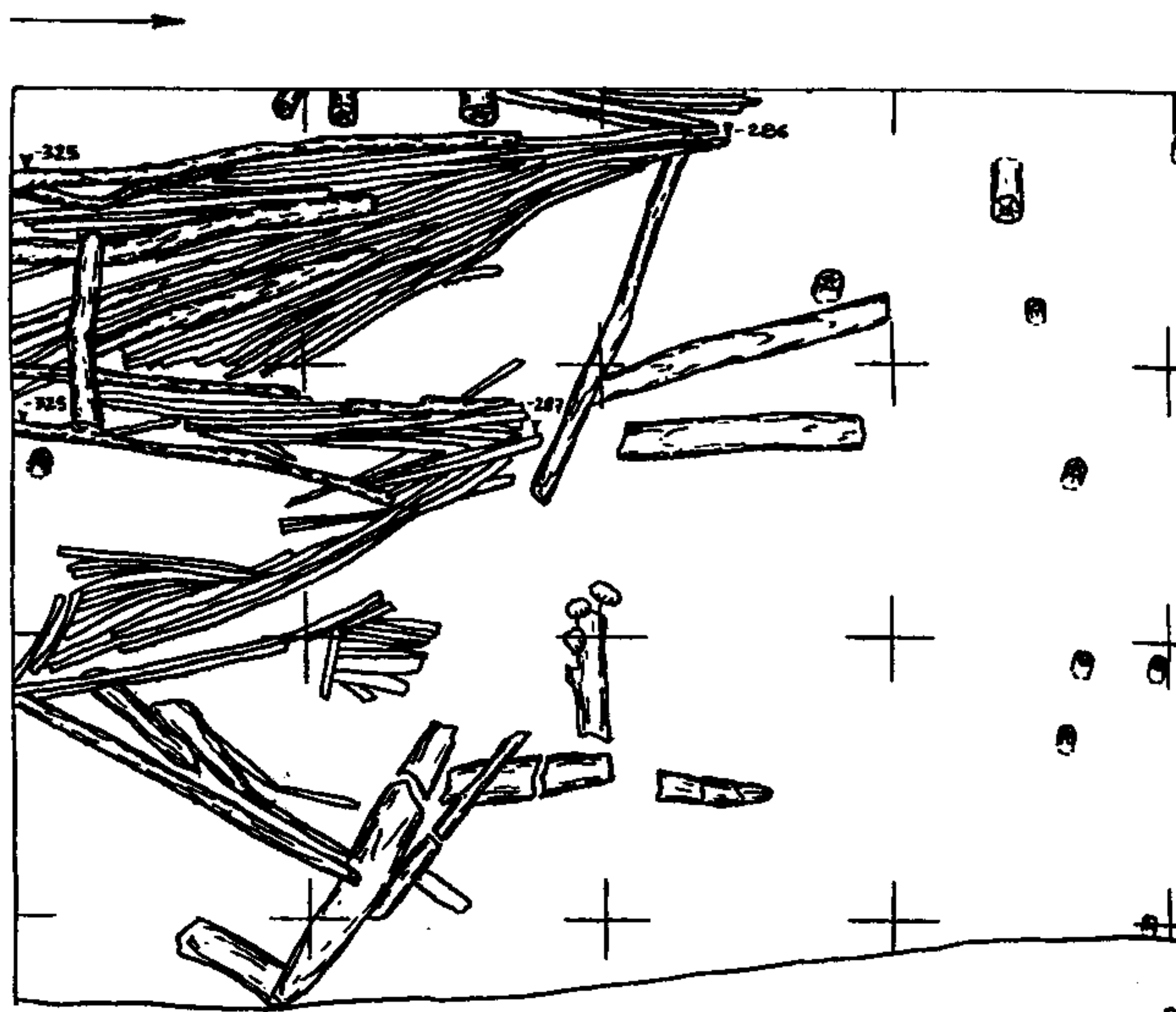


Fig.24.6. Fish-traps from Zamostje 2.

section (1.5-2cm x 0.5-1cm). The length of the first one was 2.5m, of the second 2m. The splinters were bound by bast in several places. At the sides they were fixed to long planks (1.5-1.3m) and to thick branches. The top of fish-traps as well as entrances were linked to the same planks laid perpendicular to the fish-trap direction. The position of fish traps was not horizontal, and the difference between top and entrance was about 40cm. A large number of fish skeletons were found near the fish-traps and inside them. The dimensions of fish varied, but most were from 12 to 17cm in length.

To the north of the fish traps two rows of pegs driven vertically into the bottom were discovered. Between them several branches and poles were found. There is no doubt that this construction represents the remains of a fish-fence. It is necessary to point out that the fish-traps were probably moved by the stream from their original position, because they lay 1.5-2m from the fish-fence. However, all other features of fishery construction, pointed out during the analysis mentioned above, are present. So it should be concluded that the finds of fishery construction on the site Zamostje 2 had the same typological features as the finds on the other archaeological sites and from ethnographic sources. But the most interesting thing is the dating of the Zamostje objects, which were found in the late Mesolithic layers, dated by ^{14}C to c.7200BP. This is a first find which has so ancient a date on the territory of the former USSR.

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