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HISTORY AND PREHISTORY OF LAKE VETSIJÄRVI

by
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An archaeological survey carried out in 2002 around Lake Vetsijärvi, Utsjoki parish, turned up twelve Stone-Age sites, nine of which were located more than six metres higher than the present lake. The placement of the sites and certain other observations suggest that the level of Lake Vetsijärvi may have been higher during the Stone Age than it is today. One of the sites produced finds connecting it with the earliest occupation of the northern Norwegian coast. A test excavation at this site in 2004 recovered evidence of a core-and-blade industry based on foreign chert-like raw material. This type of industry is previously known from the Varangerfiord in Norway but is unique in Finland. Finds include blades, cores, and a tanged arrowpoint with parallels in northern Russia.

Key words (GeoRef Thesaurus, AGI): archaeological sites, lakes, paleolimnology, lake-level changes, artifacts, Stone Age, Lake Vetsijärvi, Utsjoki, Finland

Introduction

Lake Vetsijärvi is the largest lake in the Kaldoaivi region, the eastern wilderness of Utsjoki, northern Finnish Lapland (Fig. 1). In 2002, the authors carried out an archaeological survey at the lake (Rankama & Kankaanpää 2003). The results of the survey gave rise to a few intriguing ideas about the history of the lake. They also led to an excavation at one of the sites, producing a finds assemblage not previously encountered in the inland regions of northern Scandinavia.

The Survey

The purpose of the survey was to test a model, previously presented by Rankama (1996), according to which the fish resources of the inland lakes in Utsjoki parish played an important role in the prehistoric economy of the region and could have been actively exploited as early as the Mesolithic Period. Lake Vetsijärvi was chosen for the survey because it is rich in fish (Niemelä & Vilhunen 1987) and would thus have been among the most likely locations for seasonal occupation. It is also one of the largest lakes in Utsjoki, with a surface area of ca. 8.2 km^2. The lake lies in a shallow depression between fell chains and is surrounded by an extensive area of bogs. It is fed by several small rivers that drain the plateau particularly north and east of the lake. Lake Vetsijärvi empties into the Teno River via the Vetsijoki River, which begins at the lake's northwestern corner and – after meandering for a while – runs nearly due north to meet the Teno at Vetsikko.

Since the water level of lakes in northern Lapland is

Fig. 1. Location of the research area.

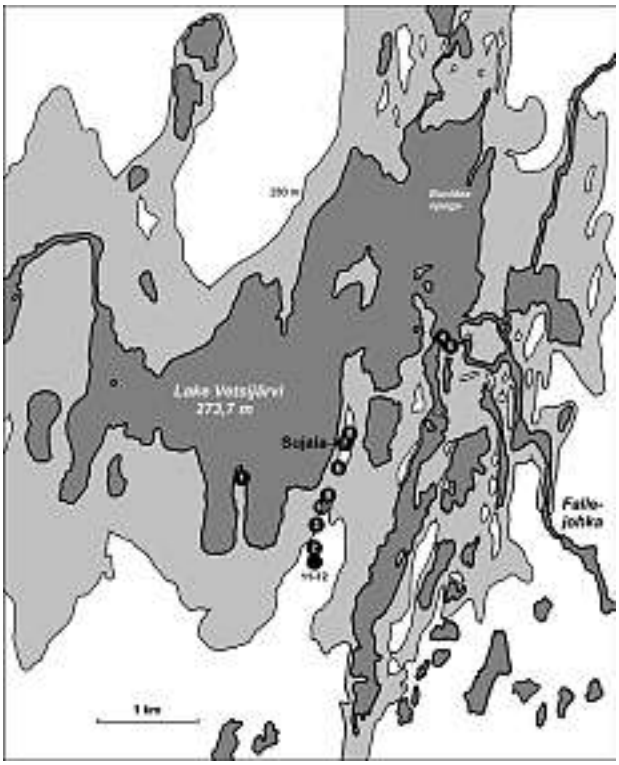

Fig. 2. Sites located during the survey of 2002. The Sujala site is nr. 7.

considered to have risen after the end of the Postglacial Climatic Optimum (e.g. Hyvärinen & Alhonen 1994, Eronen et al. 1999, Eronen et al. 2002), it was hoped that a survey of the shoreline would turn up inundated Stone Age sites. The fact that the shores of Lake Vetsijärvi are largely boggy presented the additional possibility that shoreline sites might be partly covered by peat, which would offer an anaerobic environment with a chance of organic preservation – something otherwise extremely rare in Finnish archaeology.

Several kilometres of the Lake Vetsijärvi shoreline were surveyed by kayak in the summer of 2002 for the purpose of locating shoreline sites, but the rewards were few: only three sites were discovered near the shore, and only one of these was actually in the water. However, nine further sites were discovered along a dirt track running the length of a peninsula protruding into the lake from the south (Fig. 2). All of these latter sites were located above the 280-metre mark, or a good six metres above the present level of the lake, which in early July 2004 lay at an elevation of 273.72 m above sea level. Horizontally, the sites lay a minimum of 80 metres from the present lakeshore, in many cases much further. All of the sites – with one exception – were marked by the presence of quartz flakes, a characteristic feature of Finnish Stone Age and Early Metal Age sites. The one exception, the site named *Utsjoki 226 Vetsijärvi 7 Sujala*, produced material that pointed in another direction but also suggested an exceptional age. We will return to this site later in the paper.

The Water Level Question

There appears to be no practical reason why the campsites should have been located far from shore. Level and dry shoreline locations with sandy beaches – the type of setting usually preferred by Stone Age hunter-gatherers – are available nearby, at the base of the peninsula and at its tip, but upon inspection these sites revealed no signs of Stone Age occupation. Spring flooding does not appear to affect the lake to any great extent, at least judging from the fact that a cabin in the southeastern part of the lake stands on top of a geodetic benchmark with an elevation of 275.7 m, or a scant two metres above the early July level.

Locating the campsites on high ground rather than near the shore makes little sense from a use perspective. If the camps related to fishing, the natural place would have been near the shore to minimize carrying distances. If they related to reindeer hunting, the whole location is wrong. Higher, better, and more easily hidden lookout posts could have been established on the hills to the south. A campsite located on or near the base of the peninsula would also preclude the possibility of using the peninsula itself as a natural "trap" where reindeer would have been lured by the relatively insect-free windy location or where they could have been actively driven by beaters.

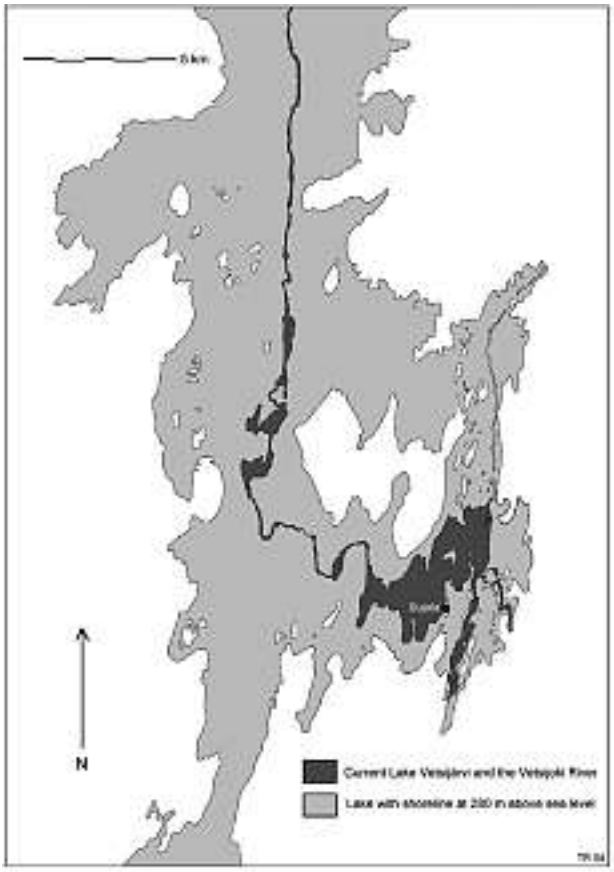

Fig. 3. Potential size of Lake Vetsijärvi with water level at 280 metres.

The most logical remaining explanation for the clustering of nine sites above the 280-metre contour would seem to be that the sites were in fact located close to the shoreline *in their time*, in other words the level of the lake during at least part of the Stone Age was actually higher relative to the surrounding area than it is today. Plotting the shoreline on the 280 -metre contour (Fig. 3) gives a much larger lake and locates many of the sites on an island separated from the mainland by a narrow and shallow strait.

A higher lake level during the Stone Age would, however, be contrary to the apparent general trend in the region. For this reason, future research at Lake Vetsijärvi should include geological studies on the lake's history. Phenomena observed during previous research that might figure in such studies include the following:

Thick peat layers in elevated dry areas

A layer of peat more than 50 cm thick was observed on top of a very narrow and steep-sided moraine ridge that forms a peninsula in the northeastern corner of the lake (Fig. 4). The ridge rises an estimated 5–6 metres above the lake. Due to the coarse soil and the sharp contours of the ridge, the ground appears to be well drained. Since the formation of peat usually requires a large amount of moisture, the thick peat layer on top of the ridge might suggest that the water level has been higher.

Possible beach formations

A formation resembling an eroded shoreline terrace runs along the western side of the peninsula where most of the sites are located; the eastern side has not been surveyed. This formation has not been systematically mapped, but it can be observed in the surface profile plotted from the vicinity of the northern find cluster of the Sujala site mentioned above down to the

Fig. 4. Thick peat on top of the *Buolžanjarga* ridge. (Photo: T. Rankama, 2002)

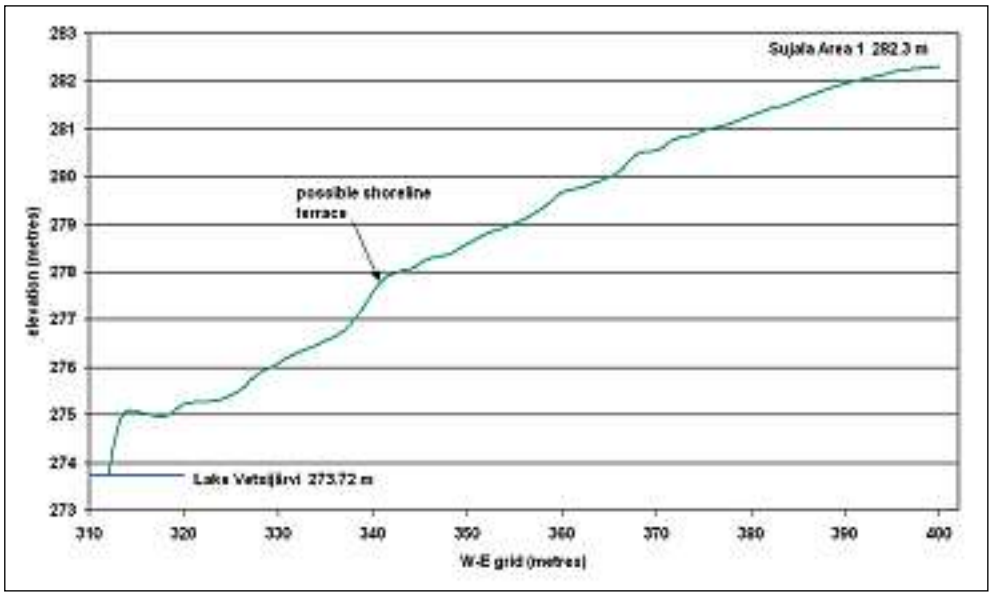

Fig. 5. Surface profile from the Sujala site.

lakeshore (Fig. 5) and also as a vegetation border on an infrared aerial photograph of the area. The elevation of the feature in the surveyed profile is ca. 278.0 metres for the edge of the "terrace" and 276.8 metres for the foot of the underlying slope. The latter elevation is more than a metre higher than the benchmark under the cabin. Two smaller "terrace-like features" may be observed in the surface profile at elevations of 279.7 and 280.5 metres, but these have not been investigated as of yet and may be just natural bumps in the terrain. One further possible indication of an ancient beach line was noted in connection with the test excavation of the Sujala site in 2004: a concentration of rocks found in the lowest test square of the northern cluster at an elevation of ca. 282.0 metres. The other – higher – test squares in this area contained mixed sand and gravel with interspersed larger stones, but this square contained almost pure rocks reminiscent of a water-washed beach line.

Tilting basin

The topography of the Lake Vetsijärvi area itself is rather flat. Though the lake is surrounded by fells, the present 280-metre elevation curve outlines a vast area that appears to continue both north and south. The present outlet of Lake Vetsijärvi is to the north through the Vetsijoki River, but isostatic rebound has tilted the basin northward (Eronen 1979) and it is consequently conceivable that the original postglacial outlet may have been towards the southwest and the Utsjoki River. Geological and topographical studies are needed to establish whether it would have been possible for the level of the lake to have been higher (relative to the present topography) when the surface was tilted more towards the south.

The Sujala Site

The most intriguing of the sites discovered during the 2002 survey was number 7, dubbed Sujala (officially, *Utsjoki 226 Vetsijärvi 7 Sujala*) after the cabin owner in whose "backyard" it was found. As with most of the other sites, the evidence of prehistoric human activity consisted of a number of lithic flakes and flake fragments discovered on the track leading to the lake from the south. What made the Sujala site interesting was the fact that both the raw material and the shape of the flakes differed from those of the other Vetsijärvi sites and from those usually found at Stone Age sites in Finland.

Instead of quartz, which dominates the Finnish Stone Age, the flakes were made from a variety of raw materials more common on the North Norwegian coast, such as quartzite, flint, and chert. The shape of the flake fragments suggested a specialized knapping technology geared towards the production of long, slender, parallel-sided flakes called blades. This technology is alien to Finnish Stone Age contexts and its products are usually considered to have been imported. In northern Norway, the technology is considered Mesolithic, i.e., part of the earliest Stone Age of the area (Olsen 1994, Woodman 1993, 1999).

Because of these unusual finds, a test excavation was

Fig. 6. Blade cores from Sujala. (Photo: J. Kankaanpää, 2004)

carried out at Sujala in 2004 (Kankaanpää & Rankama 2004). A careful surface survey at the beginning of the excavation revealed two main clusters of finds on the track some 200 metres apart. Eight 1 x 1 metre test squares were excavated around each of the clusters. A total of 379 artefacts were recovered, both from the track surface (50.7 %) and from the ten test squares closest to the track (49.3 %). The clusters of finds were small in diameter and close to the soil surface, suggesting short-term settlement, probably small single-occupation campsites (see Rankama & Kankaanpää in press for more details of the excavation).

The excavation finds bore out the unusual character of both raw material use and technology at Sujala. Only eight per cent of the finds were quartz, while the dominating raw material (87 %) was a light brown chert-like rock. This rock, which used to be erroneously called "dolomite" by Norwegian archaeologists, was commonly used during the Stone Age along the coast of the Varangerfjord (e.g. Simonsen 1961: *passim*). The current Norwegian name for it is "tuffaceous chert" (e.g. Hood 1992).

Microscopic surface examination reveals a very fine-grained matrix with even grain size. This suggests that the material does not originate in the Fennoscandian Shield; the northern Norwegian Caledonides are a more probable source area (J. Välimaa, T. Manninen & R. Kesola personal communication 2005). Pending a proper mineralogical analysis, we will call the rock simply "chert". It is fairly easily worked and forms very sharp edges. Its colour is dark grey or greenish when fresh, but it weathers to a tan or light grey colour and becomes brittle in the process. This raw material is very rare at Stone Age sites in Inari and Utsjoki (e.g., Kankaanpää & Rankama in press). Because of the commonness of the raw material in Stone Age contexts along the Varangerfjord, the few discoveries from Finnish Lapland have been considered imports from the coast (e.g. Havas 1999).

Chert had been used at Sujala to produce blades from carefully shaped blade cores. Two exhausted cores were discovered, one conical in shape (Fig. 6:1), the other a one-sided core with two opposing platforms and acute platform angles (Fig. 6:2). The blades produced from these cores during their final stage were not very large; however, the size of the recovered blade fragments (e.g. Fig. 7) indicates that the cores were originally much larger, or at least that a large number of the blades were produced from larger cores.

The total number of recovered blades and blade fragments, including implements, was 118. In addition, more than 30 core tablets, i.e., platform rejuvenation flakes, were recovered (Fig. 8). These are flakes produced during blade production, when the striking platform of the core needs to be renewed because of damage to the platform edge or because of the increasing curvature of the core face due to continued blade production. Since these flakes can hardly be used as implements of any kind, they are the most unquestionable evidence that blades were, indeed, produced at the Sujala site and not just brought there from somewhere else.

About 50 % of the chert artefacts from Sujala

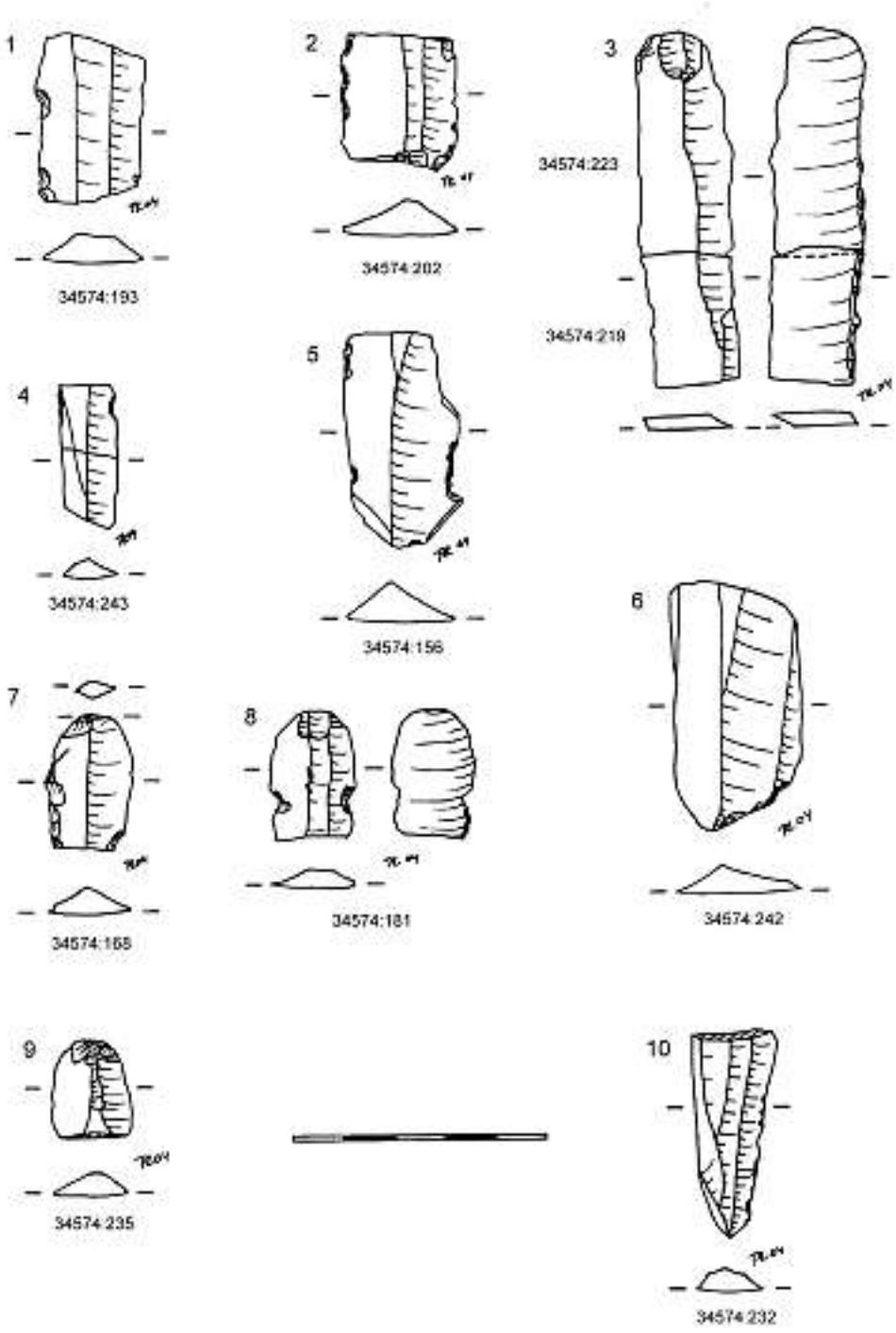

Fig. 7. Blade fragments from Sujala.

relate indisputably to blade technology. The rest of the artefacts consist mostly of small debris classified as flake fragments because they are too small to be reliably identified as deriving from blade production. The majority of them, however, probably do.

The Sujala assemblage includes one tanged point made of chert (Fig. 9). It is 42.1 mm long and made from a large blade so that the central dorsal ridge of the blade runs along the centre of the point's long axis. The tang is bifacially flaked and is diamond-shaped in cross section; the tip has invasive retouch on its ventral side, making its cross section also diamond-shaped.

The combination of raw material and technology at Sujala is alien to Finnish archaeology. Since the site lies in the inland region and has never been part of the coastal sphere, it cannot be dated through shore displacement chronology. The radiocarbon samples

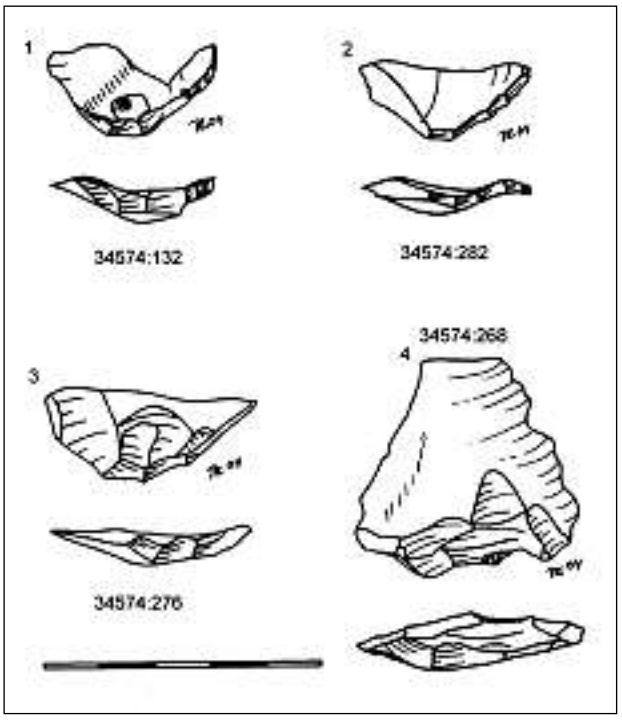

Fig. 8. Core tablets from Sujala.

collected so far are too equivocal for reliable analysis. Therefore, the only viable option is typological dating.

The nearest area where a comparable large blade technology exists is the North Norwegian coast, where it is dated to the Preboreal, representing the earliest Stone Age of the region. If the Sujala occupation is associated with the coastal sphere, it is the first discovered inland settlement of Phase I of the North Norwegian Mesolithic, also referred to as the Komsa Culture (see Olsen 1994, Woodman 1993, 1999). It thus changes our view of the adaptation of the early Komsa population, which has traditionally been considered completely maritime. At the same time, it changes the chronology of the settlement of northern Finnish Lapland: the earliest dates so far derive from the Saamen Museo site in Inari, where two pieces of birch bark pitch have been dated to 8835±90 BP and 8760±75 BP (Carpelan 2003). Phase I of the North Norwegian Mesolithic is dated to 10 000–9000 BP (Olsen 1994).

The tanged point from Sujala, however, fits poorly in the Komsa sphere, where the tanged points are usually smaller, more irregular, and never have invasive retouch on the ventral side. Instead, the point is very well at home among the Early Mesolithic so-called Post-Swiderian complexes of Northwest Russia (e.g. Sorokin 1984, Volokitin in press, Zhilin 1996), and so is the sophisticated blade technology as a whole. These complexes are also Preboreal, but they continue into the Boreal period. If this is the origin of the Sujala population, the site is very far from the core areas of these complexes (e.g. Burov 1999) – the nearest site with Post-Swiderian type material is Ristola in Lahti, southern Finland (Takala 2005), itself an outlier. The routes taken by the Post-Swiderian people to reach Utsjoki, in that case, are totally obscure. It also remains a mystery how, representing as they did an inland adaptation, they came to find the raw material so typical of the coastal assemblages.

Conclusions

The survey and excavation demonstrated that the Lake Vetsijärvi region had indeed been visited by

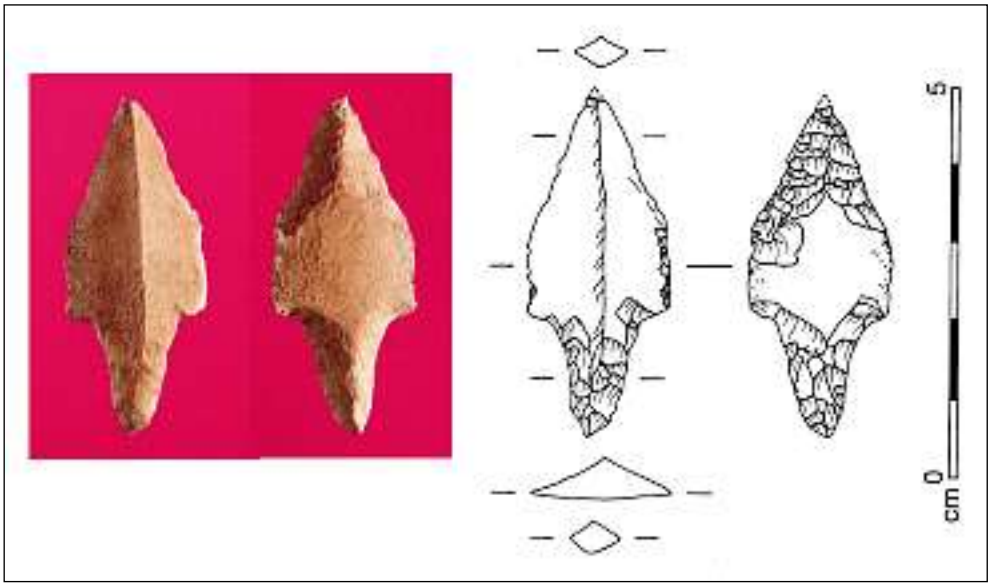

Fig. 9. Tanged point from Sujala. (Photo: J. Kankaanpää, 2004)

people during the Stone Age, although the details of these visits – seasonality, utilized resources, group size etc. – still require further research. Very little evidence of occupation was found on or near the present shoreline in spite of the fact that most of the shoreline of the main basin was carefully inspected. Unless the water level of the lake has risen several metres since the end of the Stone Age and thus covered even the latest sites, one would have expected to find evidence of human presence in places where the mineral soil lay bare on the shoreline, particularly on sandy beaches. A rise in the lake level, however, would not account for the fact that a notable cluster of sites was discovered some 6–7 metres higher than the present shoreline. In southern Finland, such a cluster would automatically be connected to shore displacement. At Lake Vetsijärvi, a lowering of the water level would go against the current view of lake history in the region. The rise of lake levels after the Climatic Optimum has been connected with increased precipitation, but in the case of the Vetsijärvi basin the effects of the cooling trend may have been nullified by isostatic tilting, which could have opened a new outlet, as happened with the Päijänne and Saimaa basins in Southern Finland. A rise of the lake level could in itself have also caused the opening and rapid erosion of a new exit channel, leading to a quick drop in the water level (M. Eronen & M. Saarnisto, personal communication 2005). Geological studies of Lake Vetsijärvi are necessary for solving this question.

The Sujala site represents the earliest human occupation recorded so far in the Lake Vetsijärvi region and possibly in all of Finnish Lapland. The origin of the occupation remains equivocal at the moment, but whichever of the possible regions – coastal North Norway or Northwest Russia – it came from, it has the potential for profoundly changing archaeologists' views concerning the colonization processes and settlement systems of northern Lapland. A coastal origin would indicate that the adaptation of the Early Komsa population was not so purely maritime as has been thought so far. On the other hand, an origin in Northwest Russia would force a rethinking of the way the north was settled as a whole: it would no longer be possible to assume that all the settlers travelled along the Norwegian coast from the south and ultimately from Northwest Europe. On a smaller scale, the site also changes the chronology of the settling of Finnish Lapland, pushing it back in time potentially several hundred years.

The history and prehistory of Lake Vetsijärvi and its surroundings obviously merit further intensive study.

Acknowledgments

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REFERENCES

Burov, G.M. 1999. "Postswiderian" of the European north-east. In: Tanged Points Cultures in Europe. Lublin: Maria Curie-Skłodowska University Press, 281–291.

Carpelan, C. 2003. Arkeologiset vaiheet. In: Lehtola, V.-P. (ed.), Inari – Aanaar. Inarin historia jääkaudesta nykypäivään. Oulu: Inarin kunta, 30–95. [in Finnish]

Eronen, M. 1979. The retreat of pine forest in Finnish Lapland since the Holocene climatic optimum: a general discussion with radiocarbon evidence from subfossil pines. Fennia 157, 93–114.

Eronen, M., Hyvärinen, H. & Zetterberg, P. 1999. Holocene humidity changes in northern Finnish Lapland inferred from lake sediments and submerged Scots pines dated by tree-rings. The Holocene 9, 569–580.

Eronen, M., Zetterberg, P., Briffa, K.R., Lindholm, M., Meriläinen, J. & Timonen, M. 2002. The supra-long Scots pine tree-ring record for Finnish Lapland: Part 1, chronology construction and initial inferences. The Holocene 12, 673–680.

Havas, H. 1999. Innland uten landegrenser. Bosetningsmodeller i det nordligaste Finland og Norge i perioden 9000–6000 BP. Hovedfagsoppgave, Institutt for arkeologi, Universitetet i Tromsø. 147 p.

Hood, B.C. 1992. Prehistoric Foragers of the North Atlantic: Perspectives on Lithic Procurement and Social Complexity in the North Norwegian Stone Age and the Labrador Maritime Archaic. Ph.D. dissertation, University of Massachusetts. Ann Arbor: UMI Dissertation Services, 564 p.

Hyvärinen, H. & Alhonen, P. 1994. Holocene lake-level changes in the Fennoscandian tree-line region, western Finnish Lapland: diatom and cladoceran evidence. The Holocene 4, 249–256.

Kankaanpää, J. & Rankama, T. 2004. Utsjoki 226 Vetsijärvi 7 Sujala. Varhaismesoliittisen asuinpaikan koekaivaus 27.6.–3.7.2004. Unpublished test excavation report. Copy kept at the archive of the National Board of Antiquities Department of Archaeology.

Kankaanpää, J. & Rankama, T. Pioneer settlement in northern Finnish Lapland. In: H. Knutsson (ed.), Pioneer settlements and colonization processes in the Barents region. First NordArk publication. Vuollerim, in press.

Niemelä, E. & Vilhunen, J. 1987. Utsjoen tunturivesien kalakantojen käyttö- ja hoitosuunnitelma. Helsinki: Riista- ja kalatalouden tutkimuslaitos, kalantutkimusosasto, 187 p.

Olsen, B. 1994. Bosetning og samfunn i Finnmarks forhistorie. Oslo: Universitetsforlaget, 158 p.

Rankama, T. 1996. Prehistoric Riverine Adaptations in Subarctic Finnish Lapland: The Teno River Drainage. Ph.D. dissertation, Brown University Department of Anthropology. Ann Arbor: UMI Dissertation Services, 955 p.

Rankama, T. & Kankaanpää, J. 2003. Utsjoki Vetsijärvi. Arkeologinen inventointi 18.–23.7.2002. Unpublished survey report. Copy kept at the archive of the National Board of Antiquities Department of Archaeology, 34 p.

Rankama, T. & Kankaanpää, J. Survey and excavation at Lake Vetsijärvi, Lapland. Proceedings of the 22nd Nordic Archaeology Conference, Oulu, Finland, August 2004, in press.

Simonsen, P. 1961. Varanger-funnene II. Fund og udgravinger på fjordens sydkyst. Tromsø Museums Skrifter VII/II, 524 p.

Sorokin, A.N. 1984. Mezolit Velikikh Meshtsherskikh Ozer. Sovetskaya Arkheologiya 1984/1, 46–65.

Takala, H. 2005. The Ristola Site in Lahti and the Earliest Postglacial Settlement of South Finland. Lahti City Museum, 205 p.

Volokitin, A.V. Some Peculiarities of Colonization of the European North-East in Mesolithic. In: H. Knutsson (ed.), Pioneer settlements and colonization processes in the Barents region. First NordArk publication. Vuollerim, in press.

Woodman, P.C. 1993. The Komsa Culture, a Re-examination of its Position in the Stone Age of Finnmark. Acta Archaeologica 63, 57–76.

Woodman, P.C. 1999. The Early Postglacial Settlement of Arctic Europe. In: Cziesla, E., Kersting, Th. & Pratsch, St. (eds.), Den Bogen spannen Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach: Beier & Beran, 297–312.

Zhilin, M.G. 1996. The Western Part of Russia in the Late Palaeolithic – Early Mesolithic. In: Larsson, L. (ed.), The Earliest Settlement of Scandinavia and its relationship with neighbouring areas. Acta Archaeologica Lundensia Series in 8º, No. 24, 273–284.