

# Kanozero petroglyphs: history of discovery and investigation

## Abstract

*The Kanozero Lake located at the southern part of the Kola Peninsula (Murmansk region, Russia). In 1997 the first petroglyphs were discovered at the lake on Kamenniy Island, which were mainly made in the Neolithic and Bronze Age. Up to now 20 panels with petroglyphs are recorded and total number of recorded rock carvings is close to 1500 images. In this article a short geographical and historical overview of the area and history of discovery and investigation of the Kanozero petroglyphs is given.*

## Key words:

*Kanozero, petroglyphs, Umba river, Murmansk region, Kola peninsula, rock carvings.*

On July 5, 1997, Yuri Ivanov found the first petroglyphs on a rocky island of the Kanozero Lake (the Umba River system on the Kola Peninsula). Within the next few years it became obvious that a large petroglyphic complex was located at the Kanozero Lake area. According to data of the Kola archeological expedition the total number recorded petroglyphs is more than 1.200 on 18 panels (Kolpakov, Shumkin 2012: 16). Last year's research (2017-2018) with use of photogrammetry method (Лихачев 2017) revealed two more panels with rock carvings and a significant number of unrecorded earlier petroglyphs on known panels.

## Historical description of the territory

According to archaeological data, at the Neolithic and the Early Metal Ages the coastal area of the Kola Peninsula was actively inhabited because of the abundance of sea resources (Гурина 1997; Shumkin 1990; Шумкин 1991). The Kanozero Lake is located at a distance of 16 km from the present coastline of the White Sea. Ac-

cording to paleo-limnological studies of the lake (Сапелко и др. 2009; Сапелко, Колпаков 2010; Колпаков, Shumkin 2012) in Holocene epoch the lake had never been a bay of the White Sea. Preliminary analysis of sediment samples taken in the Kirvinskaya Bay of the Kanozero Lake, indicate that at the period of time when most likely people appeared here - the Atlantic (8000-4500 years ago) and the Subboreal (4500-2500 years ago) - the waterlevel in the lake was low, and the shores were wetlands (Сапелко и др. 2009; Сапелко, Колпаков 2010: 76]. An analysis of natural environments and archaeological evidences (such as absence of archeological sites) suggests that visiting of the place by people had a temporary character.

For the first time the Kanozero Lake was mentioned in chronicles in 1558 as the land of pomors from the Umba village of the Dvina County (СКГЭ 1922; Лихачев 2011: 26).

Before the Russian pomors colonized the area in the 13-14<sup>th</sup> centuries it was a place of Sami people – indigenous inhabit-

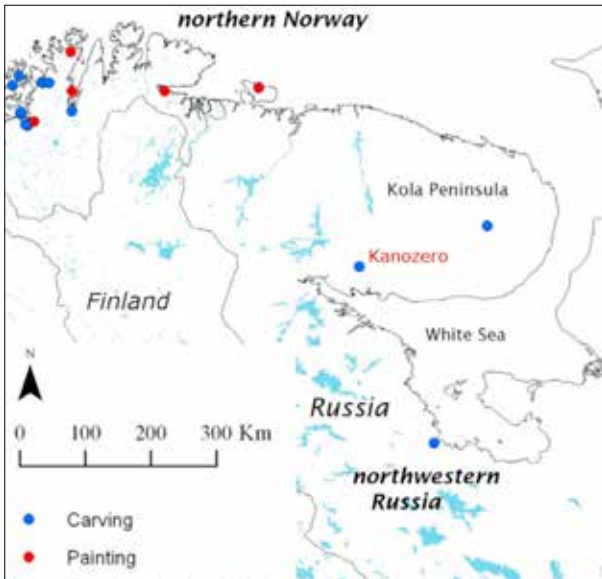


Figure 1. The map of rock art in Northwestern Fennoscandia with Kanozero site marked. Reworked from Gjerde (2010: figure 1).

ants of the Northern Fennoscandia. Most of the place names in the Kanozero Lake area have an origin from Sami language. The root "kan" of the Kanozero place name could be the Sami word "kont" transformed by Russian pronunciation which means "wild reindeer". Thus the Kanozero could be translated as «the Wild Reindeer Lake». Until now a wild reindeer and an elk could be met in the area. Images of those animals are most often met among images of animals at the Kanozero petro-

Figure 2. Fragment of the Kanozero map. The 4 main locations with rock art panels are marked with a red circle: the Kamenny Island, the Eloviy Island, the Goreliy Island, the Odinskaya Rock.



glyphs. Another place name with Sami root is Tall-ostrov (Влодавец 1930, ГСКП 1939: 96). This island now most known under the name the Kamenny Island. The word "Tall" in the Sami language means "bear" thus the name of the island is "the Bear Island". It is interesting that on the rocks of this island the first petroglyphs were discovered and almost half of known rock carvings at Kanozero are recorded here. Among them a number of images of bear, bear traces, separate bear footprints and bear hunting scenes. Thus the Sami name of the island could also be related with the images on its rocks.

Under pressure of Russian pomors colonization the Sami people left the area. Some other signs of the Sami influence on the local modern population: Russians and Karels can be recognized here. Thus at the Karelian cemetery near the Kanozero village the Sami traditional sledge - "kerezha" was found on the top of one grave (fig.4).

At the beginning of 20<sup>th</sup> century Karelian migrants established the Kanozero village which is the first documented settlement on the Kanozero Lake coast. Since the end of the 19<sup>th</sup> century the Karelians



Figure 3. The Kamenny Island. On the rock of the island first petroglyphs were found at 1997. Photo by V.Likhachev.

fish salmon and collect pearls at the rivers near the Kanozero Lake (Визе 1912; Доктуровский 1925).

From the beginning of the 20<sup>th</sup> century to the 1980-s the Umba river and the Kanozero Lake were a water transport vein for the timber industry here. It pushed to develop some other settlements in the area and involved locals in a forest rafting activity (fig. 5-7).

Now all the settlements at the Kanozero Lake shore are extinct but seasonal fishing by tourists have appeared in their place.

There is evidence that locals, the residents of the Kanozero village (mainly kids and adolescents) knew about the petroglyphs before its discovery in 1997. Thus in 1998, Gennady A. Kobylin from the Umba settlement, told us that he saw

Figure 4. Kerezha – originally it is the Sami sledges. The grave at the Karelian cemetery near the former Kanozero village. 1999. Photo V.Likhachev.





Figure 5. The Kanozero village. 1962. (Крутяков, Солод, 1963)



Figure 6. The timber industry settlement – the Podmuna. 1962. (Крутяков, Солод, 1963)



Figure 7. Kostya is the “Captain”. The Podmuna settlement. 1962. (Крутяков, Солод, 1963). Maybe it is one of the kids who knew about the Kanozero petroglyphs.



Figure 8. The recently recorded rock carvings at the Elovij 3 panel. In 1940s-50s the local children could take these images for images of "wooden huts". 2018. Photo V.Likhachev.

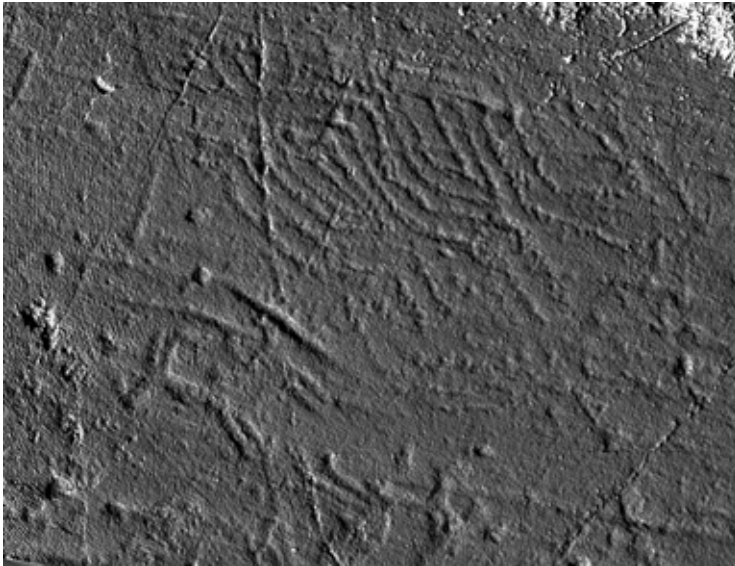


Figure 9. Newly recorded figures from the Elovij 3 panel. 2018. Picture processed from 3D model by V.Likhachev.

petroglyphs in 1949. At the rocky islands local boys from the Kanozero village have shown to him some of the rock carvings. Gennady described images which he saw as "people", "reindeers", "goats", "sheep", "fish" and "huts". Local adults did not pay attention on the kids findings (Likhachev 2011). As we can guess now the image of the "fish" could be seen as

an image of a beluga whale often met at the rocks of Kanozero. Existence of images of the "goats" and the "sheep" are not proved until now but further investigation is needed. Some the sheep and goat like images could be images of the elk or the reindeer. There was a puzzle what images could be interpreted by the kids as a "hut", until resent recording of geometri-



Figure 10. The graffiti in old Slavic alphabet from the rock of the Kirvinskiy island (south part of the Kanozero Lake). 2017. Photo by V.Likhachev.

cal pattern petroglyphs on the rock closest to the village the Eloviy island in 2018 (fig. 8-9). These patterns could be interpreted as images of "huts".

The locals also made graffiti on rocks. Thus on rocks of the Kirvinskiy Island (no petroglyphs were found there yet) the



Figure 11. The fragments of maps of the Kola peninsula with images of the Kanozero Lake. Name on the map 1. – L.Konbosero, 2. – Conbosero, 3. – Kanozero). Map's Sources: 1) 1796 г. «Laponie Russe...»; 2) 1824 г. «Генеральная карта Архангельской губернии...»; 3) 1891 «Nordost-Russland». «Stielers Hand-Atlas»...



old graffiti in old Slavic alphabet were recorded (fig. 10). One of the locals asserted in 1970-s that these inscriptions were made by “the priest from Umba settlement”.

### Researchers at Kanozero

In 1887 Finnish researchers Edgren and Levander ascended to the Kanozero Lake (Rikkinen 1980). Later the Finish geologist Wilhelm Ramsay “descended down the Umba River in a wooden boat and even made the visual survey of the river, but this map is still unpublished” (Визе, 1912: 555).



Figure 12. The boat team of Gustav Halström in his travels on the Umba River. The Research Archives of The University Library in Umeå.



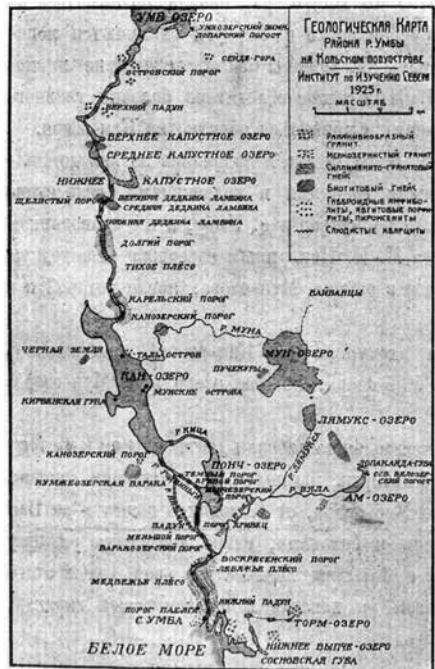
On August 14, 1910 the Swedish ethnologist and archaeologist Gustav Halström crossed the Kanozero Lake during his boat travel down the Umba River (fig.12). It interesting to note that he searched for the rock art at the Kola Peninsula but he didn't pay attention to the rocky islands of the Kanozero Lake (Лихачев, 2011). Two weeks later Halström visited the Besov Nos Cape at the Onega Lake and started the documentation of petroglyphs there.

First guide for travel by the river Umba was made by the Russian geographer Vladimir Wiese (Визе, 1912) who twice ascended and once descended the river in 1910 and 1911, and once even used the boat left by G. Halstrom.

### Geological research at Kanozero

A number of geological expeditions were conducted at the Kanozero Lake area . In their reports we find the descriptions of the rocky islands and the rock outcrops

Figure 13. The first map of the Umba River compiled in 1925 by the geologist V.I. Vlodayets (Vlodavets 1930).



and even photographs. Some of the geologists even carved graffiti in close vicinity of unnoticed petroglyphs.

In 1925, the geologist V.I. Vlodavets made a survey of the Umba River from its mouth to the Umbozero Lake and the Muna River (Рихтер, 1928; Влодавец, 1930). He published in his article the first detailed topographic map of the Umba River. It is interesting to note that the Tallostrov island (the Kamenniy Island) was firstly named on his map (fig.13).

In 1931 a geological survey of Kola peninsula (1:100 000 scale) started at the basin of the Umba river and the Kanozero Lake (Соколов, 1932). In 1948-1950 a geological research of the area was continued by geologists of the Kola Branch of Russian Academy of Science (Батиева, 1956). They study granite massive with amazonite pegmatites on the western coast of the Kanozero Lake. The same deposit was investigated for rare metals and rare elements at 1956 (Рудаков, Морозов, 1957) and at 1962 (Крутяков, Солод, 1963) (fig. 14-15).

Figure 14. The Kanozero Lake. Geologists are reloading their luggage and equipment from the hydroplane. 1962. (Крутяков, Солод, 1963: Photo 2). In the background we can see the Goreliy Island (on the left) and the Elovijy Island.

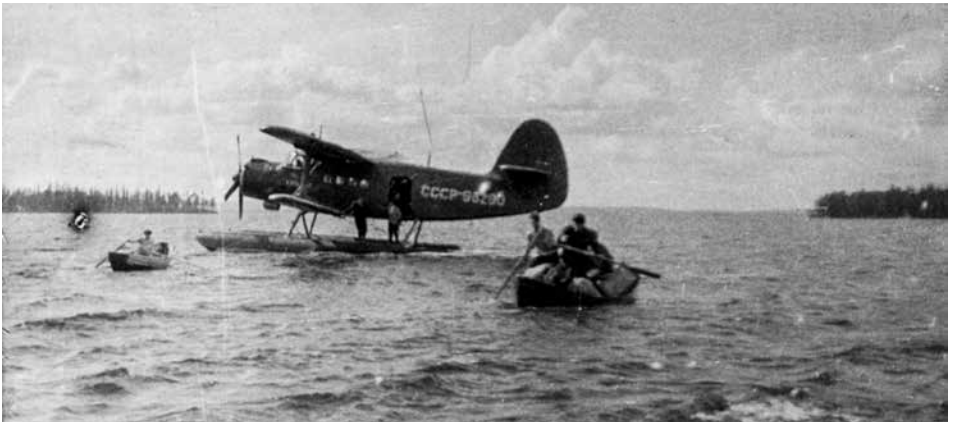


Figure 15. The Kanozero village people meeting geologists. 1962. (Крутяков, 1962).







Figure 16. The inscription on the rock dated to 1925. The Gorely Island. 2018. Photo by V.Likhachev.



Figures 17-18. Graffiti left by geologists at 1956 and at 1963. 2018. Photo by V.Likhachev.

The eastern coast of the Kanozero Lake also was investigated by geologists in 1952 году (Военнушкин, 1953) (fig.19-20) and 1962-63 (Иванова и др., 1964).

Some of the graffiti found on the outcrops of the islands can be attributed to the geologists.

In the southwestern part of the Goreliy Island, on its rocky cape right on the panel with petroglyphs Goreliy 1 the participants of V.Vlodavets's expedition left an inscription "Е. Е. Б. ПИБ" and below





Figure 19. Rocky outcrops of metaperidotite rocks (Военнушкин, 1953: photo 4). 1952. It is the first photo with rock outcrops of the Eloviy Island. Place of the Eloviy 1 and Eloviy 5 panels.

- "1925 June 1925 July" (fig. 16). "ПИБ" - initials: "Петр Иванович Березин" (Pyotr Ivanovich Berezin) - a helmsman of the expedition (Влодавец 1930, Лихачев 2011: 32-33).

On the Kamenniy 3 panel at the Kamenniy Island there is an engraving: "КГРТ 1956" (fig.17). According to the date this graffiti could be left by the geologists of

Figure 20. Character of cracks in metaperidotite rocks (Военнушкин, 1953: photo 14). 1952. The Goreliy Island (?).



the Kanozersky Party (Rudakov, Morozov 1957). Another graffiti of geologists with the «КГРТ» abbreviation, as well as the letters of initials and the inscription "Мы геологи" («We are geologists»), with date «1963», is located on the Odinskaya Rock, also near the petroglyphs on this rocky outcrop (fig. 18). Based on the date, the graffiti could be left by geologists of the Munozerskaya Party (Иванова и др., 1964). The abbreviation "КГРТ" is most likely the abbreviation of the name of the college where student geologists studied.

## Geological descriptions of the rocks of the Kanozero Lake's islands

Geologist V.I.Vlodavets provided the first preliminary geological characteristics of the rocks of the Kanozero Islands:

"The rocks of gabbro-pyroxenite formations traced in the upper Umba river, ... on Tall- island, at the Muna Islands, in the Kirvenskaya bay ... In all these initial rock outcrops, apparently augite porphyrite or diabase, altered to a great extent" [Влодавец 1930: 313].

The participant of expedition to Kanozero 1948-1950 s geologist Oia D. Batieva remembers: "The islands on the

lake is really very interesting. They have a pretty rocky outcrops, so-called "mut-ton foreheads", composed of porphyritic meta-peridotites and meta-pyroxenites. While doing examination of these islands I did not notice any carvings or inscriptions on the rocks" (Лихачев 2011: 34-35).

In some geological reports we find proximate petrographic composition of the rocky outcrops of the islands where later petroglyphs were documented (Крутяков, Солод 1963:45-53; Иванова и др., 1964: 218, 228). Thus, according to (Крутяков, Солод, 1963: Photo 26 and 27), the metapyroxenites compose the rocks of the Elovoy Island (fig.23), and the metaperidotites compose the rocks of the Kamenniy Island (fig. 21-23).

According to another report, in addition to the relict sites of metapyroxenite and metaperidotite rocks, "serpentine-chlorite, talc-chlorite, carbonate-chlorite, tremolite-serpentine, chlorite-tremolite and actinolite-tremolite rocks" are involved in the composing of the rocks of the islands (Иванова и др., 1964: 218-219, 228) (fig. 24).

Thus, we can conclude that the rocky outcrops with panels of petroglyphs on different islands are composed of rocks with different physical, mechanical and chemical properties. Those properties of rocks for each petroglyphic panel must be considered in preservation of petroglyphs.

Also geological maps and descriptions from reports make it possible to determine the other rocky outcrops around the Kanozero Lake area. These outcrops are systematically surveyed for petroglyphs by employees of the Kanozero petroglyphs museum, but so far without results.

### **Tourism and the tourist graffiti on the Kanozero rocks**

Since 1930s the tourist route on the river Uмба was included in guide books (Бартольд, 1935) and tourist travel reports were published in local newspapers (Попов, 1935). The "Proletarian" tourism of 1930s suggest that tourist should help

the Soviets with the investigation of natural resources: deposits of useful minerals and rocks, forest for logging etc. Even the task of revealing archeological sites was proposed for local proletarian tourist activists.

Since 1950-s the interest to the Uмба River as a touristic route for kayaking is growing year by year. The report for touristic travel has become an obligatory part for such a trip if their participants wanted to get a sport category or to become a professional tourist guides. Since then the tourist reports suggest that the rocky islands of the Kanozero Lake are the best place for camp on the route. «We spent the night on an island which is a giant rock covered with forests. From the top of the cliff we admired the wonderful panorama of the mirror lake illuminated by the golden rays of the sunset" (Report No. 592, 1954).

"... in front of us we saw a small fabulous island. The island is covered with forest, and in the center of the island is a big mountain ... We spent the night on the second island" (Report No. 1215, 1961).

"... Approaching. A stone island grows out of the water with huge firs and pines on the top and along the mountainside. Landing. Inspecting. Taking pictures ..." ( Report No. 3100, 1976).

"When passing this part of the route, it is advisable to make a stop on the high beautiful island." (Report No. 2641, 1974).

In one of the tourist reports we find a description of the strongest fire on the Kamenniy Island: "A high island is visible. Heading for him. ... The island is burning. We climbed to the shore and began to struggle with fire. Bucket after bucket passed through the chain. More than an hour continued to fight the fire. Useless. Moss is burning all over the island. Around are charred trees. Some trees flash before our eyes. But with our buckets there is nothing to do. Let's sail to the next island. The island is very beautiful - tall with gentle stone slopes ... "( Report No. 2215, 1967: 29) (fig.25).

Touristic descriptions from the reports once again confirm the picturesque nature



Figure 21. The metapyroxenite outcrops on one of the islands in the Kanozero Lake (Крутяков, Солод, 1963: Photo 27).

Figure 22. The north-western side of the Kamennyi Island with polished rocky outcrops (Крутяков, Солод, 1963: Photo 12).



Figure 23. The metaperidotite outcrops on one of the islands in the Kanozero Lake (Крутяков, Солод, 1963: Photo 26).





Figure 24. "The rocky outcrops of ultrabasic rocks along the northern shore of the Elovij Island, smoothed by the waters of the Kanozero Lake." (Иванова и др., 1964: Photo 96). 1963.



Figure 25. The Goreliy Island. 1967 г. (Report No. 2215, 1967).

of the Kanozero Islands, which cannot leave the traveler indifferent. It was the most popular, the best place for camping on the route (no mosquitoes, good fishing ...). Tourists sometimes stayed on the island for several days (resting, waiting for the headwind) (fig.26-27).

Since 1960s numerous graffiti appear on the rocks of the Kamenniy Island.

Preliminary analysis of tourist graffiti shows that tourists tend to carve the rock with pebbles they found nearby. They hardly used metal tools or paint. Geologist mainly did their graffiti with metal tools probably because it was easier for them - they always had geological hammer. Most of the inscriptions were found close to

rock carvings – some of them overlap the rock art (fig.28).

Analysis of old graffiti could help to understand the speed of weathering of specific rocks of the Kanozero islands and could even give some clue for the dating of the rock carvings.

At the beginning of 2000s with the protection of Kanozero petroglyphs the tradition of leaving graffiti by tourists was almost on wane.

In 2008 a museum on the Kanozero petroglyphs was established, which is responsible for the management of this cultural heritage. In 2015 for protection of the Kamenniy 7 panel the glass doom was erected (fig. 29).



Figure 26. The tourist camping on the Kamennyi Island. 1976. (Report No. 3101, 1976). The tourists are sitting in 1-2 m distance from the rock panel with petroglyphs (Kamennyi 1) which was discovered only at 1997.

Figure 27. The tourist camp on the Goreliy Island. (Report No. 3752, 1978).



## Discovery and further investigation of the Kanozero petroglyphs

The first petroglyphs were discovered by Yuri Ivanov on July 5, 1997 on the rocky

Figure 28. Making rubbings of petroglyphs (R. Lauha-kangas and V.Poikilainen) near the newly made graffiti engravings. 1999. Photo by Yu.Ivanov.





Figure 29. The Kamenny island with the glass dome over the Kamenny 7 panel. 2018. Photo by V.Likhachev.

outcrop of the Kamenny Island (fig. 30, 33). Yuriy Ivanov was a volunteer of the Lovozero GOK museum<sup>1</sup> and participated in the museum expedition (Лихачев 2011:71)(fig.33). In total, four petroglyphs were found in the first expedition (panel Kamenny 1, fig. 31-32). Among them two images of boats, a reindeer like image and an anthropomorphic figure in adoration

pose which Yu. Ivanov named “Shaman” (fig. 32). Later the fifth image – an anthropomorphic female figure was identified on the photo.

Yuri Ivanov told: “...I decided to find the oldest tourist graffiti ... among the pine needles and other forest garbage I noticed dark spots. I began to clear it, and the image of “the boat with rowers” ap-

Figure 30. Participants of the LGOK Museum’s expedition on the rock outcrop where petroglyphs were found a few hours later. July 5, 1997. Photo: V. Kuznetsov





Figures 31-32. The first photographs of the Kanozero petroglyphs. 5 July 1997. Photo: Yu. Ivanov



peared, and next to it the image of “reindeer” (Лихачев 2001: 7).

In October 1997, during the second Lovozero GOK museum’s expedition, four more petroglyphs were found (the Kamenniy 1 panel). Another panel with two images was found on the separate rocky outcrop (the Kamenniy 2).

In order to prove the old age of the petroglyphs a lichenometry method was used. The measured lichen from the surface of one of the petroglyphs was at least one hundred years old. It was enough to prove that the petroglyphs cannot be a contemporary falsification (Лихачев 2011: 72).

The photographs with petroglyphs were shown to archeologists V. Ya. Shumkin (Kola archaeological expedition IHMC RAS) and prof. A. D. Stolyar (St. Petersburg University). They admitted similarities of boat images at the Kanozero petroglyphs with boat images from Zalavruga (Neolithic time, the White Sea coast of Karelia Republic, Russia). After that the

Figure 33. Yuriy Ivanov at Kamenniy 1 panel. View from the top. Petroglyphs delineated by white chalk. October, 1997. Photo: I. Vdovin.







Figure 34. Petroglyphs from Odinokaya rock outcrop. 1999. Photo by V.Likhachev.



Figure 36-37. The Kamenniy 7 panel. 2007. Photo by V.Likhachev.

Figure 35. First plan of the rock outcrop of the Kamenniy Island. 1998. Made by V.Kustikov.

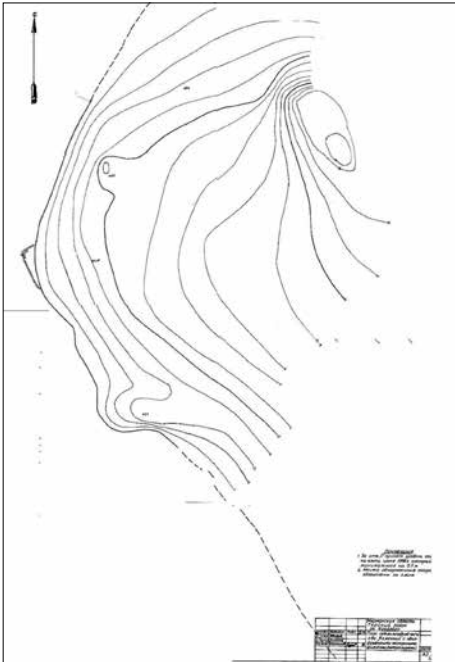




Figure 38. View on the Kamenniy 7 panel. 2013. Photo by M.Ryzhov.

Figure 39. Participants of Kola archeological expedition on the Odinskaya Rock outcrop. E.Kolpakov (sitting), V.Shumkin, A.Kler, Yu.Ivanov. 1999. Photo by V.Likhachev



first publications about the discovery were published in the Murmansk regional newspapers (Лихачев 1998а, Лихачев 1998b).

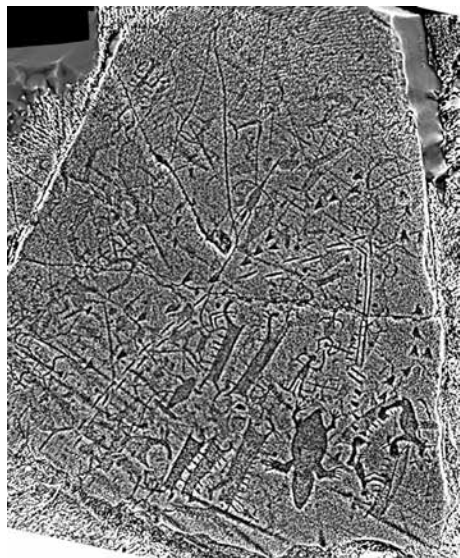
In June 1998, archaeologist V. Shumkin joined the Lovozero GOK museum's expedition (organized by V.Likhachev) to the Kanozero petroglyphs. As a result of the expedition the first plans of rocky islands and documentation of approximately 250 petroglyphs in 8 panels on 3 islands (Kamenniy 1-4, Eloviy 1-2, Goreliy 1) and one rocky outcrop named "Odinokaya" (the Lonely Rock) were made.

In June 1999, during the fourth LGOK museum's expedition (organized by

V.Likhatchev) to the Kanozero Lake, the first petroglyphs of the currently largest panel were found - Kamenniy 7. At that time, the rocky outcrop with petroglyphs was almost completely covered with turf. Now, the rock is cleared of turf and about 600 images were recorded on that panel.

In July 1999 together with the Canadian film expedition the Kanozero was visited by the members of the Estonian and Finnish societies for prehistoric art (V.Poikilainen, R. Lauhakangas – fig.28) and archeologist from Karelia (N. Lobanova). This time the new panel at Goreliy Island (Goreliy 2) was documented. Here the first image of a "wheel" at Kanozero was discovered (later a few more images of wheels were discovered at the Eloviy 3 and Kamenniy 6 panels). These kind of images made that researchers later related these panels to the Bronze Age (Kolpakov, Shumkin 2012, Колпаков 2014) because the "wheels" has similarities with «wheels» from the Bronze Age petroglyphs in Southern Sweden.

In September 1999, the Kola archaeological expedition IIMK RAS (leader V.Ya. Shumkin) started its work in Kanozero. The first season the number of discovered petroglyphs approached 400 (in 15 panels, new discovered panels: Kamenniy 6; Eloviy 3; Goreliy 3, Goreliy 4.). In 2000, the archeologists started to clear of and document the largest panel of the Kanozero petroglyphs - Kamenniy 7. With that documentation in the next few years the total number of petroglyphs was dou-



Figures 40-41. Fragments of the Kamenniy 7 panel. The picture made out of a processed 3D model. By V.Likhatchev, 2018.

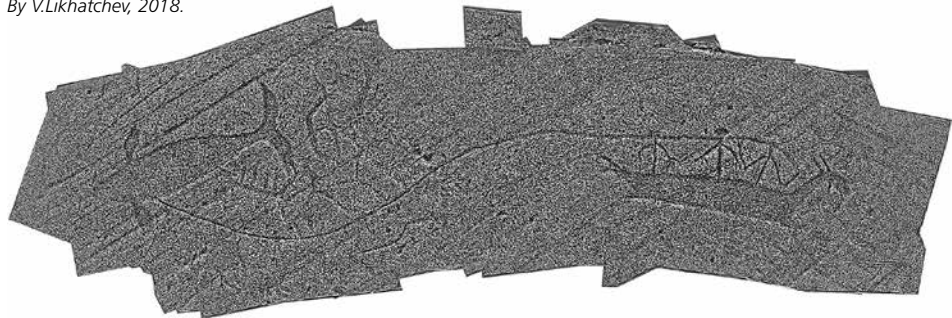




Figure 42. Fragment of the Kamenniy 1 panel. The picture made out of a processed 3D model. By V.Likhatchev, 2018.

bled and some outstanding images were documented (Kolpakov, Shumkin, 2012). In 2008 together with the Kola archeological expedition on the documentation of Kanozero petroglyphs worked Jan Magne Gjerde (Gierde, 2010).

In 2017-2018 the Kanozero petroglyphs museum started work on photogrammetric survey of all panels with petroglyphs (Лихачев 2017). Two new panels with rock art (Kamenniy 8 and Eloviy 7) were revealed and documented. The total amount of new recorded petroglyphs has grown over hundred during the process of analyzing of the collected data. The photogrammetric method of documentation shows a large possibilities for the revealing of new rock carvings both at known groups and new ones and help to refine details of already documented images (Лихачев 2017) (fig.40-42).

Since 1997 a number of researchers were engaged in study of the Kanozero rock carvings.

The participants of the first expedition in July 1997, wrote about their discovery (Иванов 2001, Кузнецов 2001). The author of this article has been engaged in the research of Kanozero Petroglyphs

since October 1997. From 1998 to 2018 he made a number of publications about the Kanozero petroglyphs as an employee of the LGOK museum (Лихачев 1998а, 1998b, 2001; Likhatchev, 1999), as a member of Kola biodiversity conservation center (КВСС) (Лихачев 2007, 2010, 2011) and as an employee of the Kanozero petroglyphs museum (Лихачев 2017, Likhachev 2018). Work on Kanozero petroglyphs together with the Kola archaeological expedition, the LGOK museum and the Kola biodiversity conservation center in 1997-2010 was partly summarized by the author in the book "Risunki Kanozera" (The rock art of Kanozero) (Лихачев, 2011; Lauhakangas 2015) (fig. 43).

Since 1998 the Kola archaeological expedition under leadership of Vladimir Shumkin conducted extensive work on the documentation of the Kanozero petroglyphs. A number of articles which reflected this work were published (Шумкин 2000, 2001, 2004, 2006; Shumkin 2000,

Figure 43. The cover of the first book about the Kanozero petroglyphs: "Risunki Kanozera"(The rock art of Kanozero)(Лихачев 2011);



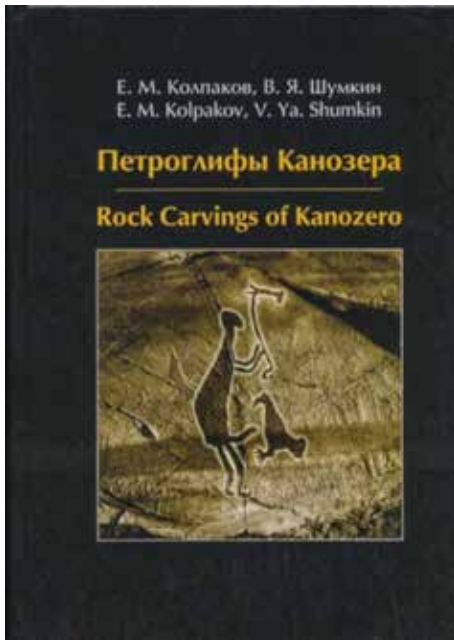


Figure 44. The cover of the first catalogue of the Kanozero petroglyphs: "Rock carvings of Kanozero" (Kolpakov, Shumkin, 2012).

2005; Шумкин, Колпаков 2010; Колпаков 2007, Kolpakov, Murashkin, Shumkin 2008; Kolpakov, Shumkin 2012; Колпаков, Шумкин 2012; Сапелко и др. 2009; Сапелко, Колпаков 2010; Городилов 2007 etc). Since 2007 the renewed catalogue of Kanozero petroglyphs is placed on the official web page of Kola archeological expedition <http://kae.rekvizit.ru/kan/kanintr.htm>

The outcome of the Kola archaeological expedition documentation of petroglyphs became the catalogue "Petroglyphs of Kanozero" (Kolpakov, Shumkin, 2012) (fig. 44). Evgeniy Kolpakov, one of the authors of the catalogue continues to do the publications on semantic analysis of Kanozero Petroglyphs (Колпаков 2014, 2015, 2018; Kolpakov 2015).

A number of authors refer in their publications related to the studies of the Karelian and Northern Fennoscandia petroglyphs to the Kanozero material (Poi-kalainen, 2004; Жульников 2006; Gjerde

2010; Кашина 2010; Лобанова 2013, 2015; Helskog 2017; Куликова 2014; Lauhakan-gas 2017; Janik 2017 etc.).

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## Note

<sup>1</sup>The corporative museum of the mining enterprise in Lovozero tundras, Murmansk region. Museum located at Revda town.

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## Abbreviations

IIMK – Institut istorii material'noy kul'tury

RAN – Rossiyskaya akademiya nauk  
Fscand Arch – Fennoscandia Archaeologica. Helsinki.

LGOK – Lovozerskiy Gorno-obogatitelniy Kombinat (the Lovozero Mining Company)

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