The North-West, the Urals and the Far East of Russia

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Introduction

The main problem related to rock art sites in Russia is the continuous process of their destruction, which occurs because of both natural and anthropogenic reasons (vandalism, quarrying, and construction of roads and reservoirs, etc). Today, vandalism by tourists is one of the major problems. Every year, a part of our cultural heritage -- rock art sites -- disappears, and the research and documentation of these sites cannot keep pace with this process. This is why a lot of art is lost forever, both physically and as a subject of study. Projects created to make rock art more popular, to attract youths to expeditions and volunteering, to make rock art museums, to protect and conserve this heritage, aim to tackle this problem. In recent years, the legal issues of saving petroglyphs have attracted the attention of scholars – unfortunately, the Russian legal system doesn't cover these sites and they are rarely protected by the government.

During the years 2015–2019, a number of rock art projects were successfully implemented in Russia, including in its most remote areas such as North-Western Russia, Transbaikalia and the Amur region. As in previous reports (Devlet 2008, 2012; Devlet & Pakhunov 2016), the structure of this survey is based on the identification of different rock art provinces or regions, with their unique iconographies and motifs, and on the distinct chronology of petroglyphs and pictorial representations. Extensive use of new remote approaches to documenting and subsequent processing of data has become one of the most important achievements of rock art researchers in recent years. With these approaches, new sites, as well as new images located in previously known ones, are being found. The research and development of these approaches to data documentation and interpretation have just begun.

Special aspects of regional rock art traditions and issues of their preservation were the focus of the Fifth Russian Congress of Archaeologists (Barnaul) and several international conferences devoted to the art of the Stone Age (St. Petersburg, 2017; Moscow, 2019). Moreover, there is now a tradition of holding meetings to discuss certain regions and sites nominated to the UNESCO World Heritage List: the annual international symposium on Kapova Cave (Shulgan-Tash), and the conference in Petrozavodsk (Karelia) "Ancient Rock Art in the Context of World Cultural Heritage" (2018).

One of the major events has been the discovery of a unique image of a Bactrian camel in the Chamber of Chaos in Kapova Cave in 2017. A. V. Ryumin's discovery of the main ensemble of Palaeolithic paintings in Kapova Cave marked its 60th anniversary in 2019.

Petroglyphs of Lake Onega and the White Sea

The petroglyphs of Lake Onega and the White Sea are among the most important archaeological sites of Northern Europe. They comprise large concentrations of Neolithic rock art. During the past five years, two small groups of petroglyphs were discovered. In addition, new carvings in some old groups were revealed, and the outlines of several previously documented images were redefined. New methods and approaches to petroglyph research and documentation were applied. One of the methods consists of making rubbings on sheets of black rice paper. The process is quite complex and time-consuming, but it allows one to accurately identify all details of the figure: its general shape, the character of the inner filling, the pecking depth, etc. As a result, the long-known petroglyphs appear in a different, sometimes even unexpected light.

The development of different topics related to the study of the cultural and natural context of the Karelian petroglyphs has continued. The general chronology of the sites became clearer, Lobanova's view of the stages of development of the Lake Onega and the White Sea petroglyphic traditions was presented, and features of their similarities as well as their main differences were revealed. Three monographs on the rock art of Karelia were published (Lobanova 2015a, 2015b; Lobanova & Filatova 2015; Poikalainen & Ernits 1998, 2019), followed by a popular science book (*Petroglify Karelii* 2019). Lobanova's manuscript "Petroglyphs of the White Sea" (2018) has also been prepared for publication.

At Cape Cherny (Lake Onega), a new group of carvings with three ornithomorphic figures was discovered by Lobanova in 2016. These images are located in the northern part of the cape, 5 km from the mouth of the Vodla River. Stylistically, they are typical of the middle stage of the Onega rock art complex (Lobanova 2019): small in size, rather sketchy, they have shallow but thorough and even pecking. Two figures are embossed with a dark spot of xenolith, which is also characteristic of the Middle Neolithic Period. Discoveries were also made on the well-studied Cape Peri Nose III. Clearing

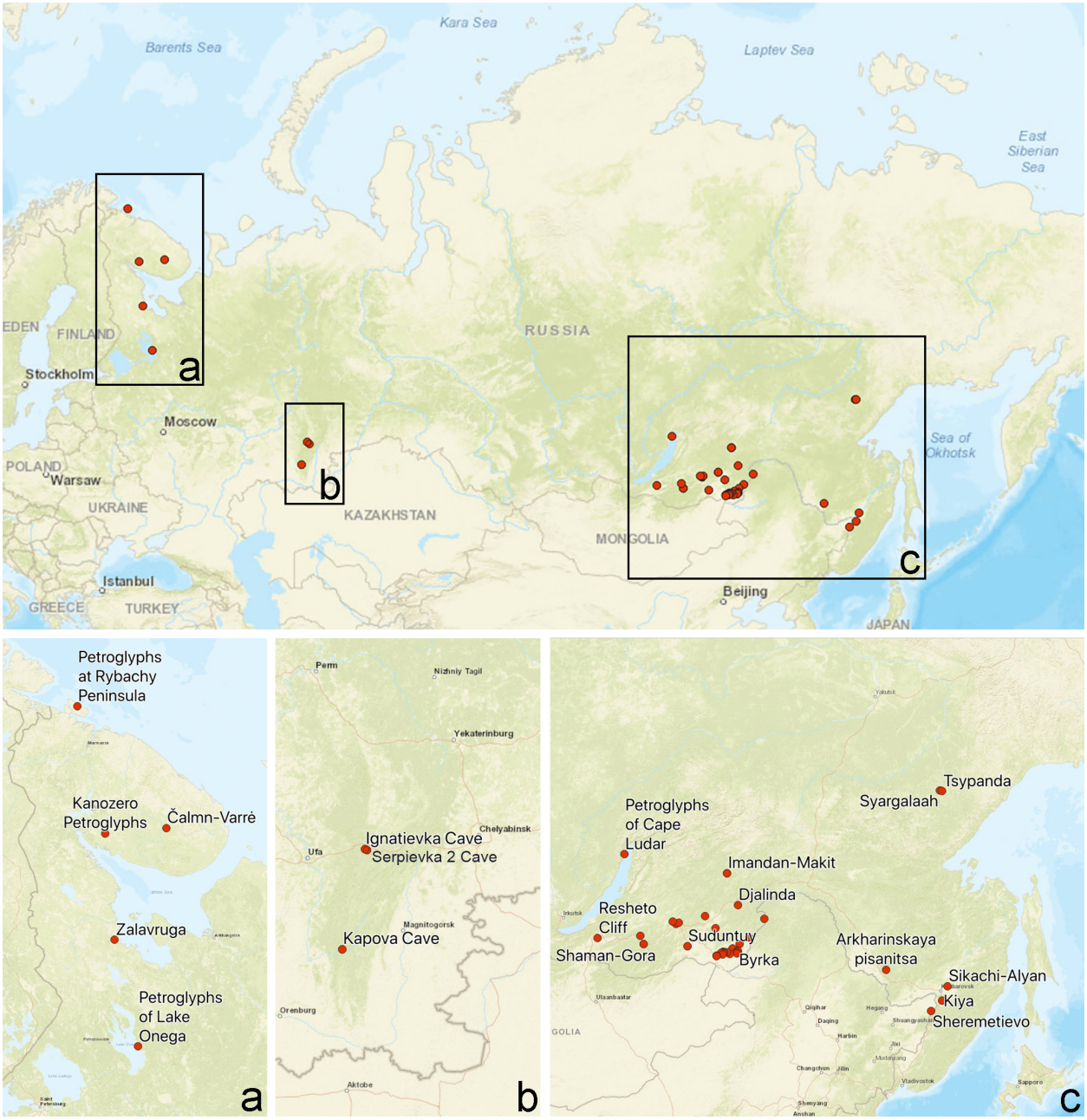

Figure 1. Location of the Russian rock art sites mentioned. a. Rock art sites in the north-west of Russia. c. Kapova and Ignatievka caves in the Urals. c. Rock art sites in the Cis- and Trans-Baikal and Far East of Russia. Map: A. Pakhunov.

the rock surface of a dense layer of lichens revealed a linear boat without rowers, and an especially interesting image representing a strongly curved line, at one end of which there is a humpback elk snout with two ears. Similar depictions are known on this cape. In Fennoscandian rock art, such motifs are often held by people and are interpreted as ritual rods. The most poorly preserved and difficult to document images are on the Kochkovnavolok Peninsula, located in the northern part of the Onega rock sanctuary. At Cape Swan Nose, discovered by researchers from Estonia (Poikalainen 2000), a number of interesting scenes have been redocumented. Rubbings were made on black Chinese rice paper. The method of a Karelian artist, S. V. Georgievskaya, was first tested at Zalavruga in 2016. Unlike mikalent rubbing, in which the relief is usually smoothed out over time, it is perfectly preserved on this rice paper. Our work showed that all previously made rubbings of these petroglyphs were not entirely accurate in details.

The first mainland group of White Sea petroglyphs was discovered by an expedition from Petrozavodsk University in 2019. It includes three barely visible bird

Figure 2. Lake Onega: new rock art group at Cape Cherny. Photo: N. Lobanova.

depictions. Prior to the construction of hydropower plants, this panel was located on the left bank of the Vyg River at the Shoyruksha rapids. An additional survey made by Lobanova revealed a fourth carving in this group. A photograph made in favourable oblique sunlight clearly shows four graceful figures of swimming swans. Stylistically, they bear a great resemblance to the most popular image of Onega petroglyphs. The discovery of a new mainland rock art panel on the Vyg River rocks is of special interest, as it is another vivid confirmation of the relationship between the creators of the Onega and the White Sea petroglyphs.

The Kola Peninsula and the Rybachy Peninsula

The Čalmn-Varrė petroglyphs were found on the right bank of the Ponoy River in the central part of the Kola Peninsula (Murmansk region) in 1973. The petroglyphs, carved on isolated stones, mainly show animals (deer) and anthropomorphic creatures. In 2014, the Kola archaeological expedition of the Institute for the History of Material Culture of the Russian Academy of Sciences started a new documentation -- the old one was carried out in 1989 by N. N. Gurina (Gurina 2005: 19). According to the documentation of 1989, there were 121 figures on 6 stones. The documentation of 2014-2017 recorded 287 figures on 10 stones. In 2018, the results were published in a collective monograph "Petroglyphs of Čalmn-Varrė" (Kolpakov *et al.* 2018).

In 1985-1986, rock carvings, engravings and ochre images were found at the confluence of the Päiva river with the Barents Sea and on the left bank of the Mayka river. In 2015, the Kola archaeological expedition completed fieldwork to re-document rock carvings. They drew up a general topographic plan, specified the geographic coordinates of the carvings, measured the previously known images, and identified new colourful figures (Kolpakov *et al.* 2017).

The Kanozero petroglyphs (Kola Peninsula) are located on the islands of Lake Kanozero in the southern part of the Kola Peninsula. With over 1000 images, these are one of the largest clusters of petroglyphs of the "hunting tradition" of Fennoscandia (Kolpakov & Shumkin 2012). The petroglyphs have been sought and documented since their discovery in 1997. The most complete catalogue of the Kanozero images is presented in the book "Petroglyphs of Kanozero". As of 2011, it included over 18 groups of 1200 carvings on three islands, and one mainland rock outcrop (Kolpakov & Shumkin 2012: 16). In 2017-2019, specialists from the Kanozero Petroglyphs museum and the Kola Archaeological Expedition found new groups of petroglyphs on the rocks of Kanozero, and identified a significant number of previously unknown images in already documented groups of petroglyphs. Five new groups of petroglyphs have been identified (Kamenny 8, Kamenny 9, Kamenny 10, Elovy 7, Gorely 5). The total number of carvings in these five groups exceeds 40. In one new group (Elovy 7), located on a separate small rocky promontory, extending into the lake, images of boats and figures of cetaceans (beluga whales) were documented. The images vary from 20 to 60 cm in size (Kolpakov & Kiseleva 2019;

Likhachev 2018). The number of petroglyphs in the already-known groups has increased by almost 150%. In general, the new figures typologically correspond to those previously known; however, a few geometric ornaments, not previously encountered on Kanozero, were also identified.

Southern Urals

Kapova cave (Shulgan-Tash), located in the Burzyansky District of the Republic of Bashkortostan, is one of the largest karst caves on the western slopes of the Southern Urals. It is a natural, historical and cultural monument. The cave is a well-preserved site with rock art from the Upper Palaeolithic of Central and Eastern Europe, dated from 20.6 to 16.1 cal ka BP. Uncalibrated ages have been published (Kotov 2019), with calibration carried out by Pakhunov with OxCal (v4.3.2: Bronk Ramsey 2017) using the IntCal13 calibration curve (Reimer *et al.* 2013).

In 2015-2019, archaeological research, a documentation programme and conservation work continued in Kapova Cave. Most of the activities took place within a framework for the development of its nomination to the UNESCO World Heritage List. In 2018, the rock paintings of Shulgan-Tash Cave were submitted to the tentative list. The nomination was separate from the one previously inscribed in 2012 for the "Bashkir Ural" area. This new nomination makes it possible to consolidate most of the available scientific data and to develop a programme for further research. In 2018 the construction of the "Shulgan-Tash" historical and cultural museum began in the area of the cave. Also in 2018 the corroded stairs between the cave chambers, installed in the 1960s, were dismantled. In addition, inaccessible areas of the cave were reached with stainless steel ladders. The chambers with Palaeolithic paintings were completely closed to tourists.

In his monograph, Zhitenev (2018) presents the results of the excavations carried out in different chambers of the cave by the South Ural Archaeological Expedition of Moscow State University in 2008-2017. These archaeological excavations have revealed multiple cultural layers of the Pleistocene and Holocene, and different periods of the use of the cave in the Upper Palaeolithic, Bronze and Middle Ages.

In a collective monograph edited by V. G. Kotov "Shulgan-Tash (Kapovaya) Cave Sanctuary" (Kotov 2019), the authors summarize the information from historical, geological and archaeological studies of Shulgan-Tash Cave, as well as about its conservation. Detailed results of the excavations in the Stalagmitovy, Dome, Chaos Chambers and in the Cascade Gallery, carried out by the expedition of the Institute of History, Language and Literature of the Russian Academy of Sciences (INL RAS) under the leadership of V. Kotov, are presented for the first time.

The researchers also presented the first steps in the study of Kapova's cave art. Kunichika (2018) described in detail the historical and political context of the discovery, and the initial stages in the study of Kapova Cave carried out amid the confrontation between the concepts of European and Soviet historical science, as well as conflicts within the USSR scientific community. This study is supplemented by the publication of the archives stored in the Shulgan-Tash state reserve. The paper (Kosarev *et al.* 2017) provides a description of Kapova Cave by A. Ryumin, discoverer of the Upper Palaeolithic images, as well as his brief biography. The work (Solodeynikov 2019) outlines the rationale for the uniqueness of Kapova Cave as a monument of cave art of the Upper Palaeolithic, and describes the main problems that have arisen during the 60 years of the cave's study.

In recent years, using AMS, several series of dates were obtained from bones and charcoal in the Upper Palaeolithic cultural layers. One charcoal mark on the ceiling of a niche in the Chamber of Paintings was dated. A large-scale programme for Uranium-Thorium dating of images has also been implemented.

Two dates were obtained from bones from the pit in the Dome Chamber: 15,235 ± 70 BP (AAR-20982) for a sample from horizon 6, and 28,050 ± 250 BP (AAR-20983) for a sample from horizon 4. In addition, the prerequisites for direct dating of images are discussed (Zhitenev *et al.* 2015).

The dates for the Upper Palaeolithic layer in the Stalagmite Chamber, obtained by the expedition led by V. Kotov, were published for the first time. Also, one sample of charcoal excavated by V. Schelinsky in the Chamber of Chaos was redated using AMS, which reduced the uncertainty inherent in the conventional method (Kotov 2019).

Uranium-Thorium dating of underlying and overlying calcite layers shows that the paintings were created between 36.4 ± 0.1 ka and 14.5 ± 0.04 ka BP. Such a wide dating interval is associated with the specific palaeoenvironment prevailing in the Southern Urals in the Late Pleistocene: a prolonged period of cold climate with no water transfer (Dublyansky *et al.* 2018).

The images in Kapova Cave were painted in red; charcoal was used for outlining and presumably for tinting some of the images. In addition, there are black lines on the walls of the cave that are not associated with the coloured images. Direct AMS dating of one of the lines in the Chamber of Drawings revealed that it was probably left in the late 19th - early 20th centuries

and is not an Upper Palaeolithic image (Dublyansky, Lyakhnitsky & Spötl 2018).

In recent years, the study of the pigments in Kapova Cave has focused on the analysis of samples from cultural layers in different chambers. Traces of paints, caches and pigments left by Palaeolithic artists on the cave floor were found throughout the chambers, as well as in the space between the first and second floors of the cave. The resulting paper (Pakhunov *et al.* 2016) provides a typology and review of the composition of pigments from all the chambers with paintings. In the Chamber of Chaos, mulberry-coloured pigments containing platy haematite crystals were found between the stones; the pigment from one grindstone contains a mixture of haematite and goethite, which may suggest the use of fire during its production. Individual drops of paint under the panels with animals and signs in the Chamber of Chaos turned out to be modern paint, applied in the second half of the 20th century by artists who made copies of the paintings.

The limonite raw material found in the vicinity of the cave has been compared with the red pigment from the grindstone in order to test the hypothesis about its possible use in the production of red pigment. The similarity of elemental and phase composition of the samples allows one to suggest that limonitic ore may have been used to obtain red pigment by calcining (Podurets *et al.* 2016).

A total documentation of the cave walls in the major chambers, which has been made using close-range photogrammetry and image processing, made it possible to discover new paintings and to define more accurately those previously known images that are in a poor state of preservation (Pakhunov 2017).

Starting in 2015, conservation work under the leadership of Eudald Guillamet has been carried out regularly. As a result, the chambers were completely cleaned of various visitors' inscriptions; in addition, a technique for masking engravings was developed (Guillamet 2016; Grigoriev *et al.* 2018). One of the most significant discoveries was made in November 2017 during the next stage of conservation and restoration in the Chamber of Chaos. After the removal of calcite layers on the panel called "Horses and Signs", a large, naturalistic image of a Bactrian camel was revealed. The camel is about 60 cm by 55 cm and is outlined in red. It is a naturalistic two-humped figure facing left, with a small, elongated snout, a vertical line dividing the outline of its body, and a filled-in neck. All the details are well-preserved, even on the belly where one can see a short hatching of hanging wool (Devlet *et al.* 2018a, 2018b). The Upper Palaeolithic age of the figure is confirmed by the results of Uranium-Thorium dating of the overlying calcite layers, which date to 14.5 ka BP (Dublyansky & Lyakhnitsky 2018). The discovery of the image of a camel in Kapova Cave is the first evidence of its presence in the region (Devlet, Pakhunov & Agadjanian 2018). However, it is possible that the ancient artists saw the camel in southern regions far from the cave.

In 2017-2018 comprehensive documentation of the site commissioned by the Shulgan-Tash Cave Museum was completed. The documentation was carried out by a combination of airborne laser scanning with a density of up to 100 points per square metre; aerial photography of the landscape of the site (25 sq km); laser scanning of the karst cavity from the Portal grotto to the Chaos Hall (1st floor) and the Diamond Hall (2nd floor); and photography followed by photogrammetric processing of those sections of the cave walls with Palaeolithic paintings. Such detail reliably reproduces the geometry of the surfaces and makes it possible to monitor the development of calcite crusts and analyse the fracture system. Photogrammetric models of cave sections are referenced to the laser scanning point cloud. Diverse spatial data are combined into a single system by uniform geodetic network. Spatially interconnected models of the landscape, karst cavity and the panels with Palaeolithic images represent a digital image of the site. Comparison of the cavity model with the surface relief pattern reveals a number of regularities that are important for analysing the behaviour of ground-waters that affect rock carvings. The preliminary results of the work were presented in a Shulgan-Tash booklet (in Russian, English and French) (Svoyski *et al.* 2018).

The second largest cave with rock art and cultural deposits dated to the Upper Palaeolithic is Ignatievka Cave, located in the north of the Chelyabinsk region. While the paintings in Kapova Cave are made with red paint, the images in Ignatievka are mostly drawn with charcoal. Direct AMS dating of three paintings resulted in a range of dates between 7040-4650 cal BC (Steelman *et al.* 2002). However, the Holocene dates obtained contrast with the results of dates from bones and charcoal from the cultural layer, as well as from the depictions of Ice Age animals (Shirokov 2018b).

The review of several South Ural sites containing mineral pigments reveals that these are primarily present in the Upper Palaeolithic layers. As this is also true for Ignatievka Cave, this might be indirect evidence for the Upper Palaeolithic age of its artistic assemblage (Zhitenev 2016).

In order to obtain independent dating of the cave art in Ignatievka Cave, Uranium-Thorium dating of calcite deposits was performed. Three dates were obtained

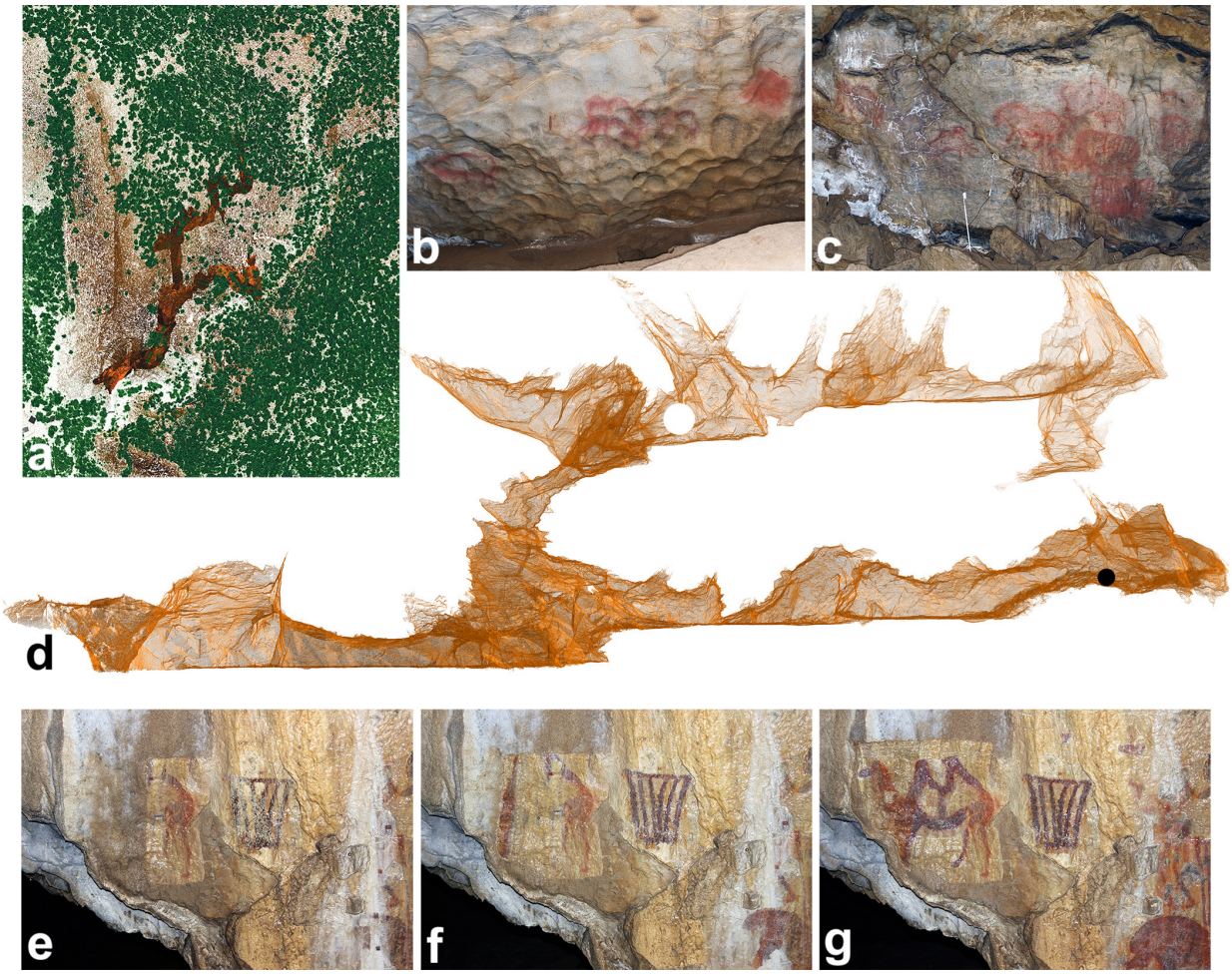

Figure 3. a. 3D point cloud of Kapova Cave karstic cavity (data acquisition and processing by the team of the RSSDA Laboratory under the guidance of E. Romanenko and Y. Svoyski). b and c. Eastern and Western panel at the Chamber of Drawings (white dot in the point cloud). d. Side view of the point cloud of the main part of Kapova Cave (data acquisition and processing: RSSDA Laboratory). e-g. Three stages of uncovering the camel figure (black dot in the point cloud). Photo: N. Grigoriev.

from the incrustations overlapping red and black paintings; these dates show that the minimum ages of the paintings are 9720, 9220, 8910 BP. The results suggest a systemic error in the direct dating of the charcoal images (Dublyansky *et al.* 2019).

Unlike Kapova Cave, located in a protected reserve with its painted chambers currently closed to the public, Ignatievka Cave remains exposed. Photographs of paintings taken in recent years make it obvious that the images are being destroyed, which is a consequence of uncontrolled visits, subsequent microclimate changes, and pollution of the cave. An interdisciplinary group of scientists has developed a programme for the examination and preservation of the cave and proposed it to the regional authorities (Shirokov 2019).

Not far from Ignatievka Cave lies Serpievka 2, a small cave with red-coloured paintings. Shirokov (2018a) describes the cave and the archaeological work carried out in it, and provides a detailed analysis of a figurative depiction of a young reindeer. The analysis of the painting technique, the cave's biostratigraphy, as well as analogies in the rock art of northern Spain, suggest that the images found in Serpievka 2 belong to the Upper Palaeolithic age.

Cis- and Trans-Baikal

The widespread use of digital documentation and image processing in recent years has changed the methodology of field research and resulted in the discovery of new paintings and locations in Cis- and Trans-Baikal. Open-air rock art sites are always exposed to weathering, which can result in the loss of integrity of the near-surface layer of the rock and its destruction; these tendencies can also be seen on surfaces with images. Thus, some individual fragments of the paint layer are lost. In contrast to the physical loss of the rock surface and the paint, the fading of colourful images is associated with pigment removal or with layered deposits overlying the painting. Either way, digital

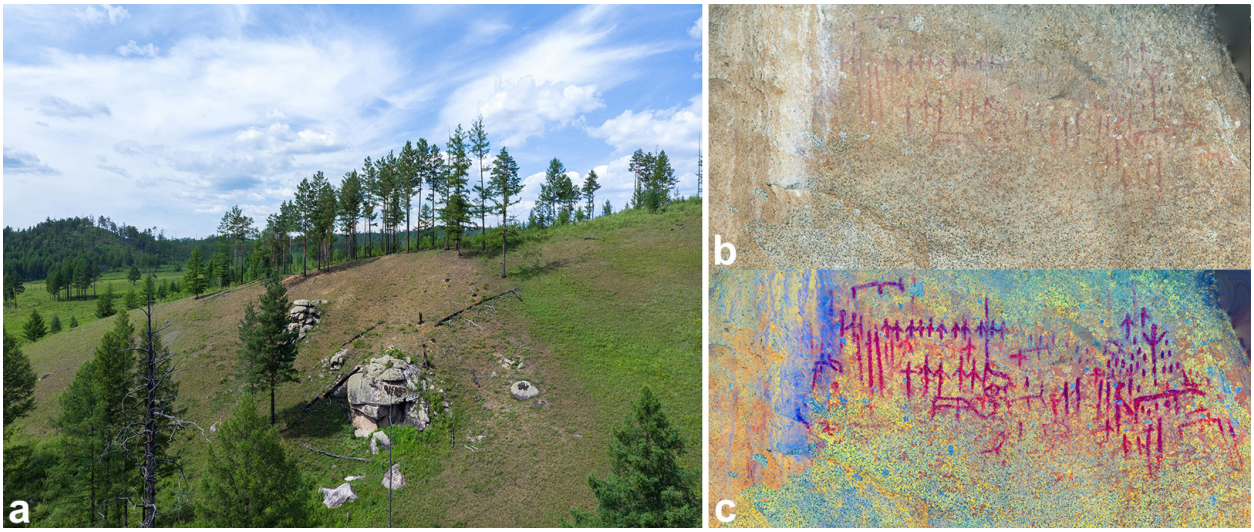

Figure 4. Trans-Baikal. Djalinda rock art site. a. Aerial photo. b. Close-up view of the panel. c. Colour enhanced image "b". Photo: A. Pakhunov.

image processing makes it possible to identify traces of paint and to reconstruct the original appearance of the images.

An article by Ponomareva (2018) provides some results of large-scale fieldwork, part of which was the documentation of 25 previously known sites in the Trans-Baikal territory. In addition, three new locations were discovered. The use of close-range photogrammetry and DStretch image enhancement made it possible to identify new images and to trace those previously known with more precision. Each site has a brief description with a reference, and the distribution of its images by motif.

A rock art site on the Imandan-Makit mountain (Tungokochensky district of the Zabaykalsky Krai) was published for the first time. It is characterized by its remoteness from the main groups of rock art sites in the region; it also stands out through the tradition of veneration of petroglyphs continuing to this day (Konstantinov & Ponomareva 2019).

Pakhunov *et al.* (2019) reported the initial results of a field trip aiming to redocument the sites in the lower reaches of the Shilka river (Sretensky and Mogochinsky districts of the Zabaykalsky Krai). New paintings were discovered at the Djalinda site. The elemental composition analysis of the samples suggested that variations in shade of the colours are related to their state of preservation rather than to the use of different pigments.

As a result of the examination of the rocks close to the previously known rock art sites, new sites with paintings of the Late Bronze Age - Early Iron Age were discovered on the north-western coast of Lake Baikal at Cape Ludar (Kichigin *et al.* 2018).

For the first time, painted images of the Late Bronze - Early Iron Age were published. They are located on separate planes of a large rock outcrop pierced by holes on the Tsagan-Daban ridge, Western Transbaikalia. It was suggested that the paintings were made at different times, and the site was used as a sanctuary; the suggested name of the site is the Sieve Cliff (Tashak 2019).

Far East

The Lower Amur and Ussuri rock art province unites a group of rock art sites on the Russia-China border. These are the sites of Sikachi-Alyan, Sheremetyevo, Kiya and Kalinovka. The petroglyphs of the Lower Amur and Ussuri can be dated from the Epi-Palaeolithic/Neolithic era (from 10th millennium BC) to the early Middle Ages (4th – 13th centuries AD). The complete description of the sites was published by A. P. Okladnikov, E. G. Devlet and A. R. Laskin (Okladnikov 1971; Devlet 2016; Devlet & Laskin 2016, 2017; Laskin *et al.* 2018).

Sikachi-Alyan has the largest cluster of petroglyphs in the Far East. They are located on basalt boulders and rocky outcrops on the right bank of the Amur riverm, 60 km south of Khabarovsk. The site has 438 rock engravings in six locations (Devlet 2019). In 2003 it was placed on the UNESCO Tentative World Heritage Site List. In 2014, when the water level in Sikachi-Alyan was abnormally low, five new stones with petroglyphs were recorded at point 1 (Devlet & Laskin 2015; Laskin *et al.* 2019a).

Figure 5. Sikachi-Alyan. a. Field view of Location 1. Photo: I. Georgievkij. b-d. Boulder 04. b. Photo: I. Georgievkij. c. High-map and d. Digital tracing by RSSDA Laboratory (data processing and photogrammetric modelling by E. Britko, E. Yushin, R. Gabdulin under the guidance of E. Romanenko).

The Sheremetyevo petroglyphs are located on the right bank of the Ussuri River on the border with China, 140 km from Khabarovsk. There are three known locations of petroglyphs on rock surfaces (points 1-3), while Sheremetyevo locations 4-8 are, actually, separate boulders (Laskin *et al.* 2019b). In 2019, a sixth boulder was found.

Since 2014, the petroglyphs of the Amur-Ussuri province of rock art have been monitored by the Institute of Archeology of the Russian Academy of Sciences, the Khabarovsk Regional Centre for Monuments Protection and the Remote Sensing and Spatial Data Analysis Laboratory (Moscow). The project was triggered by the observed deterioration of sites in

the Amur valley, affected both by pressure of increased touristic activities and periodical flooding of boulders with petroglyphs, especially during the catastrophic flood of 2013 (Devlet, Laskin & Pakhunov 2018).

Fieldwork at the Far Eastern sites during 2014-2019 was aimed at accurate and thorough mapping and documenting of sites and surfaces by means of aerial photography of unmanned aerial vehicles, ground photography, laser scanning and photogrammetric processing of digital photographs. For each site the GIS-based dataset of 3D-models of stones and surfaces with petroglyphs was developed. This resulted in finding the carvings described by A. P. Okladnikov with no exact referencing, which were considered lost, as well as discovering new, previously unpublished surfaces and images. To date, a total of 113 boulders and surfaces with rock carvings have been documented, including 15 previously undocumented boulders on the bank of the Amur river (Sikachi-Alyan, locations 1 and 2), the Ussuri river (Sheremetyevo, locations 4-8). Simultaneously 18 sections of vertical rock surfaces with petroglyphs (Sheremetyevo, locations 1-3; Kiya) were mapped and documented (Levanova *et al.* 2019).

The analysis of collected data carried out in 2017-2020 made it possible to identify carvings that had not been observed since Okladnikov's expedition more than 40 years earlier, and to correct numerous errors in the previous efforts of documenting the engravings by contact methods. For example, at Sheremetyevo (point 2) 7 images were identified (face masks, boats, geometric ornaments).

One of the most important results of the 3D-modelling project is the identification of previously unknown rock images by means of applying mathematical visualization algorithms to the model surface. This made it possible to identify more than 30 previously unknown petroglyphs and to refine significantly the outlines of most of the images already published (Levanova, Romanenko & Konakova 2019).

The rock art sites in the Republic of Sakha (Yakutia) were studied by expeditions from the Institute for Humanitarian Research and North Indigenous Peoples Problems of the Siberian Branch. In 2016, the Institute's archaeological team explored the Maya river bank from Ust-Maya village to Nelkan village in the Ust-Maisky District of the Republic of Sakha (Yakutia) and the Ayano-Maisky District of the Khabarovsk Territory. Two new sites with petroglyphs were discovered or first documented – Tsipanda and Syargalaakh. A panel, located on a high outlier made up of Cambrian limestones, at an altitude of about 35 m, was recorded. The image represents radial diverging lines made with ochre. Six previously known rock art sites were inventoried: Staraya Tsipanda II, III, Dylmy II, Kyllakh, Sygarya and Talaya (Okladnikov & Mazin 1979). A previously identified site, Staraya Tsipanda I, was not found. New panels with paintings (anthropomorphic and zoomorphic images, cruciform signs, dots, various lines, etc) were identified at the sites of Staraya Tsipanda II, Dylmy II, Kyllah and Sygarya. Many features make possible a comparison of the anthropomorphic paintings with the petroglyphs of the Amur region (Bravina *et al.* 2016).

New data on the site of Arkharinskaya Pisanitsa, located on the right bank of the Arkhara River (Amur Region), were published. The graphemes written in red and black were applied to the granite outcrops of the hill slope. The black ones, first discovered in 2003, make up a coherent whole — a hieroglyphic text arranged in three columns consisting of, respectively, seven, ten, and seven signs. In 2004, a suggestion was made that the text is written in the Jurchen hieroglyphic script. In 2014, this hypothesis, based on historical and archaeological evidence, received linguistic support, and the text was translated. Based on the field research of 2014-2018, it became evident that the inscription on the rock of the Arkhara River, dating to the 12th century, was the earliest Jurchen inscription known to date (Zabiyako 2019).

Conclusions

The results of recent research have shown that the quantitative and qualitative resource of rock art in Russia is far from exhausted. The establishment of new documentation and study methods widens the research capabilities of scholars and helps them find new art and locations.

Significant efforts were made in 2015-2019 to promote rock art sites as cultural heritage, and to prepare Russian rock art sites for several nominations to the UNESCO World Heritage List (Devlet *et al.* 2015). The Preliminary UNESCO World Heritage List included the Sikachi-Alyan site (2003), the Oglakhty mountain range (2016), Kapova Cave (Shulgan-Tash) (2018) and the petroglyphs of Lake Onega and the White Sea. Today, the nomination-dossier of the petroglyphs of Lake Onega and the White Sea is being examined by the experts of the UNESCO Committee. As a result of these nominations, scholars can review old material, as well as work on current research projects, since there are now additional resources for these tasks. This work also enables researchers to draw the attention of regional and federal authorities to the issues of site preservation, and limiting and organizing tourist flow.

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Author contributions: Elena Levanova – Kola Peninsula, Far East; Alexander Pakhunov – Urals, Cis- and Trans-Baikal; Nadezhda Lobanova – Lake Onega and White Sea; Yuri Svoisky – documentation at Kapova cave and Far East sites.

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