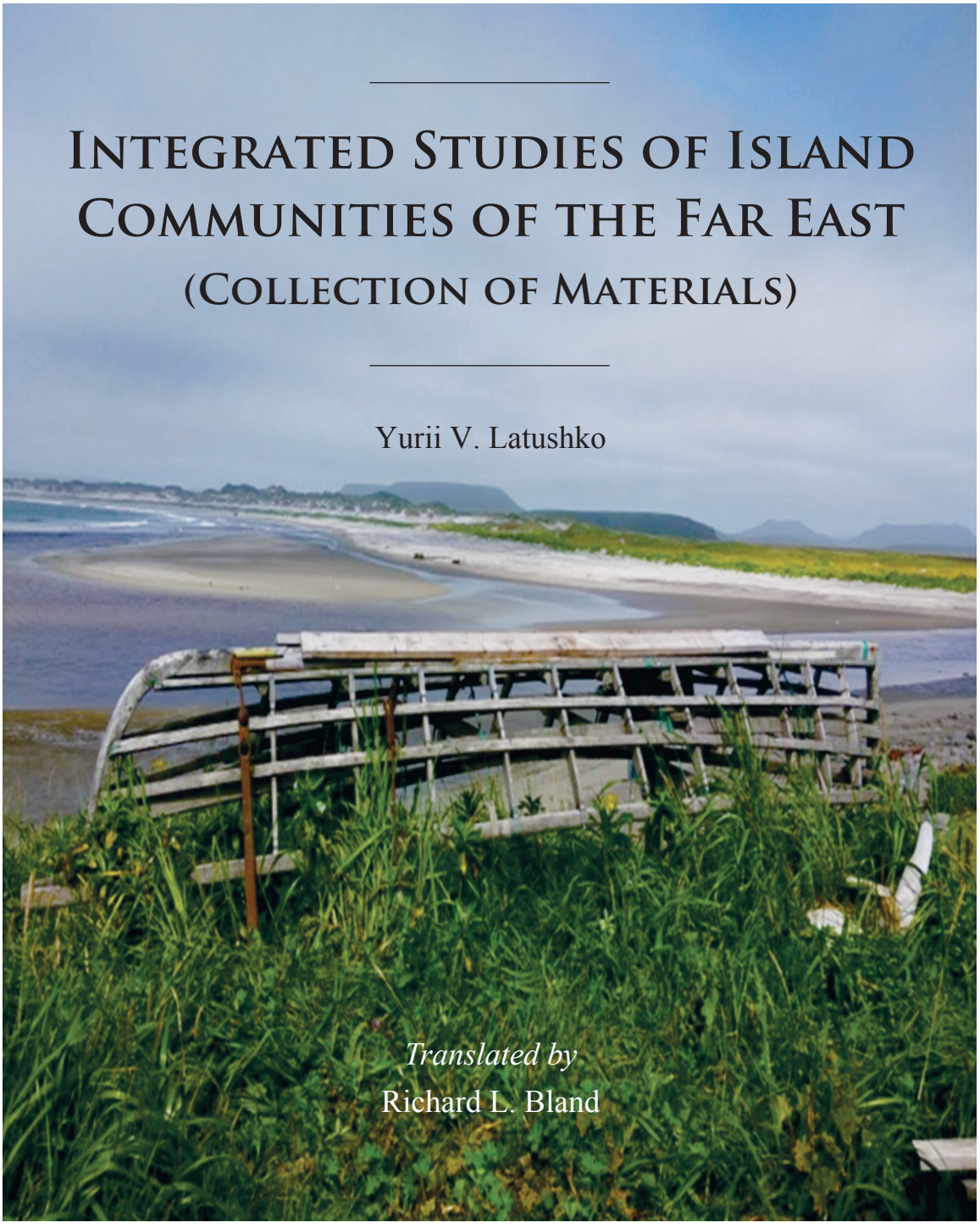
Integrated Studies of Island Communities of the Far East

(Collection of Materials)

Yurii V. Latushko



Translated by

Richard L. Bland

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation.

The Shared Beringian Heritage Program at the National Park Service is an international program that recognizes and celebrates the natural resources and cultural heritage shared by the United States and Russia on both sides of the Bering Strait. The program seeks local, national, and international participation in the preservation and understanding of natural resources and protected lands and works to sustain and protect the cultural traditions and subsistence lifestyle of the Native peoples of the Beringia region.

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English translation by Richard L. Bland

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National Park Service

Shared Beringian Heritage Program

Департамент внутренних ресурсов США является ведущей природоохранной организацией, которой вверена охрана большей части национальных земель общего пользования и сохранение природных и культурных ресурсов. Частью работы Департамента является обеспечение наиболее разумного использования наших земельных и водных ресурсов, охрана рыболовных ресурсов, диких животных и растений, охрана окружающей среды и культурных ценностей и исторических достопримечательностей в наших национальных парках и предоставление возможности активного и приятного отдыха на природе.

Программа Службы национальных парков Департамента внутренних ресурсов США «Общее наследие Берингии» является международной программой, которая способствует признанию и чествованию являющихся общими для США и России природных ресурсов и культурного наследия российской и американской территории по обеим сторонам Берингова пролива. Программа стремится обеспечить сохранение и изучение природных ресурсов и охраняемых территорий на местном, региональном и международном уровне, а также поддержку и развитие культурных традиций и традиционного образа жизни коренных народов района Берингии.

Комплексные исследования островных обществ Дальнего Востока: сборник материалов

Автор: Ю.В. Латушко.

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Эта книга переведена и издана на средства Программы Службы национальных парков «Общее наследие Берингии» и выпущена в печать Государственным типографским офисом Департаметна внутренних ресурсов США

Служба национальных парков

Программа «Общее наследие Берингии»

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Translator's Introduction

This work was originally published as *Комплексные исследования островных обществ Дальнего Востока: сборник материалов*. Edited by Yurii V. Latushko. Vladivostok: Institute of History, Archaeology, and Ethnography, Far Eastern Branch, Russian Academy of Sciences, 2017. Issue 1. A number of words, particularly names, have to be brought into English from Russian. How is this done? Every translation, and particularly from Russian to English, has the problem of finding a suitable form of transliteration. None of the three systems available (U.S. Board of Geographic Names [BGN], Library of Congress [LOC], or "Linguistic" system [Ling]) was felt to be entirely adequate. I have therefore created my own system. In this I use some of the BGN system with a slightly modified version of the LOC. For example, the Russian "e" ("ye" of BGN) is written as "e," following LOC. The Russian "ё" is also written as "e" (not as "yo"), following Ling. The Russian "э" is written as "e," following BGN. Both the Russian "и" and the "й" are transliterated as "i," unlike any of the three systems. The Russian "ю" and "я" are written as "yu" and "ya" respectively, following the BGN. The Russian soft sign, which is often dropped in transliterations or replaced with an "i," is retained here as an apostrophe, following BGN.

I have also settled, as much as possible, on one ending for words, as the English language dictates, rather than providing the appropriate ending (masculine, feminine, neuter, plural/nominative, genitive, dative, accusative, instrumental, prepositional) that can occur in Russian. And having 24 possible grammatical endings is not the end of it. In the masculine nominative, for a name ending in "-sky" there are at least five possible endings that can be found in English ("-sky," "-skiy," "-skij," "-skii," "-ski"). In addition, there are aberrant spellings that have been accepted in the literature. For example, Wrangell instead of the Russian Vrangel' has already been adopted in English. Some names are "semi-formalized" in English. For names that do not have an accepted English form I have used my system above for transliterating. All this in no way exhausts the possibilities and problems the translator faces, but rather it provides a notion of the difficulties attendant upon any translation project.

Why do I not pick one system or another? All three systems (BGN, LOC, and Linguistic) use diacritics, or something similar, making library searches difficult. The BGN uses an umlauted e (ë); the Linguistic system uses a number of diacritics, such as č, š, ž, and others; and the LOC, most problematic, uses an arc between some pairs of letters, such as t͡s, i͡a, and i͡u. All the letters in my system are standard Roman letters that can be typed into library search engines. I hope the explanation of my method will aid the reader, especially if he or

she should want to go back from English to Cyrillic, and I apologize to all whose names I have unintentionally "corrupted."

Unless otherwise indicated, all footnotes are those of the translator.

I would like to thank Anna Gokhman for reviewing the work for mistranslations, Kellye McBride for editing, Terry Duffy for layout, and Nan Coppock for editorial assistance. Most of all I must thank Dr. Yurii V. Latushko and the other authors for permitting this work to be published in English.

INSTEAD OF AN INTRODUCTION: BIOGEOGRAPHIC AND CULTURAL APPROACHES TO THE STUDY OF ISLAND SOCIETIES

Yurii V. Latushko[1]

Thousands of large and small islands are located in the vastness of the Pacific Ocean in different climatic zones. A significant part of those islands of volcanic origin are the tops of large seamounts, often active volcanoes, which, when connected by an imaginary line, form the so-called Ring of Fire, delimiting oceanic and continental platforms. There are also relatively small coastal islands in the Pacific Ocean, which, in the recent past, were an integral part of the mainland near where they are located. In the warm subequatorial and equatorial waters, we see how the islands literally become a monument to the centuries-old activity of marine invertebrates—coral polyps—appearing as if from nowhere. Such islands are called atolls. With all the diversity, the most important geographic feature of the island territories is their comparative isolation from the mainland. This circumstance, together with the extreme natural processes manifested with high intensity, allows one to consider small- and medium-size islands as model natural geosystems. Being quite extreme in terms of living conditions, they leave almost no room for human error. If we accept the thesis that culture is an abiological way of adapting people to the natural environment as an axiom, then we can confidently speak of its insular originality. Social institutions, forms of control over territory and resources, and material and spiritual culture ultimately determined the adaptive potential of the island communities of the Pacific Ocean; from a cross-cultural point of view, they provide rich material for scientific research, both fundamental and applied.

This issue will highlight a number of scenarios of the scientific study of island territories in the Pacific Ocean considered against the background of the general problems of modern island and coastal anthropology. We propose to understand the latter in as broad as possible terms as a body of sciences that study the variability of a person in time and space.

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At the same time, for quite understandable reasons, the emphasis of our issue will still be socio-humanitarian. Here, we note that we do not pretend to have a total analysis of the problem, but rather this is a proposal for further dialogue and verification of the current state of the research field.

It should be said right away that the biogeographic approach to the study of the islands was historically the first form of scientific understanding of their complex natural and social processes. At some stage of development, when anthropological knowledge was passing through the formation phase, a culturological view of the same objects of research emerged. The emancipation of the two approaches has never been absolute; they complement each other. Biogeographic and ecological thinking made it possible to compare and explain social processes and natural ones. But this also limited the heuristic value of this approach, since the number of illogical exceptions in the behavior and culture of the islanders undermined the belief in the validity of the very principle of "organicism." Oscillations of the pendulum of scientific self-development and social needs at the present stage are again pushing representatives of different scientific disciplines to search for a common language, and the island territories, as before, serve as an excellent "natural laboratory" for working out this kind of interaction.

For a better understanding of the island problem, we offer the reader a short excursion into the research field of domestic and foreign science. The key issues here will be the issues of the initial settlement of islands, the exploitation of their limited resources, and the problem of the balance of cultural and natural systems at different historical stages.

Difficulties and discrepancies begin with definitions. What is an island like? The answer seems obvious and is known from school geography lessons—land surrounded on all sides by water. However, biogeographers distinguish "inhabited islands" as an independent category, or they interpret this term broadly in relation to any isolated areas of land, where not only large bodies of water act as an insulator, but also mountains, deserts, etc. By contrast, such "pocket continents" as Madagascar or Greenland are also islands from a formal point of view, but from a geographical standpoint they rather have the features of a continent. Therefore, anthropologists most often build their models on the basis of small- and medium-size oceanic islands. In other words, there is no terminological rigor in the definition of an island.

At the subconscious level, the island most often acts as a metaphor for an enclosed space, a symbol of loneliness, isolation, and severe limitation of living space. From this, it is not difficult to understand why it is so tempting to consider the island as the ideal model when describing adaptation, for example. When all the factors of evolution line up in a clear

relationship, they appear to create an ideal experiment that seems to be easy to calculate and measure. In reality, of course, this is not the case.

One more important circumstance, which is rather implicit, is worth noting. From the point of view of social history, islands are most often viewed as the eternal periphery of mainland territories. Estimates here may vary depending on the ethical approach of the researcher. But more often than not, life on the islands seems to be non-bustling and subordinate to natural specifics. Hence the portrait of the "typical islander" as a provincial person with a special system of values, including mutual assistance and high group solidarity. However, often on islands, especially in the context of traditional culture, we see examples of asocial human behavior from a formal point of view in a wide range, from the custom of not giving a hand to a drowning man to carefully thought out birth control practices.

The perception of the island as the ideal unit of scientific research originated in evolutionary biology. It was in the Galapagos Islands that Charles Darwin first encountered numerous endemic species of fauna and flora, which later prompted him to the idea of natural selection.

Using the example of the Philippines and the Indonesian archipelago, Alfred Wallace confirmed Darwin's ideas. In addition, he also formulated some of the main ideas of modern island biogeography, for example, the pattern of decreasing species diversity on islands, due to which they can be considered natural laboratories in which evolutionary processes are much easier to untangle than on the mainland. From this thesis, there was only one step left, to look at the island adaptation of people from similar positions. This step was taken by social and cultural anthropologist Alfred Haddon. In 1898, he organized a comprehensive expedition to the Torres Strait Islands. Haddon considered these islands a testing ground for the cultural variability of humans as a biological species on a par with plants and animals.

At the beginning of the twentieth century, one of the founders of structural functionalism, Alfred Radcliffe-Brown, studied the inhabitants of the Andaman Islands; another anthropologist, Bronislaw Malinowski, on the Trobriand Islands in Melanesia studied "primitive" forms of exchange, such as "kula." His work formed the basis of many cultural anthropological theories, including the theory of gift exchange, brought to its logical completeness by neoevolutionists and substantivists. Many neoevolutionists in the middle of the twentieth century also began their scientific journey with the study of the life of islanders, as was the case with Marshall Sahlins. His work, *Social Stratification in Polynesia* (1958), is now considered a classic. In it, he connected the level of social stratification of certain Polynesian societies with each type of island (more stratified societies existed on volcanic islands as opposed to atolls).

The passion for "island modeling" is explained by the compactness and convenience of working with a relatively small amount of data. The islands and their cultures, limited in size and natural components, seemed to be excellent objects for structural and functional research. Building on the work of the classics, Waida and Rappaport (1963) proposed the concept of "primitive island isolates." According to it, island cultures were viewed as cultures isolated in time and space; they were not just "prehistoric" but "ahistoric."

A new impetus to the concept of "primitive isolate" was given by the development of quantitative island biogeography in the 1960s and 1970s. As a result, the idea of the island environment as a descriptive, isolated unit of analysis was established in anthropology and archaeology. Islands were understood as limited, isolated, fragile, and unstable habitats, characterized by a high degree of endemicity of flora and fauna, where the complexity of the natural world is significantly reduced in comparison with the continents.

R. MacArthur and E. Wilson (1967) proposed a dynamic equilibrium model between the migration of species to islands and the extinction of native species. According to their model, the key variables that determine the quantitative balance of the island biota are the distance to the mainland (that regulates immigration) and the size of the island (that affects the extinction of local species). Thus small, remote islands will have relatively low values of immigration, as well as biodiversity and natural resources, while large coastal islands will have higher rates of immigration and more species. This model can be supplemented by appropriate geographic conditions, such as the presence of a chain of closely spaced islands stretching from the mainland. When the number of species migrating to islands matches the rate at which they replace native extinct species, an equilibrium point is reached (Whittaker 1998). It follows that both in the study of wildlife and social organization on islands, the key should be the study of (and factors that contribute to) this balance.

Within the framework of social and cultural anthropology, and subsequently archaeology, they began to resort to mathematical modeling of the ecological potential of settlement territories, cultural variability, and demographic growth. Evans (1973, 1977) was the first to apply biogeographic principles to island archaeology. He argued that the sea both divides and isolates communities and binds them together, being an effective means of communication (with the corresponding development of transport technologies). This leads to the paradoxical combination of pioneering techniques of survival and wider adaptation of human beings with extreme conservatism and cultural traditionalism of the social order due to the relative physical isolation and protection of island societies from the high competition that exists on continents. Indeed, many ancient and traditional island cultures are prone to hypertrophied

development of some of their subsystems, such as the socio-normative sphere. As an example, let us recall the significant monumental construction (from Micronesia and Polynesia in the Pacific Ocean to Malta in the Mediterranean Sea).

If we look at the time of human settlement of most of the islands of the planet, we will see that in the Paleolithic Era, only those islands that were then part of the ancient continents, or lay at a short distance from them, were inhabited. The qualitative movement of man to the islands began in the Neolithic Period. Since the beginning of the Holocene, a significant warming of the climate was noted on the planet, the sea level rose by an average of thirty-five meters. Sea distances increased, but the shift in human life support systems and cultural forms of adaptation led to the gradual specialization of a number of coastal cultures. The "great sea migration" began.

The order of settlement of many islands is, to some extent, related to their size and distance from the mainland. Large coastal islands, as a rule, were settled earlier: smaller and more distant ones, later. In this vein, for example, Terrell (1976, 1986) interpreted the strong correlation between the number of languages spoken in the Solomon Islands and the size of an individual island. He also distinguished between the initial rapid settlement of islands by small, wandering groups of people and slow development and the limited spread of sedentary cultures (here, the author used a direct analogy with the process known in biology as succession).

As a result, the theory of "super tramps" appeared in island anthropology. According to it, at different stages of human development of the islands, there were such peoples who made the very movement to remote coastal and island territories the key to their own successful adaptation and, ultimately, their way of life. This idea was so seductive that it even found its figurative embodiment in cinema (for example, in Kevin Costner's film *Water World*). In real history, the first to come to mind are the Vikings in Europe and the "Sunrise Vikings," or, the Polynesians in the Pacific Ocean. What could have pushed them on such distant and dangerous wanderings? As a hypothesis, let us assume that a significant part of the reason for this movement was the search for relatively specialized cultures that were acutely responsive to demographic and environmental changes: a balance between the environment, their own needs, and the pressure of continental cultures. For example, the ancestors of the Polynesians most likely made the transition to agriculture on the mainland in Southeast Asia. Their main crops were sweet potatoes, taro, and yams. Their northern neighbors eventually switched to rice cultivation. According to archeological data (Bellwood 1979), we see a gradual expansion of the area of rice crops and their displacement of tuber crops. The latter assimilated, or

were pushed farther to the southeast, and eventually reached the territory of Taiwan and the Philippines. From there, later, a movement began toward smaller and more distant islands, the main indicator of such movement is considered to be the findings of the "Lapita" ceramic complex. However, this theory, based on biogeographic logic, revealed more and more flaws over time. It has been heavily criticized since the early 1980s, when the pendulum of science swung in the direction of post-processualism.

First and foremost, reaching western Polynesia in the middle of the first millennium BC, the Lapita ceramic complex fell into final decay and disappeared at the turn of the era. This was not directly related to the lack of raw materials—there were clays, albeit of low quality, available in western Polynesia. Before their disappearance, Lapita ceramics became much simpler (so-called "masks" and complex ornamentation disappeared), their forms changed, and the context of their use changed (on a number of Solomon Islands, Lapita ceramics are associated with the tradition of decapitated/headless burials). In this context, they had more of a sacred than a utilitarian use. But the farther to the east and the younger in age the pottery, the more and more utilitarian it became.

After the disappearance of Lapita ceramics, the process of relatively rapid colonization of outer (distant) Polynesia almost immediately began. Moreover, this colonization did not follow the main biogeographic principle—it did not go from the nearest and largest archipelagos to small and distant islands but simply followed some other logic. Very often, islands closer to the Asian mainland were developed later, often by newcomers from the east.

Considering isolation as the most important characteristic of the cultural evolution of the Polynesian Islands, P. Kirch (1984) nevertheless emphasized that it should not be confused with proximity. Island societies are not completely self-contained. At the same time, oceanic islands form extremely fragile ecosystems. Kirch concluded that, in addition to such activities as hunting; fishing; and massive deforestation for agricultural purposes, housing, and transport construction, the endemic flora and fauna of the islands suffered no less from the deliberate or unintentional introduction of highly competitive cultivated species of plants and animals people brought with them, especially at the level of the island valleys.

Therefore, it gradually came to be understood that any island landscape, no matter how pristine it looked, if people lived on the island (or, even more so, if people now live on it) it can be called "natural" only with a large share of reservation. On such small and closely spaced islands as those of the Peter the Great Gulf, this is especially evident. In the middle of the nineteenth century, the French gave the Rimsky-Korsakov Archipelago the name "Îles Pelées" ("bare islands"; now only the largest island of the archipelago is named Bol'shoi

Pelis [Big Pelis]) due to the almost complete absence of trees on it. Today, they grow in large numbers there. Pacific Fleet facilities were located on many of the Gulf Islands, as a result of which the islands have been subjected to strong anthropogenic impacts. However, after just a few decades, especially in the protected areas of the Far Eastern Marine Preserve, the situation began to improve. The comparatively high rate of restoration of the landscapes of the coastal islands forces us to raise the question more broadly—did the ancient inhabitants so rationally and carefully treat the environment around them?

If we make the assumption that some cultures (sea "super tramps") migrated from island to island due to depletion of culturally significant resources (for example, depleting soil, deforestation, etc.), then this could explain both extreme mobility and migration of a population over ultra-long distances, and the ultimate limits of such expansion on the most distant oceanic islands. So, for example, it is on them that we can see either a qualitative leap in technology (the introduction of fertilizers, the construction of dams, the development of mariculture or irrigation where it was possible, etc.), or an ecological catastrophe with the subsequent degradation and even the disappearance of the population (as in the case of Easter Island or Necker Island). In other words, sooner or later, natural factors could surpass the adaptive potential of culture in their effect.

Revision of the classical provisions of the biogeographic approach in cultural anthropological studies of island societies began with special cases and with the emphasis on the obvious things that the entire scientific community suddenly began to notice. So, Patton (1996) pointed out the fact that colonization of islands by humans is significantly different from that of plants and animals, since it is often a deliberate process arising from social and/or political motives, depending on the level of marine technology and navigational knowledge in a specific historical period. He also noted the differences between humans and animals in foraging practices and group interaction patterns. In order to study the influence of isolation on human populations in more detail, he considered it necessary to develop not insular biogeography but the "theory of insular socio-geography," shifting the emphasis to the analysis of culture.

B. Fitzhugh (1997) noted that even the most remote islands of the Pacific Ocean have never been completely isolated. By comparison, for example, the Polynesians saw the ocean ("moana") as a road linking the "sea of islands." In this vein, as early as the middle of the twentieth century, Rose noted that prehistoric communities on opposite sides of the wide strait dividing the Greater Antilles were culturally closer than communities on opposite ends of the same island. This feature did not fit well with the concept of the island as a discrete unit

of analysis, which is why at the beginning of the twenty-first century, a concept arises that is difficult to adequately translate into Russian: "islandscape," island landscapes where land and sea combine and create a special kind of spatial unity.

The emphasis on interaction rather than isolation, on the interpretation of cultural meanings rather than on biologically and geographically determined models, was the result of a post-procedural turn in Western anthropology. As a consequence, the impact of isolation on social structures has become the main subject of interest for scientists, while the islands themselves are increasingly viewed as social constructs ("islands in the head" rather than as physical units) (Patton, 1996). The application of the metaphor of the island to the islanders in general has come to be seen as an indicator of the conscious manipulation of social and cultural boundaries to create local (territorial) identity.

In turn, it is important to try to keep the golden mean. We believe that the biogeographic approach can provide a good foundation for future research. At the same time, linear borrowings and interpretations of the ideas of geographers and biologists by anthropologists and archaeologists should not be permitted. Our task should be to identify natural prerequisites and dominants to better understand the logic of cultural responses on the islands. These answers are likely to simultaneously obey some general rule, and at the same time contain a cultural residue that deserves most careful study, so that cultural exceptions better explain its specifics.

We tried to adhere to this attitude in our own research. In 2015, thanks to the help of the Russian Geographical Society, a project was launched to study the connection between landscapes and the long-term cultural evolution of island communities in the Far East. It directly brought together scientists from two institutes of the Far Eastern Branch of the Russian Academy of Sciences—the Institute of History, Archaeology, and Ethnography and the Pacific Institute of Geography. A collaboration of scientists from other scientific organizations in Russia, from Kamchatka and Sakhalin to Moscow and St. Petersburg, soon arose around this project. To coordinate research efforts, the Center for Insular and Coastal Anthropology of the Asia-Pacific Region with a promising research program was created by a decision of the Academic Council of the Institute of History, Archaeology, and Ethnography of the Far Eastern Branch of the Russian Academy of Sciences. Interdisciplinary expeditions took place to various points of the northwestern part of the Pacific Ocean—from the islands of the Peter the Great Gulf to the Kuril and Commander Islands. Interdisciplinary landscape, archaeological, and ethnological research was carried out. Most of the work was done by young scientists, for whom the project also became an important milestone in their professional activities.

The main idea was to try to study the island territories of the Far East based on the latest achievements of modern historical and geographical science. The objects were selected according to two well-known criteria—the size of the island (this variable is indirectly related to the complexity of the landscapes, which provided a greater or lesser set of resources for the local population, both in antiquity and later) and its remoteness from the mainland. These parameters are the main ones, but not the only ones, taken into account; the climatic zone, the degree of anthropogenic impact on the ecosystem of the islands, the level of development of vehicles and technologies, the nature of industrial relations, etc. are also important.

The collected material has yet to be thoroughly analyzed, but already the first results are very interesting. For example, previously unknown archaeological sites of the Paleometal Period were discovered on the small coastal islands of the Gulf of Peter the Great (in the archipelagos of Empress Eugenie and Rimsky-Korsakov). The most interesting of them is a permanent settlement (the Rikord-4 site) from the time of the Yankovskaya archaeological culture (three thousand years ago). The opening of a fairly large (about one hectare) village on an island with an area of about five square kilometers prompts us to reevaluate the model of interaction of the ancient communities of the gulf with each other and with the environment during the period of the climatic maximum of that time.

These results are all the more interesting if we compare them with the time-synchronous development of ancient cultures on the larger oceanic islands. In this regard, the longitudinally oriented Kuril Islands are extremely important for the study, where it is possible to trace culturally determined changes in the territorial organization from the Neolithic Era to the present. Even in the last segment of history, one can see how different cultures organized their living space and activities on the islands in different ways. So, for example, on Iturup Island at the time of its transfer by Japan to the USSR, there were over one hundred settlements, many of which were small and did not have a land transport connection. In our time, there are only about a dozen of them left. At the same time, the size of the Japanese and Russian population of the island is approximately comparable, but its concentration in settlements and their connectivity is significantly different.

It is also worth noting that the island way of life, if we understand it as comparative isolation and self-reliance, is often associated with the exploitation of a certain rather limited range of resources (fish, marine animals, soils, landscape zones, etc.). In this case, the isolation is always relative. During the periods of major crises, seemingly completely forgotten basic principles of island life are actualized. This is best seen in the example of the Commander Islands, when after the political and economic collapse of the USSR, the almost

lost "traditional way of life" of the islanders began to be revived. This image was previously associated with ethnic Aleut culture. However, as our research has shown, ethnicity on the islands is primarily a derivative of the territory and the way of life of people on it. This is a very provisional category that bears little resemblance to a formal definition. It is this understanding of ethnicity that allows us to better understand the statement of one of the respondents, a resident of the Bering Island, a Ukrainian by nationality: "In the 1990s, we all became Aleuts here." This also implies a conclusion about the importance of studying "ethnographic antiquity" on the islands, which never loses its relevance at the level of grassroots culture. This not only allows one to better know the history of the region but also to understand many aspects of human activities and their relationship with each other and with nature.

With this issue, we would like to present a series of publications devoted to the historical and geographical study of the island communities of the Russian Far East, we hope that they will arouse the interest not only of specialists but also of a wider circle of readers.

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DIVERSITY OF ISLAND GEOSYSTEMS AND THEIR COMPONENTS AS AN INDICATOR OF THE INFLUENCE OF NATURAL FACTORS AND ECONOMIC ACTIVITY

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The geographical location, climatic features, and history of the development of the natural environment in the southern Russian Far East contributed to the formation of a wide variety of geosystems and their components. The region under consideration is a unique area where a combination of species of northern and southern biota is noted. Peculiar natural complexes include rare and endemic plant and animal species. The only marine preserve in Russia is located here. At the same time, the region is an important transport hub with the largest seaports, coal and oil terminals, industrial enterprises, military facilities, and the highest population density on the entire Pacific coast of Russia [5]. In addition, as the southernmost section of the Russian Pacific coast, it experiences the greatest recreational burden.

The purpose of this study, using the islands in Peter the Great Bay as an example, is to reveal the influence of natural factors and economic activities on the diversity of island geosystems and their components. For this, a comparative analysis of the floristic, cenotic, soil, and landscape diversity on the islands was carried out.

Field studies of the current state of the components of the natural environment on the islands in Peter the Great Bay were carried out in 2009–2016. The geomorphological and geological structure of the islands were studied, and geobotanical, lichenological, and soil

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studies were conducted. Landscape mapping at a scale of 1: 25000 using the ArcGis 10.1 software package and mathematical analysis of the spatial structure of landscapes were done. The index of plant and lichen diversity d = S / lg A was calculated, where S is the number of species, A is the area of the island in m^2; and the Margalef index Dmg = (n-1) / lnS was also calculated, where n is the number of landscape species and S is the area of the island.

When carrying out phyto-indication studies, the following characteristics were taken into account: forest cover, closeness of tree crowns, projective cover of shrubs and grasses, frequency, species diversity, number and state of populations of protected species, and vital state of vascular plants, which was assessed according to a four-point system: (1) weakly vegetates, does not bear fruit, traces of chlorosis and necrosis on tissues; (2) does not reach usual size; (3) vegetates; (4) a full development cycle, reaches normal size. When assessing lichen-indicative parameters, the following were taken into account: species diversity of lichens, vital state according to a five-point scale [9], and the frequency of occurrence of species belonging to different ecological groups [8].

The flora of the vascular plants of the islands is characteristic of the Manchurian Province of the East Asian region of the Boreal subkingdom of the Holarctic kingdom and has nemoral features. Most of the species have an East Asian distribution. A high index of species diversity is typical for Bol'shoi Pelis Island; average values of the index for the islands of Rikord, Reineke, Popov, Putyatin, and Stenin; and low values for the islands of Shkot, Gerasimov, Lavrov, Naumov, and Engel'm. The largest number of protected species is represented on the Bol'shoi Pelis Island is twelve. On other islands, this figure does not exceed seven species. The variety of ecological conditions of the islands determines the successive phytocenoses: forest, light forest, meadow, herb-shrub-semi-shrub, petrophytic-herbaceous, marsh-herbaceous, lacustrine-herbaceous, and halophyte-herbaceous.

The species composition of lichens on the studied islands is generally typical for southern Primor'e. Lichen communities develop in forests on the bark of trees, cliffs, and stones; in herb-shrub communities on branches of shrubs, stones, and non-turfed areas of the soil; and on seaside cliffs and boulder-cobble beaches. The greatest species diversity of lichens was noted on the islands of Bol'shoi Pelis and Popov; the highest diversity index was on the islands of Sidorov and Bol'shoi Pelis; and the greatest diversity of protected species was on the islands of Bol'shoi Pelis, Popov, Putyatin, and Rikord.

The spatial differentiation of the soil cover of the islands is primarily due to natural factors: height, steepness, slope exposure, and variety of vegetation. The most widespread

are typical burozem soils,[3] which form under broadleaf forests on slopes of medium steepness. Their profile (O-AY-BM-BMC) is usually thin and very stony. Dark burozem soils with a high humus profile (O-AU-AUBM-BM-BMC) are formed under polydominant broadleaf forests with a well-developed, grassy ground cover. Limited areas on flat slopes with slow water exchange, mainly under alder-bird cherry-willow forests, are occupied by podzolized burozem soils with a characteristic clarification of the sub-humus part of the profile and the presence of traces of gleying in the illuvial horizon (O-AYe-BMg-BMC). Dark illuvial-humus burozem soils (O-AU-BMhi-BM-BMC) are confined to the lower flattened parts of the slopes under thickets of Gmelin's wormwood, miscanthus meadows, and sparse rough forests with a developed herb-shrub/semi-shrub layer. The current state of the soil cover of the islands is determined by the degree of anthropogenic pressure.

The islands are characterized by varying degrees of anthropogenic transformation of vegetation: strong (Putyatin, Popov, Rikord, Reineke, and Engel'm Islands), medium (Shkot, Lavrov, and Gerasimov Islands), and weak (Naumov and Sidorov Islands). According to the degree of transformation, the forest cover is between 60–50% for strong islands, less than 70% for medium islands, and more than 80% for weak islands. The number of anthropogenically altered communities is more than 50% for strong islands, more than 40% for medium islands, and less than 30% for weak islands. Overall, the number of protected species is fewer than seven and the vital state of vascular plants varies from 1–4 points.

At present, about half of the area of Putyatin Island is occupied by secondary broadleaf oak forests of the park type. The rest of the island is occupied by bird cherry-willow forests; shrub-herbaceous phytocenoses; and herb communities in rocks, swamps, lakes, sea terraces, erosion ledges, and beaches. Protected species are rare. On the northern part of the island, highly closed deciduous forests have been preserved. In areas adjacent to the village, there is a substantial depletion in the species composition of vascular plants and lichens, flora adventitization, and the predominance of species resistant to anthropogenic influence among lichens. On the islands of Popov and Rikord, polydominant deciduous shrub-herbaceous forests with vines prevail. In anthropogenically altered territories, there are park-type oak forests and alder-bird cherry-willow forests in waterlogged areas. Significant differences in the structure of the vegetation cover are characteristic of Reinecke Island. Here shrub-semi-shrub-forb communities form the basis of anthropogenically altered territories. Wet herb meadows are also widespread. On the islands of Sidorov and Gerasimov, linden-hornbeam-oak forests (*Tilia amurensis*, *Carpinus cordata*, and *Quercus mongolica*) prevail; there

[3] Burozem is a brown forest soil, formed under broadleaf and mixed forests in a moderately warm climate (educalingo.com).

are also shrub-herbaceous and herbaceous communities of rocks, coastal meadows, and swamps. On the islands of Shkot, Lavrov, and Engel'm, less than half of the islands' area is occupied by polydominant deciduous forest, the rest is occupied by shrub-semi/shrub-forb communities. At present, Naumov Island is a benchmark in the preservation of coenopopulations of the Japanese yew among other islands in the Peter the Great Bay [3]. The preservation of the Japanese yew (*Taxus cuspidata*) and its good renewability on this island is due to 80% forest cover, protection from strong winds by shrubs on the periphery of the island, and by steep slopes from tourists.

Lichen-indicative studies have shown that on the islands that are not part of the marine preserve, the occurrence and projective cover of lichens characteristic of natural and slightly altered habitats, as well as rare species, are higher in areas located closer to the tops of the hills. This is due to the presence of favorable conditions for the development of lichens and a lower anthropogenic burden, that is, these areas are less populated. The most impoverished species composition of lichens is presented in the vicinity of settlements; species of anthropogenically disturbed habitats are widespread here. On thallus, traces of fires were noted not only near settlements but also in the areas most remote from housing. Lichens with the vital state of 3–4 points prevail. Species with a health of 2 points (severe damage) are common. Nitrophilic lichens are ubiquitous on these islands, an indicator of surface air pollution with nitrogen compounds.

Under the forest vegetation of the Popov, Rikord, Reineke, Shkot, and Lavrov Islands, typical burozems and dark burozems are widespread, characterized by the small skeletal root layer and the presence of traces of pyrogenic effects—particles of charcoal.

On most of the islands of Engel'm, Lavrov, and Shkot, as a result of the technogenic destruction of the fertile soil layer, the soil profile under Gmelin's wormwood, formed in place of the destroyed forest vegetation, is notable for its small thickness (up to 35–37 cm), high density, and strong skeletal structure (80–95% of the volume of soil mass).

On the populated islands of Popov, Reineke, and Putyatin, due to the low-mountainous nature of the relief, low thickness, and strong skeletal structure of the soil profiles of the stony-rubble composition of burozems, the erosion of the soil cover is quite high. Most of the territory of the settlements and dirt roads, as well as hiking trails, belongs to the erosion-endangered group of lands. When "meadow landscapes" are used for hayfields and cattle grazing by the local population of Reinecke Island, this leads to soil depletion and deterioration of the structure of surface horizons and increases the erosion hazard of meadows.

The pyrogenic factor is one of the leading causes of destruction of vegetation cover and the development of planar soil erosion.

The soil cover of the hard-to-reach Naumov Island with preserved coniferous plantations is represented by thin burozem soils with clear signs of podzolization.

On the islands of Sidorov and Gerasimov, under a highly closed deciduous forest with a well-developed grass cover, favorable conditions are created for the formation of predominantly dark burozems.

The islands of Bol'shoi Pelis and Stenin, which are part of the marine preserve, are characterized by an average degree of anthropogenic transformation of vegetation. Forest cover is more than 60%; the number of anthropogenically modified communities is less than 50%; and the number of protected species is more than four. Polydominant broadleaf, shrub-forb forests with lianas prevail on these islands. Stands of Manchurian fir (Stenin Island) and broadleaf forests with a share of Japanese yew (Bol'shoi Pelis Island) have survived. Hornbeam-linden and maple phytocenoses, low-growing broad-deciduous forests, as well as Maximovich's rosehip and Gmelin's wormwood with light forests and miscanthus forests are widespread.

Lichens are characterized by high species diversity. On the island of Bol'shoi Pelis, 194 species were recorded; while 203 species on Popov Island are more well known and studied. There are thirteen species on the island of Bol'shoi Pelis included in the federal and regional Red Books. This is the highest indicator of diversity on the islands of the bay (Popov Island and Putyatin Island total thirteen each, Rikord Island twelve). Lichens of natural and slightly modified habitats prevail in communities not only in individual areas, but throughout the islands. There are no nitrophilic lichens and the present species are resistant to high levels of pollution. The occurrence of lichens is largely due to the availability of suitable substrates and habitats. Lichens with a vital state of 4–5 points predominate. However, in some areas, there are lichens with a vital state of 2–3 points (the upper crustal layer is destroyed, the layer of algae is discolored). In the absence of a direct anthropogenic impact, this may be due to the regional and transboundary transfer of pollutants [4].

Within the protected islands, the current state of the soil cover is primarily determined by natural factors. On Stenin Island, the burozems on the peaks are significantly inferior to the burozems on the slopes, both in soil thickness (50 versus 100 cm) and in the intensity of humus illuviation in the illuvial horizons. Bol'shoi Pelis Island shows a positive tendency in the change of soil-forming processes: the predominance of the features of "forest" burozem

formation in the processes of soil-development and the formation of typical burozems in places of former vegetable gardens [7].

In terms of landscape, islands are characterized by the dominance of geosystems of gentle and medium steep slopes composed of granites, granitoids, and basalts, with a predominance of highly closed polydominant broadleaf forests on dark and typical burozems. A distinctive feature of Reinecke Island is the widespread herb-grass meadows, which is a consequence of active economic development of the island in the twentieth century. Geosystems of terraced and low-lying areas gravitate toward the coast with a predominance of shrub-forb communities on meadow soils, as well as typical and podzolized burozems. The islands are surrounded by landscapes of abrasion-denudation scarps with gravel-pebble deposits containing supraliteral and petrophytic groups on stones, marsh, and primitive soils.

Based on analysis of the spatial structure of landscapes and cartographic-statistical and mathematical analysis of created landscape maps, the peculiarities of the influence of anthropogenic activity on the geosystems of the islands were revealed. At the same time, one of the most important indicators is the landscape diversity of the territory, reflecting the fundamental properties of the earth's surface and showing barely observable properties of landscapes [6]. To calculate the value of landscape diversity, we used the R. Margalef index. To confirm the obtained data, the entropy measure of the complexity of the landscape pattern was calculated, which reflects similar facets of landscape diversity [1]. The area of the island is the most important factor in the diversity of landscapes. In addition, the age of the island is of great importance: on the older ones, a greater number of biogeocenoses are formed and a more complex soil cover develops, and the development of the surface runoff system on large islands leads to an increase in landscape diversity [2].

For the islands of the Peter the Great Bay included in this study, there is a high correlation between landscape diversity and the island area ($r = 0.7$). At the same time, for islands with dynamic economic activity, there is a significantly weaker correlation.

According to the results of calculations, a decrease in the indicators of landscape diversity was noted with an increase in anthropogenic pressure. The most representative islands are Popov and Bol'shoi Pelis. The area of the former is 3.8 times larger than the latter, but the landscape diversity is only 1.3 times greater. This differentiation is due to different intensity of economic use and, consequently, the degree of landscape transformation. The island of Bol'shoi Pelis has been part of the OOPT (specially protected natural areas) since 1978. The termination of the economic use of the territory led to the formation of a large

number of plant communities at different stages of development. The formation of different successions on the islands of the preserve is associated with the intensive economic use of the islands before the organization of protected areas. The cessation of economic activity became an impetus for the restoration of vegetation cover in anthropogenically transformed territories. As already noted, this process is unevenly distributed, with the formation of a sequential series of successions.

Attention is also drawn to the high values of landscape diversity on Stenin Island, which is also associated with the lack of anthropogenic pressure on geosystems in recent years. This is practically the only large island in the Peter the Great Bay where the preservation of indigenous geosystems with the participation of fir (*Abies holophylla*) has been recorded.

Thus, islands with the lowest degree of anthropogenic load (islands in the marine preserve) are characterized by a higher diversity of vascular plants, lichens, and landscapes. Lichen communities are dominated by species of natural and slightly altered habitats; nitrophilic lichens that are resistant to high levels of pollution are absent. The distribution of lichens is largely determined by the natural conditions of the territory. During the absence of economic activity on the islands, partial restoration of vegetation on anthropogenically disturbed landscapes took place.

The cessation of economic activity during the creation of the preserve contributed to the normal development of natural complexes and made it possible to restore natural ecosystems on the islands. However, the presence of regional and transboundary transport of pollutants had a negative impact on the nature of the islands and could hinder the preservation of natural components.

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CHANGE IN THE ECOLOGICAL AND ECONOMIC BALANCE AND PROSPECTS FOR THE RECREATIONAL DEVELOPMENT OF THE ISLANDS IN THE ARCHIPELAGO OF EMPRESS EUGENIE

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Tourist and recreational activities are some of the most important directions for the development of the socioeconomic complex of the Primorsky Krai and its administrative center—Vladivostok.[5]

Coastal and island territories are of particular importance in the development of recreation. The Vladivostok urban district includes the Empress Eugenie Archipelago, which consists of four large islands (Russky, Popov, Reyneke, and Rikord) and several smaller ones. The islands of the archipelago have natural, cultural, and historical recreational potential, which creates favorable conditions for the development of recreational activities in this area.

Uncontrolled development of recreation can have a negative impact on the state of geosystems. In this regard, an analysis of the ecological and economic balance (EEB), as well as an assessment of the recreational capacity of the natural environment, aimed at the sustainable development of the territory, is of particular relevance.

During the study, qualitative and quantitative methods were used. For analysis of the EEB, the technique proposed by B. I. Kochurov [6] was adapted. To assess recreational capacity, the method developed by V. I. Prelovskii et al. for calculating the recreational capacity of a landscape [8; 9], widely tested in the Far East, was also used. On the islands of the archipelago of Empress Eugenie, the Far Eastern boreal and subboreal mid- and southern taiga near Pacific oceanic landscapes with a characteristic monsoon circulation of air masses

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[5] Primorsky Krai is also known as Primor'e and is recognized as a Maritime Territory.

were present [5]. Geosystems of gentle and medium steep slopes were composed of granites, granitoids, while basalts dominate, with a predominance of closed polydominant broadleaf forests on dark and typical burozem soils [4].

The EEB of the territory is a balanced ratio of various types of activities and interests of the various groups of the population, taking into account the potential and real capabilities of nature, which ensures the sustainable development of nature and society, reproduction of natural (renewable) resources, and does not cause environmental changes and consequences. To determine the EEB, the following characteristics are used: the ratio of lands by types and categories; the degree of anthropogenic transformation of natural landscapes; the tension of the ecological and economic state (EES), expressed in the coefficients of absolute (Ka) and relative (Ko) tension; the tension of the ecological fund; and the degree of natural protection (EZ), expressed by the coefficient Kez, which is a quantitative expression of the EEB [6].

Deciphering the structure of land using the ArcMap 10.1 software package made it possible to analyze the change in the EEB of the Russky, Popov, Reynecke, and Rikord Islands for the period 1975–2015. For an analysis of EEB in the island territories, six categories of land were identified by the degree of anthropogenic load (AN): from AN1 (no economic impact) to AN6 (complete transformation of the geomorphological structure and soil-vegetation cover) (Table 1).

Table 1 Land Categories According to the Degree of Anthropogenic Load on Russky, Popov, Reyneke, and Rikord Islands (ha) [1]

Category of land	**Degree of anthropogenic load**	**Year**		
		1975	**2007**	**2015**
Conditionally natural	AN_1	11,146.39	11,529.21	11,030.54
Lakes		83.13	15.96	15.96
Cemetery	AN_2	1.46	4.51	4.51
Agricultural	AN_3	363.71	12.17	12.95
Recreational	AN_4	6.50	46.75	110.28
Unused objects (abandoned)	AN_5	0.00	132.60	120.72
Cultural heritage sites		0.00	36.11	35.59

Residential	AN_6	221.97	428.05	367.40
Production, engineering, and transport infrastructures		53.59	29.48	380.41
Government agencies and services, military		475.90	44.04	68.76
Scientific and scientific-educational		0.70	8.03	154.12
Total	—	12,353.34	12,286.92	12,301.25

After calculating the coefficients Ka and Ko (table 2) for the period 1975–2015, it was found that the most intense EES of the territory as a whole for the islands of the Empress Eugenie Archipelago is typical for 2015 (Ka = 0.088; Ko = 0.112). This is a consequence of the implementation of large-scale construction work on Russky Island in order to prepare for the APEC summit, as well as the involvement of new territories of the islands in recreational use, accompanied by the construction of recreation centers. It should be noted that for 1991, the Popov, Reynecke, and Rikord Islands were characterized by the highest rates of territory involvement in economic use, which is associated with their maximum use by the forces of the Pacific Fleet of the USSR.

After calculating the EZ indicators (Table 2), it was revealed that the degree of EZ of the territory of the islands remained very high for the entire period under consideration. However, there is little variation in the time slices.

Changes in the EEB of the islands of the archipelago in the period 1975–2015 were insignificant. At the same time, there is a slight differentiation between the islands that is associated with the different intensity and nature of the development of each of the islands under consideration. The highest EZ level was noted for Rikord Island with poor economic development. The degree of EZ of all the studied islands from 1975 to 2015 was very high (Kez > 0.9). An insignificant transformation of the EEB of the islands caused by the instability of socioeconomic conditions was recorded after 1991. For the period 2007–2015, there was a decrease in the EZ level of the territory of the islands to 0.905, caused, as noted earlier, by the implementation of large-scale construction work on Russky Island and the emergence of new recreation centers.

Table 2 Ecological and Economic Balance of the Russky, Popov, Reynecke, and Rikord Islands [1]

Index of EEB	1975	1991	2007	2015
Russky Island				
Ka	0.072	—	0.046	0.100
Ko	0.070		0.067	0.129
Rsf	9,260.391		9,379.145	8,905.647
Kez	0.924		0.942	0.893
Popov Island				
Ka	0.073	0.083	0.059	0.059
Ko	0.070	0.080	0.067	0.069
Rsf	1,189.382	1,183.528	1,214.686	1,212.137
Kez	0.917	0.913	0.937	0.935
Reyneke Island				
Ka	0.030	0.027	0.024	0.024
Ko	0.028	0.027	0.028	0.027
Rsf	514.041	516.199	527.472	527.856
Kez	0.947	0.951	0.972	0.973
Rikord Island				
Ka	0.00	0.0033	0.0002	0.0002
Ko	0.00	0.0033	0.0012	0.0002
Rsf	487.70	486.1200	487.2200	487.6100
Kez	1.00	0.9968	0.9990	0.9998
Russky, Popov, Reyneke, and Rikord Islands				
Ka	0.067	—	0.044	0.088
Ko	0.065		0.063	0.112
Rsf	11,451.510		11,608.522	11,133.256
Kez	0.927		0.945	0.905

For future sustainable development of the islands of the Empress Eugenie Archipelago, it is important to preserve the natural framework of the territory. Despite the active economic use of the Russky, Popov, Reynecke, and Rikord Islands for 150 years, the results of the EEB analysis reflect the preservation of the landscape basis for future development, which should be based on a comprehensive analysis of the natural and socioeconomic characteristics of the territory.

According to development plans, recreational enhancement is the most promising direction of economic activity on the islands of the Empress Eugenie Archipelago. For future sustainable development of recreational activities, we assessed the recreational capacity of the natural environment of Russky, Popov, Reynecke, and Rikord Islands.

A team of authors under the leadership of K. S. Ganzei conducted a study of the landscape organization in 2016, and landscape mapping of the islands of the Empress Eugenie Archipelago [3] was carried out based on principles of the structural-genetic classification of V. A. Nikolaev [7]. A distinctive feature of this classification is the coverage of geosystems of all taxonomic levels.

V. I. Prelovskii et al. [8; 9] determined the values of permissible recreational loads for various categories of land and the main types of vegetation of Primorsky Krai, as well as the dependence of the magnitude of the recreational load on the types of relief with the calculation of the average values of the decreasing coefficients. The presence of these indicators makes it possible to calculate the recreational capacity of the territory according to the formula [8]: where E is the recreational capacity of the territory; *K*i is the correction factors for certain types of vegetation; Ri is the recreational load permissible for each type of vegetation; Si is the area occupied by certain types of vegetation; and *n* is the number of vegetation types with varying degrees of recreational resistance.

The values of permissible recreational loads for the landscape types of Russky, Popov, Reyneke, and Rikord Islands were determined on the basis of the methodology proposed by V. I. Prelovskii and coauthors (Table 3). Correction factors were introduced depending on the genetic types of relief (Table 4). At the same time, the correction factors of individual landscape genera (gully-ravine erosion-denudation V-shaped, valley bottoms of watercourses, erosion-accumulative U-shaped, abrasion-denudation scarps and landslides) were equated to the decreasing coefficients of territories with the maximum steepness of the slope, which is associated with their low resistance.

Table 3 Examples of Allowable Recreational Loads for Types of Landscapes of Russky, Popov, Reynecke, and Rikord Islands [2]

Type of Landscape	**Permissible recreational load, person / ha**
Fir-tree on burozem podzolic	0.5
Pine-linden with fir, oak, and birch shrub-forb on podzolized brown soil	1.0
Maple-ash-alder-linden shrubs-forbs on incompletely developed burozem; locally typical, strongly skeletal soils	1.5
Oak with birch and linden shrub-forb on dark brown soils, in places eroded (in ravines)	2.0
Alder with bird cherry waterlogged on brown gley	1.0
Forbs petrophytic on dark, thin, and strongly skeletal brown soil	6.0
Sedge-reed on peaty-humus-gley soils	0.5
Forb-halophytic on stones, partly on marshy soils and petrophytic on primitive soils	100.0

Table 4 Correction Factors for the Genera of the Landscape of Russky, Popov, Reyneke, and Rikord Islands [2]

Type of Landscape	**Correction factor**
Vertex and apical denudation ridge-shaped	0.69
Vertex and apical denudation flattened	0.87
Slope denudation of medium steepness	0.69
Slope denudation gentle	0.87
Gentle, deep landslides	0.02
Subhorizontal denudation hilly-ridged	0.87
Subhorizontal denudation-accumulative terraced	0.99
Coastal accumulative lowland	1.00
Gully-girder erosion-denudation V-shaped	0.02
Erosion-accumulative, mostly U-shaped valley bottoms of watercourses	0.02

Floodplain accumulative terraces	1.00
Abrasion-denudation ledges	0.02
Beach accumulative	1.00

Having determined the values of the permissible recreational loads of landscape types and correction factors depending on the types of landscapes, the recreational capacities of 362 morphological units of the tract rank were calculated for the Russky, Popov, Reyneke, and Rikord Islands. The summation of the obtained indicators made it possible to calculate the recreational capacity of the landscapes of the islands (Table 5).

Table 5 Recreational Capacity of the Natural Environment of Russky, Popov, Reyneke, and Rikord Islands

Island	**Recreational capacity of the natural environment, people**
Russky	16,431
Popov	4,154
Reyneke	2,159
Rikord	1,336
Russky, Popov, Reyneke, Rikord	24,080

To determine the categories of lands on the Russky, Popov, Reyneke, and Rikord Islands according to the degree of recreational capacity, the indicators of the recreational capacity per unit area of 362 natural boundaries allocated on the islands were calculated. We used the formula: $E_S = E/S'$, where E_S is the recreational capacity per unit area of the allocated tract; E is the recreational capacity of the allocated tract; and S is the area occupied by the tract.

The obtained values of the recreational capacity per unit area were combined into four groups with exponentially progressively increasing intervals since the values vary unevenly (from 0.01 to 100). Using the ArcMap 10.1 software package, four categories of lands were identified according to the degree of recreational capacity with the calculation of their areas. Each of the land categories received a point grade with the subsequent assignment of an index (table 6).

Table 6 Land Categories of the Russky, Popov, Reynecke, and Rikord Islands According to the Degree of Recreational Capacity

Land category, according to the degree of recreation-capacity	**Recreation-capacity, person / ha**	**Area in hectares**				
		Islands				
		Russky	**Popov**	**Reyneke**	**Rikord**	**Empress Eugenie**
RE1 (very low)	0.01–0.1	441.79	18.33	4.76	9.09	473.97
RE2 (low)	0.11–1.00	300.93	77.28	27.16	8.98	414.35
RE3 (medium)	1.01–10.00	8050.60	1019.73	461.86	463.70	9995.89
RE4 (high)	10.01–100.00	18.78	17.61	1.59	3.59	41.57

The mapping results showed that in the territory of the Russky, Popov, Reyneke, and Rikord Islands, lands with an average degree of recreational capacity (more than 99 km^2), occupied mainly by deciduous forests, prevail. These lands, in our opinion, are most suitable for ecological tourism, which implies restrictions on the use of natural recreational resources to preserve the natural environment.

The least capacious are the bottoms of watercourse valleys and ravines, which are characterized by low stability, as well as erosional ledges and areas of probable landslides that pose a danger to tourists. Tourists are not allowed to stay in these territories.

The most capacious are sandy and pebble beaches and other territories without a vegetation cover that do not pose a threat to tourists. Beaches are most suitable for organizing diving, surfing, and other types of swimming and beach recreation.

Sustainable development of recreational activities on the islands of the Empress Eugenie Archipelago should be based on a comprehensive assessment of the natural complexes of the islands, with the implementation of large-scale thematic mapping, the ultimate goal

of which should be the functional zoning of the territory. The anthropogenic transformation of the geosystems of the islands, clearly expressed in the transformation of the vegetation cover, has a negative impact not only on the sustainable functioning of landscapes but also on the development of recreational activities. The assessment of the recreational capacity of the natural environment carried out in this work can become an important stage in the formation of a strategy for the sustainable development of recreational activities on the islands of the Empress Eugenie Archipelago.

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CULTURAL TIES OF SAKHALIN IN THE NEOLITHIC ERA

Oksana V. Yanshina[6]

Sakhalin Island is the Far Eastern edge of the vast Eurasian continent—the edge of the earth. However, interest in its ancient history does not diminish in the least due to this circumstance. On the contrary, this region was destined to play an important role in the ethnogenesis of the peoples who inhabited the basins of the Sea of Okhotsk and the Sea of Japan, including such mysterious peoples as the Ainu and Nivkhi. Unfortunately, the specific circumstances of the ancient ethnocultural history of Sakhalin, which ultimately led to the formation of these peoples, are still poorly understood. This is explained by the very slow pace of development of archaeological research there.

At the same time, it should be noted that with regard to the ethnocultural specificity of Sakhalin, specialists have developed a kind of initial attitude that determines the general contours of the interpretation of any archaeological materials. It boils down to understanding Sakhalin's territory solely as a link between mainland and island cultures and, as a consequence, to perceiving it exclusively as an intermediate zone between them. The origins of this attitude lie in the works of the very first ethnographers, linguists, anthropologists, and archaeologists who worked on the island in the late nineteenth to early twentieth century. Meanwhile, an analysis of the archaeological sources available today shows that in antiquity, cultural interactions in this part of the Sea of Japan basin could have had a completely different character.

In particular, this is indicated by the analysis of the cultural ties of Sakhalin in the Neolithic Era. Based on the analysis of ceramics, a number of stages can be distinguished in their development, each of which is exemplified by its own characteristics (Table 1).

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First Stage

The first stage occurs at the very end of the Pleistocene.[7] At this time, Sakhalin and Hokkaido were a peninsula connected to the mainland in the area of the modern Amur estuary. Together with Primor'e, they constituted a relatively isolated historical and cultural zone, within which the population adhered to a general vector of development that was sharply different from the one developed in the more southern islands of the Japanese archipelago and in the Amur basin. The distinctiveness of this zone was the preservation of the Upper Paleolithic appearance of the culture, while in the neighboring territories, people were already actively mastering a whole range of Neolithic innovations, including ceramic dishes, the rejection of microblade technologies, the transition to all-in-one type tools, and the corresponding technologies for their manufacture [30]. The reasons for such stability of microblade industries in this area are still difficult to clarify [30, pp. 132–133]. The early formation of the Neolithic complex in Japan and on the Amur is often explained by the existence of favorable conditions there for salmon spawning [3; 5; 16]. Hokkaido and Sakhalin are the richest from this point of view, but it is there that the Upper Paleolithic traditions were, by contrast, preserved. Therefore, this can most likely be explained only by the action of the cultural factor.

Unfortunately, it is not known whether at that time there were any contacts between the population of Sakhalin and the Amur region, there is not even an exact certainty where the mouth of the Amur was at that time. The main human habitat on the Amur was located far to the west of Sakhalin in the region of the modern Central Amur lowland. It was associated with the Osipov culture, on the lower reaches of the modern Amur, and only one site, the Naked Cape-4, is known so far [19]. The age of this site corresponds to the initial dates of the Osipov culture; however, during excavations, a typical Paleolithic inventory was found here. The most striking analogies to its lamellar component were found on Sakhalin (Ogoniki-5), and to its pebble component—in sites of the Selemdzhin culture of the middle Amur [21, p. 61].

There are no other sources that even indirectly confirmed the existence of contacts between the Amur and Sakhalin at the very end of the Pleistocene, but regular "obsidian" expeditions connected Sakhalin with Hokkaido [37]. In the literature, however, there is a different opinion based on finds on Sakhalin of leaf-like bifaces, similar in shape to the Osipov ones. It is believed that such bifaces were widespread only in the north of the island,

[7] The boundary between the Pleistocene and Holocene on Sakhalin Island is defined in different ways. In accordance with Mikishin et al., it correlates with the onset of warming of the Allerød, whose age for Sakhalin varies ca. 11,000–11,700 14C years ago. In this work, the common Far Eastern tradition is adopted [13, pp. 30–38], referring this boundary to ~ 10,000 14C years ago.

while in the south there were Tachikawa-type petiole tips typical of the final Paleolithic of Hokkaido [3, pp. 170, 226–227; 4]. Unfortunately, this opinion is confirmed so far only by poorly documented sources. It is not indicated at which specific sites of Sakhalin the Osipov bifaces were found, what specific form, or how their age was established.

This is important, since the leaf-shaped forms of bifaces were also widespread at that time in the island zone, including Hokkaido, and bifaces very close in shape to the Osipov ones were also known in Primor'e in sites of Neolithic and transitional times (Ustinovka-3) [22, pp. 235–237]. In addition, the similarity of the stone industries of Sakhalin and Primor'e has been repeatedly emphasized by various experts [3; 7; 9;] including the Neolithic [12, pp. 137–139]. Under such conditions, a deeper study of the available materials is required to establish the origin of the bifaces.

In addition, it should be borne in mind that the existence of man on Sakhalin at the turn of the Pleistocene and Holocene has not yet been confirmed by a single radiocarbon date [4]. There is only a series of dates obtained from the bones of animals from caves [3, pp. 154–160], in which there are either no signs of human habitation at all, or they have nothing to do with the finds of the dated bones.

Second Stage

The second stage occurs at the end of the Boreal and the beginning of the Atlantic. The sharp warming of the climate at the beginning of the Holocene and the change in the hydrological situation in the Amur basin led to the disappearance of the Osipov culture. In the northern part of the Sea of Japan basin at this time, a chronological gap is recorded, which is not filled with archaeological data. Only on the border of the Boreal and the Atlantic do sites reappear here, but with a completely new appearance—Neolithic. At the same time, the nature of culture over vast areas was now common. People lived in semi-subterranean dwellings in fairly large settlements, carried out a complex economy that combined plant gathering, hunting, and fishing, and had a similar set of implements, including ceramic dishes, the differences being noted only in the details.

The very fact of this similarity testifies to the existence of a widespread network of contacts in this part of the Sea of Japan, which contributed to the spread of Neolithic innovations and achievements. But there is other evidence which concerns the spread of the ceramic traditions themselves. In particular, a kind of exchange is recorded of some of the

most striking features of pottery between mainland and island cultures, which developed independently in the previous stage [38].

On Sakhalin, the beginning of the Neolithic Era is associated with the appearance of at least three different ceramic traditions ca. 7900–7500 ^{14}C years ago, which can be identified by the leading site: (1) Slavnaya-4, (2) Ado-Tymovo-2B, and (3) Chaivo-6 [see materials of these sites in 3; 4; 8]. The largest of them is the one that ultimately became entrenched on the island among the carriers of the South Sakhalin or Soni culture (Ado-Tymovo-2, Chaivo-6, Venskoe-4, Berdyansk Lakes-2, etc.). The formation of this tradition—we will call it Protosoni—was decisively influenced by the early ceramic complexes of Hokkaido, and particularly with ceramics such as Akatsuki and Urahoro (Table 2) [see more details in 33]. Moreover, the signs bringing them together are absent in mainland pottery.

In Japanese historiography, the origin of ceramics such as Akatsuki and Urahoro, as well as types close to them, has long been associated with northern or Amur influence in a number of ways, that is, they differed from the pottery that was widespread at the same time in the rest of Japan. There are indeed grounds for such reasoning.

First, with the exception of the Akatsuki type ceramics of earlier dates, all other types of ceramics were accompanied in the complexes by a developed lamellar industry. Previously, it was believed [36] that its origins lay on the mainland, but now it is assumed that its formation could have also occurred in Hokkaido, since its own resources for this were there: huge deposits of obsidian raw materials and developed traditions of microblade splitting that occurred in the previous stage of development. Second, these ceramics were distinguished by a flat bottom, which was typical of mainland pottery; while in the south of Hokkaido, and in general almost throughout the entire territory of the Japanese archipelago, sharp-bottom forms of vessels were widespread at that time.

In light of recent research, one more thing can be added to these observations. The fact is that early Hokkaido pottery has traces of technical processing with a comb tool on its surfaces. This feature was absolutely uncharacteristic for pottery of the Proto-Jomon culture; its vessels are distinguished by exceptionally smooth walls. Such technical decor was the hallmark of the Osipov culture [38].

The practice of rough relief processing of vessels penetrates the Japanese archipelago only at the beginning of the Holocene, and in parallel with this, the transformation of Proto-Jomon pottery begins here. Along with the very idea of technical processing of the walls of vessels, other tools and techniques are introduced in Japan: a rope, a stick wrapped

with a rope, and rolling and combing techniques. And if pectinate combing is, of course, of Amur origin, then rope and rolling was more widespread. With their use, vessels were made in southern China, in Transbaikalia, and on the Middle Amur; for the lower Amur they were less characteristic.

Accordingly, all these innovations appear in Hokkaido. Here, pectinate combed patterns with impressions of a stick wrapped with a rope (ceramics such as Akatsuki and Urahoro types), as well as rope rolling, became widespread. These techniques first appeared only in the south of the island, then spread to the north and northeast; that is, in the area of distribution of the ceramics and blade industries of interest to us. Of all these innovations, only pectinate combing gets to Sakhalin, but even it quickly disappears from practice there. However, the most interesting thing is that at the same time that the aforementioned technological features reach the islands, they disappear from the pottery traditions of the Amur and Primor'e cultures. Therefore, the early pottery of Hokkaido, and with it Sakhalin, looks completely alien to their background. In fact, their only common feature is the flat bottom shape.

Simultaenously, it cannot be said that island and mainland cultures at this stage developed in complete isolation from each other. A reflection of their interaction is the ceramic tradition that was characterized by the decoration of vessels around the mouth part by a narrow ornamental frieze made of imprints of a stamp or stack, including those with a checkerboard arrangement of decorative elements. On Sakhalin, it is represented in the sites of Ado-Tymovo-2 and Blagodatnoe-3; in Hokkaido, it is the sites of Memanbetsu, Tokoro-14, etc.; while in Primor'e and the Amur region, sites of the Rudninskaya and Kondonskaya cultures are associated with it [35]. Ultimately, this tradition is recorded exactly in mainland cultures, while on the islands it is outdated and therefore not implemented.

With such a wide distribution, it is very difficult to establish unambiguously whether the ceramics of the Ado-Tymovo-2B type are a reflection of direct contacts between the Amur and Sakhalin populations, since this tradition could have gotten to Sakhalin from Hokkaido or Primor'e. The latter is supported by the fact that in the Amur region, there are still no complexes found where only stamped ornamentation would be represented, as is recorded in the corresponding sites of Primor'e (Rudnaya Pristan', Boismana) and Hokkaido (Memanbetsu, etc.). As you know, in the early Kondon sites of the Amur region, stamp ornamentation is accompanied by combing, while on Sakhalin, comb patterns are completely absent at this time.

The only site possibly reflecting early Amur-Sakhalin contacts is the Yamikhta site on the lower reaches of the Amur [23]. One of its ceramic complexes has some "island" features: an admixture of shells in the paste, molded ears on the rims, and molded ornamen-

tation [31]. For the Osipov culture and for the sites of the early Kondon type that replaced it, all these features were uncharacteristic. This complex is unique. Its age is determined in accordance with dates from soot on ceramics as being ca. 9250 and 8820 ^{14}C years ago. Considering the whole situation, it rather reflects some kind of "trial" options for making ceramic vessels that have not yet taken shape, since there are no vessels completely identical to them either on Sakhalin or on the Amur.

The close connection between Sakhalin and Hokkaido during the formation of ceramic traditions is also confirmed by analysis of the stone industries, since here their lamellar appearance was still preserved, and the population of Sakhalin had to make distant expeditions to maintain it in order to extract Hokkaido obsidian [4]. This may well be interpreted as a legacy of longstanding and strong ties between the Sakhalin and Hokkaido cultures, which developed back in the Paleolithic. Interestingly, in sites of the second stage, the discrepancy between ceramic areas and areas of stone industries is generally recorded.

For example, on Sakhalin ceramics of the same type could be accompanied in the complexes by two completely different stone industries: lamellar and bifacial [4; 8], and on Hokkaido, several types of ceramics were recorded in the culture of lamellar arrowheads [36]. Ceramics of the Urahoro type in the Hokkaido sites were combined with the blade industry, and on Iturup Island with bifacial. In Primor'e, the ceramics of the Rudnaya culture were combined with the bifacial industry [12], and in the Amur, the early Kondon ceramics were identical to it—now with blades [22, pp. 231–343].

How this can be explained is not entirely clear. It seems that the spread of stone industries and ceramics went in different ways. It should be noted that if at the previous stage of development at the end of the Pleistocene the blade and bifacial complexes were separate by area (bifacial tools on the Amur and Paleo-Honshu, microblades on Sakhalin, Hokkaido, and Primor'e), then in the era of widespread distribution of ceramic complexes in the northern part of the basin of the Sea of Japan, such a division is no longer observed. It is significant that on Sakhalin and Hokkaido, the rivalry of the bifacial and blade complex ended with the victory of the former, while on the Amur the latter lasted much longer. In this, in part, one can also see the prioritized nature of the southern influence on Sakhalin.

Assessing the overall situation at the second stage, two trends can be seen. On the one hand, Sakhalin, of course, is part of a wide network of contacts that have developed in the northern part of the Sea of Japan basin, and on the other, one can confidently speak about the identity of the culture of the Sakhalin population. The ceramics of the Soni culture, which eventually developed on the basis of the early ceramic complexes of Sakhalin, is very

original. At the same time, it must be emphasized that its origins should be sought in Hokkaido and not on the Amur. If contacts with the Amur existed at the stage of its formation, they are still practically invisible archaeologically. Moreover, the only site reflecting possible Amur-Sakhalin ties at this time—the Yamikhta site—rather testifies to the penetration of island traditions into the lower reaches of the Amur, and not vice versa.

Third Stage

The third stage reflects a certain stabilization of life within the northern part of the Sea of Japan basin. This is manifested primarily in the sustainable development of local ceramic traditions. On Sakhalin at that time there was the South Sakhalin culture (Soni), in the Amur region—the Kondonskaya and possibly Malyshevskaya, and in Primor'e—the Rudninskaya and Vetkinskaya cultures. And if common elements are recorded between mainland cultures at this time, then the South Sakhalin culture existed as though in complete isolation from them. There are also no reliable facts indicating the presence of contacts between Sakhalin and Hokkaido in this era. This is also indicated by the termination of "obsidian migrations" connecting Sakhalin with Hokkaido [4]. This means that for quite a long time, Sakhalin could have developed apart from both more southern and more northern territories.

Circa 5500–5000 ^{14}C years BP, the Soni culture ceases to exist. There is reason to say that after this the territory of Sakhalin remained poorly populated for some time. Between the latest dates of this Soni culture and the earliest dates of the next culture—Imchin—there is a chronological gap not filled with well-documented sources. It is all the more interesting that the earliest and first real evidence of the penetration of mainland cultures into Sakhalin belongs to this time. We are talking about the appearance of the Belkachi population on Sakhalin: typically Belkachi ceramics are known in the materials of the sites of Nabil' 1, Muz'ma-Barak, Tym'-zona, and Imchin-2 [4; 32].

The main area of the Belkachi culture is associated with the territory of Yakutia [15]. In the west, the border of its distribution runs along the upper reaches of the Vilyui and Khatanga; in the northeast it is recorded in the Anadyr basin; in the south—in sites of the middle [22, pp. 207–213] and lower Amur [20], as well as in the north of Sakhalin. The age of the Belkachi culture in the Yakut area is determined to be ca. 5310 and 4120 ^{14}C years ago. [1], on the Amur—according to dates from the Malaya Gavan' site—ca. 5070 and 5040 ^{14}C years ago. [20].

The Belkachi ceramics of the Amur and Sakhalin sites are practically identical in appearance [32]. In addition, it is important that both in the Amur and Sakhalin complexes the Belkachi vessels are accompanied by stone tools typical not for the Amur but rather for the Aldan-Lena basin. All this allows us to assume direct infiltration of the carriers of these ceramics to Sakhalin, which has not yet been established for earlier stages. However, both Amur and Yakut cultures could have become a source of understanding of the migration of the Belkachi population to Sakhalin. More research is needed to clarify this issue.

Fourth Stage

The fourth stage is associated with the formation of the Imchin culture in the northern Sakhalin [24], which marked the onset of a completely new era in the Amur-Sakhalin region. Its feature is the emergence of cultures common to Sakhalin and the lower Amur. Strictly speaking, the Imchin culture was the first such culture; its variant on the Amur is the sites with ceramics of the Orel' type, which are part of the Voznesenov culture of the late Neolithic in the Amur region [18]. The similarity of the Imchin and Orel' ceramics is so great that Sakhalin archaeologists tend to see in the Imchin culture an "island version" of the Voznesenov [3, p. 213], although there is no definite answer to the question of where such complexes were formed [18, pp. 127–136].

Orel' ceramics are dated from soot to ca. 4406 ^{14}C years ago [17, pp. 32–33; 2004: 136]. There is reason to believe that it also existed somewhat later in the complexes whose radiocarbon age has been determined as ca. 4040 ^{14}C years ago based on soot, and on charcoal in the interval ca. 3650–3445 ^{14}C years ago [20]. The chronology of the Imchin culture is less developed [3, pp. 210–213]. But if we leave the most reliable dates, then its radiocarbon age can be determined from charcoal (4500 to 3700 years ago) and from soot on shards (4610 to 4425 years ago) [4].

The Imchin-Orel' complexes played an important role in the fate of mainland cultures. Their carriers, integrating into the composition of the Voznesenov population, gradually completely changed the appearance of its ceramic tradition, dating back to the earlier epochs of the Amur Neolithic [18, pp. 138–139]. The result of this integration on the Amur was ultimately sites with ceramics of the Malogavan type, which represent the final stage in development of the Voznesenov culture and the Amur Neolithic in general.

The fate of the population who left these sites is interesting. They turned out to be numerous and mobile. The sites associated with it are known over a very broad area up to

the middle Amur in the west [28] and Lake Khanka in the south [10; 34]. Echoes of the Orel'-Imchin ceramic tradition are easily traced later in sites of the early Paleometal throughout eastern Sikhote-Alin' in the form of complexes with squat ceramic vessels thinned with shells, having bent rims decorated with rollers, and weakly profiled bodies (see, for example, the Lidovo-Tipevai, Margaritovskii, and Suvorov sites of eastern Primor'e) [11; 27].

The Imchin sites are located in the north of Sakhalin; in the south of the island, at about the same time, only individual archaeological complexes are known, which have not yet formed a stable typological series of ceramic vessels. These include sites with ceramics of the Tunaichinskii (Sedykh-1) and Sedykhinskii types (Sedykh-1, Okhotsk-3, Bol'shaya Rechka-7) [3, pp. 215–220; 25; 26]. The pottery of these sites contains an admixture of shells in the paste; it is characterized by an extreme impoverishment of ornamental practice and vessels of various morphology, among which the shape of a weakly profiled pot with high shoulders is most often repeated. All these features make these ceramics related to Imchin.

One more feature that brings them together is single fragments of vessels with curvilinear ornamentation in the Sedykhin complexes, which predetermined the Amur circle of analogies, as in the case of the Imchin culture [3, pp. 221–226]. Although it should be noted that the origins of the Voznesenov culture itself on the Amur have not yet been reliably established [18, pp. 127–136], and while the curvilinear design, moreover molded, is nevertheless more characteristic of the Jomon culture; on the Amur there is no such design at all.

Nevertheless, I would like to emphasize that regardless of what the origins of the features that bring the Amur and Sakhalin ceramics together at this stage are, for our review, it is important that for the first time in the Amur-Sakhalin zone, cultural complexes common both for the lower reaches of the Amur and for Sakhalin were formed. From that moment until ethnographic times, cultural history in this zone developed precisely according to this (general) scenario, for which there is a lot of evidence (see Bol'shebukhtin, Susui, and Koppa ceramics, etc.). Moreover, these common ceramic traditions of the Amur-Sakhalin zone sharply differed from the mainland ones, which is especially evident in the era of the Paleometal [29, pp. 327], when sites of the Urilo-Pol'tsev circle began to spread on the Amur and Primor'e.

Summing up, I would like to emphasize the following. First, the available materials clearly indicate that at the initial stage of development, i.e., from the end of the Pleistocene to the beginning of the Holocene climatic optimum, Sakhalin culturally gravitated toward Hokkaido and possibly toward Primor'e. Reliable evidence of the existence of contacts between the Amur and Sakhalin appears only at the boundary between the Boreal and the Atlantic (the

Yamikhta site), but they are sporadic, are not yet very clear, and do not generally cancel the overall orientation of the Sakhalin population toward the Hokkaido cultures.

Second, throughout the entire Atlantic period, from the establishment of the climatic optimum and the final development of the Soni culture, the population of Sakhalin existed separately from both mainland and island cultures. At the end of this period, carriers of the Bel'kachi culture penetrated into northern Sakhalin, but contact with the cultures of Hokkaido are not reliably manifested in the sources of this time.

Third, in the late Neolithic, in northern Sakhalin and on the lower reaches of the Amur, a common Imchin-Orel' cultural tradition was formed for both territories; its carriers integrated into the Indigenous population of the Amur valley, radically changing the appearance of its ceramic tradition. Subsequently this new Amur-Sakhalin substrate begins to spread to the south in Primor'e and, to a lesser extent up the Amur valley. In this movement from east to west, an insular impulse is clearly read, which had a significant impact on the coastal cultures of the Neolithic and Paleometal boundary.

Thus we see that throughout the Stone Age, if Sakhalin acted as a link between island and mainland cultures, this did not in any way affect the culture of the Indigenous population of Sakhalin, which for a long time remained focused on Hokkaido. Moreover, at the very end of the Stone Age, we observe a completely opposite vector of influence—from the island world to the mainland. The real spread of the Amur and partly Primor'e ceramic traditions in the island world begins, in fact, only in the early Middle Ages.

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Table 1 Sakhalin, Amur Region, Hokkaido: Dynamics of Ethnocultural Interaction in the Neolithic

14C Years Ago	**Content**
~ 13,000–7900	The population of Sakhalin Hokkaido, and Primor'e retains a close Upper Paleolithic appearance of culture and lives in parallel with the cultures of the initial Neolithic appearance: Osipov on the Amur and Proto-Jomon on Honshu. There is no reliable evidence of the existence of contacts between Sakhalin and the Amur region.
~ 7900–6900	Osipov and Proto-Jomon cultures disappear, a wide network of contacts is established in the basin of the Sea of Japan. Neolithic innovations are spreading throughout the region. Some of the technological features of Osipov pottery penetrate the Japanese archipelago, including Hokkaido. On Sakhalin, in close interaction with the cultures of Hokkaido, a distinctive South Sakhalin culture is being formed. Contacts with the Amur region are almost invisible in archaeological materials (Yamikhta-1).
~ 6900–5500	The period of independent development of the South Sakhalin culture, the absence of visible ties with mainland cultures and cultures of Hokkaido.
~ 5500–4500	The disappearance of the Yuzhno-Sakhalin culture, depopulation (?), the penetration of Bel'kachi ceramics carriers from the Amur or Yakutia to Sakhalin; contacts with Hokkaido are not reliably established.
~ 4500–3300	Formation of the Imchin-Orel' cultural complex in the north of Sakhalin and/or in the lower reaches of the Amur, which is common to the Amur-Sakhalin zone. Destruction of the ceramic tradition of the Voznesenov culture of the Amur basin under the influence of the "island impulse."
~ 2800–2000	Isolation of the Amur-Sakhalin zone from more Western cultures.

Table 2 Common Features of Early Pottery Complexes of Sakhalin and Hokkaido

Hokkaido	**t. Slavnaya-4**	**t. Protosoni**	**t. Ado-Tymovo-2B**
t. Akatsuki 1	Thin walls Shell imprints on the bottom		
		Light color Thick walls Forming the bottom on the base	
t. Akatsuki 2-3	Shell imprints on the bottom	Fingerprints on the bottom Crookedness Forming roughness Rough embossed smoothing	
t. Urahoro		Oval bottoms Rim ledges Pectinate comb Drawings on the bottoms	Base imprints at the bottom
t. Mamanbetsu		Admixture of shells Pectinate comb	Patterned stamp design

THE HISTORY OF THE ARTIC FOX BUSINESS IN THE COMMANDER AND ALEUTIAN ISLANDS

Natalia A. Tatarenkova[8]

Before the arrival of the Russians, blue foxes (whose populations the dark winter color clearly dominated) lived only on the Commander and Pribilof Islands and were represented by three subspecies: *Vulpes lagopus beringensis*, *V. l. semenovi*, and *V. l. pribilofensis*. In the eastern part of the Aleutian Ridge, other representatives of the genus *Vulpes*—foxes (*V. vulpes fulvus*)—were found. Due to the abundance of the animal, one of the groups of islands was called the Fox Islands. Among the Aleuts, foxes were a traditional object of the hunt, while Arctic foxes lived in deserted archipelagos—their settlement began after the formation of the Russian-American Company (RAC).

Until the mid-eighteenth century, the number of foxes taken was relatively small. Interest in furs increased dramatically after first contact with the Russians, emergence of an active trade exchange, and formation of stable trade relations. Since the fur of the blue fox is valued above other common foxes and was second only to the sea otter in its merit, the Russians considered it necessary to establish the animals on the Near and Andreanof Islands. The first reproductive pair was taken to Attu Island in 1750. The initiator of the idea was the Selenga merchant Andreyan Tolstykh, the leader of a hunting party from 1749 to 1752. Before continuing the trek to the Near Islands, the *shitik Sv. Ioann* wintered over on Bering Island.[9] It is logical to assume that the pair was captured there. The living conditions of the new habitat turned out to be so favorable that during the next voyage (ship *Sv. Andreyan i Nataliya*, 1756–1759) Tolstykh acquired a total of more than a thousand hides [ARGO. R. 60. Op. 1. D. 2. P. 28; 19, pp. 118–119]. And although only part of the total Arctic fox hunt was conducted on Attu Island (the other part was on Bering Island where the ship wintered), the success of the enterprise was obvious. The rapid growth of the young population also indicated that, at first, the Attu Aleuts did not hunt the animals.

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[9] A shitik is a small, sailing-rowing, single-masted vessel about 10 m long and up to 4.5 m wide. In the Kamchatka version, the sheathing boards were fastened ("sewn"—shit' [to sew], hence the name) together with whalebone, sinew, and thongs.

Another pair was taken from Copper (Mednyi) Island and, in 1768, delivered to Umnak Island. A navigator on the ship *Sv. Andreyan i Nataliya*, Luka Vtorushin, keenly looked after his fosterlings despite problems with his own health. Departing Umnak in 1772, the Russians left a breeding group of thirty-eight individual foxes there [ARGO. R. 60. Op. 1. D. 2. Pp. 105–108]. However, in a short time, the Arctic foxes were completely hunted out, or more likely, were supplanted by the native foxes. Another attempt to breed Arctic foxes on the Fox Islands was made in 1810: two pairs from St. Paul Island were taken to Unalaska. But they soon disappeared [18, p. 125]. Subsequent experiments yielded the same result.

Foxes (*Vulpes vulpes*) did not live on the islands lying to the west of Umnak Island [12, p. 7], and the introduced Arctic foxes (*Vulpes lagopus*) successfully occupied this ecological niche. In the first half of the nineteenth century there were many of them, especially on Atka Island. According to Khlebnikov, they were taken there from Bering Island from around the late 1780s to the early 1790s [6, p. 168; 18, pp. 155–156, 180]. The RAC actively promoted the further introduction of Arctic foxes. The animals were relocated to Kiska Island (according to Bailey, in 1835; Tikhmenev did not mention Arctic foxes for Kiska) and Amlia Island (according to Bailey, about 1836–1838 with reference to Tikhmenev, but the latter says that Arctic foxes were found only on Atka Island. Khlebnikov, who died in the spring of 1838, also wrote that there were no foxes on Amlia) [21, pp. 5–6; 16, pp. 299–301; 18, p. 164].

By the 1930s Arctic foxes occupied Attu, Agattu, Semichi, Kiska, Seguam, Little Sitkin, Rat, Semisopochnoi, Amchitka, Goreloi, Amatignak, Ilak, Kanaga, Bobrof, Adak, Umak, Kasatochi, Amukta, Herbert (Chagulak), Carlisle, Kagamil, and Uliaga. Arctic foxes were not recorded east of the Islands of Four Mountains group [23, pp. 298–300]. In the second half of the twentieth century, as part of the American program to rescue the Canadian goose and colonial seabirds, Arctic foxes were exterminated in various ways (from shooting to the use of poisons) on Amchitka (1956–1960); Kiska (by 1989); Kasatochi (by 1985); Agattu (by 1979); Nizki and Alaid (by 1976); Amutka (1983); Rat (1984); Little Tanaga and Umak (1986); and Carlisle, Ulak, and Amatignak (by 1991) [21, pp. 40–41]. Fur hunting continued only on the Pribilof (United States) and Commander (Russia) Islands.

Up to the 1780s blue (Arctic) foxes were hunted mainly in the Commander Islands. Most numerous was the Bering population—here the maximum harvest reached four thousand pelts per hunting season. According to the Cossack E. Basov, in the winter of 1743 to 1744, it was possible to procure up to one hundred or more pelts per day [ARGO. R. 60. Op. 1. D. 2. P. 6]. For Copper Island, the seasonal maximum did not exceed 1,520 pelts, but they

were darker and more uniform in color, and therefore of greater value. By the mid-1750s, the number of animals fell by almost an order of magnitude, and after another ten years it stabilized at a relatively low level, which made it possible to hunt only up to two-hundred individuals per year. However, amid the complete decline in sea otter procurement, the Arctic fox looked relatively profitable.

At first the Russians and residents of Kamchatka who were recruited into hunting *artels* were engaged in the taking of Arctic foxes.[10] Thus, in September 1754, the fugitive Koryak S. Serebrennikov, who joined the crew of the *Sv. Ioann* on Attu Island, brought twelve pelts with him. There are no indications that the Aleuts paid *yasak* with Arctic fox hides.[11] In the nineteenth century, the nature of environmental management changed. The RAC supplanted the place previously occupied by companies spontaneously formed on shares, as well as merchant hunting artels.[12]

Since the fur supply of the Commander and western Aleutian Islands was thoroughly decimated, the Atka Department entered the main structure of the colonies in 1825 (at the beginning of the nineteenth century it was subordinate to the Okhotsk office). But the first "sedentary" hunting artel, headed by the *baidarshchik* F. Shipitsyn, was brought to the Commanders in 1805.[13] It was based mainly on Copper Island. For six years of hunting (1805 to 1812, excluding 1808), the brigade caught 2,500 Arctic foxes. Another six hundred were procured in 1808 on Bering Island, but those skins deteriorated. Ya. Myn'kov, who was "Robinsoned" on Bering Island in 1810 to 1812, caught 180 Arctic foxes.[14] In addition, all members of the group (about fifteen people) were dressed in furs of seals and Arctic foxes "from head to toe," because their European clothes had worn out after seven years of isolation. According to the estimates of those years, on the Commander Islands, especially Bering Island, Arctic foxes were "a great many," and in addition to blue (Arctic) foxes, white

[10] An artel was a group of hunters within the framework of a single business event. The income was distributed according to the system of shares (usually one worker had one share; the higher the rank of the participant, the more shares he had). A hunting campaign could trade as a single artel or split the detachment into several artels.

[11] Yasak is tribute paid by the natives to the state.

[12] Merchant artels functioned on a share system but were no longer spontaneously formed, as were the artels among the hunters.

[13] A baidarshchik was the head of an artel.

[14] The term "Robinsoned, meaning "stranded," is interesting. It derives from Daniel Defoe's Robinson Crusoe. Interestingly, the prototype for Robinson Crusoe was the navigator of the Sink Ports galley. During a private hunting expedition (a voyage of William Dampier in 1703), a quarrel broke out between the navigator and the captain, and the navigator was set ashore on one of the uninhabited islands of the Juan Fernandez Archipelago. These islands were home to southern fur seals and southern sea lions, but Defoe ignored this fact and came up with his fantasy island. In our case, Mynkov was left to protect the hides of Arctic foxes; the ship did not return on time and decided that he did not survive (he spent about three years alone).

(Arctic) foxes were often encountered. For comparison, from 1806 to 1811, on all Andreanof Islands only seventy animals were taken [18, pp. 155, 157–160].

In the early 1820s, I. V. Mershenin brought the first group of Aleuts (seventeen kayaks from Attu Island) to the Commander Islands. From that time on, hunters began to be distributed to *odinochki* (dwellings tied to hunting grounds), or *ukhozhi*, encircling the coastlines of both islands. Hunting began in early November and continued until mid-January. In February the hunters and their families returned to Harbor (the main village on each of the islands).[15] In the period from 1821 to 1826, 4,315 Arctic fox pelts were sent to Okhotsk [18, p. 182]. After the inclusion of the Atka Department in the main colonies, furs began to be sent to Atka Island [24, p. 37].

In the eastern possessions of the RAC, Arctic foxes were hunted on the Pribilof (Kotovye) Islands, mainly on St. George Island. The first to move there were the Aleuts from Atka Island; after 1820 they were replaced by Unalaskans [24, pp. XV–XVI]. The population of *V. l. pribilofensis* was more numerous, up to 1,500 skins per year. It is believed that at the time of the discovery of the archipelago (1786), only blue [Arctic] foxes lived on the islands, but a few years later, in one of the very cold winters, white [Arctic] foxes appeared over the ice. Free crossing led to the appearance of a "smoky" form [6, p. 168; 2, p. 334]. In order not to spoil the desired shade, beginning in 1858 it was decided to hunt for white foxes in all colonial departments at any time of the year [16, p. 219].

In 1867 the bulk of the RAC's possessions went to the United States, while the Commander Islands remained with Russia. In 1868 two trading firms with almost identical management teams were registered in California: Hutchinson, Kohl & Co., and the Alaska Commercial Company. In 1870 the United States government granted the Alaska Commercial Company exclusive hunting rights on the Pribilof Islands. In February 1871 A. Wasserman, a representative of the American trading house Hutchinson, Kohl & Co. and the Russian Ministry of Internal Affairs signed a contract for the lease of the Commander's fur seal grounds for a period of twenty years. The conditions for the production of other fur-bearing animals, in particular Arctic foxes, were not stipulated in the contract. This hunting facility remained to be used by the islanders. In 1891 the fur trade was transferred to the "Russian Sealskin Company," then from 1901 to 1911 as the "Kamchatka Trade and Industrial Society," and from 1912 to 1916 as the "Vladivostok Trading House Churin and Co." As in the days of the RAC, the administration set a limit, monitored the acquisition of the animals, and determined

[15] Harbor is the name of the settlements (both on Bering and Mednoe). In the early 1880s, the villages were individualized: Preobrazhenskoe (on Mednoe Island) and Nikolskoe (on Bering Island).

the annual hunting seasons. The hunt was usually carried out in one or two years, less often three, and amounted to at least eight hundred skins [14, p. 37; 4, pp. 44, 117; 3, pp. 168, 174].

During hunting, the Aleuts were guided by the "Rules" developed by the manager, N. A. Grebnitskii, of the Commander Islands and approved in 1883 by the Governor-General of Eastern Siberia, D. G. Anuchin [4, p. 119; 13, pp. 217–219]. In accordance with the "Rules," Arctic fox hunting was to begin on Bering Island on November 10 (22),[16] on Copper Island November 20 (December 2), and to end on both islands on January 1 (13). In 1908 the season was reduced to twenty days on Bering Island and ten on Copper Island. In reality, the duration of the hunt depended on the timing of "maturation" of the fur and the weather conditions.

In addition to the deadlines, the "Rules" stipulated the boundaries of hunting areas and the areas protected from hunting. On Copper Island, the southeastern and northwestern extremities of the island were considered protected. The first included the entire territory south of the Peresheek (Isthmus), the second the sea otter haulout on Bobrovye Kamni (Sea Otter Rocks) and in their vicinity. On Bering Island, this was the southern part from Cape Manati to Bobrovaya and Peregrebnaya Bay. In the hunting area, it was forbidden to hunt sea animals or collect driftwood from September to the end of the hunting season. The October hunt for seals and the supply of driftwood was carried out far from Arctic fox holes and settlements. If possible the pups (fading underyearlings of 4–6 months) were not to be touched.

The permitted hunting gear included a variety of traps, deadfalls, and snares as well as firearms. E. Suvorov, who arrived in the islands in 1910, added to the above-mentioned hooks for pulling animals out of holes and *kamchadakh* ("Aleutian nooses," a kind of snare), with the admonition that the former were banned in 1894 and the latter a little later. In fact, it was forbidden to take Arctic foxes with hooks as early as 1882 [4, p. 119]; obviously, the poaching tool was used during Grebnitskii's absence on the islands, during his business trips to Kamchatka and St. Petersburg and after his retirement. Deadfalls were banned in 1895. Thus, at the beginning of the twentieth century, legal hunting for Arctic foxes was carried out only with steel traps and by shooting with a rifle or shotgun.

A draft of the next instructions for conducting hunting in the Commander Islands was developed in 1917. It was based on the same "Rules" as those of 1883 and did not take into account the experience of selective catching with the use of live traps, which had been practiced since 1890 on the Pribilof Islands [20, pp. 65, 69–71]. The initiator of a new approach to the management of the island economy was A. I. Cherskii, who came to Copper Island in 1915 as a senior caretaker.

[16] The two dates refer to the Gregorian and Julian calendars: e.g., November 10 is Gregorian, November 22 is Julian.

At the beginning of the twentieth century, the number of fur seals fell sharply and, as a result, there was a drop in the number of Arctic foxes, who ate sea animal meat. In order to smooth out the negative process, from 1917 attempts were made on Copper Island to organize special feeding. At Cherskii's initiative, two "souring pits" of the Kamchatka type were laid out: near the village of Glinka—with fifteen carcasses of adult male fur seals, and in Zhirovaya Bay—with several hundred marine fish [20, pp. 76, 77]. Soon souring pits and "iceboxes" began to be created in other parts of the island, and at guard posts they began to be given dried meat and *kachemaz* (sometimes *yukola*) prepared in advance.[17]

In April 1919, in Vladivostok, the Management of Fish and Marine Animal Industries of the Far East was established. The management decided to carry out reforms based on the American model, but the widespread devastation and the lack of regular transport links did not permit the plan to be carried out. In addition, in the late autumn of 1920, the initiator of the idea, A. I. Cherskii, died. The Far Eastern Fisheries and Hunting Administration, established in 1922 on the basis of the Fish Management, completed the development of a plan for a new management system. As expected, thirty years of experience in similar work on the Pribilof Islands (United States) was taken as a basis. The plan provided for the limitation of hunting sea otters, streamlining the fur seal trade, and arrangement for traps containing food for feeding and selective killing of Arctic foxes under conditions of their semi-domestic maintenance. But the difficult economic and internal political situation once again forced the dates to be postponed. Government orders and new instructions were delivered to Bering Island only in 1923 [1, pp. 425, 427, 446].

The first feeding traps with fenced areas were put into operation in the second half of 1923. In accordance with the recommendation of V. K. Arsen'ev, three such huts were planned to be opened on Bering Island, but only two were constructed: near the village of Nikol'skoe and in the vicinity of the seasonal settlement of Severnoe [AKM GI. 1234; 8, p. 143], and the first of them turned out to be ineffective due to the proximity of the administrative center and the large number of sled dogs, which were poorly controlled at that time. On Copper Island, feeders were set up near the village of Glinka (construction began in 1922) and in Peschanaya Bay. By the end of 1924, there were six of them: in Peschanka, near the village of Preobrazhenskoe; in the bays of Zhirovaya, Korabel'naya, and Glinka, and on the Isthmus. The last one was completed on October 5, 1924 [AKM GI. 537–3]. The harvesting of forage was carried out in the summer, and active feeding began from the end of October [11, p. 96; AKM GI. 537–3]. In addition to the "souring pits" with sea fish, mainly

[17] Yukola is unsalted fish jerky with the backbone removed. Kachemaz is unsalted fish jerky with the backbone.

cod, "iceboxes" were constructed with salted carcasses of adult male fur seals. At the same time, in 1925, at the direction of E. N. Freiberg, Head of Commander Island Trade, hunting with traps and guns was completely stopped on Copper Island, and on Bering Island a small Arctic fox nursery was established [AKM GI. 537–3; AKM GI. 1234]. This is how the island fur farming system began to form, which functioned until the early 1960s on Bering Island and until 1965 on Copper Island [7]. It included year-round observation of the state of the population, feeding, treatment, and selection of the best producers of the group. At the same time, animals were not removed from their natural habitat.

The next step was the cage breeding of the animal. In 1916 and 1917, probably 8 males and 22 females of blue [Arctic] foxes were caught on Copper Island and given to Keisha Ishino, representative of the Japanese government, for breeding on the islands of Ushishir and Matua. Three pups turned out to be unnecessary, and Cherskii chose a pair for raising in captivity. Due to the insufficient equipment of the improvised nursery, the scientist did not manage to move on to cage breeding, though the experiment was generally successful [20, pp. 69, 82, 101].

Cherskii's experiments were continued in 1924 by E. Freiberg. A fenced yard-nursery was located in the vicinity of Severnoe village on Bering Island; the first four animals were brought from Copper Island [AKM GI 1234; 10, p. 57]. In 1926 it was named the "A. I. Cherskii Experimental Nursery." From 1936 to 1939, on the basis of the nursery, a research station of the Arctic Institute was established, headed by E. D. Il'ina [9, p. 161]. There, they conducted experiments on crossing different colored pairs to explain the appearance of the white form [8, p. 64], and studied the course of pregnancy, the developmental features of pups, and pathological cases. The data obtained formed the basis for recommendations on the preparation of food rations, determination of fur maturity, etc.—in a word, all aspects of the capture and care of the animal. In the 1940s they began to use cage structures inside the fenced yards of the feeder-traps for these purposes. Sick and white individuals were kept in them: the former were treated, the latter were kept until the fur acquired the qualities necessary for slaughter [PMA: V. T. Timoshenko, May 7, 2015].

In 1950, in the vicinity of Nikol'skoe village, preparatory work began for the construction of a fur farm for the Commander for cage breeding Arctic foxes. The first animals were caught nearby in 1951, in the area of the Reef [AKM GI. 1570–2], but the official year of opening was 1952, when breeding individuals were brought from the mainland. The project was supervised in 1950 to 1953 by a graduate of the MPMI (Moscow Fur Institute), senior zootechnician A. I. Kotov [PMA: Z. I. Kotova, June 11, 2015]. In the 1960s the fur

farm was replenished with a group of "Norwegian veils" with a large percentage of "silver." Cage-based fur farming turned out to be less labor intensive and produced much higher quality pelts. But over time, the demand for long-haired furs in the international market began to fall, and Russia, following the fashion trends, switched to short-haired ones. In the fall of 1962, an American mink was brought to the Commander fur farm from the Avachinsky Fur Farm, and in 1969 the last caged Arctic fox was slaughtered [15, p. 157; PMA: S. E. Rogozhnikov, April 6, 2011].

As soon as the island fur farming system became unprofitable, it was gradually abandoned. Semi-wild Arctic foxes were fed until 1954. In that year a mass capture was made, and from 1955 the usual winter hunting began to be carried out. In the mid-1960s on Bering Island, the production site of the Elizovskii State Industrial Farm was organized, and traps came into use again [17, p. 469]. But by the mid-1990s, even this type of procurement began to fade away. The main reasons lie in the collapse of the socialist economic system and a decrease in the demand for furs.

After the establishment of the Komandorskii State Nature Preserve in 1993, the bulk of the hunting grounds ended up in protected areas. Currently licensed hunting is carried out only in the northern part of Bering Island. Hunting is not conducted every year and the volume of the hunt is negligible. Hunters set traps, as was the case during the state industrial farm, but there are those who prefer to feed and tame the animals first.

In 2009 the tribal community *'Ang'is* (Surf), headed by Aleut A. Yu. Kuznetsov, built a fenced yard in the area of the former Sarannyi property. This method of catching is close to island fur farming but does not contain the full range of zootechnical measures as during the heyday. The first hunting season brought seventy-eight hides, and Arctic fox fat turned out to be no less in demand. 'Ang'is uses a fenced yard to this day. Despite the positive result, the rest of the communities are in no hurry to follow the example, since hunting remains unprofitable. The problem is not so much the cost of labor and time as the high cost of the modern method of processing and dyeing the skins. The situation is aggravated by additional transport costs. Thus the modern catch of the Arctic fox in the Commander Islands is focused not on active foreign trade but on the saturation of the arbitrary "domestic market." At the same time, curative Arctic fox fat is in demand almost more than the skins themselves.

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Appendix

Hunting for Arctic Foxes in the 18th Century

Years of voyage	**Name of ship**	**Primary place of the hunt**	**Number of skins obtained (discrepancies in sources, explanations are given in parentheses)**
1743–1744	*Sv. Pëtr*	Bering	4,000 (*V. l. beringensis*)
1745–1746	*Sv. Pëtr*	Bering, Copper	2,240
1747–1748	*Sv. Pëtr*	Copper	1,520 (*V. l. semenovi*)
1747–1748	*Sv. Ioann*	Bering, went to Copper	1,421 (1,481)
1747–1749	*Sv. Simeon i Anna*	Copper	2,110 (*V. l. semenovi*)
1748–1749	*Sv. Perkun i Zanat*, wrecked, rebuilt *Sv. Kapiton*	Bering, went to Copper	650
1749–1750	*Sv. Pëtr*	Copper	1,080 (*V. l. semenovi*)
1749–1752	*Sv. Ioann*	Bering, Near	720 (*V. l. beringensis*), a pair was brought to Attu Island
1750–1752	*Sv. Simeon i Anna*, wrecked, rebuilt *Sv. Ieremiya*	Copper	1,900 (*V. l. semenovi*)
1750–1754	Sv. Ioann	Bering, Copper	2,698 blue, 224 white (7,044)
1752–1757	Sv. Boris i Gleb, wrecked, rebuilt, Avraam	Bering	3,851, including from the wrecked Sv. Pëtr (1,222 possibly from Sv. Pëtr)
1753–1755	Sv. Ioann	Bering, Attu	63, 12 of them from Attu (82)
1754–1758	Sv. Pëtr, wrecked, crew and hides removed: Sv. Andreyan i Nataliya, Avraam, Sv. Kapiton	Copper, Bering	1,400 blue, 300 white, 300 subadult

1756–1759	Sv. Andreyan i Nataliya	Bering, Attu, Agattu	1,040 and 773 from the wrecked Sv. Pëtr
1757–1761	Sv. Kapiton, wrecked near Kiska Island, then at the Near Islands	Rat	4 (either from Attu or from the wrecked Sv. Pëtr)
1758–1762	Sv. Iulian	Copper, Fox	1,263 blue (*V. l. semenovi*)
1759–1762	Sv. Zakharii i Elizabeta	Near	530 blue (1880)
1759–1763	Sv. Ioann Predtecha	Bering, Attu	236 and many hides used in clothing and blankets (possibly 109 from Attu)
1760–1763	Sv. Prokopii i Ioann	Near, Rat	63 blue (67)
1760–1764	Sv. Andreyan i Nataliya	Bering, Andreanof, Near	532 (from the Near)
1762	Sv. Pëtr i Pavel, wrecked near Attu	Near	9
1762–1766	Sv. Andreyan i Nataliya	Copper, Kodiak, Fox	66 blue, 30 blankets, 2 parkas
1764–1766	Sv. Prokopii i Ioann	Bering, Near, Fox	1,050
1764–1768	Avraam, wrecked on Copper, rebuilt as Sv. Pëtr i Pavel	Copper, Bering	1,733 blue
1765–1769	Sv. Vladimir	Bering, Attu	1,045 blue
1767–1770	Sv. Pëtr i Pavel	Copper, Bering, Andreanof	1,093 blue
1767–1772	Sv. Andreyan i Nataliya	Copper, Fox	700 blue, a pair transported from Copper to Umnak Island
1768–1772	Sv. Ioann Predtecha	Bering	1,280 blue (*V. l. beringensis*)
1768–1773	Sv. Nikolai	Copper, Near, Andreanof	1,127 blue
1770–1774	Sv. Aleksandr Nevskii	Bering, Andreanof	1,130 (*V. l. beringensis*)
1772–1778	Sv. Mikhail	Bering, Fox, Andreanof	901 blue (*V. l. beringensis*)
1772–1779	Sv. Vladimir	Copper, Attu, Umnak	1,104 blue

1773–1779	Sv. Evpl	Bering, Fox	1,008 blue (*V. l. beringensis*)
1774–1778	Sv. Prokopii	Commander	990
1776–1779	Sv. Apostol Pavel Alina	Commander	1,584 blue
1776–1781	Sv. Aleksan-dr Nevskii	Copper, Bering, Amchitka	1,106 blue
1777–1781	Sv. Apostol Pavel Orekhova	Copper, Unalaska	327 (*V. l. semenovi*)
1777–1781	Sv. Varfolomei i Varnava	Commander, Andreanof	1,600
1777–1781	Sv. Izosim i Savvatii	Commander, Andreanof	1,116
1777–1782	Sv. Andrei Pervoz-vannyi wrecked on Bering	Bering, Attu, Amchitka	609
1779–1785	Sv. Ioann Predtecha	Commander, Near, Andreanof	724 (727)
1780–1786	Sv. Evpl	Bering, Amlia, Fox	1,134
1780–1786	Sv. Ioann Ryl'skii	Bering, Near	931
1781–1786	Sv. Aleksei	Fox, Shumagin, Commander (?)	544
1781–1786	Sv. Izosim i Savvatii	Andreanof	150 (*V. l. beringensis*)
1781–1787	Sv. Apostol Pavel	Copper, Amchitka	1,106
1781–1787	Sv. Apostol Pavel, wrecked near Amchitka, rebuilt as Sv. Kirill	Copper, Amchitka	56
1781–1791	Sv. Aleksan-dr Nevskii	Fox, Pribilof	2,475 (*V. l. pribilofensis*)
1783–1790	Sv. Nikolai	Bering	Hunting data has not survived

1784–1789	Sv. Apostol Pavel, wrecked on Copper, crew and pelts removed by Sv. Nikolai	Copper, Kodiak, Kenai Peninsula	510
1785–1787	Sv. Georgii Pobedonosets	Bering	183 (*V. l. beringensis*)
1787–1791	Sv. Izosim i Savvatii	Pribilof	4,850 (*V. l. pribilofensis*)
1788–1793	Sv. Georgii Pobedonosets	Bering	946 (*V. l. beringensis*)
1790–1797	Sv. Georgii Pobedonosets	Bering, Cook Inlet, Pribilof	1,453
1792–1802	Sv. Izosim i Savvatii	Copper, Unalaska	The businesses were not preserved
1786–1797	Ships of the Shelikhov-Golikhov Company	Bering, Fox, Kodiak, and others	600, part of them V. l. beringensis

This appendix is based on data from A. Polonskii's manuscript and the summary table of A. Grinëv (ARGO. R. 60. Op. 1. D. 2; 5, pp. 636–641). Where possible, the name of the subspecies, color options, and age are given.

THE ARCTIC FOX TRADE IN THE COMMANDER AND ALEUTIAN ISLANDS

N. A. Tatarenkova

Abstract. Until the middle of the eighteenth century, aboriginal blue foxes lived only on the uninhabited Commander and Pribilof Islands. The Eastern Aleuts hunted red foxes, but the number of animals killed for the needs of island communities was not high. There is no information about special Aleut traps for foxes. From 1740 to 1770, only "Russians" hunted blue foxes. They introduced these animals to the Near and Andreanof Islands of the Aleutian chain. They also trained the local people to use the new methods of hunting. Most of the equipment used for catching foxes in the territory of the Russian-American Company (RAC) had a Siberian origin. These were various *samolovy* (self-catch traps): *kulëma*, *ochep*, *klyaptsy*, and *cherkan*.[18] The Aleut modification of the self-catch, noose-trap (ochep) was called *kamchadakh*. Klyaptsy and cherkani were used for fox hunting in the Fox Islands until 1910. In the Commander Islands, cherkani were either not used or used very rarely (as experimental) and kulëma and ochep were banned at the end of the nineteenth century. Steel traps began to replace wooden klyaptsy beginning in the 1870s. Further changes were connected with the introduction of a new type of management. The new management included a year-round set of activities designed for rational use of bioresources. This "system of island animal breeding" coincided with natural biological rhythms and cyclic natural processes; thus it became attractive for the local residents. One Aleut clan of the Commander Islands has continued to use the methods of their elders today. Thus it is not quite correct to speak of "traditional" blue Arctic fox hunting per se but rather of the integrated approach to the exploitation of island bioresources.

Keywords: Traditional hunting, Commander Islands, Arctic fox (blue fox), red fox, Aleuts, Siberian self-catch traps for foxes, system of "island animal breeding," island fur farming.

Before the middle of the eighteenth century, blue foxes (populations in which a dark winter color clearly dominated) lived only on the Commander and Pribilof Islands. In the eastern part of the Aleutian Ridge, other representatives of the genus *Vulpes*—foxes (*V. vul-*

[18] For examples of these devices, see the Appendix.

pes fulvus)—were found. Among the Aleuts, foxes (Rus. *lisa*; Al. *aaygakaag'ux'*) were a traditional object of the hunt, while Arctic foxes (Rus. *pesets*; Al. *uuquchiin'ix'*) lived in deserted archipelagos—whose settlement began after the formation of the RAC.[19]

Traditionally, the number of foxes taken was relatively low. Interest in furs increased dramatically after first contact with the Europeans, the emergence of active trade, and the formation of stable trade relations. Since the fur of the blue fox was valued above the common fox and was second only to the sea otter in its value, the Russians considered it necessary to introduce the animals to the Aleutian Islands. The first reproductive pair was taken to Attu Island in 1750. At the end of the 1780s and the beginning of the 1790s, Arctic foxes were brought to Atka Island [16, pp. 155–156, 180]. The RAC promoted further introduction, and in the 1840s Arctic foxes could be found on Kiska and Amlia [20, pp. 5–6; 15, pp. 299–301; 16, p. 164]. By the 1930s, they occupied Attu, Agattu, Semichi, Kiska, Seguam, Little Sitkhin, Rat, Semisopochni, Amchitka, Gareloi, Amatignak, Ilak, Kanaga, Bobrof, Adak, Umak, Kasatochi, Amukta, Herbert (Chagulak), Carlisle, Kagamil, and Uliaga [22, pp. 298–300]. No introduced species were recorded east of the Islands of the Four Mountains, although attempts were repeatedly made.

Simultaneously, with the introduction of animals and the formation of stable trade relations, new hunting techniques began to be established, since techniques widespread in Siberia and the Far East were absent in the Aleutian Islands. There are no indications that the Aleuts paid *yasak* with Arctic fox skins.[20]

A Brief History of the Arctic Fox Trade

In the eighteenth century, Arctic foxes were hunted mainly in the Commander Islands, though a population was discovered in the Pribilof Islands in 1786. Up to that time, only the "Russians" and residents of Kamchatka recruited into hunting artels preyed upon the animal (the Aleuts were taken as interpreters on long trips, and local residents were hired to conduct fur trades). At the end of the century, the RAC took over the companies that had been spontaneously formed on shares, and the character of nature management changed. In the early 1820s, permanent settlements appeared in the Pribilof Islands consisting mainly of migrants from Unalaska Island (up to 1820, the Aleuts from Atka Island had hunted there)

[19] In order to distinguish the red (and other colors of) fox (lisa) from the Arctic fox (pesets) the Russian names are inserted where there might be confusion. However, in order not to relieve the reader of all confusion, the blue fox is an Arctic fox (pesets).

[20] Yasak was tribute paid by the natives to the state.

[23, pp. XV–XVI]. At the same time, a large group was brought to the Commander Islands from Attu Island. From that moment on, hunters, the bulk of whom were Aleuts, began to be distributed in *odinochki*—dwellings in the hunting areas (grounds) that encircled the coastlines of the islands.[21]

After the sale of the main part of the RAC's possessions on the Pribilof Islands to the United States, which became American, the fur trade was leased in 1869 by the Alaska Commercial Company. In 1871 the trading company Hutchinson, Kohl & Co. entered into an agreement with Russia. In 1891 the Russian Seal Hunting Association became the new tenant of the Russian (Commander and Robben) islands; from 1901 to 1911, Commander Islands trade came under the jurisdiction of the Kamchatka Trade and Industrial Society, and from 1912 to 1916, under the Vladivostok Trading House Churin and Co. As in the days of the RAC, the administration of Commander Islands set the limit, monitored the procurement, and determined the years of hunting. The Arctic fox hunt was usually carried out skipping one to two, less often three, years and amounted to at least eight hundred foxes [14, p. 37; 10, pp. 44, 117–119; 8, pp. 168, 174].

Hunts were guided by "Rules" developed in the late 1870s and approved in 1883. They stipulated the terms and boundaries of the hunting grounds, as well as the equipment. The Arctic fox hunt began November 10 (22) on Bering Island, November 20 (December 2) on Copper Island, and ending January 1 (13) on both islands.[22] The equipment permitted using a variety of traps, kulëmki, ochepi, and firearms. In 1912, E. K. Suvorov added hooks to the above for pulling foxes out of holes and "Aleut loops" or *kamchadakh*, with the admonition that the former had been banned in 1894 and the latter a little later [13, p. 219]. In fact, it was forbidden to take Arctic foxes with hooks from at least 1882 [10, p. 119]. Kulëmki were discontinued in 1895. Thus at the beginning of the twentieth century, legal hunting for Arctic foxes was carried out only with traps and by shooting from rifles and shotguns.

Since by 1910 the volume of hunted fur seals had fallen sharply, there was a decline in the number of Arctic foxes, which fed on the meat of sea mammals. In order to smooth out the negative process, special feeding began to be organized in 1917. In 1919, it was decided to carry out reforms based on the experience of judicious selection with the aid of live traps, which had been used on the Pribilof Islands since the 1890s [18, pp. 65, 69–71, 76–77]. New instructions were delivered to Bering Island in 1923 [3, pp. 425, 427, 446]. The plan provided for the limitation of hunting *kalan'* (sea otters), streamlining the fur seal hunt, and the use of feeding traps for feeding and selective slaughter of Arctic foxes.

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[21] In our case an odinochka is a small outpost occupied by one or two promyshlenniki for hunting and trapping.

[22] The two dates refer to the Gregorian and Julian calendars: November 10 is Gregorian, November 22 is Julian.

The first trap feeders were put into operation in the second half of 1923. This is how the island fur farming system began to form, which functioned until the early 1960s on Bering Island and until 1965 on Copper Island. It included year-round observation of the state of the population, feeding, care, and selection of the best producers for the population. The animals were not removed from their natural habitat. At the same time, the A. I. Cherskii Experimental Nursery was organized in the area of the Northern Settlement, where experiments on mating of mismatched pairs were carried out, and the course of pregnancy, development of pups, and pathological cases were studied [11, p. 64]. The data obtained formed the basis for recommendations that reflected all aspects of the industry.

The next step was the cage-breeding of the Arctic fox. In 1950, construction of the Komandor Fur Farm began in the vicinity of Nikolskoe village. In 1952 the first breeding specimens were acquired. Cage-breeding fur farming turned out to be less labor intensive and produced higher quality hides. But as the demand for long-haired furs began to drop around the world, an American mink was brought in 1962 to the Komandor Fur Farm, and in 1969 the last caged Arctic fox on the island was killed. A production site for a state hunting farm was organized, and traps came into use again. By the mid-1990s this type of hunting began to fade away as well.

After the organization of the Nature Reserve “Komandorsky” in 1993, the primary part of the hunting grounds ended up in a protected area. Currently licensed hunting is carried out only on the northern part of Bering Island, with the volume of the take being insignificant. Hunting is carried out mainly with the use of traps. In 2009 the tribal community “Ang’is” (“Breaking Wave”), headed by Aleut A. Yu. Kuznetsov, built a fenced yard in the vicinity of Lake Sarannoe and uses it up to now. This method of catching is similar to that of island fur farming, but it does not contain the full range of zootechnical measures. The current production of Arctic fox is mainly focused on saturating the provisional domestic market and does not promise significant profits.

Hunting Equipment and Methods of Trapping from the Eighteenth to the Early Twentieth Centuries[23]

Almost all of the tools described below are of Siberian origin and came into use no earlier than the middle of the eighteenth century. The emergence and active use of *samolovy* (self-catch traps) is associated with the formation of new social and commodity-exchange relations. After the arrival of the Russians, furs became the main "currency"; there was a need to switch to more intensive forms of hunting. Borrowed techniques were quickly implemented as more effective.

Whether specialized fox-hunting tools existed in the Aleutian Islands before the arrival of the Russians remains an open question. Knowing the peculiarities of the behavior of these animals, subtly noted in the fairy tale "The One-Eyed Man and the Transformation of a Woman into a Fox" (in the original "The Fox Woman," collected by Jochelson in 1910 on Umnak Island) [24, pp. 390–393], we can assume that the answer is no. In any case, they have not survived to this day.

The principles of all self-catch traps were introduced by Russian hunters, and the material and manufacturing techniques varied depending on the area. The most significant in this respect are the kamchadakh loops that existed on the territory of the Atka Department. The kamchadakh was a modification of the Siberian *ochep*, adapted to island conditions and used for hunting Arctic foxes. Over time, the trap began to be perceived by the Aleuts as something native, in contrast to the "Asian Aborigines'" *uuchihmax'* (derived from the word "ochep"). The memory of the kamchadakh was preserved on the island of Atka at least until the middle of the twentieth century.

No less noticeable change was made to the *cherkan* (deadfall), a simplified model of which was used by the eastern Aleuts for fox hunting. This self-catch trap came into use last, probably in the second half of the nineteenth century. It is noteworthy that this word in similar phonetics is found in the group of Finno-Ugric languages, among the Mansi, Yakuts, Evens, and Oroks [2, p. 657]. In Aleut it sounds like *chalkaanax'*.

The most primitive tool was the *usy* (vibrissae, mustache). But in this case, we are not talking about borrowing, but rather about the successful selection of available improvised material. The object is so simple that it has no special designation in any of the languages.

[23] See figures pp. 86–90.

Traps of a crushing type—the *past'* (mouth)—began to be used earlier in the Commander Islands than in others.[24] In the winter of 1743 to 1744, they were built from improvised materials by the crew of the *shitik* Sv. Pëtr. Up to one hundred and more Arctic foxes were caught with it in one day [ARGO. P. 60. Op. 1. D. 2. P. 6]. One of the varieties of the past' is the kulëma, or kulëmka (kulumkix') [21, p. 248], which is characterized by a shorter corridor length. These traps were popular throughout the RAC territory. According to Veniaminov's definition, in the Aleutian Islands, the kulëmka for the Arctic fox was a trap "similar to a small hut, fenced with stakes on three sides." A log or a heavy plank was placed on top instead of a roof, held by small guard sticks. Bait was placed inside the hut, for example, sea lion or seal meat. As soon as the Arctic fox stuck its head inside and began to pull at a piece, the log fell and crushed the animal [7, p. 335].

The kind of kulëma that used to exist on the Commanders is more properly called a past.' Grebnitsky reported that a detailed description of trapping equipment is given in Krivoshapkin [10, p. 119; 12, pp. 65–66]. If so, then we are talking about a classic stationary tundra past' for the Arctic fox [6, pp. 206–210]. The falling samolov (self-catch trap) was made as follows: long pegs with a height of a yard (71 cm) and a thickness of "three fingers" were driven into the ground in two rows. These pegs formed a corridor about 70 cm long and about 35 cm wide, with the walls slightly diverging to the sides, so that the distance at the top was slightly wider than at the bottom. The weight (*gnët'*) was a log or heavy plank slightly narrower than the corridor and about 2–2.5 (3–4) m long. The rear end of the weight rested on a peg with a fork driven into the ground or other primitive support, while the front end was held up by a system of levers. The height of the peg with the fork was selected in such a way that the fallen weight was tightly pressed to the ground inside this "mouth." To do this, when setting the trap, the shape of the ground was always taken into account.

In the front end of the weight, perpendicular to the main axis, a *romzha-slag* (a thick pole), otherwise called a rocker arm, was cut in an oblique groove. The romzha was made 3–4 cm thick and about 2 (3) m long; it had two arms: a short one (10–15 cm), going to the *motyr'* (tilt arm), and a long one, resting on the second stake with a fork. Near the head of the trap, on the side opposite the long shoulder of the rocker arm, a support stake was driven in, on which the tilt arm was set. The tilt arm was located parallel to the walls of the corridor and reached approximately the middle of the past'. It served as an unequal lever: with its short shoulder, the tilt arm held the rocker arm with the weight, and a cord about 35 cm long was

[24] The past' is probably closest to the trap known in American as a deadfall, though deadfalls generally do not have a corridor.

attached to the lowered long one with a catch tied at the other end. Right there, in front of the central part of the past', a "fork" was installed—a peg with a knot facing down and toward the mouth. A shallow perpendicular notch was made on the peg just above the knot and the end of the catch was lightly inserted into it. In this position, it was kept armed, holding the catch along with the knot. A cord was tied to the other end of the catch and stretched obliquely into the mouth. The bait was attached to the end of the cord. When the animal took the bait, the trigger was released and the mechanism activated.

The system Commander trigger might differ from that described by Krivoshapkin, but the principle remained the same. In particular, there was the three-wall. K. I. Savich describes the three-wall "kulyumok" of 1893 as follows: this is "a special kind of trap, similar to a hut, fenced off on three sides with low stakes; on the fourth side the entrance is covered from above by a log supported by two small sticks; inside the fenced space they put bait. As soon as the Arctic fox sticks its head inside the trap and pulls the bait (meat), the top log falls and kills the Arctic fox with its weight. This kind of trap is placed on higher places or on the edge of rocks, near the sea" [RGIA DV. F. 702. Op. 1. D. 262. l. 30ob.–31]. Sometimes the Arctic fox managed to trigger the kulëmka, and then go in and calmly eat the bait.

It was not difficult to make a kulëma from driftwood. Therefore, they were very popular in the Commander and Near Islands until the middle of the nineteenth century [16, pp. 180, 182]. Kulëmka trapping had two significant drawbacks: first, the skin was damaged, and second, during heavy blizzards, the Aleuts were not able to inspect the traps daily, and in their absence, the carcass was pecked by birds or torn apart by other Arctic foxes. The skins obtained in this way were for the most part considered second-rate. Since 1895, kulëmi have been officially banned.

Steel traps and their wooden variety—klyaptsy—were no less popular. Klyaptsy, or kleptsy (*klimchix'* on Atka, *klisax'* in the Eastern Aleutians) [21, p. 243], were the simplest spring mechanism, consisting of a wooden pad (stump) and a jaw equipped with teeth. The pad of Aleutian klyaptsy (MAE 313-57) looks like a hollow cylinder about 35 cm long with a wide groove in the central part, deepened by two-thirds of the diameter. A fixed wooden base 140 cm in length was firmly inserted into the groove, with a rectangular slot in the area where the teeth of the scabbard hit. The pad is made seven-sided and has a flat base, which gives it additional stability. The movable part of the device was a jaw: a strong wooden stick 60 cm long with three penetrating metal prongs fixed in the upper third (lost on the model MAE 313-57) and a small wooden or metal pin for the trigger on the side. The length of the teeth ranged from 8 to 9 cm. On the lower part of the rocker arm was a smooth head separated

from the main part by a shallow groove. This part was inserted into the central groove of the pad and fixed with loops—thick twisted cords made of whale sinew that served as a spring. A loop was passed through a hole in the rocker arm, twisted along the groove of the cylinder and fixed on the opposite side of the block with a wooden wedge. In a similar way, the loop is turned back. Two external wedges on the sides of the pad were fixed and a homemade spring was twisted, exerting the required level of tension. The MAE 313-57 klyaptsy were made in the Commanders in the 1880s and acquired by N. Grebnitskii. The second item (NMNH E73015) from 1882 to 1883 was collected on Bering Island by L. Steineger; the trap retained all the features, including the prongs and elements of the guard (probably the NMNH E73014 plaque served as a stand).

Before use, the klaptsy were rubbed with the root of hogweed (*Heracleum lanatum*) and/or kept for a week under a layer of soil to repel the human smell. Then they were installed on Arctic fox trails, securely fastened with stakes on tripwires and carefully masked with grass. The tilt arm was bent to the opposite part of the base and armed with two small bracket-shaped sticks: the catch had a recess into which the pin of the tilt arm was set and a wedge-shaped "beak" entering the groove of the trigger. A thin cord was tied to the trigger and stretched across the path to a peg driven into the ground. If one hit the tripwire, the spring would work with such force that the teeth could easily penetrate a human leg [7, p. 331].

According to the reports of the Fox Aleuts, Bill Cherepanov (Tcheripanoff, 1902–1991, Akutan Island) and Sergei Suvorov (Sovoroff, 1902–1989, Umnak Island), solid wood of "red cedar" was used to make fox inserts, and for stakes the so-called "female tree," which has no smell. The length of the pad varied from 40 to 45 cm, while the "wooden jaw" (tilt arm) did not exceed the same 60 cm. In the absence of iron, teeth (14–16 pieces) were made from the strong outer shell of large whale bones [25, pp. 151, 154–156].

Klyaptsy existed on the Aleutian Islands until about 1910, but by the 1870s they had been replaced by steel traps (*kamkaanax'*) [21, p. 228]. At the beginning of the twentieth century, small American traps of the Newhouse and Victor system No. 2 were used [13, p. 220]. Several of these items are kept in the Aleutian Museum of Local Lore (the marking has not survived). Probably the incomplete model "Otsep after Catching an Arctic Fox" (MAE 313-55; NMNH E73012) also illustrates this method of catching. The model is a rectangular mahogany platform with a wooden peg "driven into" the central part and slightly shifted toward one of the short sides. The peg is made of white wood, almost square in cross section. The rest of the details of the model have been lost. The word "otsep" does not sound like an Aleut word, since in this language there are no sounds "ts" and "o"; it is consonant with the word "chain." Most likely, a trap chain was attached to the peg.

When setting traps, each hunter used his own tricks. For example, in the 1980s on Bering Island they loved to use 50 L wooden barrels thrown out by the sea: a trap was placed at the entrance and bait was placed inside. This method was good in that a barrel lying on its side with a trap nailed to it constituted a single integral device and it could be moved and turned depending on the dominant wind direction. But over time, the amount of waste material decreased, and this method became obsolete. Today, P. M. Yaskin prefers to fix the traps to the snags frozen on a tidal flat (supralittoral) and nail them a little higher. Since the second half of the twentieth century Arctic foxes are caught exclusively in "twos"—imported traps "Taiga" No. 2 [PMA: S. E. Rogozhnikov, 6 April 2011; P. M. Yaskin, 22 March 2011].

Until about 1910 the Aleuts of the Fox Islands used chalkaanax' (or cherkan; self-catch traps, using the force of bow elasticity) [25, pp. 151–153; 21, p. 129]. The principle of creation and the name of the tool came from Siberia (in the nineteenth century, cherkans were widespread everywhere from the Arkhangel'sk Province to the Kolyma and the lower reaches of the Amur). At the same time, the self-catch traps described in the 1970s by Aleuts B. Cherepanov and S. Suvorov differed from continental analogues. Like all the others, the Aleutian cherkan consisted of a wooden frame and a movable "hammer" (crush) fixed in grooves. The bow was rigidly attached to the frame, but it was placed not in the middle but rather at the highest point. The height of the frame was 90 cm with a width of slightly more than 30 cm, and the length of the bow was 122 cm. The cherkan resembled a sill, but in addition to the lower "threshold," the structure had a horizontal middle partition with a hole in the center. This hole served as an additional guide for the crush handle (called the "arrow" by the Aleuts). The height of the "arrow" could vary: the longer it was, the greater the pressing force. The bow was made from a coniferous tree called *chaxam qan'ga* (perhaps it was not the biological species that was meant but rather the most durable part of the plant), and a tendon-cord was used as a bowstring. Bringing it to combat readiness was carried out with the help of a cord and two pegs: a catch and a trigger (without the participation of the "tongue"—this was the third fundamental difference). One end of the cord is attached to the bow, the other to the catch. The trigger was freely wound in the slot of the frame and was held only by the catch. The spring-loaded bow "hammer" was lifted up, and in the opening formed at the bottom the catch pegs and trigger were carefully installed. When the fox left the den, it touched the guard, and the mechanism was activated, clamping it in the frame.

The use of cherkan in the Aleutian Islands raises many questions. Usually this self-catch trap was used on ermines, Siberian weasels, squirrels, sables, and mink. They rarely hunted foxes. In the reports of the RAC and in earlier sources, no mention of this method of hunting was found. One gets the impression that chalkaanax' did not come from Siberia

in the eighteenth century but rather in the second half of the nineteenth century and from Alaska, where they had been brought earlier and where there were more "suitable" animals.

Fragments of a cherkan are kept in the Aleut collection in the N. I. Grodekov Khabarovsk Regional Museum collection (KhKM KP 1138). The "pressure trap" retained only a bow made of "mahogany" 83.5 cm long and the "hammer" 30.3 cm long. Unfortunately, there is no exact information about the place and time of collection; the item dates from the late nineteenth to early twentieth centuries. In the collection of B. Dybowski there was a "crossbow for killing foxes," collected in the Commanders in 1879–1883 (lost).

To extract Arctic foxes from their holes, Aleuts often used usy. To do this, they took a long rod of baleen or a tree branch and cut notches on the outer ends, or simply split them. Then the end was pushed into the Arctic fox hole and, having groped for the animal, began winding movements. The sharp split end first grabbed the wool, and then dug into the skin. As soon as it was firmly fixed in the body, the hunter pulled the prey out [7, pp. 276, 335]. With all the accessibility and simplicity, the method had one significant drawback—it led to over-harvesting females, and therefore in the early 1880s was banned.

Ochep came into use no earlier than the middle of the nineteenth century—neither Veniaminov nor Khlebnikov mention them. Usually, ochep was called self-catch trap, which jerk the game up when using the force of an unequal lever ("rocker"). Also, any strength (counterweight) with a load can be considered as weight. Krivoshapkin mentioned that when hunting Arctic foxes *silushki* (force) was occasionally used [12, p. 65].

One of the types of ochep that existed in the Commanders was the loop "kamchadakh" [13, p. 219]. The only description that has survived to this day was given by Knut Bergsland for Atka Island (1952): kamchadax' is a fox/Arctic fox trap, consisting of a snare attached to a stick (*kadxii*) that captures the fox, with a weight and a wooden ring in a semicircle to lure the fox into the snare. The wood ring was called *kamchadaalux'*. During the same fieldwork, Bergsland collected another word—uuchihmax', a derivative of the Russian "ochep." Informants said that uuchihmax' came with the Aleuts who had visited Russia, and probably borrowed from "Asian aborigines"; there is no description of this self-catch trap [21, pp. 226, 413].

Apparently, an incomplete model of the loop "kamchadakh," taken from the Commander Islands by N. Grebnitskii (1891), is kept in the collection of the MAE RAN under number 313-56 (a similar item NMNH E73011 has much worse preservation). The ochep was arranged quite simply: as in the case with a kulëma, pegs 60–75 cm long were driven

into the ground on wind-blown snow-free heights. But they formed a semicircle and not a corridor. At the entrance to the trap, two protruding pegs with a height of about 80 cm were installed (on model 313-56 they are lost, but holes from them are visible). These were the clamps that protected the rocker from being swayed by the wind. A tripod with a height of about 1.7 m was installed opposite the entrance. A rocker was fixed on it so that it would not slide, and a notch was made. The short shoulder of the rocker led to the trap; the long one served as the rocker arm.

A line ending in a wooden catch and a self-tightening loop were fixed to the short end of the rocker arm. The latter passed straight between the stakes of the corridor. The wooden trigger was firmly embedded in one of the rear pegs and ran at a low height parallel to the floor (a fragment of it has been preserved on model 313-56). Judging by everything, the "wooden ring" indicated by Bergsland is the catch that threw itself onto the end of the trigger. The bait was also placed there. Grabbing the meat, the Arctic fox threw off the ring and thus triggered the ochep.

A similar trap for the Arctic fox was described in 1953 by Kamenskii [17, pp. 149–150], with the difference that the Kamenskii tripod with a rocker was located on the side opposite the entrance, and in the case of the MAE 313-56 model, the traces of the "trigger" remained opposite the entrance. The second difference lies in the shape of the trap and the presence of a rear wall in the Commander version.

Another model of the Commander "silushka" of the same year of appearance is listed under MAE number 313-52. This trap used the fall force of an ordinary trimmed boulder. Apparently, a primitive snare was installed on a sufficiently steep slope, consisting of a powerful wooden stake with a hole in the central part and a boulder attached to it by means of a line. The stake was made from a log or a powerful bar, slightly squeezing the upper end so that a short, truncated cone was obtained. The weight was installed on the resulting small area and the bait was laid. The stake was driven into the ground in such a way that its height allowed the animal to reach the stone with the equipment only from the side facing the top of the slope. A little above the stake on the ground, a loop was straightened, a line was passed through the central hole of the stake and fixed on the opposite end of a boulder weighing 7–8 kg. The boulder was attached in the same way as the stone sinker at the ends of sea otter nets: for reliability, a shallow groove was carved along the perimeter of the stone, clearly visible on the surviving model. The Arctic fox approached and, trying to reach the bait, rested on the unstable weight with its paws. The boulder fell off and the loop closed around the animal's body. At the same time, the stake did not allow the carcass to slide down. The

description of the principle of operation of this trap has not survived, but such a mechanism is quite probable.

Model NMNH E73013 demonstrates the same capture principle but looks different and does not have a copy in the MAE (duplication of most models is due to the fact that, N. A. Grebnitskii, the manager of the Commander Islands was friends with the American zoologist L. Steineger and helped him collect biological and ethnographic collections). Perhaps it was this type of ochep that was called kamchadakh in the Commanders.

Loops appeared later but were used longer than other homemade traps. Since 1910, only rifles and imported traps have become permitted tools.

Trapping Methods during the Period of Insular Fur Farming (1920s–1960s)

In 1923 a more efficient system of insular fur farming began to be introduced in the Commander Islands, which provided for maintaining Arctic foxes semi-free, regular feeding, and the simplest selection work. For catching animals feeder-traps, "self-catch traps," and box-traps began to be used [4, pp. 34, 44–45; 5, pp. 50–54; 11, pp. 138–141].

The feeder-trap was mainly borrowed from the Americans (Pribilof Islands); it consisted of a small wooden house and an adjoining net yard. The house, measuring approximately 4 x 5 x 2 m, was divided by two partitions into three separate rooms: the observation room, the collection room, and the operating room. The observation room had an exit into a netted courtyard and a glazed observation window, which served to observe the foxes, and from where a trigger mechanism for the rear courtyard door was activated. The collector, or "dark" room (2–3 m^2), served to transfer Arctic foxes if their number was excessive. It was connected to the operating room by a window through which the animals were passed. Later, the collection room was abandoned, and the foxes began to be released throughout the feeder. Feeder-traps built in 1937–1938 no longer had collection rooms. The operating room was the largest working room (10–12 m^2). Here appraisal, weighing, treatment, or slaughter of the animal were carried out. In addition, there was an attic in the house where a supply of food was stored.

The second room of the feeder-trap was a net yard. Typically, the mesh fence was the same width as the operating room and enclosed the area in front of the house. At the top, a mesh or wooden canopy in the form of a visor was attached to the mesh wall, preventing the

escape of animals, this was especially important in snowy winters. A gate that rose on hinges, sometimes in the form of a small (1 x 1 m) square, was built into the front wall of the net yard. A line ran from the gate through a system of blocks into the observation room.

After 1936 automatic pipes began to be installed, in addition to the gates: 2–3 wooden pipes (25 x 30 cm in cross section and 60–70 cm long). They were placed near the gate and on the side walls at a height of approximately 70–80 cm (depending on the average snow depth). In the central part of the pipe, near the upper wall ("ceiling"), a wooden door with hinges was attached, which opened in both directions and served as a barrier. During hunting, a lock was installed from the outside, a nut or a nail; the Arctic fox could go inside the courtyard but not the reverse.

In the same year, the construction of simplified utility feeder-traps began, which instead of a house had a one-room shed and a small grid courtyard with only pipes. On Bering Island such feeder-traps were placed in the bays of Tundryanaya, Vodyanaya, Kislaya, etc.

Self-catch traps were pits, though less often large stationary net boxes. The pits were created mainly on Copper Island, net boxes on Bering Island, but there were pits there as well [PMA: V. T. Timoshenko, April 19, 2011]. The pit was made about 120–150 cm deep with a log frame, board or net sheathing, and a wooden cover. An unattended pipe with a ladder was installed above it. On the opposite side, above, there was another one with a suspended bait. There was a hatch in the pipe above the trap that was closed during baiting and automatically opened during hunting. The disadvantage of such trapping was that the animals that were gathered in the small area fought hard and bit. Therefore, self-catch traps began to be placed in areas where Arctic foxes were not encountered very often.

Old hunters remembered not only how they set traps and pulled out Arctic foxes but also how they themselves escaped bad weather in traps [PMA: G. M. Yakovlev, May 13, 2009, March 10, 2011; K. T. Ladygin, March 23, 2011, November 25, 2012; M. M. Aksënov, November 18, 2008].

Box-traps were for catching live animals. This was a net box with a wooden frame, about 140 cm long. On top of the box there was a door through which the bait was suspended and the trapped Arctic fox subsequently removed. The falling door was connected to the bait located near the opposite wall by means of a trigger. As soon as the Arctic fox entered and began to pull on the bait, a nail or stick acting as a trigger shifted and the door fell. The boxes were put in places where it was impossible to equip a feeder-trap and self-catch trap. Devices for catching Arctic foxes stood wherever the holes and trails of these animals were located—along the entire coastline of both islands.

The principle of hunting was simple but laborious: in the fall, before slaughtering, Arctic foxes were actively fed with odorous, slightly sour meat or fish; at the same time, they were taught to fearlessly enter the net yards and pass through unattended pipes. Feeding was not only passive but also active: a hunter specially assigned to a feeder-trap walked around the area dragging spoiled meat along the ground—a bundle of *yukola* or a piece of salted, sour seal meat. At the same time, he loudly blew a whistle or beat a homemade bell. Hearing the familiar sound, the half-tame Arctic foxes ran after the spoiled meat with a joyful squeal. The whistle was made from an ordinary piece of tin (AKM GI 1574).

In December a trial catch was made: if the animal had molted completely, the hunting season was opened, usually at the beginning of January. All Arctic foxes caught were evaluated: the strongest and most beautiful ones were left in the pack. Their ear was pierced with a marked clip and the hair on the tip of the tail was cut at a sub-right angle, such cropped Arctic foxes were called *tukulka,* or *tukuulkix'* ("hachet"). Pups and yearlings were also released.

Guns, which were rarely used on Copper Island at the end of the hunting season, were common practice on Bering Island. In the nineteenth and early twentieth centuries these were mainly single- and double-barreled shotguns. The popular models from 1894 and 1895 have been preserved in the Aleutian museum (AKM GI 32, 108).

Features of Processing Fox Hides

The skin of a slaughtered animal was removed like a stocking. To remove the tailbone, an incision was made on the underside of the tail. At the beginning of the twentieth century the fleshing was carried out by hand; some fastened the skin to a board for convenience. Later, they began to use an inclined bench, and instead of a knife, a sharpened tablespoon or a fleshing knife made of a cast scythe blade with handles attached at the ends. The cleaning started from the tail. To prevent the fat from staining the fur, they lay it on *chirilax'* (*ciril*; bunches of dry soft grass). If more Arctic foxes were harvested than the hunter had time to process, some of the unremoved skins were put out in the cold with their fur turned out.

Arctic fox skin is very delicate and needs careful handling. Cleaning was followed by the repair of cuts and bullet holes if the Arctic fox was taken with a gun. The cleaned and patched skin was pulled on a wooden frame (*pyala*, *pyalan*)—a straightener consisting of two smooth symmetrical boards (112–137 cm long, 4–6.5 cm wide, and 9–18 mm thick), connected at an acute angle in the form of an inverted "V." When pulled, the head part of the

skin rested against the rounded top of the board. The hind legs were straightened at opposite ends and tied tightly with a cord. The tail was straightened on a hanger (Rus. *nahvostnik*)—a wedge-shaped plate with a rounded edge inserted between the two arms of the extension; it could be extended to the required length. The front paws were straightened on tenons (Rus. *lapka*), or *cham-t'yagagish'* (from the Aleut *chax'* [hand] and *qya-* [to tie tightly]) [21, pp. 123, 340] 22–31 cm long and 4.8 cm wide, and the ears on small *tutushnik*, or *tutushikh-tyaga* (from the Aleut *tutusix'* [ear]). The Aleut names given were used on Copper Island and have survived thanks to the records of the head of the Commander District, N. P. Sokolnikov (1907–1916) [REM. F. 1. Op. 2. D. 602. L. 114, 114v.].

The skin stretched with the fur inside was hung horizontally in a heated room. The fat that comes out was wiped off with chiril grass. The skin was warmed up until the fat ceased to emerge. Then, without turning it inside out, they put it under a bunk to cure; later they turned it fur-side out and hung it up to dry [18, pp. 67–68].

There were no special dryers; the skins were processed in ordinary hunting yurts. The first years of "insular fur farming" (1920s), before hunting increased, readied skins on Copper Island were kept in the apartment of the head of Commander-Islands trade and even in the school corridor. One of the features of Commander skin processing was that the Aleuts removed the fur without claws [3, pp. 457, 447].

Using the Obtained Biomaterials

The Aleuts rarely used the fur of foxes or Arctic foxes for sewing clothes; it sometimes went to decorate parkas. Nevertheless, a report has survived according to which the promyshlenniki on Copper Island and the Fox Islands, navigator S. Glotov, in 1766 brought to Kamchatka, among other things, "blankets of 30 foxes and 2 fox parkas" [ARGO. R. 60. Op. 1. D. 2. P. 82]. Apparently, the skins were exported from the Commanders and processed by Fox Island craftswomen at Unalaska or Umnak. Blankets and parkas were specially made for sale.

An interesting fact was noted by I.-G. Georgi. During the winter games, the Western Aleuts wore feather hats made of skins of shelducks; the bird's neck was replaced with an elastic decorated strip of skin, and instead of the bird's head the lower jaw of an Arctic fox was attached [9, p. 366]. Considering that Arctic foxes were not found on Attu Island before 1750, such attention to an introduced species is quite unexpected.

There is a known case when the skin of a fox was used to cover a tambourine [25, p. 114]. In the 1970s, Bill Cherepanov made two tambourines for the Akutan school: one with a metal rim and covered with fox skin, the other made of wood with reindeer skin. The fur was removed in the simplest way: grass moistened with warm water was put on it and folded in such a way that the fur with the grass lay inside. The hair fell out in one day. Bill, like his father, was a bearer of the Fox Islands cultural traditions. He was a renowned Aleut dancer and toolmaker. But in this case, it seems, he experimented: over time, the skin on the "deer" drum began to tighten and "led away," while on the "fox" it remained elastic due to the "natural fat." Unfortunately, there is no explanation as to why he chose these two materials for the covering.

Since the nineteenth century the Aleuts, along with the Russians, began to use Arctic fox down for the manufacture of yarn. It was also used as a heater: The Aleutian Museum stores a winter sleeping bag for one- to four-month-old babies stitched in the early 1990s by M. Fomicheva (AKM HB 740).

Arctic fox fat was and is still valued the most. This is the first remedy for the treatment of various lung diseases, including being used for tuberculosis. Fat was applied to the skin for burns, superficial wounds, and various forms of dermatitis. It was rubbed into the scalp for better hair growth, etc. Arctic fox meat was seldom eaten. They occasionally made a roast from the legs.

Summary

After the end of the eighteenth century, the Aleuts became the main acquirers and suppliers of furs. For the inhabitants of the Near Islands, hunting for Arctic foxes was sometimes the only source of income. Despite this, intensive hunting for Arctic foxes cannot be called traditional in the full sense of the word for the region under consideration.

Analysis of self-catch traps used in the territory being studied leads to the conclusion that they were all of Siberian origin. Words denoting hunting equipment were also borrowed from the Russian language. Their appearance and rapid spread across the territory of the future RAC is associated with the advance of the Russians to the east and the concomitant formation of exchange, and then commodity-money relations. Active trade and a new structure of social relations forced the local population to carry out intensive hunting and use more effective, borrowed techniques.

The spread of Siberian trappers proceeded according to the following schemes: (1) the pioneers expressed interest in acquiring skins and demonstrated the methods of hunting the animal known to them (mid-eighteenth century); (2) companies on shares introduced Arctic foxes and gave Aleuts recommendations for breeding and harvesting, promising benefits for the future (second half of the eighteenth century); (3) Russian tradesmen entered into marriages with local women, carried out the trade themselves, taught it to their children and other members of the community (eighteenth and nineteenth centuries); (4) The RAC obligated the aboriginal population to carry out trade with approved hunting equipment (nineteenth century). In this case, we mean by "Russians" all non-indigenous hunters, among whom were also Komi (Zyryans and Permians), Siberian Tatars, "Kamchadals," etc. All the aboriginal population of the Aleutian Islands, as well as their descendants from various mixed marriages (with Russians, Alutiiq, Tlingit, etc.) are called "Aleuts." Local modifications of self-catch traps were practiced quite successfully, but for a relatively short time—an average of about a hundred years for each of the items.

Further changes on the islands are associated with the introduction of a new type of farming known as "insular fur farming." The new approach provided for the implementation of a year-round set of measures aimed at maximizing the streamlining of all types of hunting. In the spring the preparation of fish began; in June and July fur seals (bachelors) were slaughtered. Some of the fish and meat were dried, the rest was transported to open areas and fermented in "sour pits." Both of them subsequently went to feed the Arctic foxes. Preparations for Arctic fox farming began in August. Families lived in open areas: the men fished, hunted seals, and kept a record of the Arctic foxes; the women ran the household and processed the booty; the children carried the yukola, feeding and taming the animals. Each Aleut had comprehensive information about their area. In the fall women and children returned to the villages while the hunters dispersed. In November, Arctic foxes were actively fed and taught to go into traps. Hunting started closer to the New Year and lasted less than two months. March and April were filled with household chores and preparations for the new season: men hunted sea lions; the children collected the down of arriving fulmars and then foxes; the women worked and sewed. With the return of spring the first schools of fish appeared, and the cycle began anew.

The conformity of the system to the natural biological rhythms and the cyclic nature of natural processes, the rational use of resources and compensation for losses—all this became the reason that the Aleuts perceived insular fur farming as something primordial. Thus a paradox arises: it would be more correct to call "traditional" not the hunt for the Arctic fox itself but an integrated approach to the exploitation of the biological resources of the island system.

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28. MAE RAN (Muzei Antropologii i Etnografii im. Petra Velikogo Rossiiskoi Akademii nauk/Peter the Great Museum of Anthropology and Ethnography)

29. RGIA DV (Rossiiskii gosudarstvennyi istoricheskii arkhiv Dal'nego Vostoka/Russian State Historical Archive of the Far East). "Otchot po komandirovke v 1893 g. na Komandorskie o-va prichislennogo k Departamentu torgovli i manufaktur Ministerstva finansov Konstantina Savicha" [Report on a Business Trip in 1893 to the Commander Islands Assigned to the Department of Trade and Manufactures of the Ministry of Finance of Konstantin Savich]. RGIADV. F. 702. Op. 1. D. 262.

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Appendix 1

Figures

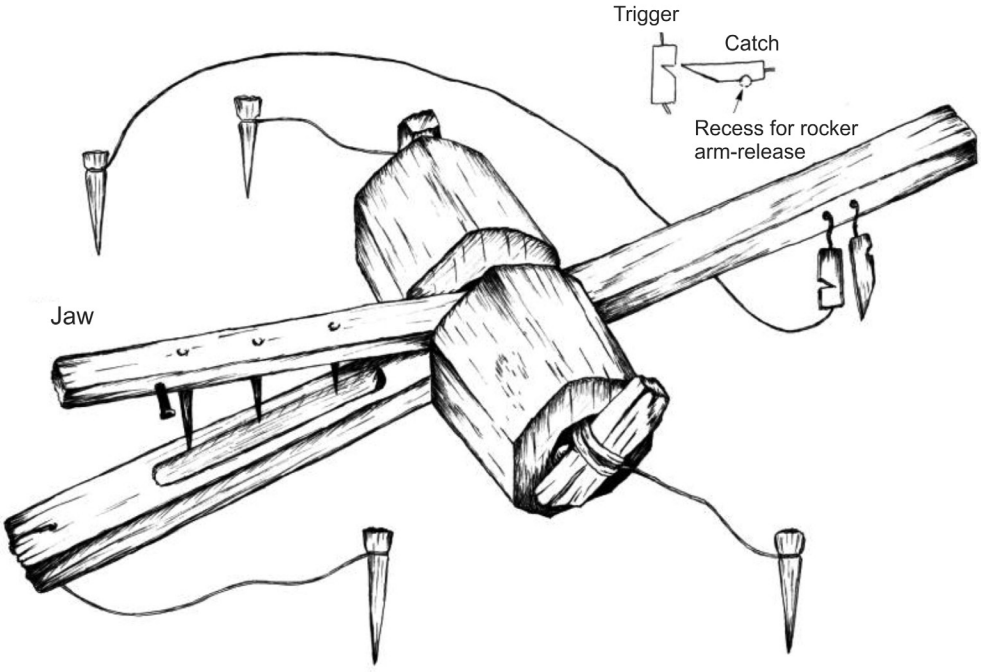

Figure 1. Commander klyaptsa [trap]. Reconstruction of Model MAE 313-57.

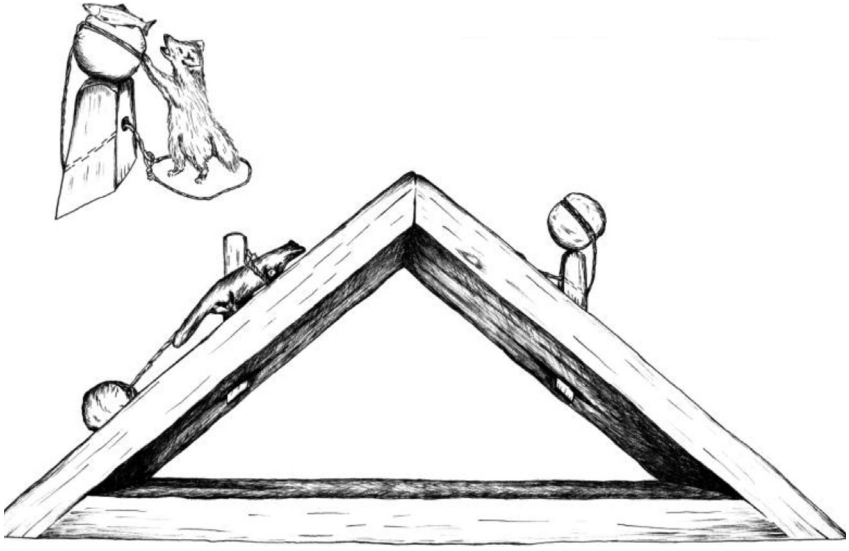

Figure 2. Ochep [pole]. The most probable variant of a Commander "silushka" [trap] (MAE 313-52).

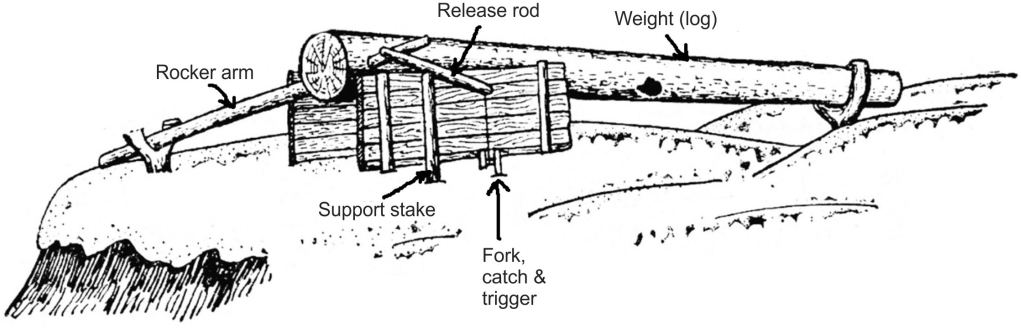

Figure 3. Fall [deadfall] for Arctic fox. Tundra "jaw" for an Arctic fox (Bullo et al. Okhotovendenie [Hunting Studies]. Moscow: Economics, 1969. P. 206.

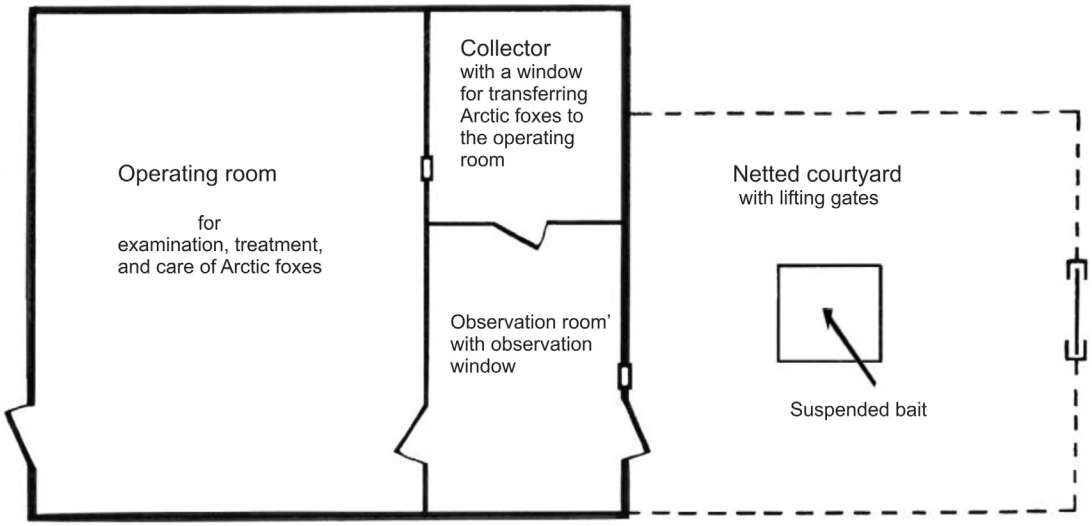

Figure 4. Plan of an Arctic fox feeder trap (Barabash-Nikiforov, I. I. Annual Excerpts from the Archives of the Commander Islands Fur Industry, 1934).

Figure 5. Net yard (Photo by G. Lipilina, 1987).

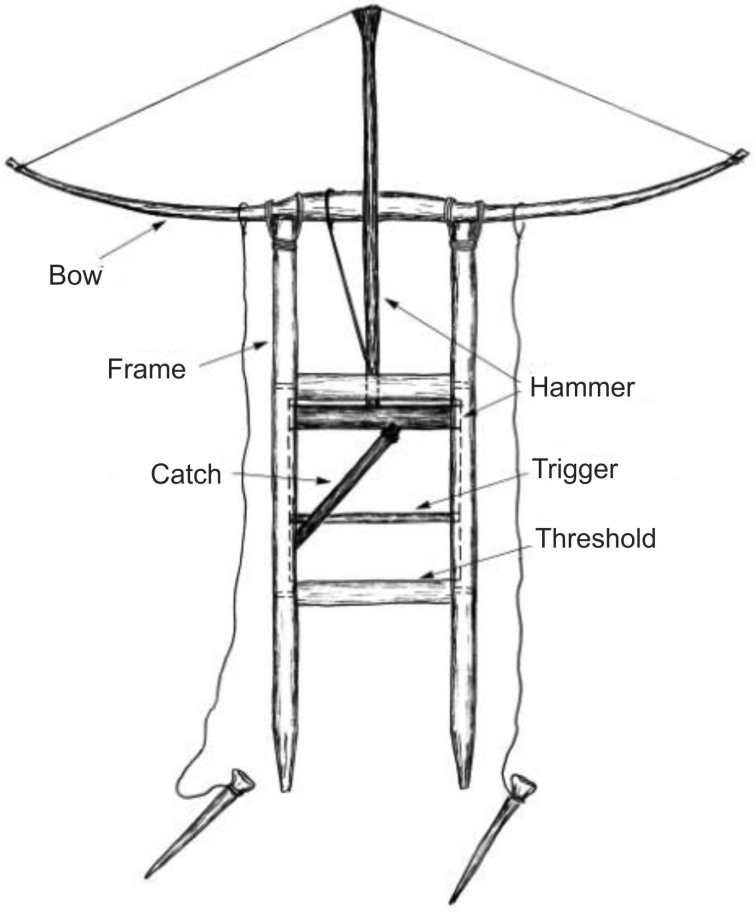

Figure 6. Cherkan [trap]. A set cherkan according to Cherepanov (Akutan Island).

Appendix 2

Fox Procurement in the Commander Islands from the 19th to the Beginning of the 20th Centuries

Year	On Bering I., based on Suvorov (1847–1911) (13, pp. 219, 220, 224, 225)	On Bering I., based on Steineger (1872–1882) (25, pp. 249–250)	On Copper I., based on Suvorov (1847–1911)	On Copper I., based on Arsen'ev (1909–1920) (1, p. 445)	On both islands, based on Grebnitskii (1871–1881) (4, pp. 67, 91) and Dybovskii (1872–1883) (22, pp. 63–64)
1847*	772		64		
1848	-		-		
1849	-		3		
1850	-		384		
1851	-		-		
1852	1,900		516		
1853	547		261		
1854	435		220		
1855	-		133		
1856	1,025		180		
1857	-		2		
1858	-		-		
1859	1,233		776		
1960	584		488		
1861	-		-		
1862	-		-		
1863	-		-		
1864	-		-		
1865	-		-		
1866	-		-		
1867	-		-		

1868	1,091: 986 blue, 105 white		465 blue		
1869	-		300 blue		
1870	550		209 blue		
1871	890: 870 blue, 20 white		326 blue		-
1872	608: 580 blue, 28 white	840: 836 blue, 4 white	390 blue		1,030
1873	538: 514 blue, 24 white	608: 580 blue, 28 white	475: 451 blue, 24 white		1,065
1874	-	538: 514 blue, 24 white	447 blue		985
1875	1,137 blue	-	-		-
1876	592: 573 blue, 19 white	1,137: 1,087 blue, 50 white	696 blue		1,833
1877	-	592: 573 blue, 19 white	-		592
1878	-	-	619 blue		
1879**	-	789 blue	503 blue		1,390: 790 Bering, 600 Copper
1880**	-	-	-		503 Copper
1881	580: 533 blue, 47 white	-	908 blue		-
1882	888: 874 blue, 13 white	1,467: 1,447 blue, 20 white	525 blue		2,500
1883	-		-		2,000: 1,000 Bering, 1,000 Copper

1884	1,520: 1,507 blue, 13 white		701 blue		
1885	-		-		
1886	894: 888 blue, 6 white		1 blue		
1887	-		1,311 blue		
1888	-		-		
1889	1,490: 1,468 blue, 22 white		692 blue		
1890	-		-		
1891	-		-		
1892	1,581 blue		836: 833 blue, 3 white (on p. 220, 1891 is indicated)		
1893	20: 14 blue, 6 white		-		
1894	1,358: 1,345 blue, 13 white		732 blue		
1895	15: 13 blue, 2 white		-		
1896	1,275: 1,266 blue, 9 white (on p. 219, 1,266 is indicated for 1895: 208 steel traps, 259 guns, 799 deadfalls)		40 blue		
1897	14 blue (on p. 220, 0 is indicated for 1896, no pelts were purchased)		975 (on p. 220, 994 are indicated for 1896)		
1898	1,319 blue		6 blue		

1899	32 (Dept. of Agriculture: 61: 63 blue, 1 white		31 blue		
1900	1,893: 1,883 blue, 10 white		-		
1901	6: 1 blue, 5 white		10 blue		
1902	1,260: 1,257 blue, 7 white		619 blue		
1903	34: 17 blue, 17 white		15 blue		
1904	1,062: 1,052 blue, 10 white		471 blue		
1905	53: 39 blue, 14 white		9 blue		
1906	1,186, 1,172 blue, 14 white		725 blue		
1907	411: 404 blue, 7 white		13 blue		
1908	1,034: 1,024 blue, 10 white (on p. 220, 1,034 are indicated for 1907: 616 deadfall, 418 gun)		722 blue (on p. 220, 723 are indicated for 1907: 628 deadfall, 86 gun, 9 deadfall)		
1909	825: 815 blue, 10 white		19 blue	772	
1910	1,053: 1,035 blue, 18 white		595 blue (on p. 220, 590 are indicated steel traps, 85 guns)	-	

1911	(on p. 220, 309 are indicated for 1910: 197 steel traps, 112 guns)		-	461	
1912				-	
1913				440	
1914				-	
1915				348	
1916				-	
1917				11 indicated	
1918				255	
1919				37 indicated, of them 19 padshikh*	
1920				252	

** Since the hunting was conducted in winter, the year the hunt ended is indicated; the quantity reflects only those skins that were accepted by the office and paid for.*

*** Grebnitskii's data accurately reflect the year of the end of the hunt and the issuance of monetary amounts, while in Suvorov's tables time shifts are traced, giving rise to numerous inaccuracies.*

THE RATIO OF SOCIAL AND ETHNIC IDENTITY OF THE COMMANDER ISLAND ALEUTS

Kirill S. Kartavtsev and Yurii V. Latushko[25]

Identity is a psychological representation of a person about his "I," characterized by a subjective feeling of his individual self-identity and integrity; a person identifies himself (partially conscious, partially unconscious) with certain typological categories (social status, gender, age, role, model, norm, group, culture, etc.) [15]. The scientific analysis of identity as a phenomenon and conflicts of identities of a different order (social, professional, ethnic, etc.) is experiencing a rebirth in Russian ethnology, not least due to the discussion that was launched in the early 2000s by Academician V. A. Tishkov [16]. Due to the cultural specifics and history of Russian science, the interpretation of the category "ethnic identity" is the most contradictory.

Ethnic identity (1) "is awareness, perception, emotional assessment, the experience of belonging to an ethnic community" [14]; and (2) "a constituent part of the social identity of an individual, a psychological category that refers to the awareness of one's belonging to a particular ethnic community" [15, pp. 234]. Thus, on the one hand ethnic identity can be viewed as an independent category, and on the other as part of social identity. From the point of view of psychology, ethnic identity (as well as other types of identity) at certain moments performs the function of psychological protection, and also separates the individual as part of his group from other ethnic groups and their representatives.

Let's now turn to the history of the formation of ethnic identity among the Aleuts. The individual's perception of his own belonging to any ethnic group, among other things, is expressed by linguistic means through self-name (endoethnonym). With regard to the ethnonym "Aleut" one can find a common mistake. It is believed that the self-name of the Aleuts—*Unangan*—is their common self-name [12]. In fact, Unangan is the name of the Unalaska-Fox territorial group of Aleuts. Thus, for example, the Aleuts of Atka Island called

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themselves *Nigugis*; the Aleuts of the Near Islands, *Saskhanakis*; the Aleuts of the Rat Islands,*Tsagus*; and the inhabitants of Kodiak Island, *Kanagis* [11, pp. 109].

G. A. Menovshchikov pointed out that the armed Aleuts, when meeting foreigners, shouted "allitkhukh" (meaning "community," "detachment," "team," "army"), making it clear that the incoming group faced an armed group of local people ready for an enemy attack and defense. Russian travelers and *promyshlenniki* interpreted this word as the self-name of all Aleuts. Due to its frequent use in conversations with Russians, it was adapted and began to be used to name the islanders as an ethnonym. Let us cite the following statement by the merchant F. A. Kul'kov, who lived for two years on the islands in the eighteenth century: "they call themselves in their own language *oleut*" [cited in 12, pp. 109–113]. Each group of Aleuts designated and identified itself in the context of geographic, group, or tribal demarcation.

Conditions that have developed in the region since the emergence of Europeans in the eighteenth century and the establishment of the Russian-American Company (RAC) in 1799 led to complex social processes among the Aleuts [2, pp. 74; 10, pp. 22]. The RAC played the role of a full-fledged master of the aboriginal and service population. In fact, political–economic relations were formed between the RAC and the Aleuts [3, pp. 53]. During the period of close contacts with the Russians, due to intercultural ties and economic dependence, the Aleuts were forming and simultaneously transforming new social and ethnic identities.

This is best seen from an analysis of the social structure of the transitional Aleut society. Thus there is a social stratum of *kagors*—Aleuts who have become economically dependent on the RAC [8, pp. 164]. This new socioeconomic group had to be correlated with the social strata of traditional society familiar to Aleuts.

The simultaneous combination of the formation and change of identity can, to a certain extent, explain why its defense mechanism did not work and did not provide the proper consolidation of the Aleut ethnos. I. Veniaminov gives an example of the existence among them of a legend-prophecy about the coming of people to the Aleuts from across the sea, as a result of which they will become like these people [cited in 3, pp. 55]. A similar myth was found among many (not only insular) peoples in different parts of the world, and it was recorded, as a rule, from the words of missionaries or other European cultural bearers. In the spirit of our reasoning, the originality of this legend does not really matter, it is only important that such a vision existed. This "sacred knowledge of the elders" influenced the inculturation of the younger generation and the perception of a new system of values by the Aleuts, including religious ones.

In the second half of the nineteenth and beginning of the twentieth centuries, the following qualitative shifts in the Aleut identity began, associated with the territorial delimitation of the island possessions of Russia and America. Commander Aleuts "renounced" their "Aleut" identity and began to call themselves "Creoles," took Russian names and surnames, and the number of interethnic marriages increased [3, pp. 112–113], which led to a voluntary renunciation of their "traditional" ethnicity. This transition had already been finalized in Soviet times in connection with the policy of Russification and industrial development. According to Aleut E. Grebzdyi, in the 1930s, in schools in Kamchatka and on the Commanders, they taught in Russian and all official relations and contacts were in Russian, although Russian-Aleutian bilingualism remained in everyday life [5].

According to I. S. Gurvich, the reconstruction of the socioeconomic sphere, an increase in the level of material wellbeing, and an improvement in everyday culture influenced the disappearance of the last primitive elements of the traditional material culture of the Aleuts. The rapprochement of the Aleuts with the alien population increased. The process of dispersing the Aleuts was well developed. Over time, there was a language change, a voluntary transition from bilingualism to Russian. The small-numbered Aleut people retained their national identity, which had not yet merged with the Russian nation [3, pp. 123]. The opposite position regarding the assimilation of the Commander Aleuts was taken by R. G. Lyapunova. During expeditionary research in 1975 to 1977, she recorded the preservation of ethnogenetic knowledge about the origin of the Aleuts and migration processes. We note here that R. G. Lyapunova placed the Commander Aleuts in a separate independent sub-ethnic community in relation to the Aleuts of other islands. During the course of interviews, she also learned that people of mixed blood and living on the mainland often no longer called themselves Aleuts, while their close relatives who returned to the Commanders considered themselves to be the latter [11, pp. 85–86, 202]. This example well illustrates the instrumental nature of ethnic identity, as well as the importance of realizing territorial rather than blood unity (In parentheses, we note that for almost all islanders, when deconstructing kinship relations, the commonality of their territorial affiliation comes to the fore. Compare, for example, the statement of M. Pukui regarding the Hawaiian family—the inhabitants of the "short wind" [an area on the island of Hawaii]—all relatives, wherever they live, are bound to their land with certain warm feelings) [18].

In the 1980s, R. G. Lyapunova recorded intensive migration processes between the islands and the mainland, which made it difficult to establish the exact size of the population. According to her rough estimates, the total population of the Commanders was then 1,350 people, of which 275 were Aleuts. In mixed families, affiliation in the Aleut line was possible

if either of the parents (usually the mother) had Aleut nationality. We note here that in the course of our field research on Bering Island in 2016 [9], we met condemnation of this practice from the "rooted" members of the Aleut community, who also reported the desirability of attributing not only children from both Aleut parents to the Aleuts but also checking the presence of Aleut blood at least up to the third generation. This is not to say that this point of view is widespread, rather the opposite, but its very appearance is symptomatic. We see an indirect reason for its existence in the aggravation of the struggle for the resources of the island (according to Federal Law 82, the Aleuts, like other Indigenous peoples of the North, have the right to priority use of local biological resources) in the face of an increase in the number of Aleut migrant workers returning from the mainland to their small homeland.

The formalized register and directiveness of referring to the list of Indigenous peoples of the north and the Far East has long been a source of conflict among the old-timers in various parts of our country. To resolve this issue, it is necessary for all interested parties—legislators, experts, and public activists—to work together actively. It must be resolved not by depriving representatives of Indigenous peoples these rights, of which they are extremely afraid, but by giving the rest of the Old Dwellers appropriate rights, as well as by monitoring their involvement in the real economic turnover of land and biological resources.

It does not follow from the above that economic expediency has become the most important reason for the construction of identity. However, today it objectively preserves, albeit formal, ethnic identity, preventing the final blurring of ethnic boundaries. At the time of field research by R. G. Lyapunova, it seemed that these borders had almost disappeared due to "the sharp numerical predominance of the Russian population . . . the growth of mixed marriages . . . the disappearance of many features of traditional life" [6, pp. 86].

Socioeconomic problems noted on the islands in the late 1980s and even earlier (such as alcoholism, low labor discipline, antisocial behavior, low level of education, etc.) led to an awareness of disrespect for the ethnic status of the Aleuts. Their economic discrimination was also noted, for example, in terms of the size of their wages, employment, etc. All this led to a voluntary renunciation of their ethnicity and, ultimately, the degradation of traditional culture.

Nevertheless, even in late Soviet times, the complete assimilation and acculturation of the Aleuts was questioned by many researchers. In the 1990s, after the collapse of the USSR, the collapse of the Soviet economy, a significant outflow of newcomers from the islands, and disruption of supplies and regular communication with the mainland, there was a sudden renaissance of traditional culture. During these years, in order to survive, "we all be-

came Aleuts here," one of the respondents (a Ukrainian by nationality) told us [9]. Moreover, a large number of non-Aleuts participated in this revival, which once again leads us to the idea of the universality of the territorial and active approach to the definition of ethnicity (at least on the islands, where so-called face-to-face interaction and classical self-government of the territorial community are possible, this rule works on a large number of examples from all over the Pacific Ocean—from the Commanders to Samoa).

Thus the main role in the ethnic identity of the Aleuts was and is played by the idea of the commonality for them of this or that small homeland. From the very first contacts with Europeans, such an identity had extremely blurred boundaries, both due to the significant numerical domination of the newcomer population and the subsequent linguistic assimilation.

The specificity of the island identity of the Commander Aleuts is determined by the simultaneous dependence and greater or lesser autonomy from the mainland.

The formation of the Aleuts' ideas about their own identity was greatly influenced by the newcomer Russian population, while the following qualitative transitions of this process can be tentatively distinguished:

1. The eighteenth to the first half of the nineteenth centuries was the period of early contact and the establishment of "political economic relations" between Russians and Aleuts, a change in the autochthonous social structure;

2. the second half of the nineteenth to the early twentieth centuries was the period of creolization of the local population, the divergence of Aleut territorial communities;

3. the Soviet period was characterized by industrialization and Russification, loss of the native language, and an increase in the share of interethnic marriages against the background of a significant influx of labor migrants in the second half of this period, as a result of the neutral or negative attitude of Aleuts toward their ethnic identity;

4. from the collapse of the USSR to the present is the period of "territorial accentuation," the renaissance of traditional culture against the background of the collapse of the Soviet model of politics and economics, the "capitalization" of one's own ethnicity in the conditions of market relations ("ethnicity as an exchange form").

Today, the territorial identity of the "Commander residents" in some aspects approaches the ethnic one—"Aleut"—and often comes to the fore. It all depends on the angle and the level of reference to it. At the micro level, it is important to know what family a person comes from, and when they came to the islands; from the early 1970s, after the closure of Preobrazhenskoe village on Copper Island, the question of a Bering or Copper Island origin has also become a reference for the Aleut Commander Island community [9]. However, at a higher level (when communicating with the mainland inhabitants), the island identity prevails over all other forms. The concept of "Commander Aleut" is so vague here that enrollment in this group can occur simply by the fact of birth and/or long-term residence on the island, and "Aleut blood" can be recorded in a person not only in the generation of parents but also in other relatives (in the generations of moms and dads, grandparents).

A separate issue is identification by phenotypic traits. Visible boundaries in the course of physical assimilation and contacts with phenotypically different newcomers were gradually erased. Today they are rather blurred. Although physical anthropologists can easily record the presence on Bering Island of conditionally "dolichocephalic" and "brachycephalic" variations of the Aleut population, the genesis of these differences can only be judged by conducting detailed genetic and biomedical research (such work could be especially successful in a combination of physical-anthropological and ethnohistorical research). In addition, external differences, expressed by skin color, bigger or smaller epicanthus fold, etc., for a long time have played no role, if only because the newcomer population itself is extremely diverse in its origin and ethnic (national) composition.

Table 1 shows that according to the official data of the administration of the Aleutian Municipal District, as of January 1, 2016, 695 people permanently lived in the Commander Islands (which is somewhat more than the official data of the 2010 population census). They classify themselves as twelve nationalities, while the overwhelming majority of the population belongs to the Aleut-Russian majority (95.1% of the total population) with a slight predominance of Aleuts in it.

In conclusion, we note that the group of "Commander Aleuts" today is more of a social than an ethnic or linguistic category. At the same time, the concepts of "Aleut," "Aleut culture" are present in the consciousness of a significant number of the island's inhabitants, which ensures a stable transmission of ethnic identity from parents to their children.

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Table 1. The Size and National (Ethnic) Composition of the Commander Islands According to the Administration of the Aleutian Municipal District of the Kamchatka Territory as of January 1, 2016 [9]

1.	Aleuts	336
2.	Russians	325
3.	Ukrainians	9
4.	Belarusians	4
5.	Koreans	4
6.	Koryak	4
7.	Khakas	4
8.	Kirghiz	2
9.	Ainu	1
10.	Armenians	1
11.	Kazakhs	1
12.	Tuvans	1
13.	Nationality unknown	3
	Total	695