

SPECIFIC ISSUES OF ARCTIC CRUISE DEVELOPMENT IN THE RUSSIAN ARCTIC: THE RUSSIAN ARCTIC NATIONAL PARK CASE STUDY

Victor Kruzhalin*, Natalia Shabalina**, Ekaterina Kashirina*** & Alexandra Nikanorova****

Abstract

The specific issues of the arctic cruise development are highlighted for the Russian Federation. The research is based on data obtained during the expedition (July-August 2021) in the Russian Arctic National Park, located within Franz Josef Land and Novaya Zemlya archipelagoes. The research was carried out in order to evaluate the prospects for the development of cruise tourism and identify the risks of implementing projects for the development of cruise tourism in the Russian Arctic National Park as more available for tourism territory than other Russian arctic islands. The national park is considered as a prospect site for arctic cruises operation according with the State interests to develop the Arctic zone of the Russian Federation as well. Results and conclusion evidence the potential of tourism as well as describe the specific factors hindering the development of tourism there. They are associated with the peculiarities of the climate, weather and natural phenomena, the vulnerability of landscapes to anthropogenic loads and administrative and legal barriers.

Keywords: Arctic Tourism; Arctic Cruises; The Russian Arctic National Park; Arctic Tourism Potential.

QUESTÕES ESPECÍFICAS DO DESENVOLVIMENTO DO CRUZEIRO ÁRTICO NO ÁRTICO RÚSTICO: O ESTUDO DE CASO DO PARQUE NACIONAL ÁRTICO RUSSO

Resumo

As questões específicas do desenvolvimento do cruzeiro ártico são destacadas para a Federação Russa. A investigação baseia-se em dados obtidos durante a expedição (Julho-Agosto de 2021) no Parque Nacional do Ártico Russo, localizado no interior do arquipélago de Franz Josef Land e Novaya Zemlya. A investigação foi realizada a fim de avaliar as perspectivas de desenvolvimento do turismo de cruzeiro e identificar os riscos de implementação de projetos para o desenvolvimento do turismo de cruzeiro no Parque Nacional do Ártico russo como mais disponível para o território turístico do que outras ilhas árticas russas. O parque nacional é considerado como um local de prospecção para operações de cruzeiros árticos de acordo com os interesses do Estado para desenvolver também a zona ártica da Federação Russa. Os resultados e as conclusões evidenciam o potencial do turismo, bem como descrevem os fatores específicos que dificultam o desenvolvimento do turismo na região. Estão associados às peculiaridades do clima, do clima e dos fenômenos naturais, à vulnerabilidade das paisagens às cargas antropogênicas e às barreiras administrativas e legais.

Palavras-chave: Turismo do Ártico; Cruzeiros pelo Ártico; Parque Nacional Russo do Ártico; Potencial do Turismo Ártico.

CUESTIONES ESPECÍFICAS DEL DESARROLLO DE CRUCEROS EN EL ÁRTICO RUSO: EL CASO DEL PARQUE NACIONAL DEL ÁRTICO RUSO

Resumen

Se destacan las cuestiones específicas del desarrollo de cruceros en el Ártico para la Federación Rusa. La investigación se basa en los datos obtenidos durante la expedición (julio-agosto de 2021) en el Parque Nacional Ártico Ruso, situado en los archipiélagos de Franz Josef Land y Novaya Zemlya. La investigación se llevó a cabo con el fin de evaluar las perspectivas de desarrollo del turismo de cruceros e identificar los riesgos de la implementación de proyectos para el desarrollo del turismo de cruceros en el Parque Nacional Ártico Ruso como territorio más disponible para el turismo que otras islas árticas rusas. El parque nacional se considera como un sitio de perspectiva para la operación de cruceros árticos de acuerdo con los intereses del Estado para desarrollar la zona ártica de la Federación Rusa también. Los resultados y la conclusión evidencian el potencial del turismo, así como describen los factores específicos que obstaculizan el desarrollo del turismo allí. Están asociados a las peculiaridades del clima, el tiempo y los fenómenos naturales, la vulnerabilidad de los paisajes a las cargas antropogénicas y las barreras administrativas y legales.

Palabras clave: Turismo en el Ártico; Cruceros por el Ártico; Parque Nacional del Ártico Ruso; Potencial del Turismo en el Ártico.



Licenciada por Creative Commons
4.0 / Internacional
CC BY 4.0

* Faculty of Geography, Lomonosov Moscow State University (Moscow, Russia), Ph.D. in Geography, professor, the head of recreational geography and tourism department. E-mail: v.kruzhalin@gmail.com

** Faculty of Geography, Lomonosov Moscow State University (Moscow, Russia), Ph.D. in Geography, associate professor, Sevastopol State University, Urban Development Institute (Sevastopol, Russia), associate Professor. E-mail: natshab@yandex.ru

*** Faculty of Geography, Branch of the Lomonosov State University (Sevastopol, Russia), Ph.D. in Geography, associate professor, Sevastopol State University, Urban Development Institute (Sevastopol, Russia), associate Professor. e_katerina.05@mail.ru

**** Faculty of Geography, Lomonosov Moscow State University (Moscow, Russia), Ph.D., senior researcher; Sevastopol State University, Urban Development Institute (Sevastopol, Russia), associate Professor. Scopus Author ID: 56525244000. E-mail: Alexandra.nikanorova@gmail.com

1 INTRODUCTION

Arctic cruise tourism is a young and one of the fastest growing segments of the tourism market (Cajaiba-Santana et al., 2020). The area of the Arctic region is 27 million km². The Arctic is divided into 5 sectors between Russia, the USA, Norway, Canada and Denmark.

For several decades, the main centers of cruise tourism have developed in the Arctic. The most popular cruise routes pass through Longyearbyen in the Svalbard Archipelago (Norway), Pond Inle, Cambridge Bay in the Canadian Arctic Archipelago (Canada), Alaska and the Aleutian Islands (USA), Greenland (Denmark), as well as Murmansk, Franz Josef Land, Anadyr, Petropavlovsk-Kamchatsky in the Russian sector of the Arctic.

The technical capabilities of the cruise ships allow visiting the Arctic region. Svalbard is the most development center of the cruise tourism in the Arctic. It is visited annually by more than 100 thousand tourists. The number of ships call for 20 years has increased from 76 to 195, the number of tourists on cruise ships - from 39,109 to 131,286 passengers in 2014. (Holmgaard et al., 2019). About 20-25% of tourists visit the archipelago regularly (Lopez, 2021). The islands attract with rich nature and historical and cultural heritage. There are 3,513 heritage objects in the archipelago (Holmgaard et al., 2019).

The Russian territories of the Arctic zone include the territories of the Murmansk Region, the Nenets Autonomous Area, the Chukotka Autonomous Area, the Yamalo-Nenets Autonomous Area, the Arkhangelsk Region, the Komi Republic, the Sakha Republic (Yakutia), the Krasnoyarsk Region as well as islands and archipelagoes in the Arctic Ocean, listed in Decree of the Presidium of the Central Executive Committee of the USSR of April 15, 1926 "On the declaration of the territory of the USSR of lands and islands located in the Arctic Ocean" and other legal acts of the USSR.

Comparing the Russian Arctic with other arctic regions of tourism development (Snyder, 2007) we must say that the study region significantly differs, because there's no local permanent population, any tourist infrastructure and easy access to the territory.

However, the Russian Arctic is considered as a promising direction to develop cruises, create tourist infrastructure and form tourist and recreational clusters for the purpose of sustainable development according to state strategies and federal programs (Sevastyanov, 2020). The general approach to the sustainable Arctic tourism is to consider economic and social sustainability, support the local economy, use the environmentally friendly business approaches, involve

local people and protect their interests, as well as educate tourists how to preserve the environment, minimize the consumption, wastes and pollutions. (Timoshenko, 2020).

One of the main territories for cruise development is the Russian Arctic National Park, located on Franz Josef Land and Novaya Zemlya archipelagoes in the Barents and Kara Seas. In 2017 it was visited by 1142 tourists on eleven cruise vessels, which was a 20% increase over the previous year (Huddart & Stott, 2020).

Thus, the number of visits decreased in recent years during Covid era, the Russian Arctic National parc is predicted to gain popularity while mass tourism destinations must be avoided against the background of the resent tourism trends (Afanasiev & Afanasieva, 2021; Ojala, 2020; Renaud, 2020).

The present research provides scientific basis for tourism development in the Russian Arctic National Park. It is considered as an important task that meets the social, environmental and economic interests of the state and business.

The research is focused on studing risks and prospects for development of actic tourism in the National Park "Russian Arctic" as the main spot of growing tourism activity in the Russian Arctic region. The main goal is to identify all specific factors limiting recreation activity for future development of tourism development strategy in the the region.

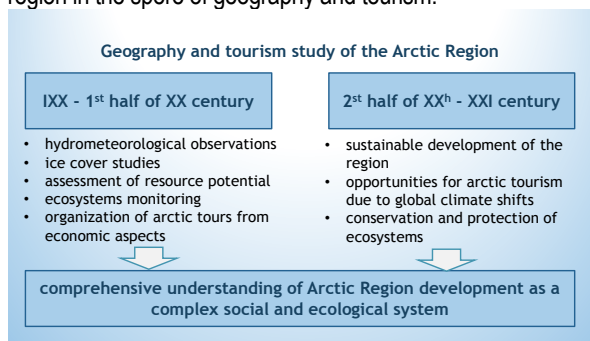
2 THEORETICAL REVIEW

Comprehensive scientific research of the Russian Arctic began a long time ago. The first International Polar Year (1882-1883) summed up the great geographical discoveries in the Arctic and marked the beginning of its systematic scientific development (Matishov & Dzhezlyuk, 2007).

Throughout the twentieth century, the work was carried out within the framework of hydrometeorological observations, study of global climate change, ice cover, determination of the North Magnetic Pole, assessment of resource potential, use of hydrocarbon raw materials, coastal and marine ecosystems stability, assessment of pollution levels, monitoring, etc. The use of icebreaking vessels expanded the list of studies and gave new opportunities for using the Northern Sea Route, including for tourist purposes (Figure 1).

Early works devoted to the study of the Arctic cruise tourism reveal the peculiarities of the organization of tours and the economic components of cruises (Cajaiba-Santana et al., 2020). Studies of the tourism potential of the Arctic contribute to the solution of the strategic tasks of its development (Nekipelov & Makosko, 2013).

Figure 1. Main directions of scientific research of the Arctic region in the sphere of geography and tourism.



Source: own elaboration.

Nowadays there are 3 main positions in Arctic tourism research:

1. Sustainable socio-economic development of the Arctic regions;
2. Global climate warming and new opportunities for the tourism;
3. Conservation of biodiversity and protection of the natural ecosystems.

The development of tourism in the Arctic, and cruise tourism in particular, contributes to the diversification of the economy of remote areas, reducing the contribution of extractive industries and the development of the non-productive sector. Cruise tourism has become an institutional phenomenon with an appropriate approach to its analysis (Cajaliba-Santana et al., 2020).

The method of stakeholder analysis (stakeholders) and sociological methods (surveys, interviews, etc.) are used to study the role of cruise tourism in the development of the natural environment and local communities. The survey revealed a positive attitude to the preservation of the environment and local culture among the main stakeholders: local residents, tourists and tourist operators. Among the three stakeholder groups, tourists show the greatest interest in the development of sustainable tourism in the Arctic region (Chen, 2015).

Global climate warming should contribute to the expansion of the number of cruise routes, open access to new remote waters (Stewart, 2011). Now the number of tourists in the Arctic is increasing. So, the studies are focused on the sustainable development of the territory – the state of the natural environment (Stonehouse and Snyder, 2010; Shijin, 2020) and local communities (Kugiejko, 2021; Ren et al., 2021). Polar ecosystems are characterized by fragility and low stability. Much attention is paid to the ecological component of cruise tourism, assessment of the state of the components of the natural environment under anthropogenic impact (Chen, 2015; Schrot et al., 2019).

Thus, the management of cruise tourism in the Arctic is a complex task that needs to be solved with the use of comprehensive approach, international cooperation, taking into account the interests of different countries and the specifics of national legislation (Maher, 2011; Dawson et al., 2017).

3 METHODOLOGY

According to the analysis of researches on the Arctic tourism (Ren et al., 2021) there are three “central troubles”: the impact and stakeholder attitude; climate change, sustainability and resilience; governance and management. The main purpose of the research is to substantiate the development of cruise tourism in the Russian Arctic and to indicate specific regional risks of implementation tourist development projects there.

As part of the study, in the summer season from July to August 2021, an expedition was carried out on the territory of the Russian Arctic National Park. Islands of Franz Josef Land archipelago, coasts of the northern part of Novaya Zemlya archipelago and the Oran Islands were explored during the expedition.

The study of tourists’ perception of arctic cruises was one of the goals of the expedition in order to understand the main motivations and expectations from visiting the Russian Arctic. For this purpose, the focus group of 46 passengers, who took part in the expedition as tourists, was interviewed with the aim to indicate preferences and impressions they had before, during and after the expedition. The list of questions was worked out on the basis of authors’ methodologies to indicate the prospects and limits of tourism development within the Russian Arctic National Park’s specific conditions.

Analysis of the arctic tourism potential was carried out on the basis of information provided in the federal legal acts and official statistics of the Russian Arctic National Park administration. Franz Josef Land archipelago and Novaya Zemlya archipelago have dual status of natural protected area and special border security zone, where military bases are located. Consequently, consideration of the limits of tourism development related with environmental law and the security restrictions is essential for understanding the prospects of tourism in the study area.

The outputs of the field research and assessment of the territories were presented as GIS and data base with all spots and objects, which may have tourists’ interest and can be included in tourist routes. As a result, considering all the information on peculiarities of the territory, a list of recommended tourist routes and cruise scenarios were given. However, authors of the research indicate a lot of risks related with the cruise tourism in the Russian Arctic National Park, and the

issue of economic efficiency needs to be further negotiated and researched.

4 RESULTS AND DISCUSSION

4.1 General Conditions for the Tourism Development on the Territory of the Russian Arctic National Park

Before the Covid-era a great number of ice-class vessels with tourists on board navigated in the Russian sector of the Arctic Ocean. Mainly there were four foreign tourist companies involved in the formation, implementation, promotion and realization tours to the Russian Arctic: Poseidon Expeditions, Hapag-Lloyd cruises, Quark Expeditions LTD, Oceanwide Expeditions. Among national tour operators the Special Travel Club, an expeditioner partner of the Russian Geographical Society, can be indicated as the unique company which organized the complex high-latitude Arctic expedition - Ice base «Barneo» at the North Pole (Timoshenko, 2020).

Traditionally the ice-class vessels «Taimyr», «50 Years of Victory», «Sea Spirit» as well as «Ocean Adventurer», «Greg Mortimer», «HANSEATIC inspiration», «HANSEATIC nature» visited the Russian Arctic National Park according to the information provided by its administration.

As part of the implementation of the National Project «Tourism and Hospitality Industry», the Ministry of Transport of the Russian Federation and the Federal Agency for Tourism have been instructed to develop favorable conditions for cruise companies to include Franz Josef Land and Novaya Zemlya into navigational tourist routes.

Most of the cruise routes are organized in the northern part of the Russian Arctic National Park - Franz Josef Land. Because of the imposed legal and ecological limits tourists are allowed to disembark on a very limited number of places: Bell Island, Northbrook Island, Hooker Island, Champa Island, Alger Island, Gall Island, Wilczek Island, Heiss Island, Jackson Island, Rudolf Island. Meanwhile complex weather conditions may impede the disembarkments and hinder the tourist program.

According to the Russian Arctic National Park administration data, the citizens of Russia, China and the United States were the participants of Arctic cruises. In 2020 for the first time, the National Park was visited by the citizens of Argentina, El Salvador, Serbia, Thailand, Nigeria.

In the course of sociological research carried out during the expedition, a social-economy «portrait» of a tourist of an arctic cruise was formed. It is a male tourist from 35 to 55 years old, with a high level of income,

traveling with colleagues or friends, ready to spend from 500 thousand up to 1 million rubles (as of December 2021 approximately from 6600 to 13 2000 US \$) on a two-week trip to high latitudes, his main interests in the Arctic are the nature and the history.

The major tourists' activities are birds and marine mammals watching, taking pictures, ice glacier and icebergs observing, minerals and rocks studying. Lectures, master classes and providing travel information are very important part of an interactive program on board as well.

4.2 Tourist Potential of the Territory of the National Park "Russian Arctic"

As a result of nature studying, we indicated two groups of tourist attractions in the Russian Arctic National Park. There are two kind of groups: group of nature attractions and group of 200 cultural and historical objects on Franz Josef Land (Kunnikov, 2019), which are associated with history of conquest of the North Pole, as well as objects of the World War II military legacy on Novaya Zemlya.

Among the objects of nature origin, we indicate objects of wildlife and still nature.

The history of geological development and modern exodynamics (mainly glacial and aeolian processes) on Franz Josef Land have formed landscapes that are distinguished by high aesthetic potential. Within the objects of still nature, trap plateaus and rocky outliers composed of columnar basalts, single forms of aeolian denudation, nival-glacial landforms, different types of glaciers and icebergs are the site of tourist attraction.

A specific vegetation cover, which as of 2020 consists of 57 species of polar vascular plants, 122 species of mosses and 129 species of lichens (Safronova et al., 2020), determines the high psychological and aesthetic attractiveness of landscapes.

We propose highlight as tourist sites different types of plant communities and individual plant species, for example, the polar poppy, the polar buttercup, and various types of saxifrage. Plant communities with the inclusion of these species are characterized by a special aesthetic value, stand out in contrast to the general background of the Arctic desert landscapes and are widespread throughout the islands.

The plant communities formed by the species of mosses and grasses, resembling «green carpets», have also very high aesthetic potential for tourist experience. They are found on elevated sea terraces located in the zone of influence of bird colonies and characterized by a significant input of organic matter of

ornithogenic origin (Cape Flora on Northbrook Island, Cape Norway on Jackson Island, etc.).

The most notable wildlife objects are arctic mammals: polar bear, atlantic walrus, seal, sea hare, mustachioed whale, narwhal, beluga whale, white-faced dolphin. Most of the listed species belong to the «Red list».

The bird populations inhabiting Franz Josef Land are especially attractive. In total, 17 species of nesting birds can be found on the archipelago (De Korte et al., 1995).

At the same time, most of the species remain outside of the tourist display due to their paucity and rarity. The field observations revealed that the most accessible to observe are the species that form bird colonies (thick-billed guillemots, kittiwakes, glaucous). During sea crossings periods, it is most likely to meet a fulmar and a kittiwake accompanying a vessel.

It is also highly probable to meet with the Atlantic walrus as one of the most abundant species among marine mammals in the Russian Arctic National Park (Huddart, D., & Stott, T., 2020). Individual walruses can be met everywhere, and their permanent rookeries are also known on Appolonov Island, Oran Islands (within the Novaya Zemlya archipelago).

Meeting with polar bear is highly likely as well. However, a meeting with a polar bear poses a risk for a tourist, therefore, it is permissible to carry out a tourist display of this species only from a ship or boats at a distance of at least 20 meters.

Cetaceans, despite their potential high tourist attractiveness, are not recommended to be considered as an object of tourist display during sea cruises, since the likelihood of meeting them is very low while on board of cruise vessel.

Cultural and historical objects are the main basis for tourist routes design. We account more than 30 different points on different islands, including those where the first Soviet scientific polar and meteorological stations, memorable places of Soviet and international expeditions of the XIX-XX centuries are located. The most notable islands from cultural-historical point are:

- 1) Hooker Island: Polar station "Tikhaya Bay".
- 2) Jackson Island, Cape Norway: remains of dugout, where F. Nansen and J. Johansen overwintered (1896).
- 3) Alger Island: the remains of the base camp of E. Boludin's American expedition (1901-1902).
- 4) Gall Island, Cape Tegetthof: remains of the base camp of W. Welman's American expedition (1898-1899).
- 5) Rudolph Island: polar station "Rudolph Island", the remains of the ANT-6 aircraft.

6) Northbrook Island, Cape Flora: memorial sign in honor of F. Nansen and J. Johansen the wintering (1896).

7) Severny Island, Cape Zhelaniya: memorial sign about V. Barents' wintering (1596-1597).

A comprehensive assessment of tourist and recreational resources indicate the high potential for tourism development in the Russian Arctic National Park. Moreover, carried out sociological research shows that the most expected impressions from a cruise to the Russian Arctic National Park are ones from the observation of natural objects as well as from the insights into the history of the Arctic conquest.

4.3 Specific regional factors and risks affecting the development of cruise tourism navigation in the Russian Arctic National Park

Arctic cruise tourism is the most popular and widespread type of Arctic tourism, traditionally developed in latitudes no higher than 70-75°N due to security reasons and easier access. Meanwhile most of the territory of the Russian Arctic National Park is located above 75°N, therefore the implemented tourist routes can be attributed to expeditionary activities (Val'kova & Shumkov, 2020).

Based on the results of monitoring and assessing a wide range of risks associated with cruise expeditions in the Barents Sea, the following key factors limiting cruise development are identified.

Despite the fact that the Barents Sea research has been carried out for over 100 years (Dzhenyuk, 2012), still there are information gaps and lack of detailed navigation maps of Franz Josef Land. It poses a danger to safe cruise navigation. The study of the seabed relief in the archipelago area is extremely fragmented, especially for numerous straits between the islands, which are picturesque for cruise navigation within the archipelago.

Floating ice is another navigational obstacle, which influences a lot chosen navigational route. The geographical position of Franz Josef Land in high latitudes, the prevailing sea currents and air transport, contributing to the ice removal from the Kara Sea to the Barents Sea, despite the warming effect of the Atlantic waters, cause unfavorable ice conditions throughout the year (Zhichkin, 2014). It seriously limits the operation of cruise expedition ships with a low ice class (low ice capacity).

Long-term observations of the ice cover show that within Franz Josef Land archipelago, ice cover exists throughout the entire year, with the exception of anomalous years. In the most favorable period for cruise tourism, from July to September, the average

sea ice cover is 78% in July, 57% in August and 45% in September (Zhichkin, 2014).

The use of modern satellite data also does not solve the problem of route planning, since their interpretation does not reflect the real conditions of ice cover and its characteristics. Sea ice cover on satellite images can be hidden by clouds in the visible range. Radar images are not regular for the circumpolar area and difficult for ice detecting, particularly in summer due to the ice melts (Alekseeva et al., 2018). There is no monitoring system for floating ice with use of unmanned aerial vehicles on the archipelago.

At the same time, under the global climate change, the conditions for ice formation have become extremely changeable (Stroeve & Notz, 2018; Kumar et al., 2020). It complicates the precise planning of tourist cruise routes.

Weather conditions is another factor that impede the curriculum of disembarkments and exploration the islands.

A feature of weather conditions is the presence of dense clouds of stratified and stratocumulus type. The total number of days with cloudy skies is 71%. The highest frequency of occurrence occurs in June–October with a maximum in August–September (90–92%) (Boyarskiy, 2003). Plus, the archipelago is characterized by frequent fogs with a complex distribution pattern due to the varied geographical conditions and relief of the archipelago. In July–August, the expected number of foggy days can range from 20 to 28 days per month, with a maximum in the northern territories (Dzhenyuk, 2014).

The prolonged fogs should be taken into account for design cruise routes. Under foggy weather conditions planned landings are impossible due to poor visibility, and the navigation speed of a vessel reduces by half and more. It lengthens the route time from one point to another by 1.5–2 times.

It is worth to indicate the problems associated with determining the vessel position which is necessary for safe navigation. In the polar zone the magnetic compass has an extremely high error, the use of astronomical systems to determine the location is limited by weather conditions. Global positioning satellite systems (GNSS), such as GLONAS, GPS, Galileo, etc. also do not provide the recommended positioning accuracy for navigation at these latitudes.

It occurs due to the peculiarities of the orbits of GNSS satellites as well as significant ionospheric activity in the region. Various disruptions in the functioning of radio communications in the polar zone is more the norm than an exceptional event (Jensen & Sicard, 2010). The Russian GLONASS has the highest orbital inclination, compared with other systems,

potentially implying better performance in the Arctic region (Yastrebova et al., 2021).

Development of rescue services infrastructure is a considerable challenge for the region and the whole Arctic (Kruke & Auestad, 2021). Franz Josef Land is in the area of responsibility of the Murmansk Maritime Rescue Coordination Center. The remoteness of the archipelago from the main shipping routes does not allow counting on the early arrival of other ships. The passage to Franz Josef Land from the ports of permanent rescue ship location takes more than 2 days.

The archipelago itself lacks any rescue infrastructure and is outside the range of rescue helicopters based on the mainland. A helicopter flight to Franz Josef Land from Arkhangelsk is technically possible, but it requires complex approvals and provision of refueling on Novaya Zemlya archipelago and depends on weather conditions. Therefore, the provision of quick assistance to a cruise ship in distress is almost impossible. For the same reason, there is no possibility of prompt medical evacuation of a sick or wounded from a cruise ship.

4.4 Specific Factors and Risks Affecting Tourists' Disembarkments and Visiting on Islands of the Russian Arctic National Park

Contrast to Svalbard (Nyman, 2020) the islands of Franz Josef Land and Novaya Zemlya do not have any berthing facilities for sea vessels, and there is no infrastructure on the islands recommended as tourists' sites. Due to seabed topography, the distance from the ship's anchorage at a safe depth to the disembarkment site accounts usually several kilometers. In the event of a sudden weather worsening, the returning to the ship can be dangerous, and tourists may stay on the shore for a long period without heat and food.

Tourists are usually disembarked by Zodiac inflatable rubber boats that the cruise ship carries on board. Accordingly, a cruise ship must also have zodiac's drivers as additional staff. Plus, it is necessary to have special armed personnel (bear guards) to protect tourists from possible attacks of polar bears during the disembarkment on islands what is mandatory rule of.

According to the Russian law, only the Russian Arctic National Park's rangers are allowed to carry firearms, therefor cruise ships are not obliged to employ their own bear guards (Pashkevich & Stjernström, 2014). Attacks by polar bears are relatively rare, but a real threat.

However, we estimate that the highly possible tourist risk is injuries got when boarding and disembarking from zodiac boats. The operating

procedures and safety rules are left at the discretion of cruise companies. Plus the special equipment to enhance the safety is difficult to provide due to economic factors.

Specific issue is the assessing the resilience and recreational carrying capacity of the polar ecosystems (Sevastyanov, 2015). Natural complexes within the national park are characterized by mosaicism, what determines the landscape differentiation in terms of resistance to anthropogenic impact.

4.5 Ecological Risks Related with Anthropogenic Tourist Loads

The field studies carried out to assess the recreational loads show that the natural complexes of the national park have different ecological and tourist capacities.

For example, the territory of Champa Island, characterized by the landforms of outstanding aesthetic value, where the famous spherical nodules are located (Onyakova, 2020), requires the routes tracing and fencing to protect geological landforms unstable to anthropogenic loads.

A similar situation has developed in the area of the remains of F. Nansen's wintering place on the Jackson Island (Cape Norway). On high sea waterlogged terraces covered with moss-lichen and herbaceous plant communities, we observed a noticeable vegetation cover degradation during the landing of tourist groups. The most pronounced signs of degradation are within the natural complexes are characterized by the fade of moss vegetation and soil flow.

The legal regime of land use in the national park is established by the Order of the Ministry of Natural Resources of the Russian Federation dated 04.10.2011 N 806 "On approval of the Regulations on the Russian Arctic National Park" (Registered in the Ministry of Justice of the Russian Federation on 02.12.2011 N 22490).

Despite the elimination of the nature reserve located on the territory of the Frans Josef Land archipelago, and the accession of its lands to the Russian Arctic National Park, the legal regime of land use in the Frans Josef Land is still being determined by the Order of the Ministry of Natural Resources of the Russian Federation of 08.16.2011 N 679 "On the approval of the Regulations on the state natural reserve "Franz Josef Land" of federal significance" (Registered in the Ministry of Justice of the Russian Federation 09.14.2011 N 21799).

In 2021 the draft order on approval of the regulations on the Russian Arctic National Park in its expanded boundaries is under consideration. The

document gives details on the functional zoning with allocation of recreational areas and defines land use rules, however it doesn't provide any information on the limits of recreational loads and maximum number of tourist visits.

Thereby the national park's administration defines the limits on its own view and independently regulates the tourist flow without significant considering the specific features of arctic permafrost landscapes. The research conducted in 2017 on Tikhaya Bay, Hooker Island (Chekmareva et al., 2019, April) indicated serious biodiversity loss vegetation destroy.

The most sensitive were the semi-hydromorphic communities with a significant participation of mosses. The main output of the research is the necessity to equip the tourist territories with the information on the sustainability of vegetation components and the hazardous geological processes what hasn't been done yet.

4.6 Institutional Barriers of Cruise Navigation in the Arctic

The features of the regulatory and legal regime in the Barents Sea significantly influence the organization of cruise routes.

The administrative trouble to visit the territory of the Russian Arctic National Park is the presence of a border zone regime within Franz Josef Land archipelago and the absence of an official checkpoint across the state border. Visits to the territory by foreign citizens arriving on ships are carried out with special one-time permits.

The installation of checkpoint across the border on Alexandra Land could contribute to the development of inbound tourism and give the possibility to accept cruise ships following from the Svalbard.

However, the border regime restricts free navigation in the water area, requires coordination of routes of navigation and obtaining permits for individuals in accordance with the procedures approved by the regulatory legal acts of the Federal Security Service (Russian Federation).

The visit of Cape Desire and east parts of the national park on Northern Island of Novaya Zemlya archipelago meets another administrative barrier related to the rules of the navigation in the waters of the Northern Sea Route (article 5.1. Merchant Shipping Code of the Russian Federation).

The water area of the Northern Sea Route is understood as the water area located to the east of the meridian passing through Cape Desire. Therefore, any entry of a vessel east to the cape requires the mandatory permit from the Federal Agency for Maritime and River Transport. Considering unstable weather conditions, it is difficult to predict the navigational route,

and there is a risk to receive a fine due to the enter into the waters of the Northern Sea Route without obtained permission in advance.

Special requirements for ships operating in polar regions imposed by the International Code for Ships Operating in Polar Waters (Polar Code). The Code provisions apply to all cruise ships in the Arctic Ocean.

Taking into account the special conditions of the polar navigation, the Code establishes special requirements for the structure of a ship, its stability and division into compartments, watertightness, mechanical installations, fire and fire safety, life-saving devices, etc.

In synthesis, as we have analysed in the previous sections, the key group is factors and risks were identified on the basis of comprehensive field, statistic and theoretical research as well as the result of interview the key scientist and head of administration of the Russian Arctic National Park (Figure 2).

Figure 2. Risk of implement cruise expedition tourism in the Russian Arctic National Park.

Risks of implementing cruise expedition tourism development projects in the Russian Arctic National Park	
Navigation	<ul style="list-style-type: none"> • Ice conditions • Insufficient exploration of the bottom of the sea area • Poor working of navigation systems in high latitudes
Weather and climate	<ul style="list-style-type: none"> • Short tourist season (July-August) • Fogs and cloudy weather up to 90% • Dismemberment restrictions when it is storming
Ecology	<ul style="list-style-type: none"> • Recreational loads • "Stress" and risks for mammals and bird colonies when disembarking tourists
Safety	<ul style="list-style-type: none"> • Safety Issues in Landings • Lack of emergency medical facilities
Management	<ul style="list-style-type: none"> • Border Territory Regime • Environmental Compliance • Compliance with ecological and technical requirements

Source: own elaboration.

5 CONCLUSIONS

The tourist potential of the Russian Arctic National Park is highly valued: along with the historical sites of the expeditions of Nansen, Sedov and other polar explorers, unique geological objects and natural monuments are located there. Among other things, tourists are likely to meet with a polar bear and to observe walrus rookeries as well as glaciers and icebergs.

The specific features of a cruise organization in the Russian Arctic National Park are the unpredictability and the readiness for changing the route due to weather conditions, ice conditions or other factors. In this regard, it is important both to have available reliable data on navigational conditions and to be ready for "plan b" if embarkments are not allowed. In that case an animation program with interesting events, lectures should be provided for the tourists on board.

Taking into account the tourist potential of protected areas located in the Arctic zone of the Russian Federation, the increase of transport

accessibility is essential for the further development of expedition cruise tourism. The proposed measures are to work out the possibility to use the military airfields for charter aircrafts, develop of berthing infrastructure, improve the regulatory framework in terms of tourist formalities simplification.

An important task is to develop regulations for visiting protected areas, taking into account the specifics of the flora and fauna of each specific landing site. Responsible tourism should be developed as the route to sustainability (Baksi, 2020) of frigate arctic ecosystems.

Thus, the integrated development of the Russian Arctic National Park requires a comprehensive systematic approach including the necessity to work out conceptional basis for tourism development with respect to international experience and taking into account the peculiarities of ecology, state policy, trends of tourism market and interests of investors and stakeholders.

REFERENCES

- Alekseeva, T. A., Serovetnikov, S. S., Frolov, S. V., & Sokolov, V. T. (2018). Ice conditions of navigation in the Arctic Basin in summer 2018. *Russian Arctic*, 2, 31-40. DOI: 10.24411/2658-4255-2018-00016
- Afanasiev, O. E., & Afanasieva, A. V. (2021). Tourism Industry in Russia and Global Covid-19 Pandemic: Threats, Counteractions, Trends. *Rev. Anais Brasileiros De Estudos Turísticos - ABET*, 11. <https://doi.org/10.5281/zenodo.5770991>
- Baksi, A. K., & Parida, B. B. (2020). Exploring Relationship Between Controllable Metrics and Socio-Environmental Performance Indicators in Responsible Tourism Context Using Temporal Causal Model. *Rev. Anais Brasileiros De Estudos Turísticos - ABET*, 10(1, 2 e 3). <https://doi.org/10.34019/2238-2925.2020.v10.29960>
- Boyarskiy, P.V. (2003). *Ostrova i arhipelagi Rossiyskoy Arktiki: Zemplya Frantsa-Iosifa* [Islands and archipelagos of the Russian Arctic: Franz Joseph land]: a monograph. Izdatel'stvo «Paulsen». (In Russ.).
- Cajaiba-Santana, G., Faury, O., & Ramadan, M. (2020). The emerging cruise shipping industry in the arctic: Institutional pressures and institutional voids. *Annals of Tourism Research*, 80, 102796. <https://doi.org/10.1016/j.annals.2019.102796>.
- Chen J.S. (2015). Tourism stakeholders attitudes toward sustainable development: A case in the Arctic. *Journal of Retailing and Consumer Services*. 22, 225-230. DOI: 10.1016/j.jretconser.2014.08.003
- Chekmareva, A. C., Dobrynin, D. V., Kirilov, A. G., & Byzova, N. M. (2019). Monitoring of anthropogenic load, recreational safety of the Arctic tourism objects in Russian Arctic National Park. In IOP Conference Series: *Earth and Environmental Science* (Vol. 263, No. 1, p.

- 012024). IOP Publishing. <https://doi.org/10.1088/1755-1315/263/1/012024>
- Dawson J., Johnston M., Stewart E. (2017). The unintended consequences of regulatory complexity: The case of cruise tourism in Arctic Canada. *Marine Policy*, 76, 71-78. <https://doi.org/10.1016/j.marpol.2016.11.002>
- De Korte, J., Volkov, A. E., & Gavrilov, M. V. (1995). Bird Observations in Sevemaya Zemlya, Siberia. *Arctic*, 222-234. <http://www.jstor.org/stable/40511657>
- Dzhenyuk S.L. (2014). Klimatoobrazuyushchiye faktory i klimaticheskiye osobennosti Zemli Frantsa-Iosifa [Climate-forming factors and climatic features of Franz Josef Land]. *Trudy Kol'skogo nauchnogo tsentra RAN* [Proceedings of the Kola Scientific Center of the Russian Academy of Sciences], (4 (23)), 61-69. (In Russ.).
- Dzhenyuk, S. L. (2012). K otsenke okeanologicheskoy izuchennosti Barentseva i Belogo morey [To an assessment of the oceanological knowledge of the Barents and White Seas]. *Vestnik Murmanskogo gosudarstvennogo tekhnicheskogo universiteta* [Bulletin of the Murmansk State Technical University], 15(4), 739-748.
- Holmgaard S.B., Thuestad A. E., Myrvoll E. R. (2019). Barlindhaug S. Monitoring and Managing Human Stressors to Coastal Cultural Heritage in Svalbard. *Humanities*, 8(1), 21. <https://doi.org/10.3390/h8010021>
- Huddart, D., & Stott, T. (2020). *Adventure Tourism in the Russian Arctic*. In *Adventure Tourism* (pp. 101-120). Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-18623-4_4
- Kugiejko M. (2021). Increase of tourist traffic on Spitsbergen: An environmental challenge or chance for progress in the region? *Polish Polar Research*, 42(2), 139-159 DOI: 10.24425/ppr.2021.136601
- Jensen, A., & Sicard, J. P. (2010). Challenges for positioning and navigation in the Arctic. *Coordinates*, 6(10), 10-13.
- Kruke, B. I., & Auestad, A. C. (2021). Emergency preparedness and rescue in Arctic waters. *Safety science*, 136, 105163. <https://doi.org/10.1016/j.ssci.2021.105163>
- Kumar, A., Yadav, J., & Mohan, R. (2020). Global warming leading to alarming recession of the Arctic sea-ice cover: Insights from remote sensing observations and model reanalysis. *Heliyon*, 6(7), e04355. <https://doi.org/10.1016/j.heliyon.2020.e04355>
- Kunnikov, A. V. (2019). Polyusnyy arkticheskiy turizm v Rossii [Pole Arctic tourism in Russia]. *Geograficheskaya sreda i zhivyye sistemy* [Geographic environment and living systems], (3), 41-55 p. DOI: 10.18384/2310-7189-2019-3-41-55 (In Russ.).
- Kunnikov, A. V. (2019). Polyusnyy arkticheskiy turizm v Rossii [Pole Arctic tourism in Russia]. *Geograficheskaya sreda i zhivyye sistemy* [Geographic Environment and Living Systems], (3), 41-54.
- López A.M. (2021). *Share of first-time tourists and regular tourists visiting Svalbard, Norway in selected years from 1995 to 2017*. <https://www.statista.com/statistics/985338/share-of-first-time-tourists-and-regular-tourists-visiting-svalbard-norway/>
- Maher, P. T., & Lück, M. (2011). *Polar tourism: human, environmental and governance dimensions*. Cognizant Communication Corporation. <https://doi.org/10.1016/j.tourman.2011.12.012>
- Matishov, G., Jenyuk S.L. (2007). Scientific research in the Arctic//*Bulletin of the Russian Academy of Sciences*, 77(1), 324-343.
- Nekipelov A.D., Makosko A.A. (2013). *Prospects of fundamental scientific research in the Arctic//The Arctic Region: Problems of International Cooperation, Mozhaysk: Aspect Press, Volume 2. p.370-380*.
- Nyman, E., Galvao, C. B., Mileski, J., & Tiller, R. (2020). The Svalbard archipelago: an exploratory analysis of port investment in the context of the new arctic routes. *Maritime Studies*, 19(1), 1-13. <https://doi.org/10.1007/s40152-019-00143-4>
- Ojala, M. L., Räikkönen, J., & Kiiski, T. (2021). *The Northeast Passage: Connecting China and the Arctic through cruise tourism?* Asian Mobilities Consumption in a Changing Arctic, 85-98.
- Onyakova, A. M. (2020). Arkticheskiy geoturizm i ekologicheskiye riski yego razvitiya [Arctic geotourism and environmental risks of its development]. *Modern Science* [Modern Science], (7-1), 28-31. (In Russ.).
- Pashkevich, A., & Stjernström, O. (2014). Making Russian Arctic accessible for tourists: analysis of the institutional barriers. *Polar Geography*, 37(2), 137-156. <https://doi.org/10.1080/1088937X.2014.919040>
- Ren, C., James, L., Pashkevich, A., & Hoarau-Heemstra, H. (2021). Cruise trouble. A practice-based approach to studying Arctic cruise tourism. *Tourism Management Perspectives*, 40, 100901. <https://doi.org/10.1016/j.tmp.2021.100901>
- Renaud, L. (2020). Reconsidering global mobility—distancing from mass cruise tourism in the aftermath of COVID-19. *Tourism Geographies*, 22(3), 679-689. <https://doi.org/10.1080/14616688.2020.1762116>
- Safronova, I. N., Kholod, S. S., Gavrilov, M. V., & Yezhov, O. N. (2020). Floristicheskoye i tsenoticheskoye raznoobraziye rastitel'nogo pokrova arhipelaga Zemlya Frantsa-Iosifa [Floristic and coenotic diversity of the vegetation cover of Franz Josef Land archipelago]. *Botanicheskiy zhurnal* [Botanical Journal], 105(2), 133-151. (In Russ.).
- Schrot O.G., Christensen J.H., Formayer H. (2019). Greenland winter tourism in a changing climate // *Journal of Outdoor Recreation and Tourism*, 27, 100224. <https://doi.org/10.1016/j.jort.2019.100224>
- Sevastyanov, D. V., Korostelev, E. M., Gavrilov, Y. G., & Karpova, A. V. (2015). Recreational nature management as a factor for sustainable development of Russian Arctic Regions. *Geography and Natural Resources*, 36(4), 369-374. DOI: 10.1134/S1875372815040071
- Sevastyanov, D.V. (2020). Arctic tourism in the Barents Sea region: current situation and boundaries of the possible. *Social and economic development*, 23. <https://doi.org/10.1088/1755-1315/625/1/012008>
- Shijin, W., Yaqiong, M., Xueyan, Z., & Jia, X. (2020). Polar tourism and environment change: Opportunity, impact

- and adaptation. *Polar Science*, 25, 100544. <https://doi.org/10.1016/j.polar.2020.100544>
- Snyder, J. M. (2007). The economic role of Arctic tourism. *Prospects for polar tourism*, 102-122.
- Stewart, E. J., Dawson, J., & Draper, D. (2011). Cruise tourism and residents in Arctic Canada: Development of a resident attitude typology. *Journal of Hospitality and Tourism Management*, 18(1), 95-106. <https://doi.org/10.1375/jhtm.18.1.95>
- Stonehouse, B., & Snyder, J. (2010). *Polar tourism: an environmental perspective* (Vol. 43). Channel View Publications. <https://doi.org/10.1016/j.tourman.2011.06.007>
- Stroeve, J., & Notz, D. (2018). Changing state of Arctic sea ice across all seasons. *Environmental Research Letters*, 13(10), 103001. <https://doi.org/10.1088/1748-9326/aade56>
- Timoshenko, D. S. (2020, July). Sustainable Tourism Development in the Russian Arctic: Challenges and Prospects. In IOP Conference Series: *Earth and Environmental Science*, 539(1), 012-97). IOP Publishing. <https://doi.org/10.1088/1755-1315/539/1/012097>
- Val'kova, T. M., & Shumkov, D. S. (2020). Arkticheskiy turizm: Shpicbergen [Arctic tourism: Svalbard] *Geograficheskaya sreda i zhivye sistemy* [Geographic environment and living systems], (4). DOI: 10.18384/2712-7621-2020-4-87-107 (In Russ.).
- Yastrebova, A., Höyhty, M., Boumard, S., Lohan, E. S., & Ometov, A. (2021). *Positioning in the Arctic Region: State-of-the-Art and Future Perspectives*. IEEE Access, 9, 53964-53978.
- Zhichkin, A. P. (2014). *Ledovyye usloviya v rayone arkhipelaga Zemlya Frantsa-Iosifa* [Ice conditions in Franz Josef Land archipelago]. Trudy Kolskogo nauchnogo tsentra RAN [Proceedings of the Kola Scientific Center of the Russian Academy of Sciences], (4 (23)). (In Russ.).

Table 1. CRediT author statement.

Term	Definition	Author 1	Author 2	Author 3	Author 4
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims	x			
Methodology	Development or design of methodology; creation of models		x		
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components				
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs			x	
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data				x
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection		x		x
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools	x	x	x	x
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse				
Writing - Original Draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)	x	x	x	x
Writing - Review & Editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre- or post-publication stages		x		x
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation				
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team	x	x		
Project administration	Management and coordination responsibility for the research activity planning and execution				x
Funding acquisition	Acquisition of the financial support for the project leading to this publication		x		

Source: adapted from Elsevier (2022, s/p), based upon Brand et al. (2015).

Processo Editorial / Editorial Process / Proceso Editorial

Editor Chefe / Editor-in-chief / Editor Jefe: PhD Thiago D. Pimentel (UFJF).

Recebido / Received / Recibido: 02.04.2022; Revisado / Revised / Revisado: 09.07.2022 – 31.08.2022; Aprovado / Approved / Apobado: 16.09.2022; Publicado / Published / Publicado: 05.10.2022.

Seção revisada às cegas por pares / Double-blind peer review section / Sesión revisada por pares ciegos.