

Marine Reserve “Zaliv Vostok”

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Abstract

The nature, the history of organization, the present, the problems and perspectives of the Marine Reserve “Zaliv Vostok” (Vostok Bay, Sea of Japan, Russia) are discussed in the article.

Key words: Natural Reserve, Vostok Bay, Peter the Great Bay.

Морской заказник "Залив Восток"

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Аннотация

Описаны природа, история организации, настоящее, проблемы, перспективы морского заказника "Залив Восток" (Приморский край).

Ключевые слова: ООПТ, залив Восток, залив Петра Великого.

The Complex Marine Reserve of Regional Significance “Zaliv Vostok” in Vostok Bay, Peter the Great Bay, Sea of Japan (Fig. 1)

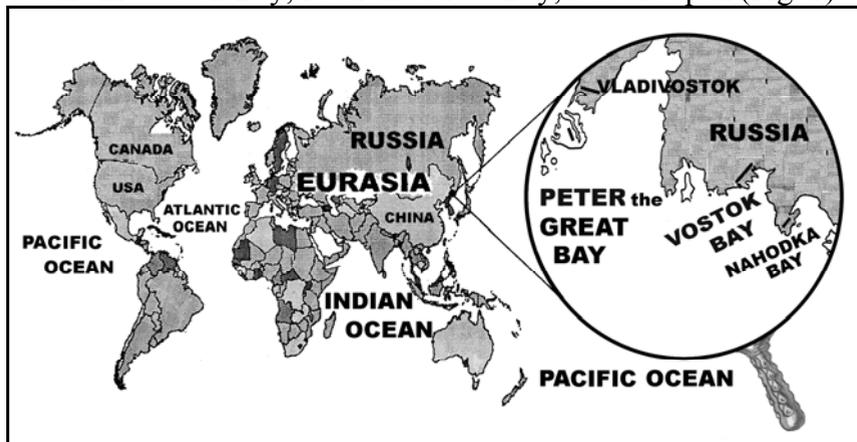


Fig. 1. Location of Vostok Bay on the world map.

– the first Marine Reserve in the USSR and Russia (Category 6 IUCN: Protected area with sustainable use of natural resources; protected area managed mainly for the sustainable use of natural ecosystems [2]) was created in 1989 under the initiative of the Institute of Marine Biology (IMB) of the Far Eastern Branch of the Russian Academy of Sciences (FEB RAS).

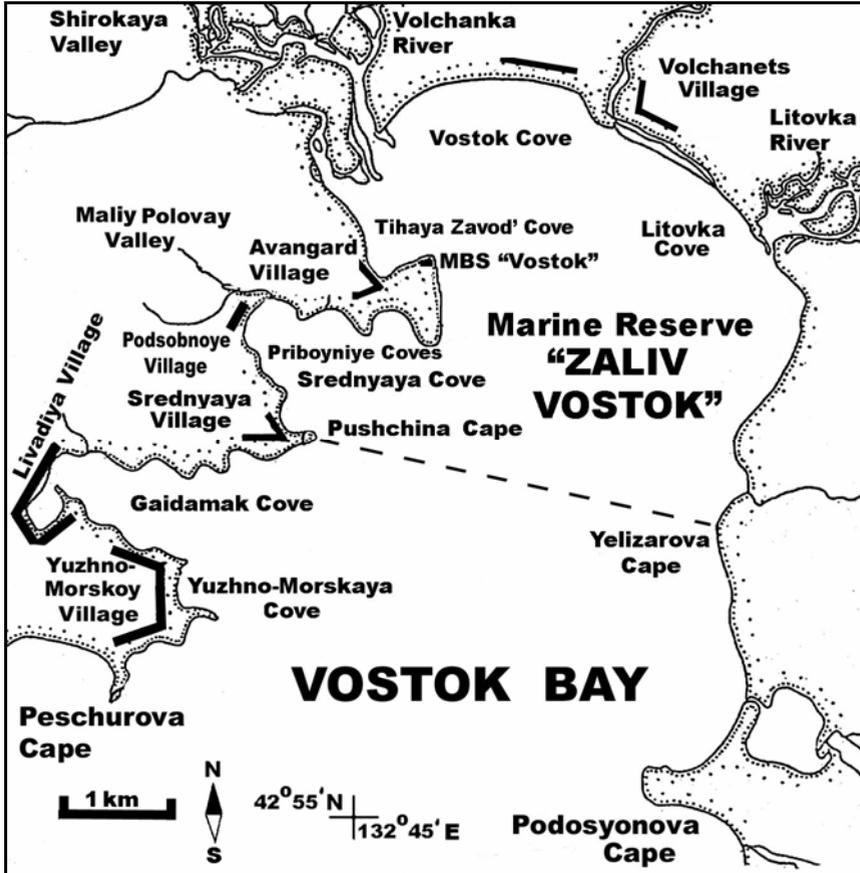


Fig. 2. Vostok Bay and the Marine Reserve "Zaliv Vostok".
Dashed line – southern boundary of the Reserve.

The specially protected area covered 18.2 km² (about 70%) of Vostok Bay including coves Srednyaya, Vostok, Tikhaya

Zavod', and Litovka. In the west, north, and east, the protected area of Vostok Bay was bounded by the coastline from Pushchina Cape to Yelizarova Cape. The southern boundary of the reserve is located on the water area of Vostok Bay between Pushchina Cape and Yelizarova Cape (Fig. 2).

The purposes of the Reserve were conservation of marine flora and fauna in Vostok Bay for scientific studies, as well as elaboration of biological grounds for organization and development of aquaculture farms. The Decision No. 131 on organization of the reserve was taken by the Executive Committee of Primorsky Krai Soviet of Peoples' Deputies [8].

The reserve did not include a part of Vostok Bay with intensive economic activity: Yuzhno-Morskaya Cove with berths and a fish-processing plant; Gaidamak Cove with a ship repairing yard, berths, and a fish-processing facility of the fishing kolkhoz "Tikhiy Okean"; the unnamed cove between capes Yelizarova and Podosyonova with a large yacht club of the Center for Active Marine Fishing (CAMF) and smaller summer recreation camps belonging to various enterprises of the city of Nakhodka. The following types of activity were prohibited in waters of the "Zaliv Vostok" Reserve: (a) fishing for marine organisms; (b) fishing with catching gears damaging the sea bottom; (c) diving operations; (d) discharge of household and industrial wastes; (e) any operations that can cause pollution, changes in the hydrochemical composition of waters in Vostok Bay, and mortality of aquatic organisms; (f) anchorage of ships; (g) blasting and exploratory operations and extraction of minerals [8].

Commercial and large-sized animals, caught by tourists for food and souvenirs, were determined as the main protected objects: sea urchins *Strongylocentrotus nudus*, *S. intermedius*, *Scaphechinus mirabilis*; Japanese sea cucumber *Stichopus japonicus*; Yesso scallop *Mizuhopecten yessoensis* and Swift's scallop *Swiftopecten swifti*; mussels *Crenomytilus grayanus* and *Modiolus kurilensis*; seastars Asteroidea.

Initially, the coastal sanitary zone of the reserve was 50 m in width, and anthropogenic activities within it were also restricted; the following ones were prohibited: (a) entrance, parking, and washing of vehicles; (b) organization of temporary camps, crowding, etc.; (c) setting of tents; (d) making of fires, dump sites; (e) devastation of maritime vegetation.

A limited economic activity was allowed in waters and in the coastal sanitary zone: (a) amateur fishing; (b) catching of marine animals for science; (c) aquaculture activity without damages to natural marine benthic communities; (d) organization of temporary camps, parking sites in specially allocated recreation zones.

To implement the Decision No. 131, the IMB, formed within its structure, formed a subdivision "Marine Reserve 'Zaliv Vostok'" with the staff consisting of one manager and two security officers. Also it completely took over provision of the reserve, as in 1978 it assumed financing of the Far Eastern Marine Reserve, the first marine reserve of the category 1a in the USSR (Category 1a IUCN: Strict nature reserve: protected area managed mainly for science), also created under IMB's initiative.

In 1994, the IMB advanced a proposal to increase the sanitary zone of the reserve, and the Administration of Primorsky Krai issued the Decision No. 259, which significantly broadened the zone, from 50 to 500 m [8].

When the Marine Reserve "Zaliv Vostok" was created in 1989, its validity was approved for the term of 10 years, and thus, the directorate of the IMB had to make significant efforts in 1999 to extend the validity term. As a result, in 2000, the Governor of Primorsky Krai issued the Decree No. 556, which established the term of reserve's validity up to 2010.

The Decree No. 556 entrusted the director of the IMB, academician V.L. Kasyanov, with "providing the regime, determined by the Regulations, on the territory of the reserve, and demarcating the territory of the reserve and its buffer zone along the perimeter with corresponding signs and guideboards".

The new Regulations of the State Complex Marine Reserve of Regional Significance "Zaliv Vostok" in Peter the Great Gulf, Sea of Japan, differed cardinally from the former ones. The item

“organization and development of aquaculture farms” was excluded from the purposes of the reserve, and the contrary item was added instead: “the study of the effect of limited in size aquaculture farms on the state and structure of benthic, plankton, and pelagic communities”.

The Regulations charged the IMB with management of works in the reserve, aimed at: “(a) reduction of the anthropogenic effect on Vostok Bay; (b) conservation of natural diversity of animals and plants in Vostok Bay; (c) conservation and restoration of stocks of commercial marine organisms and their breeding grounds; (d) studies of patterns of ecological development of Vostok Bay, which is a model area of sea waters; (e) development of biological grounds for aquaculture of promising marine objects; (f) recreation activity on the territory of the reserve, including organization and conducting of ecological and travel itineraries; (g) development of aquaculture in waters of the reserve”.

The Regulations also conferred plenary powers on the IMB to consider geological prospecting surveys, extraction of minerals, allotment of parcels of land for building, withdrawal of land, allotment of organized recreation zones in the buffer zone of the reserve.

The Regulations specified the brief formulations of the Decree No. 556: (1) all measures for security of the reserve are financed, and research and other works are conducted according to IMB’s staff schedule and estimates of costs; (2) guarding of the reserve is provided by the special security service, organized by the IMB in compliance with the Regulations, agreed by the specially authorized nature conservation agencies of the Russian Federation (RF) (territorial agencies of Primorsky Krai), as well as by the State Far Eastern Nature Conservation Marine Service. (3) Specially authorized state nature conservation agencies of the RF and the State Far Eastern Nature Conservation Marine Service are entrusted with supervision over the security regime established in the reserve.

The IMB’s cooperation with specially authorized state nature conservation agencies was stipulated in the Regulations of the reserve under initiative of the IMB; that was an attempt to

prevent and mitigate the damage caused by the inroad of “wild tourists” on the coast of Vostok Bay, whose number unexpectedly and abruptly grew in 1999. It should be mentioned that the Avangard Village with its population of 75 residents had to “receive” over 2500 tourists in July and August of that year.

Vostok Bay had attracted tourists with its sand beaches and warm sea water (up to 27°C) during these months even earlier, but in 1999 their inflow increased dozens of times. It happened owing to the financial crisis 1998, which caused the 3-fold drop of the ruble exchange rate, bankruptcy of many banks and enterprises, and plummeting of the income level and living standards of the society. For many residents of the Far Eastern Federal District, travelling to traditional recreation sites, such as the Black Sea coast of the Crimea and Caucasus, became too expensive and unaffordable, and thus they had to turn into car-tourists and arrived in the south of Primorsky Krai in their Japanese vehicles, which in 1999 became very common among dwellers of the Far East.

The inroad of “wild tourists” resulted in illegal cutting of trees and shrubs in maritime forests for firewood and tent stakes, blocking up the beaches with living and toilet tents, turning the maritime forests in dumps of household wastes. Very soon, beaches and forests got the unsanitary state.

Professional lawyers that occurred among tourists often prevented the security guards of the reserve from their effective work: they knew very well that, according the RF laws “On Conservation of Natural Environment” (1991) and “On Specially Protected Natural Territories” (1995), only “specially authorized state nature conservation agencies”, from the list of which the Russian Academy of Sciences had been excluded, were empowered to guard nature. Not only did these legally competent tourists refuse to obey the demands made by guards, who had only ID cards of IMB personnel, but they also bunched large groups of adherents of anarchism around themselves.

The staff of the reserve “Zaliv Vostok”, the two security guards and the manager, already was not able to provide protection of Vostok Bay. Poaching in the bay acquired a large scale. Every day during the inroads, the guards of the reserve

removed dozens of China-made small-meshed fishing nets, which were considered a poaching gear according to the "Rules of Amateur and Sports Fishing in Waters of Primorsky Krai" (1983). Unfortunately, this type of nets was freely sold in markets of Primorsky Krai. Owners sometimes watched their nets and did not leave them to the guards without rough quarrel and even fight. Abundance of fish, Yesso scallop, Japanese sea cucumber, sea urchins, and starfish in the bay substantially decreased then.

In 1999, a significant assistance to the guard of the reserve was rendered by local police and border guards, who, nevertheless, could participate in cooperative raids along the coast of the reserve only occasionally. As a result of this assistance, hundreds of tourists were driven out and transported from the shores of the small coves of Vostok Bay to the 5-kilometer-long Rifovaya Bay, which is adjacent to Vostok Bay but located on the open side of Peter the Great Gulf. Only few of tourists came back to the Vostok Bay coast after that.

The main role in saving the nature of Vostok Bay was played by entrepreneurs from the Livadia and Yuzhno-Morskoi Villages. In spring 2000, they took on lease all the parts of the Vostok Bay coastline suitable for setting tents. They acted in strict compliance with the Regulations of the Reserve "Vostok Bay": entrance for vehicles to the leased areas was prohibited, firewood purchased, agreements for garbage disposal concluded, toilets constructed, mobile food vendors invited, and water rescue teams organized. Tourists had to pay for places to set tent and for guarded car parking, purchase firewood and stakes for their tents, and observe the rules of the security regime in the buffer zone of the Reserve "Zaliv Vostok", as it was demanded not only by two security guards of the reserve, but also by many public guards, who were partners of the lessees and members of one of the best "Kyokushin kaikan karate-do Club" in Primorsky Krai and Russia, organized in the Yuzhno-Morskoi Village. The arguments for protection of the Reserve "Zaliv Vostok", advanced by those public guards, were so simple and convincing that cutting of trees and shrubs ceased in a few days. Forests of Vostok Bay around Avangard, Podsobnoye, and Srednyaya villages were saved.

This way, the “wild tourism” in Vostok Bay was turned into organized recreation just for one year.

Soon, new recreation centers with bungalows and modest but sufficient service appeared in villages and along the coast. Local residents followed the companies, which had organized the large-scale civilized recreation, and began renting out any available constructions for accommodation and even places for tents.

In 2005, the Administration of Primorsky Krai issued the Decree No. 205-pa “On State Reserves of Regional Significance”. The Decree adopted new regulations for the reserves “Zaliv Vostok”, “Verkhnebikinsky”, “Borisovskoye Plato”, “Losiny”, “Tikhy”, and “Goraly”. Particularly, new items appeared in the Regulations of “Zaliv Vostok”: (1) Fulfillment of tasks set for the reserve, assignment and dismissal of employees of the reserve are implemented by the United Administration of Specially Protected Natural Territories (SPNT), created by the Administration of Primorsky Krai. (2) Administration of SPNT has the right to conclude a treaty with the IMB FEB RAS for cooperation and conducting the research and other works in the reserve and in its buffer zone. The draft of the treaty is to be considered by the Nature Management Department of the Administration of Primorsky Krai. (3) By the decision of the Nature Management Department of the Primorsky Krai Administration, the following activities can be allowed within the boundaries of the buffer zone of the reserve: geological prospecting surveys and extraction of minerals; allotment of parcels of land for building, any withdrawal of land (beyond the boundaries of settlements); conducting of research works.

Thus, the Administration of Primorsky Krai accroached the right to manage the waters and coast of Vostok Bay and unprecedentedly restricted the right of the institute of the RAS (IMB) for studies. This was apparently related to the project of construction of the oil pipeline “Sakhalin - South Primorsky Krai” and the search for convenient sites to build oil loading terminals.

The IMB addressed a complaint to the Prosecutor of Primorsky Krai. Prosecutor A.A. Anikin sent to the Primorsky Krai Court his decision to declare the Decree No. 205-pa, issued by the Primorsky Krai Administration, invalid, and the Primorsky

Krai Court supported the prosecutor's opinion. The Primorsky Krai Administration's appeal in cassation to the Supreme Court of the RF was considered by the Judicial Collegium for Civil Cases of the RF Supreme Court, and the latter made the ruling, dated on March 22, 2006, in which it particularly emphasized that "according to the RF legislation, objects enlisted in the list of World's Natural Heritage, including state natural reserves, also referred to as objects of National Treasure, are subject to special protection, and thus the Primorsky Krai Court's decision of December 21, 2005, should be left without changes and the Primorsky Krai Administration's appeal in cassation without satisfaction".

In 2008, the Governor of Primorsky Krai issued the Decree No. 62-pg "On Introduction of Amendments to the Decree No. 556 Issued by the Governor of Primorsky Krai on August 8, 2000". Not only did this Decree grant the previous IMB's petition, but it also proved to be momentous document for the Marine Reserve "Zaliv Vostok", since it determined that "the State Natural Complex Marine Reserve of Regional Significance 'Zaliv Vostok' in Peter the Great Gulf, Sea of Japan, is organized within the same boundaries without limitation as to the term of validity".

Another great concern about the future of Vostok Bay was arose in 2010, when "Rosneft" planned to construct an oil loading terminal and an oil production facility on the shore of the bay near Cape Yelizarov, which is a border the Reserve "Zaliv Vostok". It was evident that so called "normative losses of oil" during loading of tankships and discharges of gaseous oil production wastes would inevitably cause an ecological catastrophe in the bay and around it. Residents of the Nakhodka and Partizansk towns collected 15,000 signatures for protection of the Vostok Bay. Thanks to them and to participation of such persons as academician A.V. Adrianov, the Director of the IMB, S.M. Dolganov, the Director of the MBS "Vostok", B.V. Preobrazhensky, the Chairman of the Coordination Council on Ecological Problems of Primorsky Krai, academician V.I. Sergienko, the Chairman of FEB RAS, academician Yu.S. Osipov, the President of RAS, the Bay was saved from those short-sighted managers, guided only by

the principle "after us, the deluge", or "we do not live here". After the petition by the persons above to the Government and the President of the RF, the Rosneft's project was sent to ecological expertise again. As a result, in 2012, an alternative site for the oil loading terminal, for the plant to produce polypropylene and polystyrol, and for discharging toxic gaseous wastes was found in Nakhodka Bay, near the port Vostochny, in Prudikha Valley. The ruling by the Supreme Court Collegium in 2006, which indicated that "the Reserve 'Zaliv Vostok' is an object of World Natural Heritage and National Treasure", became one of those important factors that made the "big business" surrender.

We repeatedly mentioned about the assistance rendered by the IMB FEB RAS to the Reserve "Zaliv Vostok". It started from the idea to create a reserve and from the substantiation of its organization, composed by members of the IMB. This substantiation was not just a trivial appeal to save one more lot of land and water, but it represented an enough serious work, based on the 20-year-long deep study of the environment and biota in Vostok Bay.

The study began with the expedition to Vostok Bay in the summer of 1969, organized by biologists from the Marine Biology Department of the Far Eastern Subdivision of the Siberian Branch of the USSR Academy of Sciences (AS USSR), which was reformed into the Institute of Marine Biology (IMB) in September 1969 by the decision of the State Committee on Science and Technology. In 1970, according to the Decree by the Presidium of the AS USSR, the Far Eastern Scientific Center (FESC) with its Presidium in Vladivostok, was formed from all the existing scientific institutions of the Siberian Branch of the AS USSR, located in the Far East.

In 1970, the Director of the IMB A.V. Zhirmunsky examined the site, which had been selected by the first expedition to Vostok Bay, and approved creation of the marine biological station (MBS) "Vostok" at the northern part of Pashinnikova Cape. It was the first biological station of the IMB; it became the structural subdivision of the institute. The members of the Eastern Expedition 1970 lived in tents, but already in 1971, the MBS "Vostok" was furnished with

first summer cottages, booths, and studios, in which laboratories worked mainly in summer, and with wooden barracks for the laboratories of physiological ecology, embryology, and biophysics, which conducted field studies all the year round.

Initially, the MBS “Vostok” was destined for collection, determination, and description of marine animals and plants. However the first constructions at the MBS “Vostok” were the only site to deploy and create some IMB laboratories until the building of the institute was built in 1985. The laboratories of physiological ecology, embryology, genetics, biophysics of cell, experimental hydrobiology, and the laboratory of ecology and cultivation of invertebrates were first ones at the MBS “Vostok”. Under harsh field conditions, researchers continuously conducted deep studies of the marine biota, using various methods, from traditional hydrobiological and morphological to up-to-date and precise, such as biophysical, biochemical, neurophysiological, and genetic ones. The results of those studies were published in hundreds of articles and dozens of dissertations [5-9].

Many distinguished scientists from the leading institutes and universities of Moscow, St. Petersburg, Novosibirsk, Kiev, and other cities worked, managed studies, share their experience, and delivered lectures at the MBS “Vostok”. One of them is Yaroslav Iгореvich Starobogatov, an outstanding zoologist and malacologist, who was called by his colleagues “the last person who know the entire zoology of invertebrates”. But he not only knew zoology, but also was a real encyclopaedist. Georgii Petrovich Pinayev, the head of the Cell Cultures Department of the Institute of Cytology RAS and the unchallenged leader of the Association of Experts in Cell Cultures, came not only to teach biochemists and biophysicists, but also to stage a ballet for “Days of Sea”. Vladimir Alexandrovich Sveshnikov, the head of the Laboratory of Ecology and Morphology of Marine Invertebrates at the Institute of Ecology and Evolution, taught how to identify marine animals. Lev Nikolayevich Seravin, the head of the Invertebrate Zoology Laboratory at the Research Institute of St. Petersburg State University, taught to set up ethological experiments. Vladimir Vasilyevich Malakhov, a professor at Moscow State

University, who became a doctor of sciences when he was only 29, a known phylogeny theorist and an expert in comparative anatomy, embryology, and ultra-structure of invertebrates, guided embryologists. Other great scientists also visited the MBS "Vostok".

Academician Aleksey Viktorovich Zhirmunsky, the Director of the IMB, also enjoyed working at the MBS "Vostok". There he set up his experiments on thermal resistance of invertebrates, received important visitors, delivered lectures, and dived together with professional divers of the station. The "diving academician" was so proud of his Open Water Diver certification card, given by PADI (Professional Association of Diving Instructors) in New Zealand when he was almost 70 years old, that he jokingly put it in one row with his three the most important achievements: (1) creation of the Institute of Marine Biology in 1970 and construction of its building in 1985, (2) establishment of the Journal "Biologiya Morya" (Russian Journal of Marine Biology) in 1975, and (3) organization of the Far Eastern Marine Reserve in 1978.

In 1970-1991, the MBS "Vostok" had a very important advantage: it was located in the closest site to Vladivostok where foreigners were allowed in. Thanks to the high professionalism of IMB researchers and the traditional Russian hospitality showed by the personnel of the MBS "Vostok", already in 1980 the MBS "Vostok" became one of world's known scientific and educational center, which not only conducted cooperative studies, but also held international congresses, symposiums, conferences, and schools [3], and even received academicians and creators of nuclear weapon in the USSR, who came just to have a rest.

Many foreign scientists also came to MBS "Vostok" to deliver lectures and work: professor O. Kinne (Germany), a marine biologist, the Director of the Marine Institute on Helgoland Island, the shape of the building of which was used by A.V. Zhirmunsky for the project of the IMB building; professor J. Costlow (USA), the Director of the Marine Laboratory at Duke University; Ruth Turner (USA), a professor at Harvard University; professor A. Benson, a member of the US National Academy;

French academician J. Peres; professors T. Habe, N. Kobayasi, K. Numachi, and K. Moriwaki from Japan, and many others [5].

The biological station was visited also by other world celebrities, such as Thor Heyerdahl, who was a renowned traveler, anthropologist, an investigator in peoples' migrations, and a writer (Fig. 3).



**Fig. 3. Thor Heyerdahl talks with the staff of the MBS “Vostok” in 1981.
His autograph is in the bottom of the photograph.**

Photo by Victor P. Kashenko.

In 1988-1991, Sigizmund Semenovich Kharkevich, one of leading Far Eastern botanists, and his wife Tamara Georgievna Buch performed a study of small parcels of the forest and flood-meadow with the total area of 4 km², adjoining the MBS “Vostok”. The scientists revealed a rich plant diversity of the area and a high species density of vascular plants. This area of studies and the publication with results of the work by S.S. Kharkevich and T.G. Buch were given a poetic name: “The Emerald Necklace of the Marine Biological Station ‘Vostok’” [4].

Thanks to the studies, conducted by IMB researchers and their colleagues from other institutes, universities, and countries at the MBS “Vostok” since 1970, Vostok Bay has become the best studied area from a biological point of view among all the seas of Russia.

Littoral and upper sublittoral zones of Vostok Bay had been carefully studied to the depth of 1.0 m. Using the scuba diving equipment, researchers have also surveyed in detail the strip of coastal waters to the depth of 12 m. Central part of Vostok Bay has been also studied by bottom-grabs and divers. The network of the scientific stations and transects demonstrates thoroughness of the studies of benthos in Vostok Bay (Fig. 4).

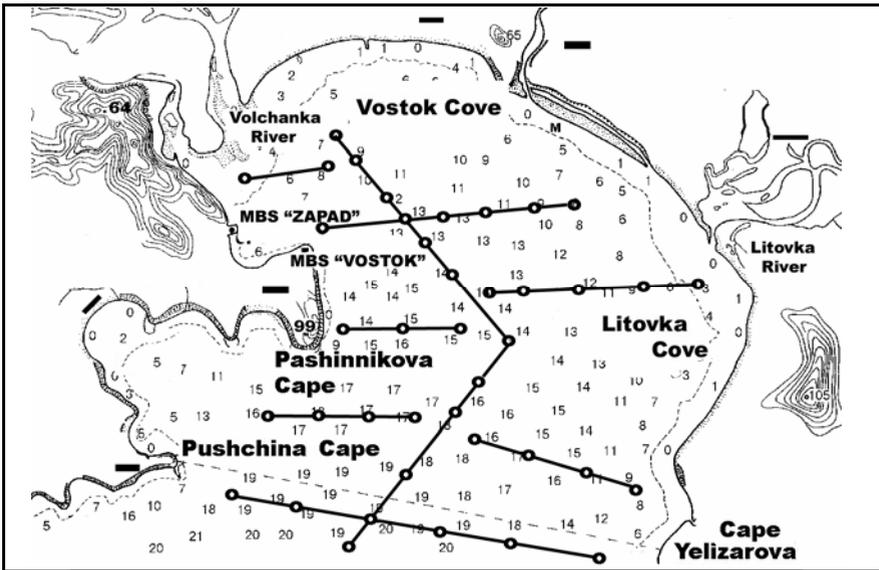


Fig. 4. Network of the scientific diving stations and transects [4].

The review of macrobenthos inventories in Vostok Bay, composed by S.A. Tyurin, a graduate student of the Institute of Marine Biology FEB RAS, in 2002, included the annotated list of 630 species: 170 species of macrophytes; 6 sponge (*Spongia*) species, 3 cnidarian (*Cnidaria*) species, 18 nemertean (*Nemertinea*) species, 6 sipunculid (*Sipuncula*) species, 161 polychaete (*Annelida*) species, 128 mollusk (*Mollusca*) species, 96 species of arthropods (*Arthropoda*), 3 bryozoan (*Bryozoa*) species, 24 echinoderm (*Echinodermata*) species, and 12 species of chordates (*Chordata*). As it was shown, the relatively small area of Vostok Bay is inhabited by most phyla of fauna registered in Peter the Great Bay [9].

The great biological diversity of fauna and flora of Vostok Bay is determined by the variety of habitat conditions, created by nature: a multitude of types of the shoreline, soils, terrains, landscapes, currents, the wide range of water temperature from -1.8 to $+27^{\circ}\text{C}$ and salinity from 1-2 to 32‰, and the balanced eutrophication.

The attention currently paid to development of the MBS “Vostok” by academician Andrey Vladimirovich Adrianov, the Director of the IMB FEB RAS, promotes more active and deeper of the studies in Vostok Bay. Thanks to his care, new comfortable houses, laboratory premises, a house for diving equipment, a sauna, and a covered slipway have been built for the recent years (Fig. 5).



Fig 5. MBS “Vostok”. The roofs on new and renovated houses are painted in red.

Photo by Aleksey A. Miheev. 2012

The base of Aquaculture farm in Vostok Bay was closed in 1998. A branch of the MBS “Vostok”, named “Zapad” (Fig. 4), was created on its territory. Now, many laboratories of IMB FEB RAS at “Vostok” and “Zapad” have their field bases for twelve-month study. Russian and foreign researchers keep on coming to “Vostok” and “Zapad” to work, share their experience, and deliver lectures; biology students and postgraduates from higher education institutions of Russia arrive to collect material for their

yearly essays, graduation papers, and dissertations; students of the Junior Academy of Marine Biology conduct their field practical works. All-Russia and regional conferences, schools are traditionally held at the MBS "Vostok".

Due to the many-sided and deep study of the biota, Vostok Bay was selected an international base for the long-term, 50-year, monitoring of Peter the Great Gulf by the programmes Census of Marine Life, DIWPA, and NaGISA, which bring together works on inventory and monitoring of biodiversity in the West Pacific [1].

The Reserve "Zaliv Vostok" also can become a test area for scientific assessment of feasibility of the form of rational nature use, recommended by the Russian Federal Supervisory Natural Resources Management Service to be implemented in Primorsky Krai: conflictless combination of research studies, aquaculture, and recreation within the same body of waters.

Thus, the current main objective set by the administration and security service of the Marine Reserve of Regional Significance "Zaliv Vostok" is conservation of biota in Vostok Bay for the world and Russian science.

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