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"Foreign science" in Russian context: Murman Scientific-Fishery Expedition and Russian participation in early ICES activity

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The Murman Scientific-Fishery Expedition (1898–1908), organized by a philanthropic committee, contributed greatly to the development of oceanography and fishery science in Russia. During the discussion that preceded its organization, special attention was paid to the example set by other European countries concerning the involvement of scientists in the problems of developing their fisheries. The first head of the Expedition, zoologist Nikolai Knipowitsch, established close connections with European marine scientists, which integrated his Expedition into the international community and was crucial for the involvement of Russia in ICES. Negotiations between governmental officials on the question of Russian participation in ICES went on up to the beginning of 1902, but scientific research based on the international programme on the specially designed research vessel was already begun by the Expedition in 1900. Scientists with the Expedition tried to balance scientific objectives with applied work, which was the price of governmental support. In spite of this, tension mounted between the Expedition and its patron. Knipowitsch was accused of paying excessive attention to "foreign science", considered detrimental to the interests of Russian fishermen. After his removal, the next head of the Expedition, Leonid Breitfuss, continued the research of the Expedition according to the ICES programme up to 1906 when the Expedition lost its financial support.

Keywords: fishery science, historical perspective, Murman Scientific-Fishery Expedition, oceanography, Russian North.

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Organization of the Murman Scientific-Fishery Expedition, 1897–1899

In contrast to the situation in most of the founding countries of ICES, the northern marine fisheries were not the focus of scientific and public attention in Russia at the end of the 19th century. A few officials at the Ministry of Agriculture, who were responsible for managing the fisheries, as well as the members of the Royal Society for Fisheries and Fish Breeding, were preoccupied with the problems of the Caspian Sea and the inland fisheries, the most important for Russia. Both of these agencies lacked sufficient financial resources to support marine research. The only scientific institution involved with the northern seas was the Solovetsky Biological Station (Ginetsinskaya, 1993). However, its staff had neither the interest nor the ability for fishery research.

Only traditional local fisheries existed in the Russian northern seas at that time. The most important among them was the cod longline fishery on the Murman coast of the Barents Sea which was conducted seasonally from small, unsafe fishing boats. There were no railways, no telegraph, and no regular shipping during the long winter (Engelhardt, 1899). The necessity of improving these fisheries and the life of the local Russian population ("pomors") was discussed widely during several decades, but nothing changed up to 1895. In that year, the wreck of 25 fishing vessels increased public concern over the fate of northern fishermen to such an extent that the special philanthropic Committee for the Aid to Pomors of the Russian North was organized in St. Petersburg from both private donations and governmental subsidies. Members of the Royal Society for the Assistance to the Russian Trade Navigation, which united ship owners, mariners, industrialists, and merchants, constituted the bulk of the new Committee.

Figure 1. Nikolai Knipowitsch – the first head of the Murman Scientific-Fishery Expedition, 1898–1901, Russian representative in ICES from 1902 to 1914, Vice President of ICES in 1913–1914.

At first, the Committee dealt with payments of pensions and other social assistance, but soon its leaders recognized the need to broaden its activity. To improve the fisheries in general, they decided to seek the advice of scientists and formed a special Northern Commission from several members of the Committee and invited scientists. Taking the activities in other European countries as an example, members of this Commission proposed that the development of scientific research in the form of a long-term expedition was necessary to improve the fisheries (Varpakhovsky, 1898). During discussions in the Commission, several speakers referred to the positive results that came from the involvement of scientists in solving fisheries problems in foreign countries. Scientists themselves felt that Russia was behind other countries in the level of marine scientific knowledge, and they gave considerable attention to the necessity of reducing this difference. Several members of the Commission expressed their doubts about the ability of a traditional fishery in an economically underdeveloped area to accept this knowledge, but the Commission did not seriously consider these doubts (Lajus, 1995).

Among the scientists invited to work in the Commission was the zoologist Nikolai Knipowitsch (1862–1939) (Figure 1) who was known for his research at the Solovetsky Biological Station and on the Barents Sea (Knipowitsch, 1893a, b) as well as for surveying the state of fisheries along the Murman coast (Knipowitsch, 1897). The programme of the Expedition that Knipowitsch opened for discussion with the Commission, was very broad. He placed priority on the scientific tasks, believing that only after full and comprehensive study of the area would it be possible to offer practical recommendations. He stressed the necessity of hydrographic observations for understanding the distribution of fish (Knipowitsch, 1898a). The Commission supported his ideas and sent the proposal for the Expedition to the Ministries of Agriculture and Finance, and to the Navy. It was crucial that the Minister of Finance, Sergei Witte, considered the question positively. Particularly important was the decision to build the vessel "Andrei Pervozwanny", which is known to be one of the first vessels in the world specially designed for fishery research. (Figure 2). Its construction began in 1897 in Germany as a Russian project, according to which it should be a yacht, but with a stern rigged for trawling.

In the same year, 1897, Knipowitsch travelled throughout northern Europe acquainting himself with modern developments in oceanographic and fishery research and acquiring modern equipment for the Expedition. He visited most of the well-known marine biological and fishery institutions and met with their leaders, among them Carl G. J. Petersen, Johan Hjort, Victor Hensen, Carl Apstein, Friedrich Heincke, and John Murray (Knipowitsch, 1898b). After this trip, Knipowitsch began to correspond with most of these scientists, but this correspondence has not yet been consolidated and analysed. His acquaintance with foreign colleagues strengthened Knipowitsch's belief in the correctness of his strategy for the Expedition.

The Murman Scientific-Fishery Expedition, as it was officially called, began its work in 1898 on the small sailing vessel "Pomor", which was bought in Norway, because the big vessel was not yet ready (Stepanjants *et al.*, 1998). Knipowitsch obtained, as his first assistant, Leonid Breitfuss, who agreed to work at Murman in the winter instead of Knipowitsch, who was too busy teaching at St. Petersburg University and working in the Zoological Museum of the Academy of Sciences. Breitfuss (1864–1950) was born into a German family in St. Petersburg, but obtained a doctoral degree in zoology from Berlin University (Hermann, 1949).

Already in the fall of 1898, Knipowitsch wrote to Otto Pettersson about the first results of the hydrographic research, expressing the hope of linking them with subsequent research by Scandinavian scientists (Knipowitsch, 1898c). In the spring of 1899, the vessel "Andrei Pervozwanny" was finally ready. During its cruise from Germany to Murman with the members of the Expedition, it visited Kiel, Copenhagen, Kristiania

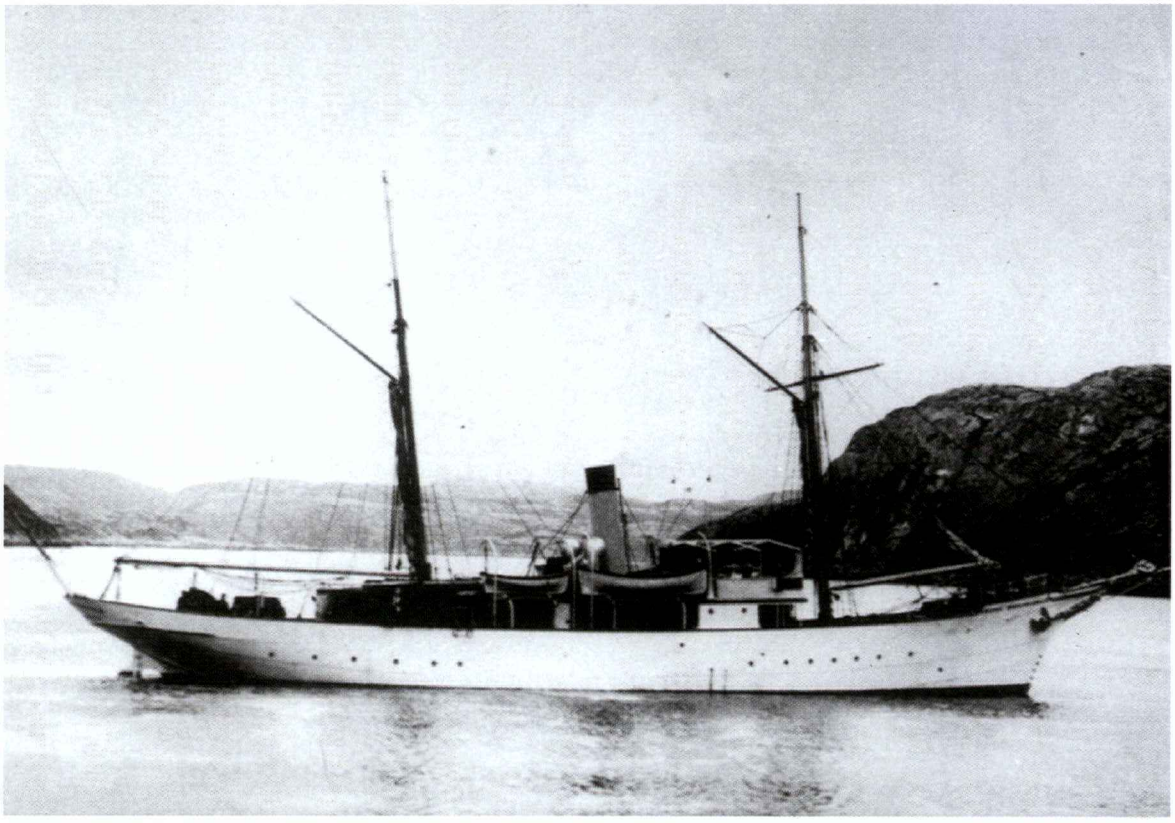

Figure 2. "Andrei Pervozwanny" – the research vessel of the Murman Scientific-Fishery Expedition.

(Oslo), Bergen, Trondheim, and Tromsø. The scientists in these cities (among them were Victor Hensen, Karl Brandt, Carl G. J. Petersen, Fritjof Nansen, Johan Hjort, N. N. Gran, and others), as well as the public, were able to observe the vessel.

Contacts with foreign scientists were very important for the staff of the Expedition. One of the students who worked in the Expedition later recalled the visit to Johan Hjort's laboratory: "During the conversation with assistants of Prof. Hjort, we asked what their specialty was? In Russia, we knew zoologists, botanists, chemists, and so on, but here in the laboratories we saw the botanical and zoological samples near the apparatus for the chemical analysis. – We are working with everything that concerns the seawater. We study the inhabitants of the sea, both plants and animals, we also analyze the water itself and the products of fishery and so on – was the answer. – It was so new for us!" (Yagodovsky, 1921, pp. 37–38).

The beginning of Russian involvement in ICES, 1899–1900

At the time when the Murman Expedition started working on board its own research vessel, preparations for the Stockholm Conference were going ahead at full speed. The invitation of the Swedish King Oscar II was sent to Russia through the special note from the Swedish/Norwegian Legation to the Minister of Foreign Affairs, Count Muraviev. The latter wrote about it to the Minister of Agriculture, Alexei Yermolov, who also supervised the fisheries (Muraviev, 1899). He noted that Russian participation in international marine research was desirable and suggested that it would not require much funding because of the existence of the Murman Expedition, whose work was very comparable with the proposed research.

Inspector for Fisheries Oscar von Grimm (1845–1921), the head official for all Russian fisheries (Knipowitsch, 1928), was immediately informed. After some negotiations, he was appointed by Czar Nikolai II as the Russian delegate to the Conference. Von Grimm was not a newcomer to international meetings. He had participated in most of the international fishery exhibitions and congresses and had authored a book on the

Russian fisheries, translated into English for the London Exhibition in 1883 (von Grimm, 1883). Only a year before the Stockholm Conference, he had attended the Bergen Exhibition and Congress where he met several people who later played a central role in ICES (Comptes rendus, 1899).

Though von Grimm definitely supported international cooperation in the study of the northern seas (von Grimm, 1899a), he, as an official responsible for all Russian fisheries, was more interested in research in the south. Thus, he wrote to Yermolov after the Stockholm Conference: "...If we are participating in the studies of the northern seas, in which practically we are interested only slightly, especially as the results of these studies will be used by Norwegians and Germans earlier than by Russians, it seems more necessary for us to carry out the same studies in the seas, where our main fishery is situated, i.e. Caspian, Azov and Black Seas" (von Grimm, 1899b). Nevertheless, he became a very active member of ICES (Committee C) and, in 1908–1913, was Vice-President (Went, 1972).

According to the programme of the Stockholm Conference, two areas were assigned to Russia: the eastern Baltic Sea, where research was carried out by Finnish scientists (Mälkki, 1990), and the Barents Sea, the area of activity of the Murman Expedition. At the end of 1899, Yermolov founded the Commission for the Clarification of the Question of Acceptance by the Russian Government of the Decisions of the International Stockholm Conference, which included representatives from all the main ministries and the Academy of Sciences. The Commission concluded that Russia should participate in the proposed studies, but without participation in the International Bureau. Instead of this, the Commission decided to raise money for the establishment of a Russian bureau, which would coordinate all national marine research. The decision was supported by the examples from meteorology and geology where, without any international bureau and only through regular international congresses and special committees which served between congresses, impressive unification of methods had been achieved. The idea of Russian participation in the International Bureau was also opposed by Minister of Finance Witte who pointed out to Yermolov that the State Treasury was already spending considerable money to support the expeditions in the northern area, including the Murman Expedition (Witte, 1900; Smed, unpub. ms).

Two members of the Commission, namely von Grimm and Knipowitsch, disagreed with its decision. Because of their dissent, the question remained unresolved by the State Council. Knipowitsch wrote in his disagreement paper that, in the fields of hydrography and marine biology especially, there simply were not enough Russian specialists, and thus the national bureau would be too weak both in staff and in technical equipment. He insisted on participating initially in the International Bureau for at least five years to learn the methods and to prepare carefully for the national version of it. Knipowitsch emphasized that the research of his Expedition closely resembled that of the Stockholm Conference proposals because he organized all of his work as a result of contact, during his foreign trip, with the scientists who initiated the Stockholm Conference itself (Knipowitsch, 1900a).

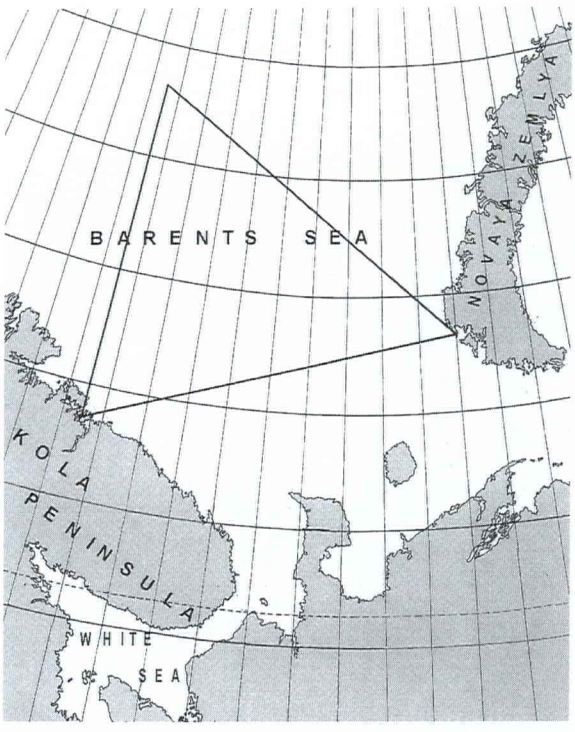

Figure 3. Triangle route of the quarterly research cruises assigned to Russia according to the programme of the 1899 Stockholm Conference.

The next step: progress in hydrographic research and the Conference in Kristiania, 1900–1901

In the summer of 1900, hydrographic research in the international programme became the top priority for the Expedition. From the cruises that year along the triangle in the Barents Sea set by ICES (Figure 3), and especially along its western side called the Kola Meridian, came the section sampled regularly up to the present time. Knipowitsch was convinced that hydrography controls biology, very much the same as Pettersson's ideas (Svansson, 1999). But the big difference between them was the fact that Knipowitsch was a zoologist. Though he had some experience in hydrographic research, being among the first in Russia to try to explain the distribution of marine animals in connection with their environment (Knipowitsch, 1893a), he

Figure 4. Staff of the Murman Scientific-Fishery Expedition in 1906. First row (l-r): A. K. Linko, L. L. Breitfuss, O. K. Hausman, and B. L. Issatchenko. Second row (l-r): G. F. Goebel, A. P. Smirnov, A. K. Hausman, V. L. Issatchenko, A. A. Elenkin, and V. N. Chichagov.

encountered many difficulties organizing this type of research in his Expedition.

The most difficult was the assessment of salinity. Knipowitsch complained to Pettersson about the non-qualified chemist he had for the expedition in 1899 (Knipowitsch, 1899). Knipowitsch visited Pettersson in the spring of 1900 to get his advice. In the fall of this year, Breitfuss spent some time in Stockholm learning the methods (Breitfuss, 1900). In letters, Knipowitsch asked Pettersson to send him new bathometers and tables and finally to recommend a good chemist (Knipowitsch, 1900b, 1900c).

Throughout all of 1900, the Russian government protracted the decision on Russian participation in ICES, probably simply awaiting the decisions of the other governments. Swedish/Norwegian and German legations sent notes to the Russian Ministry of Foreign Affairs asking about the decision. In December 1900, the Swedish/Norwegian representative in Russia stressed to Yermolov the importance which the Swedish government attached to Russia's participation (Smed, unpub. ms). Minister Muraviev wrote several times to Yermolov asking him to resolve the question as soon as possible. Yermolov wrote to Witte (Yermolov, 1900), arguing that this participation was necessary for Russia as a great country standing on the same level of cultural development as other European countries. He stressed that he did not think it desirable or even possible to avoid this responsibility. Russia had already taken part in testing the validity of the Hydrographical Tables (Smed, 1992) and had contributed a thousand rubles for it.

When, at the beginning of 1901, it became clear that most of the European countries had agreed to participate in ICES and, at the same time, Witte had refused to finance the national bureau, Yermolov again assembled the Commission and it moved towards a positive decision. However, this decision did not mean an immediate decision by the government. In February 1901, Knipowitsch wrote to Pettersson that the Expedition had obtained financing for the next four years and, independ-

ent of the government's decision, would continue research on the international programme (Knipowitsch, 1901a).

Knipowitsch was invited to the International Conference in Kristiania together with von Grimm, who did not participate because of illness. He informed the delegates about the uncertain situation with Russian participation, but mostly reported the results and future programme of research of his Expedition, emphasizing not only the scientific, but also the practical importance of its activity (Knipowitsch, 1901b, 1901c).

The summer of 1901 was the most successful for Knipowitsch. Pettersson offered him his own assistant, Augusta Palmquist, who spent three months at Murman analysing water samples and teaching the method to one of Knipowitsch's assistants. The hydrographic research progressed well, and the first detailed hydrographic map was drawn (Knipowitsch, 1901d, 1902 a). He was actually the first to depict the distribution of branches of the Gulf Stream in the Barents Sea and tried to associate this with fish distribution (Hjort, 1939). However, the sudden conflict with the Committee, which supervised the Expedition, destroyed all his satisfaction.

Change of the head of the Expedition

The first serious dissatisfaction with the activity of the Expedition was already evident in the summer of 1900 when, in an influential newspaper, the Expedition was accused of "forgetting the needs of local fishermen in favour of benefit to foreign science" (Anon., 1900). This publication had broad resonance. The connection between hydrographic research and the benefits for fisheries and fishermen was incomprehensible to the "broad public" to which the Committee directed its attention. The Committee wanted the Expedition to be more narrow and practically focused, which did not coincide with Knipowitsch's strategy. Consequently, at the end of 1901, he lost his position.

The removal of Knipowitsch was accompanied by a conflict with Breitfuss, who succeeded him as head of the Expedition. The conflict became known internationally; some opinions, not favourable for Breitfuss, can be found in Palmquist's letters (1901, 1902). Knipowitsch complained about this conflict to Fritjof Nansen, stressing the incompetence of the Committee in scientific matters (Knipowitsch, 1902b).

However, even after Knipowitsch's removal, the analyses and publication of the material already collected were left to him, and he was very satisfied with it (Knipowitsch, 1901e). He had soon published two volumes of the Expedition's reports (Knipowitsch, 1902c, 1904) and had summarized the hydrographic portion of the research: for foreign colleagues in an article (Knipowitsch, 1905), and for Russians in a fundamental book (Knipowitsch, 1906).

The Murman Expedition under Breitfuss, 1902–1906

In March 1902, the approval for Russian participation in the International Bureau was received (initially for two years only, but later this approval was renewed for the next three years). It is uncertain if the interference of the Danish Prince Valdemar (who was the brother of the Czar's mother, Maria Fyodorovna Romanova, formerly Princess Dagmar of Denmark), organized by Pettersson through the Danish representative in ICES, C. F. Drechsel, had any influence on this decision (Smed, unpub. ms). Already in 1902, Breitfuss started to send the results of the hydrographic research of the Expedition to the ICES Bulletin and soon summarized them (Breitfuss, 1904a). As the data increased, he saw that the pattern of currents was more complicated than Knipowitsch, who considered the currents to be very stable, had proposed. He opposed Knipowitsch's consideration about the importance of insolation for the seasonal increased warming of the Gulf Stream and referred it to the strengthening of inflow of the current, noticing that the breadth of several branches of the Gulf Stream changed seasonally (Goebel and Breitfuss, 1908). Pettersson discussed the data of both Knipowitsch and Breitfuss in describing his hypothesis about the periodical and non-periodical fluctuations of the Gulf Stream (Pettersson, 1905).

The staff of the Expedition matured (Figure 4). A notable appointment was that of the planktologist Aleksandr Linko, who in the summer of 1903 collected the first plankton data (Bulletin, 1903–1904, pp. 52–55). He analysed the zooplankton data (Linko, 1904, 1907), and the phytoplankton data were initially analysed by Swedish algologist Per Theodor Cleve (Bulletin, 1903–1904, p. 62) and later by the Russian Alexander Elenkin. In 1906, the microbiologist Boris Issatchenko discovered denitrification bacteria in the cold waters of the Arctic Ocean (Issatchenko, 1914; Mills, 1989, p. 72). The study of rich zoological samples was accomplished through the joint efforts of Russian and foreign zoologists; Breitfuss (1904b) listed about twenty individuals.

It is amazing that the Expedition managed to maintain a high level of scientific research in spite of being forced by the Committee to fulfil numerous practical tasks, such as building baths and schools for the fishermen (Breitfuss, 1905). Regarding practical research for the fishery, the Expedition had started to fish with a trawl in 1899 and in 1901 discovered many good fishing places along the Murman coast. However, when the results of this exploratory fishing were published, they produced very little profit for Russian fishermen, who had no vessels suitable for offshore fishing, but considerable profit for foreign (i.e., English and German) trawlers. This fact became the most common accusation against the Expedition in Russia.

The shortsightedness of the Committee and the difficulties experienced during the First Russian Revolution of 1905 undermined the Expedition's financial situation, and in mid-1906 its work had to stop (though on paper it existed until 1909). Breitfuss and the other scientists failed to find a new patron for the Expedition (Lajus, 1995). In 1908 when the Russian government again considered the question of its participation in ICES, it decided to start research in the Baltic instead of the Barents Sea (Khomiakov, 1908).

Even though he was head of the Murman Expedition, Breitfuss was not the official Russian representative to ICES. He participated only twice in ICES meetings as an expert in 1906 and 1913. Knipowitsch remained the Russian representative, working mostly in Committee A, and was Vice-President in 1913–1914 (Went, 1972). Later, one of the presidents of ICES, C. F. Drechsel, summarized the work of Knipowitsch in ICES, emphasizing that he "had that generous consideration for the advancement of the work as a whole, without which no international undertaking can ever hope to thrive" (Drechsel, 1927).

The results of ICES participation for the growth of oceanography in Russia were of great importance. The development of methods, instruments, and changes in the understanding of ocean processes all bore fruit later in the Soviet era. International cooperation in the field – ICES and Bergen oceanographic courses – were crucial for producing a new generation of Russian oceanographers. All marine institutions working in the northern seas after the Revolution considered themselves to be the successors of the Murman Expedition (Lajus, 1999). In the early 1920s, and in spite of the fact that the Soviet Union did not participate in ICES, cruises along the Kola Meridian were still called "international" (Derjugin, 1925). Knipowitsch made many efforts to return Russia to ICES, but this proved impossible until 1955.

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