Annotated List of Ichthyofauna of Inland and Coastal Waters of Sakhalin Island. 1. Families Petromyzontidae–Salmonidae

Article *in* Journal of Ichthyology · March 2021

DOI: 10.1134/S0032945221010057

CITATIONS
11

READS
795

2 authors:

Yury Valentinovich Dyldin
Tomsk State University
107 PUBLICATIONS **323** CITATIONS

SEE PROFILE

A. M. Orlov
P.P. Shirshov Institute of Oceanology
742 PUBLICATIONS **3,177** CITATIONS

SEE PROFILE

ISSN 0032-9452, Journal of Ichthyology, 2021, Vol. 61, No. 1, pp. 48–79. © Pleiades Publishing, Ltd., 2021.

Annotated List of Ichthyofauna of Inland and Coastal Waters of Sakhalin Island. 1. Families Petromyzontidae—Salmonidae

Yu. V. Dyldin[a, *] and A. M. Orlov[a, b, c, d, e, f]

[a] *Tomsk State University (TSU), Tomsk, Russia*

[b] *Shirshov Institute of Oceanology, Russian Academy of Sciences (IO RAS), Moscow, Russia*

[c] *Russian Federal Research Institute of Fisheries and Oceanography (VNIRO), Moscow, Russia*

[d] *Severtsov Institute of Ecology and Evolution, Russian Academy of Sciences (IPEE RAS), Moscow, Russia*

[e] *Dagestan State University (DSU), Makhachkala, Dagestan, Russia*

[f] *Caspian Institute of Biological Resources, Dagestan Federal Research Center, Russian Academy of Sciences (CIBR DFRC RAS), Makhachkala, Dagestan, Russia*

**e-mail: yurydyldin@gmail.com*

Received March 27, 2020; revised April 1, 2020; accepted April 1, 2020

Abstract—A complete annotated list of marine, brackish-water, and freshwater ichthyofauna of Sakhalin Island and the adjacent southern part of the Sea of Okhotsk is provided for the first time in the entire history of the study of the fish population. It is based on a critical analysis of the literature data for the last 200 years, collection materials, and the results of our own long-term studies. The list includes 600 species in 4 classes, 44 orders, 17 suborders, 129 families, 50 subfamilies, and 312 genera. It presents both English and Latin (scientific) names, information on the ranges in the World Ocean and distribution within Sakhalin waters, and data on the conservation status, commercial importance, and abundance. For a number of species, the list also provides information on collection specimens, confirming their presence within the studied water area. For all species, the current ranges and taxonomic status are specified according to the new data, if any. The so-called controversial taxa are discussed. The first part provides brief information about the history of the study of the Sakhalin ichthyofauna, the geographical and oceanological characteristics of the study area, as well as the first 118 species of the annotated list belonging to 79 genera, 42 families and 20 orders in 4 classes.

Keywords: ichthyofauna, annotated list, conservation status, commercial value, marine, freshwater, brackish water, Sakhalin, Sea of Okhotsk, Sea of Japan

DOI: 10.1134/S0032945221010057

INTRODUCTION

Sakhalin is the largest island in the Russian Federation and ranks 23rd in the world with an area of 76 400 km^2. Its total coastline is ~3200 km. The island is located 45°54′–54°25′ N and 141°37′–144°55′ E (Fig. 1). The Sea of Japan washes the shores of its western coast from Kril'on Peninsula in the southwest of the island, including Moneron Island, up to the Nevelskoy Strait in the north. The Sea of Okhotsk washes the northern, eastern, and southeastern coasts from the Sakhalin Bay to the La Perouse Strait, including the Terpeniya Bay and Aniva Bay.

Currently, the world is facing an acute problem of preserving the natural resources of both individual biological units (species) and the entire groups (populations, biota, biocenoses, etc.). The lack of knowledge on the fish population and a modern system of their classification makes impossible to carry out full monitoring and rational exploitation of these natural resources. Modern knowledge about the diversity of marine fish on Sakhalin Island and the adjacent waters of the southern part of the Sea of Okhotsk has not yet been fulfilled and is cumulative and descriptive. Nevertheless, over a more than 200-year study of the island ichthyofauna (up to 2006 inclusive), almost 100 new species were described, most of which are marine (Dyldin and Orlov, 2017b).

Up to date, the marine ichthyofauna of Sakhalin was the least studied both in comparison with the adjacent waters of neighboring countries (for example, Japan) and with other regions of the Russian Federation. For example, there is still no general taxonomic list of either marine or freshwater ichthyofauna species for the island and the adjacent waters. Such gaps do not allow integrating taxonomic information on the ichthyofauna of the largest island in Russia, both to the world and Russian scientific knowledge. Also it is necessary to have information about the native fauna for monitoring and assessing the conservation status of a particular species. The possibility to show the impact

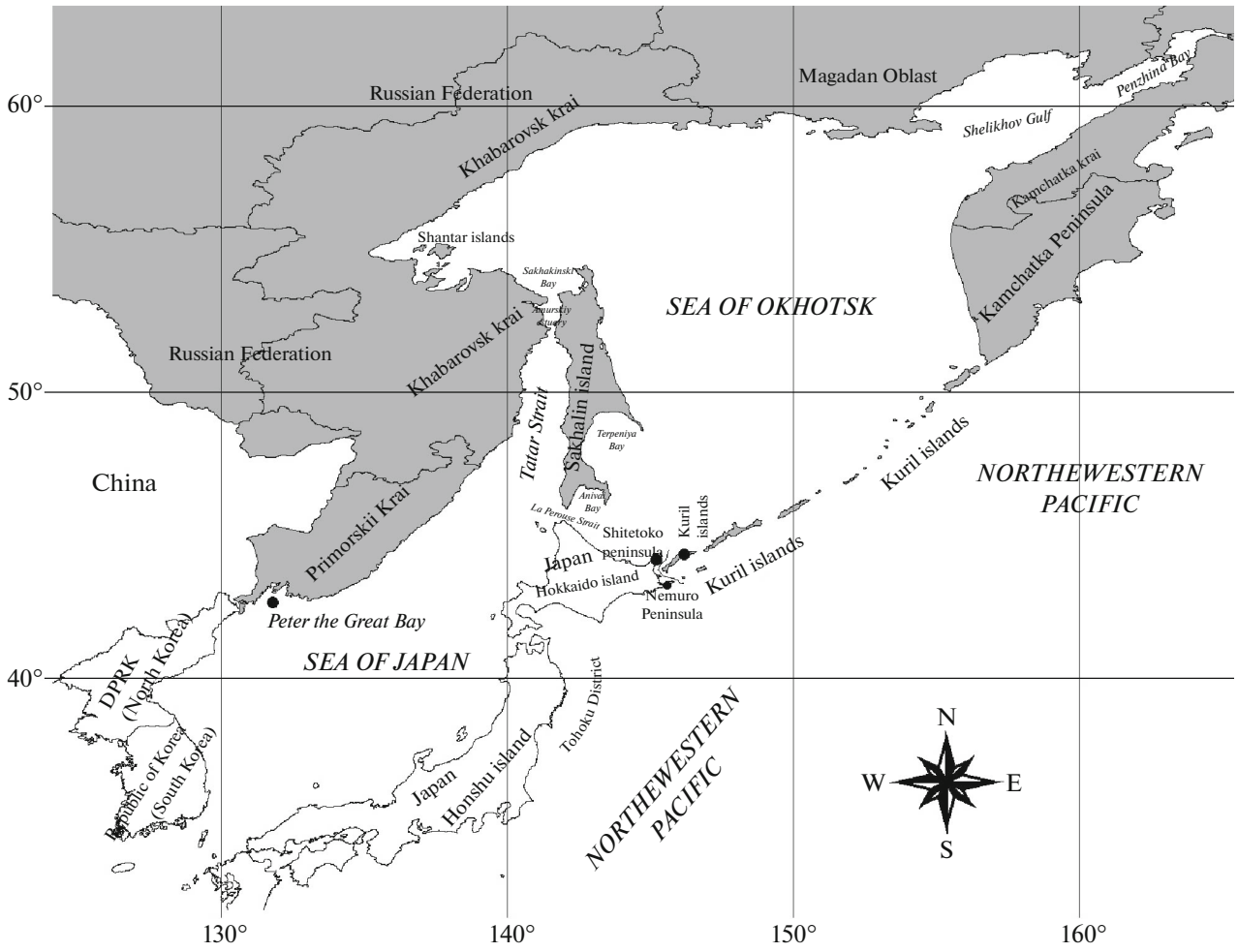

Fig. 1. Map of Sakhalin and adjacent areas of the northwestern Pacific.

of introduced species, anthropogenic activity, climate, evolutionary processes, and geological changes on the local ichthyofauna, to analyze the state of commercial stocks and their dynamics, as well as many other not less important issues also lays on the analysis of data on native species in a particular region in the particular time (historical) period.

The aim of this work is to summarize the data accumulated over the past 200 years and to present a complete taxonomic list of marine (within a 200-mile Exclusive Economic Zone, including the island slope of the northern and southeastern coasts) and freshwater ichthyofauna for island waters, taking into account the requirements of modern nomenclature, conservation status, and a number of recent taxonomic revisions. In addition, in order to remove as much as possible erroneous information about fish and lampreys found within Sakhalin and the adjacent southern part of the Sea of Okhotsk, our data are based on collection specimens deposited in various museums around the world.

MATERIALS AND METHODS

The work is based on critically analyzed scientific publications, type catalogs, electronic catalogs, and databases (Voronina and Volkova, 2003, 2007, 2019; Sideleva, 2006a, 2006b; Balushkin et al., 2011, 2012a, 2012b; Tohkairin et al., 2015; Nakae and Shinohara, 2018; Kawai, 2019; Museums Victoria..., 2019; Vasil'eva, 2019; Catania and Fong, 2020; *Eschmeyer's Catalog*..., 2020a; GBIF, 2020; Lopez, 2020; *Collection of specimens*..., 2020; Orrell, 2020; UWFC, 2020), a seven-volume series of monographs led by G. U. Lindberg (Lindberg and Legeza, 1959, 1965; Lindberg and Krasyukova, 1969, 1975, 1987; Lindberg and Fedorov, 1993; Lindberg et al., 1997) that provides information about collection material from Sakhalin, deposited in the Zoological Institute of the Russian Academy of Sciences, as well as materials of our own long-term research.

In the list of Sakhalin ichthyofauna, we included not only those fish and lampreys that were docu-

mented at least once in its waters, but also all those that have not yet been recorded for the island, but are found in the adjacent waters of the southern part of the Sea of Okhotsk and are likely to be registered within the island waters.

The basic classification of higher taxa of fish and lampreys (from class to family) is used in accordance with the latest developments (van der Laan et al., 2014; Fricke al., 2020b). For a number of species, the section Samples provides information on collection specimens obtained in the insular and adjacent waters of the southern part of the Sea of Okhotsk and deposited in various scientific collections (Russia, Japan, United States, Australia, United Kingdom, and Denmark), for which the following abbreviations are used: CAS-SU—California Academy of Sciences, San Francisco, United States; NHMUK ZOO—The Natural History Museum, London, United Kingdom; FAKU—Fish collection of Kyoto University, Kyoto, Japan; HUMZ—Fish Collection of Hokkaido University, Hokkaido, Japan; KhMSF—Kholmsk Museum of the Sea Fauna, Kholmsk, Sakhalin Island, Russia; MCZ-Ich – Museum of Comparative Zoology, Harvard University, USA; MIMB—Zhirmunsky Institute of Marine Biology, Far Eastern Branch, Russian Academy of Sciences, Vladivostok, Russia; KAUM—Fish specimens of Kagoshima University Museum, Japan; NMV—National Museum of Victoria, Melbourne, Australia; NSMT-P—Fish Collection of National Museum of Nature and Science, Tokyo, Japan; SRM–Sakhalin Regional Museum, Yuzhno-Sakhalinsk, Russia; UAM—Fish collection, University of Alaska Museum within the University of Alaska Fairbanks, USA; USNM—National Museum of Natural History, Smithsonian Institution, Washington DC, United States; UWFC—The University of Washington Fish Collection, United States; ZMMU—Zoological Museum of Lomonosov Moscow State University, Russia; ZMUC-Fisk—The Fish Collection, Zoological Museum, Natural History Museum of Denmark Copenhagen, Denmark; ZIN RAS—Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia.

Information about each species is presented according to a single scheme. Each species is assigned a serial number, the name is given in Latin (scientific one) and English (common one). The Latin name is accompanied by an indication of the author(s) and the year of the original description. The English names for taxa of the highest classification (from class to subfamily) are given mainly according to Nelson (2006) and *Eschmeyer's Catalog of Fishes* (2020b). English common names of species are given in accordance with published works (Sheiko and Fedorov, 2000; Parin et al., 2014) or an Internet source (*FishBase*...., 2020). If the English common name of any species has not been found in the literature or Internet resources, we give it according to the type locality or the etymology of the species name. Then we provide information on the general distribution, which for marine, marine-brackish-water and anadromous species is given according to the accepted large areas of the World Ocean according to the FAO classification (FAO ..., 2020) with additions (Fricke et al., 2020a): Arctic, North Atlantic, Northwestern Atlantic, Northeastern Atlantic, North Pacific, Northwestern Pacific, Northeastern Pacific (Fig. 2), as well as including concepts such as cosmopolitan and circumglobal. If a species is found exclusively in the North Pacific and penetrates north to the Bering Sea (both on the Russian and American sides), sometimes even further north through the Bering Strait, reaching the adjacent Arctic seas, we referred it not to the North Pacific, but to the Northwestern Pacific and the Bering Sea, or the Northwestern Pacific, the Bering Sea and the adjacent Arctic. For freshwater species, the main common (native) regions of distribution (for example, Japan, China, and Russia) or the specific river basins (for example, the Amur River basin) are given. In some cases of a wider distribution, the total area is indicated as Eurasia, East Asia, the Far East, Siberia, etc. To describe the local distribution of marine fish and lampreys within the waters of Sakhalin on the basis of hydrological and climatic conditions, its coastal water area is conventionally divided into 5 regions (Fig. 3): southern (Aniva Bay between Kril'on Peninsula and Aniva Cape, including La Perouse Strait), south–eastern (between Capes Aniva and Terpeniya), northeastern (between Capes Terpeniya and Elizabeth), southwestern (from Viakhtu Bay to Kril'on Peninsula, including Moneron Island), and northeastern (from Viakhtu Bay to Severny Bay in Schmidt Peninsula) (Ueno, 1971; Dyldin and Orlov, 2016a).

We also provide information on the ecological characteristics of the species in relation to the aquatic environment: marine, brackish-water, anadromous, freshwater, amphidromic, and landlocked (forming from marine or anadromous fish species forms that constantly inhabit fresh waters without further migrations to the sea); as well as information about the abundance of the species within the island (numerous, common, not abundant, rare or very rare). At the end of the section, information on the commercial importance is given. Lack of information means that the species is not a target of commercial or recreational fishing, or is very rare, that means that the species is of no commercial significance, or under protection.

The Notes section provides taxonomic and other additional information for most species.

The section Conservation status provides information on the conservation status (if any) in accordance with the criteria of the Red List of the International Union for Conservation of Nature (IUCN); to characterize the conservation status of species, the following categories are used (IUCN, 2003, 2012, 2015, 2019): Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened,

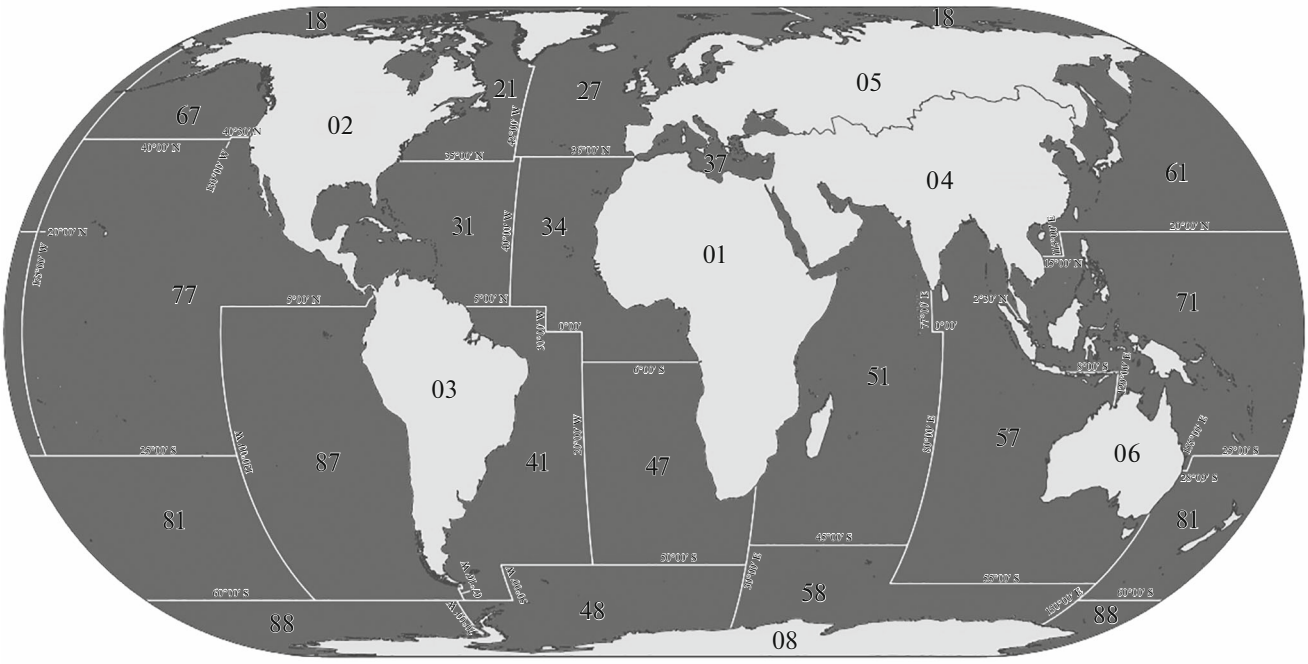

Fig. 2. The main large (fishing) areas of the World Ocean, according to the FAO classification (2020): 18, Arctic; 21, Northwestern Atlantic; 27, Northeastern Atlantic 61, Northwestern Pacific; 67, Northeastern Pacific.

Least Concern, Data Deficient, and Not Evaluated. The conservation status of the species is also given in accordance with the The Red Data Book of Sakhalin Oblast (*Krasnaya kniga*..., 2016) in accordance with the following categories: 0, probably extinct; 1, endangered; 2, decreasing in numbers; 3, rare; 4, with an undefined status; 5, recoverable and recovering; 6, rare with an irregular occurrence; 7, out of danger.

We use the following designations in this paper: (*) according to our and published data, the species was not recorded for Sakhalin, but it is known from the adjacent waters of the southern parts of the Sea of Okhotsk and Sea of Japan; (**) previously it was indicated in the studied region, but now it is not noted off the coast of Sakhalin and in adjacent waters, has been replaced by other species, or, possibly, was incorrectly identified in the past; (?) taxonomic status or identification is doubtful, the range is not clear, information on distribution, abundance, etc. requires clarification; (i) introduced species; ICZN, the International Code of Zoological Nomenclature; IUCN Red List, Red List of Threatened Species of the International Union for Conservation of Nature; RBSO, Red Data Book of the Sakhalin oblast.

RESULTS

History of Research on the Ichthyofauna of Sakhalin Island

The first scientific data concerning the ichthyofauna of Sakhalin Island date back to the beginning of the 19th century and belong to Tilesius (1809, 1811, 1813), who for the first time for the island described several new coastal species from the Terpeniya Bay.

The next stage in the study of the ichthyofauna of the island was carried on only in the late 19th–early 20th centuries due to the development of the American marine animal hunting. In order to collect information on the prospects of hunting for marine animals in the summer seasons of 1896 and 1906, an American scientific expedition on the USFC *Albatross* visited Sakhalin. Ichthyological material was collected both on the western and eastern coasts, including the Terpeniya and Aniva Bays. In addition to *Albatross*, Sakhalin was visited by other steamships of the American fishery companies, on which captains often collected ichthyological material, which was later delivered to scientific institutions in the United States. Later, these collections provide the basis for description of several new fish species for the island, such as *Podothecus accipiter* Jordan et Starks, 1895, *P. veternus* Jordan et Starks, 1895, *Triglops beani* Gilbert, 1896, *Careproctus acanthodes* Gilbert et Burke, 1912, *C. bathycoetus* Gilbert et Burke, 1912, *Liparis rhodosoma* Burke, 1930, *Limanda sakhalinensis* Hubbs, 1915, *Triglops dorothy* Pietsch et Orr, 2006, and a number of others (Jordan and Starks, 1895; Gilbert and Burke, 1912; Hubbs, 1915; Burke, 1930; Pietsch and Orr, 2006). Fish samples collected by the *Albatross* expedition in the coastal waters of Sakhalin are still kept in the collections of the United States (CAS-SU, USNM).

Fig. 3. Areas of coastal waters of Sakhalin and the main settlements (cities and ports) mentioned in the describtions of the species distribution: (*1*) southern (Aniva Bay between Kril'on Peninsula and Aniva Bay, including La Perouse Strait); (*2*) southeast (between Aniva Cape and Cape Terpeniya); (*3*) northeastern (between Cape Terpeniya and Elizabeth Cape); (*4*) southwestern (from Viakhtu Bay to Kril'on Peninsula, including Moneron Island); (*5*) northeastern (from Viakhtu Bay to North Bay of Schmidt Peninsula).

In the same period the island was visited by A.M. Nikolskii in 1881 and P.Yu. Schmidt in 1901; these visits resulted in publication of three monographs (Nikolskii, 1889; Schmidt, 1904, 1905). Nikolskii (1889) was the first to provide information on the island's freshwater ichthyofauna, represented by 13 species, two of which (*Gasterosteus tymensis* and *Leuciscus sachalinensis*) were described as new. Schmidt (1904) described a number of new species for Sakhalin Island: *Cottiusculus gonez*, *Cottus amblystomopsis*, *Chloea aino*, *Agonomalus jordani*, *Eumicrotremus pacificus*, *Lycenchelys brachyrhynchus*, *L. fasciatus*, *Acanthopsetta nadeshnyi*, *Microstomus stelleri*, *Hippoglossoides dubius*, *Hippoglossus stenolepis*, *Limanda schrenki*, etc.

In 1899–1902 V.K. Brazhnikov on the schooner *Storozh* collected a vast collection of fish from the Sea of Okhotsk and the Sea of Japan, including the waters off the Sakhalin and Amur estuary, still kept in the ZIN RAS. In 1907–1913 V.K. Soldatov made a number of voyages to the Amur estuary and the northern tip of Sakhalin. Later, on the basis of collected specimens, he described several new species from the coastal waters of the island: *Artediellus schmidti* Soldatov, 1915, *Gymnelopsis brashnikovi* Soldatov, 1922, *Lycodes brashnikovi* Soldatov, 1918, and *L. schmidti*

Soldatov, 1918 (Soldatov, 1915, 1918, 1922). Soon afterwards, the accumulated material was generalized and published as a review on the fishes of the Far Eastern seas (Soldatov and Lindberg, 1930). Berg (1907), based on samples from the collections of the Zoological Museum of the Imperial Academy of Sciences, described a new subspecies for the island, *Phoxinus percnurus sachalinensis* Berg, 1907.

In 1934, in the northern and central parts of the island, A.Ya. Taranetz collected material, partly still stored at the ZIN RAS. He identified a number of marine and freshwater species that were not previously noted for Sakhalin and described several new ones: *Bryostemma snyderi* Taranetz, 1938, *Hypomesus olidus bergi* Taranetz, 1935, *Icelus gilberti* Taranetz, 1936, *Liparis* (*Neoliparis*) *kusnetzovi* Taranetz, 1936 (Taranetz, 1935, 1936a, 1936b, 1937a, 1937b, 1938).

From the beginning of the 20th century to the mid-1940s, the ichthyofauna of the island, mainly its southern and central parts, was also studied by Japanese researchers. S. Tanaka in 1911–1930 published a series of works entitled *Figures and descriptions of the fishes of Japan including Riukiu Islands, Bonin Islands, Formosa, Kurile Islands, Korea and southern Sakhalin* (see Dyldin and Orlov, 2016a). More than that, he described (Tanaka, 1908) new species (*Porocottus ijimai* and *P. nigrescens*) for the southern part of Sakhalin and, in collaboration with American scientists, published a consolidated catalog of the fishes of Japan, which also provides information on fishes from southern Sakhalin (Jordan et al., 1913). S. Sato (1942) published a list of freshwater fish fauna in the southern part of the island. S. Isii (1940) provided a number of valuable information about the coastal and freshwater ichthyofauna of the south of the island.

Further studies of the fish population of Sakhalin are associated with the post-war period. Berg (1948, 1949a, 1949b), in his three-volume fundamental work on the entire freshwater ichthyofauna of the USSR and adjacent waters, provided some information on freshwater fishes and cyclostomes, including anadromous, of the Sakhalin inland waters. The vast ichthyological material was collected in 1947–1949 under the leadership of G.U. Lindberg during the Kuril–Sakhalin marine complex expedition ZIN–TINRO. These research resulted in a seven-volume fundamental work Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas (Lindberg and Legeza, 1959, 1965; Lindberg and Krasyukova, 1969, 1975, 1987; Lindberg and Fedorov, 1993; Lindberg et al., 1997). However, it is important to note that in this series of guides, information on the Sakhalin marine ichthyofauna is provided only for the southern part of the island. In addition to these works, a separate list of marine fishes of the southern part of Sakhalin and the Southern Kurils was also published (Lindberg, 1959). The great monograph on fish of the Sea of Okhotsk (Schmidt, 1950) presents an array of data also for the Sakhalin coast of the Sea of Okhotsk, with a description of a number of new species (*Bathylagus arae*, *Careproctus nigricans*, and others).

In the mid-1950s and early 1960s ichthyological research began in the internal and lagoon waters of the island. The upper reaches of the river Tym (Berezantsev, 1955) and Lake Sladkoe in the northwestern part of the island (Kazarnovskii, 1961) were examined. In 1959–1961 the limnological expedition of Moscow State University conducted a comprehensive survey of the lakes of the southern part of Sakhalin (Klyuchareva, 1964). In 1982, the first list of freshwater fishes of Sakhalin inland waters was published (Voronov, 1982). It lists 41 species and a subspecies. Gritsenko (1990) summarized data on all anadromous fish and cyclostomes of Sakhalin; this work subsequently served as the basis for his monograph (Gritsenko, 2002). In 1995, a preliminary list of freshwater and brackish fishes of the island was published, including 80 species and subspecies (Safronov and Nikiforov, 1995), and in 2003, the same authors presented an updated list of fishes of the island, both freshwater and some brackish-water, which lists 89 species and subspecies (Safronov and Nikiforov, 2003).

In the early 2000s expeditions of TINRO and SakhNIRO in the sea waters of Sakhalin collected ichthyological material, on the basis of which several faunistic works were published, including information on new records (Balanov, 2000, 2003; Kim Sen Tok, 2000, 2004, 2005, 2006, 2007; Shuntov et al., 2003, 2014; Velikanov, 2004; Velikanov and Stominok, 2004; Volvenko et al., 2018, 2020). Also the annotated list of fishes from the Far Eastern seas (Borets, 2000) should be mentioned. However, it provides only general information on the occurrence of fishes in the seas of Japan and Okhotsk and the Bering Sea.

The international project Biodiversity of Sakhalin Island (ISIP, 2001–2002) under the leadership of T.W. Pietsch (University of Washington and the Burke Museum of Natural History and Culture, Seattle, United States) made a significant contribution to the study of freshwater ichthyofauna of Sakhalin (Shed'ko, 2001; Shed'ko S.V. and Shed'ko M.B., 2003; Shedko et al., 2005; Pietsch et al., 2012). During the expedition, extensive ichthyological material was collected on the freshwater fish of the island, which is kept now in the Burke Museum.

In addition to the abovementioned studies, information on marine, brackishwater, and freshwater fishes of Sakhalin, including commercial species, can be found in a number of works (Parin, 2001, 2003; Parin et al., 2002, 2014; Evseenko, 2003; Vasil'eva, 2003; Fedorov, 2004; Fadeev, 2005; Gritsenko et al., 2006; Sokolovskii et al., 2007, 2011; Zemnukhov, 2008; Gritsenko, 2012; Nikitin, 2012; Nikitin et al., 2013, 2014; Labai et al., 2014 , 2015; Tuponogov and Kodolov, 2014; Zhivoglyadov, 2014; Dyldin et al., 2016, 2017; Labai, 2016; Safronov and Nikitin, 2016,

2017a, 2017b; Nikitin and Labai, 2017; Kim Sen Tok and Kim, 2019) and other publications, cited in the text. Our recent works (Dyldin and Orlov, 2016a, 2016b, 2017a, 2017b, 2018; Dyldin et al., 2018a, 2018b) summarized information on the freshwater and brackish water ichthyofauna of Sakhalin, including the species also found in the freshened lagoons of the island (175 species). Also a taxonomic list of cartilaginous fishes (sharks, rays, and chimeras) of Sakhalin and the adjacent southern part of the Sea of Okhotsk (43 species) and a list of fish from Aniva Bay (274 species) are given.

Brief Physical, Geographical and Oceanological Characteristics of Sakhalin

The island is characterized by a clear meridional length from the north from Cape Elizabeth (54°25′ N) to the south to Kril'on Peninsula (45°54′ N) of 948 km in length with a maximum width of 160 km and a minimum of 26 km. The island is separated from the eastern part of the Asian mainland by the Tatar Strait and in the northern part by the Nevelskoy Strait, the Amur estuary, and the Sakhalin Bay. In the Nevelskoy Strait, about 56 km long, which connects the Tatar Strait with the Amur estuary, the distance between the island and the mainland at the narrowest point (between Cape Lazarev on the mainland and Cape Pogibi on the island) is only 7.3 km. However in the southern end, the island is separated from the mainland by more than 300 km. The island is separated from Japan by the La Perouse Strait, the borders of which are the northern tip of the island of Hokkaido and Kril'on Peninsula in the southern tip of Sakhalin. The smallest width of the strait between Sakhalin and Hokkaido is about 43 km. In addition, the La Perouse Strait serves as the border between the Sea of Japan and the Sea of Okhotsk (Dyldin and Orlov, 2016a).

There are 61177 rivers and streams on Sakhalin; their total length is more than 97644 km. At the same time, only two rivers have a length of more than 300 km (the Tym River, 330 km with a watercourse area of 7850 km^2 and the Poronai River, 350 km with a watercourse area of 7990 km^2). The length of 61 rivers is from 50 to 200 km, the other rivers (more than 60000) have a length of less than 10 km. There are a large number of different types of lakes (more than 16000) with a total area of more than 1000 km^2. Sakhalin is dominated by lagoon-type lakes, which in some cases remain in contact with the sea and have brackish water. They occupy a fifth of the island's coast. The majority of lakes (about 16000) have an area less than 0.4 km^2, the largest are Tunaicha (174 km^2) and Nevskoe (178 km^2), both of the lagoon type (Dyldin and Orlov, 2016a).

The climatic conditions of the water area of the Sakhalin–Kuril basin are severe in comparison to others, located in the same latitudes. The monsoon nature of the weather in the Sakhalin–Kuril basin is often disturbed by intense cyclonic activity associated with an increase in cloudiness to continuous one, deterioration of visibility, abundant rainfall, and stormy winds. Cyclones usually pass the basin from southwest to northeast. Their influence is especially strong in the central part of the Sea of Okhotsk and near Kurils. During the winter period (December–March), conditions for intensive icing of ships are created in the waters of the basin. Navigation and fishing by small ships during this period is limited in most parts of the basin. The Sea of Okhotsk is one of the cold subarctic seas. In winter, the surface water temperature is generally negative, from –1.6 to –1.8°C. In summer, in most of the Sakhalin area of the sea, surface water warms up unevenly: from 8°C near northern Sakhalin to 12–14°C in the La Perouse Strait. In the western part of the Sea of Okhotsk, ice conditions are much more severe than in the eastern one (Dyldin and Orlov, 2016a).

TAXONOMIC LIST

I. CLASS **PETROMYZONTI**—Lampreys

1. ORDER **PETROMYZONTIFORMES** Berg, 1940—Lampreys

1. Family **PETROMYZONTIDAE** Bonaparte, 1831—Northern lampreys

1. Genus ***ENTOSPHENUS*** Gill, 1862

1. * ***Entosphenus tridentatus*** (Richardson, 1837)—Pacific lamprey. North Pacific and adjacent Arctic. Sakhalin: probably the eastern part (Orlov et al., 2008). The closest location to the island was noted in the southern part of the Sea of Okhotsk (Orlov and Tokranov, 2019). Anadromous, freshwater, forms landlock forms in some lakes and rivers of Canada and the United States (Clemens et al., 2019).

Conservation status: IUCN (Not Evaluated).

2. Genus ***LETHENTERON*** Gray, 1851

2. ***Lethenteron camtschaticum*** (Tilesius, 1811)—Arctic lamprey. Arctic, North Pacific and adjacent Northeastern Atlantic. Sakhalin: along all coasts (Safronov and Nikifirov, 2003; Pietsch et al., 2012; Orlov et al., 2014; Dyldin and Orlov, 2016a; Dyldin et al., 2019). Anadromous, freshwater (forms landlock forms). Common. Not a fishery species on Sakhalin (however, occasionally is used by the local population for food and in amateur fishing as a bait).

Conservation status: IUCN (Least Concern).

3. ***Lethenteron reissneri*** (Dybowski, 1869)—Far Eastern brook lamprey. Basins of the Arctic and North Pacific. Sakhalin: throughout the island, but mainly in the southern and central part (Dyldin and Orlov,

2016a; Dyldin et al., 2019). Freshwater. Common. Not a fishery target on Sakhalin.

Conservation status: IUCN (Least Concern).

II. CLASS **ELASMOBRANCHII**—Sharks and batoids

2. ORDER **HEXANCHIFORMES**, 1913—Cow sharks

2. Family **HEXANCHIDAE** Gray, 1851—Cow sharks

3. Genus ***NOTORYNCHUS*** Ayres, 1855

4. ****Notorynchus cepedianus*** (Péron, 1807)—Broadnose sevengill shark. Almost circumglobal, with the exception of the North Atlantic. Sakhalin: likely to be recorded along the southeastern and southwestern coasts, including Aniva Bay (Dyldin and Orlov, 2018). The closest to the island was caught in the southern part of the Sea of Okhotsk near the northern part of Hokkaido, Japan (Imai et al., 2005). For the southern part of the Sea of Okhotsk, without preservation of specimens, the species is also mentioned in a number of other works (Nagasawa and Torisawa, 1991; Imai et al., 2005; Grigorov and Orlov, 2013; Dyldin and Orlov, 2018). Marine.

Samples: HUMZ no. 95297—off eastern Hokkaido, Japan; HUMZ no. 98336—off Yukuru, Wakkanai, Hokkaido, Japan.

Conservation status: IUCN (Data Deficient).

3. ORDER **ORECTOLOBIFORMES** Compagno, 1973—Carpet sharks

3. Family **RHINCODONTIDAE** Muller et Henle, 1841—Whale sharks

4. Genus ***RHINCODON*** Smith, 1829

5. * ***Rhincodon typus*** Smith, 1828—Whale shark. In temperate, mainly tropical waters of all oceans. Sakhalin: probably in the eastern part (Dyldin and Orlov, 2018). The closest to the island was observed in 2012 in the southern part of the Sea of Okhotsk near Monbetsu, Hokkaido, Japan (Tomita et al., 2014). Marine.

Conservation status: IUCN (Vulnerable).

4. ORDER **LAMNIFORMES** Garman, 1885—Mackerel sharks

4. Family **LAMNIDAE** Bonaparte, 1835—Mackerel sharks

5. Genus ***CARCHARODON*** Smith, 1838

6. ***Carcharodon carcharias*** (Linnaeus, 1758)—Great white shark. In all oceans, mainly in temperate waters, with the exception of the Arctic. Sakhalin: southwestern part and Aniva Bay (Velikanov, 2010; Velikanov et al., 2016; Dyldin and Orlov, 2018). Marine, brackish water. Rare.

Conservation status: IUCN (Vulnerable).

6. Genus ***ISURUS*** Rafinesque, 1810

7. ***Isurus oxyrinchus*** Rafinesque, 1810—Shortfin mako. Everywhere in tropical and temperate waters. Sakhalin: southern part (Probatov, 1952; Lindberg, 1959—with the "?" sign, as *Isurus glauca*; Dyldin and Orlov, 2018). Marine. Rare.

Conservation status: IUCN (Endangered).

7. Genus ***LAMNA*** Cuvier, 1816

8. ***Lamna ditropis*** Hubbs et Follett, 1947—Salmon shark. North Pacific and possibly the adjacent Arctic. Sakhalin: probably along all coasts, including Aniva Bay (Shuntov et al., 2003; Dyldin and Orlov, 2018). Marine, brackish water, including estuaries and lower reaches of large rivers. Common. Often caught as bycatch, but not used commercially.

Samples: SRM no. KP-9188/15 PP-53/15—2 km east of the mouth of the Borisovka River, near Cape Bellingshausen, Sea of Okhotsk, eastern Sakhalin.

Conservation status: IUCN (Least Concern).

5. Family **CETORHINIDAE** Gill, 1861—Basking sharks

8. Genus ***CETORHINUS*** Blainville, 1816

9. ***Cetorhinus maximus*** (Gunnerus, 1765)—Basking shark. Cosmopolitan, but mainly in temperate and Arctic waters. Sakhalin: southern part (Fadeev, 2005; Dyldin and Orlov, 2018). It is also recorded in the adjacent waters of the southern part of the Sea of Okhotsk near Hokkaido (Murakami et al., 2011). Marine. Rare.

Conservation status: IUCN (Endangered).

6. Family **ALOPIIDAE** Bonaparte, 1838—Thresher sharks

9. Genus ***ALOPIAS*** Rafinesque, 1810

10. * ***Alopias vulpinus*** (Bonnaterre, 1788)—Thintail thresher. Circumglobal to temperate and cold waters. Sakhalin: probably in the southeastern part and Aniva Bay (Dyldin and Orlov, 2018). The closest to the waters of Sakhalin was recorded in 2004 in the southern part of the Sea of Okhotsk near Hokkaido, Japan (Uchida, 2020). It is also known in the Sea of Japan (Shinohara et al., 2014). Marine, brackish water.

Conservation status: IUCN (Vulnerable).

5. ORDER **CARCHARHINIFORMES** Garman, 1913—Ground sharks

7. Family **TRIAKIDAE** Gray, 1851—Hound sharks

10. Genus ***TRIAKIS*** Müller et Henle, 1838

11. ***Triakis scyllium*** Müller et Henle, 1839—Banded hound shark. Northwestern Pacific. Sakhalin:

southern part (Gubanov, 1993). In addition, it is known in Japan (from Hokkaido); in the waters of Russia 2 specimens are known from the Peter the Great Bay, Sea of Japan (Ebert et al., 2009; Dyldin, 2015; Dyldin, Orlov, 2018). Marine, brackish water.

Conservation status: IUCN (Least Concern).

8. Family **CARCHARHINIDAE** Jordan et Evermann, 1896—Requiem sharks

11. Genus ***CARCHARHINUS*** Blainville, 1816

12. ? ***Carcharhinus plumbeus*** (Nardo, 1827)—Sandbar shark. Circumglobal in tropical and temperate waters. Sakhalin: recorded in the 1950s near the village of Antonovo, southwestern coast (Probatov, 1951, as *Carcharias japonicus*). Marine, brackish water. Very rare.

Notes. According to recent molecular studies, the West Atlantic populations are distinct from the Indo-Pacific one. The latter should be re-named as *Carcharhinus japonicus* (Temminck et Schlegel, 1850) (Naylor et al., 2012; Ebert et al., 2013).

Conservation status: IUCN (Vulnerable).

12. Genus: ***PRIONACE*** Cantor, 1849

13. ***Prionace glauca*** (Linnaeus, 1758)—Blue shark. Tropical and temperate waters. Sakhalin: in the past was recorded in summer in the southern part of the island (Isii, 1940). It is also recorded in the adjacent waters of the Sea of Okhotsk, including its southern part off the coast of Hokkaido, Japan (Nagasawa and Torisawa, 1991; Uchida, 2020). Marine. Rare.

Conservation status: IUCN (Near Threatened).

13. Genus ***RHIZOPRIONODON*** Whitley, 1929

14. * ***Rhizoprionodon acutus*** (Rüppell, 1837)—Milk shark. Circumglobal in tropical to temperate waters. Sakhalin: possibly the southeastern part (Dyldin and Orlov, 2018). Most close record to the island—in the southern part of the Sea of Okhotsk (Ueno, 1971, as *Scoliodon walbeehmi*; Nagasawa and Torisawa, 1991); is also known in the Sea of Japan (Shinohara et al., 2014). Marine, brackish water.

Conservation status: IUCN (Least Concern).

9. Family **SPHYRNIDAE** Bonaparte, 1840—Hammerhead sharks

14. Genus ***SPHYRNA*** Rafinesque, 1810

15. * ***Sphyrna zygaena*** (Linnaeus, 1758)—Smooth hammerhead. Circumglobal, but mainly in temperate and tropical waters. Sakhalin: probably off the southwestern and southeastern coasts (Dyldin and Orlov, 2018). The closest to Sakhalin waters were recorded in the southern part of the Sea of Okhotsk, including the coast of Hokkaido, and in the Sea of Japan off the mainland coast to the northern part of the Tatar Strait (Schmidt and Taranetz, 1934; Nagasawa and Torisawa, 1991; Dyldin and Orlov, 2018). Marine, brackish water.

Conservation status: IUCN (Vulnerable).

6. ORDER **SQUALIFORMES** Goodrich, 1909—Dogfish sharks

10. Family **SOMNIOSIDAE** Jordan, 1888—Sleeper sharks

15. Genus ***SOMNIOSUS*** Lesueur, 1818

16. ***Somniosus pacificus*** Bigelow et Schroeder, 1944—Pacific sleeper shark. North Pacific and adjacent Arctic. Sakhalin: eastern part and Aniva Bay (Orlov and Baitalyuk, 2014; Tuponogov and Kodolov, 2014; Dyldin and Orlov, 2018); Tatar Strait (Fedorov et al., 2003). Marine. Common. It is captured as the by-catch; only the liver is of commercial interest; meat is not used due to its toxicity (Orlov, 2017).

Conservation status: IUCN (Data Deficient).

11. Family **SQUALIDAE** de Blainville, 1816—Dogfish sharks

16. Genus ***SQUALUS*** Linnaeus, 1758

17. ***Squalus suckleyi*** (Girard, 1855)—North Pacific spiny dogfish. North Pacific and adjacent Arctic. Sakhalin: along all coasts (Fadeev, 1960; Orlov et al., 2012; Dyldin and Orlov, 2018). Marine, brackish water. Common; in some localities (Aniva Bay) forms aggregations. In the past in the southern part there was a specialized Japanese fishery (Isii, 1940).

Samples: KhMSF no. KP-225. P-152—Tatar Strait, Sakhalin Isl.

Conservation status: IUCN (Least Concern).

18. ? ***Squalus mitsukurii*** Jordan et Snyder, 1903—Mitsukuri's spiny dogfish. Circumglobal. Sakhalin: S. Tanaka (1908), based on two catches, lists this species for the Korsakov coast, Aniva Bay, and southern part of Sakhalin. Most close records to the island are known from the Sea of Japan off the Korea Peninsula and on the Pacific side of Hokkaido, Japan (Dyldin, 2015). Marine.

Conservation status: IUCN (Data Deficient).

7. ORDER **RAJIFORMES** Muller et Henle, 1841—Skates

12. Family **RAJIDAE** de Blainville, 1816—Skates

17. Genus ***AMBLYRAJA*** Malm, 1877

19. ** ***Amblyraja hyperborea*** (Collett, 1879)—Arctic skate. Inhabits mainly Arctic waters; also known in the border areas of the Pacific and Atlantic oceans. Marine.

Notes. The presence of this species in the Sea of Okhotsk (Borets, 2000; Fedorov et al., 2003) and, in particular, off the eastern coast of Sakhalin (Balanov, 2003) requires documentary confirmation. According to a number of authors (Grigorov and Orlov, 2013; Mecklenburg et al., 2016, 2018), this species belongs to the Arctic ones, since it is distributed only in the Arctic seas and in border waters.

Conservation status: IUCN (Least Concern).

18. Genus ***BERINGRAJA*** Ishihara, Treloar, Bor, Senou et Jeong, 2012

20. ***Beringraja pulchra*** (Liu, 1932)—Mottled skate. Northwestern Pacific. Sakhalin: eastern and southwestern part, including Moneron Isl., Terpeniya Bay, and Aniva Bay (Dyldin and Orlov, 2018; Dulvy et al., 2020a). Marine, brackish water. Common. Used as a by-catch.

Notes. A number of authors (Antonenko et al., 2011; Shuntov et al., 2014; Panchenko et al., 2016) attribute this species to the genera *Dipturus* or *Raja*. Nevertheless, according to the recent morphological revision (Ishihara et al., 2012) and results of genetic analysis (Last et al., 2016b) should be attributed in the genus *Beringraja*.

Samples. ZIN RAS: nos. 35390 and 35391—southern Sakhalin Isl.; no. 35395—La Perouse Strait.

Conservation status: IUCN (Endangered).

19. Genus ***DIPTURUS*** Rafinesque, 1810

21. * ***Dipturus tengu*** (Jordan et Fowler, 1903)—Acutenose skate. Northwestern Pacific. Sakhalin: probably on the continental slope of the southeastern coast (Dyldin and Orlov, 2018). This species is also known from the adjacent waters of the southern part of the Sea of Okhotsk and around the Hokkaido (Ishiyama, 1967; Ueno, 1971; Nagasawa, Torisawa, 1991). Marine.

Conservation status: IUCN (Data Deficient).

20. Genus ***OKAMEJEI*** Ishiyama, 1958

22. ***Okamejei kenojei*** (Müller et Henle, 1841)—Ocellate spot skate. Northwestern Pacific. Sakhalin: southeastern and southwestern part, including Aniva Bay (Dyldin and Orlov, 2018). Marine. Common. Used as a by-catch in fishery for other species.

Conservation status: IUCN (Data Deficient).

13. Family **ARHYNCHOBATIDAE** Fowler, 1934—Softnose skates

21. Genus ***ARCTORAJA*** Ishiyama, 1958

23. ** ***Arctoraja parmifera*** (Bean, 1881)—Alaska skate. North Pacific and adjacent Arctic. Sakhalin: eastern and western parts, including Aniva Bay (Velikanov and Stominok, 2004; Tokranov et al., 2005; Antonenko et al., 2007; Grigorov et al., 2015). Marine.

Notes. The distribution limits for this species, in particular, in the waters of Sakhalin, require further study, since, according to a number of authors, its range is limited to the northeastern Pacific Ocean, the Bering Sea and the adjacent Arctic (Stevenson et al., 2007, 2008; Orr et al., 2011; Dyldin, 2015; Mecklenburg et al., 2016, 2018). Nevertheless, before the detailed revision of the Far Eastern skates of the genus *Arctoraja* according the data of morphological and genetic analysis, we attribute all the above-mentioned *A. parmifera* records in Sakhalin waters to *A. smirnovi* or *A. simoterus*. Based on the results of molecular genetic studies, some authors (Orr et al., 2011; Misawa et al., 2020) attribute within the genus *Bathyraja* the subgenus *Arctoraja*, others (Dyldin, 2015; Dyldin and Orlov, 2018) consider it in the genus *Arctoraja*, while others (Last et al., 2016b) hold a popular opinion on attribution of the species to the genus *Bathyraja*.

Conservation status: IUCN (Least Concern)

24. ***Arctoraja smirnovi*** (Soldatov et Pavlenko, 1915)—Smirnov's skate. Northwestern Pacific. Sakhalin: southwestern and southeastern part, including the Tatar Strait, the Terpeniya Bay, and Aniva Bay (Schmidt, 1904, 1950; Ishiyama, 1967; Ishihara and Orlov, 2009; Orr et al., 2011; Dyldin and Orlov, 2018; Dulvy et al., 2020b). Marine. Common.

Notes. Taxonomic notes on this species in Sakhalin waters are given by Dyldin and Orlov (2018).

Samples: ZIN RAS no. 12603—Korsakov, Aniva Bay, southern Sakhalin. Originally, P. Yu. Schmidt (1904) identified this specimen as *Raja binoculata*, while Lindberg and Legeza (1959) later reidentified it as *Breviraja smirnovi*: ZIN RAS no. 35385—southern Sakhalin, 48.8° N 143.6° E; ZIN RAS no. 35386—25 miles southeast off Cape Svobodnyi, Sea of Okhotsk, off southeastern Sakhalin; USNM No. 170485—Tatar Strait, off southwestern coast of Sakhalin; HUMZ no. 103372—off theTerpeniya Bay, Sakhalin; HUMZ no. 58997—east of Sakhalin, 47.7167° N 144.1667° E.

Conservation status: IUCN (Near Threatened).

25. * ***Arctoraja simoterus*** (Ishiyama, 1967)—Hokkaido skate. Northwestern Pacific. Sakhalin: possibly the southeastern part, where it is probably confused with the closely related *A. parmifera* (Dyldin and Orlov, 2018). The closest findings to the waters of the island were recorded in the southern part of the Sea of Okhotsk near Hokkaido (Orr et al., 2011). Marine.

Notes. Previously (Mecklenburg et al., 2002; Dolganov and Korolev, 2006), based on the analysis of external morphology without a comparative study of the type material, it was considered a junior synonym for *Bathyraja parmifera*. Later, the detailed morphological studies (Orr et al., 2011) showed the validity of

A. simoterus, which was accepted by a number of authors (Spies et al., 2011; Dyldin, 2015; Last et al., 2016b; Dyldin and Orlov, 2018).

Conservation status: IUCN (Not Evaluated).

22. Genus ***BATHYRAJA*** Ishiyama, 1958

26. *Bathyraja abyssicola* (Gilbert, 1896)—Deepsea skate. North Pacific. Sakhalin: near the southeastern part, at the bottom slope (Balanov, 2003). Also, this species is noted in the adjacent waters of the southern part of the Sea of Okhotsk. Marine. Rare.

Samples. HUMZ: nos. 120001, 120222, and 126420—Sea of Okhotsk; nos. 124192, 124193, and 124204—off Hokkaido, Kitami-Yamato bank, Sea of Okhotsk, Japan.

Conservation status: IUCN (Data Deficient).

27. *Bathyraja aleutica* (Gilbert, 1896)—Aleutian skate. North Pacific. Sakhalin: eastern part (Balanov, 2000; Tokranov et al., 2005; Kim Sen Tok, 2007; Dyldin and Orlov, 2018). This species is also recorded in the adjacent waters of the southern part of the Sea of Okhotsk. Marine. Common. Can be used as a by-catch.

Notes. Recently the species was attributed to the genera *Breviraja*, *Raja*, or *Rhinoraja* (Dyldin, 2015).

Samples: HUMZ: no. 152417—off Utoro, Shari, Sea of Okhotsk, Hokkaido, Japan; nos. 120261, 120311, 126279—Sea of Okhotsk; nos. 124097, 124126, 124251, 124133, 124312—Kitami-Yamato bank, Sea of Okhotsk, off Hokkaido, Japan.

Conservation status: IUCN (Least Concern).

28. *Bathyraja bergi* Dolganov, 1983—Berg's skate. Northwestern Pacific. Sakhalin: southeastern and western parts (Shuntov et al., 2014; Dyldin and Orlov, 2018; Kim Sen Tok and Kim, 2019; Dulvy et al., 2020c). Marine. Not abundant.

Notes. This species was first described by Berg (1911) under the name *Raja interrupta*, based on a specimen obtained by P.Yu. Schmidt in 1901 off the coast of southwestern Sakhalin, which he later transferred to the ZIN RAS (no. 12602). Later it was attributed to a new species (Dolganov, 1983): *Bathyraja bergi* Dolganov, 1983 (type locality: Khlomsk [Maoka], western coast of Sakhalin, Russia).

Samples: ZIN RAS: no. 12602 (holotype of *Bathyraja bergi*)—west coast of Sakhalin, Kholmsk [Maoka]; no. 35382—southern Sakhalin (in the work (Lindberg and Legeza, 1959), along with a specimen of ZIN RAS no. 12602, was identified as *B. interrupta*); no. 46198 (paratype of *Bathyraja bergi*)—west coast of Sakhalin, Kholmsk [Maoka].

Conservation status: IUCN (Least Concern).

29. *Bathyraja diplotaenia* (Ishiyama, 1952)—Dusky-pink skate. Northwestern Pacific. Sakhalin: at the slope off the southeastern coast (Dyldin and Orlov, 2018; Dulvy et al., 2020d). The closest records to the island are for the waters of the Sea of Okhotsk, Hokkaido, Japan (Shinohara et al., 2012; Grigorov and Orlov, 2013; Uchida, 2020; Dulvy et al., 2020d). Marine.

Samples: HUMZ no. 20266–20268—off Hokkaido, Sea of Okhotsk, Japan; NSMT-P no. 59390—off Ohmu, Sea of Okhotsk, Hokkaido, Japan.

Conservation status: IUCN (Least Concern).

30. *Bathyraja fedorovi* Dolganov, 1983—Fedorov's skate. Northwestern Pacific. Sakhalin: eastern part (Orlov and Ishihara, 2009a; Dulvy et al., 2020e). The wide distribution of this species throughout the Sea of Okhotsk, including its southern part, is also mentioned in other works (Dolganov, 1985; Borets, 2000; Fedorov et al., 2003; Dulvy et al., 2020e). Marine. Rare.

Conservation status: IUCN (Least Concern).

31. *Bathyraja isotrachys* (Günther, 1877)—Raspback skate. Northwestern Pacific. Sakhalin: southwestern and eastern part (Orlov and Tokranov, 2005; Orlov and Ishihara, 2009b; Dyldin and Orlov, 2018; Dulvy et al., 2020f). Marine. Common.

Notes. Recently was attributed to the genus *Breviraja* or *Rhinoraja* (Dyldin, 2015).

Samples: USNM no. 170478—Tatar Strait, off the southwestern coast of Sakhalin Isl.

Conservation status: IUCN (Least Concern).

32. * ? *Bathyraja lindbergi* Ishiyama et Ishihara, 1977—Commander skate or Lindberg's skate. North Pacific. Sakhalin: possibly at the slope near the southeastern part (Dyldin and Orlov, 2018). The closest findings to the island are noted in the southern part of the Sea of Okhotsk near Hokkaido, Japan (Uchida, 2020). Marine.

Notes. A number of authors consider this species as valid (Dyldin and Orlov, 2018), while others (Dolganov and Tuponogov, 1999; Sheiko and Fedorov, 2000) consider it a junior synonym for *B. matsubarai*.

Conservation status: IUCN (Least Concern).

33. *Bathyraja maculata* Ishiyama et Ishihara, 1977—White-blotched skate. North Pacific. Sakhalin: eastern and western part (Tokranov et al., 2005; Dyldin and Orlov, 2018). Marine. ? Rare.

Conservation status: IUCN (Least Concern).

34. *Bathyraja matsubarai* (Ishiyama, 1952)—Matsubara's skate. Northwestern Pacific. Sakhalin: eastern part, including the Terpeniya Bay (Balanov, 2000; Tokranov et al., 2005; Kim Sen Tok, 2007; Dyldin and Orlov, 2018; Dulvy et al., 2020g). Marine. Common. Can be used as a by-catch.

Notes. Taxonomic notes about Matsubara's skate of Sakhalin Island are given by Dyldin and Orlov (2018).

Conservation status: IUCN (Least Concern).

35. *Bathyraja minispinosa* Ishiyama et Ishihara, 1977—Smallthorn skate. North Pacific. Sakhalin:

along the continental slope of the eastern coast (Tuponogov and Kodolov, 2014; Dyldin and Orlov, 2018). Marine. ? Rare.

Conservation status: IUCN (Least Concern).

36. * ***Bathyraja trachouros*** (Ishiyama, 1958)—Erimo skate. Northwestern Pacific. Sakhalin: possibly along the continental slope of the southeastern part. The closest records to Sakhalin Island were in the southern part of the Sea of Okhotsk near Hokkaido and the Southern Kurils (Tohkairin et al., 2015; Dulvy et al., 2020h). Marine.

Notes. Dolganov and Tuponogov (1999) believed that *B. trachouros* is a junior synonym of *B. violacea* (Suvorov, 1935). However, more detailed taxonomic studies have shown that these species differ from each other in the morphology of claspers (Ishihara et al., 2009). *B. trachouros* is currently considered as a valid species (Shinohara et al., 2009; Dyldin, 2015; Tohkairin et al., 2015; Last et al., 2016b; Weigmann, 2016; Dulvy et al., 2020h).

Samples: HUMZ no. 161924—off Iturup Island, Kurils; HUMZ no. 154848—off Shikotan Island; FAKU no. 200676—Kitami-Yamato bank, southern Sea of Okhotsk, off Hokkaido, Japan.

Conservation status: IUCN (Near Threatened).

37. ***Bathyraja tzinovskii*** Dolganov, 1983—Creamback skate. Northwestern Pacific. Sakhalin: eastern part (Orlov et al., 2009; Orlov and Tokranov, 2019; Dulvy et al., 2020i). Marine. Rare.

Conservation status: IUCN (Least Concern).

38. ***Bathyraja violacea*** (Suvorov, 1935)—Okhotsk skate. North Pacific. Sakhalin: eastern part (Balanov, 2000; Shuntov et al., 2003; Kim Sen Tok, 2006; Grigorov et al., 2017; Dyldin and Orlov, 2018; Dulvy et al., 2020j). Based on the depths of its habitat (23–1110 m), it can penetrate through the La Perouse Strait into the Sea of Japan, including the southwestern part of the island (Dyldin and Orlov, 2018). Marine. Common. Can be used as a by-catch.

Notes. Previously identified as an independent species *Breviraja abasiriensis* Ishiyama, 1952, described from Abasiri, the southern part of the Sea of Okhotsk near Hokkaido. Now, according to the priority rule, the species is synonimized with *B. violacea* (Dyldin and Orlov, 2018).

Conservation status: IUCN (Least Concern).

23. Genus ***RHINORAJA*** Ishiyama, 1952

39. * ***Rhinoraja kujiensis*** (Tanaka, 1916)—Dapple-bellied softnose skate. Northwestern Pacific. Sakhalin: probably southeastern part (Dyldin and Orlov, 2018). The closest findings to the waters of the island are known off the Okhotsk and Pacific coasts of Hokkaido, in the waters of Paramushir Island and South Kurils (Shinohara et al., 2009; Wang et al., 2009; Ishihara et al., 2012; Uchida, 2020; Dulvy et al., 2020k). Marine.

Samples: HUMZ no. 143346—Siretoko Pen., Sea of Okhotsk, Hokkaido, Japan.

Conservation status: IUCN (Least Concern).

40. * ***Rhinoraja longicauda*** Ishiyama, 1952—White-bellied softnose skate. Northwestern Pacific. Sakhalin: possibly at the drop of depths off the southeastern part. The nearest findings to Sakhalin waters are in the southern part of the Sea of Okhotsk, including the Pacific waters of the Southern Kurils (Borets, 2000; Orlov and Ishihara, 2009c; Grigorov and Orlov, 2013; Parin et al., 2014; Dyldin, 2015; Dulvy et al., 2020l). Marine.

Samples: HUMZ no. 120086—Sea of Okhotsk.

Conservation status: IUCN (Near Threatened).

8. ORDER **MYLIOBATIFORMES** Compagno, 1973—Stingrays

14. Family **DASYATIDAE** Jordan, 1888—Whiptail stingrays

24. Genus ***BATHYTOSHIA*** Whitley, 1933

41. * ***Bathytoshia brevicaudata*** (Hutton, 1875)—Short-tail stingray. ? Circumglobal. Sakhalin: probably, southeastern coast and Aniva Bay (Dyldin and Orlov, 2018). The nearest records to the waters of the island according to documented captures were in the adjacent waters of the southern part of the Sea of Okhotsk in September 1998 off Daiei, Hokkaido (HUMZ no. 157821—as *Dasyatis matsubarai*) and in October 2007 off Abashiri, Hokkaido (HUMZ no. 209188—as *Dasyatis matsubarai*) (Nagao et al., 2011). Marine.

Notes. According to a recent taxonomic revision (Last et al., 2016a), *Dasyatis matsubarai* (Miyosi, 1939) is synonymized with *B. brevicaudata*.

Conservation status: IUCN (Least Concern).

15. Family **MYLIOBATIDAE** Bonaparte, 1835—Eagle rays

25. Genus ***MYLIOBATIS*** Cuvier, 1817

42. * ***Myliobatis tobijei*** Bleeker, 1854—Japanese eagle ray. Northwestern Pacific. Sakhalin: possibly the southeastern part and in Aniva Bay (Dyldin and Orlov, 2018). The closest records to the waters of Sakhalin were along the Pacific and Sea of Okhotsk coasts of Hokkaido, Japan (Ueno and Abe, 1966; Ueno, 1971; Nagasawa and Torisawa, 1991; Jeong et al., 2009). Marine.

Conservation status: IUCN (Data Deficient).

16. Family **MOBULIDAE** Gill, 1893—Mobulid rays

26. Genus ***MOBULA*** Rafinesque, 1810

43. * ***Mobula tarapacana*** (Philippi, 1892)—Chilean devil ray. ? Circumglobal in tropical waters. Sakhalin:

possibly the southeastern part and in Aniva Bay (Dyldin and Orlov, 2018). The closest findings to the waters of the island were recorded in 2011 in the southern part of the Sea of Okhotsk near Hokkaido, Japan (Tomita et al., 2013). Marine.

Samples: HUMZ no. 215294—southwestern Sea of Okhotsk, off Monbetsu, northeastern Hokkaido, Japan, 45° N 145° E.

Conservation status: IUCN (Data Deficient).

III. CLASS **HOLOCEPHALI**—Chimaeras

9. ORDER **CHIMAERIFORMES** Patterson, 1965—Chimaeras

17. Family **CHIMAERIDAE** Rafinesque, 1815—Shortnose chimaeras, ratfishes

27. Genus ***HYDROLAGUS*** Gill, 1862

44. ***Hydrolagus barbouri*** (Garman, 1908)—Barbour's chimaera. Northwestern Pacific. Sakhalin: at the slope of the depths near the southeastern part (Balanov, 2003). Rare.

Conservation status: IUCN (Data Deficient).

45. ***Hydrolagus purpurescens*** (Gilbert, 1905)—Purple chimaera. Western Pacific, including the waters of the Hawaiian Islands. Sakhalin: at the slope near the southeastern part (Poltev and Sheiko, 2007—as *Hydrolagus* cf. *purpurescens*). Marine. Rare.

Conservation status: IUCN (Data Deficient).

18. Family **RHINOCHIMAERIDAE** Garman, 1901—Longnose chimaeras

28. Genus ***RHINOCHIMAERA*** Garman 1901

46. ***Rhinochimaera pacifica*** (Mitsukuri, 1895)—Pacific spookfish. ? Cosmopolitan. Sakhalin: southeastern part (Dolganov, 2017). The closest findings to the waters of the island were also recorded in the southern part of the Sea of Okhotsk near Hokkaido and the southern Kurils (Parin et al., 2014). Marine. Rare, known from single capture in June 1997 (Dolganov, 2017).

Samples: HUMZ no. 124198—off Hokkaido, Sea of Okhotsk, Kitami-Yamato bank, Japan.

Conservation status: IUCN (Least Concern).

IV. CLASS **ACTINOPTERI**—Ray-finned fishes

10. ORDER **ACIPENSERIFORMES** Berg, 1940—Sturgeons

19. Family **ACIPENSERIDAE** Bonaparte, 1831—Sturgeons

29. Genus ***ACIPENSER*** Linnaeus, 1758

47. ***Acipenser mikadoi*** Hilgendorf, 1892—Sakhalin sturgeon. Northwestern Pacific. Sakhalin: in the past, according to individual records, it was noted along all shores, including Aniva Bay, except for the northeastern part (Dyldin and Orlov, 2016a; Dyldin et al., 2018a). The last capture in the waters of the island was dated 1994 in Aniva Bay (Nikiforov et al., 1997). In the past the species was rare, currently not noted. Anadromous.

Samples: SRM no. KP-5086 P-447—at the mouth of the Poronai River, central-west Sakhalin; ZIN RAS no. 13171—Aniva Bay near Korsakov, Sakhalin.

Conservation status: IUCN (Critically Endangered)/RBSO (category 1).

48. ***Acipenser schrenckii*** Brandt, 1869—Amur sturgeon. East Asia. Russia, Mongolia, China, and the northern part of Hokkaido, Japan. Sakhalin: northwestern part from the Sakhalin Bay to the Amur estuary (Dyldin and Orlov, 2016a). Anadromous, freshwater (forms landlock forms). Rare.

Conservation status: IUCN (Critically Endangered).

30. Genus ***HUSO*** Brandt et Ratzeburg, 1833

49. ***Huso dauricus*** (Georgi, 1775)—Kaluga. Northwestern Pacific. Sakhalin: along the western coast from Sakhalin Bay to the southern part of Aniva Bay near the mouth of the Uryum and Lyutoga rivers (Safronov and Nikitin, 2017a; Dyldin et al., 2018a). Anadromous, freshwater (forms landlock forms). Very rare in the southern part, relatively common in the northwestern part.

Conservation status: IUCN (Critically Endangered)/RBSO (category 2).

11. ORDER **ALBULIFORMES** Greenwood, Rosen, Weitzman et Myers, 1966—Bonefishes

20. Family **ALBULIDAE** Bleeker, 1849—Bonefishes

1. Subfamily **PTEROTHRISSINAE** Gill, 1893—Longfin bonefishes

31. Genus ***PTEROTHRISSUS*** Hilgendorf, 1877

50. ***Pterothrissus gissu*** Hilgendorf, 1877—Japanese gissu. Northwestern Pacific. Sakhalin: southwestern part (Safronov and Galimzyanov, 1981; Velikanov, 2004). Marine. Rare.

Conservation status: IUCN (Data Deficient).

12. ORDER **NOTACANTHIFORMES** Berg, 1947—Spiny eels

21. Family **NOTACANTHIDAE** Rafinesque, 1810—Spiny eels

32. Genus ***NOTACANTHUS*** Bloch, 1788

51. ***Notacanthus chemnitzii*** Bloch, 1788—Spiny eel. ? Cosmopolitan. Sakhalin: southeastern part (Bala-

nov, 2003). Also was recorded in the adjacent southern part of the Sea of Okhotsk. Marine. Rare.

Samples: HUMZ no. 123909—off Hokkaido, Kitami-Yamato bank, Sea of Okhotsk, Japan.

Conservation status: IUCN (Least Concern).

33. Genus ***POLYACANTHONOTUS*** Bleeker, 1874

52. * ***Polyacanthonotus challengeri*** (Vaillant, 1888)—Longnose tapirfish. Circumglobal. Sakhalin: possibly southeastern part. The closest records to the island were in the adjacent southern part of the Sea of Okhotsk near Hokkaido, Japan and in the Pacific waters of the Southern Kurils (Savin, 2014).

Samples: HUMZ nos. 123952, 123960–123962, and 124223—off Hokkaido, Sea of Okhotsk, Kitami-Yamato bank (Japan). Marine.

Conservation status: IUCN (Least Concern).

13. ORDER **ANGUILLIFORMES** Berg, 1940—Eels

22. Family **SYNAPHOBRANCHIDAE** Johnson, 1862—Cutthroat eels

2. Subfamily **SYNAPHOBRANCHINAE** Johnson, 1862—Cutthroat eels

34. Genus ***SYNAPHOBRANCHUS*** Johnson, 1862

53. ***Synaphobranchus affinis*** Günther, 1877—Grey cutthroat eel. ? Circumglobal. Sakhalin: southeastern part (Kim Sen Tok, 2006). Marine. Rare.

Conservation status: IUCN (Least Concern).

54. ***Synaphobranchus kaupii*** Johnson, 1862—Kaup's cutthroat eel. ? Circumglobal. Sakhalin: near the southeastern part. Also recorded in adjacent waters in the southern part of the Sea of Okhotsk near Hokkaido, Japan. Marine. Rare.

Notes. The sample of this species (HUMZ no. 149590) allows it to be included in the list of Sakhalin ichthyofauna for the first time.

Samples: HUMZ: nos. 124048, 124050, 124362, 131349—off Hokkaido, southern Sea of Okhotsk, Japan; no. 149590—off southeastern Sakhalin.

Conservation status: IUCN (Least Concern).

23. Family **MURAENESOCIDAE** Kaup, 1859—Pike conger eels

35. Genus ***MURAENESOX*** McClelland, 1844

55. ***Muraenesox cinereus*** (Forsskål, 1775)—Daggertooth pike conger. Indo-Western Pacific. Sakhalin: known only by a single specimen caught in Aniva Bay in 2006 (Dyldin et al., 2018a). Also, according to our survey data, in the summer, fishermen sometimes visually observed it in the waters of southern Sakhalin (Dyldin et al., 2018a). Marine, brackish water. Rare.

Samples: SRM no. KP 7988 PP-25—near the Busse channel mouth, Aniva Bay, Sakhalin.

Conservation status: IUCN (Data Deficient).

24. Family **NEMICHTHYIDAE** Kaup, 1859—Snipe eels

36. Genus ***AVOCETTINA*** Jordan et Davis, 1891

56. * ***Avocettina infans*** (Günther, 1878)—Avocet snipe-eel. Circumglobal from 50° N to 10° S (Shinohara et al., 1994). Sakhalin: possibly at the drop of the depths of the southeastern part. The closest finds to the island were recorded in the southern part of the Sea of Okhotsk and along the Pacific coast of the Southern Kurils (Fedorov and Parin, 1998; Parin et al., 2014). Marine.

Conservation status: IUCN (Least Concern).

14. ORDER **CLUPEIFORMES** Bleeker, 1859—Herrings

25. Family **CLUPEIDAE** Cuvier, 1816—Herrings

37. Genus ***CLUPEA*** Linnaeus, 1758

57. ***Clupea pallasii*** Valenciennes, 1847—Pacific herring. Arctic, adjacent North Atlantic and North Pacific. Sakhalin: along all coasts (Dyldin and Orlov, 2016a). Marine, brackish water. Abundant. Commercial.

Samples: HUMZ nos. 139572, 141029 – Severny Bay, northern of Sakhalin.

Conservation status: IUCN (Data Deficient).

38. Genus ***KONOSIRUS*** Jordan et Snyder, 1900

58. ***Konosirus punctatus*** (Temminck et Schlegel, 1846)—Dotted gizzard shad. Northwestern Pacific. Sakhalin: southwestern part and Aniva Bay (Dyldin and Orlov, 2016a; Safronov and Nikitin, 2017a; Dyldin et al., 2018a). Rare. Marine, brackish water.

Conservation status: IUCN (Least Concern).

39. Genus ***SARDINOPS*** Hubbs, 1929

59. ***Sardinops melanosticta*** (Temminck et Schlegel, 1846)—Japanese sardine. Northwestern Pacific and Bering Sea. Sakhalin: along all coasts (Shuntov et al., 2003; Velikanov, 2016; Dyldin et al., 2018a). Common. Marine, brackish water. It is of commercial importance during the periods of high abundance.

Notes. In the past, *S. melanosticta* was synonymous with *S. sagax* (Jenyns, 1842) or was considered as a subspecies of the latter as *S. sagax melanosticta* (Dyldin et al., 2018a).

Conservation status: IUCN (Not Evaluated).

26. Family **DUSSUMIERIIDAE** Gill, 1861—Round herrings

40. Genus ***ETRUMEUS*** Bleeker, 1853

60. * ***Etrumeus micropus*** (Temminck et Schlegel, 1846)—Japanese herring. Northwestern Pacific. Sakhalin: possibly the southeastern part and Aniva Bay. The closest records to the waters of the island were in the southern part of the Sea of Okhotsk near the northern part of Hokkaido, Japan (Uchida, 2020—as *Etrumeus teres*). Marine.

Notes. According to molecular data (DiBattista et al., 2012; Randall and DiBattista, 2012), it was identified as *E. micropus* for the waters of Japan, while the taxon *E. teres* (DeKay, 1842), previously indicated for the region under consideration (Sokolovskii et al., 2007; Shinohara et al., 2012), was recognized as a junior synonym for *E. sadina* (Mitchill, 1814). Adhering to this opinion, the species in the waters of Primorsky Krai and adjacent areas shouldbe attributed to *E. micropus*.

Samples: HUMZ nos. 135733, 135769, 135770, and 135771—all as *Etrumeus teres*—Sea of Okhotsk, Siretoko Pen., Shari, Hokkaido, Japan.

Conservation status: IUCN (Least Concern).

27. Family **ENGRAULIDAE** Gill, 1861—Anchovies

41. Genus ***ENGRAULIS*** Cuvier, 1816

61. ***Engraulis japonicus*** Temminck et Schlegel, 1846—Japanese anchovy. Western Pacific. Sakhalin: around the island, including Aniva and Terpeniya bays, also Moneron Island (Velikanov, 2004; Fadeev, 2005; Dyldin et al., 2018a). Common. Marine, brackish water. In years of high abundance, large concentrations of anchovy appear periodically off the coast of Sakhalin. At this time it can be an object of commercial fishing.

Samples: HUMZ no. 187022—Arkovo River estuary, central-west Sakhalin.

Conservation status: IUCN (Least Concern).

15. ORDER **ALEPOCEPHALIFORMES**—Slickheads

28. Family **ALEPOCEPHALIDAE** Bonaparte, 1846—Slickheads

42. Genus ***BAJACALIFORNIA*** Townsend et Nichols, 1925

62. * ***Bajacalifornia megalops*** (Lütken, 1898)—Bigeye slickhead. All oceans except polar waters. Sakhalin: probably at the slope off the southeast coast. The closest records to the island are in the southern part of the Sea of Okhotsk, including Hokkaido, Japan (Balanov and Il'inskii, 1992; Il'inskii, 1995; Beamish et al., 1999; Borets, 2000; Ivanov and Sukhanov, 2010). Marine. Rare in the waters of Russia.

Conservation status: IUCN (Least Concern).

16. ORDER **CYPRINIFORMES** Bleeker, 1859—Carps

1. Suborder **COBITOIDEI**—Loach-like cypriniforms

29. Family **BOTIIDAE** Berg, 1940—Botiine loaches

3. Subfamily **LEPTOBOTIINAE** Nalbant, 2002—Chinese pointface loaches

43. Genus ***PARABOTIA*** Dabry de Thiersant, 1872

63. ***Parabotia mantschuricus*** (Berg, 1907)—Manchurian spiny loach. East Asia, in the Amur River basin (from the central part to the lower reaches), including the basins of the Sungari and Ussuri rivers. Sakhalin: northwestern part in the channels of Sladkoe, Svetloye, and Dlinnoe lakes (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. ? Common.

Notes. Previously it was listed in the genus *Leptobotia* (Safronov and Nikiforov, 2003).

Conservation status: IUCN (Not Evaluated).

30. Family **COBITIDAE** Swainson, 1838—Loaches

44. Genus ***COBITIS*** Linnaeus, 1758

64. ***Cobitis lutheri*** Rendahl, 1935—Luther's spiny loach. East Asia, China, Russia, and the Korea Peninsula, from the lower and middle reaches of the Amur basin to the rivers of the Yellow Sea basin. Sakhalin: from the northern to the central part in the basin of Nevskoe Lake, including the basins of the Poronai and Tym rivers (Safronov and Nikiforov, 2003; Safronov et al., 2008; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, withstands slightly brackish waters. Common.

Notes. Berg (1949a), Nikolskii (1956) and other researchers symonymized the species with *Cobitis taenia* Linnaeus, 1758. According to molecular studies (Perdices et al., 2012), *C. lutheri* is represented by two phylogenetic lineages: samples from the Russian Far East are closer to type habitat (Lake Khanka, Amur basin), and the second line is closer to the samples of *C. lutheri* from the Korea Peninsula.

Samples: ZIN RAS no. 25478 – the lake from the Tyk River, Sakhalin; ZIN RAS no. 41991—Tysyu River, Sakhalin; ZMMU no. P-20344—Krasnaya River (Tym River drainage), Sakhalin; ZMMU No. P-20345—Alba River, Sakhalin; ZMMU no. P-23369—Chaivo Bay basin, Sakhalin; UWFC no. 46188—lower Val River basin, northeastern Sakhalin (*Cobitis* cf. *lutheri*); UWFC nos. 46255 and 46129—lower Val River Basin, northeastern Sakhalin; UWFC no. 46239—north of Gastelo, southeastern Sakhalin; UWFC no. 46242—lover Tym River basin, south Nogliki, north-central Sakhalin; UWFC no. 46236—lover Poronai River basin, east of the Leonidovo town, southeastern Sakhalin; UWFC no. 44923—along coast near northern and of Piltun Bay, southeast of Tungor village, northeastern Sakhalin; UWFC

no. 46172—Krasnaya River basin, just south of the town of Yasnoe, central Sakhalin.

Conservation status: IUCN (Not Evaluated).

65. ? ***Cobitis melanoleuca*** Nichols, 1925—Far Eastern spiny loach. Currently, the native range of the species is limited by the Amur River basin to the waters of northern China (Kottelat, 2012). Sakhalin: from the northern to the central part in the basin of Lake Nevskoye (Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, brackish water. Common.

Notes. In the inland waters of Sakhalin Island, this species remains insufficiently studied and, possibly, is presented as new to science (see also taxonomic notes in the work by Dyldin and Orlov (2016b)).

Conservation status: IUCN (Least Concern).

45. Genus ***MISGURNUS*** Lacepède, 1803

66. ? ***Misgurnus nikolskyi*** Vasil'eva, 2001—Nikolskii's weatherfish. East Asia. Sakhalin: from the northern to the central part (Safronov et al., 2008, 2010; Pietsch et al., 2012; Dyldin and Orlov, 2016b). It is also known in the southern part in the basins of the Naiba and Lyutoga rivers, where it was probably unintentionally introduced (Dyldin and Orlov, 2016b). Freshwater. Common.

Notes. Remains underinvestigated within the island (see also taxonomic notes by Dyldin and Orlov (2016b)).

Conservation status: IUCN (Not Evaluated).

67. ***Misgurnus mohoity*** (Dybowski, 1869)—Snake weatherfish. East Asia, China, Mongolia, and Russia. Sakhalin: in the Vavai–Chibisan lakes system in the southern part, where it was probably unintentionally introduced, it is also known in the northwestern part in the channel of Lake Sladkoe (Safronov et al., 2010; Dyldin and Orlov, 2016b). Freshwater. In the southern part the species is rare; the abundance in the northwestern part requires clarification.

Notes. Berg (1949a) and other authors synonymized the species with *M. anguillicaudatus* (Cantor, 1842); later it was shown that *M. mohoity* is a valid species (Bogutskaya et al., 2008; Kottelat, 2012).

Samples: UWFC: no. 44725—inland from Sakhalin Gulf, northwestern Sakhalin; no. 44785—environs of lake Uspenskoe, inland from Sakhalin Gulf, northwestern Sakhalin (as *M. anguillicaudatus*); no. 46167—central Val River basin, west of Chayvo Bay, north of Val, northeastern Sakhalin (as *M. anguillicaudatus*); no. 46237—lower Tym River basin, west of Nabilsky Bay, south of Nogliki, north-central Sakhalin (as *M. anguillicaudatus*).

Conservation status: IUCN (Not Evaluated).

31. Family **NEMACHEILIDAE** Regan, 1911—Brook loaches

46. Genus ***BARBATULA*** Linck, 1790

68. ? ***Barbatula toni*** (Dybowski, 1869)—Siberian brook loach. The native range of *B. toni* is limited to the type locality in the upper reaches of the Amur River (Kottelat, 2012), however, a very extensive range is often indicated for this species, which is largely due to different views on the nomenclature and taxonomic status of this species (see also taxonomic notes in by Dyldin and Orlov (2016b)). Sakhalin: throughout the island, excluding short rivers in the southeastern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, withstands slightly brackish waters. Abundant. Can be used as bait for amateur fishing of other more valuable species.

Notes. We indicate *B. toni* from Sakhalin Island with a "?" sign, which means it needs further studies (revision), with the inclusion of a comparative analysis of samples from the type locality (Onon and Ingoda rivers, Amur River basin) with Sakhalin ones.

Samples: UWFC no. 46371—north of the Aniva Bay, southern Sakhalin.

Conservation status: IUCN (Not Evaluated).

47. Genus ***LEFUA*** Herzenstein, 1888

69. ***Lefua nikkonis*** (Jordan et Fowler, 1903)—Hokkaido brook loach. East Asia, Hokkaido, Japan (Sakai et al., 2014). Sakhalin: southern part, including the Vavai lakes system, where it may have been unintentionally introduced (Shedko et al., 2008; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Relatively common.

Notes. Recently, the species was synonymized with *L. costata* (Kessler, 1876) or attributed to a subspecies of the latter, *L. costata nikkonis* (Berg, 1949a; Pietsch et al., 2001). Currently, based on genetic and morphological data, it has been reattributed to an independent species (Bogutskaya et al., 2008; Shedko et al., 2008; Kottelat, 2012; Pietsch et al., 2012).

Conservation status: IUCN (Least Concern).

70. ***Lefua pleskei*** (Herzenstein, 1888)—Pleskei's brook loach. East Asia. Sakhalin: northwestern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Not abundant.

Notes. Berg (1949a) and Nikolskii (1956) synonymized *L. pleskei* with *L. costata* (Kessler, 1876). Now, based on the study of the type material and genetic data, *L. pleskei* is an independent species (Bogutskaya et al., 2008; Shedko et al., 2008).

Conservation status: IUCN (Not Evaluated).

2. Suborder **CYPRINOIDEI** Rafinesque, 1810—Carp-like fishes

32. Family **CYPRINIDAE** Rafinesque, 1815—Carps

4. Subfamily **CYPRININAE** Rafinesque, 1815—Carps

48. Genus ***CARASSIUS*** Jarocki, 1822

71. ***Carassius gibelio*** (Bloch, 1782)—Prussian carp. Eurasia. In Russia, its distribution covers the whole Siberia; the species is common for the lakes of Primorskii krai and the Amur basin and is widespread in the southwestern part of Russia, for example, in the basin of the Azov and Black seas, including the Kuban. Sakhalin: native from the northern to the central part, in the southern part, acclimatized (Safronov and Nikiforov, 2003; Dyldin and Orlov, 2016b). Common. Freshwater, withstands slightly brackish waters. An object of local fishing and recreational fishing.

Conservation status: IUCN (Not Evaluated).

49. Genus ***CYPRINUS*** Linnaeus, 1758

72. ***Cyprinus rubrofuscus*** Lacepède, 1803—Amur carp. East Asia, Japan, and also from the Amur River basin to the Red River in China and Vietnam. Sakhalin: native in the northern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). It was introduced in the southern part, where it was naturalized and recorded in Lake Tunaicha and the Vavai lakes system (Dyldin and Orlov, 2016b). Freshwater, withstands brackish waters. In the native part, the species is common. An object of local fishing and recreational fishing.

Conservation status: IUCN (Least Concern).

33. Family **XENOCYPRIDIDAE** Gunther, 1868—East Asian minnows

50. Genus ***CHANODICHTHYS*** Bleeker, 1860

73. ***Chanodichthys erythropterus*** (Basilewsky, 1855)—Predatory carp. East Asia. From the Amur River southward to Taiwan and Hainan. Sakhalin: northwestern part associated with the Amur estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Not abundant. In the adjacent waters of the Amur River, it is a common species and is of commercial use.

Notes. Recently, the species was attributed to the genera *Culter*, *Erythroculter*, and *Cultrichthys* (Dyldin and Orlov, 2016b).

Conservation status: IUCN (Least Concern).

51. Genus ***CTENOPHARYNGODON*** Steindachner, 1866

74. ***Ctenopharyngodon idella*** (Valenciennes, 1844)—Grass carp. East Asia, from the middle and lower reaches of the Amur River, including the lowland rivers of China to Hong Kong. Sakhalin: native in the northwestern part adjacent to the Amur River estuary. Since the 1960s–1970s—an aquaculture object in the southern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Common. Freshwater, withstands slightly brackish waters.

Conservation status: IUCN (Not Evaluated).

52. Genus ***CULTER*** Basilewsky, 1855

75. ***Culter alburnus*** Basilewsky, 1855—Topmouth culter. East Asia. From the lower and middle reaches of the Amur River in the southern direction to the Red River and the central part of Taiwan, including Hainan. Sakhalin: northwestern part, Lake Sladkoe, where it was first recorded in 2010 (Nikitin et al., 2014). Freshwater, brackish water. Rare.

Conservation status: IUCN (Not Evaluated).

53. Genus ***ELOPICHTHYS*** Bleeker, 1860

76. ***Elopichthys bambusa*** (Richardson, 1845)—Yellowcheek. East Asia. Russia, China, and Vietnam, including the Amur River basin. Sakhalin: northwestern part adjacent to the Amur River estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Low abundant.

Conservation status: IUCN (Data Deficient).

54. Genus ***HYPOPHTHALMICHTHYS*** Bleeker, 1860

77. ***Hypophthalmichthys molitrix*** (Valenciennes, 1844)—Silver carp. The native range is located in China and the Amur River basin (in the middle and lower reaches) southward to Guangxi. Sakhalin: native in the northwestern part, associated with the Amur River estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Introduced in the southern part, where it is not found at present (Dyldin and Orlov, 2016b). Freshwater. Low abundant. An object of amateur fishing.

Conservation status: IUCN (Near Threatened).

34. Family **ACHEILOGNATHIDAE** Bleeker, 1863—Bitterlings

55. Genus ***RHODEUS*** Agassiz, 1832

78. ***Rhodeus sericeus*** (Pallas, 1776)—Amur bitterling. East Asia, throughout the Amur River basin from the upper to the lower reaches in a south direction to southern China. Sakhalin: from the northern to the central part in the Nevskoe Lake basin (Safronov and Nikiforov, 2003; Dyldin and Orlov, 2016b). Freshwater. Common.

Notes. See Dyldin and Orlov (2016b) for comments on the taxonomic position of the Amur bitterling on Sakhalin.

Samples: UWFC: no. 46254—lower Tym River basin, west of Nabilsky Bay, south of Nogliki, north-

central Sakhalin; no. 46225—lower Poronai River basin, east of Leonidovo, northwestern of the Terpeniya Bay, east-central Sakhalin; No. 46231—middle Tym River Basin, north of Tymovsk, west-central Sakhalin; no. 46241—lower Val River Basin, west of Chaivo Bay, northern of Val, northeastern Sakhalin; nos. 44733 and 44800—environs of Lake Sladkoe, inland from the Gulf of Sakhalin, northwestern Sakhalin.

Conservation status: IUCN (Least Concern).

35. Family **GOBIONIDAE** Bleeker, 1863—Gobionids

56. Genus ***ABBOTTINA*** Jordan et Fowler, 1903

79. ? (i) ***Abbottina rivularis*** (Basilewsky, 1855)—Chinese false gudgeon. The native range is located in East Asia from the lower and middle reaches of the Amur River and to the south, possibly to northern Thailand, including the Korea Peninsula, and Kyushu, Japan. Sakhalin: the southern part of the Vavai lakes system (Shed'ko S.V. and Shed'ko M.B., 2003; Shedko et al., 2005; Dyldin and Orlov, 2016b), where, probably, was unintentional introduced from the Amur River basin. Freshwater. Common.

Notes. Berg (1949a) attributed this species to the genus *Pseudogobio*.

Samples: UWFC: nos. 46210 and 46375—east of Korsakov, north of Aniva Bay, southern Sakhalin; no. 46256—southeastern side of Small Chibisanskoe Lake, north of Ozersk, southern Sakhalin; no. 46257—channel between Bol'shoe Chibisanskoe and Maloe Chibisanskoe lakes, north of Ozersk, southern Sakhalin; no. 44918—west side of Maloe Chibisanskoe Lake, 25 km east of Korsakov.

Conservation status: IUCN (Not Evaluated).

57. Genus ***GOBIO*** Cuvier, 1816

80. ? ***Gobio cynocephalus*** Dybowski, 1869—Amur gudgeon. East Asia, North Korea, China, Mongolia, and Russia, but mainly in the Amur River basin. Sakhalin: northwestern part, where it is a native species or an unintentional introduced species (Naseka and Gershtein, 2006; Bogutskaya et al., 2008). Freshwater.

Notes. The presence of this species in the northwestern part of the island requires documentary evidence (Dyldin and Orlov, 2016b).

Conservation status: IUCN (Not Evaluated).

81. ***Gobio soldatovi*** Berg, 1914—Soldatov's gudgeon. East Asia, Mongolia, Russia, and China, but mainly in the middle and lower reaches of the Amur River. Sakhalin: northern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Abundant.

Samples: UWFC: no. 44790—environs of Lake Sladkoe, inland from the Sakhalin Gulf, northwestern Sakhalin; no. 44790—environs of Lake Sladkoe, inland from Sakhalin Gulf, northwestern Sakhalin.

Conservation status: IUCN (Not Evaluated).

58. Genus ***GOBIOBOTIA*** Kreyenberg, 1911

82. * ***Gobiobotia pappenheimi*** Kreyenberg, 1911—Eightbarbel gudgeon. East Asia, China, and Russia, mainly in the middle and lower reaches of the Amur River and in the Yangtze River. Sakhalin: during the study of ichthyoplankton in the southern part of the island, it was found in Bolshoe Chibisanskoe Lake (Mukhametova, 2008—as *Gobiobotia* cf. *pappencheimi*). Freshwater.

Notes. There is no further confirmation of the presence of this species in the southern part of the island.

Conservation status: IUCN (Not Evaluated).

59. Genus ***HEMIBARBUS*** Bleeker, 1860

83. ***Hemibarbus labeo*** (Pallas, 1776)—Barbel steed. East Asia, across the Amur River basin to southern China and possibly Vietnam, including Taiwan, Japan, Mongolia, and Hainan. Sakhalin: northwestern part adjacent to the Amur River estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016a). Freshwater, brackish water. Not abundant. Can be an object of amateur fishing.

Conservation status: IUCN (Not Evaluated).

84. ***Hemibarbus maculatus*** Bleeker, 1871—Spotted steed. East Asia, mainly in the lower and middle reaches of the Amur River further south to the Yangtze River, and possibly Vietnam. Sakhalin: northwestern part adjacent to the Amur estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Not abundant. Can be an object of amateur fishing.

Conservation status: IUCN (Not Evaluated).

60. Genus ***PSEUDORASBORA*** Bleeker, 1859

85. (i) ***Pseudorasbora parva*** (Temminck et Schlegel, 1846)—Stone moroko. The native range is located in Japan (Honshu Island), Taiwan and Hainan, Korea Peninsula, northern Vietnam, China, and Mongolia, including the entire basin of the Amur River and the rivers of Primosrskii krai. Sakhalin: southern part in the Vavai and Chibisan lakes system, where it was unintentionally introduced during fishery activities from the Amur River basin in 1982 (Dyldin and Orlov, 2016b). Freshwater, withstands slightly brackish waters. Abundant.

Samples: UWFC: no. 44975—west side of Maloe Chibisankskoe Lake, 25 km east of Korsakov, southern Sakhalin; no. 46228—channel between Bolshoe Chibisanskoe and Maloe Chibisanskoe lakes, north of Ozersk, southern Sakhalin; no. 46230—

southeastern side of Maloe Chibisanskoe Lake, north of Ozersk, southern Sakhalin.

Conservation status: IUCN (Least Concern).

36. Family **LEUCISCIDAE** Bonaparte, 1835—Leuciscids

5. Subfamily **PSEUDASPININAE** Bogutskaya, 1990—Far East Asian leuciscines

61. Genus ***PSEUDASPIUS*** Dybowski, 1869

86. *Pseudaspius brandtii* (Dybowski, 1872)—Pacific redfin. Northwestern Pacific. Sakhalin: probably around the island, with the highest concentration in the central and northern parts (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Abundant. Anadromous, freshwater (forms landlock forms). An object of amateur and commercial fishing.

Notes. Recently the species was attributed to the genera *Leuciscus* or *Tribolodon*. According to the latest molecular data (Fricke et al., 2020a; Sakai et al., 2020), due to the priority rule, the genus *Tribolodon* is synonymized with *Pseudaspius*.

Samples: UWFC no. 44986—mouth of the Nayba River, southern Sakhalin; UWFC no. 46394—lower Tym River basin, north-central Sakhalin; UWFC no. 46395—north of Aniva Bay, southern Sakhalin; UWFC no. 44991—Lake Barguzinskoe, southeastern Sakhalin; UWFC no. 46370—Il'inka River basin, east of Il'insk, south-central Sakhalin; HUMZ nos. 183355, 183356, 183359, 183364, 183366, 183376, and 183377—Lake Aynskoye, southwestern part of Sakhalin.

Conservation status: IUCN (Not Evaluated).

87. *Pseudaspius hakonensis* (Günther, 1877)—Bigscaled redfin. Northwestern Pacific. Sakhalin: around the island (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Anadromous, freshwater (in some lakes, in particular in the southern part, forms landlock freshwater forms). Common. Target of local commercial fishing.

Notes. Recently was attributed to the genera *Leuciscus* and *Tribolodon*.

Samples: CAS-SU nos. 13351—Korsakov, Aniva Bay, Sakhalin; HUMZ no. 179553—Aniva Bay, southern part of Sakhalin; HUMZ no. 183216—estuary of the Aynskaya River, southwestern part of Sakhalin; HUMZ nos. 183370, 183373, and 183378—Lake Aynskoye, southwestern part of Sakhalin; HUMZ no. 187083—east of Sokol, southeastern Sakhalin; SRM no. KP-8232/2 PP-35/2—Susuya River, southern Sakhalin; UWFC no. 46368—Il'inka River basin, east of Il'insky, south-central Sakhalin; UWFC no. 46387—estuary at mouth of the Mereya River, southern Sakhalin; UWFC no. 46390—Maloe Chibisanskoye Lake, north of the Aniva Bay, southern Sakhalin.

Conservation status: IUCN (Not Evaluated).

88. *Pseudaspius leptocephalus* (Pallas, 1776)—Redfin. East Asia, mainly in the Amur River from the headwaters to the estuary. Sakhalin: northwestern part adjacent to the Amur estuary (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, withstands slightly brackish waters. Common. An object of amateur fishing.

Conservation status: IUCN (Not Evaluated).

89. *Pseudaspius sachalinensis* (Nikolskii, 1889)—Sakhalin redfin. Northwestern Pacific. Sakhalin: along all coasts (Safronov and Nikiforov, 2003—as *Tribolodon ezoe*; Shedko, 2005; Pietsch et al., 2012). Anadromous, freshwater (forms landlock forms in the southern part). Common. Object of local commercial fishing.

Notes. According to Shedko (2005), *Leuciscus sachalinensis* was reinstated to a separate species with synonymization with *Tribolodon ezoe* Okada et Ikeda, 1937 as a junior synonym. In the past, it was attributed to the genera *Leuciscus* and *Tribolodon*. This species was described by Nikolskii (1889) from samples taken in Aleksandrovsk-Sakhalinsky: *Leuciscus sachalinensis* Nikolskii, 1889 (type locality: Aleksandrovsk-Sakhalinsky, Sakhalin Island, Russia).

Samples: UWFC—all as *Tribolodon ezoe*: no. 44985—Maloe Chibisanskoe Lake, 25 km east of Korsakov, saouthern Sakhalin; no. 44987—Malyi Takoi River, southwest of Dolinsk, southern Sakhalin; no. 46384—Il'inka River basin, east of Il'insk, south-central Sakhalin; no. 46393—Middle Tym River basin, west-central Sakhalin; ZIN RAS no. 6598 (lectotype)—Aleksandrovsk-Sakhalinsky, Sakhalin, Russia; ZIN RAS no. 6599 (paralectotypes)–Aleksandrovsk-Sakhalinsky, Sakhalin.

Conservation status: IUCN (Not Evaluated).

62. Genus ***RHYNCHOCYPRIS*** Günther, 1889

90. *Rhynchocypris czekanowskii* (Dybowski, 1869)—Czekanowsky's minnow. In Russia, the species range includes Siberia and the Far East. Sakhalin: in rivers and lakes between the Vagis and Chernaya rivers, as well as in the upper reaches of the Tym and Poronai rivers (Safronov and Nikiforov, 2003; Nikitin and Safronov, 2009; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Not abundant.

Notes. According to the latest molecular data (Sakai et al., 2020), all previously mentioned genera for the Far Eastern minnows (*Czekanowskiella* Dybowski, 1916, *Eupallasella* Dybowski, 1916, *Lagowskiella* Dybowski, 1916, and *Morynoco* Jordan et Hubbs, 1925) are synonymized with *Rhynchocypris*. Current limits of *Rh. czekanowskii* distribution remain uncertain, and its nomenclature requires careful study, including comparative morphological and genetic analysis of samples from the type locality and other parts of the species range (Dyldin and Orlov, 2016b). However, most likely, the distribution of this species is

limited to the upper reaches of the Amur River basin with adjacent territories.

Samples: UWFC: no. 47995—Krasnaya River basin, just south of the town of Yasnoe, north-central Sakhalin; no. 47997—lower Val River basin, west of Chayvo Bay, north of Val, northeastern Sakhalin; no. 48000—lower Poronai River basin, east of the town of Leonidovo, northwestern of the Terpeniya Bay, north-central Sakhalin.

Conservation status: IUCN (Least Concern).

91. ***Rhynchocypris lagowskii*** (Dybowski, 1869) – Lagowsky's minnow. East Asia and Siberia. Mongolia, Russia, and China, mainly in the Amur River basin, the Selenga River, and the upper reaches of the Lena River. Sakhalin: northwestern part adjacent to the Amur estuary (Safronov and Nikiforov, 2003; Nikitin and Safronov, 2009; Dyldin and Orlov, 2016b). Freshwater. Common.

Conservation status: IUCN (Not Evaluated).

92. ***Rhynchocypris mantschuricus*** (Berg, 1907)—Manchurian lake minnow. East Asia. From the lower reaches of the Amur River to the Korea Peninsula. Sakhalin: northwestern part to the south up to the Poronai and Tym rivers (Safronov and Nikiforov, 2003; Safronov and Nikitin, 2005; Nikitin and Safronov, 2009; Pietsch et al., 2012, as *Rh. perenurus*; Dyldin and Orlov, 2016b). Freshwater. Common.

Conservation status: IUCN (Not Evaluated).

93. ***Rhynchocypris oxycephalus*** (Sauvage et Dabry de Thiersant, 1874)—Chinese minnow. East Asia, including Japan (as subspecies *Phoxinus oxycephalus jouyi*—see Nakabo, 2002). From the lower and middle reaches of the Amur River and the rivers flowing into the Peter the Great Bay to the south to the Yangtze River, China. Sakhalin: northwestern part in the upper reaches of the Tym and Poronai rivers (Safronov and Nikiforov, 2003; Nikitin and Safronov, 2009; Dyldin and Orlov, 2016b). Freshwater. Not abundant.

Conservation status: IUCN (Not Evaluated).

94. ***Rhynchocypris sachalinensis*** (Berg, 1907)—Sakhalin lake minnow. Endemic species of Sakhalin and Hokkaido islands, Japan. Sakhalin: all over the island, with the exception of the northern tip (Safronov and Nikiforov, 2003; Safronov and Nikitin, 2005; Nikitin and Safronov, 2009; Dyldin and Orlov, 2016b). Freshwater. Common.

Notes. For the first time was described by L.S. Berg (1907) as a subspecies *Phoxinus percnurus sachalinensis* Berg, 1907 (type locality: Arakul River, southern Sakhalin Island).

Samples: ZIN RAS no. 13879 (14 syntypes)—Arakul River near Chepizan, system of the Vavai lakes, southern part of Sakhalin.

Conservation status: IUCN (Not Evaluated).

6. Subfamily **LEUCISCINAE** Bonaparte, 1835—Leuciscines

63. Genus ***LEUCISCUS*** Cuvier, 1816

95. ***Leuciscus waleckii*** (Dybowski, 1869)—Amur ide. East Asia, Mongolia, China, Korea Peninsula, and Russia, mainly in the Amur River basin southward to the Yellow River, China. Sakhalin: northwestern part, from the Sakhalin Gulf to the south to the central part in Lake Nevskoye (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, brackish water. Abundant. Target of recreational fishing, also used as a by-catch.

Samples: UWFC no. 44974—environs of Lake Sladkoe, inland from Sakhalin Gulf, northwestern Sakhalin.

Conservation status: IUCN (Not Evaluated).

7. Subfamily **PHOXININAE** Bleeker, 1863—Eurasian minnows

64. Genus ***PHOXINUS*** Rafinesque, 1820

96. ? ***Phoxinus phoxinus*** (Linnaeus, 1758)—Eurasian minnow. Basins of the Atlantic, Arctic, and Pacific, from France to the Anadyr and Amur rivers. Sakhalin: from northern to central part (Safronov and Nikiforov, 2003; Nikitin and Safronov, 2009; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Collection specimens of the UWFC (nos. 46363 and 46366) indicate a presence in the southern part of Sakhalin, where it was probably unintentionally introduced. Common. Freshwater, brackish water.

Notes. According to modern data, the range of *Ph. phoxinus* is restricted to the type locality (the Agger River in Germany) and the Rhine River drainage in central Europe (Fricke et al., 2020a). Thus, the clarification of the *Ph. phoxinus* species, previously indicated for the waters of Sakhalin, requires comparative studies with closely related species *Ph. ujmonensis* Kashchenko, 1899, Altai minnow, according to the original description from the Katun River, near Uimon village, Altai, Ob River basin, Siberia and *Ph. tumensis* Luo, 1996, described from the Jilin Province, China, East Asia.

Samples: UWFC: no. 46356—central Val River basin, west of Chayvo Bay, north of Val, northeastern Sakhalin; nos. 46359 and 46369—lower Tym River, west of Nabilsky Bay, south of Nogliki, north-central Sakhalin; nos. 46360 and 46362—lower Poronai River basin, east of Leonidovo, north-central Sakhalin; no. 46363—near mouth of the Shlyuzovka River, inlet to Lake Vavayskoe, southern Sakhalin; no. 46364—lower Val River Basin, west of Chayvo Bay, north of Val, northeastern Sakhalin; no. 46366—channel between Bolshoe Chibisanskoe and Maloe Chibisanskoe lakes, north of Ozersk, southern Sakhalin; no. 46367—small string of ponds off highway, northwestern of the Terpeniya Bay, north of Gastello,

north-central Sakhalin; no. 47996—lower Val River basin, west of Chayvo Bay, north of Val, Sakhalin.

Conservation status: IUCN (Least Concern).

17. ORDER **SILURIFORMES** Cuvier, 1816—Catfishes

3. Suborder **SILUROIDEI**—Freshwater catfishes

37. Family **BAGRIDAE** Bleeker, 1858—Bagrid catfishes

65. Genus ***TACHYSURUS*** Lacepède, 1803

97. ***Tachysurus sinensis*** Lacepède, 1803—Chinese catfish. The Yongding River basin in northern China, however, the range is probably more extensive and includes the northeastern part of Asia, which requires further study (Ng and Kottelat, 2007). Sakhalin: northwestern part adjacent to the Amur estuary, where, according to our data, this species is tentatively identified as *T.* cf. *sinensis* (Dyldin and Orlov, 2016b). Freshwater. Common. Can be an object of local amateur fishing.

Notes. For taxonomic notes on *T. sinensis* in northern Sakhalin, see Dyldin and Orlov (2016b).

Conservation status: IUCN (Not Evaluated).

38. Family **SILURIDAE** Rafinesque, 1815—Sheatfishes

66. Genus ***SILURUS*** Linnaeus, 1758

98. ***Silurus asotus*** Linnaeus, 1758—Amur catfish. Japan (from Hokkaido to Kyushu), Korea, China, Vietnam (Hanoi), and Mongolia. Sakhalin: northwestern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, tolerates slightly brackish waters. Common in a limited area. Can be an object of amateur fishing.

Notes. Berg (1949a) attributed to the genus *Parasilurus*.

Conservation status: IUCN (Least Concern).

18. ORDER **ARGENTINIFORMES** Johnson et Patterson, 1996—Marine smelts

39. Family **BATHYLAGIDAE** Gill, 1884—Deepsea smelt or black smelts

67. Genus ***BATHYLAGUS*** Günther, 1878

99. ***Bathylagus pacificus*** Gilbert, 1890—Pacific blacksmelt. North Pacific. Sakhalin: southeastern part (Balanov, 2000; Shuntov et al., 2003). It is also known from the adjacent waters of the southern part of the Sea of Okhotsk, Hokkaido, Japan. Marine. ? Rare.

Samples: HUMZ nos. 124290, 123996, 123988, 124288, 124289, 124268, and 124269—off Hokkaido, Kitami-Yamato bank, Sea of Okhotsk, Japan.

Conservation status: IUCN (Not Evaluated).

68. Genus ***LEUROGLOSSUS*** Gilbert, 1890

100. ***Leuroglossus schmidti*** Rass, 1955—Schmidt's blacksmelt. North Pacific. Sakhalin: around the island, at depths over several hundred meters (Schmidt, 1950; Balanov, 2000; Safronov, 2000; Velikanov, 2004). Marine. Common. It forms commercial concentrations near the eastern coast (Velikanov, 2004) and in the future can be developed by commercial fishery.

Notes. Until the description of the new subspecies *L. stilbius schmidti* Rass, 1955 for the waters of Russia and Hokkaido (Japan) was identified as *L. stilbius* Gilbert, 1890 (Schmidt, 1950; Lindberg, 1959; Ueno, 1971), the range of the latter is currently limited to the Eastern Pacific (*Eschmeyer's Catalog*..., 2020a).

Conservation status: IUCN (Not Evaluated).

69. Genus ***LIPOLAGUS*** Kobyliansky, 1986

101. ***Lipolagus ochotensis*** (Schmidt, 1938)—Okhotsk blacksmelt. North Pacific and Australia. Sakhalin: eastern part (Balanov, 2000; Shuntov et al., 2003). Marine. Common.

Notes. In the past some authors attributed the species to the genus *Bathylagus* (Shmidt, 1950; Quast and Hall, 1972).

Conservation status: IUCN (Not Evaluated).

70. Genus ***PSEUDOBATHYLAGUS*** Kobyliansky, 1986

102. ***Pseudobathylagus milleri*** (Jordan et Gilbert, 1898)—Stout blacksmelt. North Pacific. Sakhalin: eastern part (Schmidt, 1950; Shuntov et al., 2003). Marine. ? Rare.

Notes. In the past was included by some authors in the genus *Bathylagus* (Schmidt, 1950; Quast and Hall, 1972). Schmidt (1950) described a new species *Bathylagus arae* Schmidt, 1950 (type locality: eastern shore of Sakhalin, 52°47′ N, 144°51′ E, Sea of Okhotsk) for the southeastern coast of Sakhalin, which later (Parin et al., 2014; *Eschmeyer's Catalog*..., 2020a) was synonymized with *P. milleri*.

Samples: ZIN RAS no. 24821 (holotype of *Bathylagus arae* Schmidt, 1950)–eastern shore of Sakhalin, Sea of Okhotsk, 52°47′ N, 144°51′ E.

Conservation status: IUCN (Least Concern).

40. Family **OPISTHOPROCTIDAE** Schmidt, 1918—Spookfishes

71. Genus ***MACROPINNA*** Chapman, 1939

103. ***Macropinna microstoma*** Chapman, 1939—Barreleye. North Pacific. Sakhalin: at the slope along the eastern side (Shuntov et al., 2003). Marine. Rare.

Conservation status: IUCN (Not Evaluated).

19. ORDER **ESOCIFORMES** Rafinesque, 1810—Pikes

41. Family **ESOCIDAE** Rafinesque, 1815—Pikes

72. Genus ***ESOX*** Linnaeus, 1758

104. ***Esox reichertii*** Dybowski, 1869—Amur pike. East Asia. China, Mongolia, and Russia, including the entire Amur River basin and part of the Kamchatka Peninsula. Sakhalin: the northwestern and central parts; as an occasional introduced species have been noted for the southern part since 1999 (Safronov and Marchenko, 1999; Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016a). Freshwater, withstands brackish waters. Common. An object of local amateur fishing.

Samples: SRM No. KP-9188/14 PP-53/14 – Poronay River, Sakhalin.

Conservation status: IUCN (Not Evaluated).

20. ORDER **SALMONIFORMES** Rafinesque, 1810—Salmons

42. Family **SALMONIDAE** Jarocki, 1822—Salmons

8. Subfamily **COREGONINAE** Bonaparte, 1845—Whitefishes

73. Genus ***COREGONUS*** Linnaeus, 1758

105. ***Coregonus ussuriensis*** Berg, 1906—Amur whitefish. East Asia, in the middle and lower reaches of the Amur River, including Lake Khanka and the southern part of the Sea of Okhotsk. Sakhalin: known along the western coast from the Sakhalin Gulf in a southern direction to Lake Ainskoe in the southern part of the island, along the eastern coast, was recorded from the Schmidt Peninsula to Nabilsky Bay, but was mainly recorded in the northern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater, brackish, marine. Common. An object of local amateur fishing.

Samples: HUMZ no. 141031—Severny Bay, northern Sakhalin.

Conservation status: IUCN (Not Evaluated).

9. Subfamily **THYMALLINAE** Gill, 1885—Graylings

74. Genus ***THYMALLUS*** Linck, 1790

106. ***Thymallus tugarinae*** Knizhin, Antonov, Safronov et Weiss, 2007—Lower Amur grayling. East Asia, northern China and Russia. Sakhalin: northwestern part (Dyldin and Orlov, 2016b). Freshwater. Common. Target of local amateur fishing.

Samples: SRM nos. KP-8119/1 PP-32/1, KP-8119/2 PP-32/2, KP-8119/3 PP-32/3, KP-8119/4 PP-32/4, KP-8119/5 PP-32/5, and KP-8119/6 PP-32/6 (all as *Th. grubii*)—Langry River in the northwestern part of Sakhalin.

Conservation status: IUCN (Not Evaluated).

10. Subfamily **SALMONINAE** Jarocki, 1822—Salmons

75. Genus ***BRACHYMYSTAX*** Günther, 1866

107. ***Brachymystax tumensis*** Mori, 1930—Tumen lenok. East Asia and Siberia. Sakhalin: northwestern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Common. Target of local amateur fishing.

Conservation status: IUCN (Not Evaluated).

76. Genus ***HUCHO*** Günther, 1866

108. ***Hucho taimen*** (Pallas, 1773)—Taimen'. Eurasia. China, Mongolia, and Russia. Sakhalin: limited in some rivers of the northwestern part (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016a). Freshwater. Rare.

Conservation status: IUCN (Vulnerable)/ RBSO (category 2).

77. Genus ***ONCORHYNCHUS*** Suckley, 1861

109. ***Oncorhynchus gorbuscha*** (Walbaum, 1792)—Pink salmon. Native range in the North Pacific and adjacent Arctic (from the delta of the Lena River to the Bering Strait). Sakhalin: all coasts (Dyldin and Orlov, 2016b). Anadromous. Common. Valuable commercial species.

Conservation status: IUCN (Not Evaluated).

110. ***Oncorhynchus keta*** (Walbaum, 1792) – Chum salmon. North Pacific and adjacent Arctic. Sakhalin: all coasts (Dyldin and Orlov, 2016b). Anadromous. Common. Valuable commercial species.

Samples: SRM no. KP-8119/8 PP-32/8—Ochepuha River, southern Sakhalin.

Conservation status: IUCN (Not Evaluated).

111. ***Oncorhynchus kisutch*** (Walbaum, 1792)—Coho salmon. North Pacific and adjacent Arctic. Sakhalin: recorded along all shores, but mainly along the northwest and east coasts (Shuntov et al., 2003; Dyldin and Orlov, 2016b). Anadromous, freshwater (forms landlock forms in some lakes of North America and Kamchatka). Common. Object of minor fishing and by-catch.

Samples: SRM no. KP-9342/1 PP-55/1—Vestovaya River, in the middle of Sakhalin.

Conservation status: IUCN (Not Evaluated).

112. ***Oncorhynchus masou*** (Brevoort, 1856)—Cherry salmon. Northwestern Pacific. Sakhalin: on all shores (Dyldin and Orlov, 2016b). Anadromous, freshwater (forms landlock forms everywhere). Common. Target of minor local fishery and by-catch.

Samples: SRM no. KP-8418 PP-39—Mordvinov Bay, southeastern Sakhalin.

Conservation status: IUCN (Not Evaluated).

113. ***Oncorhynchus nerka*** (Walbaum, 1792)—Sockeye salmon. North Pacific and adjacent Arctic. Sakhalin: northern part (Dyldin and Orlov, 2016b). Anadromous, freshwater (forms landlock forms in some lakes of Kamchatka, Southern Kurils (Iturup Island), and Japan). Rare. Used as a by-catch.

Conservation status: IUCN (Least Concern).

114. ***Oncorhynchus tshawytscha*** (Walbaum, 1792)—Chinook salmon. North Pacific and adjacent Arctic. Sakhalin: recently and currently it is recorded from individual specimens for the open waters of the eastern part (Shuntov et al., 2003; Dyldin and Orlov, 2016b). Anadromous. Rare.

Conservation status: IUCN (Not Evaluated).

78. Genus ***PARAHUCHO*** Vladykov, 1963

115. ***Parahucho perryi*** (Brevoort, 1856)—Sakhalin taimen. Northwestern Pacific. Russia and Japan, Hokkaido, but in the past it was also known on Honshu. Sakhalin: widespread in the coastal zones of river mouths, in large brackish lagoons and bays (Dyldin and Orlov, 2016b). Anadromous, in the presence of natural obstacles in some rivers, it can form landlock forms. Common; sometimes rare; practically everywhere with decreasing abundance.

Samples: HUMZ Nos. 183208, 183209—estuary of the Ainskaya River, southwestern part of Sakhalin; HUMZ no. 187033—estuary of the Arkovo River, central-west Sakhalin; NHMUK ZOO No. 1992.4.28.1-2—Sakhalin; SRM No. KP-9188/2 PP-53/2—Mordvinov Bay, Sea of Okhotsk, southeast Sakhalin; USNM no. 124490—Korsakov Light, Otomari, south end of Sakhalin; UWFC no. 46190—east of Korsakov, north of Aniva Bay, southern Sakhalin.

Conservation status: IUCN (Critically Endangered)/RBSO (category 2).

79. Genus ***SALVELINUS*** Richardson, 1836

116. ***Salvelinus curilus*** (Pallas, 1814)—Kuril char. Northwestern Pacific. Sakhalin: all over the island (Dyldin and Orlov, 2016b). Anadromous, freshwater (forms landlock forms).

Notes. For taxonomic notes on the taxonomic position of Kuril char within Sakhalin see (Dyldin and Orlov, 2016b).

Samples: SRM No. KP-9188/3 PP-53/3 (as *S. malma kraschenninnikovi*)—mouth of the Malaya Khuzi River, northeastern Sakhalin; UWFC—all as *Salvelinus malma* (Walbaum, 1792): no. 44742—south of Bolshaya Langri River mouth, northeast Sakhalin; no. 44837—Sokolovka River, 5 km from Yuzhny Sokol, southern Sakhalin; no. 44883—environs of Lake Monchigar, east of Cape Marii, northwestern Sakhalin; no. 44892—Belaya River, northeast of Sokol, southern Sakhalin; no. 44942—west side of Cape Elizabeth, northern Sakhalin.

Conservation status: IUCN (Not Evaluated).

117. ***Salvelinus leucomaenis*** (Pallas, 1814)—Whitespotted char. Northwestern Pacific. Sakhalin: in almost all rivers, lagoons, and lakes connected with the sea (Safronov and Nikiforov, 2003; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Anadromous, freshwater (forms landlock forms). Common, numerous in the southern part. No specialized fishery; it is used as a by-catch when catching other fish species. Amateur fishing target.

Samples: HUMZ no. 183693—west side of Cape Elizabeth, northernmost of Sakhalin; SRM no. KP-8119/7 PP-32/7—Ochepukha River, southern part of Sakhalin; UWFC: no. 44720—mouth of the Taliki River, northeast Sakhalin; no. 44755—south of the Bolshaya Langri River mouth, northeast Sakhalin; no. 44778—Ochepukha River, 4 km from mouth, north of Lake Tunaycha, southeast Sakhalin; no. 44881—Belaya River, northeast of Sokol, southern Sakhalin; no. 46126—lower Val River basin, west of Chayvo Bay, north of Val, northeast Sakhalin; no. 46327—lower Tym River basin, west of Nabil'skii Bay, nort-central Sakhalin.

Conservation status: IUCN (Not Evaluated).

118. ***Salvelinus vasiljevae*** Safronov et Zvezdov, 2005—Sakhalinian char. Endemic species from the rivers of the northwestern Sakhalin, connected with Amur Liman and the Nevelskoy Strait (Safronov and Zvezdov, 2005; Safronov, 2009; Pietsch et al., 2012; Dyldin and Orlov, 2016b). Freshwater. Common. Amateur fishing object.

Notes. Described from the upper reaches of the Tengi River, northwestern Sakhalin: *Salvelinus vasiljevae* Safronov et Zvezdov, 2005 (type locality: Tengi River, upper reaches, northwestern Sakhalin Island).

Samples: ZMMU: no. P-20938 (holotype) – Sakhalin Oblast, northwestern Sakhalin, upper Tengi River; no. P-20939 (paratypes), Sakhalin Oblast, northwestern Sakhalin, upper Tengi River.

Conservation status: IUCN (Not Evaluated).

FUNDING

The work of the second author in part was funded by the Ministry of Science and Higher Education, Russian Federation, grant no. 13.1902.21.0012 and contract no. 075-15-2020-796. The work of the first author was made within the framework of the State Assignment of the Ministry of Science and Higher Education of the Russian Federation (project no. 0721-2020-0019).

COMPLIANCE WITH ETHICAL STANDARDS

Conflict of interests. The authors declare that they have no conflicts of interest.

Statement on the welfare of animals. All applicable international, national, and/or institutional guidelines for the care and use of animals were followed.

REFERENCES

Antonenko, D.V., Pushchina, O.I., and Solomatov, S.F., Distribution and some biological features of skate *Bathyraja parmifera* (Rajidae, Rajiformes) in the northwestern part of the Sea of Japan, *J. Ichthyol.*, 2007, vol. 47, no. 4, pp. 279–287.
https://doi.org/10.1134/S0032945207040042

Antonenko, D.V., Solomatov, S.F., Balanov, A.A., et al., Occurrence of skate *Raja pulchra* (Rajidae, Rajiformes) in Russian waters of the Sea of Japan, *J. Ichthyol.*, 2011, vol. 51, no. 6, pp. 426–431.
https://doi.org/10.1134/S0032945211040011

Balanov, A.A., Composition and ratio of fishes and invertebrates in the upper part of continental slope of southeastern Sakhalin, in *Promyslovo-biologicheskie issledovaniya ryb v tikhookeanskikh vodakh Kuril'skikh ostrovov i prilezhashchikh raionakh Okhotskogo i Beringova morei v 1992–1998 gg.* (Commercial and Biological Studies of Fishes in Pacific Waters of Kuril Islands and Adjacent Regions of the Okhotsk and Bering Seas in 1992–1998), Moscow: VNIRO, 2000, pp. 215–223.

Balanov, A.A., Supplement to ichthyofauna of continental slope of the southeastern Sakhalin (Sea of Okhotsk), *Vopr. Ikhtiol.*, 2003, vol. 43, no. 1, pp. 132–135.

Balanov, A.A., and Il'inskii, E.N., Species composition and biomass of mesopelagic fishes in the Okhotsk and Bering seas, *Vopr. Ikhtiol.*, 1992, vol. 32, no. 1, pp. 56–63.

Balushkin, A.V., Sheiko, B.A., and Fedorov, V.V., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences: class Osteichthyes (bony fishes), order Perciformes, family Zoarcidae, *J. Ichthyol.*, 2011, vol. 51, no. 10, pp. 950–1034.
https://doi.org/10.1134/S0032945211100031

Balushkin, A.V., Sheiko, B.A., and Prirodina, V.P., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences. Class Osteichthyes. Order Perciformes. Suborder Zoarcoidei. Families: Bathymasteridae, Zoarcidae, Cryptacanthodidae, Ptilichthyidae, and Zaproridae. Suborder Icosteoidei. Family Icosteidae, in *Issledovanie fauny morei* (Exploration of the Fauna of the Seas), St. Petersburg: Zool. Inst., Ross. Akad. Nauk, 2012a, vol. 71 (79).

Balushkin, A.V., Sheiko, B.A., and Prirodina, V.P., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences. Class Osteichthyes. Order Perciformes. Suborder Zoarcoidei. Families Stchaeidae, Pholidae, Anarhichadidae, in *Issledovanie fauny morei* (Exploration of the Fauna of the Seas), St. Petersburg: Zool. Inst., Ross. Akad. Nauk, St. Petersburg: Zool. Inst., Ross. Akad. Nauk, 2012b, no. 80.

Beamish, R.J., Leask, K.D., Ivanov, O.A., et al., The ecology, distribution, and abundance of midwater fishes of the Subarctic Pacific gyres, *Progr. Oceanogr.*, 1999, vol. 43, no. 2–4, pp. 399–442.

Berg, L.S., Notes on several Palearctic species of genus *Phoxinus, Ezhegodn. Zool. Muz. Imper. Akad. Nauk*, 1907, vol. 11, pp. 196–213.

Berg, L.S., *Fauna Rossii i sopredel'nykh stran. Ryby (Marsipobranchii i Pisces). Tom 1. Marsipobranchii, Selachii i Chondrostei* (Fauna of Russia and Adjacent Countries. Fishes (Marsipobranchii, Pisces), Vol. 1: Marsipobranchii, Selachii, and Chondrostei), St. Petersburg: Tipogr. Imper. Akad. Nauk, 1911.

Berg, L.S., *Ryby presnykh vod SSSR i sopredel'nykh stran* (Freshwater Fishes of Soviet Union and Adjacent Countries), Moscow: Akad. Nauk SSSR, 1948, part 1.

Berg, L.S., *Ryby presnykh vod SSSR i sopredel'nykh stran* (Freshwater Fishes of Soviet Union and Adjacent Countries), Moscow: Akad. Nauk SSSR, 1949a, part 2, pp. 467–925.

Berg, L.S., *Ryby presnykh vod SSSR i sopredel'nykh stran* (Freshwater Fishes of Soviet Union and Adjacent Countries), Moscow: Akad. Nauk SSSR, 1949b, part 3, pp. 927–1382.

Berezantsev, Yu.A., Fish of the upper reaches of the Tym River (Sakhalin Island), *Vopr. Geogr. Dal'nego Vost.*, 1955, no. 2, pp. 111–119.

Bogutskaya, N.G., Naseka, A.M., Shedko, S.V., et al., The fishes of the Amur River: updated check-list and zoogeography, *Ichthyol. Explor. Freshwater*, 2008, vol. 19, no. 4, pp. 301–366.

Borets, L.A., *Annotirovannyi spisok ryb dal'nevostochnykh morei* (Annotated List of Fishes from Far Eastern Seas), Vladivostok: TINRO-Tsentr, 2000.

Burke, C.V., Revision of the fishes of the family Liparidae, *Bull. U.S. Nat. Mus.*, 1930, no. 150.

Catania, D. and Fong, J., CAS Ichthyology (ICH), Version 150.215, California Academy of Sciences. 2020.
https://doi.org/10.15468/efh2ib. Accessed March 21, 2020.

Clemens, B.J., Weitkamp, L., Siwicke, K., et al., Marine biology of the Pacific lamprey *Entosphenus tridentatus, Rev. Fish Biol. Fish.*, 2019, vol. 29, pp. 767–788.
https://doi.org/10.1007/s11160-019-09578-8

Collection of specimens, Occurrence dataset, Natural History Museum, 2020.
https://doi.org/10.5519/0002965. Accessed April 13, 2020.

DiBattista, J.D., Randall, J.E., and Bowen, B.W., Review of the round herrings of the genus *Etrumeus* (Clupeidae: Dussumieriinae) of Africa, with descriptions of two new species, *Cybium*, 2012, vol. 36, no. 3, pp. 460–447.
https://doi.org/10.26028/cybium/2012-363-004

Dolganov, V.N., *Rukovodstvo po opredeleniyu khryashchevykh ryb dal'nevostochnykh morei SSSR i sopredel'nykh vod* (Guide for Identification of Chondrichthyes Fishes from Far Eastern Seas of Soviet Union and Adjacent Waters), Vladivostok: Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr., 1983.

Dolganov, V.N., New species of skates of the family Rajdae from the northwestern Pacific Ocean, *J. Ichthyol.*, 1985, vol. 25, no. 3, pp. 121–132.

Dolganov, V.N., Rhinochimaeridae (Chimaeriformes): a new family of chimaeras for the fauna of Russia, *Russ. J. Mar. Biol.*, 2017, vol. 43, no. 1, pp. 99–100.
https://doi.org/10.1134/S1063074017010047

Dolganov, V.N. and Korolev, M.R., On validity of skates of group parmifera of genus *Bathyraja* (Rajidae, Rajoidei), *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 2006, vol. 147, pp. 179–182.

Dolganov, V.N. and Tuponogov, V.N., The tables for identification of skates of genera *Bathyraja* and *Rhinoraja* (fam. Rajidae) in Russian Far Eastern seas, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 1999, vol. 126, pp. 657–664.

Dulvy, N.K., Dyldin, Y.V., Herman, K., et al., *Beringraja pulchra*, in *The IUCN Red List of Threatened Species* 2020a, no. e.T161669A124525206. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161669-A124525206.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Bathyraja smirnovi*, in *The IUCN Red List of Threatened Species* 2020b, no. e.T161612A124514790. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161612-A124514790.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Bathyraja bergi*, in *The IUCN Red List of Threatened Species* 2020c, no. e.T161722A124533622. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161722-A124533622.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Herman, K., et al., *Bathyraja diplotaenia*, in *The IUCN Red List of Threatened Species* 2020d, no. e.T161462A124489862. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161462-A124489862.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., *Bathyraja fedorovi*, in *The IUCN Red List of Threatened Species* 2020e, no. e.T161623A124517037. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161623-A124517037.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., *Bathyraja isotrachys*, in *The IUCN Red List of Threatened Species* 2020f, no. e.T161454A124488486. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161454-A124488486.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., *Bathyraja matsubarai*, in *The IUCN Red List of Threatened Species* 2020g, no. e.T161424A124482422. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161424-A124482422.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Bathyraja trachouros*, in *The IUCN Red List of Threatened Species* 2020h, no. e.T161701A124530553. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161701-A124530553.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Bathyraja tzinovskii*, in *The IUCN Red List of Threatened Species* 2020i, no. e.T161444A124486488. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161444-A124486488.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Bathyraja violacea*, in *The IUCN Red List of Threatened Species* 2020j, no. e.T161594A80676330. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161594-A80676330.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Rhinoraja kujiensis*, in *The IUCN Red List of Threatened Species* 2020k, no. e.T161534A124501763. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161534-A124501763.en. Accessed December 12, 2020.

Dulvy, N.K., Dyldin, Y.V., Ebert, D.A., et al., *Rhinoraja longicauda*, in *The IUCN Red List of Threatened Species* 2020l, no. e.T161575A124509549. https://doi.org/10.2305/IUCN.UK.2020-3.RLTS.T161575-A124509549.en. Accessed December 12, 2020.

Dyldin, Yu.V., Annotated checklist of the sharks, batoids and chimaeras (Chondrichthyes: Elasmobranchii, Holocephali) from waters of Russia and adjacent areas, *Publ. Seto Mar. Biol. Lab.*, 2015, vol. 43, pp. 40–91. https://doi.org/10.5134/197957

Dyldin, Yu.V. and Orlov, A.M., Ichthyofauna of fresh and brackish waters of Sakhalin Island: an annotated list with taxonomic comments: 1. Petromyzontidae–Clupeidae Families, *J. Ichthyol.*, 2016a, vol. 56, no. 4, pp. 534–555. https://doi.org/10.1134/S0032945216040032

Dyldin, Yu.V. and Orlov, A.M., Ichthyofauna of fresh and brackish waters of Sakhalin Island: an annotated list with taxonomic comments: 2. Cyprinidae–Salmonidae Families, *J. Ichthyol.*, 2016b, vol. 56, no. 5, pp. 656–693. https://doi.org/10.1134/S0032945216050040

Dyldin, Yu.V. and Orlov, A.M., Ichthyofauna of fresh and brackish waters of Sakhalin Island: an annotated list with taxonomic comments: 3. Gadidae–Cryptacanthodidae Families, *J. Ichthyol.*, 2017a, vol. 57, no. 1, pp. 53–88. https://doi.org/10.1134/S0032945217010039

Dyldin, Yu.V. and Orlov, A.M., Ichthyofauna of fresh and brackish waters of Sakhalin Island: an annotated list with taxonomic comments: 4. Pholidae–Tetraodontidae Families, *J. Ichthyol.*, 2017b, vol. 57, no. 2, pp. 183–218. https://doi.org/10.1134/S0032945217020072

Dyldin, Yu.V. and Orlov, A.M., An annotated list of cartilaginous fishes (Chondrichthyes: Elasmobranchii, Holocephali) of Sakhalin Island and the adjacent southern part of the Sea of Okhotsk, *J. Ichthyol.*, 2018, vol. 58, no. 2, pp. 158–180. https://doi.org/10.1134/S0032945218020042

Dyldin, Yu.V., Matsuura, K., and Makeev, S.S., Comments on puffers of the genus *Takifugu* from Russian waters with the first record of yellowfin puffer, *Takifugu xanthopterus* (Tetraodontiformes, Tetraodontidae) from Sakhalin Island, *Bull. Natl. Mus. Nat. Sci., Ser. A*, 2016, vol. 42, no. 3, pp. 133–141.

Dyldin, Yu.V., Matsuura, K., Orlov, A.M., and Romanov, V.I., New information about tetradontiform fishes (Actinopterygii, Tetraodontiformes) of Sakhalin Island and adjacent waters, *Materialy XVIII mezhdunarodnoi nauchnoi konferentsii "Sokhranenie bioraznoobraziya Kamchatki i prilegayushchikh morei"* (Proc. XVIII Int. Sci. Conf. "Conservation of Biological Diversity of Kamchatka and Adjacent Seas"), Petropavlovsk-Kamchatskiy: Kamchatpress, 2017, pp. 411–418.

Dyldin, Yu.V., Orlov, A.M., Velikanov, A.Ya., et al., An annotated list of the marine and brackish-water ichthyofauna of Aniva Bay (Sea of Okhotsk, Sakhalin Island): 1. Petromyzontidae–Agonidae families, *J. Ichthyol.*, 2018a, vol. 58, no. 4, pp. 473–501. https://doi.org/10.1134/S0032945218040033

Dyldin, Yu.V., Orlov, A.M., Velikanov, A.Ya., et al., An annotated list of the marine and brackish waters ichthyofauna of Aniva Bay (Sea of Okhotsk, Sakhalin Island): 2. Cyclopteridae–Molidae families, *J. Ichthyol.*, 2018b, vol. 58, no. 5, pp. 633–661. https://doi.org/10.1134/S0032945218050053

Dyldin, Yu.V., Hanel, L., Plesník, J., et al., Morphometric and meristic variability in lampreys of the genus *Lethenteron* (Petromyzontida: Petromyzontiformes) in Sakhalin Island rivers, in *Lampreys: Evolution, Distribution and Use in Research*, Moss, R., Ed., Hauppauge, NY: Nova Science, 2019, chap. 2, pp. 27–56.

Ebert, D.A., Tanaka, S., and Nakaya, K., *Triakis scyllium*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161395A5413845. https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161395-A5413845.en. Accessed March 24, 2020.

Ebert, D.A., White, W.T., and Ho, H.-C., An annotated checklist of the chondrichthyans of Taiwan, *Zootaxa*, 2013, vol. 3752, no. 1, pp. 279–386. https://doi.org/10.11646/zootaxa.3752.1.17

Eschmeyer's Catalog of Fishes: Genera, Species, References, Version of February 15, 2020, Fricke, R., Eschmeyer, W.N., and van der Laan, R., Eds., 2020. http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp.

Evseenko, S.A., An annotated catalogue of pleuronectiform fishes (order Pleuronectiformes) of the seas of Russia and adjacent countries, *J. Ichthyol.*, 2003, vol. 43, suppl. 1, pp. S57–S74.

Fadeev, N.S., Some data on piked dogfish from the eastern coast of Southern Sakhalin, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 1960, vol. 46, pp. 247–249.

Fadeev, N.S., *Spravochnik po biologii i promyslu ryb severnoi chasti Tikhogo okeana* (Handbook on Biology of Fishes and Fishery in the Northern Part of Pacific Ocean), Vladivostok: TINRO-Tsentr, 2005.

FAO major fishing areas, 2020. http://www.fao.org/fishery/area/search/en.

Fedorov, V.V., An annotated catalog of fishlike vertebrates and fishes of the seas of Russia and adjacent countries, Part 6: Suborder Zoarcoidei, *J. Ichthyol.*, 2004, vol. 44, suppl. 1, pp. S73–S128.

Fedorov, V.V. and Parin, N.V., *Pelagicheskie i bentopelagicheskie ryby tikhookeanskikh vod Rossii (v predelakh 200-mil'noi ekonomicheskoi zony)* (Pelagic and Benthopelagic Fishes from Pacific Russian Waters within the 200-Mile Economic Zone), Moscow: VNIRO, 1998.

Fedorov, V.V., Chereshnev, I.A., Nazarkin, M.V., et al., *Katalog morskikh i presnovodnykh ryb severnoi chasti Okhotskogo morya* (Catalogue of Marine and Freshwater Fishes of the Northern Part of Sea of Okhotsk), Vladivostok: Dal'nauka, 2003.

FishBase, Version 08/2020, Froese, R. and Pauly, D., Eds., 2020. http://www.fishbase.org.

GBIF, The Global Biodiversity Information Facility, 2020. http://www.gbif.org/. Accessed March 1, 2020.

Fishes of Japan with Pictorial Keys to the Species, Nakabo, T., Ed., Tokyo: Tokai Univ. Press, 2002.

Gilbert, C.H. and Burke, C.V., New cyclogasterid fishes from Japan, *Proc. U.S. Nat. Mus.*, 1912, vol. 42, no. 1907, pp. 351–380.

Grigorov, I.V. and Orlov, A.M., Species diversity and conservation status of cartilaginous fishes (Chondrichthyes) of Russian waters, *J. Ichthyol.*, 2013, vol. 53, no. 11, pp. 923–936. https://doi.org/10.1134/S0032945213110040

Grigorov, I.V., Orlov, A.M., and Baitalyuk, A.A., Spatial distribution, size composition, feeding habits, and dynamics of abundance of Alaska skate *Bathyraja parmifera* in the North Pacific, *J. Ichthyol.*, 2015, vol. 55, no. 5, pp. 644–663. https://doi.org/10.1134/S0032945215050069

Grigorov, I.V., Baitalyuk, A.A., and Orlov, A.M., Spatial distribution, size composition, and dynamics of catches of the Okhotsk skate *Bathyraja violacea* in the North Pacific Ocean, *J. Ichthyol.*, 2017, vol. 57, no. 5, pp. 706–720. https://doi.org/10.1134/S0032945217050071

Gritsenko, O.F., Migratory fishes of the Sakhalin Island: systematics, ecology, and fishery, *Extended Abstract of Doctoral (Biol.) Dissertation*, Moscow: VNIRO, 1990.

Gritsenko, O.F., *Prokhodnye ryby ostrova Sakhalin (sistematika, ekologiya, promysel)* (Migratory Fishes of the Sakhalin Island: Systematics, Ecology, and Fishery), Moscow: VNIRO, 2002.

Gubanov, E.P., *Akuly Indiiskogo Okeana. Atlas-opredelitel'* (Sharks of the Indian Ocean: Atlas-Guide for Identification), Moscow: VNIRO, 1993.

Hubbs, C.L., Flounders and soles from Japan collected by the United States Bureau of fisheries steamer "Albatross" in 1906, *Proc. U.S. Nat. Mus.*, 1915, vol. 48, no. 2082, pp. 449–496.

Il'inskii, E.N., The composition and structure of mesopelagic nekton community from the Sea of Okhotsk, *Extended Abstract of Cand. Sci. (Biol.) Dissertation*, Vladivostok: Inst. Mar. Biol., Far Eastern Branch, Russ. Acad. Sci., 1995.

Imai, C., Ikeda, I., and Sakai, H., A record of the rare broadnose sevengill shark *Notorynchus cepedianus* off Yamaguchi in the Sea of Japan, *J. Nat. Fish. Univ.*, 2005, vol. 53, no. 1, pp. 35–40.

Ishihara, H. and Orlov, A.M., *Bathyraja smirnovi*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161612A5464424. https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161612-A5464424.en. Accessed March 24, 2020.

Ishihara, H., Huveneers, C., and Orlov, A., *Bathyraja trachouros*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161701A5484194. https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161701-A5484194.en. Accessed March 18, 2017.

Ishihara, H., Treloar, M., Bor, P.H.F., et al., The comparative morphology of skate egg capsules (Chondrichthyes: Elasmobranchii: Rajiformes), *Bull. Kanagawa Prefect. Mus. Nat. Sci.*, 2012, vol. 41, pp. 9–25.

Ishiyama, R., *Fauna Japonica. Rajidae (Pisces)*, Tokyo: Biogeogr. Soc. Jpn., 1967.

Isii, S., The list of fishes from the freshwaters of Southern Sakhalin, *Nauchno-Rybolovn. Zh.*, 1940, no. 47, pp. 1–66.

IUCN, *Guidelines for Application of IUCN Criteria at Regional Levels, Version 3.0,* Gland: Int. Union Conserv. Nat. Nat. Resour., 2003, 4th ed.

IUCN, *The IUCN Red List Categories and Criteria, Version 3.1*, Gland: Int. Union Conserv. Nat. Nat. Resour., 2012, 2nd ed. http:// www.iucnredlist.org/technical-documents/categories-and-criteria.

IUCN, *The IUCN Red List of Threatened Species, Version 2015.2*, Gland: Int. Union Conserv. Nat. Nat. Resour., 2015. http://www.iucnredlist.org. 27.07.2015.

IUCN, *The IUCN Red List of Threatened Species, Version 2019-2*, Gland: Int. Union Conserv. Nat. Nat. Resour., 2019. http://www.iucnredlist.org. 20.10.2019.

Ivanov, O.A. and Sukhanov, V.V., Species composition of nekton in the Sea of Okhotsk, *Vestn. Sev.-Vost. Nauch.*

Tsentra, Dal'nevost. Otd., Ross. Akad. Nauk, 2010, no. 2, pp. 48–62.

Jeong, C.-H., Ishihara, H., and Wang, Y., *Myliobatis tobijei*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161354A5405116. https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161354-A5405116.en. Accessed May 26, 2017.

Jordan, D.S. and Starks, E.C., The fishes of Puget Sound, *Proc. Calif. Acad. Sci., Ser. 2*, 1895, vol. 5, pp. 785–855.

Jordan, D.S., Tanaka, S., and Snyder, J.O., A catalogue of the fishes of Japan, *J. Coll. Sci. Tokyo Imper. Univ.*, 1913, vol. 33, no. 1.

Kawai, T., Fish collection of Hokkaido University, Occurrence dataset, National Museum of Nature and Science, 2019. https://doi.org/10.15468/f791zg. Accessed March 20, 2020.

Kazarnovskii, M.Ya., The Sladkoe Lake is valuable water reservoir, *Rybn. Prom-st' Dal'nego Vost.*, 1961, no. 3, p. 10.

Kim Sen Tok, Current resources of bottom fishes in the Aniva and Terpeniya bays in the southwestern part of Sea of Okhotsk, *Vopr. Rybolov.*, 2000, vol. 1, no. 2, pp. 163–164.

Kim Sen Tok, Seasonal features of the vertical structure of ichthyocenes of West Sakhalin shelf and island slope, *Vopr. Ikhtiol.*, 2004, vol. 44, no. 1, pp. 77–88.

Kim Sen Tok, Vertical and spatio-temporal structure of communities of demersal fishes of the Aniva Bay in summer-autumn seasons of 1989–2002, *Tr. Sakhalin. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2005, vol. 7, pp. 23–44.

Kim Sen Tok, Characteristic of deep water fishery of the broadbanded thornyhead *Sebastolobus macrochir* and the catch structure on the slope of Southeastern Sakhalin in July–December 2005, *Vopr. Rybolov.*, 2006, vol. 7, no. 4 (28), pp. 584–604.

Kim Sen Tok, Modern structure and dynamics of demersal fishes in East Sakhalin waters, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 2007, vol. 148, pp. 74–92.

Kim Sen Tok and Kim, A., The structure of multispecies associated communities of fish at the western Sakhalin coast by the results of a trawling assessment survey on R/V *Bukhoro* in June 2018, *J. Ichthyol.*, 2019, vol. 59, no. 5, pp. 707–726. https://doi.org/10.1134/S0032945219050060

Klyuchareva, O.A., The data on ichthyofauna and fishery in the lakes of southern Sakhalin, in *Ozera yuzhnogo Sakhalina i ikh ikhtiofauna* (Lakes of Southern Sakhalin and Their Ichthyofauna), Moscow: Mosk. Gos. Univ., 1964, pp. 223–266.

Kottelat, M., Conspectus Cobitinum: an inventory of the loaches of the world (Teleostei: Cypriniformes: Cobitoidei), *Raffles Bull. Zool. Suppl.*, 2012, no. 26.

Krasnaya kniga Sakhalinskoi oblasti. Zhivotnye (The Red Data Book of Sakhalin Oblast: Animals), Efanov, V.N., Ed., Moscow: Buki Vedi, 2016.

Laan van der, R., Eschmeyer, W.N., and Fricke, R., Family-group names of recent fishes, *Zootaxa Monogr.*, 2014, vol. 3882, no. 1, pp. 1–230.

Labai, V.S., Atamanova, I.A., Zavarzin, D.S., et al., *Vodoemy ostrova Sakhalin: ot lagun k ozeram* (Reservoirs of the Sakhalin Island: From Lagoons to Lakes), Yuzhno-Sakhalinsk: Sakhalin. Obl. Kraeved. Muz., 2014.

Labai, V.S., Zhivoglyadova, L.A., Polteva, A.V., et al., Natural history of Sakhalin and Kuril Islands, in *Vodotoki ostrova Sakhalin: zhizn' v tekuchei vode* (Watercourses of Sakhalin Island: Life in the Running Water), Yuzhno-Sakhalinsk: Sakhalin. Obl. Kraeved. Muz., 2015.

Last, P.R., Naylor, G.J.P., and Manjaji-Matsumoto, B.M., A revised classification of the family Dasyatidae (Chondrichthyes: Myliobatiformes) based on new morphological and molecular insights, *Zootaxa*, 2016a, vol. 4139, no. 3, pp. 345–368. https://doi.org/10.11646/zootaxa.4139.3.2

Last, P.R., Weigmann, S., and Yang, L., Changes to the nomenclature of the skates (Chondrichthyes: Rajiformes), in *Rays of the World: Supplementary Information*, Last, P.R., Ed., Melbourne: CSIRO, 2016b, pp. 11–34.

Lindberg, G.U., The list of fauna of marine waters of southern Sakhalin and southern Kuril Islands, in *Issledovaniya dal'nevostochnykh morei SSSR* (The Studies of Far Eastern Seas of Soviet Union), Tr. Kurilo-Sakhalin. Eksp., Leningrad: Akad. Nauk SSSR, 1959, pp. 244–256.

Lindberg, G.U. and Fedorov, V.V., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1993, part 6.

Lindberg, G.U. and Krasyukova, Z.V., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1969, part 3.

Lindberg, G.U. and Krasyukova, Z.V., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1975, part 4.

Lindberg, G.U. and Krasyukova, Z.V., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1987, part 5.

Lindberg, G.U. and Legeza, M.I., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1959, part 1.

Lindberg, G.U. and Legeza, M.I., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1965, part 2.

Lindberg, G.U., Fedorov, V.V., and Krasyukova, Z.V., *Ryby Yaponskogo morya i sopredel'nykh chastei Okhotskogo i Zheltogo morei* (Fishes of the Sea of Japan and Adjacent Parts of the Okhotsk and Yellow Seas), Moscow: Nauka, 1997, part 7.

Lopez, A., *UAM Fish Collection (Arctos), Occurrence Dataset, Version 34.36*, Fairbanks, AK: Univ. Alaska, Mus. North, 2020. https://doi.org/10.15468/ovjmrn. Accessed March 20, 2020.

Mecklenburg, C.W., Mecklenburg, T.A., and Thorsteinson, L.K., *Fishes of Alaska*, Bethesda, MA: Am. Fish. Soc., 2002.

Mecklenburg, C.W., Mecklenburg, T.A., Sheiko, B.A., and Steinke, D., Pacific Arctic marine fishes, in *Conservation of Arctic Flora and Fauna*, CAFF Monit. Ser. Rep. no. 23, Akureyri: CAFF, 2016.

Mecklenburg, C.W., Lynghammar, A., Johannesen, E., et al., Marine fishes of the Arctic region, in *Conservation of Arctic Flora and Fauna*, CAFF Monit. Ser. Rep. no. 28, Akureyri: CAFF, 2018, vol. 1.

Misawa, R., Orlov, A.M., Orlova, S.Y., et al. *Bathyraja (Arctoraja) sexoculata* sp. nov., a new softnose skate (Rajiformes: Arhynchobatidae) from Simushir Island, Kuril Islands (western North Pacific), with special reference to geographic variations in *Bathyraja (Arctoraja) smirnovi*. *Zootaxa*. 2020, vol. 4861, no. 4, pp. 515–543.
https://doi.org/10.11646/zootaxa.4861.4.3

Mukhametova, O.N., Ichthyoplankton of lagoon lakes of the southeastern part of the Sakhalin Island, *Extended Abstract of Cand. Sci. (Biol.) Dissertation*, Vladivostok: Inst. Mar. Biol., Far Eastern Branch, Russ. Acad. Sci., 2008.

Murakami, T., Fujisawa, M., and Masuda, Y., Stranding records of basking shark *Cetorhinus maximus* to Shari town, Eastern Hokkaido, *Bull. Shiretoko Mus.*, 2011, vol. 32, pp. 35–36.

Museums Victoria provider for OZCAM, Occurrence dataset, 2019.
https://doi.org/10.15468/lp1ctu. Accessed March 20, 2020.

Nagao, T., Kawai, T., Matsubara, H., and Suzuki, A., Record of pitted stingray *Dasyatis matsubarai* (Myliobatiformes: Dasyatidae) collected from the Sea of Okhotsk, Abashiri, Hokkaido, Japan, *Bull. Shiretoko Mus.*, 2011, vol. 32, pp. 31–34.

Nagasawa, K. and Torisawa, M., *Fishes and Marine Invertebrates of Hokkaido: Biology and Fisheries*, Sapporo: Kita-Nihon Kaiyo Center, 1991.

Nakae, M. and Shinohara, G., Fish collection of National Museum of Nature and Science, Occurrence dataset, Japan, 2018.
https://doi.org/10.15468/w3dzv1. Accessed March 20, 2020.

Naseka, A.M. and Gershtein, V.V., Cyclostomata and fishes, in *Pozvonochnye zhivotnye zapovednika Khankaiskii i Prikhankaiskoi nizmennosti* (Vertebrates of the Khanka Nature Reserve and Khankaiskaya Lowland), Vladivostok: Ideya, 2006, pp. 16–67.

Naylor, G.J.P., Caira, J.N., Jensen, K., et al., A DNA sequence-based approach to the identification of shark and ray species and its implications for global elasmobranch diversity and parasitology, *Bull. Am. Mus. Nat. Hist.*, 2012, vol. 367, pp. 1–262.
https://doi.org/10.1206/754.1

Nelson, J.S., *Fishes of the World*, New Jersey: Wiley, 2006.

Ng, H.H. and Kottelat, M., The identity of *Tachysurus sinensis* La Cepède, 1803, with the designation of a neotype (Teleostei: Bagridae) and notes on the identity of *T. fulvidraco* (Richardson, 1845), *Electron. J. Ichthyol.* 2007, vol. 2, pp. 35–45.

Nikiforov, S.N., Grishin, A.F., Zakharov, A.V., and Shelepakha, G.N., Composition of ichthyofauna and distribution of fishes in the Poronai and Tym' River basins (Sakhalin), *Vopr. Ikhtiol.*, 1997, vol. 37, no. 3, pp. 329–337.

Nikitin, V.D., Resources of freshwater fishes near the Sakhalin Island, *Tr. Sakhalin. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2012, vol. 13, pp. 143–151.

Nikitin, V.D. and Labai, V.S., The Sakhalin taimen (*Parahucho perryi*) in ichthyofauna of the Nabil' River according to studies performed in 2015–2016, *Uch. Zap. Sakhalin. Gos. Univ.*, 2016–2017, nos. 13–14, pp. 19–32.

Nikitin, V.D. and Safronov, S.N., Analysis, species composition, morphology, and distribution of Sakhalin cyprinid fishes of genus *Rhynchocypris* (Cyprinidae), *Izv. Irkutsk. Gos. Univ., Ser. Biol., Ekol.*, 2009, no. 2, pp. 41–44.

Nikitin, V.D., Metlenkov, A.V., Prokhorov, A.P., et al., Species composition and seasonal distribution of fishes in the Lyutoga River in 2011–2012, *Tr. Sakhalin. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2013, vol. 14, pp. 55–95.

Nikitin, V.D., Prokhorov, A.P., Metlenkov, A.V., et al., New data on ichthyofauna of the Lake Sladkoe (northwestern Sakhalin Island), in *Chteniya pamyati V.Ya. Levanidova* (Vladimir Ya. Levanidov's Biennial Memorial Meetings), Vladivostok: Dal'nauka, 2014, no. 6, pp. 470–482.

Nikolskii, A.M., *Ostrov Sakhalin i ego fauna pozvonochnykh zhivotnykh* (The Sakhalin Island and Its Fauna of Vertebrates), St. Petersburg: Imp. Akad. Nauk, 1889.

Nikolskii, G.V., *Ryby basseina Amura* (Fishes of the Amur Basin), Moscow: Akad. Nauk SSSR, 1956.

Orlov, A.M., The Pacific sleeper shark *Somniosus pacificus*: a deterrence for existing fisheries or a promising target? *Adv. Med. Biol.*, 2017, vol. 119, pp. 277–289.

Orlov, A.M. and Baitalyuk, A.A., Spatial distribution and features of biology of Pacific sleeper shark *Somniosus pacificus* in the North Pacific, *J. Ichthyol.*, 2014, vol. 54, no. 8, pp. 526–546.
https://doi.org/10.1134/S0032945214040080

Orlov, A. and Ishihara, H., *Bathyraja fedorovi*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009a, no. e.T161623A5466960.
https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161623-A5466960.en. Accessed March 24, 2020.

Orlov, A. and Ishihara, H., *Bathyraja isotrachys*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009b, no. e.T161454A5427955.
https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161454-A5427955.en. Accessed March 24, 2020.

Orlov, A.M. and Ishihara, H., *Rhinoraja longicauda*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009c, no. e.T161575A5455430.
https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161575-A5455430.en. Accessed March 19, 2017.

Orlov, A.M. and Tokranov, A.M., New data on two rare skate species of the genus *Bathyraja* in Kamchatka and Kuril waters, *J. Ichthyol.*, 2005, vol. 45, no. 6, pp. 444–450.

Orlov, A.M. and Tokranov, A.M., Checklist of deep-sea fishes of the Russian northwestern Pacific Ocean found at depths below 1000 meters, *Prog. Oceanogr.*, 2019, vol. 176, art. ID 102143.
https://doi.org/10.1016/j.pocean.2019.102143

Orlov, A.M., Savinykh, V.F., and Pelenev, D.V., Features of the spatial distribution and size structure of the Pacific lamprey *Lampetra tridentata* in the North Pacific, *Russ. J. Mar. Biol.*, 2008, vol. 34, no. 276, pp. 276–287.
https://doi.org/doi.org/10.1134/S1063074008050039

Orlov, A.M., Ishihara, H., and McCormack, C., *Bathyraja tzinovskii*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161444A5425647.
https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161444-A5425647.en. Accessed April 1, 2017.

Orlov, A.M., Savinykh, V.F., Kulish, E.F., and Pelenev, D.V., New data on the distribution and size composition of the North Pacific spiny dogfish *Squalus suckleyi* (Girard, 1854), *Sci. Mar.*, 2012, vol. 76, no. 1, pp. 111–122.
https://doi.org/10.3989/scimar.03439.22C

Orlov, A.M., Baitalyuk, A.A., and Pelenev, D.V., Distribution and size composition of the Arctic lamprey *Lethenteron camtschaticum* in the North Pacific, *Oceanology* (Engl. Transl.), 2014, vol. 54, no. 2, pp. 180–194. https://doi.org/10.1134/S0001437014020192.

Orr, J.W., Stevenson, D.E., Hoff, G.R., et al., *Bathyraja panthera*, a new species of skate (Rajidae: Arhynchobatinae) from the western Aleutian Islands, and resurrection of the subgenus Arctoraja Ishiyama, *NOAA Prof. Pap. NMFS*, 2011, no. 11, pp. 1–50.

Orrell, T., Extant specimen records: version 1.29, Occurrence dataset, National Museum of Natural History, Smithsonian Institution, 2020. https://doi.org/10.15468/hnhrg3. Accessed March 20, 2020.

Panchenko, V.V., Kalchugin, P.V., and Solomatov, S.F., Specification of the habitation depths and maximum sizes for the demersal fish species in the Russian territorial waters of the Sea of Japan, *J. Ichthyol.*, 2016, vol. 56, no. 3, pp. 348–367. https://doi.org/10.1134/S0032945216030127

Parin, N.V., An annotated catalog of fishlike, vertebrates and fishes of the seas of Russia and adjacent countries, Part 1: Order Myxiniformes–Gasterosteiformes, *J. Ichthyol.*, 2001, vol. 41, suppl. 1, pp. S51–S131.

Parin, N.V., An annotated catalogue of fish-like vertebrates and fishes of the seas of Russia and adjacent countries: Part 3. Orders Perciformes (excluding suborders Gobioidei, Zoarcoidei and Stichaeoidei) and Tetraodontiformes, *J. Ichthyol.*, 2003, vol. 43, suppl. 1, pp. S1–S40.

Parin, N.V., Fedorov, V.V., and Sheiko, B.A., An annotated catalogue of fish-like vertebrates and fishes of the seas of Russia and adjacent countries: Part 1. Order Scorpaeniformes, *J. Ichthyol.*, 2002, vol. 42, suppl. 1, pp. S60–S135.

Parin, N.V., Evseenko, S.A., and Vasil'eva, E.D., *Ryby morei Rossii: Annotirovannyi katalog* (Fishes of Russian Seas: Annotated Catalogue), Moscow: KMK, 2014.

Perdices, A., Vasil'ev, V., and Vasil'eva, E., Molecular phylogeny and intraspecific structure of loaches (genera *Cobitis* and *Misgurnus*) from the Far East region of Russia and some conclusions on their systematics, *Ichthyol. Res.*, 2012, vol. 59, no. 2, pp. 113–123. https://doi.org/10.1007/s10228-011-0259-6

Pietsch, T.W. and Orr, J.W., *Triglops dorothy*, a new species of sculpin (Teleostei: Scorpaeniformes: Cottidae) from the southern Sea of Okhotsk, *Fish. Bull.*, 2006, vol. 104, no. 2, pp. 238–246.

Pietsch, T.W., Amaoka, K., Stevenson, D.E., et al., Freshwater fishes of the Kuril Islands and adjacent regions, *Species Diversity*, 2001, vol. 6, no. 2, pp. 133–164.

Pietsch, T.W., Bogatov, V.V., Storozhenko, S.Yu., et al., Biodiversity and biogeography of Sakhalin Island, in *Materials of International Kuril Island and International Sakhalin Island Projects "Flora and Fauna of North-West Pacific Islands,"* Vladivostok: Dal'nauka, 2012, pp. 11–79.

Poltev, Yu.N. and Sheiko, B.A., Capture of *Hydrolagus* cf. *purpurescens* (Gilbert, 1905) (Chimaeriformes: Chimaeridae) off southeastern Sakhalin, *J. Ichthyol.*, 2007, vol. 47, no. 8, pp. 611–619. https://doi.org/10.1134/S0032945207080073

Probatov, A.N., Invasion of termophilic fishes to the Sakhalin waters, *Dokl. Akad. Nauk SSSR*, 1951, vol. 77, no. 1, pp. 145–147.

Probatov, A.N., The shark near Sakhalin Island, *Priroda* (Moscow), 1952, no. 6, pp. 115.

Promyslovye ryby Rossii (Commercial Fish Species of Russia), Gritsenko, O.F., Kotlyar, A.N., and Kotenev, B.N., Eds., Moscow: VNIRO, 2006.

Quast, J.C. and Hall, E.L., List of fishes of Alaska and adjacent waters with a guide to some of their literature, in *NOAA Technical Report NMF SSRF-658*, Silver Spring, MD: Natl. Ocean. Atmos. Admin., 1972.

Randall, J.E. and DiBattista, J.D., *Etrumeus makiawa*, a new species of round herring (Clupeidae: Dussumierinae) from the Hawaiian Islands, *Pac. Sci.*, 2012, vol. 66, no. 1, pp. 97–110. https://doi.org/10.2984/66.1.6

Ryby Kuril'skikh ostrovov (Fishes of Kuril Islands), Gritsenko, O.F., Ed., Moscow: VNIRO, 2012.

Safronov, S.N., Biology and systematics of the northern smoothtongue *Leuroglossus schmidti* (Bathylagidae, Pisces) from the Sea of Okhotks, *Uch. Zap. Sakhalin. Gos. Univ.*, 2000, no. 1, pp. 94–105.

Safronov, S.N., Species diversity, known data, and monitoring of rare and endangered species of Salmoniformes of Sakhalin Island, *Izv. Irkutsk. Gos. Univ., Ser.: Biol. Ekol.*, 2009, no. 2, pp. 51–54.

Safronov, S.N. and Galimzyanov, K.G., About finds of *Pterothrissus gissu*, Holgendorf, 1877 (Pterothrissidae, Pisces) near Southwestern Sakhalin, *Materialy nauchno-prakticheskoi konferentsii "Itogi issledovanii po voprosam ratsional'nogo ispol'zovaniya i okhrany biologicheskikh resursov Sakhalina i Kuril'skikh ostrovov," Tezisy dokladov* (Proc. Sci.-Pract. Conf. "Rational Use and Protection of Biological Resources of Sakhalin and Kuril Islands," Abstracts of Papers), Yuzhno-Sakhalinsk, 1981, pp. 31–33.

Safronov, S.N. and Marchenko, V.I., First find of the Amur pike (*Esox reichertii* Dybowski, 1869) in the lakes of southern Sakhalin and its morphobiological characteristics in island reservoirs, *Materialy II Regional'noi konferentsii "Aktual'nye problemy morskoi biologii, ekologii i biotekhnologii," Tezisy dokladov* (Proc. II Reg. Conf. "Marine Biology, Ecology, and Biotechnology," Abstracts of Papers), Vladivostok: Dal'nevost. Gos. Univ., 1999, pp. 131–133

Safronov, S.N. and Nikiforov, S.N., Species composition and distribution of ichthyofauna of fresh and saline waters of Sakhalin, *Materialy XXX nauchno-metodicheskoi konferentsii prepodavatelei* (Proc. XXX Sci.-Methodological Conf. of Teachers), Yuzhno-Sakhalinsk: Yuzh.-Sakhalin. Gos. Pedagog. Inst., 1995, part 2, pp. 112–124.

Safronov, S.N. and Nikiforov, S.N., The list of fish-like species and fishes of fresh and saline waters of Sakhalin, *Vopr. Ikhtiol.*, 2003, vol. 43, no. 1, pp. 42–53.

Safronov, S.N. and Nikitin, V.D., Morphological characteristic of the lake chars (genus *Phoxinus*) in Sakhalin Island, in *Chteniya pamyati V.Ya. Levanidova* (Vladimir Ya. Levanidov's Biennial Memorial Meetings), Vladivostok: Dal'nauka, 2005, no. 3, pp. 456–465.

Safronov, S.N. and Nikitin, V.D., Quantitative characteristics of the freshwater fishe ichthyofauna of Northeastern Sakhalin in the summer-autumn, *Nauka, Obraz., O-vo*, 2016, no. 1 (9).

Safronov, S.N. and Nikitin, V.D., Species structure and abundance of ichthyofauna near marine coasts of Kholmsk city (Southwestern Sakhalin) in summer, *Nauka, Obraz., O-vo*, 2017a, no. 1.

Safronov, S.N. and Nikitin, V.D., Quantitative characteristics of the freshwater ichthyofauna of Southeastern Sakhalin in the summer-autumn period, *Nauka, Obraz., O-vo*, 2017b, no. 1.

Safronov, S.N. and Zvezdov, T.V., *Salvelinus vasiljevae* sp. nova—a new species of freshwater chars (Salmonidae, Salmoniformes) from northwestern Sakhalin, *J. Ichthyol.*, 2005, vol. 45, no. 9, pp. 700–711.

Safronov, S.N., Nikitin, V.D., Zavarzina, N.K., et al., Species structure, population, and fishery of fishes in the Nevskoe Lake (Sakhalin Island), *Tr. Sakhalin. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 2008, vol. 10, pp. 208–235.

Safronov, S.N., Khapochkin, E.E., Safronov, A.S., and Nevedomaya, A.I., The loaches of genus *Misgurnus* (Cypriniformes) from freshwater of Sakhalin, *Materialy XI Mezhdunarodnoi nauchnoi konferentsii "Sokhranenie bioraznoobraziya Kamchatki i prilegayushchikh morei"* (Proc. XI Int. Sci. Conf. "Conservation of Biological Diversity of Kamchatka and Adjacent Seas"), Petropavlovsk-Kamchatskiy: Kamchatpress, 2010, pp. 355–358.

Sakai, H., Ueda, T., Yokoyama, R., et al., Genetic structure and phylogeography of northern Far Eastern pond minnows, *Rhynchocypris perenurus sachalinensis* and *R. p. mantschuricus* (Pisces, Cyprinidae), inferred from mitochondrial DNA sequences, *Biogeography*, 2014, vol. 16, pp. 87–109.

Sakai, H., Watanabe, K., and Goto, A., A revised generic taxonomy for Far East Asian minnow *Rhynchocypris* and dace *Pseudaspius, Ichthyol. Res.*, 2020, vol. 67, pp. 330–334.
https://doi.org/10.1007/s10228-019-00726-5

Sato, S., A check list of the fresh water fishes of Sakhalin Island, *Trans. Sapporo Nat. Hist. Soc.*, 1942, vol. 17, pp. 102–112.

Savin, A.B., Bathymetric groupings of demersal fishes on the slope and outer shelf at the oceanic side of southern Kuril Islands in spring season, *Izv. Tikhookean. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2014, vol. 177, pp. 167–181.
https://doi.org/10.26428/1606-9919-2014-177-167–181

Shed'ko, S.V., The list of freshwater Cyclostomata species and fishes in coastal Primorye, in *Chteniya pamyati V.Ya. Levanidova* (Vladimir Ya. Levanidov's Biennial Memorial Meetings), Vladivostok: Dal'nauka, 2001, no. 1, pp. 229–249.

Shedko, S.V., On the taxonomic status of *Leuciscus sachalinensis* Nikolsky, 1889 (Cypriniformes, Cyprinidae), *J. Ichthyol.*, 2005, vol. 45, no. 7, pp. 496–502.

Shed'ko, S.V. and Shed'ko, M.B., New data on freshwater ichthyofauna of the south of Russian Far East, in *Chteniya pamyati V.Ya. Levanidova* (Vladimir Ya. Levanidov's Biennial Memorial Meetings), Vladivostok: Dal'nauka, 2003, no. 2, pp. 319–336.

Shed'ko, S.V., Shed'ko, M.B., and Pitch, T.V., *Pungitius polyakovi* sp. n. is a new species of ninespine stickleback (Gasterosteiformes, Gasterosteidae) off the southeast of Sakhalin Island, in *Materialy Mezhdunarodnogo sakhalinskogo proekta "Rastitel'nyi i zhivotnyi mir ostrova Sakhalin"* (The Materials of International Sakhalin Project "Flora and Fauna of Sakhalin Island"), Vladivostok: Dal'nauka, 2005, part 2, pp. 223–233.

Shedko, S.V., Miroshnichenko, I.L., and Nemkova, G.A., On the systematics and phylogeography of eight-barbel loaches of the genus *Lefua* (Cobitoidea: Nemacheilidae): MtDNA typing of *L. pleskei, J. Ichthyol.*, 2008, vol. 44, no. 7, pp. 817–825.
https://doi.org/10.1134/S1022795408070090

Sheiko, B.A. and Fedorov, V.V., Fish-like species and fishes, in *Katalog pozvonochnykh Kamchatki i sopredel'nykh morskikh akvatorii* (Catalogue of Vertebrates of Kamchatka and Adjacent Marine Basins), Petropavlovsk-Kamchatskii: Kamchat. Pechat. Dvor, 2000, pp. 7–69.

Shinohara, G., Yabe, M., Nakaya, K., et al., Deep-sea fishes collected from the North Pacific by the T/S *Oshoro-Maru, Bull. Fac. Fish. Hokkaido Univ.*, 1994, vol. 45, no. 2, pp. 48–80.

Shinohara, G., Narimatsu, Y., Hattori, T., et al., Annotated checklist of deep-sea fishes from the Pacific coast off Tohoku district, Japan, *Nat. Mus. Nat. Sci. Monogr.*, 2009, no. 39, pp. 683–735.

Shinohara, G., Nazarkin, M.V., Nobetsu, T., and Yabe, M., A preliminary list of marine fishes found in the Nemuro Strait between Hokkaido and Kunashiri islands, *Bull. Nat. Mus. Nat. Sci., Ser. A*, 2012, vol. 38, no. 4, pp. 181–205.

Shinohara, G., Nakae, M., Ueda, Y., et al., Annotated checklist of deep-sea fishes of the Sea of Japan, *Nat. Mus. Nat. Sci. Monogr.*, 2014, no. 44, pp. 225–291.

Shmidt, P.Yu., *Ryby vostochnykh morei Rossiiskoi imperii* (Fishes of Eastern Seas of the Russian Imperia), St. Petersburg: Russ. Geogr. O-vo, 1904.

Shmidt, P.Yu., Marine commercial fishery at the Sakhalin Island, in *Rybnye promysly Dal'nego Vostoka* (Fishery at the Far East), St. Petersburg: Tipogr. Pozharova, 1905, vol. 3.

Shmidt, P.Yu., *Ryby Okhotskogo morya* (Fishes of the Sea of Okhotsk), Moscow: Akad. Nauk SSSR, 1950.

Shmidt, P.Yu. and Taranetz, A.Ya., New southern elements in fish fauna of the northern part of Sea of Okhotsk, *Dokl. Akad. Nauk SSSR*, 1934, vol. 11, no. 9, pp. 591–595.

Shuntov, V.P., Bocharov, L.N., Volvenko, I.V., et al., *Nekton Okhotskogo morya. Tablitsy chislennosti, biomassy i sootnosheniya vidov* (Nekton of the Okhotsk Sea: Tables of Abundance, Biomass, and Species ratio), Vladivostok: TINRO-Tsentr, 2003.

Shuntov, V.P., Volvenko, I.V., Kulik, V.V., and Bocharov, L.N., *Makrofauna bentali severozapadnoi chasti Yaponskogo (Vostochnogo) morya: tablitsy vstrechaemosti, chislennosti i biomassy, 1978–2010* (Benthic Macrofauna of the Northwestern Part of Japan (East) Sea: Tables of Occurrence, Abundance, and Biomass. 1978–2010), Vladivostok: TINRO-Tsentr, 2014.

Sideleva, V.G., Neelov, A.V., Voronina, E.P., and Volkova, G.A., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences. Class Osteichthyes. Order Scorpaeniformes. Suborder Cottoidei, Part 1, *Issled. Fauny Morei*, 2006a, vol. 57, no. 65, pp. 1–223.

Sideleva, V.G., Neelov, A.V., Voronina, E.P., and Volkova, G.A., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences. Class Osteichthyes. Order Scorpaeniformes. Suborder Cottoidei, Part 2, *Issled. Fauny Morei*, 2006b, vol. 57, no. 65, pp. 225–349.

Sokolovskii, A.S., Dudarev, V.A., Sokolovskaya, T.G., and Solomatov, S.F., *Ryby rossiiskikh vod Yaponskogo morya* (Fishes of the Russian Basin of the Sea of Japan), Vladivostok: Dal'nauka, 2007.

Sokolovskii, A.S., Sokolovskaya, T.G., and Yakovlev, Yu.M., *Ryby zaliva Petra Velikogo* (Fishes of the Peter the Great Bay), Vladivostok: Dal'nauka, 2011.

Soldatov, V.K., Two new species of genus *Artediellus* (Cottidae) off the Tatar Strait and Sea of Okhotsk, *Ezheg. Zool. Muz. Russ. Imp. Akad. Nauk*, 1915, vol. 20, pp. 155–161.

Soldatov, V.K., Notes on two new species of *Lycodes* from Okhotsk Sea, *Ezheg. Zool. Muz. Russ. Imp. Akad. Nauk*, 1918, vol. 22, pp. 112–117.

Soldatov, V.K., Description of a new species of *Artediellus* (Pisces, Cottidae) from Okhotsk Sea, *Ezheg. Zool. Muz. Russ. Imp. Akad. Nauk*, 1922, vol. 23, pp. 321–324.

Soldatov, V.K. and Lindberg, G.U., Review of the fishes from Far Eastern seas, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 1930, vol. 5, pp. 1–576.

Species by Family/Subfamily in Eschmeyer's Catalog of Fishes, Version of February 15, 2020, Fricke, R., Eschmeyer, W.N., and Fong, J.D., Eds., 2020. http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp.

Spies, I.B., Stevenson, D.E., Orr, J.W., and Hoff, G.R., Molecular systematics of the skate subgenus *Arctoraja* (Bathyraja: Rajidae) and support for an undescribed species, the leopard skate, with comments on the phylogenetics of *Bathyraja, Ichthyol. Res.*, 2011, vol. 58, no. 1, pp. 77–83. https://doi.org/10.1007/s10228-010-0185-z

Stevenson, D.E., Orr, J.W., Hoff, G.R., and McEachran, J.D., *Field Guide to the Sharks, Skates, and Ratfish of Alaska*, Fairbanks, AK: Alaska Sea Grant Coll. Progr., 2007.

Stevenson, D.E., Orr, J.W., Hoff, G.R., and McEachran, J.D., Emerging patterns of species richness, diversity, population density, and distribution in the skates (Rajidae) of Alaska, *Fish. Bull.*, 2008, vol. 106, no. 1, pp. 24–39.

Tanaka, S., Notes on a collection of fishes made by Prof. Ijima in the southern parts of Sakhalin, *Ann. Zool. Jpn.*, 1908, vol. 6, pp. 235–254.

Taranetz, A.Ya., Some changes in fish taxonomy of Soviet Far East with the notes on their distribution, *Vestn. Dal'nevost. Otd., Akad. Nauk SSSR*, 1935, no. 13, pp. 89–101.

Taranetz, A.Ya., About some fishes of the Sakhalin Island, *Vestn. Dal'nevost. Otd., Akad. Nauk SSSR*, 1936a, no. 15, pp. 85–88.

Taranetz, A.Ya., Description of three new species of genus *Icelus* Kröyer (Pisces, Cottidae) from the Japan and Okhotsk seas, *Dokl. Akad. Nauk SSSR*, 1936b, vol. 4, no. 13, pp. 145–148.

Taranetz, A.Ya., Brief guide for identification of fishes of the Soviet Far East and adjacent waters, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 1937a, vol. 11, pp. 1–200.

Taranetz, A.Ya., The data for analysis of ichthyofauna of Soviet Sakhalin, *Izv. Tikhookean. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr.*, 1937b, vol. 12, pp. 5–50.

Taranetz, A.Ya., New finds of southern elements in ichthyofauna of the northwestern part of Sea of Japan in summer 1936, *Vestn. Dal'nevost. Otd., Akad. Nauk SSSR*, 1938, vol. 28, no. 1, pp. 113–130.

Tilesius von, W.G., Description de quelques poissons observés pendant son voyage autour du monde, *Mém. Soc. Impér. Nat. Moscou*, 1809, vol. 2, art. 20, pp. 212–249.

Tilesius von, W.G., Piscium *Camtschaticorum* descriptiones et icones, *Mém. Acad. Impér. Sci. St. Petersb.*, 1811, vol. 3, pp. 225–285.

Tilesius von, W.G., Iconum et descriptionum piscium *Camtschaticorum continuatio* tertia tentamen monographiae generis Agoni blochiani sistens, *Mém. Acad. Impér.Sci. St. Petersb.*, 1813, vol. 4, pp. 406–478.

Tohkairin, A., Hamatsu, T., Yoshikawa, A., et al., An illustrated and annotated checklist of fishes on Kitami-Yamato Bank, southern Sea of Okhotsk, *Publ. Seto Mar. Biol. Lab.*, 2015, vol. 43, pp. 1–29. https://doi.org/10.5134/193238

Tokranov, A.M., Orlov, A.M., and Sheiko, B.A., *Promyslovye ryby materikovogo sklona prikamchatskikh vod* (Commercial Fishes from Continental Slope of Near-Kamchatka Waters), Petropavlovsk-Kamchatskiy: Kamchatpress, 2005.

Tomita, T., Kawai, T., Matsubara, H., and Nagata, R., Occurrence of the Chilean devil ray *Mobula tarapacana* (Elasmobranchii: Batoidea: Myliobatiformes) in the Sea of Okhotsk: first record from cold temperate waters, *J. Fish Biol.*, 2013, vol. 83, no. 3, pp. 695–698. https://doi.org/10.1111/jfb.12205

Tomita, T., Kawai, T., Matsubara, H., et al., Northernmost record of a whale shark *Rhincodon typus* from the Sea of Okhotsk, *J. Fish Biol.*, 2014, vol. 84, no. 1, pp. 243–246. https://doi.org/10.1111/jfb.12273

Tuponogov, V.N. and Kodolov, L.S., *Polevoi opredelitel' promyslovykh i massovykh vidov ryb dal'nevostochnykh morei Rossii* (Field Guide for Identification of Commercial and Mass Fish Species from Far Eastern Russian Seas), Vladivostok: Russkii Ostrov, 2014.

Uchida, A., Fish list of the Shiretoko Peninsula, 2020. http://shiretoko-museum.mydns.jp/shizen_rekishi/seibutsu/sakana_list. Accessed March 20, 2020.

Ueno, T., List of marine fishes from the waters of Hokkaido and its adjacent regions, *Sci. Rep. Hokkaido Fish. Exp. Stn.*, 1971, no. 13, pp. 61–102.

Ueno, T. and Abe, K., Studies on deep-water fishes from off Hokkaido and adjacent regions, *Jpn. J. Ichthyol.*, 1966, vol. 14, nos. 1–3, pp. 35–39.

UWFC, University of Washington ichthyology collection, Occurrence dataset, 2020. https://doi.org/10.15468/vvp7gr. Accessed March 20, 2020.

Vasil'eva, E.D., An annotated catalogue of fishes and fish-like organisms living in seas of Russia and adjacent countries: Part 4. Gobioidei, *J. Ichthyol.*, 2003, vol. 43, suppl. 1, pp. S41–S56.

Vasil'eva, E.D., Type specimens of fishes in the Zoological Museum of Moscow State Universitety, *Zool. Issled.*, 2019, no. 21, pp. 1–168.

Velikanov, A.Ya., Communities of pelagic fishes at the western and eastern Sakhalin in 2002, *Izv. Tikhookean. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2004, vol. 137, pp. 207–225.

Velikanov, A.Ya., The record of the white shark *Carcharodon carcharias* (Lamnidae) from Aniva Bay, Sakhalin, *J.*

Ichthyol., 2010, vol. 50, no. 4, pp. 347–350. https://doi.org/doi.org/10.1134/S0032945210040089.

Velikanov, A.Ya., Pacific sardine (*Sardinops melanostictus*) migrations to the shores of Sakhalin Island in the 20th–early 21st centuries, *J. Ichthyol.*, 2016, vol. 56, no. 5, pp. 715–727.
https://doi.org/10.1134/S0032945216040147

Velikanov, A.Ya. and Stominok, D.Yu., The current state of ichthyofauna of the Aniva Bay (Sakhalin Island), *Tr. Sakhalin. Nauchno-Issled.Inst. Rybn. Khoz. Okeanogr.*, 2004, vol. 6, pp. 55–69.

Velikanov, A.Ya., Biryukov, I.A., and Makeyev, S.S., On catches of low-latitude fish at Sakhalin coast in summer 2014, *J. Ichthyol.*, 2016, vol. 56, no. 4, pp. 625–630.
https://doi.org/10.1134/S0032945216030176

Vodnaya biota ozera Tunaicha (yuzhnyi Sakhalin) i usloviya ee sushchestvovaniya (Aquatic Biota of the Tunaicha Lake (Southern Sakhalin) and Its Habitat Conditions), Labai, V.S., Ed., Yuzhno-Sakhalinsk: Sakhalin. Nauchno-Issled. Inst. Rybn. Khoz. Okeanogr., 2016.

Volvenko, I.V., Orlov, A.M., Gebruk, A.V., et al., Species richness and taxonomic composition of trawl macrofauna of the North Pacific and its adjacent seas, *Sci. Rep.*, 2018, vol. 8, no. 16604, pp. 1–20.
https://doi.org/10.1038/s41598-018-34819-4

Volvenko, I.V., Gebruk, A.V., Katugin, O.N., et al., Commercial value of trawl macrofauna of the North Pacific and adjacent seas, *Environ. Rev.*, 2020, vol. 28, no. 3, pp. 269–283.
https://doi.org/10.1139/er-2019-0073

Voronina, E.P. and Volkova, G.A., Catalog of the archival collection of the Zoological Institute, Russian Academy of Sciences. Class Osteichthyes. Order Pleuronectiformes, *Issled. Fauny Morei*, 2003, vol. 55, no. 63, pp. 1–198.

Voronina, E.P. and Volkova, G.A., Catalogue of specimens in the collection of the Zoological Institute, Russian Academy of Sciences. Osteichthyes, Scorpaeniformes, Scorpaenoidei, Congiopodoidei, Platycephaloidei, Anoplopomatoidei, Hexagrammoidei, Scorpaenoidei, *Issled. Fauny Morei*, 2007, vol. 58, no. 66, pp. 1–189.

Voronina, E.P. and Volkova, G.A., Annotated catalogue of type specimens of flatfishes (Osteichthyes: Pleuronectiformes) in the Zoological Institute, St. Petersburg, Russia, *Zootaxa*, 2019, vol. 4695, no. 3, pp. 253–282.
https://doi.org/10.11646/zootaxa.4695.3.2

Voronov, V.G., The list of vertebrates of Sakhalin and Kurile Islands, in *Ekologo-faunisticheskie issledovaniya nekotorykh pozvonochnykh Skhalina i Kuril'skikh ostrovov* (Ecological and Faunistic Studies of Some Vertebrates of Sakhalin and Kuril Islands), Vladivostok: Dal'nevost. Nauch. Tsentr, Akad. Nauk SSSR, 1982, pp. 110–135.

Wang, Y., Ishihara, H., Fahmi, Manjaji, B.M., et al., *Rhinoraja kujiensis*, in *The IUCN Red List of Threatened Species*, Gland: Int. Union Conserv. Nat., 2009, no. e.T161534A5445740.
https://doi.org/10.2305/IUCN.UK.2009-2.RLTS.T161534-A5445740.en. Accessed April 25, 2012.

Weigmann, S., Checklist of the living sharks, batoids and chimaeras (Chondrichthyes) of the world, with a focus on biogeographical diversity, *J. Fish Biol.*, 2016, vol. 88, no. 3, pp. 837–1281.
https://doi.org/10.1111/jfb.12874

Zemnukhov, V.V., Ichthyofauna of the Pil'tun Bay, northeastern Sakhalin: composition, ecology, and origin, *Extended Abstract of Cand. Sci. (Biol.) Dissertation*, Vladivostok: Inst. Mar. Biol., Far Eastern Branch, Russ. Acad. Sci., 2008.

Zhivoglyadov, A.A., Fish of small and medium rivers of Sakhalin Island: spatial distribution, structure, and dynamics, *J. Ichthyol.*, 2014, vol. 54, no. 1, pp. 54–64.
https://doi.org/10.1134/S0032945214010147

Translated by T. Kuznetsova