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MATERIALS OF INTERNATIONAL KURIL ISLAND PROJECT: ORIGIN PATTERNS OF KURIL ARCHIPELAGO BIOTA

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The work described here is based on a long-term program designed to survey and inventory the biota of the islands of the Kuril Archipelago: the International Kuril Island Project (IKIP), focusing primarily on plants, aquatic and terrestrial insects, spiders, freshwater and terrestrial mollusks, freshwater fishes, amphibians, and reptiles. Having now completed seven field seasons of collecting (1994-2000), on all 30 major islands, we are now able to provide some general distributional and zoogeographic information.

Collections of whole specimens of plants and animals, as well as tissue samples for future molecular studies, were made by teams of scientists from Russia, Japan, and the U.S., averaging 34 people for each of the seven annual summer expeditions (1994-2000). A total of 164 students and professionals (97 Russians, 50 Americans, and 17 Japanese) helped to collect some 500,000 specimens that are now archived in various institutions of all three nations.

The Kuril Island biota is characterized by unusually high taxonomic diversity, which slightly exceeds the species diversity of the situated at the same latitude Sakhalin Island, yet area of Sakhalin at about 5 times larger than the geographic area of all Kuril Islands combined. The present biotic features of the Kuril Island ecosystem were evidently laid down primarily during the large-scale regression of the Late Würm (about 18,000 to 15,000 YBP) and the subsequent rise of sea level. During that period, Sakhalin, Hokkaido, Habomai, Shikotan, Kunashir, and probably Iturup were united into a single mountainous region that was connected as well to the mainland Sikhote-Alin Mountains that presently stretch along the east coast of Primorski Krai. At the same time, Paramushir and Shumshu in the north were connected to Kamchatka, and the southern Kuril islands of Urup, Chirpoi, Brat Chirpoev, and Broutona were probably united as a single island, as were the central islands of Ekarma, Shiashkotan, Kharimkotan, and Onekotan. Probably the most intensive introduction of warm-adapted elements of the Kuril biota took place during Late Würm (about 15,000 to 13,000 YBP), when the climate was warm but the sea-level low. Very low endemism of Kuril biota to testify the relatively short-time isolation of species. An example of a non-relict biota, the Kuril biota originated from two primary sources: a southern source, the Asian mainland by way of Sakhalin and Hokkaido, and a northern source by way of Kamchatka. The contribution of the southern source biota was considerably greater than the northern one.

Based on the analysis of distribution of about 2500 species of vascular plants, mollusks, insects, fresh-water fishes, and terrestrial mammals the unified biogeographical division of the Kuril Archipelago is proposed. The Bussol Strait is the most significant biogeographical boundary within Archipelago, which divided floristic and faunistic regions or subregions. The De Vries Strait in the south and the 4th Kuril Strait in the north serve to delimit a central transitional zone characterized by overlapping ranges of East Asian and boreal species, extremely low species diversity, and the absence of terrestrial vertebrates (except for birds and introduced mammals).

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