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Biodiversity and biogeography of the islands of the Kuril Archipelago [Abstract]

Based on seven consecutive seasons of biotic survey and inventory of the terrestrial and freshwater plants and animals of the 30 major islands of the Kuril Archipelago, a description of the biodiversity and an analysis of the biogeography of this previously little known part of the world are provided.

The Kuril Archipelago, a natural laboratory for investigations into the origin, subsequent evolution, and long-term maintenance of insular populations, forms the eastern boundary of the Okhotsk Sea, extending 1200 km between Hokkaido, Japan, and the Kamchatka Peninsula of Russia. A chain of more than 56 islands, the system is only slightly smaller than the Hawaiian Islands, covering an area of 15,600 km² and providing 2409 km of coastline. 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 USA, averaging 34 people for each of the seven annual summer expeditions (1994–2000). Floral and faunal similarities between islands were evaluated by using Sorensen's coefficient of similarity. The similarity matrix resulting from pair-wise calculations was then subjected to UPGMA cluster analysis.

Despite the relatively small geographical area of all islands combined, the Kuril Island biota is characterized by unusually high taxonomic diversity, yet endemism is very low. An example of a non-relict biota, it 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 to the species diversity of the Kurils was considerably greater than the northern one.

The Bussol Strait, lying between Urup and Simushir in the central Kurils, is the most significant biogeographical boundary within the Archipelago. Of lesser importance are two transitional zones, the De Vries Strait or 'Miyabe Line', which passes between Iturup and Urup in the southern Kurils, and the fourth Kuril Strait, between Onkotan and Paramushir in the northern Kurils.