Amphibian and Reptile biodiversity in the Russian Arctic

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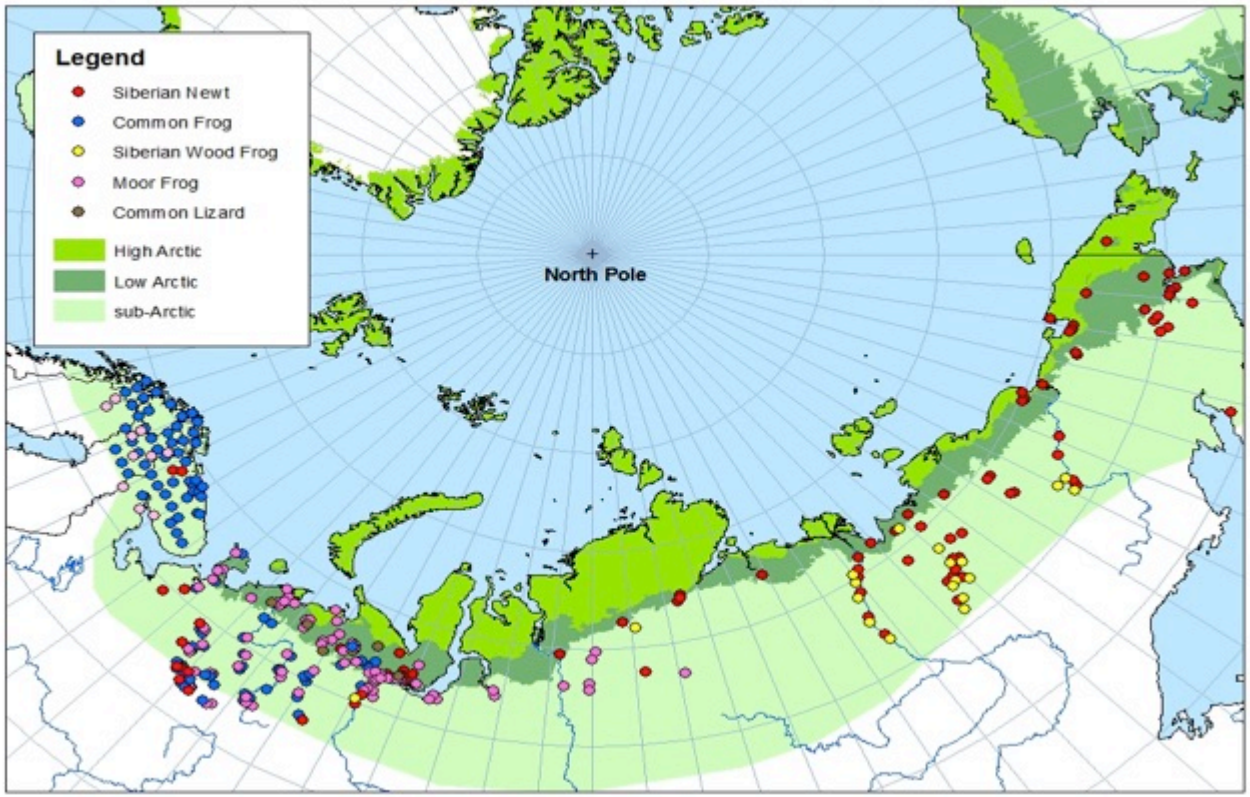

Siberian Newt
(Salamandrella keyserlingii)

Common Frog
(Rana temporaria)

Moor Frog
(Rana arvalis)

Siberian Wood Frog
(Rana amurensis)

Common Lizard
(Lacerta vivipara)

- Russia has longest Arctic shoreline than any other country in the Old World. Amphibian and reptile biodiversity in those areas are very low.
- Only 4 amphibian species and 1 reptile live there.
- Maximum Arctic amphibian and reptile richness, three species, occurs south of the Yamal Peninsula, where *Rana temporaria* and *R. arvalis* coexist. *Rana arvalis* and *R. temporaria* are sympatric on the Kanin Peninsula and in the Vorkuta region, while *Salamandrella keyserlingii* and *Rana amurensis* both inhabit few Arctic areas of Republic of Sakha-Yakutia. Throughout the remainder of the Arctic, species richness of amphibians and reptiles appears to be zero or one.
- *Rana temporaria* and *R. arvalis* are mainly inhabitants of Europe but both range eastwards to the Urals, *R. amurensis* lives in Siberia. *Rana temporaria* crosses into the low Arctic only in the northernmost peninsulas of Norway (Gasc *et al.*1997) and along the eastern slope of the polar Urals at the southern border of the Yamal in Russia (Toporkova & Shvarts 1960, Toporkova & Zubareva 1965, Toportkova 1973, Ishchenko 1978).
- Important physiological adaptations are known *for S. keyserlingii* allowing this species of living in the extreme condition. According to the studies by D.I. Berman and his colleagues (1984), the main mechanism belongs to seasonal variation in concentrations of a cryoprotectant, glycerol-like substance in the tissues. Adaptations of other species need future studies.

There are no indications of declines of amphibian and reptile populations in the Arctic. However, their apparent stability may result from the absence of long-term monitoring data. In few cases there are some estimates of local abundance, but these are insufficient to determine the population dynamics.

* Overall numbers of amphibians and reptiles in the Arctic appear to be low and populations represent a sporadic distribution, which makes them more sensitive to anthropogenic influences than larger and continuously distributed populations in the taiga zone.

* Few Arctic areas appear to be of particular importance: the delta of the Khadyta-Yakha River on the Yamal Peninsula, the Chaunskaya Tundra in the lowlands of the Chaunsky District of the Chukotsky Autonomous Okrug, and the Khalerchinskaya Tundra in the Kolyma River lowlands. These areas contain large isolated populations of *R. arvalis* and *S. keyserlingii*.

* Main recommendations:

- Establish effective survey and inventory of the Arctic populations for all amphibian and reptile species living in the Arctic;

- Establish monitoring programs for each species in model monitoring locations representative for different habitat types for each amphibian and reptile species;

- Studying of the impacts of long-term habitat changes caused by natural and anthropogenic factors on the persistence and population dynamics of the Arctic amphibian and reptile species;

- Determination of key territories with protective regime in the Arctic areas of particular importance for amphibians.

The end