
Population Dynamics – Session 2

Habitat preferences and spatial distribution of lemmings in western Taimyr

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The lemmings in the Arctic tundra north of 73 °N have received little attention, because this region is remote and difficult to access. Habitat use and spatial distribution of two species of lemmings – Siberian lemming (*Lemmus sibiricus*) and collared lemming (*Dicrostonyx torquatus*), were studied during nine summer field seasons (June-August) in 1993-1995, 2002 and 2004-2008 at the west coast of Taimyr peninsula in the delta of the river Pyasina (74°10' N, 86°45' E). Lemmings were captured by three different methods: by snap-traps along permanent lines and in plots in the main types of habitats and by live-traps on a permanent plot in the dominant habitat types. We caught 492 Siberian and 73 collared lemmings. Snap-trap line surveys showed that each of the two species had its own preferred habitat. For Siberian lemming, it was the grass-sedge marshy tundra and rocks or stony fields with lichen-moss vegetation, for collared lemming it was the rubble polygonal dwarf-willow tundra. On the other hand, the plant community preferences partly coincided in the two species: both lemmings had a high abundance in the dominant plant community - polygonal-hummocky tundra. Habitat distribution of Siberian lemmings was considerably wider than that of collared lemmings. *Lemmus sibiricus* had a significantly wider spatial-ecological niche, measured as Simpson's index of habitat diversity. When both species coexisted on the same plot, Siberian lemmings were ousted into the moister habitats with a moss-sedge type plant cover. The spatial distribution of lemmings was patchier when the habitat diversity increased. The home range size decreased when the population density increased.

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