Acarocenoses (Acariformes, Parasitiformes) in Polar Deserts: 2. Cenotic Relations, Structure of Communities, and the Proportion of Suborders

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Abstract—The richest mite fauna (a total of 50 species) was found in lemming (*Dicrostonyx torquatus*) colonies occupying the best-drained and heated sites on the maritime plain of Bolshevik Island (the Severnaya Zemlya Archipelago). It includes 11 species not found anywhere else, but only 6 of these are associated with lemmings themselves or the substrates of their burrows. The permanent parasite *Laelaps semitectus* predominates on lemmings. Two phoretic associations of mites with dipterans were recorded: the abundant soil mite *Arctoseius productus* disperses on the common chironomid midge *Smittia* sp., whose larvae develop in soil, and *Arctoseius tajmyricus*, on the winter crane fly *Trichocera arctica* (both species being abundant in lemming burrows). The mite diversity in individual biotopes (5–31 species; 15, on the average) is half that observed in the tundra (16–50 species; 31, on the average). The core of the acarocenoses of principal habitats (65–97% of the total density) is composed of prostigmatic mites belonging to the genera *Nanorchestes* and *Protereynetes* (small, slightly sclerotized, algivorous and omnivorous forms). The same situation is frequently observed in Antarctic polar deserts. In the zonal communities proper (with dominant *Deschampsia borealis* and mosses), these representatives of the most ancient lineages of Acariformes (Nanorchestidae, Eupodina are known beginning the Devonian) almost completely replace oribatid mites, acting as their "ecological equivalents." This is true for arid deserts as well. In tundra-like and other intrazonal biotopes, where the snow cover disappears much earlier than in other habitats, the total mite density reaches the maximum values (1000–2400 ind./dm^2), with oribatids constituting up to 50% of the mite population. Thirty-nine mite out of the 61 species found on the coastal plain are restricted to these habitats. The possible reasons for the success of Prostigmata in polar deserts are discussed. Their simple organization, piercing-sucking mode of feeding, and high rate of standard metabolism are regarded as the most important preadaptations allowing these mites to develop during the short favorable periods.