

Landscape distribution of oribatid mites (Acari, Oribatida) in Kolkheti National Park (Georgia, Caucasus)*

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Abstract

The key subject of this investigation was to study distribution patterns of oribatid mites in the main habitats and ecosystems of Kolkheti National Park. Oribatida were studied in 1) sand dunes, 2) *Juncus* bogs, 3) flooded alder (*Alnus barbata* C. A. Mey) forests, and 4) humid alder forests. Sampling was conducted in November 2009 at 18 sites along three transects. For exploratory analysis, we applied clustering techniques. Correlation between species number, density and humus was calculated. Chao1 statistics were used to estimate the completeness of sampling. Forty six oribatid species were recorded. The highest Shannon diversity index was registered for alder forests, whereas the lowest index was observed for dunes. In sand dunes 16 species were found, three of which occurred only in this landscape. In *Juncus* bogs, 32 species were recorded, and 16 were unique to this landscape, including bog specific *Zetomimus furcatus* (Warburton & Pearce, 1905), *Euzetes globulus* (Nicolet, 1855) and *Punctoribates manzanoensis* Hammer, 1958. Twenty two species were found in flooded forests, seven being exclusive. Ten species were recorded in humid forests, and *Metabelbella macerochaeta* Bulanova-Zachvatkina, 1965 and *Eremobelba geographica* Berlese, 1908, typical inhabitants of humid forest soils, appeared as exclusive species. Faunal comparisons among landscapes show high similarity between dune and bog oribatid mite communities, followed by flooded and humid alder forests. In dunes and bogs, total faunal density is determined by euryecological species, whereas in alder forests density was determined by high abundance of humid and extremely humid specific species.

Key words: Oribatida, dunes, *Alnus barbata*, Shannon's index of diversity, cluster analyses.

Introduction

Kolkheti National Park was created in 1999. It is located on the Kolkheti Lowland and is made up of three natural geographic regions: Anaklia-Churia (13,713 ha), Nabada (10,697 ha) and Imnati (19,903 ha). The Kolkheti Lowland area became the subject of international interest in 1997 when Georgia joined the Ramsar Convention on "Wetlands of International Importance Especially as Waterfowl Habitat" (The Ramsar Convention Manual, 2006). Kolkheti mires, first of all, are important for their relict origin (Denk *et al.*, 2001; Kikodze & Gokhelashvili, 2007; Zazanashvili, 2009). This lowland is a remainder of the tropical and subtropical landscapes that stretched along the entire Eurasian continent as a continuous belt in the Cenozoic, about 10 million years ago. Some of the plants found in the Kolkheti are otherwise found only in swampy ecosystems of tundra and taiga of the far north of Europe (Kikvidze & Ohsawa, 2001). The Kolkheti Lowland area is also of international significance for another reason: the flooded ecosystems of Kolkheti National Park have a great importance for maintaining the biodiversity of the region (Management Plan of the Kolkheti National Park, 2003; Kikodze & Gokhelashvili, 2007). The boundaries between terrestrial and aquatic ecosystems are critical transition zones and generally support unique or diverse biota (Bardgett *et al.*, 2001). Aquatic and semi-aquatic habitats of Kolkheti National Park create a refuge for many rare and endemic plant and animal species, including invertebrates (Arabuli *et al.*, 2007; Denk *et al.*, 2001; Kikodze & Gokhelashvili, 2007; Kikvidze