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Records of mountain Hydradephaga *(Coleoptera)* in springs of Belarus

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The occurence of a rare animal species at a particular territory is often correlated with the presence of a specific habitat. In the case of aquatic invertebrates, spring ecosystems are one such habitat. This phenomena is influenced by several ecological factors which occur and persist for a long periods in cold springs. On the one hand, spring ecosystems are characterised by high biological quality of water, unpolluted by industrial and sewage wastes. On the other hand, the predominant ecological factor differentiating cold springs from other inland water ecosystems is the relatively constant low water temperature all year round. These factors lead to the formation of unique faunistic communities in springs. These springs provide only refugia for several hydrobiont species.

Preliminary investigations of springs in Belarus have shown that several unusual aquatic invertebrate species are present. Two boreal - montane species of water beetles *(Dytiscidae)*, previously unrecorded from Belarus, occur: *Oreodytes sanmarki* (Sahlberg, 1826) and *Agabus guttatus* (Paykull, 1798).

It is necessary to note that Belarus is situated in the western part of the East European Plain, in the basin of the Upper Dnieper, Western Dvina and Neman Rivers. Mean elevation is 159 m above sea level, varying between 85 and 346 m. The climate of Belarus is transitional between an oceanic and a continental type, giving rise to moderately moist conditions.

Oreodytes sanmarki (Sahlberg, 1826). Material: **1** male, 2 females. Minsk Reg., Lagoisk Dist., Pogrebishche, June 15, 1994. Fast flowing creek formed by helocrene spring in spruce forest. Water temperature: summer 11.0°C, winter 3.5°C, pH 8.5. Beetles were collected in shallow water over a sandy pebbly bottom.

According to the literature, this species has a wide geographical range, from Spain in the west, to Japan and USA in the East (Zaitzev 1953; Lafer 1989; Jakobson 1905-1915; Rico et al. 1990). In Central Europe it is found mainly in montane regions. In Poland it prefers clean mountain streams (Galewski and Tranda 1978), but as yet it is recorded in springs (Biesiadka 1979, Kordylas 1994). In European Russia it is found in the lakes of Karelia (Gerd 1965). In Ukrainian Carpathians *O. sanmarki* inhabits the upper reaches of temporary spring brooks (Mateleshko 1977) and is not known from the forest belt (Mateleshko 1988).

Agabus guttatus (Paykull, 1798). Material: 3 males, 1 female. Minsk Reg., Dzerzhinsk Dist., Novaya Rodina. February 15, 1988. Helocrene spring at the edge of spruce - deciduous forest. Water temperature: summer 8.0°C, winter 3.5°C. The bottom is sandy - pebbly, with some detritus.

The species is distributed from Spain in the west to western Siberia in the east, and also recorded from India (Zaitzev 1953; Jakobson 1905 - 1914; Kinel 1939 - 1948; Rico *et al.* 1990). It is a mountain and foothill species in Central Europe and in Southern Europe particularly. In Poland it inhabits brooks, rarely occuring in oligotrophic mountain lakes (Galewski and Tranda 1978). It is one of the most common water beetle species in various spring types (Biesiadka 1979; Kordylads 1995). In Ukrainian Carpathians it prefers brooks in the high mountain belt, and is unknown in the lowlands (Mateleshko 1977). In European Russia *A. guttatus* is recorded from the Karelian lakes (Gerd 1965) and in a mountain brook on the Urenga ridge in the southern Ural Mountains (Zaporozhsky 1987).

The occurence of two boreal-montane water beetle species in the Belarus region suggests a possible dispersal route of the north - European faunal element through to the south by a system of cold springs. In Belarus these species may be considered only as glacial relicts.

In conclusion, the present investigation supports our knowledge of the origin of the water beetle fauna in the mountains of Central Europe.

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