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Parabathyscia dematteisi Ronchetti & Pavan, 1953: a silent invader

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Abstract

In the 1950s, the speleologist Giuseppe Dematteis discovered a small "cave" insect exploring the Fornaci di Rossana (FDR) cave, Piedmont, Italy, subsequently described as *Parabathyscia dematteisi* (*PD*) Ronchetti & Pavan, 1953 (Coleoptera, Leptodirini). The FDR cave develops under a quarry of lime stone which was feared would destroy the cavity. In the 1960s, cave fauna was deemed endemic to individual cavities, therefore, a cave destruction could have led to the extinction of the species living there. Different people started a campaign to "save" *PD* from the quarry activities, transferring many insects from FDR cave to improvised laboratories in Dossi (PI106) and Bossea (PI108) show caves, located about 50 km from it. Soon, the *PD* case was forgotten, as well as the specimens transferred into the two caves, which escaped from the artisanal terrariums, invading the guest cavities. During our research on subterranean Piedmontese fauna, Leptodirini specimens were found in Bossea (1992) and Dossi (1995) caves, subsequently identified by the specialists as *PD*. In the Underground Karst Laboratory of Bossea cave, the reproduction and development stages of this species were documented thanks to direct observations and macro photography. Moreover, these insects were found in different areas of the two cavities, evidencing an extensive invasion of the species. In FDR cave, *PD* coexists with *Doderotrechus casalei* Vigna Taglianti, 1969, a hypogean Carabidae Trechinae which prey *PD* larvae and juveniles. In Bossea and Dossi caves, Trechinae predators have never been reported, probably favoring the *PD* diffusion. In the last 30 years, observation on this allochthonous species in Bossea and Dossi caves were taken, and new native underground stations of *PD* were found in the Maira and Varaita valleys caves, confirming its not uniqueness for the FDR cave. Alien species are accidentally or intentionally introduced by human to a place outside its origin area. Many of these species fail to reproduce and they disappear, however, other one successfully settle in the new area, becoming invasive and a serious threat to biodiversity, altering the ecological balance, and bringing some autochthonous species to extinction. The false beliefs about the "cave" fauna could have had serious consequences for the ecology and biology of two important show caves of the Italian Alps, still to be evaluated. With our direct long-term observations on subterranean fauna we hope to contribute actively to the conservation of underground ecosystems and to provide useful information for future studies.

Keywords: alien species, show caves, subterranean biology, conservation, monitoring

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