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# A new species of freshwater isopod (Sphaeromatidea: Sphaeromatidae) from an inland karstic stream on Espíritu Santo Island, Vanuatu, southwestern Pacific

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## Abstract

*Exosphaeroides quirosi* is described from a karstic stream and its associated cave sink located 390 m above sea level and 23.5 km inland from the east coast of Espíritu Santo (Vanuatu, SW Pacific ocean). This is the first purely freshwater sphaeromatid isopod reported from an oceanic island, and is a new example of colonization of an oceanic island freshwater habitat by a typically marine taxon. *E. quirosi* differs from any other representative of the family in the peculiar condition displayed by the exopod of pleopod 4, which has a falcate outline, is distinctly longer than the corresponding endopod, and has the medial margin of the proximal segment produced into a foliaceous endite. Seemingly, the sexual dimorphism expressed in the presence/absence of a setulose fringe on the pereopods has not been recorded in any other sphaeromatid. Even though the peculiar pleopod 4 and the fusion pattern of pleonites—with complete incorporation of pleonite 1 to rest of pleonites—could suggest a new genus to accommodate the new species, it is included here in the broad *Exosphaeroma s. l.* cluster, from which most freshwater sphaeromatids seem to derive. This is done with the caveat that it is *incertae sedis* in *Exosphaeroides* until such time as a comprehensive revision of *Exosphaeroma* and related genera has been undertaken. *E. quirosi* appears to be a *Exosphaeroma*-derived species with an unusual pleopod 4 and fusion of pleonite 1 to the remainder of the pleon; these features being here regarded as species-level apomorphies within a morphologically diverse genus.

**Key words:** Crustacea; Isopoda; *Exosphaeroides*; running waters; Stygofauna; Oceanic islands

## Introduction

Epigean freshwater habitats on oceanic islands are prone to being colonised by marine groups that seldom penetrate inland on continental landmasses. Having never been connected to hydrographic networks of any mainland, they offer plenty of vacant niches to marine invaders, which can successfully occupy these habitats without competition from primary freshwater species (Veuille 1979; Bowman 1981). A textbook example of colonization of island freshwaters by a typically marine taxon is *Clibanarius fonticola* McLaughlin & Murray, 1990, an anomuran crab dwelling in karstic springs and blueholes adjacent to the seashore on the island of Espíritu Santo (Vanuatu, SW Pacific), which is the only freshwater representative of its group known thus far (McLaughlin & Murray 1990). Other notable examples include particular groups of isopod crustaceans, such as some *Jaera* (Asellota: Janiridae) from the Balearics and the Azores, of which isolated populations are found up to 500 m above sea level in both archipelagos, and up to 16 km inland in the Mallorcan mountains (Veuille 1979; Margalef 1952; Jaume & García 1988).

Here we report a new noteworthy case of colonization of insular epigean freshwaters by a member of a typically marine isopod taxon: the family Sphaeromatidae (*ca*. 99 genera and 680 species recognized; Schotte *et al*. 2007). Other than the swarm of taxa restricted to the inland groundwaters of the Dinaric karst and neigh-

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