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Radiation and decline of endodontid land snails in Makatea, French Polynesia

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Abstract

The family Endodontidae Pilsbry, 1895 comprised one of the most diverse groups of indigenous land snails of Pacific Islands. However, due to anthropogenic degradation of their habitats and predation by or competition with introduced species, most members of the family are now extinct or severely endangered. Based on limited and sporadic collections, the endodontid fauna of the raised coral island of Makatea in the western Tuamotu Archipelago was known to consist of four valid species, *Mautodontha (Mautodontha) daedalea* (Gould, 1846), *Kleokyphus callimus* Solem, 1976, *K. hypsus* Solem, 1976 and *Pseudolibera lillianae* Solem, 1976, the last three of which were endemic. To these, we add 18 new species based on a reappraisal of museum collections and analysis of abundant new material collected in 2005: *M. (M.) domaneschii*, *M. (M.) virginiae*, *M. (M.) harperae*, *M. (G.) aurora*, *M. (G.) occidentalis*, *M. (G.) temaoensis*, *M. (G.) makateaensis*, *M. (G.) passosi*, *M. (G.) spelunca*, *K. cowiei*, *P. solemi*, *P. matthieui*, *P. cookei*, *P. aubertdelaruei*, *P. extincta*, *P. paraminderae*, *P. elieporoi*, and *P. parva*. The recently collected material also revealed new information on the morphology, intraspecific variation and distribution of the four previously known species, which are here revised and re-described. With 22 recognized taxa, the radiation of endodontids in Makatea is second in species richness only to that of Rapa Iti in the Austral Islands, from where 24 endodontids have been described. Despite intensive field work in Makatea in 2005, only *M. (M.) daedalea* was found alive. All other Makatean endodontids were represented solely by empty and worn shells and are probably extinct.

Key words: extinction, endemism, biodiversity, islands, systematics, new species

least some species may have been lost soon after initial human settlement, as has indeed occurred in other Pacific islands (e.g. Christensen & Kirch 1981; Preece 1998; Burney *et al.* 2001). Further studies of the malacofauna of Makatea, particularly additional field work in unexplored areas, archeological excavations and/or the direct dating of individual shells (Goodfriend 1989), are required to provide a chronology of the decline of endodontids on the island.

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