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A new genus and species of Enidae (Gastopoda: Pulmonata) from the Quaternary of the Balearic Islands (Western Mediterranean)

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Abstract

Balearena gymnesica **gen. nov.**, **spec. nov.**, is described from late Upper Pleistocene shore sediments in Mallorca, Balearic Islands, Spain. The new species may be closely related to enids living in the eastern Mediterranean, North-west Africa, and Macaronesia, but geometric morphometrics shows it differs in having a distinctly slender shape; it also differs in the embryonic whorls with a deep suture and a sculpture consisting of shallow collabral grooves on top and delicate incised spiral lines laterally, a teleoconch sculpture formed only by low, simple, irregular collabral wrinkles, and the aperture with a low columellar fold and a blunt angular tooth. Such affinities point to a vicariant origin for *Balearena* in the formation of the Mediterranean during the Miocene. This species, or closely related forms, are widespread in terrigenous Upper Pleistocene sites in the northern Balearics, but have never been found alive. Its extinction predated the arrival of humans, and may have been coeval with a mass extinction in the southern Balearics putatively caused by a submarine volcanic explosion in the Valencia Trough.

Key words: Mollusca, land snail, Mediterranean, islands, *Balearena gymnesica*, fossil, geometric morphometrics, vicariance, extinction

Introduction

Since the early stages of research on the Quaternary molluscs of Mallorca, an extinct, previously unrecorded land snail was often found in paleosoils, fossil beaches and aeolianites at the top of coastal stratigraphic sequences. This snail was identified (Cuerda 1959) as an elongated form of *Mastus pupa* (Linnaeus, 1758), a species of Enidae that is widespread in southern and eastern Mediterranean countries (Arrébola 1990). This identification, even though suspect from the onset, was never challenged and has been used in postulating biogeographic scenarios (Gasull 1966, 1972; Cuerda 1989; Giusti *et al*. 1995; Vicens *et al.* 2001).

Extensive collecting in numerous fossil sites in the Balearic archipelago during the last 15 years (Paul & Altaba 1992; Altaba 1993, 2003) has yielded well-preserved specimens of this enigmatic snail. In the light of this evidence, it is postulated that the extinct Balearic enid represents an undescribed endemic taxon. The following description of the new genus and species is based on specimens from a single locality and stratum, a well-known site where it was first reported. Many additional specimens have been studied from various localities throughout the northern Balearics, yet the slight variations among sites is not considered here and will be the subject of further research. In the absence of anatomical data, the taxonomic position of the Balearic fossil enid may be assessed only through comparison with shell characters of living taxa, taking as a yardstick the variability within extant genera and species. Such analysis shows a unique combination of traits in the new taxon and supports its recognition as a monotypic genus.

The following abbreviations and definitions are used: CRA, author's collection, Palma de Mallorca, Balearic Islands, Spain; MBCN, Museu Balear de Ciències Naturals, Sóller, Balearic Islands, Spain; MZB, Museu

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