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**The genus *Echinolittorina* Habe, 1956  
(Gastropoda: Littorinidae)  
in the eastern Atlantic Ocean and Mediterranean Sea**

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## Abstract

This is the last in a series of systematic accounts of the 60 worldwide species of the littorinid genus *Echinolittorina*. The taxonomy and distributions of molluscs in the eastern Atlantic are poorly known and littorinids are no exception. Recent molecular studies have clarified the number of species and their relationships, and are used as the basis of this systematic account. Detailed morphological descriptions are provided here for the eight known living species in the tropical and warm temperate eastern Atlantic, from the Mediterranean to Namibia, including the islands of Cape Verde, Canaries, São Tomé, Ascension and St Helena. The descriptions give details of shell, operculum, pigmentation of headfoot, reproductive anatomy, spermatozoa, egg capsules and radulae. Diagnoses include reference to mitochondrial gene sequences (COI). A key is based on shell, penial shape, pallial oviduct and geographical distribution, and includes all other littorinid species (members of genera *Tectarius*, *Afrolittorina*, *Littoraria*, *Melarhaphe* and *Littorina*) found in the eastern Atlantic region. Three new species are described: *E. peregrinator*, *E. caboverdensis* and *E. soroziczac*. One name change is proposed: *Littorina lemniscata* Philippi, 1846 was formerly listed as a junior synonym of *E. miliaris* from Ascension Island, but examination of types has shown this to be a senior synonym of *E. galapagensis* (Stearns, 1892) from the tropical eastern Pacific, which should now be called *E. lemniscata*. Full synonymies are given for all taxa, and the taxonomic, evolutionary and ecological literature reviewed. Distribution maps are based on examination of 312 samples and on reliable literature records. These reveal close correspondence with the biogeographic division of the region into three provinces (Lusitanian; West African; St Helena and Ascension). The allopatry of sister taxa is maintained by barriers of ocean currents, river deltas and distribution of continental and oceanic conditions. The eight species belong to four clades (*E. peregrinator*; *E. soroziczac*; *E. punctata* group; *E. granosa* group), each of which is sister to one or more species from the western Atlantic or belongs to a clade with western Atlantic and eastern Pacific distribution. This supports trans-Atlantic dispersal from the west, estimated to have occurred in the Early Miocene and in the Plio-Pleistocene.

**Key words:** radula, penis, oceanic distribution, continental distribution, littoral fringe, molecular phylogeny, biogeography, speciation

## Introduction

Members of the genus *Echinolittorina* are the dominant littorinids of the littoral fringe on rocky shores in tropical and warm-temperate latitudes of the global oceans. This is the largest genus of Littorinidae, with 60 known living