



## The genera *Limatula* and *Limea* (Mollusca, Pelecypoda, Limidae) from deep waters off Brazil

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### Abstract

Five species of the genus *Limatula* and one of *Limea* were found in a total of 83 samples taken from deep waters (700–1950 m) off Brazil. *Limatula laminifera* (Smith, 1885) and *Limea lirata* Allen, 2004 were not previously reported from Brazil. *Limatula confusa* (Smith, 1885) and *L. louiseae* Clarke, 1974, although already reported for Brazilian waters, have their distribution extended southward. *Limatula domaneschii* n.sp. is described from the Campos Basin (~22° S). It is diagnosed by concentric lamellae strengthening towards the ventral margin of the shell, and absence of axial ornamentation; an internal median groove is not present. A fifth *Limatula* species is present, and we strongly suspect that it is also new to science, but a formal description is delayed until additional specimens are collected.

**Key words:** Limidae, *Limatula*, *Limea*, deep-water, geographic distribution, Southern Atlantic, Brazil, Bivalvia

### Introduction

Members of the family Limidae are present in all the world seas and at most depths. This group usually comprises pelecypods with conchological variations of the same basic body plan. These shell characters are important for taxonomy, and their distinguishing features usually include size; shell outline and ornamentation; internal ridge and/or fold; and, when present, the relative number of axial ribs. Ribs number has been widely used as a species character in several limid genera (Mikkelsen & Bieler 2003). In 1968, Stuardo carried out an extensive revision including conchological analysis, anatomy, distribution, revision of types, and introduction of more than 80 new taxa (as manuscript names) to the family Limidae. Unfortunately, only a small part of this study was published (Stuardo 1982). Nowadays, a considerable number of species have been studied, with molecular analyses, detailed morphology, reproductive cycles, life history, respiration and filtration aspects, speciation and dispersal evidence (Gilmour 1974; Morton 1979, 2000; Lodeiros & Himmelman 1999; Page & Linse 2002; Allen 2004; Jarnegren & Altin 2006; Jarnegren *et al.* 2007). Stuardo (1968) distinguished, based on an extensive list of characters, two large groups of limid genera: *Limaria-Limatula-Limea* and *Ctenoides-Lima-Ancesta-Divarilima*. For the Atlantic basin, *Limatula* and *Limea* were studied by Allen (2004) concerning conchological and anatomical aspects.

In spite of the undoubted importance of conchological traits for taxonomy, not uncommonly definitions based only on shell characters fail to establish clear boundaries among different taxa, even at the genus level. In 1978, Fleming produced an extensive review and documented the conservative nature of the shell morphology of *Limatula*, which makes the shell characters difficult to use for phylogeny reconstruction. The phylogenetic position, even at the family level, of the limids within the pteriomorph pelecypods is still under