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Deep-water Thyasiridae (Mollusca: Bivalvia) from the Oman Margin, Arabian Sea, new species and examples of endemism and cosmopolitanism

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Abstract

Seven species of Thyasiridae are reported from the Oman Margin of the Arabian Sea at depths between 688 m and 3356 m. Hypoxic conditions exist at depths between 400 and 1200 m and three species are restricted to this zone and to the Arabian Sea. *Leptaxinus indusarium* has also been recorded from the Indus Fan and *Channellaxinus investigatoris* from off Sri Lanka. A new species *Thyasira anassa* sp. nov. is described from the hypoxic zone. Another four species are recorded from the abyssal zone where oxygen levels are typical for the deep ocean. Here another new species is described, *Parathyasira bamberi* sp. nov. but the other species could not be conclusively identified because of close affinity with populations from other oceans. Deep water Atlantic species *Aximulus croulinensis* and *Mendicula ferruginosa* are apparently present in the abyssal Indian Ocean while another thyasirid shell is very close to *Channellaxinus excavatus* from the Eastern Pacific and *C. perplicata* from the Atlantic. Accompanying these abyssal thyasirids were other bivalve species, *Deminucula atacellana*, *Limopsis pelagica* and *Bentharca asperula* that cannot be distinguished by morphology from their Atlantic populations. It is concluded that using morphology alone that the abyssal species may well be cosmopolitan in distribution.

Key words: Thyasiridae, Oman Margin, Arabian Sea, new species, cosmopolitan species

Introduction

In 1994 the RRS Discovery undertook a biological survey across the Oman Margin with the aim of assessing the effects of hypoxia on the benthos across the oxygen minimum zone (Gage *et al.* 2000; Levin *et al.* 2000). This cruise sampled from depths of 35 to 3400 m with oxygen levels ranging from 3.0 to 0.15 ml l⁻¹ and secured 43 bivalve species (unpublished data, with the author).

Of these, some of the more charismatic have been described: *Amygdalum anoxicolum* Oliver, 2001; *Lucinoma gagei* Oliver & Holmes, 2006; *Leptaxinus indusarium* Oliver & Levin, 2006; *Nucinella owenensis* Oliver & Taylor, 2012 and *Huxleyia habooba* Oliver & Taylor, 2012.

The family Thyasiridae Dall, 1900 is represented in these samples by six nominal taxa of which only one has been reported previously from the Indian Ocean, *L. indusarium* (Oliver & Levin, 2006), described from the Indus Fan, off Pakistan. In literature, the family is apparently poorly represented in the Arabian Sea and Indian Ocean with only two species reported: *Channellaxinus* (as *Cryptodon*) *investigatoris* Smith, 1895 and *Thyasira* (as *Cryptodon*) *acuticarinata* Smith, 1895 known from southern India and Sri Lanka. Other taxa, from the region, described as *Cryptodon* have been shown to be species of Lucinidae, e.g. *Megaxinus* (as *Cryptodon*) *omanensis* Smith, 1906 (Glover & Taylor 1998).

The number of specimens collected is small but after ten years of researching the taxonomy of the Thyasiridae it is now possible to describe this fauna with confidence and conclude that two of the species are new to science. Uncertainty remains with others, particularly with those from abyssal depths that appear to be conspecific with populations from the Atlantic Ocean.