Zootaxa 1752: 41–56 (2008)
www.mapress.com/zootaxa/
Copyright © 2008 · Magnolia Press

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

Thyasiroidea (Mollusca: Bivalvia) from the mud volcanoes of the Gulf of Cadiz (NE Atlantic)

CLARA F. RODRIGUES[1], P. GRAHAM OLIVER[2] & MARINA R. CUNHA[1]

[1]*CESAM, Departamento de Biologia, Universidade de Aveiro, Campus de Santiago, 3810-193 Aveiro, Portugal. E-mail: clara.rodrigues@ua.pt; marina.cunha@ua.pt*

[2] *BioSyB, National Museum of Wales, Cathays Park, Cardiff, Wales, UK, CF10 3NP. E-mail: graham.oliver@museumwales.ac.uk*

Abstract

The Thyasiroidea collected from the mud volcanoes of the Gulf of Cadiz are reviewed. Of the seven species identified only one, *Thyasira vulcolutre* n. sp., is closely associated with a chemosynthetic setting. This species has anatomical features typical of chemosymbiotic taxa and is compared with *T. sarsi* (Philippi, 1845), *T. southwardae* Oliver & Holmes, 2006, *T. oleophila* Clarke, 1989 and *T. methanophila* Oliver & Sellanes, 2005. The other six, *Thyasira (Parathyasira) granulosa* (Monterosato, 1874), *Thyasira tortuosa* (Jeffreys, 1881), *Thyasira obsoleta* (Verrill & Bush, 1898), *Axinulus croulinensis* (Jeffreys, 1847), *Mendicula ferruginosa* (Forbes, 1844) and *Leptaxinus minutus* Verrill & Bush 1898, are previously known from typical deep-water benthic settings. Of these only *A. croulinensis* is known to harbour chemosymbionts although the gill anatomy of *T. tortuosa* suggests that it might also be chemosymbiotic. *Thyasira vulcolutre* is restricted to active seeps but there is no pattern in the distribution of the other species.

Key words: *Thyasira*, new species, bathyal, seep

Introduction

Communities of benthic animals associated with cold seeps are known from many locations on active and passive continental margins around the world and occur at virtually all depths (Sibuet & Olu 1998; Levin 2005). Along the European margins cold seepage is known from the North Sea and Norwegian margin (eg. Dando *et al.* 1991, 1994; Pimenov *et al.* 1999) and has recently been discovered in the eastern Mediterranean (Salas & Woodside 2002; Olu-Le Roy *et al.* 2004). Associated chemosymbiotic species include Vestimentifera and Frenulata tube worms, (Polychaeta: Siboglinidae), Cladorhizidae and Hymesdesmiidae sponges and bivalves (Sibuet & Olu 1998; Levin 2005). The dominant bivalves at cold seeps are large chemosymbiotic species belonging to the families Vesicomyidae and Mytilidae with Thyasiroidea, Solemyoidea and Lucinoidea sometimes also abundant.

Thyasirids have a much wider distribution than other chemosymbiotic bivalve families; they are found from coastal to hadal depths, in different types of sediments, and from both the poles to the equator. They may show a wide variation in their anatomical characters and in the extent of their nutritional reliance upon symbionts (Dufour 2005). The generic definitions within the Thyasiroidea have been recognized to be problematic (Payne & Allen 1991; Oliver & Killeen 2002; Oliver & Sellanes 2005). Routinely, they can be separated into two groups: those with larger, upright (dorso-ventrally extended) shells and those with minute, elongate (antero-posteriorly extended) shells (Payne & Allen 1991). This is reflected in the degree of symbiosis where the former are chemosymbiotic and latter lack bacteria. Thyasirids, as opposed to many other bivalves with chemoautotrophic symbionts, are small (Dufour 2005), their bacteria are extracellular (exception of *Maorith-*

Accepted by R. Bieler: 25 March 2008; published: 18 Apr. 2008