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***Ascetoaxinus quatsinoensis* sp. et gen. nov. (Bivalvia: Thyasiroidea)
from Vancouver Island, with notes on *Conchocele* Gabb, 1866,
and *Channelaxinus* Valentich-Scott & Coan, 2012**

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Abstract

Ascetoaxinus quatsinoensis sp. et gen. nov. is described from deep waters off the coast of Vancouver Island, British Columbia, Canada. The shell of this species is quite unusual in that the margin of the lunule is distinctly scalloped, a feature not reported previously for the Thyasiroidea. Further investigation led to the discovery of another similarly scalloped shell, represented by the unique type specimen of *Cryptodon ovoideus* Dall, 1890, herein re-classified as *Ascetoaxinus ovoidea* (Dall, 1890). Results obtained from scanning electron microscopy reveal additional anatomical differences, including distinct gill structure, that distinguish *A. quatsinoensis* from other thyasirids examined. Morphological comparisons of this new species to closely related taxa has resulted in a re-evaluation of the genera *Conchocele* Gabb, 1866, and *Channelaxinus* Valentich-Scott and Coan, 2012.

Key words: thyasirid, clam, morphology, new species, deep-water, British Columbia

Introduction

Despite recent advances in thyasirid taxonomy and systematics (e.g., Oliver & Killeen 2002, Oliver & Sellanes 2005, Oliver & Levin 2006, Oliver & Drewery 2013, Rodrigues et al. 2008), our understanding of this group remains far from complete. Resolution is often impeded by the lack of anatomical material and appropriately preserved tissues suitable for molecular study. Systematic progress is therefore serendipitous depending on the availability of newly collected specimens for further comparative study.

In 2009, the Royal BC Museum acquired a single specimen of a large, obliquely extended thyasirid bivalve collected from Quatsino Sound, Vancouver Island, British Columbia, Canada at a depth of 1086–1318m. The shell is unusual in that the margin of the lunule is distinctly scalloped, a feature not reported previously for the Thyasiroidea. Given the relatively large size and oblique outline of this specimen it was possible that the specimen represented an aberration of *Conchocele bisecta* (Conrad 1849), which is also known from the Northeast Pacific (Coan et al. 2000).

Both the Vancouver Island specimen and typical *Conchocele bisecta* were loaned to the senior author for research into thyasirid gill morphology. Results quickly indicated that certain anatomical characters were not shared, suggesting that the scalloped specimen was not an aberrant *C. bisecta*, but rather a previously undescribed taxa. This was further supported by the discovery of another scalloped shell, represented by the unique type specimen of *Cryptodon ovoideus* Dall, 1891, from off southeast USA in the Atlantic.

Here we report our findings in detail, including the description of a new genus and species (*Ascetoaxinus quatsinoensis* sp. et gen. nov.). A morphological comparison of this new species to related taxa has also resulted in a re-evaluation of the genera *Conchocele* Gabb, 1866 and *Channelaxinus* Valentich-Scott and Coan, 2012 in Coan and Valentich-Scott, 2012.

Anatomy of type species unknown. Following diagnosis based on *C. excavata* and *C. perplicata*. Anterior adductor muscle much longer than posterior; mantle unfused except for a small exhalant aperture; foot vermiform with a bulbous toe; ctenidia of two fully reflected demibranchs, filaments laminar with fully ciliated frontal faces, abfrontal surfaces lined with bacteriocytes; lateral body pouches densely arborescent; dorsal digestive gland slightly protruding.

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