

Regular talk

**ATAVIACONCHA—A MIDDLE PALAEOZOIC SEEP SPECIALIZED BIVALVE?**

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Methane seep carbonates of the Middle Devonian (ca. 390 Ma) Hollard Mound yield mass accumulations of bivalves otherwise uncommon at Palaeozoic seeps. The dominant species in these accumulations is the modiomorphid *Ataviacocha wendti* gen. et sp. nov. It is the second modiomorphid bivalve known from Palaeozoic chemosynthesis-based ecosystems, next to the roughly coeval *Sibaya ivanovi* Little, Maslennikov, Morris, and Gubanov, 1999, from the Sibay hydrothermal vent deposit in the Ural Mountains, Russia. *Ataviacocha wendti* is very large for a Palaeozoic bivalve (> 100 mm in length), and is relatively large even when compared to much younger, Mesozoic and Cenozoic seep bivalves. Its characteristic feature is an elongated shell with boomerang shape. The elongated shell is reminiscent of that of some Mesozoic and Cenozoic semi-infaunal seep bivalves, such as species of the Mesozoic kalenterid *Caspiconcha*, Cenozoic vesicomysids like *Adulomya* spp. and “*Ectenagena*” *extenta* and the bathymodiolid *Bathymodiolus boomerang*, and we hereby interpret it as an adaptation to the seep environment. The boomerang-shaped shell is likely an adaptation helpful in movement and re-location at seeps. This new finding, together with a finding of the solemyid bivalve *Dystactella? eisenmanni* at the same seep site, show that bivalves are present at seeps for at least 390 Myr, and that the bivalve-dominated faunas predate the dimerelloid brachiopods at seeps. The early adaptation of some bivalves to seeps is probably related to a symbiosis-based metabolism allowing efficient exploitation of chemosynthetic food resources.

