

A new sediment-dwelling pholadid bivalve from Oligocene glaciomarine sediments of King George Island, West Antarctica

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We present a re-description of the pholadid bivalve from the Oligocene Polonez Cove Formation, King George Island, West Antarctica, previously identified as *Penitella* sp. The study is based on a collection of 210 specimens, preserved exclusively in life position in flask-shaped *Gastrochaenolites* type borings which have been subsequently buried by glaciomarine diamictite. The systematic study showed that this pholadid is a new species belonging to the genus *Pholadidea* rather than to *Penitella* and we name it *Pholadidea gradzinskii* sp. nov. The species is one of very few Late Cretaceous–Paleogene pholadids that we could safely identify as *Pholadidea*. All of them are known exclusively from the southern Pacific and adjacent areas (New Zealand, Antarctica, and Patagonia). We demonstrate that the genus attained its Recent broad distribution before the middle Miocene, when the first species of *Pholadidea* appeared in the Northern Hemisphere. The mass occurrence of *P. gradzinskii* in the Oligocene of West Antarctica results from favourable living condition in a shallow marine environment. Low sedimentation rate allowed the settlement of numerous larvae and their subsequent metamorphosis, growth, and maturity terminated by the mass mortality caused by the burial by marine diamictite. The sediment-boring Paleogene species of *Pholadidea*, among them *P. gradzinskii*, follow the wood-boring Late Cretaceous species *P. (Hatasia) wiffenae*, which reflects a general pattern of evolution of substrate selection among pholadoid bivalves.

Key words: Bivalvia, Pholadoidea, *Pholadidea*, ecology, glaciomarine, palaeobiogeography, Oligocene, Antarctica.

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