

2250095
2011

EXTENDING THE PALEOGEOGRAPHIC DISTRIBUTION OF NON-MARINE PERMIAN BIVALVES: THE FALKLAND ISLANDS CONTINENTAL FOSSIL RECORD

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During Permian time, non-marine bivalves (anthracosiids, palaeomutelids, myaliniids) had a worldwide paleogeographic distribution. Well known records are from southern Africa and Madagascar, Antarctica, southwestern and eastern United States, Oka-Volga River Basin, Russia, southern Asia, and South America. Herein we describe for the first time the occurrence of non-marine bivalves from the Permian (Capitanian) Brenton Loch Formation, Saladero Member, cropping-out at Rory's Creek, 8 km NW of Walker Creek Farm, on the southern shore of Choiseul Sound, East Falkland. Externally, the shells resemble those of anthracosiids, but our taxonomic discussion and interpretation is based on possible affinities with previously described coeval species. This is because the number of genera and species of Upper Paleozoic non-marine bivalves are clearly over-split. Anthracosiidae is a group commonly present in Permian terrains lying in the vicinity of the Falkland Islands block prior to Gondwana break-up. They were reported from the Karroo Basin, South Africa, including the Eccia Group (Waterford Formation, Unio=Paleoanodonta) and particularly in the Lower Beaufort Group (Abrahamskraal Formation). They were also reported from the Permian Mount Glossopteris Formation, Antarctica, where Paleoanodonta is associated with plant remains, mostly Glossopteris. Bivalve shells from the Brenton Loch Formation were collected from a 25cm thick interval of dark siltstone and mudstone with planar-lamination, covered by massive sandstone and associated with ichnofossils. Planolites occur in the mudstone and Paleophycus occur in the sandstone. Most of the shells are preserved articulated, typically with the valves splayed open. They are dispersed in the matrix and lie concordant to bedding in a convex-up attitude. Closed articulated shells, oblique to bedding, are also found and were probably preserved in situ. Higher in the succession, mudstone beds nearly 1.5m above the bivalve-bearing layers yielded Glossopteris remains. The closed, articulated condition of the bivalve shells might suggest high rates of sedimentation and low residence time of bioclasts at the sediment/water interface. Yet, the presence of specimens with splayed shells would indicate rapid burial and/or the slow decay of shell ligament in oxygen-deficient waters. This condition is reinforced by the presence of complete carbonized leaves of Glossopteris sp. close to the bivalve-bearing beds. Our data indicate that the studied bivalves were preserved by abrupt burial, possibly by distal turbiditic deposits carried into the Brenton Loch Formation lake, and may represent autochthonous to parautochthonous assemblages. Our results reinforce the impressions that (a) the true distribution in space and time of all Permian non-marine (freshwater) bivalves is not well-known yet, and (b) there is no evidence to date for marine conditions in the upper part of the Brenton Loch Formation. Research supported by CNPq/FAPESP/USP.