

## A Tetrapod Fauna from the Permian of the Sydney Basin

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**ABSTRACT.** A recent discovery by Bruce Ross of Oceanic Coal Australia Ltd in the roof of the Borehole Seam, West Wallsend Colliery, is the first well documented evidence of a tetrapod fauna from the Permian of Australia. The Borehole Seam (Newcastle Coal Measures, Lambton Subgroup) lies immediately above the Waratah Sandstone which forms the base of the Newcastle Coal Measures and is most likely Kazanian in age. Preliminary study has shown that among the five tetrapod specimens recovered at least temnospondyl amphibians are represented. The only previous tetrapod body fossil from the Australian Permian is a temnospondyl amphibian, *Bothriceps major*, from Airly, to the north-west of Sydney. Tetrapod trace fossils have been known for some time in the southern part of the Sydney Basin where the Illawarra Coal Measures have yielded several sets of reptilian footprints. Tetrapods were therefore living to the north, west and south of the Sydney Basin in the Late Permian of Australia.

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In Australia, records of tetrapod body fossils date from the Late Devonian Cloghnan Shale near Forbes, New South Wales (Campbell & Bell, 1977) and Devonian tetrapod footprints have been described from the Genoa River beds of northern Victoria (Warren & Wakefield, 1972). Most recently the first Early Carboniferous tetrapod fauna from the Southern Hemisphere has been found in Queensland (Thulborn *et al.*, 1996). Australia also has a widespread and diverse Early Triassic temnospondyl fauna, especially in the Arcadia Formation of Queensland (Warren, 1991) which is remarkable for the rarity of therapsid reptiles. It is surprising therefore that only a single tetrapod, an amphibian from near the Permo-Triassic boundary of the Sydney Basin (Woodward, 1909), has been recovered from the period between the

Early Carboniferous and the Early Triassic. This time interval is important for the emergence of the therapsids which are present in quantity in other continents, especially in the Permian.

The recent discovery of a tetrapod fauna from well below the Permo-Triassic boundary in the Sydney Basin is significant as a first step to filling in this gap. The find was made by Bruce Ross, of Oceanic Coal Australia Ltd, who had previous experience collecting Palaeozoic tetrapods with the legendary Stan Wood of Scotland. Although the state of preservation of the fossils prevents their detailed description and precise identification, the fact that a tetrapod fauna was present is of significance. In this paper I have taken the opportunity to summarise our knowledge of both body and trace fossils from the