

Triassic lungfish from Gondwana

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Abstract

Analysis of the reptilian and amphibian faunas of a number of Triassic localities in Africa, Antarctica, and Australia demonstrates that the fauna of these deposits in Australia differs from faunas found in Antarctica and Africa. A number of fish species, including lungfish, also occur in these localities. One of the lungfish species in the Lower Triassic deposits of Australia is also present in the Lower Triassic *Cynognatus* zone near Bergersdorp, Orange Free State, South Africa. Aquatic faunas of the Early Triassic of Australia might have been more similar to those of other Gondwanan deposits than are the terrestrial or amphibious faunas. This lungfish, previously referred to *Ceratodus* cf. *C. philippsi*, belongs in the genus *Ptychoceratodus*, described from extensive material from the Lower Keuper of Kupferzell in Germany. This record extends the geographic range of *Ptychoceratodus* to the Southern Hemisphere, and its geological range from the Middle to the Early Triassic.

Ptychoceratodus philippsi is based on well preserved skull bones, jaws and associated tooth plates from Africa and tooth plates with some skull bones from Queensland as well as poorly preserved tooth plates from Western Australia, and Tasmania. *P. philippsi* shares with *P. serratus* thick heavy skull bones, short strong jaws, and high crowned grinding tooth plates. *P. philippsi* differs from *P. serratus* in characters of the skull and in details of tooth plate shape. *P. philippsi* was also considerably smaller than the massive *P. serratus*, and reached a maximum of only 60 cm in length.

Introduction

Early Triassic localities from Gondwana have produced isolated dipnoan tooth plates, usually with a fragment of jaw bone attached, but no skull bones or post cranial material. Recent collections of new material from Australia and South Africa have included calvarial bones associated with the commonest of these dipnoan tooth plates, previously referred to *Ceratodus* cf. *C. philippsi* (KEMP 1982, 1991a). Examination of these two specimens, one from the Early Triassic of the Crater, near Rolleston in Queensland and one from the *Cynognatus* zone near Bergersdorp, in the Orange Free State, has solved several taxonomic riddles. The Queensland tooth plate specimens were included with a small juvenile skull of definite gnathorhizid affinities, but no associated tooth plates (KEMP 1991a). The tooth plates are here described as *Ptychoceratodus philippsi* and the gnathorhizid skull is regarded as a separate species.

The material has permitted reconstruction of a dipnoan with links to the European genus *Ptychoceratodus* (SCHULTZE 1981). These skull and jaw bones with tooth plates resemble those of *Ptychoceratodus serratus* (SCHULTZE 1981). The specimens confirm that skull bones and tooth plates are both consistent indicators of taxonomic status in dipnoans, and extend the geographic range of *Ptychoceratodus* to the Southern Hemisphere. The Australian and South African deposits are also older than the European as they are just above the Permo-Triassic boundary (THULBORN 1986).

Isolated tooth plates from other Queensland localities, from Tasmania and from Western Australia are also attributed to *Ptychoceratodus philippsi*. These tooth plates match the tooth plates associated with both the Queensland and the South African skull bones.

Specimen designations

AM, Australian Museum, Sydney, New South Wales, Australia. QM, Queensland Museum, Brisbane, Queensland, Australia. SMNS, Staatliches Museum für Naturkunde, Stuttgart, Germany. UTGD, Univer-

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