FIRST TRIASSIC LUNGFISH FROM THE ARABIAN PENINSULA

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INTRODUCTION

Triassic Lungfish (Dipnoi) have been extensively documented from the Gondwanan continental and marine shelf deposits of Africa and Madagascar (Teixeira, 1949; Lehman et al., 1959; Beltan, 1968; Martin, 1979, 1981; Kemp 1996), Australia (Kemp, 1993, 1994, 1997a, 1998), India (Jain et al., 1964; Jain, 1968), and Antarctica (Dziewa, 1980). Numerous records also exist from Laurasian landmasses including Europe (Agassiz, 1838; Schulze, 1981), North America (Case, 1921) and central and eastern Asia (Liu and Yeh, 1957; Vorobyeva, 1967; Martin and Ingavat, 1982). By comparison, nothing is known of contemporary lungfish fossils from the Middle East. Thus, the recent recovery of a single tooth plate representing a new geographic occurrence of the genus Ceratodus Agassiz, 1838 from paralic marine deposits of the Jilh Formation, a latest Anisian to lower Carnian unit that crops out along the eastern margin of the Proterozoic Arabian Shield in central Saudi Arabia (Fig. 1), is significant because it provides the stratigraphically oldest record of dipnoans from the Arabian Peninsula.

Repository.—The fossil lungfish specimen described herein was collected during a joint Saudi-Australian field survey in 2007. It has been registered with the Saudi Geological Survey (SGS 07-03-63), Jiddah, Kingdom of Saudi Arabia but is presently housed on long-term loan in the Paleontological Collection at the Museum of Victoria (MV), Australia (cast lodged under MV P229554).

GEOLOGICAL SETTING

Powers et al. (1966); Sharief (1981, 1984, 1986), and Halawani (2001) have provided detailed accounts of stratigraphy and geology (including maps) for the Jilh Formation. In summation, the unit consists of a basal fine-grained sandstone-claystone series with overlying thickly bedded dolomitic sandstone, hematitic sandstone, and uppermost stromatolitic dolomite layers. The Jilh Formation represents the middle section of the Buraydah Group, an extensive Early to Late Triassic rock sequence that crops out along the eastern margin of the Proterozoic Arabian Shield in central Saudi Arabia (Fig. 1). Age determinations based on conodonts and pollen indicate an Anisian to lower-most Carnian range (Halawani, 2001 and references therein). Sequentially, the Jilh Formation rests conformably on the Scythian Sudair Shale and is overlain by the Carnian-Rhaetian Minjur Sandstone (Sharief, 1981, 1986; Halawani, 2001).

The lungfish fossil was found in a thick dolomitic bed near the town of Ar Rubay’iyah (N 26°23′20.4″ E 44°14′3″), east of Buraydah in central Saudi Arabia (Fig. 1). One associated vertebrate remains included isolated bones and teeth of marine reptiles (ichthyosaurs and sauropterygians), actinopterygians, and hybodontiform sharks (see Vickers-Rich et al., 1999 for summary). Limited surface corrosion on the individual elements suggests minimal post-mortem transport with disarticulation probably via low-energy wave action and/or currents prior to burial. This interpretation is consistent with lithological features, which infer sediment deposition under paralic marine conditions (tidal flats) linked to a westward transgression of the Neotethys onto the cratonic Arabian Shield (Sharief, 1986).

SYSTEMATIC PALEONTOLOGY

Dipnoi Müller, 1845
Ceratodontidae Gill, 1873
Genus Ceratodus Agassiz, 1838

Type species.—Ceratodus latissimus Agassiz, 1838, p. 129.
Diagnosis.—Kemp (1993) provided a list of characters states defining the genus Ceratodus. Cavin et al. (2007) also recently examined phylogenetic relationships relative to other post-Paleozoic dipnions.

![Figure 1](image-url)