

A New Middle Devonian Arthrodire (Placoderm Fish) from the Broken River Area, Queensland

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ABSTRACT. Associated bones of the trunk-armour belonging to a large brachythoracid arthrodire are described as *Confractamnis johnjelli* n.gen. and n.sp. The specimen comes from strata of probable Eifelian age in the Broken River Group of Queensland. It shows a range of derived brachythoracid features including reduction of dermal ornament, and strong development of the dermal neck joint articulation. The posterior dorsolateral and posterior lateral plates of the trunk armour were high and narrow, and the anterior lateral plate had a distinctive narrow bilobed dorsal angle as indicated by the shape of its overlap area on the anterior dorsolateral plate. A provisional reconstruction suggests that the bones came from a large fish over 2 m in length. A cross section of the trunk armour is compared with the large arthrodire *Taemasosteus* from the Early Devonian of Burrinjuck, New South Wales. A possible close relative of this new taxon has been illustrated from the Early Devonian of Morocco, supporting other indications of resemblance in placoderm fish assemblages between these regions of east and north Gondwana during the Early-Middle Devonian.

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Over 20 years ago Professor J.S. Jell (University of Queensland) made a small collection of limestone samples apparently containing bones from several localities in the Devonian outcrops of the Broken River area of Queensland (Fig. 1). They were sent to Professor K.S.W. Campbell (Australian National University), who passed on remains of placoderms (Devonian armoured fishes) to the author for preparation and study.

Acetic acid preparation, which completely removes bones (calcium phosphate) from limestone (calcium carbonate), revealed a small collection of six placoderm specimens from the ten original samples. Two samples belonged to one specimen (ANU V1028, described below). Three other samples contained only vertebrate microfossils (small scales and plates), which have been well documented from many horizons in the Broken River Devonian sequence by other authors (e.g., De Pomeroy, 1995, 1996; Turner *et*

al., 2000). The six placoderm specimens belong to two orders, the Antiarchi and the Arthrodira, which were the most successful of some seven orders within the class Placodermi (Denison, 1978; Young, 1986; Goujet & Young, 1995). The two antiarch specimens from Broken River were the best preserved, with articulated armours and some small bones of the jaws, cheek, and sclerotic ring surrounding the eye, not previously well documented for the group. They were described as two new genera (*Nawagiaspis* and *Wurungulepis*) by Young (1990).

The other four specimens can be assigned to the Arthrodira, by far the most diverse placoderm order, with its major subgroup, the Brachythoraci, comprising nearly 60% of about 170 genera within the Arthrodira (Carr, 1995). These specimens are much more fragmentary, probably because they belonged to considerably larger fishes, all representatives of the