

The Upper Devonian Fish *Bothriolepis* (Placodermi: Antiarchi) from near Canowindra, New South Wales, Australia

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ABSTRACT. The Upper Devonian fish fauna from near Canowindra, New South Wales, occurs on a single bedding plane, and represents the remains of one Devonian palaeocommunity. Over 3000 fish have been collected, predominantly the antiarchs *Remigolepis walkeri* Johanson, 1997a, and *Bothriolepis yeungae* n.sp. The nature of the preservation of the Canowindra fauna suggests these fish became isolated in an ephemeral pool of water that subsequently dried within a relatively short space of time. This event occurred in a non-reproductive period, which, along with predation in the temporary pool, accounts for the lower number of juvenile antiarchs preserved in the fauna. Thus, a mass mortality population profile can have fewer juveniles than might be expected. The hypothesis that a single species of *Bothriolepis* is present in the Canowindra fauna is based on the consistent presence of a trifid preorbital recess on the internal headshield and separation of a reduced anterior process of the submarginal plate from the posterior process by a wide, open notch. Principal Components Analysis (PCA) based on head and trunkshield plate measurement shows no separation of *Bothriolepis* individuals into distinct clusters and is consistent with this hypothesis. A wide range of plate shape variation can thus occur within a species of *Bothriolepis*, and caution should be used when separating species on this basis in the future.

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In 1993, Alex Ritchie (Australian Museum) collected approximately 3000 fish from a single layer within the Upper Devonian Mandagery Sandstone, at a site approximately 10 km southwest of Canowindra, along the road to Gooloogong (Fig. 1). The recovery of these fish from a single bedding plane suggests these fish lived and died together, representing the remains of a palaeocommunity. Thus, the Canowindra fauna provides an opportunity to

describe the nature and structure of an Upper Devonian fish community, although it must be remembered that the total community has not been preserved. The crowding of fish on the layer suggests a mass mortality during dry conditions. Additionally, the large number of well-preserved specimens of *Bothriolepis* present allows for a determination of the range of variation in head and trunkshield plate proportions that could be expected within a single species.