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Adding to the diversity of a latest Devonian gondwanan plant assemblage : a new anatomically preserved axis from Barraba, Australia

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Documenting a wide paleogeographic range of Famennian (latest Devonian) floras is essential to better understand the state of land plant diversity between the Kellwasser and the Hangenberg bio-events, two first-order global crises for the marine biota but whose impact on terrestrial organisms needs to be clarified.

There are few well-documented plant assemblages of Famennian age in Gondwana. One of them occurs in the Mandowa Mudstone Formation at Barraba, in New South Wales (Australia). The plant remains recovered at Barraba are dated from the late to latest Famennian and are preserved both as adpressions and permineralizations. A recent assessment of the permineralized assemblage indicates that the spore-producing plants are dominant and include lycopsids, cladoxylopsids, and one iridopterid (*Keraphyton*).

This presentation describes a second anatomically preserved iridopteridalean plant, represented by a 50 mm long and 7.7 mm wide fragment of axis with no branch or appendage bases attached along its length. Its tissues are entirely primary. The vascular system is actinostelic. In transverse section, it shows three fundamental ribs that divide twice slightly unequally. The protoxylem strands occur at the rib tips. Metaxylem tracheids are scalariform. The cortex is aerenchymatous in its innermost part.

This new plant is the first iridopterid to show an adaptation to a wetland habitat. Together with *Keraphyton*, it confirms that a group of Iridopteridales characterized by a complex vascular system occurred beyond the Frasnian in Eastern Gondwana. This discovery is consistent with a limited impact of the Kellwasser bio-event on land plant diversity prior to the Devonian-Carboniferous boundary.