

Extraordinary New Subterranean Isopods (Peracarida: Crustacea) from the Kimberley Region, Western Australia

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ABSTRACT. A new genus and two new species of fresh water isopods from ground waters of the Kimberley region of West Australia are described. This new genus cannot be immediately assigned to an isopod suborder or family because its unique combination of characters encompass many plesiomorphies, as well as synapomorphies with the 'Flabellifera' *sensu lato*. These features include free pleonites that are subequal except for an enlarged fifth pleonite, broad natatory pleopods, genital pores on medial extensions of the coxae, five pairs of oostegites, true coxal plates, an antennal protopod of three articles, and a rudimentary second flagellum on the antennula. One of the new species, well represented in one sample, is iteroparous and breeds continuously during the winter months. Because the type localities are from limestone fossil reefs not exposed to the marine environment since the Devonian period, these isopods may be remnants of an ancient freshwater stock. Name changes of some setal types are proposed.

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During 1988, one of us (WFP) explored fresh water habitats in parts of the Kimberley Region of Western Australia, and made several incidental collections of small crustaceans from a pool in a limestone cave and in several springs issuing from limestone. This material contained odd, swimming isopods that, in their natural habitat, looked like syncarid crustaceans. Preliminary inspection suggested that these animals were related to phreatoicidan isopods. Subsequent study, however, has revealed that these specimens represent a novel taxon that cannot be comfortably classified in any suborder of the Isopoda. This paper provides a detailed description

of two species of the new taxon, a preliminary evaluation of its morphological features, and a discussion of its possible affinities and biogeography. The following description of the genus provides features of potential phylogenetic significance. A diagnosis and phylogenetic definition, however, will be provided with a natural classification estimated using cladistic techniques (research in progress). The combination of character states possessed by this new taxon may have a significant impact on interpretations of the phyletic relationships of isopods, recently evaluated using cladistic techniques by Brusca & Wilson (1991). Because this research is still in