

Post-extinction recovery of the earliest Carboniferous rugose corals, a glimpse from eastern Australia

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After the crises and extinctions associated with the Frasnian-Famennian boundary and Devonian-Carboniferous boundary, the marine ecosystem underwent a slow recovery. This is particularly true for corals and very few genera generally occur in the basal Tournaisian (Poty, 1999)."

In Western Europe, the basal Tournaisian solitary rugose corals belong to the genera *Coniophyllum*, *Hebukophyllum* and *Kizilia* (Poty *et al.*, 2006; Korn & Weyer, 2003; Chwieduk, 2005). The first two are post-disaster genera showing a wide morphological malleability and an unknown origin but are most probably close relative. *Kizilia* is a Lazarus taxon, related to the Mid Devonian stringophyllids that suddenly reappeared at the Devonian–Carboniferous boundary then disappeared from the fossil record before reappearing in the Viséan (Poty *et al.*, 2006). The genus is also known in the basal Tournaisian of SE China (Poty & Xu, 1996). The basal facies of Western Europe (Montagne Noire, Rhenish Mts, NE Germany, Semenoff-Tian-Chansky, 1988; Korn & Weyer, 2003) yield only small non-dissepimented solitary rugose corals among which are mostly long-ranging taxa. In N America, *Vesiculophyllum*, a genus very similar to and probably related to *Kizilia* occurs together with non-dissepimented long-ranging corals (Sando & Bamber, 1985). The only colonial genus in the basal Tournaisian is *Melanophyllidium*, a colonial kiziliid that occurs in NE Siberia beside *Coniophyllum* and *Parasiphonophyllia* (Poty & Onoprienko, 1984).

Like most of the basal Tournaisian dissepimented rugose corals, the two genera known from the basal Tournaisian of Eastern Australia are considered as post-disaster fauna representatives. One is solitary and develops a cystimorphic trend whereas the other is a colonial genus characterized by very large corallites, which is extremely uncommon for a Tournaisian genus. Their origin is not understood to date and they seemingly left no descent in the Carboniferous. Their stratigraphic range is extremely limited as they only occur at the base of the lower Tournaisian Gudman Formation in the type area (Webb, 2005). They show a wide morphological malleability despite their dependency to microbialithic buildup facies that might be explained by their rapid colonization of empty niches after the faunal extinction associated with the Devonian–Carboniferous boundary.

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