

Paper Number: 1068

Why *Corumbella* is a cloudinid and not a conularid

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The tuboid Late Ediacaran fossil *Corumbella weneri* Hahn et al. 1982 is revised based upon both two-dimensionally compressed and three-dimensionally preserved material from the Tamengo Formation (Corumbá Group) of the original localities near the city of Corumbá, Mato Grosso do Sul (W-Brazil). All material investigated, more than 100 topotype and paratype specimens, revealed that their elongate tubes possess a round cross-section throughout their length instead of a postulated “squarish” diameter in their mature portions [1,2,3] and a 30:1 (15cm to 0.5 cm) overall body length to diameter ratio, which is in excess to the mature body length to general diameter ratio of most cloudinids. Three-dimensional material was found together with two-dimensional specimens, but also in coquinoid layers both in the “Saladeiro” quarry (“Sobramil” ore-port) on the eastern side of Corumbá and at the quarry “Corcal” on the western part of Corumbá. The initial juvenile portions of *C. weneri* are directly affixed to the original seafloors (“mudstickers” in terms of Seilacher [4]) and consist of a conical ring-in-ring mineralized skeleton forming elongate slender tubes, which originally were bent but probably defined an erect life-mode on top of the soft-sediment well-layered mud substrate of the Tamengo Formation (Fig. 1).



The tubes in their most frequently preserved compressed preservation generally document characteristic disjointed “midlines”, which are due to *post mortem* cracks and originated due to burial by subsequent sediment covering (Fig. 2). Such “midlines”, however, are absent from three-dimensionally preserved tubes. These “midlines” are, in the most cited literature until 2015, interpreted as primary structures demonstrating a postulated

tetragonal cross-section typical of a morphogenetic and thus

Fig. 1: Corumbella 3D tube *Fig. 2: Corumbella*

with post mortem cracks

phylogenetic relationship to conularid polyyps [1,2,3]. It is worth mentioning that all illustrated specimens from the Itapucumi Group of eastern Paraguay and from the Lagoa Santa Formation (Bambui Group) of the northern part of Minas Gerais State of Brazil are three-dimensionally

preserved, without “midlines” and with round cross-sections [5] and yet were tentatively referred to the Conularida. Other reports of *C. weneri* are from the White Inyo Mountains of eastern California, the Deep Spring Fm. of Esmeralda County, SW Nevada and from the Caborca Fm. of NW Sonora, Mexico, and very similar tubes are known from China (*Sinotubulites baimatuoensis*, *Wutubus*, *Conotubus*, etc.).

The original life mode of the cloudinid tubes is suggested to have been analogous to modern pogonophorans (tube worms) with respect to their bacterial oxygen metabolism, this also being documented by isotopic analyses of the contemporary sediments and their open-tuboid morphology. *Corumbella weneri* may be the oldest fossil on record carrying a mineralized skeleton and may represent the latest development in the evolution of “Phanerozoic-type” top Ediacaran index fossils [6].

References:

- [1] Pacheco M et al. (2011) Journal of Taphonomy, 9 (4): 269-283
- [2] Van Iten H et al. (2014) Palaeontology, 2014: 1-14
- [3] Pacheco M et al. (2015) Plos One, March 30: 1-19
- [4] Seilacher D (1999) Palaios, 14:86-93
- [5] Warren L et al. (2012) Geology, 40: 691-94
- [6] Walde D et al. (2015) Annales de Paléontologie, 101: 213–224

