Octocoralls as hosts to densely encrusting serpulids from the Cretaceous of the Potiguar Basin (NE Brazil)

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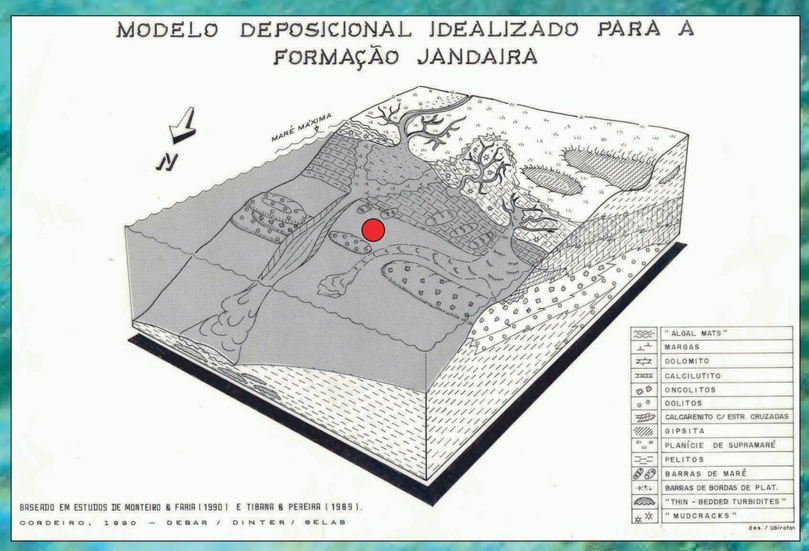
Polished longitudinal section of octocorallian stem with serpulid worm tubes.

The Jandeira Formation of the Potiguar Basin in NE Brazil covers the Coniacian to lower Campanian interval (A). At the sampled exposure at Estreito Field, the associated macrofossil assemblage (abundant nerineid and aporrhaid gastropods) and rock facies suggest deposition in a setting with moderate bottom currents and presence of soft substrates (lagoonal environment).

Several dm-sized tubelike structures, densely encrusted by serpulids, were collected from an abandoned mine pit at the right margin of the Açu River (Rn-118 Highway, de Farias et al., 2003). The weathered, yellowish calcirudites are rich in fossils, including gastropods, echinoids, and bivalves. The polished sections of the structures show a main tube with a prominent central canal, covered with a dense layer of encrusting serpulid worm tubes. The structures point to the Holaxonia-group within the Octocorallia (Alcyonaria). Interruptions of the wall are interpreted as openings for polyps.

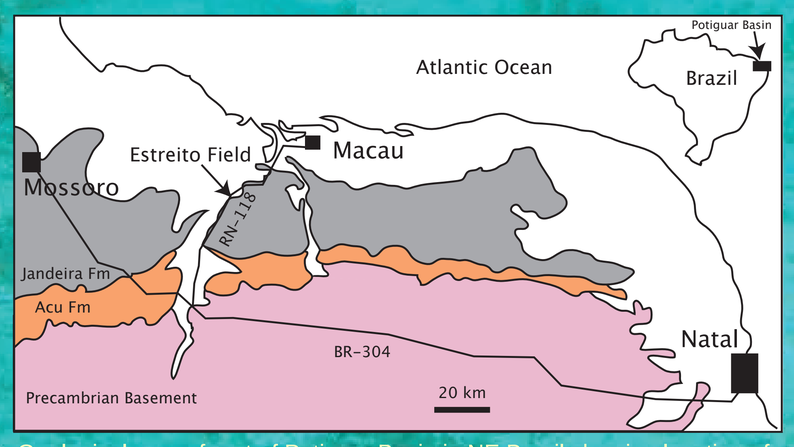


Idealized depositional model for the Jandaira Fm. (Cordeiro 1990, internal report, based on Monteiro and Faria, 1990). Red spot indicates assumed area of octocorallian growth.

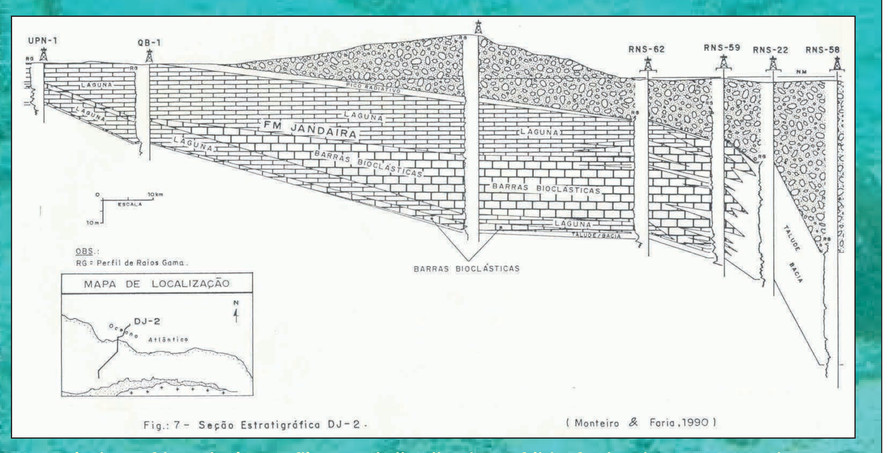
Only worm tubes visiblle from outside.

Here we present a possibly unique case of xenomorphic structures around octocoral stem surfaces produced by serpulids. So far, the only fossil example of octocoral-hosted sceletobionts has been reported from the Upper Cretaceous of NE Brazil, where bioimmurating oysters preserved the impressions of a perishable biologic hard substratum. A geometric pattern of nodes was interpreted as a gymnosperm stem or as a gorgonacean octocoral (Rohr and Boucot 1989).

Abandoned limestone pit at Estreito Field (1) and further commonfaunal elements of the lagoonal environment of the Jandaira Fm: oysters (2), gastropods (3) and regular sea urchins (4).



Geological map of part of Potiguar Basin in NE Brasil showing location of outcrops at Estreito Field.



Correlation of borehole profiles and distribution of lithofacies in a N-S section across the Potiguar Basin. Lagoonal facies is dominating the upper and southern portions of the Jandaira Fm (from Monteiro and Faria, 1990).

Cross section of stem with worm tubes

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