

Rudists and the Pacific in the Late Jurassic and Early Cretaceous

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The Pacific dimension of Late Jurassic to Early Cretaceous rudist evolution shows four phases.

1. In the Tithonian-Berriasian, cosmopolitan rudists ranged from Nova Scotia (Eliuk, 1998, fig. 5D) to Japan (Sano *et al.*, 2007). None are recorded from Pacific seamounts, nor can their presence there be inferred in the absence of identifiable disjunct endemism on either side.
2. Valanginian-Hauterivian rudists are unknown from the Caribbean, Pacific and Japan.
3. In the Barremian-Early Aptian, endemic caprinids arose in the Caribbean-Pacific region (Skelton & Masse, 1998; Chartrousse & Masse, 1998, 2004), and an Aptian(?) caprinuloidinid from the Osaka Formation in Japan provides the oldest record of trans-Pacific range extension. *Pachytraga* found in Barremian(?) calcareous sandstones in the Osaka Formation also suggests immigration from the Pacific, given the absence of the genus from the Atlantic-Tethyan region at that time. This phase coincided with the initiation of Cretaceous volcanothermal edifice-building in the Pacific (Larson, 1991).
4. The Late Aptian-Albian saw significant Pacific developments. We recognize three new polyconitid taxa of Late Albian age, two from mid-Pacific seamounts, and the third from Cebu and Japanese Seamounts (collaboration with Yasuhiro Iba), a derivative of Late Aptian *Praeacprotina* from Japan and Daiichi-Kashima Seamount. But revision of *Caprina mulleri* from mid-Pacific guyots (Swinburne & Masse, 1995) reveals similarities with co-eval *C. choffati* from Iberia, hence a disjunct distribution of the genus in the Mediterranean Tethys and the Pacific.

Pacific seamounts thus hosted rudists from at least Barremian times, allowing trans-Pacific range extension by the Aptian, earlier than previously recognized (Skelton, 1988). The Pacific rudist fauna remained important to the Late Albian, with taxa derived from both the western Pacific (despite the demise of Japanese platforms at that time; Iba & Sano, 2007) and the Mediterranean Tethys.

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