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CARBONIFEROUS RUGOSA IN THE HINA LIMESTONE, AKIYOSHI TERRANE, SOUTHWEST JAPAN: FAUNA ENDEMIC TO THE PANTHALASSAN OCEAN

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Exotic limestone masses of seamount origin are sporadically present within the Akiyoshi Terrane in the Inner Zone of Southwest Japan. Rugose corals of the Akiyoshi Terrane are notable, both because of their role in reef construction and due to their highly endemic nature (Kato and Minato, 1975) that gives rise to questions as to their palaeobiogeographic variation and their origin.

Until now, little has been known about the faunal characteristics of the coral rich Hina Limestone (Early Viséan to Late Bashkirian) in the Akiyoshi Terrane. The overall trend of the rugosan succession is as follows: *Cyathaxonia* is characteristically abundant in the Early Viséan. The non-dissepimented solitary corals are replaced in the Middle to Late Viséan by such large dissepimented solitary corals as *Amygdalophyllum*, *Echigophyllum*, *Nagatophyllum*, and *Dibunophyllum*. This solitary fauna is followed by dominantly pseudopavonid corals of variable form, including the fasciculate *Hiroshimaphyllum*, cerioid *Ozakiphyllum* and thamnasterioid *Pseudopavona*. During the Late Viséan warm-water transgression, the Akiyoshi fauna contrasted markedly with Tethyan faunas (e.g., the *Kueichouphyllum* fauna), forming a characteristic Akiyoshian type.

Ozakiphyllum, *Pseudopavona*, and *Omiphyllum* suggest close phylogenetic continuity through their intergradational morphology. Only four species of *Ozakiphyllum*, three of *Pseudopavona*, and one of *Omiphyllum* were previously known elsewhere in specific Japanese terranes. However, abundant new species of these genera are recognized in the Hina Limestone, and those will clarify phylogenic relationships among them. Although *Hiroshimaphyllum* may be ancestral to this clade, its solitary species are not yet well known.

Of special interest is the presence of the Australian „*Orionastraea*" cf. „*O.*" *columellaris* that perhaps is to be separated from European *Orionastraea* (Webb, 1990). Webb (1999) also noted closely related genera in Eastern Australia and the Akiyoshi Terrane, such as „*Siphonodendron*" vs. *Akiyosiphyllum*; *Amygdalophyllum* vs. *Omiphyllum*; *Symplectophyllum* vs. *Nagatophyllum*; and *Dinostrophinx* vs. *Echigophyllum*. However, no pseudopavonid genera have yet been interpreted as exhibiting true „sister-group" relationships with any genera from regions other than the Japanese Islands. If the true „sister-group" rather than „analogous-group" relationships are recognized within pseudopavonids and non-pseudopavonids, phylogenetic problems may arise as to the monophyly of the family Pseudopavinidae. More importantly, invaluable clues for the origins of the Akiyoshi fauna can be obtained from the combination of palaeogeographic and phylogenetic analyses.

References

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