琉球大学学術リポジトリ

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センナリスナギンチャク科の系統と多様性の研究

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Form 3

Abstract

Title

Diversity and phylogeny of the sponge-parazoanthid association

カイメン類ーセンナリスナギンチャク科の系統と多様性の研究

In this study we explored the sponge-Parazoanthidae association from different perspectives. Initially we reviewed the taxonomy and phylogeny of the sponge-associated Parazoanthidae, and then we explored different ecological aspects of this interaction in the Pacific Ocean. In the Pacific region studies have been few, and only five species of sponge-associated parazoanthids have been reported. We analysed the phylogeny and morphology of 70 specimens of sponge-associated parazoanthids collected in the Pacific Ocean. Our results led us to erect genus *Umimayanthus*, within family Parazoanthidae, containing three previously undescribed species; *U. chanpuru*, *U. miyabi*, *U. nakama*, and the previously described species *U. parasiticus*, formerly belonging to the genus *Parazoanthus*. However, in phylogenetic analyses genus *Parazoanthus* was still presented as a polyphyletic group with two well supported clades; with the type species of *Parazoanthus*, *P. axinellae* in one of the clades, and *P. catenularis*, the type species of the former genus *Bergia* inside the other clade. We used 198 previously published and publically available sequences from five phylogenetic markers to demonstrate that the genus *Bergia* is a well-supported monophyly and therefore should be re-established as a valid genus inside family Parazoanthidae. After the description of *Umimayanthus* and the resurrection of *Bergia* we decided to focus on the ecological aspects of the interaction. We explored the specificity of the association by performing a concatenated phylogenetic analyses with four different molecular marker on specimens of sponges associated to *Umimayanthus* spp. in the Pacific Ocean. Our results and the available literature indicate that the sponge family Clionaidae seems to be specific to genus *Umimayanthus* in the Indo-Pacific and Caribbean region. On the other hand, it seems that the different *Umimayanthus* species in the Pacific Ocean have variable degrees of specificity towards the host sponge species. Finally we investigated if coloration plays a functional role in the sponge-*Umimayanthus* association. We developed a protocol to measure coloration and used our newly developed program HaviStat© v2.3 to search for emergent ecological patterns behind the coloration patterns of the sponge-*Umimayanthus* association. Our results and a literature review indicated that the sponge-*Umimayanthus* symbioses have a tendency to be as concealed as possible, different from the sponge-*Parazaonthus* symbiosis in the Caribbean that seems to be much more conspicuous.

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