CHAPTER 9

Feather stars (Crinoidea, Comatulida) of Nhatrang Bay, Vietnam: fauna, habitat and symbionts

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ABSTRACT. As a result of extensive sampling performed during short field trips in 2004–2008, 31 comatulid crinoid species from 5 families were found in the Bay of Nhatrang, southern Vietnam. Comasteridae is the most species rich family in Nhatrang Bay, with 18 species from 4 subfamilies. The other families are Mariametridae with 6 species, Himerometridae with 3, and Zygometridae and Colobometridae with 2 each. The most numerous species in our samples were Himerometra robustipinna (Carpenter, 1881) (Himerometridae) (32 individuals) and Cenometra bella (Hartlaub, 1890) (Colobometridae) (27 individuals). Cenometra bella and Colobometra perspinosa were associated with gorgonians; one species was found on sediment, while others inhabit hard substrates. Twenty-three species (74%) were diurnal and 5 (16%) were nocturnal (cryptic during the day and crawling to exposed feeding perches at night. The diel activity of 3 species was not established. All crinoids were inhabited by symbionts, polychaetes (including myzostomids), gastropods, crabs, shrimps and ophiuroids. Comaster nobilis and Lampometra palmata harbored the richest symbiotic assemblages (19 and 13 species, respectively). A key for field identification of comatulids in Nhatrang Bay is provided.

Unstalked crinoids, also known as feather stars or comatulids, are relatively large, bottom-dwelling animals. They inhabit a wide range of depths, from the intertidal zone to deep ocean trenches [Belyaev 1966; Oji et al. 2009]. In some habitats they are very common and may reach densities up to 115 individuals per square meter [Fabricius 1994; Messing 1994]. More than a half of known comatulid species are found at shelf depths (<200 m) in the tropical Indo-West Pacific. The East Indian Archipelago, which coincides with the center of the Coral Triangle, is usually considered to be the center of comatulid biodiversity. Approximately 100 species of shallow-water crinoids (≤50 m) have been recorded there. No more than 50% of this number can be found in the fauna of local areas studied within the Archipelago. The Sulu (Jolo) Archipelago has been reported to include a maximum of 54 species [Messing 1998]. Variations in species number within this region may derive from: habitat diversity, limited geographic ranges of species and sampling efforts. Species richness declines in all directions from the hot spot described above, although local comatulid diversity may reach similar or even higher levels elsewhere, e.g., 57 species in the vicinity of the Lizard Island, Northern Great Barrier Reef [Messing 1998].

The South China Sea comatulid fauna consists of 102 species, with 90 known from shallow water [Lane et al. 2000]. The Vietnamese coast was never considered as a hot spot of marine biodiversity [e.g. Hoeksema 2007], with 45 comatulid species known so

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Graff, 1883, *M. ambiguum* Graff, 1887; Decapoda *Allogalathea elegans*, Harrovia sp., *Periclimenes commensalis*.

**Distribution in Nhatrang Bay.** Mot Island.

**General distribution.** Red Sea, East Africa, South Africa, Madagascar, Seychelles, South-China Sea, Vietnam, Japan, north Australia, Great Barrier Reef, New Caledonia, New Zealand, at depths 1–103 m.

*Comaster nobilis* (Carpenter, 1884)

(Pl. 68 A)

*Actinometra nobilis* Carpenter 1888: 336, pl. 65.  

**Material examined.** South China Sea, Nhatrang Bay, Mun Island, 03.10.2003 – 1 spm; 24.05.2005 – 2 spms; Mot Island, 7–12 m, 02.10.2005 – 2 spms; 7–12 m, 08.05.2006 – 1 spm; Nok Island, 4–5 m, 12.05.2006 – 1 spm; Mun Island, 12 m, 24.04.2007 – 1 spm; Nok Island, 5 m, 25.04.2007 – 1 spm; 12 m – 1 spm; Mun Island, 8–10 m, 27.04.2007 – 1 spm; Nok Island, 12–15 m, 02.05.2007 – 1 spm; Mun Island, 6 m, 04.05.2007 – 1 spm; 5 m, 11.05.2007 – 1 spm; 12–15 m, Nok Island – 1 spm; Do Island, 5–6 m, 27.05.2007 – 1 spm; Mun Island, 28.05.2007 – 1 spm; 5–7 m, 31.05.2008 – 1 spm; Mot Island, 30.05.2007 – 1 spm; Tam Island, 5 m, 01.06.2007 – 1 spm; Nok Island, 10 m, 16.06.2007 – 1 spm.

**Measurements.** Arm number ranges from 58 (juvenile) to 130 with 90–110 on average. The arms are arranged in different planes; filtering arms of a given specimen are longer than those which are used to attach to the bottom.

**Coloration.** Variable: white, lemon-yellow and black or dark brown in different combinations also black-orange, purely white and brown specimens.

**Ecological notes.** Common, diurnal, fully exposed. Numerous in the outer part of the Bay. Feeding specimens are located on top of rocks. Inactive specimens look like loose balls. During filtration, some arms extended in multidirectional posture. Pinnules of feeding arms are arranged in 4 planes, with each pinnule perpendicular to the arm axis, and are often observed to flex. Pinnules of arms used to attach to the bottom are arranged in one plane and are pressed against the arm axis. Found at 5–15 m.


**Distribution in Nhatrang Bay.** Do, Tam, Mot, Mun, Nok Islands.

**General distribution.** Sri-Lanka, Indonesia, Malaysia, South China Sea, Vietnam, Philippines, Vakayama (Japan), Coral Sea, Great Barrier Reef, New Caledonia.
activity, crown shape and feeding posture of crinoids. Symbionts associated with diurnal crinoids may be more susceptible to predation pressure. Thus diurnal crinoids should harbor less diverse assemblages than nocturnal species. Among diurnal crinoids, we may expect more diverse assemblages in cryptic and semi-cryptic species than in species fully exposed to view. Further studies are necessary to verify this hypothesis.

Acknowledgements

Our work in Vietnam was made possible through the logistics of the Coastal Branch of the Russian-Vietnamese Tropical Centre, and we would like to thank its directors, Mr. N.L. Filichev and Mr. Chan Than Kuang. We are grateful to O.V. Savinkin for the photos of crinoids and assistance in the field, and to Dr. I. Marin for identification of decapods. We are indebted to Ms. A. Zalota for her help with linguistic corrections. Comments and changes made by Dr. C. Messing significantly improved the manuscript. Field work was accomplished with permission from the Hon Mun Marine Protected Area granted to the Coastal Branch of the Russian-Vietnamese Tropical Centre. The study was partly supported by the Russian Foundation for Basic Research, under grants numbers 12–05–00239-a and 12–04–31017 mol_a 2012.

References


Бесстебельчатые морские лилии залива Нячанг: фауна, местообитания и симбионты

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РЕЗЮМЕ. В заливе Нячанг отмечено 31 вид бесстебельчатых морских лилий из 5 семейств. Наиболее богатое видами семейство Comasteridae представлено в заливе Нячанг 18 видами (4 подсемейства), семейство Mariametridae – 6 видами, семейство Himerometridae – 3 видами, семейства Colobometridae и Zygometridae – 2 видами. По числу особей в наших сборах доминировали виды *Himerometra robustipinna* (Carpenter, 1881) (32 экземпляра) и *Cenometra bella* (Hartlaub, 1890) (27 экземпляров) из семейств Himerometridae и Colobometridae соответственно. Большинство обнаруженных видов (23 вида, 74% всей фауны) являются дневными, и лишь 5 видов (16%) – ночными, которые в течение дня прячутся в убежищах, а ночью выбираются на более открытые участки для фильтрации. Для 3 видов время активности в заливе не установлено. Все морские лилии были заселены симбионтами: полихетами, гастроподами, крабами, креветками и офурами. Наиболее богатые видами симбиотические ассоциации найдены на лилиях *Comaster nobilis* и *Lamprometra palmata* (19 и 13 видов соответственно). Дан упрощенный дихотомический ключ для определения морских лилий залива Нячанг.

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