

New records of *Fungiacava eilatensis* Goreau et al., 1968 (Bivalvia, Mytilidae)
boring into Indonesian mushroom corals (Scleractinia, Fungiidae)

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New observations on endoparasites in mushroom corals at South Sulawesi and Bali resulted in eight new coral host records of the mytilid bivalve *Fungiacava eilatensis* Goreau et al., 1968, bringing the total to 14. The host corals were observed in various habitats, most frequently on sandy substrates. The largest numbers of parasitic bivalves (> 10 individuals) were found in large attached mushroom coral hosts of the genus *Podabacia*.

Key words: Bivalvia, Mytilidae, *Fungiacava*, Scleractinia, Fungiidae, Indonesia, South Sulawesi, Bali, endoparasitism

The first Indonesian record of the endoparasitic mytilid *Fungiacava eilatensis* Goreau et al., 1968, concerned specimens from Komodo collected in 1984 by the first author during the Indonesian-Dutch Snellius-II Expedition (Hoeksema & Achituv, 1993). This bivalve species is only known to occur in mushroom corals, which belong to the scleractinian family Fungiidae. In a review, Hoeksema & Achituv (1993) listed six species of fungiid host corals from various localities, belonging to five subgenera in *Fungia* Lamarck, 1801: *F. (Cycloseris) fragilis* (Alcock, 1893), *F. (C.) tenuis* Dana, 1846, *F. (Fungia) fungites* (Linnaeus, 1758), *F. (Lobactis) scutaria* Lamarck, 1801, *F. (Verrillofungia) repanda* Dana, 1846, and *F. (Wellsofungia) granulosa* Klunzinger, 1879. Successive records of *Fungiacava eilatensis* in *F. (C.) fragilis* were obtained from Réunion Island and Madagascar, West Indian Ocean (Zibrowius & Arnaud, 1995).

In 1994 and 2001, additional specimens were collected at the Spermonde Archipelago, South Sulawesi (Indonesia) during surveys on endosymbiotic parasites in Fungiidae (table 1, figs 1-2). The material has been deposited in the mollusc collection of the National Museum of Natural History, Leiden (RMNH). *Fungiacava eilatensis* not only appeared to be more common than expected but also to occur in three additional host genera (i.e., *Halomitra* Dana, 1846, *Sandalolitha* Quelch, 1884, and *Podabacia* Milne Edwards & Haime, 1849) and one additional subgenus, *Fungia (Pleuractis)* Verrill, 1864 (table 1). The eight newly recorded host species are *Fungia (Cycloseris) costulata* Ortmann, 1889, *F. (Pleuractis) mohuccensis* Van der Horst, 1919, *F. (P.) paumotensis* Stutchbury, 1833, *Halomitra pileus* (Linnaeus, 1758), *Sandalolitha dentata* Quelch, 1884, *S. robusta* (Quelch, 1886), *Podabacia crustacea* (Pallas, 1766), and *P. motuporensis* Veron, 1990. For descriptions of the host coral species, see Hoeksema (1989, 1993).

During a recent survey at Bali (NNM-LIPI-WWF Bali-Lombok Strait Expedition Station 22, Tulamben, April 2001) specimens of *Fungiacava eilatensis* were also observed in *Podabacia crustacea*, *P. motuporensis*, *Sandalolitha robusta* and *S. dentata*.

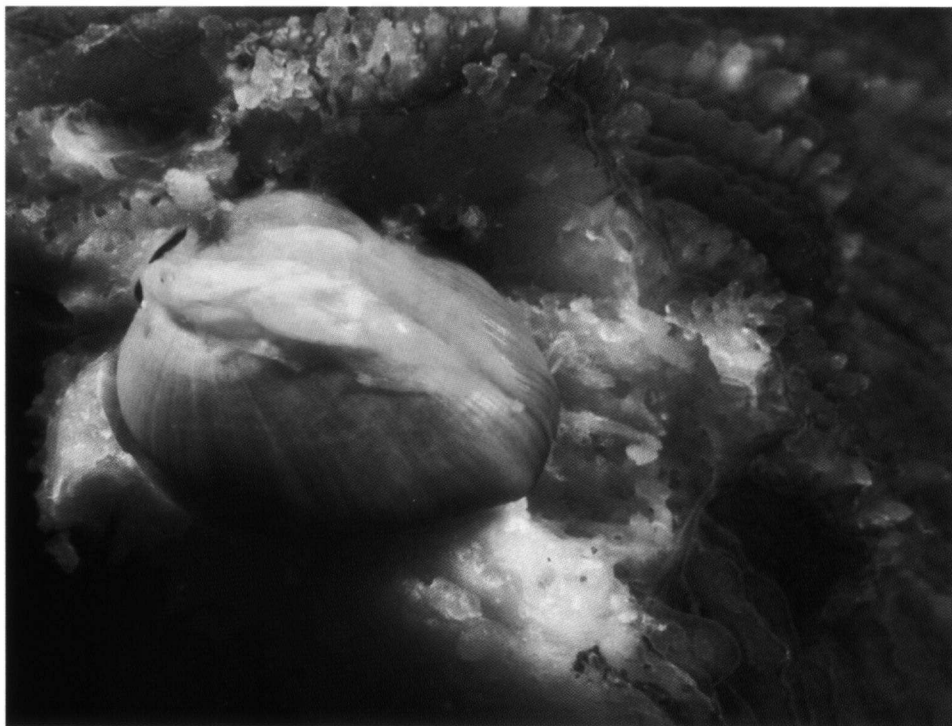


Fig. 1. *Fungiacava eilatensis* in *Sandalolitha dentata* (Kudingareng Keke I., RMNH 84612).

At South Sulawesi, most of the endoparasitic bivalves were found at lower reef slopes and reef bases, especially in specimens of *Fungia fragilis*, *F. costulata* and *F. moluccensis* on sandy bottoms. Among these host corals, individuals of *F. moluccensis* appeared the most frequently infested. Corals of *Sandalolitha* and *Podabacia*, which become large in adult stage, usually contained the largest numbers of the mytilid parasite, particularly *Podabacia* species with over 10 bivalves per coral. With regard to habitat preference of *F. eilatensis*, there is no clear preference in distance offshore (table 1, fig. 3), since the animals were found on reefs near river mouths (2 km offshore) and on barrier reefs that are most remote from the river outlets (36 km offshore).

With the new records from South Sulawesi and Bali taken into account, the total number of host species infested by *Fungiacava eilatensis* has become 14. Since these species belong to several genera and subgenera, we conclude that although the host specificity of this bivalve is limited to only one scleractinian family, the Fungiidae, the total number of host species is quite large for a single parasitic species.

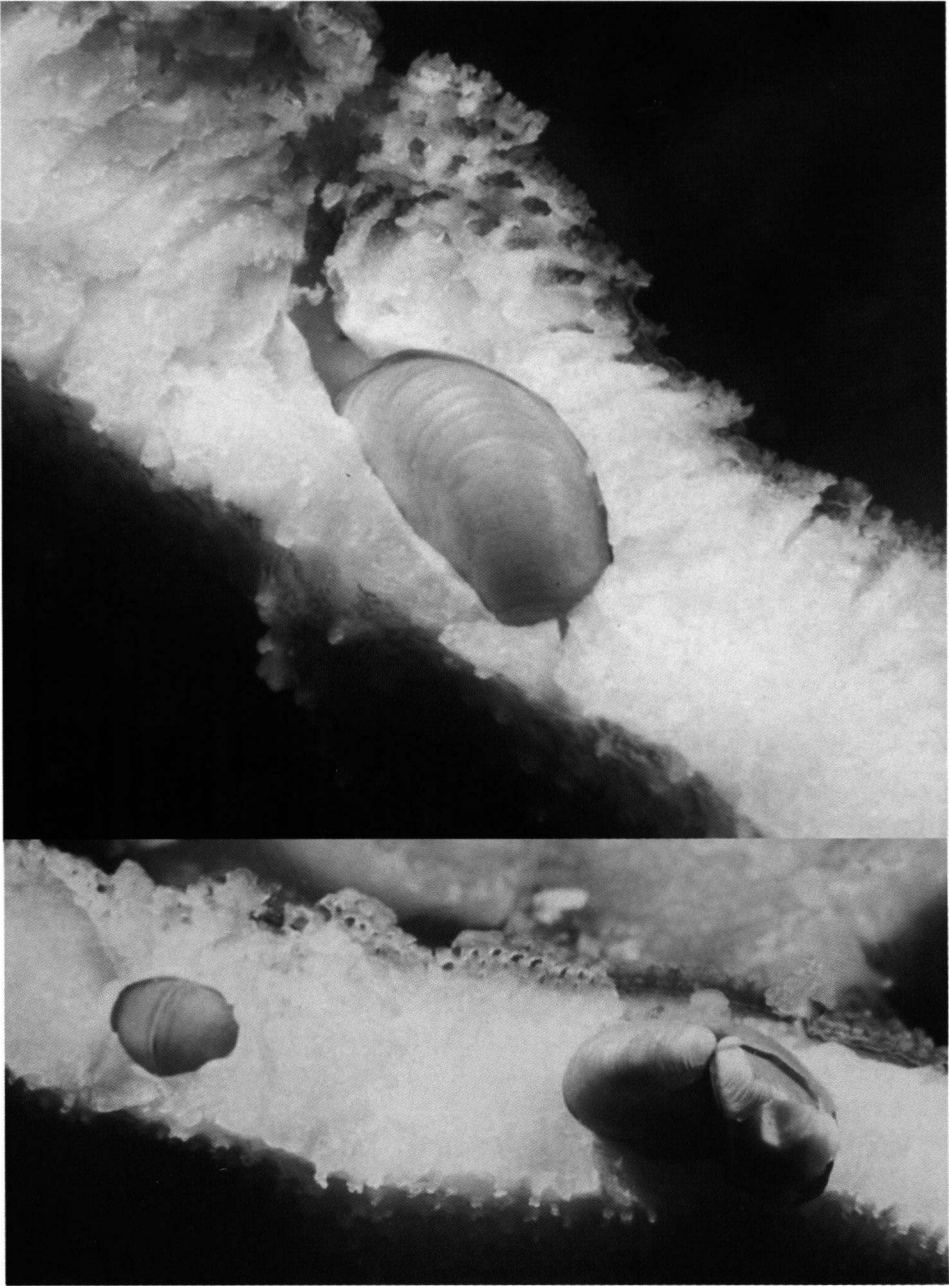


Fig. 2a, b. *Fungiacava eilatensis* in *Podabacia motuporensis* (Bone Tambung I., RMNH 84616).

Table 1. Overview of mushroom coral hosts for *Fungiacava eilatensis* recorded at the Spermonde Archipelago, South Sulawesi, Indonesia; * = new host record.

| Host species | Reef | Distance offshore (km) | Catalogue no. RMNH |
|--|---------------------|------------------------|--------------------|
| <i>Fungia (Cycloseris) fragilis</i> (Alcock, 1893) | Samalona I. | 6 | 10121 |
| | Kudingareng Keke I. | 13 | 10107 |
| | Lumu-Lumu I. | 29 | 10115 |
| * <i>Fungia (Cycloseris) costulata</i> Ortmann, 1889 | Lae-Lae I. | 2 | 10112 |
| | Barang Lompo I. | 12 | 10080, 10081 |
| | Kudingareng Keke I. | 13 | 10096 |
| | Badi I. | 22 | 10120 |
| <i>Fungia (Fungia) fungites</i> (Linnaeus, 1758) | Samalona I. | 6 | 10136 |
| * <i>Fungia (Pleuractis) paumotensis</i> Stutchbury 1833 | Kudingareng Keke I. | 13 | 10098 |
| * <i>Fungia (Pleuractis) moluccensis</i> Van der Horst, 1919 | Gusung I. | 2 | 10090 |
| | Samalona I. | 6 | 10126, 10127 |
| | Kudingareng Keke I. | 13 | 10097, 10102 |
| | Bone Tambung I. | 18 | 10085 |
| | Lumu-Lumu I. | 29 | 10114, 10116 |
| * <i>Halomitra pileus</i> (Linnaeus, 1758) | Kudingareng Keke I. | 13 | 10106 |
| * <i>Sandalolitha dentata</i> Quelch, 1884 | Kudingareng Keke I. | 13 | 84612 |
| * <i>Sandalolitha robusta</i> (Quelch, 1886) | Samalona I. | 6 | 10123, 10131 |
| | Bone Tambung I. | 18 | 10087 |
| | Langkai I. | 36 | 10109, 10110 |
| * <i>Podabacia crustacea</i> (Pallas, 1766) | Samalona I. | 6 | 10133 |
| | Barang Caddi I. | 11 | 10078 |
| | Kudingareng Keke I. | 13 | 10101, 10103 |
| | Bone Tambung I. | 18 | 10089 |
| * <i>Podabacia motuporensis</i> Veron, 1990 | Bone Tambung I. | 18 | 84616 |

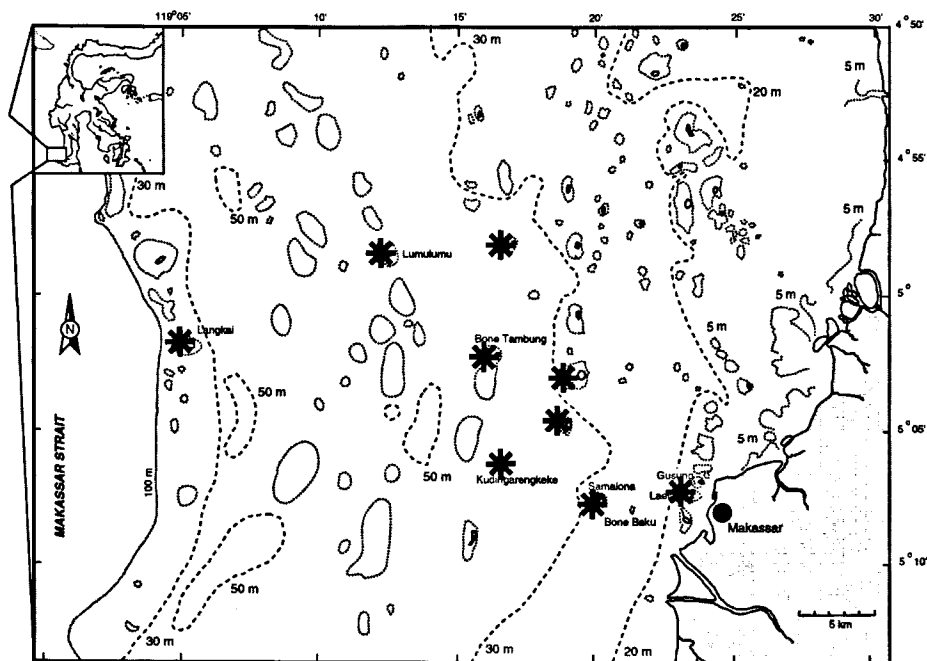


Fig. 3. Localities (n = 10) of *Fungiacava eilatensis* at South Sulawesi (for names, see table 1).

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REFERENCES

- HOEKSEMA, B.W., 1989. Taxonomy, phylogeny and biogeography of mushroom corals (Scleractinia: Fungiidae). – *Zoologische Verhandelingen*, Leiden 254: 1-295.
- HOEKSEMA, B.W., 1993. Mushroom corals (Scleractinia: Fungiidae) of Madang Lagoon, northern Papua New Guinea: an annotated check-list with the description of *Cantharellus jebbi* spec. nov. – *Zoologische Mededelingen*, Leiden 67: 1-19.
- HOEKSEMA, B.W., & Y. ACHITUV, 1993. First Indonesian record of *Fungiacava eilatensis* Goreau et al., 1968 (Bivalvia: Mytilidae), endosymbiont of *Fungia* spp. (Scleractinia: Fungiidae). – *Basteria* 57: 131-138.
- ZIBROWIUS, H., & P.M. ARNAUD, 1995. New records of molluscs (*Leptoconchus*, *Lithophaga*, *Fungiacava*) that bore Indo-Pacific reef corals and their interactions with their hosts. – *Bulletin du Muséum national d' Histoire naturelle*, Paris (4) 16 (A, 2-4): 231-244.