琉球大学学術リポジトリ

沖縄島大渡海岸の潮間帯におけるサンゴヤドリガニ類の記録

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Observations of coral-dwelling gall crabs (Cryptochiridae) in the intertidal zone of Odo Beach (Okinawa, Japan)

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Record

The intertidal zone, situated between the boundary of low and high tide, is a hostile zone. Fluctuating tides result in periods of submergence by seawater followed by exposure to air, as well as a constant physical barrage from moving waters and freshwater inundation. Nonetheless diverse assemblages of stony corals have been reported to thrive in these conditions (Richards et al. 2015). At Odo Beach, Okinawa Isl., Japan (26°5'22.33" N 127°42'33.48" E), several scleractinian species were encountered in the upper intertidal zone (Fig. 1A). The coral fauna was dominated by *Coelastrea aspera* (Verrill, 1866), a regular intertidal zone inhabitant (Brown et al. 2002), as well as a fair amount of branching *Montipora* cf. *digitata* (Dana, 1846). A surprisingly large number of *Pavona divaricata* Lamarck, 1816 colonies, relatively uncommon on the reefs around Okinawa, *Porites* "bommies" and various *Platygyra* corals were also encountered. In the deeper rock pools in the lower intertidal zone the diversity of corals was higher and also included tabular *Acropora* species and the fire coral *Millepora* spp.

During surveys around Okinawa Isl. we paid particular attention to obligate coral-dwelling species. At Odo Beach we encountered a single specimen of *Spirobranchus* sp. and a specimen of *Pedum spondyloideum* (Gmelin, 1791) in a massive *Porites*. Coral-dwelling gall crabs (Cryptochiridae) were encountered in three different coral species (*Pavona venosa* (Ehrenberg, 1834), *P. divaricata* and *C. aspera*; Fig. 1B-D) each housing a different gall crab species (respectively, *Opecarcinus* cf. *sierra* Kropp, 1989, *Pseudohapalocarcinus ransoni* Fize & Serène, 1956, and *Lithoscaptus* sp.). Cryptochirids have been reported from shallow waters of less than 1 meter (e.g. Takeda and Tamura, 1980), but not specifically from the upper intertidal zone.

Unexpectedly, in a *C. aspera* colony an inhabited *Lithoscaptus* sp. dwelling was observed in a part of the colony (mostly) occurring above the high water line. This part of the coral had completely died off, exposing the coral skeleton, and was overgrown with algae (Fig. 1D, E). The gall crab also had algae growing on its carapace, and was parasitized by a bopyrid isopod identified as *Carcinione platypleura* Bourdon, 1983 (Fig. 1F). Kropp (1986) suggested that gall crabs feed on coral mucus, but other dietary preferences have been postulated (Carricart-Ganivet et al. 2004: filamentous algae; Terrana et al. 2016: filter feeding). Apparently, this particular *Lithoscaptus* specimen could survive without being able to feed on coral tissue. Based on this observation it seems plausible that gall crabs are opportunistic feeders and do not (solely) rely on coral mucus as a food source.

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References

Brown, B.E., C.A. Downs, R.P. Dunne & S.W. Gibb, 2002. Exploring the basis of thermotolerance in the reef coral Goniastrea aspera. Marine Ecology Progress Series, 242: 119–129.

Carricart-Ganivet, J.P., L.F. Carrera-Parra, L.I. Quan-Young, & M.S. García-Madrigal, 2004. Ecological note on *Troglocarcinus corallicola* (Brachyura: Cryptochiridae) living in symbiosis

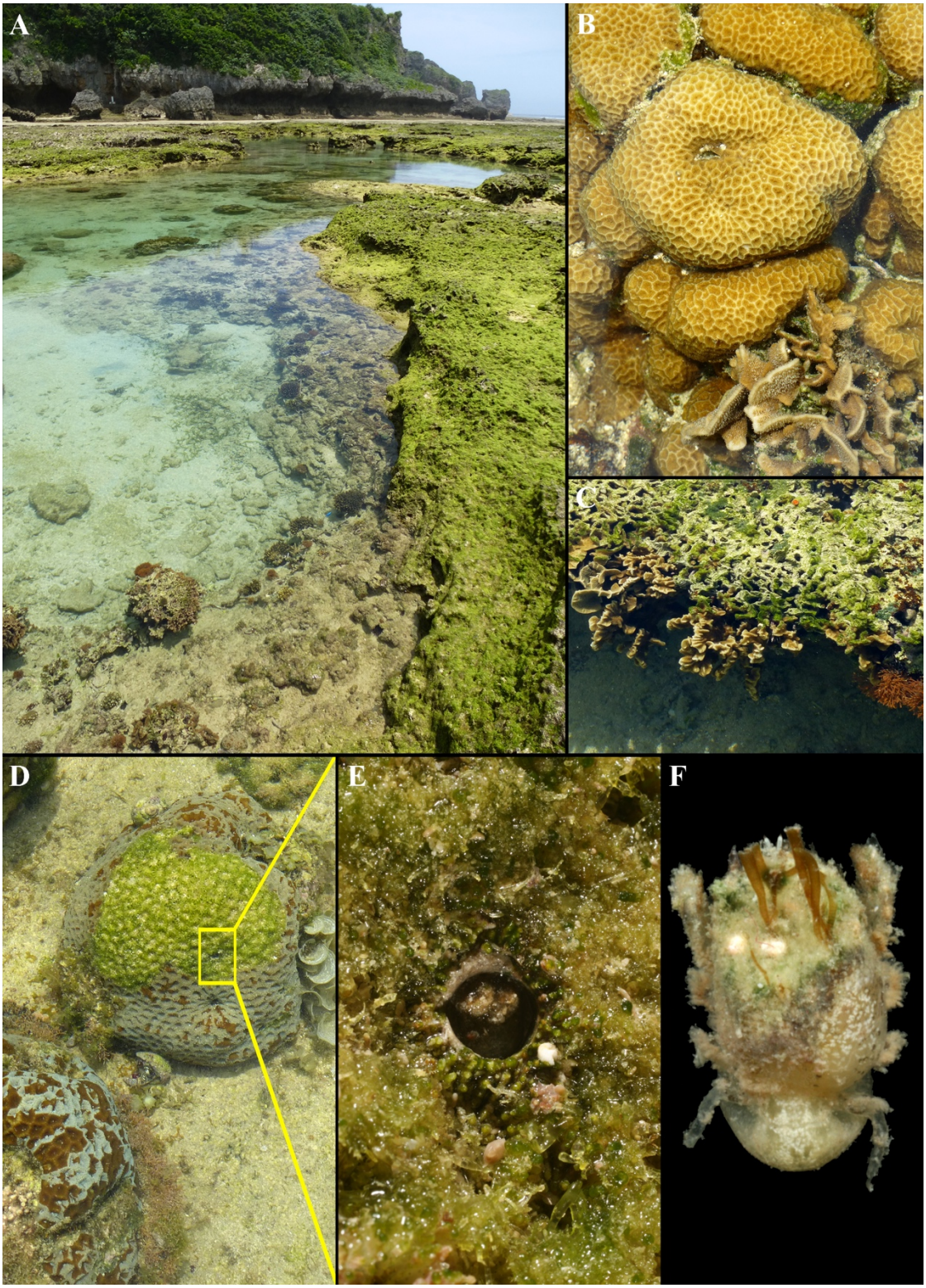

Fig. 1. (A) Upper intertidal zone at Odo Beach, Okinawa Isl., Japan, (B) *Opecarcinus* cf. *sierra* dwelling in *Pavona venosa*, (C) *Pavona divaricata* colony from which *Pseudohapalocarcinus ransoni* were sampled, (D) *Coelastrea aspera* with *Lithoscaptus* sp., (E) Close-up of algae covered dwelling of *Lithoscaptus* sp. in *C. aspera*, (F) *Lithoscaptus* sp. collected from *C. aspera*, with algae on its carapace and bopyrid infestation in right branchial chamber.
図 1. (A) 沖縄島大渡海岸の高潮帯, (B) シコロキクメイシに寄居する *Opecarcinus* cf. *sierra*, (C) ヒメヤドリサンゴガニを採集したトガリシコロサンゴの群体, (D) パリカメノコキクメイシに寄居する *Lithoscaptus* sp., (E) パリカメノコキクメイシに寄居する藻類が生えた *Lithoscaptus* sp.の拡大図, (F) パリカメノコキクメイシより採集された, 頭胸甲に藻類が生えた *Lithoscaptus* sp.

with *Manicina areolata* (Cnidaria: Scleractinia) in the Mexican Caribbean. Coral Reefs, 23: 215–217.

Kropp, R.K., 1986. Feeding biology and mouthpart morphology of three species of coral gall crabs (Decapoda: Cryptochiridae). Journal of Crustacean Biology, 6: 377–384.

Richards, Z.T., R.A. Garcia, C.C. Wallace, N.L. Rosser & P.R. Muir, 2015. A diverse assemblage of reef corals thriving in a dynamic intertidal reef setting (Bonaparte Archipelago, Kimberley, Australia). PloS One, 10: e0117791.

Takeda, M. & Y. Tamura, 1980. Coral-inhabiting crabs of the family Haplocarcinidae from Japan. II. Genus *Pseudohapalocarcinus*. Proceedings of Japanese Society of Systematic Zoology, 18: 54–59, pls. 2–5.

Terrana, L., G. Caulier, G. Todinanahary, G. Lepoint & I. Eeckhaut, 2016. Characteristics of the infestation of *Seriatopora* corals by the coral gall crab *Hapalocarcinus marsupialis* Stimpson, 1859 on the great reef of Toliara, Madagascar. Symbiosis, 69: 113–122.

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要旨. 沖縄島大渡海岸にて実施した潮間帯調査中に，高潮帯よりサンゴヤドリガニ類 3 種が観察されたので記録する．それら 3 種が寄居した宿種は特異的であり，*Opecarcinus* cf. *sierra* Kropp, 1989 は *Pavona venosa* (Ehrenberg, 1834) シコロキクメイシから，*Pseudohapalocarcinus ransoni* Fize & Serène, 1956 ヒメヤドリサンゴガニは *Pavona divaricata* Lamarck, 1816 トガリシコロサンゴから，そして *Lithoscaptus* sp. は *Coelastrea aspera* (Verrill, 1866) パリカメノコキクメイシからのみ確認できた．そのうち，パリカメノコキクメイシのある群体では，そのほとんどが水面上に露出し、かつ死んでおり，表面が藻類に覆われているにも関わらず，同じく背面に藻類が生えた *Lithoscaptus* sp.が生存しているのが確認された．サンゴヤドリガニ類はサンゴ類が放出するサンゴ粘液に加え，他の栄養源を利用していることが推測されてきたが，少なくともこの *Lithoscaptus* sp.の個体はサンゴ粘液にのみ依存していないということが示唆された．

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