

## First records of *Nanozoanthus* (Anthozoa: Hexacorallia: Zoantharia) from the waters of southwestern Shikoku

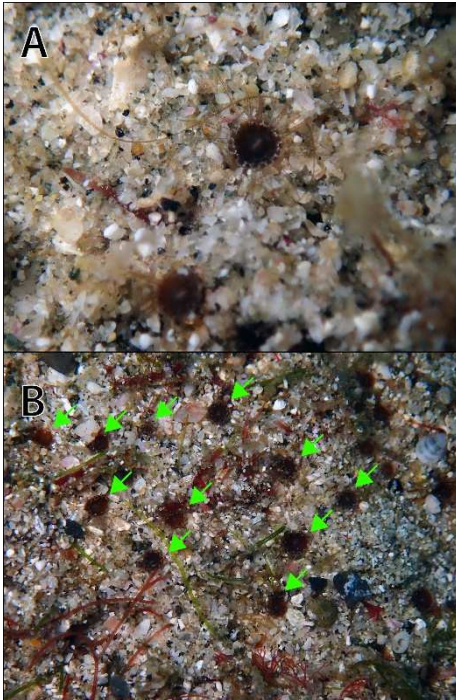


Figure 1. *Nanozoanthus harenaceus* Fujii & Reimer, 2013 in situ in waters around southeastern Shikoku. A) A colony at Sotogashira, Okinoshima Island, Sukumo, Kochi (32° 44' 34.1"N 132°33'44.3"E) on August 31, 2019, depth 21 m, and B) a colony at the north side of Kashiwajima Island, Otsuki, Kochi (32°46'28.5"N 132°37'31.8"E) on October 17, 2020, depth 19 m. Green arrows in

Since its formal description, the genus *Nanozoanthus* Fujii & Reimer, 2013 has been reported from southern Japan (Fujii and Reimer 2013; Reimer et al. 2017), western Australia (Fujii and Reimer 2013; Reimer et al. 2017), and the Red Sea (Reimer et al. 2015). Initially erected based on the species *N. harenaceus* Fujii and Reimer, 2013 from coral reef ecosystems in Okinawa, more recently specimens identified as *N. aff. haraneceus* have been found in temperate waters of Kagoshima in southern Kyushu, Japan (Reimer et al. 2017), and thus it has been thought that the genus extends into temperate waters in southern Japan. During ecological scuba surveys using the roving method (Lincoln Smith 1988) in August 2019 and October 2020, we noted several colonies of *N. harenaceus* from sites around Kashiwajima Island and Okinoshima Island in southwestern Kochi, Japan; in situ images were taken and depths noted (Fig. 1), and one specimen collected (RUMF-ZG-04463, deposited in the University of the Ryukyus Fujikan Museum). These represent the first records of the family Nanozoanthidae from Shikoku and on the Pacific coast of mainland Japan north of Sakurajima, Kagoshima (Reimer et al. 2017). The colonies were attached to hard substrates with a shallow covering of sand (Fig. 1), similar to as previously reported (Fujii and Reimer 2013). The colonies agreed well with the external morphology of the

original description of *N. harenaceus*, with only a notable difference in the number of tentacles (20–22 tentacles as opposed to 16–20 in Fujii and Reimer 2013; Fig. 1). With this finding, the number of zoantharian species reported from the waters Shikoku rises to 18 species from 10 genera (Reimer 2007; Reimer et al. 2008; 2013), and it is expected that numbers will continue to increase via further research as previously suggested (Reimer et al. 2013).

**Acknowledgements** We thank Drs. Keita Koeda and Takuma Mezaki (Kuroshio Biological Research Foundation), and the Pacific Marine (Sukumo) and Sea Air (Kashiwajima) dive shops for logistical support. The author was supported in part by the Winifred Violet Scott Estate fund (United Kingdom) to Dr. Maria Beger (Leeds University, United Kingdom). This work was improved by comments from anonymous reviewers.

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## References

- Fujii, T. and Reimer, J.D. (2013) A new family of diminutive zooxanthellate zoanths (Hexacorallia: Zoantharia). *Zoological Journal of the Linnean Society*, 169: 509–522.
- Lincoln Smith, M.P. (1988) Effects of observer swimming speed on sample counts of temperate rocky reef fish assemblages. *Marine Ecology Progress Series*, 43: 223–231.
- Reimer, J.D. (2007) Preliminary survey of zooxanthellate zoanthid diversity (Hexacorallia: Zoantharia) from southern Shikoku, Japan. *Kuroshio Biosphere*, 3: 1–16 + 7 pls.
- Reimer, J.D., Kise, H., Albinsky, D., Uyeno, D. and Matsuoka, M. (2017) *Nanozoanthus* (Cnidaria: Anthozoa: Hexacorallia: Zoantharia: Nanozoanthidae) outside of tropical and subtropical waters. *Marine Biodiversity*, 47: 965–969.
- Reimer, J.D., Sinniger, F. and Irei, Y. (2013) Preliminary list of macrocnemic zoanths diversity (Anthozoa: Hexacorallia: Zoantharia) from southern Shikoku, Japan. *Kuroshio Biosphere*, 9: 1–12.
- Reimer, J.D., Nonaka, M., Sinniger, F. and Iwase, F. (2008) Morphological and molecular characterization of a new genus and new species of parazoanthid (Anthozoa: Hexacorallia: Zoantharia) associated with Japanese Red Coral. *Coral Reefs*, 27: 935–949.
- Reimer, J.D., Kawamura, I. and Berumen, M.L. (2015) First record of Nanozoanthidae from the Red Sea. *Marine Biodiversity Records*, 8: e19
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