

Reef sites

Remarkable specialization in Eastern Pacific sea fan ectoparasites (*Neosimnia*)

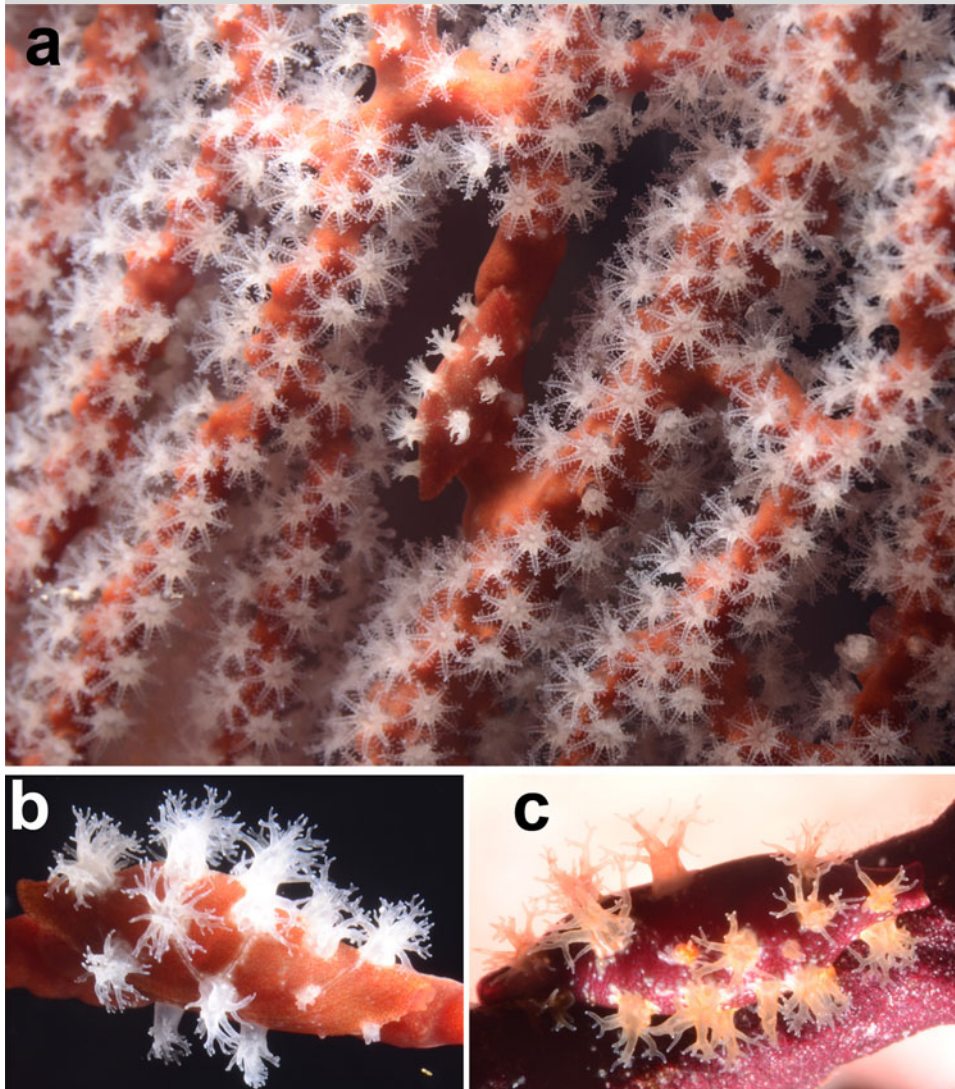


Fig. 1 Images of *Neosimnia avena* (Mollusca: Gastropoda: Ovulidae) ectoparasites of Eastern Pacific sea fans (*Pacifigorgia*: Gorgoniidae: Octocorallia) at Malpelo island reefs (Colombia). **a** *Pacifigorgia* cf. *cairnsi* Breedy and Guzmán, 2003 colony with *N. avena* in the center (15 m deep); **b**, **c** *N. avena* with mimic octocoral polyps on the mantle; **b** *N. avena* associated with *P. cf. cairnsi*; **c** *N. avena* associated with *Pacifigorgia* cf. *curta* Breedy and Guzmán, 2003 (orange polyps morphotype, 7 m deep) (all shells <15 mm long)

References

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J. A. Sánchez (✉)

Laboratorio de Biología Molecular Marina (BIOMMAR), Departamento de Ciencias Biológicas, Facultad de Ciencias, Universidad de los Andes, Bogotá, Colombia
e-mail: juansanc@uniandes.edu.co

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Ovulids, cowry-like mollusks, are permanent ectoparasites of black corals and octocorals (Lorenz and Fehse 2009). Pacific sea fans (Octocorallia: Gorgoniidae: *Pacifigorgia*) host an ovulid identified as *Neosimnia avena* (G. B. Sowerby II, 1832) (Mollusca: Gastropoda: Ovulidae), which mimics its octocoral host matching both coenenchyme and polyps (Fig. 1a–c). There are more than 30 species of *Pacifigorgia* that are confined to the Eastern Pacific rocky-coral reefs, and each species contains a specialized *N. avena*. At the remote island of Malpelo (Colombia), for instance, there are only two sea fan species with very different colorations and branching shapes (Sánchez et al. 2011), each containing mimetic *N. avena* ectoparasites (Fig. 1b, c). Are all these nearly perfectly adapted symbionts the same species? Is host morphological resemblance a selective driving force for *Neosimnia*? Although *N. avena* is commonly found on gorgonian corals (Lorenz and Fehse 2009), it is uncertain whether speciation in these symbionts matches the hosts' evolutionary processes. However, *Pacifigorgia-N. avena* is a promising biological model for studying ecological speciation and coevolution in coral reefs.

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