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Membraniporopsis tubigera (Osburn, 1940) (Bryozoa) on floating substrata: evidence of a dispersal mechanism in the western Atlantic

L. M. Vieira · A. E. Migotto

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Membraniporopsis tubigera (Osburn 1940) (Fig. 1a–f) was collected in 2008 in São Paulo and between August and September 2009 in Fortaleza, Ceará, Brazil in shrimp trawlnets or by hand in sand beaches. This species was originally described as being from Puerto Rico and the Gulf of Mexico (Florida and Texas), and since then it has been reported forming erect colonies in the Pacific (Japan, Australia, and New Zealand), south-southeastern Brazil, and Uruguay (Gordon et al. 2006; López Gappa et al. 2010). Encrusting colonies of *M. tubigera* were found on floating plastics, dead leaves, and algae with other pseudoplanktonic bryozoans [e.g. *Jellyella tuberculata* (Bosc, 1802) (Taylor and Monks 1997)]. Erect fronds were found stranding in sandy beaches.

We have found young encrusting colonies of *M. tubigera*, which are considered rare (Gordon et al. 2006). They are small, flat, rounded, forming unilaminar patches (Fig. 1a) entirely covering the substrata in late astogeny (Fig. 1b–d) and often covering both surfaces of algae with bilaminar expansions at the edge (Fig. 1e). Erect fronds previously reported from New Zealand and Brazil may have a tapering proximal portion that could facilitate the detachment of fronds from the encrusting colony (Gordon et al. 2006). Erect

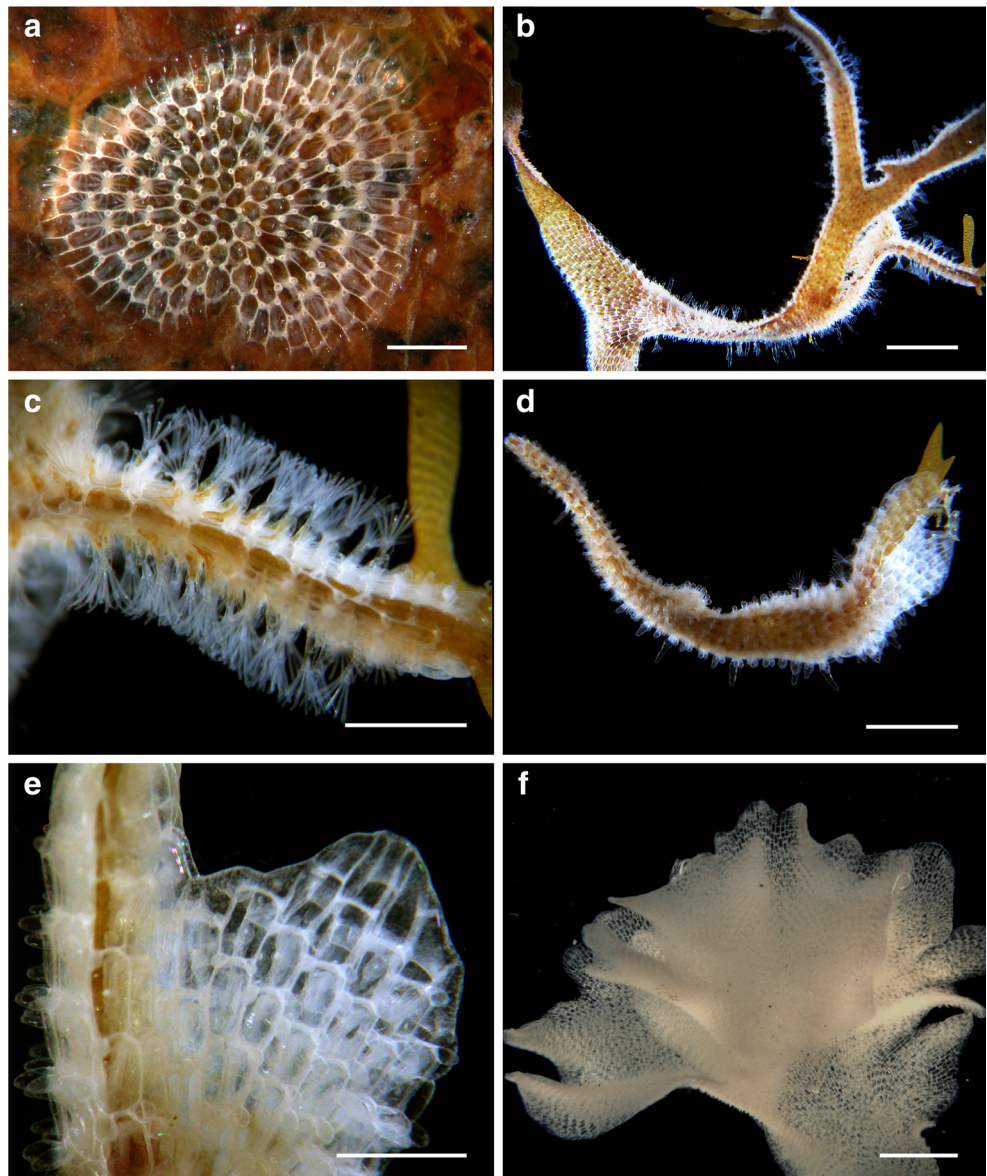
colonies of *M. tubigera* may also become free with the destruction of ephemeral substrata (Fig. 1f).

The dispersal mechanisms of *M. tubigera* are poorly understood. The occurrence of living *M. tubigera* on floating plastics and algae with other pseudoplanktonic bryozoan species provides evidence for rafting as a dispersal mechanism, and the characteristic shape of foliaceous colonies, which keep alive when free, could also benefit dispersal. Dispersal by rafting does not exclude the hypothesis of transoceanic transportation in *fouling* communities of vessels or ballast water, as suggested by Gordon et al. (2006). Although it is unclear where *M. tubigera* is originally native, it has been considered invasive in many places. Given the variety of possible dispersal capabilities, it is expected that *M. tubigera* may reach new localities in tropical to warm-temperate waters of the Atlantic, Indo-Pacific, and eastern Pacific over relatively short time periods.

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L. M. Vieira (✉) · A. E. Migotto
Centro de Biologia Marinha, Universidade de São Paulo,
São Sebastião, SP 11600-000, Brazil
e-mail: leandromanzoni@hotmail.com

Fig. 1 *Membraniporopsis tubigera* (Osburn, 1940) collected in São Paulo State, Brazil. **a** Small encrusting colony on drift algae. **b** Colony covering the entire surface of *Sargassum*. **c** Detail of colony covering the basal and frontal surface of substratum. **d** small piece of alga covered by encrusting colony, which is free at the edge. **e** Detail of free portion of the colony, forming flexible branch with two layers of opposite zooids. **f** Erect colony. Scale bar: a,c,e 1 mm; b,d,f, 5 mm



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