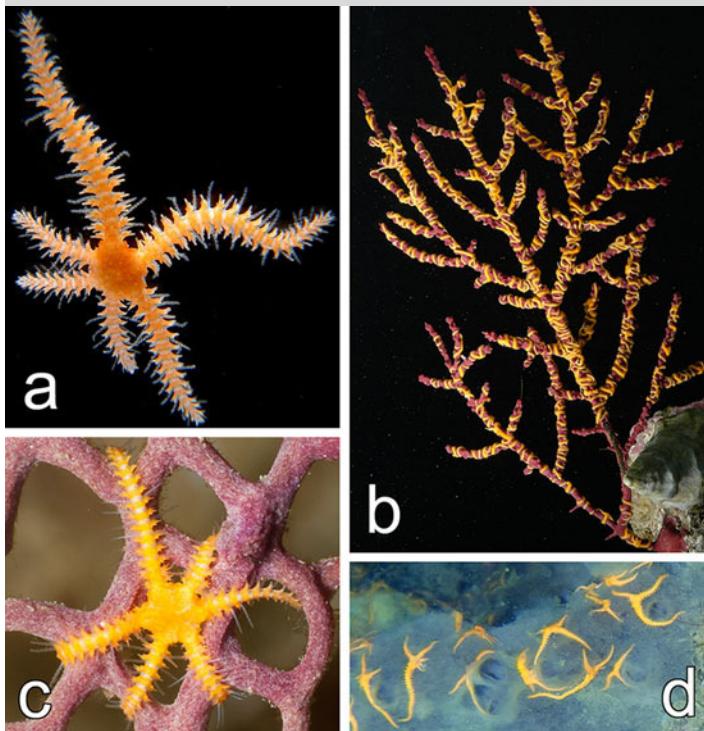


## Epizoic *Ophiothela* brittle stars have invaded the Atlantic



**Fig. 1** a The disks of *O. mirabilis* ( $\approx 2$  mm diameter for ophiuroids in the figure) and the arms ( $\sim 5$  times as long) contrast in color with the host species b *Leptogorgia punicea*, c *Gorgonia ventalina*, and d *Mycale angulosa*. Images a, b, d photographed at São Paulo by Migotto; c at St. Vincent by Haberman

It was thought that ophiuroids of the genus *Ophiothela* are confined to Pacific waters (Clark 1976). However, animals provisionally identified as *Ophiothela mirabilis* have founded emergent populations in the Atlantic. Further expansion of the range of *Ophiothela* could alter the appearance and the ecology of Atlantic coral reef habitats because ophiothelas, in multitudes, densely colonize gorgonians and sponges on Indo-West central Pacific and on tropical eastern Pacific reefs.

In 2000, *O. mirabilis* was first observed in Brazil off Ilha do Pai, Rio de Janeiro. It was seen  $\sim 1,200$  km to the northeast off Farol da Barra, Bahia, in 2004, and  $\sim 600$  km to the southwest at Ilha do Mel, Paraná, in 2009, and has been repeatedly collected from São Paulo to Espírito Santo. In late 2011, it was discovered near Camden Park Bay, St. Vincent, Lesser Antilles, and as of June 2012 occurs at several more Vincentian sites. Its presence near Brazilian and Caribbean ports  $\sim 4,500$  km apart indicates that *O. mirabilis* could have been spread by shipping. *O. mirabilis* from the Eastern Pacific is variably colored, but nearly all Atlantic animals are yellow-orange, suggesting they belong to a single lineage (Fig. 1).

Proliferation of the small, 6-armed species is enhanced by its capacity for fissiparous, asexual reproduction, a process producing cloned progeny with regenerating arms (Fig. 1a, d). Low host specificity of *O. mirabilis* (already associated with at least 20 Atlantic host species) may also help it colonize new territory (Fig. 1b–d). Unfortunately, too little is known of the

species' biology to predict its potential impact on Atlantic reef communities. Sexual reproduction, larval and post-larval dispersal, feeding habits, environmental requirements, and interactions of *Ophiothela* species with their hosts, predators, and parasites have not been studied. Taxonomy and identification of ophiothelas is complicated by the morphological plasticity of their regenerating structures. A molecular phylogenetic analysis of the 10 named species of 6-armed *Ophiothela* is required to establish whether they comprise one species (as suggested by Clark 1976) and possibly identify the source of colonization.

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