

# Multiple purple spots in the Caribbean sea fan *Gorgonia ventalina* caused by parasitic copepods at St. Eustatius, Dutch Caribbean

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Symbiotic Copepoda comprise a widespread, diverse, and abundant ecological group of small crustaceans associated with various invertebrates, including octocorals. Some copepods, such as Lamippidae, are morphologically highly modified endoparasites found in galls or other cavities of various species of octocorals (Buhl-Mortensen and Mortensen 2004). Despite previous investigations of symbiotic copepods inside Caribbean octocorals (Stock 1973), lamippid copepods associated with the common shallow-water sea fan *Gorgonia ventalina* Linnaeus, 1758, have not been reported so far. During a marine biodiversity survey around the Dutch Caribbean island

St. Eustatius (June 2015) by use of SCUBA (2–21 m deep), numerous colonies of *G. ventalina* with multiple purple spots (Ø 1–4 cm) were discovered at eight of 40 localities. The spots were outgrowths of the gorgonian tissue, lacking any polyps or noticeable openings (Fig. 1a–c). Dissection of 24 outgrowths revealed chambers typically enclosing one or two adult copepods (female, or female and male) identified as *Sphaerippe* sp., distinguished by a spherical female body shape and acicules present on legs 1 and 2 (Fig. 1d, e). The GenBank accession number of our copepod 18S rRNA fragment is KT762152. The only known species of the genus, *S. caligicola* Grygier 1980, was found in galls of the sea fan *Callogorgia* sp. near Grand Bahama Island at 355 m depth (Grygier 1980). In addition to the adult copepods, the chambers found in *G. ventalina* contained eggs, spermatophores, and yellow structures representing exuvia of copepods, eggs, and spermatophores covered by a gorgonian secretion. The presence of numerous multiple purple spots on some colonies but their absence in adjacent colonies suggests self-infestation of the gorgonian by offspring of the copepods from first settlement. Our data therefore suggest that endoparasitic lamippid copepods induced the purple spots on *G. ventalina* colonies. The multiple purple spots with copepods are remarkably similar to those of the multifocal purple spots syndrome (MPSS) of *G. ventalina* reported from several Caribbean localities since 2006 (Burge et al. 2012). The occurrence of multiple purple spots on *G. ventalina* around St. Eustatius caused by endoparasitic copepods require

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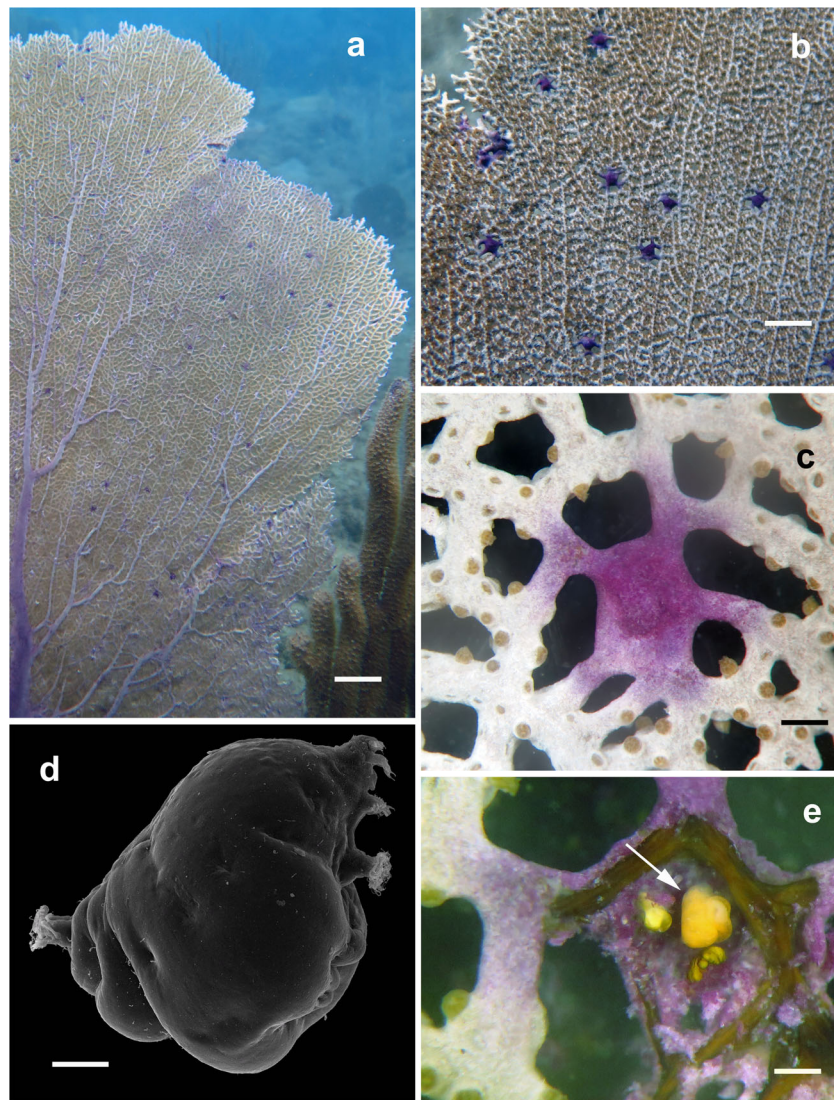
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**Fig. 1** a–c. *Gorgonia ventalina* with multiple purple spots caused by parasitic copepods; **d** habitus of female *Sphaerippe* sp., lateral view, SEM; **e** dissected purple spot with female *Sphaerippe* sp. (arrow). Scale bars: a – 10, b – 5, c – 0.8, d – 0.1, e – 0.4 cm>

additional study of the distinctive features and ecology of the lamippid copepods, specification of the diagnosis of MPSS, and identification of the agents inducing multiple purple spots at various localities in the region.

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