

Reef sites

Initial spread of the invasive green alga *Caulerpa verticillata* over coral reef communities in the Gulf of California

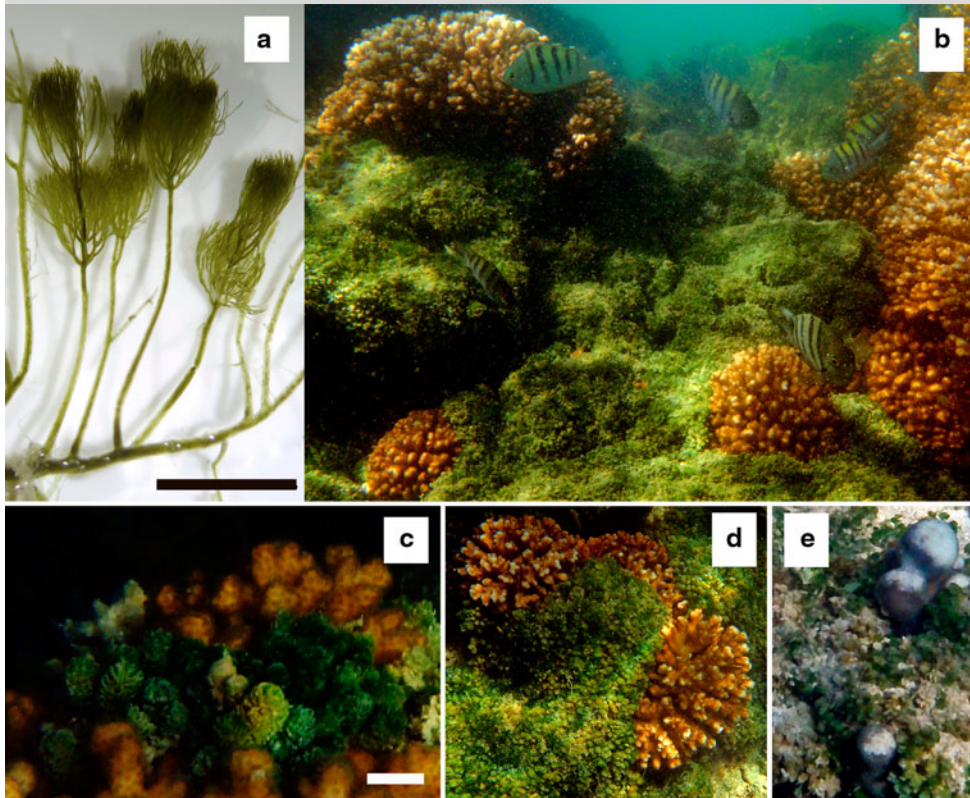


Fig. 1 a Alga *Caulerpa verticillata* b *C. verticillata* growing over coral reef community c Detail of algal growth between branches d, e Alga overgrowing colonies of *Pocillopora damicornis* and *Porites panamensis*, respectively. Scale bars 1 cm

tween branches of *Pocillopora damicornis* (Fig. 1c) and over *P. damicornis* and *Porites panamensis* colonies (Fig. 1d,e). Surveys of 12 sites (from 24.04°N to 24.74°N) between 2010 and 2012 indicated that *C. verticillata* so far remains limited to the three sites above. This is the first report of *C. verticillata* overgrowing coral reef communities in the Gulf of California. This finding emphasizes that regular reef monitoring will be necessary to evaluate the effects of this algal invasion on coral populations in this region.

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Caulerpa verticillata J. Agardh 1847 (Bryopsidales, Caulerpaceae) is an invasive and aggressive algal species that quickly spreads by extensive blooms and overgrows coral colonies until the corals are completely covered (Lapointe and Bedford 2010).

Like other species in this genus, this alga has the potential to impact ecosystem diversity and function of coral reefs (Fernández and Cortés 2005; Kružić et al. 2008). In the tropical Eastern Pacific, this species has been reported only in Panama at 8°N and in the Mexican Pacific at 19°N (Mateo-Cid and Mendoza-González 1991; Pérez-Justavino et al. 2010). Little is known about the spread of this alga. In January 2010, *C. verticillata* (Fig. 1a) was recorded for the first time covering a few square meters in rocky areas at 2 m depth at Esterito (24°10'36.46"N, 110°18'21.16"W) and La Concha (24°12'4.72"N, 110°18'2.24"W), in the southwestern part of the Gulf of California. One year later, diver and aerial surveys revealed that the alga had increased its coverage at the same two locations ~200,700 and ~11,000 m², respectively. In November 2011, the alga was found at Palmira (24°11'18.52"N, 110°18'12.00"W), covering ~30,000 m² at 0.5–7 m depth and growing on a coral reef community (Fig. 1b). Algal growth occurred be-