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Mediterranean gorgonians fighting

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1 **Mediterranean gorgonians fighting**

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10 The long-lived, slow-growing, and low-resilience sea fans *Paramuricea clavata* (Risso, 1826) and
11 *Eunicella cavolini* (Koch, 1887) are keystone species of the Mediterranean coralligenous
12 assemblages and are affected by anthropogenic disturbances and mass mortality events triggered by
13 marine heatwaves (Turicchia et al. 2018; Garrabou et al. 2019). The frequent closeness between
14 colonies of these two sympatric species throughout all the Mediterranean Sea suggests weak
15 interspecific competition, at least at low colony densities, despite a large overlap in their
16 bathymetric distribution (Di Camillo et al. 2018; Ponti et al. 2018). However, a direct interaction
17 between their colonies has never been reported. We photographically documented the accidental
18 contact, maybe caused by basal rocks' movement, between branches of *P. clavata* and *E. cavolini* at
19 28 m depth at Capo Calvo, Elba Island, Italy (42.7350° N, 10.4342° E, Geodetic Datum WGS84),
20 the May 25th, 2019 (Fig. 1a). The branch portions of *P. clavata* in touch with those of *E. cavolini*
21 showed depigmented coenenchyme and bare skeletons, while the *E. cavolini* ones appeared healthy
22 (Fig. 1a, b).

23 The interspecific interactions by contact with neighbouring specimens, although well documented
24 for many scleractinians, are still little investigated in gorgonian octocorals. For the purpose, some
25 corals develop specialised (i.e. sweeper and thread-like) tentacles. Around the contact area, there
26 were thread-like tentacles in polyps of *P. clavata*, but not in those of *E. cavolini* (Fig. 1c). In *P.*

27 *clavata*, thread-like tentacles, with high densities of nematocysts, have been reported to be involved
28 in feeding activity (Lopez-Gonzalez et al. 2018). Although these modified tentacles could also have
29 a defensive function, they seem poorly effective weapon against *E. cavolini*, which appeared to be
30 the winner in direct fighting.

31

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36 direct costs.

37

38 **Conflict of Interest:** The authors declare that they have no conflict of interest.

39

40 **Ethical approval:** No animal testing was performed during this study.

41

42 **Sampling and field studies:** The study is compliant with CBD and Nagoya protocols.

43

44 **Author Contribution Statement:** ET and MP conceived research and conducted field
45 observations. ET wrote the manuscript. All authors read and approved the final manuscript.

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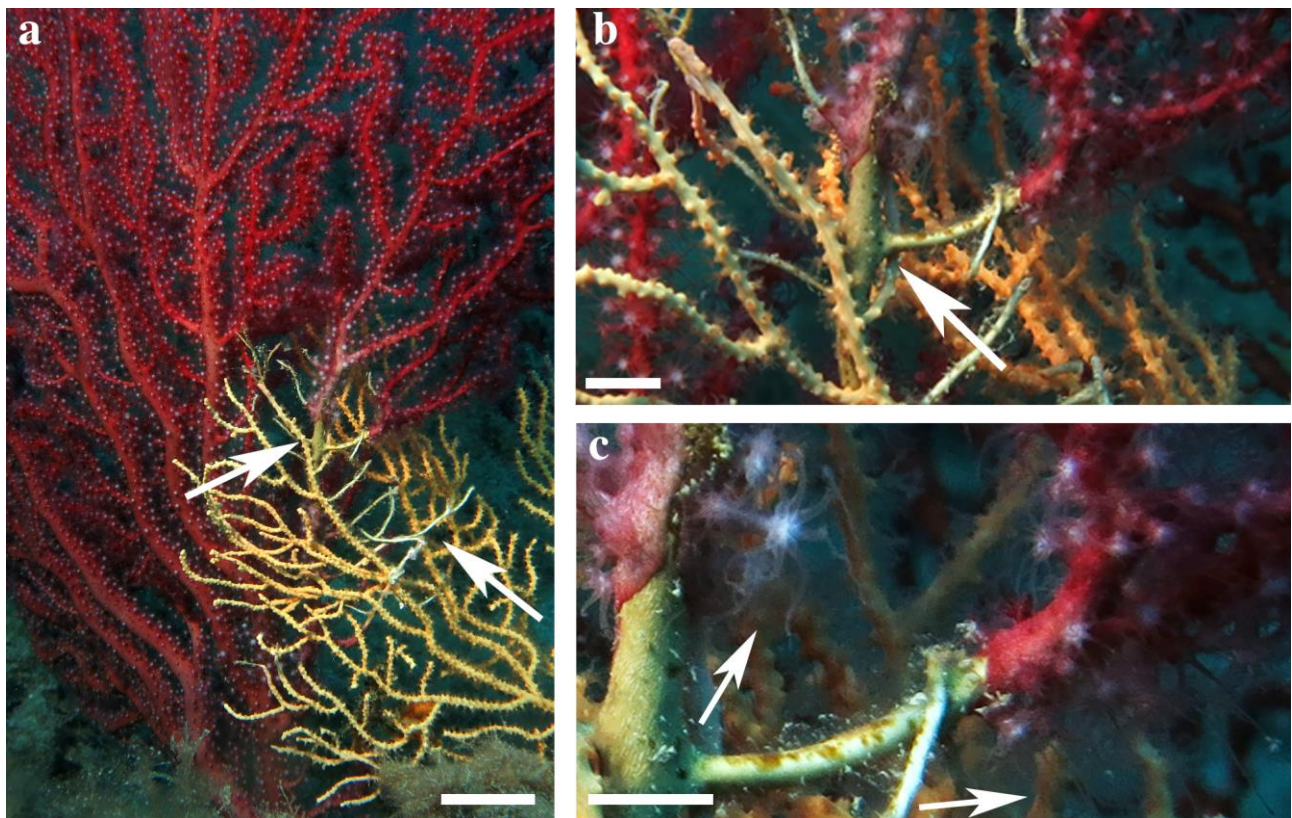
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61
62 **Fig. 1** Colonies of *Paramuricea clavata* and *Eunicella cavolini* in direct contact: **a)** contact points
63 (scale bar 5 cm); **b)** close up of depigmented coenenchyme and bare skeleton of *P. clavata* (scale
64 bar 2 cm); and **c)** particular of thread-like tentacles in polyps of *P. clavata* around the contact area
65 (scale bar 1 cm).