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Mediterranean gorgonians fighting

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# 1 Mediterranean gorgonians fighting

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9

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 25<sup>th</sup>, 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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34

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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.

46

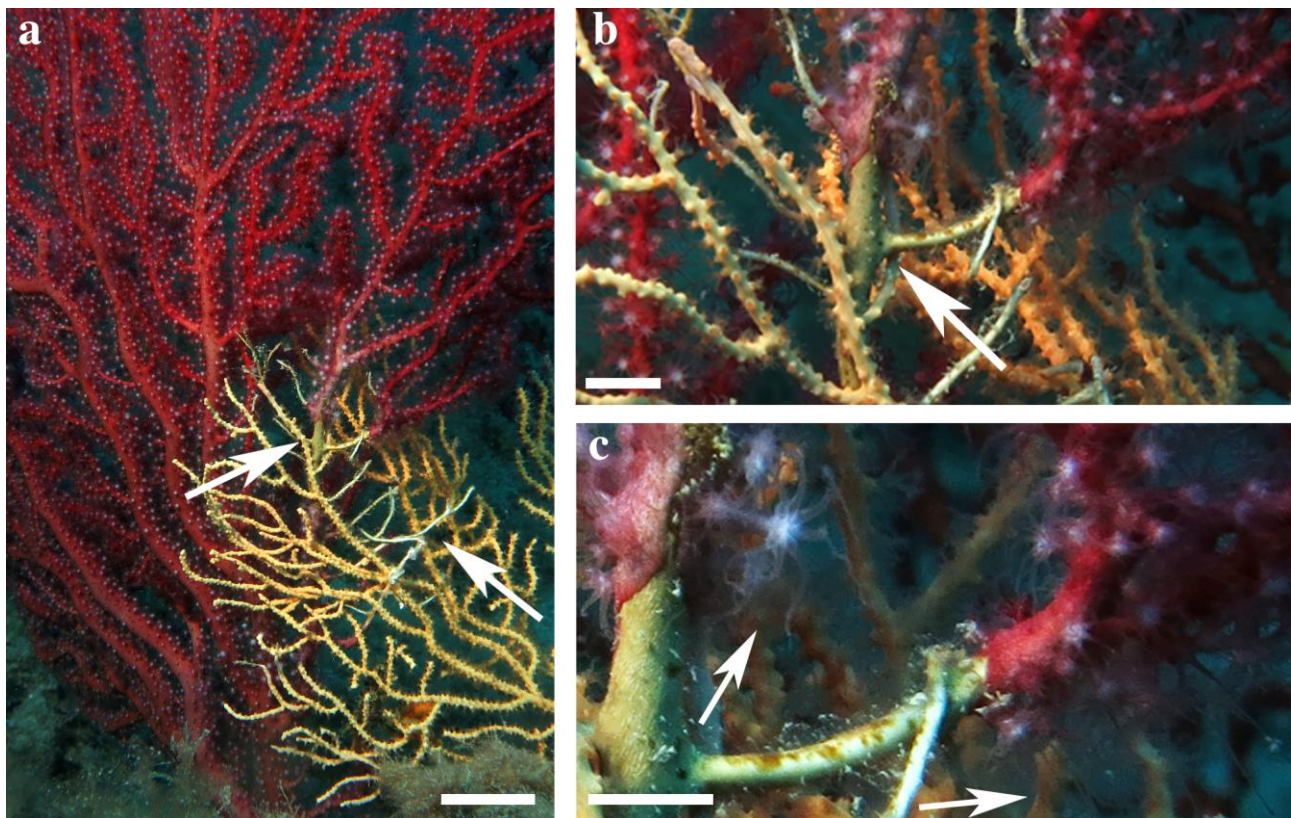
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61  
 62 **Fig. 1** Colonies of *Paramuricea clavata* and *Eunicella cavolini* in direct contact: **a)** contact points  
 63 (scale bar 5 cm); **b)** close up of depigmented coenenchyme and bare skeleton of *P. clavata* (scale  
 64 bar 2 cm); and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