

Tentacular release of planulae in Anthozoa: the case of the Mediterranean endemic orange coral *Astroides calycularis* (Scleractinia: Dendrophylliidae)

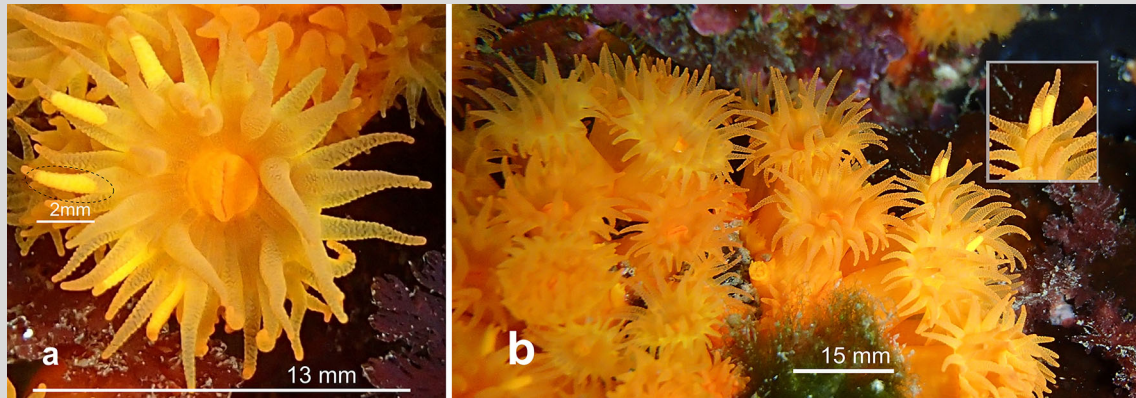


Fig. 1 *Astroides calycularis* during planulation in **a** Tarifa, Spain, and **b** Palermo, Italy

Astroides calycularis (Pallas, 1766) plays an important ecological role in the Mediterranean region, accumulating calcium carbonate and building rigid skeletons (Terrón-Sigler et al. 2014). *Astroides calycularis* is threatened due to declining populations, and thus, in Spain it is a legally protected species listed as “Vulnerable”. The species is a gonochoric coral that undergoes brooding reproduction (Goffredo et al. 2010). However, the precise mechanism of larval (planulae) expulsion has not yet been described.

We observed planulae release of *A. calycularis* during spring 2014 at two locations within the Mediterranean Sea: Tarifa, eastern Mediterranean Sea (Fig. 1a); and Palermo, central Mediterranean Sea (Fig. 1b). We confirmed that planulae were released through the tentacles under natural conditions. Planulae originated from the gastrovascular cavity and were initially oval shaped at the oral region of the tentacle. The planulae elongated as they migrated inside the tentacle to the distal end, where they were ready to be released. Finally, the planulae slowly exited the polyp through the distal region of the tentacle. The duration of expulsion depended on the level of water movement. These observations suggest that planulae of *A. calycularis* mature in the tentacles.

There are several hypotheses about the timing of planulation by *Astroides calycularis* (Casado-Amezua et al. 2013). In Palermo, planulation began on the night of the full moon (10 July 2014) when sea surface temperature (SST) was 22 °C, and continued for a period of 15 d. In Tarifa, planulation was observed on 22 July 2014 when SST was 14.5 °C; however, evidence of new recruitment in the area suggests that planulation likely began earlier in the month. Thus, both the lunar cycle and SST (local increase) may feasibly coordinate planulation.

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References

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