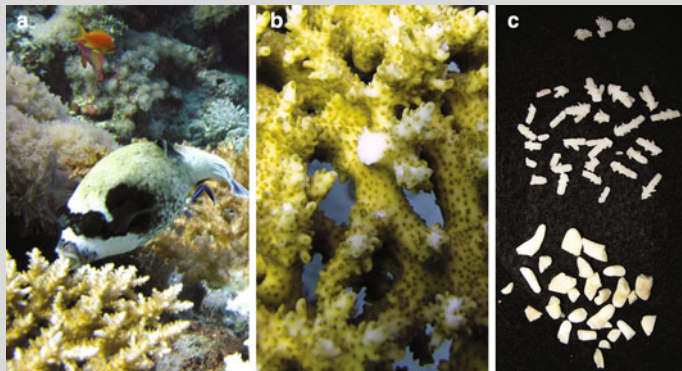


# New records of corallivory in the Red Sea

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**Fig. 1** *Arothron diadematus* consuming *Acropora* coral branch tips (a), leaving behind a grazing scar (b). Gut contents of a single fish (c) revealed *Pocillopora*, *Acropora*, and *Millepora* skeletal material



**Fig. 2** Two *Pseudocheilinus hexataenia* fishes amidst a *Pocillopora* colony, where they regularly graze on the live coral tissue

*Pocillopora* corals, usually *P. verrucosa*, a coral frequently occupied by *P. hexataenia*. *P. hexataenia* appeared to only feed on coral tissue (mucus or polyps) as no skeletal material was apparent in dissections ( $n = 3$ ) of the digestive tract. Microscopy was not conducted, so it is possible that bites taken on small epizootic invertebrates and not actual coral tissues. Further study is required to determine the actual prey intake and utilization of *P. hexataenia*.

Surveys of corallivorous fish abundances revealed a relatively low density of *A. diadematus* (0.75 fish per 500 m<sup>2</sup>) although individuals were observed at 11 of 20 sites. This is in contrast to *P. hexataenia* that was seen at all 20 sites and was among the most abundant corallivores on the reefs (11.4 per 500 m<sup>2</sup>). The total ecological impact of the grazing activity of these fishes on corals warrants further investigation.

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# Reef sites

With over 160 consumers of live coral reported, corallivory is gaining recognition as a feeding mode on tropical reefs (Cole et al. 2008; Rotjan and Lewis 2008). However, the description of corallivores suffers from a lack of attention, and thus it is likely that our ecological, taxonomic, and geographic understanding of corallivory has been underestimated.

Here, we present two fishes previously undocumented in the scientific literature to feed on corals. One, *Arothron diadematus*, is a congener of known corallivores (e.g., Jayewardene and Birkeland 2006), while the other, *Pseudocheilinus hexataenia*, is from a genus not previously reported to consume live corals. We observed both species feeding on corals in situ on reefs in the Saudi Arabian Red Sea. This region is poorly represented in the literature, but hosts a diversity of known corallivorous species.

*Arothron diadematus* ( $n = 8$ ) was observed to take 0.66 coral bites per minute ( $\pm 0.43$  SE), frequently consuming whole branch tips (Fig. 1a, b). Various branching and corymbose *Acropora* spp. were frequently targeted and some individuals also took bites from *Pocillopora* spp. However, *A. diadematus* fed in bursts with long periods of searching between feeding bouts. This requires longer observations than typically used for corallivorous fishes (e.g., Berumen et al. 2005), and in some long observations (>10 min), no bites were observed. We dissected five intestinal tracts and found three to be packed with coral branch tips identifiable to genus (Fig. 1c). Importantly, skeletal pieces were found throughout the gut tract, suggesting that only the tissue is utilized nutritionally.

*Pseudocheilinus hexataenia* (Fig. 2) was observed to feed at a much higher rate (6.7 coral bites per minute  $\pm 0.83$  SE;  $n = 18$ ). All 18 observed individuals fed on