

# First record of predation on jellyfish by butterflyfish on Brazilian rocky reefs

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*The present study reports the first record of predation of the banded butterflyfish *Chaetodon striatus* on the jellyfish *Chrysaora lactea* on Brazilian rocky reefs. The activity involved a pair of *C. striatus* and was photographed and video-recorded. We believe that temporarily available food resources benefit species with a more generalist diet.*

**Keywords:** first record, predation, jellyfish, butterfly fish, *Chaetodon striatus*, *Chrysaora lactea*, Brazilian rocky reefs

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Chaetodontids live close to the substrate and feed diurnally (Zekeria, 2003). These fish can consume a wide range of prey, and depending on the use of food sources, five feeding categories of butterflyfish are listed (Roberts & Ormond, 1992): obligate hard coral feeders; feeders on sessile and sedentary invertebrates; feeders on motile benthic invertebrates; generalist omnivores; and planktivores. The majority of the butterflyfish belong to the first two dietary categories.

*Chaetodon striatus* Linnaeus, 1758 occurs in the tropical Western Atlantic, ranging north from Massachusetts to southern Brazil, including St Paul's Rocks, inhabiting various reef habitats at shallow depths to 20 m (Kuiter, 2002). It lives associated with the substrate and feeds on anthozoans, polychaetes, crustacean and molluscs' eggs (Randall, 1967; Pitts, 1991). Although episodes of feeding activity in the water column are scarce, a group of *C. striatus* was recorded foraging on plankton at Abrolhos reefs (Sazima & Sazima, 2001).

The scyphomedusa *Chrysaora lactea* Eschscholtz, 1829 is considered widespread and is one of the most common and most widely distributed scyphozoans on the Brazilian coast (Migotto *et al.*, 2002), but little information exists on its biology (Morandini *et al.*, 2006). Herein we report the first record of the feeding behaviour of a butterflyfish on the jellyfish *C. lactea*.

The present study was carried out at Prainha beach, Arraial do Cabo, Rio de Janeiro State (22°57'S–42°00'W), a subtropical region on the Brazilian south-eastern coast. The study site is characterized by rocky shores covered by granite boulders, with a sand bottom and the incidence of rock rubbles at some sites. The benthic cover in mid-depths to bottom is mostly represented by the zoanthid *Palythoa caribaeorum*, whereas some scattered colonies of the firecoral *Millepora alcornis* and macroalgae mats are also found. At shallow depths (~2 m) urchins and turf algae are dominant.

Observations were made during free dives, in January 2009. The maximum depth was of 6 m, with 10 m of water visibility. The feeding activity was photographed and video-recorded between 10h00 and 13h00. We have used the focal animal methodology recording all occurrences (Altmann, 1974). Total length (TL) was visually estimated and recorded on plastic sheets.

The opportunistic predation on *C. lactea* (4 cm of umbrella diameter) occurred when two pairs of *C. striatus* (6 cm TL) foraged on the rocky bottom. At a certain point of the feeding activity, one pair moved up to the water column and simultaneously preyed on the jellyfish (Figure 1A). After nibbling it for a while, one individual from the couple left and the other continued feeding for few seconds, following its partner afterwards. Tissue damage on portions of the umbrella and the velarium was estimated as 15% of the total body area of the jellyfish (Figure 1B).

Fish are the best documented group of jellyfish predators (Arai, 2005), but most feeding on pelagic coelenterates have a broad diet (Purcell & Arai, 2001), unlikely chaetodontids. Another report of predation on *C. lactea* was made recently in Santa Catarina, southern Brazil (Bonaldo *et al.*, 2004) and involved the filefish *Stephanolepis hispidus* Linnaeus, 1766. Jellyfish are well recognized predators in food webs, but as food items they are often overlooked for the easy digestibility of their tissue (Arai, 2005). As many fish feed on such prey, it is expected to be an important accessory item for generalist and opportunistic predators.

Moreover, *C. striatus* is known to feed on the zoanthids *Palythoa carybaeorum* Duchassaing & Michelotti, 1860 and *P. variabilis* Duchassaing & Michelotti, 1860 (Bonaldo *et al.*, 2005), which produce the most poisonous marine toxin known (Moore & Scheuer, 1971). The palytoxin seems not to affect the banded butterflyfish, as in other marine animals (e.g. the hawksbill turtle *Eretmochelys imbricata*) (Stampar *et al.*, 2007) which makes them liable to feed on other toxic coelenterates.

The family Chaetodontidae comprises many specialized fish species (e.g. corallivorous fish), but some of them have generalized diets. The record presented herein can be a

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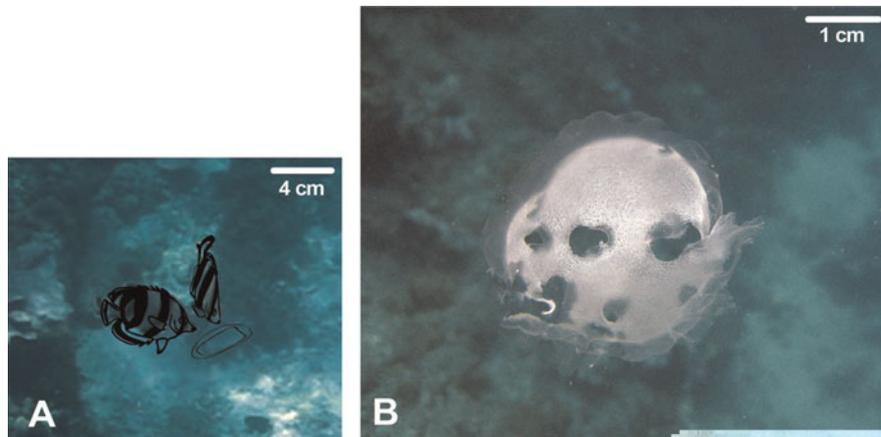


Fig. 1. (A) A pair of butterflyfish (*Chaetodon striatus*) nibbling on the jellyfish; (B) tissue damage of the jellyfish after the event.

result of the higher abundance of the food source (during jellyfish blooms), becoming a constant and relatively easy prey to catch. Opportunistic feeding on a temporarily available item is reported for several fish (Lowe-McConnell, 1987), mainly generalist species, thus indicating that these occasional items benefit those with some level of feeding plasticity.

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