Juvenile *Sphyraena viridensis*, preyed by the lizard fish *Synodus saurus*, a new predatory association from the Azores (NE Atlantic Ocean)

by

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RÉSUMÉ. - Les juvéniles de *Sphyraena viridensis*, proies de *Synodus saurus*, une nouvelle association prédateur-proie aux Açores.

Au cours d'un travail sur l'écologie (comportement, alimentation et reproduction) du poisson lézard, *Synodus saurus*, aux Açores (Atlantique NE) nous avons découvert, dans plusieurs contenus stomacaux, des exemplaires postlarvaires et des juvéniles de la bécune à bouche jaune *Sphyraena viridensis*. Non seulement cette découverte nous a permis d'obtenir, pour la première fois, des postlarves de cette espèce de barracuda mais nous avons réussi à décrire une action de prédation d'un poisson épibenthique envers une espèce pélagique.

Key words. - Sphyraenidae - *Sphyraena viridensis* - *Synodus saurus* - ANE - Azores - Predation - New association.

Generally, when one thinks about barracudas (Sphyraenidae), the immediate image of a long snouted sharply toothed voracious predator comes to mind (Russell, 2002b). These voracious predators are known to capture mainly small teleost fish (Barreiros *et al*., 2002). Nevertheless, little is known about these fish's predators, with only scattered observations of smaller individuals (less than 60 cm TL) eaten by tuna and somewhat bigger specimens by sharks (Pfeffer, 1989). It was not without surprise that, while doing a study on the lizard fish *Synodus saurus* (Linnaeus, 1758), a demersal epibenthic species that grows up to 40 cm SL but more commonly to about 12 cm (Russell, 2002a), we discovered that this species is indeed a predator of yellow mouth barracudas, *Sphyraena viridensis* Cuvier, 1829, the only barracuda that occurs in the Azores Archipelago (Fig. 1) (Santos *et al*., 1997).

MATERIAL AND METHODS

During an intensive study on the lizardfish *Synodus saurus* (Linnaeus, 1758) from the Azores (Soares *et al*., 2002; 2003; Sousa *et al*., 2003 for methods and study area) we identified sixty seven juveniles of *S. viridensis* in 8 stomach contents of *S. saurus* (Tab. I). These were all small juveniles, ranging in length, from 15.65 mm to 63.03 mm. The heaviest specimen weighed 0.6 g. Each of the 8 lizardfish's stomach had an average of 8.4 barracudas (one with 17). The majority (58.2 %) of preyed barracudas were eaten tail-first while 11.9 % were captured head-first. In 29.8 % of cases, due to their advanced state of digestion, the orientation was not determined.

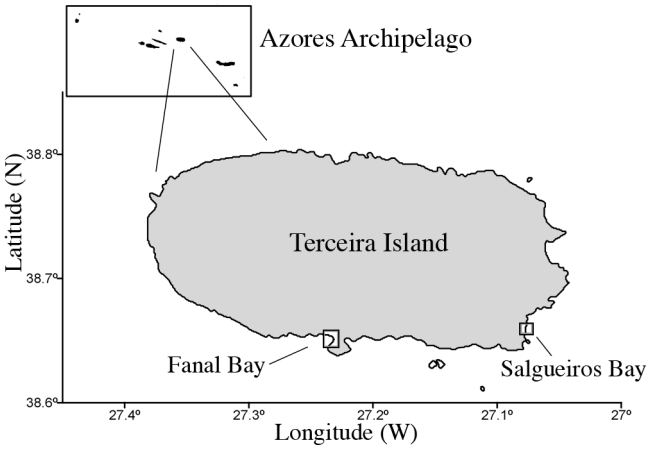

Figure 1. - Study areas in Terceira island (Azores). *[Sites d'échantillonnage dans l'île Terceira (Açores).]*

RESULTS AND DISCUSSION

According to Golani (1993), prey orientation in the stomach may indicate the hunting strategy of the predator (i.e. preys found head facing were most likely to have been ambushed while those found tail-first were probably chased or caught from behind). Knowing that barracudas are fast swimmers, it is natural to conclude that these were captured by chasing.

Coincidence of habitat used by juvenile yellow mouth barracudas and the lizard fish, usually shallow bottom areas at depths less than 20 m (Russell, 2002a), is an interesting result. Although adult *S. viridensis* are common and abundant in Azorean waters (Barreiros *et al*., 2002), the occurrence of small juveniles was never detected before in spite of several efforts (Nash *et al*., 1994; Nash and Santos, 1998) These authors have worked on a sandy beach community but we do not know exactly the nature of the substratum where our specimens were collected. Our Mediterranean colleagues (Rellini-Orsi, pers. comm., 1999) also have made continuous efforts to find small barracudas (both *S. viridensis* and *S. sphyraena*) with little success.

The present report of a previously undescribed predatory association is also an insight into the preferred habitat of post-larval and juvenile *S. viridensis* in the Azores. The small barracudas were cap-

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Table I. - Data on specimens of *Sphyraena viridensis* caught by *Synodus saurus*. (TL: total length; H: maximum body height; W: weight; SD: standard deviation). *[Données concernant les* Sphyraena viridensis *capturés par* Synodus saurus *(TL : longueur totale ; H : hauteur ; W : poids ; SD : déviation standard SD).]*

Month	N	TL ± SD (mm)	H ± SD (mm)	W ± SD (g)
March	33	38.5 ± 15.2	4.1 ± 0.9	0.2 ± 0.1
April	34	36.4 ± 10.7	4.5 ± 0.6	0.2 ± 0.1
Total	67	37.4 ± 13.1	4.3 ± 0.8	0.2 ± 0.1

tured by *S. saurus* in two confined and relatively shallow-water bays, Fanal and Salgueiros bays (Fig. 1). The high number of preys for only 8 predators may indicate that these were caught while schooling (see Soares *et al*. 2002 and Soares *et al*. 2003 for, respectively, predatory behaviour and feeding habits of *S. saurus*).

In a recent work Barreiros *et al*. (2002) state that, from winter to spring, *S. viridensis* juveniles form small groups and tend to remain in sheltered bays, which are slightly warmer and with fewer potential predators than further offshore. This study corroborates the findings of Barreiros *et al*. (2002) as lizardfish with barracudas were collected when the sea water temperatures were at around 15ºC (March and April).

Besides the description of this opportunistic predatory behaviour by *S. saurus*, these new data give us a new spatial and seasonal perspective about *S. viridensis* juvenile/post-larvae behaviour.

Further studies are still needed in order to achieve a more comprehensive understanding of feeding interactions and space occupation by these and other fish in inshore waters.

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