

DIET OF *CEPHALOPHOLIS FULVA* (PERCIFORMES: SERRANIDAE) IN THE ABROLHOS BANK, NORTHEASTERN BRAZIL

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ABSTRACT

Gathaz, J. R., Goitein, R., Freitas, M. O., Bornatowski, H. & Moura, R. L. 2013. Diet of *Cephalopholis fulva* (Perciformes: Serranidae) in the Abrolhos Bank, Northeastern Brazil. *Braz. J. Aquat. Sci. Technol.* 17(1):61-63. DOI:10.14210/bjast.v17.n1.p61-63. eISSN 1983-9057. This study presents data on the natural diet of *C. fulva* in the Abrolhos Bank. Specimens were obtained in commercial fisheries landings between May 2005 and January 2007. A total of 372 stomachs were examined. Main categories of food items were Teleostei and Crustacea. Analysis of Similarity (ANOSIM) showed no significant dietary differences related to fish size (Global R = -0.019, p = 0.85) and season (Global R = 0.006, p = 0.42). In the study region, *C. fulva* may be regarded as a small predator of fishes and crustaceans being a mesopredator i.e. predator in the mid-trophic levels.

Keywords: Coney, diet, Abrolhos.

The coney *Cephalopholis fulva* (Linnaeus, 1758) is a medium sized member of family Serranidae (Subfamily Epinephelidae) (Craig & Hastings, 2007), reaching maximum lengths of about 40 cm. It is distributed in tropical reef areas of the western Atlantic from North Carolina (US) to São Paulo (Brazil), from near the surface down to 150 m depths (Heemstra & Handall, 1993; Menezes et al., 2003). It is a protogynous hermaphrodite, beginning life as female and changing sex at about 18cm in length (Figueiredo & Menezes, 1980; Leite Jr. et al., 2005; Freitas et al., 2011).

The species is subject to intensive fishing at the central coast of Brazil (13 - 22° S), reaching the third most important place in commercial landings between Salvador and Cabo de São Tomé (Klippel et al., 2005; Araújo & Martins, 2009; Freitas et al., 2011). Between 2004 and 2007, annual landings reached 455t and supplied foreign markets, especially Europe and the USA (Leite Jr. et al., 2005; IBAMA, 2008). In the northeastern coast of Brazil, *C. fulva* is found mainly in the states of Ceará, Rio Grande do Norte, Pernambuco and Bahia (Bezerra & Silva, 2011).

Despite the abundance and commercial importance of *C. fulva*, little is known about the basic aspects of its biology. This study contributes to fulfill an important knowledge gap, presenting data on the natural diet of *C. fulva* in the largest coralline area off northeastern Brazil, the Abrolhos Bank.

Specimens were obtained in commercial fisheries landings in the cities of Alcobaça and Prado – Bahia State (Figure 1), between May 2005 and January 2007. Samples were obtained from vessels that operate with handline, longline and spear fishing. Specimens

had their standard length and total weight recorded in centimeters and grams, respectively. Stomachs were removed and fixed in 10% formalin for 24 h and subsequently transferred and stored in 70% alcohol. Contents were examined under stereomicroscope, with food items separated and identified to the lowest possible taxonomic level. The frequency of occurrence of each prey (%FO) and the percentage of each item in the total number of prey items were recorded following Hyslop (1980). For temporal analyses, seasons were coded as winter (June - July - August), spring (September - October - November), summer (December - January - February) and autumn (March - April - May). Ontogenetic diet shifts were addressed by pooling individuals in four size classes of standard length (SL): Class 1 = 20.0 – 25.0cm; Class 2 = 25.1 - 30.0cm; Class 3 = 30.1 – 35.0cm; Class 4 = 35.1 - 40.0cm. Analyses of similarity (ANOSIM) were used to test the null hypothesis of no differences in diet composition between seasons and size classes.

A total of 372 stomachs were examined. From this total, 148 (39.8%) were everted, 125 (33.6%) were empty and 99 (26.6%) contained food. Main categories of food items were Teleostei and Crustacea (41.2%FO; 22.7%FN), corroborating the results of Araújo & Martins (2009). Within teleost fishes, orders Perciformes and Tetraodontiformes predominated, while Decapoda, Isopoda and Stomatopoda predominated within crustaceans (Table 1). Overall, decapods were the most representative group (21.6%FO; 11.3%N) (Table 1). Analysis of Similarity (ANOSIM) showed no significant dietary differences related to fish size (Global R = -0.019, p = 0.85) and season (Global R = 0.006, p = 0.42).

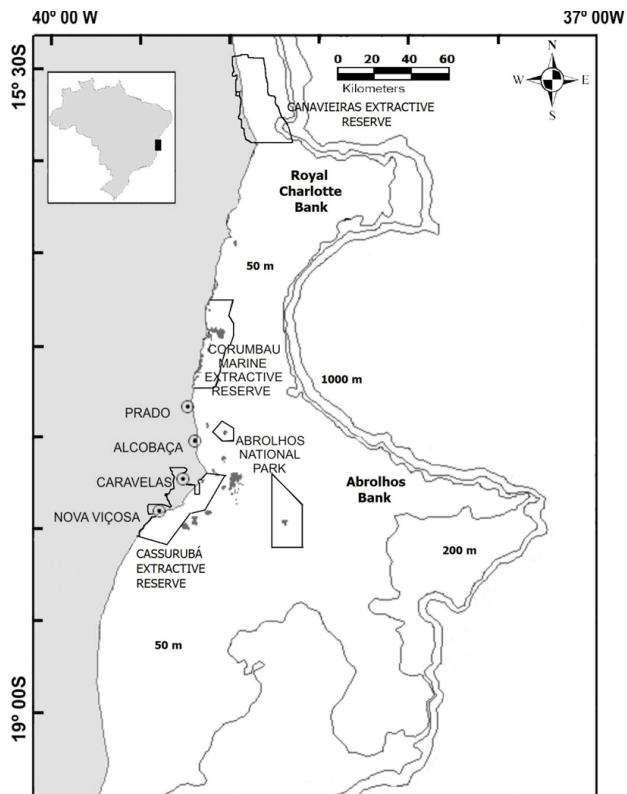


Figure 1 - Map of the study region (Abrolhos Bank) showing the emerging coralline reefs (gray), and the marine protected areas (polygons).

In the study region, *C. fulva* may be regarded as a small predator of fishes and crustaceans. These groups were also recorded as the most important preys of *Cephalopholis* spp. (e.g. Randall, 1967; Heemstra & Randall, 1993; Nakai et al., 2001; Dierking et al., 2009). On the other hand, variations in frequency of occurrence of these items may show differences for species congeners in other regions. For example, *C. argus* ate primarily fishes (97.7%) in Hawaii (Dierking et al., 2009), while *C. urodeta* ate primarily crustaceans in southern Japan (Nakai et al., 2001). The relative abundance of a particular prey item in a diet may be related to its abundance, escape capabilities (which is constrained by habitat particularities), preferential foraging (Heithaus, 2004), and habitat partitioning (Shpigel & Fishelson, 1989). For instance, *C. fulva* may even prey locally abundant cleaner fishes such as *Thalassoma noronhanum* (Francini-Filho et al., 1999).

The coney may face relatively intense predation from large fishes (e.g. large groupers and tuna) (Randall, 1967; Zavala-Camin, 2008), being a mesopredator i.e. predator in the mid-trophic levels. Following reductions in large fish populations and the cascading effects over lower trophic levels, mesopredators can have their abundances increased (e.g. Chan & Sadovy, 2002; Dulvy et al. 2004; Blanchard et al., 2005;). We demonstrate herein that *C. fulva* is

Table 1 - Diet of *Cephalopholis fulva* from the Abrolhos Bank, Eastern Brazil including frequency of occurrence (% FO) and number (%N) of the consumed food items.

Food Items	%FN	%FO
TELEOSTEI (total)	34.5	69.07
Perciformes (total)	2.5	5.15
Gobiidae	1.5	3.09
Lutjanidae	1.0	2.06
Tetraodontiformes (total)	2.5	4.12
Diodontidae	2.0	3.09
Monacanthidae (<i>Monacanthus setifer</i>)	0.5	1.03
CRUSTACEA (total)	22.7	41.24
Decapoda (total)	11.3	21.65
Dendrobranchiata/Penaeidae	3.4	6.18
Pleocyemata	6.4	12.37
Brachyura	3.9	7.22
Calappidae	0.5	1.03
Portunidae (<i>Portunus spinimanus</i>)	1.5	3.09
Caridae	1.0	2.06
Palinura (<i>Panulirus sp</i>)	1.0	2.06
Palinura (total)	1.5	3.09
Isopoda	0.5	1.03
Stomatopoda	3.0	4.12

an important predator of both benthic and demersal prey, but further work is needed to determine the mesopredator release and cascading effects.

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