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NOTES ON THE FEEDING OF *BLENNIUS CRISTATUS* LINNAEUS FROM A ROCKY POOL OF ITANHAÉM, SÃO PAULO STATE

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Synopsis

This preliminary study analyzes the feeding habit of the fish Blennius cristatus inhabiting a rocky pool, in Itanhaém, south littoral of São Paulo State - Brazil. The main food items found were: Alga, Decapoda Reptantia, Mollusca and Amphipoda. The results showed that B. cristatus is an omnivorous species and probably also a trophic specialist preying on Gammaridea, but on Hyale media only, although twelve other species of the group were recorded in the sampling local.

Introduction

At the Itanhaém littoral region, tide pools with a rich crustacean fauna and some fish species are frequent, among the latter *Blennius cristatus* is the most abundant. Bohlke & Chaplin (1970) recorded the species as an inhabitant of shallow rocky areas, tide pools and rocky slopes. Since no data on stomach contents of *B. cristatus* from Itanhaém have been published, the main purpose of this preliminary work is to provide information on its feeding habit.

Study area

The sampling site is a permanent salt-water pool according to Ganning's (1971) classification, and is located at Praia do Poço, Itanhaém (24°12'S and 46°47'W). During the sampling period (January and June, 1979), the average values of salinity, dissolved oxygen and water temperature were 31.53°/oo, 4.88 ml/l and 24.0°C, respectively.

The pool is shallow, with a diameter of 5.0-6.0 m approximately, and some stones in it. Besides invertebrates, algae as *Padina vickersiae* and *Sargassum stenophyllum* are reasonably abundant, whereas *Ulva* sp and *Enteromorpha* sp are present in smaller quantity. *Blennius cristatus* is abundant and the presence of other fishes such as *Paraclinus fasciatus*, *Labrisomus nuchipinnis*, *Mycteroperca rubra* and *Abudefduf sexatilis* has also been noted.

Material and methods

Blennius cristatus was fished using hooks with shrimp baits and immediately preserved in 4% formalin. At the laboratory, the guts were removed, the contents examined under microscope, each food item was sorted and counted. The total volume of a food category was measured in a graduated measuring device, this displacement volume being equal to that of the food item. The data of the food analysis are expressed as percentage of occurrence and volume of all stomach contents.

Results

All the 40 stomachs of *B. cristatus* (Tab. I) contained food. The number of food items in each stomach varied from one to six and the mean number was three items. Excepting Alga (several species, not classified) and Mollusca (five species), almost all the food items were constituted by one or two species only.

The analysis of the stomach contents revealed the presence of seven items (Tab. I), as well as the occurrence of sand (37.5%), mucus (40.0%) and calcareous fragments (10.0%). Considering the percentage of occurrence, Decapoda-Reptantia, Alga, Amphipoda, Mollusca, Polychaeta, Isopoda and Bryozoa is the order of importance of food items. However, if percentage volume is taken into account, this order should read Alga, Decapoda-Reptantia, Mollusca, Amphipoda, Isopoda, Polychaeta and Bryozoa.

Alga and Decapoda-Reptantia were ingested by most of the fishes (more than 50.0%) and made up a considerable volume as well. On the other hand, Amphipoda, although found in more than 50.0% of the stomachs, presented a small volume, less than 10.0%. Polychaeta was also a similar item, with high occurrence but with low volume. Mollusca

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Table I - Stomach contents of 40 *Blennius cristatus* Linnaeus from Praia do Poço. ( ) = number of stomachs containing food items

	Food item	Occurrence (%)	Volume (%)
Alga (29)	(mainly filamentous).....	72.5	35.1
Decapoda (30)	*Petrolisthes* sp. (02).....	5.0	3.1
	Fragments unidentified (28).....	70.0	28.7
Mollusca (16)	*Littorina ziczac* (Gmelin) (02).....	5.0	1.5
	Acmaea subrugosa Orbigny (04).....	10.0	2.5
	Modiolus carvalhoi Klappenback (02)...	5.0	1.5
	Brachidontes sp. (04).....	10.0	3.1
	Odostomia sp. (01).....	2.5	1.5
	Juveniles unidentified (03).....	7.5	1.5
Amphipoda (23)	*Hyale media* (Dana) (20).....	50.0	6.3
	Fragments unidentified (03).....	7.5	1.5
Isopoda (06)	*Sphaeroma walkeri* Stebbing (05).....	12.5	4.7
	Dynoides castroi Loyola & Silva (01)	2.5	1.5
Polychaeta (15)	*Phragmatopoma lapidosa* Kinberg (03)...	7.5	3.1
	Fragments probably *Phragmatopoma* (12).	30.0	1.5
Bryozoa (02)	.....	5.0	1.5

in spite of its low occurrence, less than 50.0%, constituted more than 10.0% of the stomach volume.

Discussion

Alga and Decapoda-Reptantia were the main food found in *B. cristatus* stomachs. It seems that species of Blennidae fed commonly on algae (Randall, 1967; Gibson, 1972; Smith, 1974; Zander, 1980). According to Randall (1967), *B. cristatus* from West Indies showed 99.2% of algae and organic detritus in its stomachs. The amount of algae found in the stomachs of *B. cristatus* from Itanhaém and the presence of algae such as *Padina*, *Sargassum*, *Ulva* and *Enteromorpha* in the fish habitat, indicate that they constitute an important source of food, besides offering shelter and dispersal conditions. The bulk of fragments of large Decapoda-Reptantia and the low number of stomachs with entire animals may suggest they were dead when swallowed by *B. cristatus*. The crab *Petrolisthes* as food item was referred previously by Randall (*op.cit.*) only for carnivorous Blennidae, *Labrisomus gupyi* and *L. nuchipinnis*.

Mollusca contributed significantly to the somach volume, however the available organic material is probably not so large, because of its shell. They were referred by Randall (1967) as food for *B. cristatus*, *L. gupyi* and *L. nuchipinnis*. Smith (1974) pointed out eggs of molluscs as food item for *B. cristatus*.

The importance of *Hyale media* among the item Amphipoda is remarkable, constituting a valuable prey for the local fishes, at least for *B. cristatus*. Although as many as 13 species of Gammaridea have been recorded at the pool under observation (Tararam *et al.*, 1981), only *H. media* was found with a high occurrence values in the stomach contents of the fish. Amphipoda were found previously, in Blennidae *Labrisomus nuchipinnis* stomachs examined by Randall (1967), *Lypophrys canevai* and *L. delmatinus* analyzed by Zander (1980) and *Blennius pholis* studied by Gibson (1972).

At present, further investigations on a larger sampling and laboratory experiments are necessary, such as those carried out by Nelson (1979), to get a total view on the feeding of *B. cristatus* from Itanhaém. However, these preliminary results revealed that the fish ingested from abundant vagile preys such as easily captured phytal Gammaridea to other sessile and semi-sessile preys as Polychaeta and Mollusca. *B. cristatus* is an omnivorous species, feeding on algae and animals, and probably a trophic specialist, (Stoner & Livingston, 1980) consuming

certain species such as *Hyale media* in great quantity.

Resumo

O presente estudo constitui-se numa análise preliminar do hábito alimentar do peixe *Blennius cristatus* Linnaeus, comum nas poças da zona entre-marés do litoral de São Paulo.

As coletas foram realizadas na Praia do Poço, Itanhaém (24°12'S - 48°47'W), litoral sul do Estado de São Paulo. A poça é rasa e mede 5,0-6,0 m de diâmetro, aproximadamente. O peixe foi capturado com anzol, usando-se, como isca, pedaços de camarão.

Os resultados mostraram que *B. cristatus* utilizou sete ítens alimentares: Alga, Decapoda-Reptantia, Mollusca, Amphipoda, Isopoda, Polychaeta e Bryozoa. Além desses ítens, foram encontrados ainda nos estômagos examinados, areia, muco e fragmentos calcários. *B. cristatus* mostrou ser uma espécie omnívora, especializada em consumir *Hyale media*, apesar de, no local de coleta, ocorrerem muitas outras espécies de Gammaridea.

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References

BOHLKE, J. E. & CHAPLIN, C. C. G. 1970. Fishes of the Bahamas and adjacent tropical waters. Wynnewood, Pa, Livingston, 771 p.

GANNING, B. 1971. Studies on chemical, physical and biological conditions in Swedish rockpool ecosystems. Ophelia, 9:51-105.

GIBSON, R. N. 1972. The vertical distribution and feeding relationships of intertidal fish on the Atlantic coast of France. J. Anim. Ecol., *41*: 189-207.

NELSON, W. G. 1979. An analysis of structural pattern in an eelgrass (*Zostera marina* L.) amphipod community. J. Exp. mar. Biol. Ecol., *39*:231-264.

RANDALL, J. E. 1967. Food habits of reef fishes of the West Indies. Stud. trop. Oceanogr., *5*:665-847.

SMITH, R. L. 1974. On the biology of *Blennius cristatus* with special reference to anal fin morphology. Bull. mar. Sci., *24*(3):595-605.

STONER, A. W. & LIVINGSTON, R. J. 1980. Distributional ecology and food habits of the banded blenny *Paraclinus fasciatus* (Clinidae): a resident in a mobile habitat. Mar. Biol., *56*:239-246.

TARARAM, A. S.; WAKABARA, Y & TAKEDA, A. M. 1981. Seasonal variations of Amphipoda species living on *Sargassum* in Itanhaém, São Paulo - Brazil. II Sem. reg. de ecologia. São Carlos, Universidade Federal de São Carlos, p. 305-321.

ZANDER, C. D. 1980. Morphological and ecological investigations on sympatric *Lypophrys* species (Blennidae, Pisces). Helgoländer wiss. Meeresunters., *34*:91-110.

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