

# FEEDING SELECTIVITY OF SOME BENTHIC FISH FROM THE ROCKY BOTTOM OF THE ROMANIAN BLACK SEA COAST (AGIGEA AREA)

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## Abstract

Three benthic dominant fish species were analyzed in the Agigea area of the Romanian Black Sea in order to quantify any forage selectivity or avoidance behavior of these fish. For this purpose items found in the stomachs of these fish were identified and compared, in terms of percent occurrence, to the corresponding values of the same species from random rocky bottom transects taken at the point of capture. The calculation of Ivlev's index indicated that amphipods and decapods were positively selected by the analyzed fish. Contrary to the literature sources, the data obtained assign the analyzed fish species to selective predators.

**Keywords:** *Black Sea, Rocky Shores, Fish Behaviour, Zoobenthos*

## Introduction

The round goby (*Neogobius melanostomus* Pallas 1814), the knout goby (*Mesogobius batrachocephalus* Pallas 1814), and the black scorpionfish (*Scorpaena porcus* Linnaeus 1758) are one of the main benthic feeders from the rocky seabed of the Black Sea. These species are considered to exhibit a generalistic feeding strategy with a relative broad niche width [1]. The aim of this project is to provide qualitative and quantitative data on feeding ecology of these fish species with special emphasis on their feeding selectivity.

## Material and Methods

Fish were sampled with a trap net placed at a depth of 9.5 m and 12.5 m. For each species, 100 individuals were dissected and the gastrointestinal tracks were drawn and immediately preserved in absolute ethyl alcohol. The prey items were identified to the lowest taxonomic level as possible. The prey size also was taken into account [2]. In parallel, the macrofauna inhabiting rocky bottom, sampled using SCUBA diving from 0 to 16 m depth, was analyzed in order to establish community structure patterns in terms of species richness, abundance and biomass. Dietary preferences were calculated using Ivlev's selectivity index [3]. The values of 1 indicate the maximum preferences and selectivity towards a food item, those of -1 indicate the maximum avoidance, and 0 indicate the random feeding. Categories in the collected benthos were defined to correspond with the taxonomic levels identified in the guts.

## Results and Discussion

The faunistic analysis of the 52 samples from the rocky bottom revealed the presence of 97 taxa, from which 88 were identified to the species level. Dominant groups as number of species were Polychaeta, Amphipoda, Hydrozoa, Decapoda and Turbellaria, which accounted for more than 50% of the total number of the species identified. The diet of analyzed fishes was based on gastropods, amphipods, bivalves, isopods and chironomid larvae. The round goby and the knout goby fed on 35% of the resources of the rocky benthos and the black scorpionfish on 29% of it.

only *Mytilaster lineatus* showed positive selection. Although the benthic samples revealed that *Mytilus galloprovincialis* is the dominant species, it presented negative electivity values for all the three species of fish analyzed (-0.85 for round goby, -0.69 for knout goby and -0.81 for black scorpionfish). The avoidance of this species may be due to either digestibility or their body size. Comparing the content of the fish guts with the macrozoobenthos from different depths, it has been observed that there are small differences, except those related to the bivalves *Mytilus galloprovincialis* and *Mytilaster lineatus*. The round goby and the knout goby seem to avoid *Mytilaster* between 0 and 2 m depth (-0.455 and -0.001 respectively), but prefer it at greater depth (0.893 and 0.958 respectively). It is difficult to determine why a particular prey type is selected. We suggest that several of the important factors are prey size, mobility, type of fixing to substratum, activity and digestibility. Based on the obtained data it can be concluded that these fish species are selective feeders.

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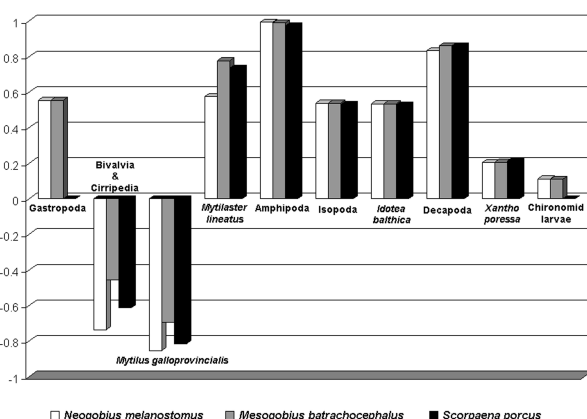


Fig. 1. Ivlev's selectivity index values for *Neogobius melanostomus*, *Mesogobius batrachocephalus* and *Scorpaena porcus*

The Ivlev's index indicated that the food items positively selected by the fish were mainly amphipods (>0.90) and decapods (>0.58) (Fig. 1). From the bivalves