

DIET OF THE LESSEPSIAN *FISTULARIA COMMERSONII* (TELEOSTEI, FISTULARIIDAE) OFF THE COAST OF LEBANON: PRELIMINARY RESULTS

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Abstract

Stomach content analysis showed that *F. commersonii* preys exclusively upon fish, mainly Atherinidae, Sparidae, Centranchidae and Blenniidae. The seasonal variation showed a preference for anchovies in summer, blennies in autumn and silversides in both winter and spring. *F. commersonii* seems to feed mostly on native Mediterranean fish regardless of the habitat type in which it lives in.

Keywords : Diet, Teleostei, Species Introduction, Levantine Basin, Eastern Mediterranean.

Introduction

The opening of the Suez Canal (1869) removed a natural biogeographic barrier which separated the temperate Atlantico-Mediterranean biota from the Indo-Pacific organisms of the Red Sea. This connection resulted in a massive introduction of marine organisms (Lessepsian migration) into the eastern Mediterranean [1, 2]. *Fistularia commersonii* Rüppell, 1838 is a Lessepsian fish that has established large populations in the eastern basin and has been spreading towards the western Mediterranean Sea [3, 4]. The purpose of this study was to examine the stomach contents of the invasive predator as a first step towards assessing its feeding ecology in the new environment.

Material and methods

Sampling took place from May 2003 to April 2004 in different localities off the coast of Lebanon. Measurements included total fish length (T_L) and gutted fish weight (W_G), and all prey items were identified to the lowest taxon possible. Percentage frequency of occurrence (%F), percentage composition by number (%Cn), percentage composition by weight (%Cw), and the index of relative importance (IRI) were calculated [5]. Prey items were separated into "bottom" vs. "water column" species according to the environment in which they live.

Tab. 1. Composition of stomach contents of *F. commersonii*.

Family	%N _{TP}	%F	%Cn	%Cw	%IRI
Atherinidae	16.62	14.74	26.15	26.25	42.04
Blenniidae	14.01	7.69	10.46	9.92	8.53
Callyonimidae	0.33	0.64	1.30	1.30	0.09
Centranchidae	8.14	9.61	16.15	15.94	16.78
Clupeidae	1.63	0.64	1.30	1.30	0.09
Engraulidae	10.10	3.85	6.23	5.62	2.48
Gobiidae	3.27	3.85	3.81	3.90	1.61
Labridae	4.56	4.49	6.71	6.88	3.32
Mugilidae	0.65	0.64	0.87	1.08	0.07
Mullidae	0.33	0.64	1.30	1.30	0.09
Myctophidae	0.33	0.64	1.30	1.30	0.09
Pomacentridae	0.65	1.28	1.95	1.71	0.26
Scaridae	0.33	0.64	0.43	0.33	0.03
Siganidae	1.96	2.56	2.99	2.40	0.75
Sparidae	8.15	11.54	17.62	19.46	23.28
Trypterygiidae	2.28	3.21	1.45	1.33	0.48
Unid. fishes	26.71	32.69	-	-	-

Results and discussion

A total of 156 *F. commersonii* specimens were collected. Size varied between 36.2 and 112.1 cm T_L (79.60 ± 14.79 cm T_L) with 80-90 cm T_L being the most frequent size-class. W_G varied between 22.3 and 1033.2 g (371.85 ± 198.63 g).

Sixteen families, represented by 21 species of fish prey, were identified from the stomach contents. Atherinidae represented 16.6% of the total number of prey (%N_{TP}) ingested; Blenniidae (14.1%) and Engraulidae (10.1%). Sparidae, Centranchidae and Labridae were found at 8.2, 8.1 and 4.6% respectively (Table 1). The majority of the identified food items were fishes native to the Mediterranean Sea; Lessepsian prey were *Atherinomorus lacunosus*, *Callionymus filamentosus*, *Siganus luridus* and *S. rivulatus* and accounted for only 3.3% of fish prey. This showed that the earlier presence of Lessepsian prey in the Mediterranean was not one

of the reasons for the success of *F. commersonii* in its new environment. Atherinidae and Sparidae showed the highest %F, with respectively 14.7% and 11.5%. They were followed by Centranchidae and Blenniidae. In contrast, Labridae, Engraulidae and Gobiidae had a lower %F, despite their relative high presence in the examined stomachs (Table 1). Similarly %Cn, %Cw and %IRI showed that Atherinidae, Sparidae, Centranchidae and Blenniidae were the most represented families by number and in terms of biomass.

Seasonal fluctuation of ingested prey showed a clear temporal pattern where one species *E. encrasicolus* (Engraulidae, 38.7%) was favoured in summer and *A. lacunocus* in winter (Atherinidae, 38.5%) and spring (Atherinidae, 56.9%). Blenniidae (34.5%) was the most represented prey in autumn. Centranchidae seemed to be an important forage fish in the diet during most of the year (summer to winter) (Fig. 1).

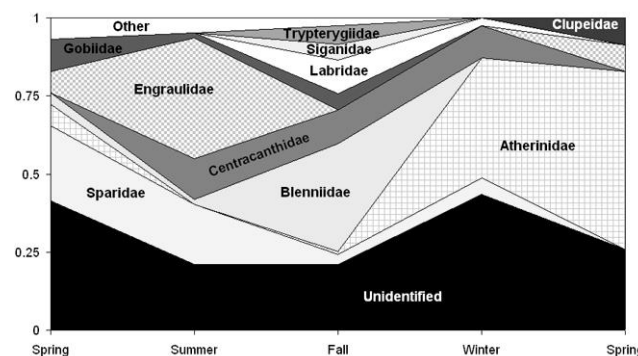


Fig. 1. Seasonal variation of *F. commersonii* diet based on % F values.

"Water-column" species represented 59.1% of the consumed prey, mainly Atherinidae (22.7%), Engraulidae (13.8%), Centranchidae (11.1%) and Sparidae (7.1%). "Bottom" species represented 40.9% with Blenniidae (19.1%), Labridae (6.2%) and Gobiidae (4.5%) being the most important ones. No significant differences (Wilcoxon test, $P > 0.05$) existed between the two habitat groups. This implies that *F. commersonii* does not feed selectively in any of the two habitats considered, which might be one of the reasons for its success in the Mediterranean.

References

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