

**TROPHIC HABITS OF *ARISTAEOMORPHA FOLIACEA* (DECAPODA: ARISTEIDAE)
IN THE EASTERN MEDITERRANEAN**

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Abstract

The diet composition (abundance, prey occurrence, diversity) and feeding activity (vacuity and repletion index) of *Aristaeomorpha foliacea* were examined. The main prey items identified were *Natantia*, osteichthyes, gastropods and crustaceans. Feeding intensity was lower during the highest reproductive activity (summer) than in other seasons. Diet composition did not differ significantly ($P>0.05$) with sex, although the weight of the stomach content was generally higher in females than males.

Key-words: feeding, Aristaeomorpha foliacea, Ionian Sea, deep-water shrimp

Introduction

The deep-water shrimp *Aristaeomorpha foliacea* (Risso, 1827) constitutes a commercially important species for the Central Mediterranean [1]. The aim of this study is to present preliminary data on its feeding habits in the E. Ionian (E. Mediterranean).

Materials and methods

Three seasonal surveys (April, July and September 2000) were carried out in the northern part of the Greek Ionian Sea, at depths ranging from 300 to 1200 m. The samples were fixed immediately after capture, in 10% formalin. In total, 448 females (17.6-63.5 mm carapace length, CL) and 317 males (14.5-56.4 mm CL) were examined. In the laboratory the CL and the body weight (BW) were recorded. The stomach was removed and their content was weighted (SC). Prey items were identified at the order level. Fishes, echinoderms and sipuncula were counted as a single prey item per stomach, because it was not possible to establish the exact number of prey items. The unidentified mollusks and crustaceans were reported as "molluscs" and

"crustaceans". Seeds and macrophytes were reported as "plant debris". The diet composition was expressed by the relative abundance (A) and the percent frequency of occurrence (O) for each type of prey and stomach. Trophic diversity was established using the Shannon index. The vacuity index (VI) was estimated as follow: (empty stomachs/total number of stomachs)X100. The stomach fullness was recorded using the repletion index: $RI = (SC/BW)X100$.

Results and discussion

For both sexes, the most common components of the diet were fragments of *Natantia*, Osteichthyes, Gastropods and Crustacea (Table 1). These four categories made more than 55 and 60% of the total prey items in female and male stomachs, respectively. The (SC) differed significantly (Mann-Whitney test, $P<0.05$) in all surveys between the two sexes and was always higher in females (Table 2). This was attributed to the larger size of females when compared to males.

The diversity index (DI), which did not differ significantly between sexes (Mann-Whitney test, $P>0.05$), although was higher in July, at the peak of the spawning activity (Table 2).

Empty stomachs were found during all seasons; VI was highest in July for both sexes and lowest in April for males and in September for females, a fact indicating that feeding activity is lower during the reproductive period (July-September, [2]) than at the end or after it. VI was significantly (Mann-Whitney test, $P<0.05$) higher in females during April and July, a fact possibly related to the greater volume of their gonads.

RI varied among surveys. The highest mean value was in September for males and in April for females (Table 2). This fact could be related to the highest abundance of the heavy prey items (Crustaceans, Gastropods), in the stomachs of both sexes. The lowest RI value was recorded in April for males and in July for females.

Table 2. Average values of stomach content, repletion, vacuity and diversity index of *A. foliacea* per survey and sex, E. Ionian Sea.

SURVEY	SEX	SC (g)	RI (%)	DI	VI (%)
April	Males	0.117	1.07	0.945	10.94
	Females	0.343	1.72	1.078	16.81
July	Males	0.138	1.10	1.104	15.56
	Females	0.156	0.86	1.091	18.63
September	Males	0.151	1.25	1.011	12.16
	Females	0.383	1.28	1.047	11.21

Table 1. Diet composition (relative abundance % A, frequency of occurrence % O) of *A. foliacea* per survey and sex, E. Ionian Sea.

Sex Month	MALES						FEMALES					
	April		July		Septem.		April		July		Septem.	
Pray	A	O	A	O	A	O	A	O	A	O	A	O
MOLLUSCA	1.9	1.9	4.1	3.7	0.6	0.7			2.0	2.1		
Bivalvia	4.8	4.9	1.2	1.2	2.0	2.2	7.7	7.9			2.8	2.9
Gastropoda	0.9	0.9	4.7	4.3	4.8	5.1	8.8	6.8	6.2	3.2	4.2	4.3
Scaphopoda							0.5	0.5				
Cephalopoda	1.9	1.9	2.4	2.4	1.3	1.4			2.5	2.7	4.7	4.8
Ceph. eggs											0.9	0.9
POLYCHAETA			2.4	2.4	2.0	2.2	1.5	1.7	2.0	2.1	1.8	1.9
NEMATODA									0.5	0.5		
SIPUNCULA			0.6	0.6	1.3	1.4						
CRUSTACEA	4.8	3.9	5.9	6.2	6.9	7.4	8.4	9.0	3.6	3.8	6.6	6.7
Decapoda <i>Natantia</i>	37	38.4	27.5	27.9	29.6	29.6	27.4	28.9	29.0	30.4	28.3	28.0
Other Decapoda	1.9	1.9	2.4	2.4			1.0	1.1	2.0	2.1	0.4	0.4
Brachyura			1.2	1.2	1.3	1.4	2.0	2.2	3.6	3.8	5.6	5.8
Amphipoda			2.4	2.4	3.4	3.7			2.0	2.1	4.2	4.3
Isopoda			1.8	1.8	0.6	0.7	1.0	1.1	1.0	1.0	0.9	0.9
Tanaidacea									0.5	0.5		
Ostracoda	2.8	2.9	1.8	1.86			0.5	0.5	0.5	0.5		
Copepoda					1.3	0.7	4.1	1.1				
Euphausiacea	0.9	0.9	2.4	2.4	1.3	1.4	1.0	1.1	3.1	3.2	1.8	1.9
Mysidacea									0.5	0.5	1.4	1.4
Reptantia					2.7	2.9					0.4	0.4
FISHES	16.5	16.6	14.3	14.9	13.1	14.0	13.4	14.7	16.0	16.8	14.6	14.9
Scales	8.6	8.8	10.1	10.5	5.5	5.9	6.2	6.8	8.8	9.2		
UNIDENTIFIED	3.8	3.9	1.2	1.2	2.7	2.9	1.5	1.7	1.0	1.0	2.3	2.4
Soft tissues	4.8	4.9	6.5	6.8	7.5	8.1	4.1	4.5	5.1	5.4	11.3	11.5
Plant debris	2.8	2.9	0.6	0.6	2.0	2.2	3.1	3.4	1.5	1.6	2.8	2.9
FORAMINIFERA	3.8	2.9	2.9	1.2	7.5	3.7	3.6	2.2	3.1	1.6	0.9	0.9
HYDROZOA			0.6	0.6			1.0	1.1				
ECHINODERMA									0.5	0.5	1.4	0.4
Ophiuroidea												
Mud	0.9	0.9	1.8	1.8	0.6	0.7	1.5	1.7	2.5	2.7	0.4	0.4
Micromollusc remains	0.9	0.9					0.5	0.5			0.9	0.4
RADIOLARIA					0.6	0.7	0.5	0.5	0.5	0.5		
CHAETOGNATH			0.6	0.62								
Plastics, Other									1.0	1.0	0.4	0.8

The species is characterized as an extremely fast and active predator [3, 4]. This agrees with our results, since the majority of the food items consumed were large and mobile organisms (e.g. *Natantia*, fishes). The findings of the present study are in accordance with those of other studies [3, 4].

References

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