

Stomach content analysis of Norway Lobster, *Nephrops norvegicus*, in the North Aegean Sea (Greece)

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Introduction

Norway lobster (*Nephrops norvegicus*) is a species of high commercial importance. Published information on its food habits are limited (Atlantic and West Mediterranean Sea: THOMAS & DAVIDSON, 1962; FARMER, 1975; SARDA & VALLADARES, 1989). A preliminary study on the biology of the species is available from the Greek seas (MYTILINEOU *et al.*, 1990), but no information exists concerning its diet. This work is a preliminary study on the food habits of the Norway lobster from the North Aegean sea.

Material and methods

A total of 1365 individuals (689 females, 676 males) was collected seasonally, between June 1990 and March 1991, by a fishing trawler with a cod-end mesh size of 28mm (stretched), in the North Aegean Sea. Carapace length (CL), weight, sex and maturity stages were recorded in the laboratory. Stomach contents were extracted, weighed and analysed. Prey organisms were identified to the lowest possible taxon. The mean individual degree of fullness (LEBEDEV, 1946), the mean individual index of fullness (HUREAU, 1966) and the percentage of empty stomachs were estimated. The importance of different prey types in the diet was expressed as percent frequency of occurrence (%F) (HYSLOP, 1980) and its relationship with length and sex was examined.

Results

Carapace length of Norway lobsters taken for food analysis, ranged from 16 to 61mm and from 15 to 48mm for males and females respectively. Over all, 159 stomachs for males and 248 for females were empty. The percentage of empty stomachs was estimated seasonally and was found higher in September and December (Table I). Females had higher percentage than males, especially in September. The mean individual degree and index of fullness were higher in March and June (Table I).

TABLE I. Seasonal fluctuations of the feeding intensity of Norway lobster in the North Aegean Sea.

MALES	June	Sept.	Dec.	March
Stomachs examined	286	145	143	102
Empty stomachs (0/0)	16.1	24.8	41.3	17.7
Fullness index (0/00)	61.1	56.1	34.9	61.6
Fullness degree	2.45	2.25	2.07	2.73
FEMALES	June	Sept.	Dec.	March
Stomachs examined	316	124	125	124
Empty stomachs (0/0)	26.0	57.3	55.2	21.0
Fullness index (0/00)	66.9	30.3	30.8	69.6
Fullness degree	2.04	1.96	1.56	2.70

The examination of the degree of fullness in relation to maturity stage showed that berried females presented very low values (September: 0.53 and December: 0.67).

Stomach contents consisted mainly of particles of crustaceans, fish vertebrae and otoliths, parts of muscles and other organic items, difficult to be identified. Ten taxa, including the digested food and the unidentified organisms, were considered in the graphical representation of the qualitative analysis of the diet (Fig.1). Digested food showed the higher F value (~65%) in the diet of Norway lobster, followed by decapods and other crustaceans (~40%), fish (~15%) and cephalopods (~10%). There was little seasonal variation in the diet; decapods and cephalopods were more frequent in winter, while other crustaceans and fish in autumn and spring. No differences were found in the diet between sexes. However, more taxa (polychaets, foraminifera and unidentified organisms) were identified in the diet of males than females (Fig.1).

The F values of the different taxa showed differences with size. The stomach contents of the young Norway lobsters (<20mm CL) contained almost exclusively digested food (80%); decapods, gastropods and cephalopods were also found in the diet of young males, whereas only crustaceans in the diet of young females. The F value of decapods and other crustaceans appeared to increase with increasing length (CL), whereas the F of fish was higher for specimens with CL>40mm.

Discussion and conclusions

The feeding intensity of Norway lobster in the North Aegean Sea was low. The maximum intensity appeared in spring and summer while the minimum in autumn and winter. Berried females showed a high percentage of empty stomachs, as FARMER (1975) has also reported. Food items were difficult to be identified. Digested food presented high F values, possibly related to the low ability of the species to ingest large particles of food (THOMAS & DAVIDSON, 1962). Decapods and other crustaceans comprised mainly the food of Norway lobster, followed by fish and cephalopods. However, if the relative digestion rate of the different prey types consumed (polychaets, crustaceans, gastropods etc) had been taken into consideration, a different food composition might be found. Little variation appeared in the diet composition between seasons and sexes. Food of young individuals consisted mainly of detritus and small organic fragments, while adults fed with larger items of crustaceans and fish.

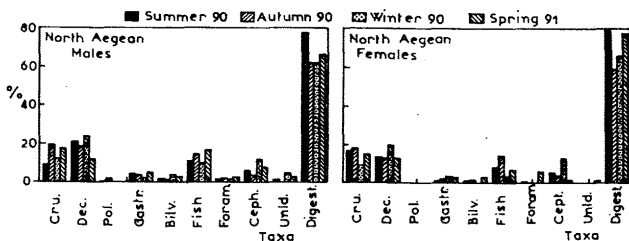


Fig.1. The F of the different taxa in the diet of Norway lobster.

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