

**PRELIMINARY STUDY ON THE BIOLOGY OF NORWAY
LOBSTER *NEPHROPS NORVEGICUS*,
IN THE GULFS OF CHALKIDIKI (GREECE)**

MYTILINEOU, CH., FOURTOUNI, A. and C. PAPACONSTANTINO
National Centre for Marine Research, Ag. Kosmas, 16604 Athens, Greece

Norway lobster is a common decapod in the Atlantic Ocean, the North and the Mediterranean seas. Despite numerous studies, a lot of questions, most of them related with age and growth, still remain open for research. Preliminary studies have been done on the biology of the species in the Greek waters (MYTILINEOU *et al.*, 1992, 1993). This work provides more information about the size composition, the age, the growth, the depth distribution and the reproduction of norway lobster in the northern part of the Aegean Sea. Samples were collected at three months intervals, from June 1992 to September 1993, with a commercial trawler equipped with a cod-end mesh size of 32 mm in the two gulfs of Chalkidiki, situated in the northern part of the Aegean Sea. A total of 3861 individuals was caught during all sampling periods. Carapace length, weight, sex, maturity stages of females and berried females were recorded. All analyses have been made separately for each sex. Age was determined from the length-frequency distributions using Bhattacharya's (1967) method, as applied in the Compleat Elefan (GAYANILO *et al.*, 1988). Growth parameters Loo and k were estimated using Compleat Elefan. The length-frequency diagrams of nor-

way lobster showed that carapace length ranged from 16 to 73 mm for males and from 12 to 53 mm for females (Fig. 1). Young of the year appeared as recruits mainly in March, but they were present in the trawl net until June. The length - frequency distribution of each sample was analyzed for the identification of the normal components corresponding to the age groups. Five age groups were detected for both sexes. As an example, the

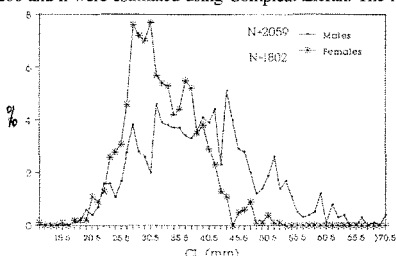


Fig. 1. Length frequency distribution of *N. norvegicus* for each sex.

results of the analysis of the June 1993 sample are presented in Table 1.

Table 1. Age groups of *N. norvegicus* identified by the Bhattacharya's method

Age group	MALES			FEMALES		
	Mean length	SI	SD	Mean length	SI	SD
A	24.6	-	0.9	21.5	-	2.2
B	28.4	4.7	0.8	26.2	2.7	1.3
C	32.0	4.7	0.7	29.8	2.9	1.2
D	35.4	4.4	0.9	33.9	3.6	1.1
E	37.7	2.3	1.1	36.7	2.5	1.1

SI : separation index, SD : standard deviation

Certainly, more age groups might exist beyond the upper and lower limit of the identified lengths-at-age. Polymodal analysis was not able to detect well the age groups of the larger individuals (> 40 mm) because of their low percentage in the samples as well as because of their low growth rate that produces overlap between the different age groups. Moreover, the age groups of the young individuals (< 20 mm) was difficult to be identified because of the gear selectivity that influences the representativity of them in the samples. For this reason, the age groups identified by length-based methods should be considered with caution. The growth parameters of the von Bertalanffy model, estimated by the Compleat Elefan, were found to be as follows : Loo = 82.6 mm, k = 0.11 for males and Loo = 65.6, k = 0.127 for fe-males. The carapace length-weight relationship was calculated as follows : $W = 0.000353L^3.138$, $r = 0.90$ for males and $W = 0.000523L^3.054$, $r = 0.98$ for females. Norway lobster in the gulfs of Chalkidiki was caught, during all the sampling periods, at depths ranging from 150 to 370 m; its maximum presence was found in waters >200 m. Examination of the number of individuals caught per hour presented seasonal fluctuations ranging from a high of about 200/h in December to a low of 20-40/h in June '92 and 50-60/h in June '93. This despite the fact that December is a period open for trawl fishing whereas in June trawl fishing is not permitted. The proportion of male and female remained generally about 1:1. However, females were less abundant than males in the March and September samples, fact related

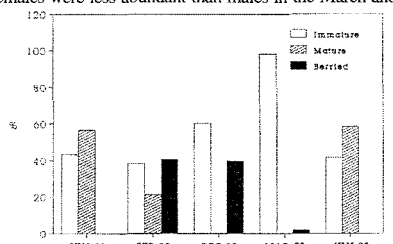


Fig. 2. Percentage of the different maturity stages of *N. norvegicus* in the gulfs of Chalkidiki.

REFERENCES

- BHATTACHARYA, C.G., 1967. *Biometrics*, 23 : 115-135.
 GAYANILO, F.C., SORIANO J.M. and D. PAULY, 1988. ICLARM, Software 2, 66p.
 MYTILINEOU, CH., FOURTOUNI A. and C. PAPACONSTANTINO, 1992. *Rapp. Comm. int. mer Médit.*, 33 : 46.
 MYTILINEOU, CH., C. PAPACONSTANTINO & A. FOURTOUNI, 1993. *Bios*, vol 1, n° 1 : 117-126;