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Reproductive Biology of the Females of *Nephrops norvegicus* in the Northern Tyrrhenian Sea

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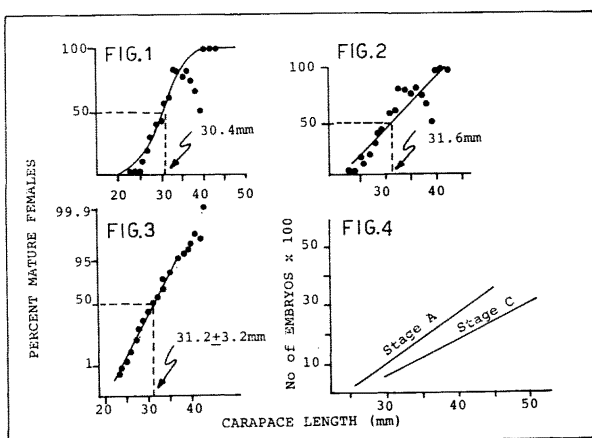
During research trawl surveys carried out in the Northern Tyrrhenian Sea, between the Isles of Elba and Giannutri, data on the reproductive biology of the females of *N. norvegicus* were collected. Here we report the results from the analysis of the data gathered in 1986/87.

Range size. The carapace length (CL) ranged between 10 and 55 mm. The CL seasonal frequency distributions were essentially unimodal with modal class between 27 and 33 mm CL. **Size at sexual maturity.** Size at 50% maturity was estimated, on samples caught at September 1986, using three methods: a) fitting the logistic equation, by using non-linear least squares, to percentage of the data classified as mature females by size (DRAPER & SMITH, 1981) (Fig. 1); b) by regressing CL on the percentage of mature females by size (WATSON, 1969) (Fig. 2); c) using a probability paper, on which cumulative percentage of mature females is shown for each size class (WENNER *et al.*, 1974) (Fig. 3). Mature females were considered both those with dark green ovaries and ovigerous ones. All the three methods gave similar estimates of the size at 50% maturity. Our estimates of the size of sexual maturity are similar to those known for other areas of the Mediterranean Sea (FROGLIA & GRAMITTO, 1981; ORSI RELINI & RELINI, 1989). The slight differences among authors could arise either from having included, among mature females, specimens in different maturity stages or from having fitted the logistic curve by different methods. **Spawning season.** Most mature females spawn yearly. Females with mature ovaries (green and dark green) predominated in late spring catches and were found up to December. Most females with embryos, in agreement with the observations of FROGLIA & GRAMITTO (1981) for the Adriatic Sea, were present from August to February but single specimens were observed up to late Spring (May). **Moulting frequency.** Moulting of the females occurred throughout the year with monthly percentage floating between 9 - 18% reaching, however, peaks of 27-32% between April and July. **Fecundity.** The size-fecundity relationships have been calculated separately both for females carrying embryos at stage A and females with embryos at stage C, classified according to FIGUEIREDO & BARRACA (1963). The linear function was adopted to represent the size-fecundity relationships, since it fitted the data set better than the power function (Fig. 4). The ANOVA was used to determine whether the size-fecundity relationships differ between the two groups of females.

Stage A: $N = 92$; $r = 0.902$; $Y = 181.65 X - 4426.2$

Stage C: $N = 29$; $r = 0.865$; $Y = 128.41 X - 3208.8$

The slopes differ significantly ($F=20.1$; $P<0.01$) and there is a loss of embryos during the incubation that seems to be directly related to lobster size. Instead MORIZUR *et al.* (1981) observed a constant loss of 45% for the Norway lobster of the Bay of Biscay.



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