

AN ESTIMATE OF THE FECUNDITY OF NORWAY LOBSTER (*Nephrops norvegicus*) IN THE ADRIATIC SEA.\*

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Abstract

Fecundity of Norway lobster (*Nephrops norvegicus*) in the Adriatic sea was estimated by oocyte counts in ovaries of mature females and counts of external eggs in newly berried females. An exponential relationship between fecundity and animal size (Carapace Length in mm.) was calculated.

Résumé

La fécondité de la Langoustine (*Nephrops norvegicus*) dans la Adriatique centrale a été évaluée par comptage des ovules dans les ovaries des femelles mûres et des oeufs fixés sous l'abdomen des femelles.

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The Norway lobster (*Nephrops norvegicus*), despite its economic importance, has received little attention by mediterranean scientists. Only in Adriatic, where it is by far the most important crustacean, has its biology been investigated in some detail by Yugoslav authors.

We report here preliminary results of our researches on reproduction and fecundity of *Nephrops norvegicus* from two selected areas from the Central Adriatic sea.

The first sampling area, located about 13 miles north of Ancona, is representative of the Adriatic "shallow water *Nephrops* grounds" (depths 50-70 m). The second area, located in the western part of the Pomo pit is representative of the central Adriatic "deep water *Nephrops* grounds" (depths 200-250 m).

In the first area the average size (Total Length) of Norway lobsters caught by trawl is 12.8 cm and 11.9 cm, respectively for males and females. In the western Pomo pit the size is reduced to 8.9 cm for males and 8.3 cm for females.

In both areas females spawn yearly, but size at which sexual maturity is reached is quite different (Tab. 1).

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\* Research supported by the P.F. "Oceanografia e risorse marine"

Tab.1 - *Nephrops norvegicus*, size (Carapace Length, mm) of females.

Area	"Shallow" depth 50-70 m	"Deep" - Pomo depth 220 m
Average size	36.2	25.0
Smallest ovigerous	29.4	23.9
Average size ovigerous	39.0	29.4
Sexual maturity sizes (smallest-50%-100%)	26.3-32.5-40.3	21.8-25.9-30.6

In the investigations on fecundity we considered the number of oocytes in ovaries of females ready to lay eggs (ovaries extended at least to the end of first abdominal segment), and the number of eggs on pleopods of newly berried females (dark-green eggs, without marks of embryo's ocular pigment).

Oocyte numbers were estimated from counts of 1/4 of ovaries previously fixed in Gilson-Garazzi medium.

External eggs on the other side were counted in their totality. Altogether 85 females were examined for oocyte counts and 135 females for egg counts.

Our study has shown that fecundity, expressed as number of oocytes or external eggs, is correlated to animal size (Carapace Length) by an exponential relationship.

The equations obtained for the two areas are nearly the same, even though the size of mature females is quite different. For this reason all data were pulled together and average equations for *Nephrops norvegicus* of whole Adriatic calculated:

$$\log n^{\circ} \text{ oocytes} = 2.9419 \log \text{ C.L.} - 1.2407$$

$$\log n^{\circ} \text{ external eggs} = 3.1635 \log \text{ C.L.} - 1.7498$$

These equations drawn in a logarithmic scale give two slightly convergent straight lines showing that at a given size number of eggs is significantly smaller than number of oocytes in ovaries and that bigger animals have a higher efficiency in egg laying.

Comparison of oocyte counts for Adriatic, North sea and Eastern Atlantic (FIGUEIREDO & THOMAS 1967; FONTAINE & WARLUZEL 1969) evidenced a slightly lower fecundity of adriatic animals. The same results are obtained if egg counts for Adriatic and Isle of Man (FARMER 1974) are compared.

Also if sampling gear can influence the results of external egg counts, this method gives a more appropriate estimation of fecundity, which knowledge could be useful in management policies.

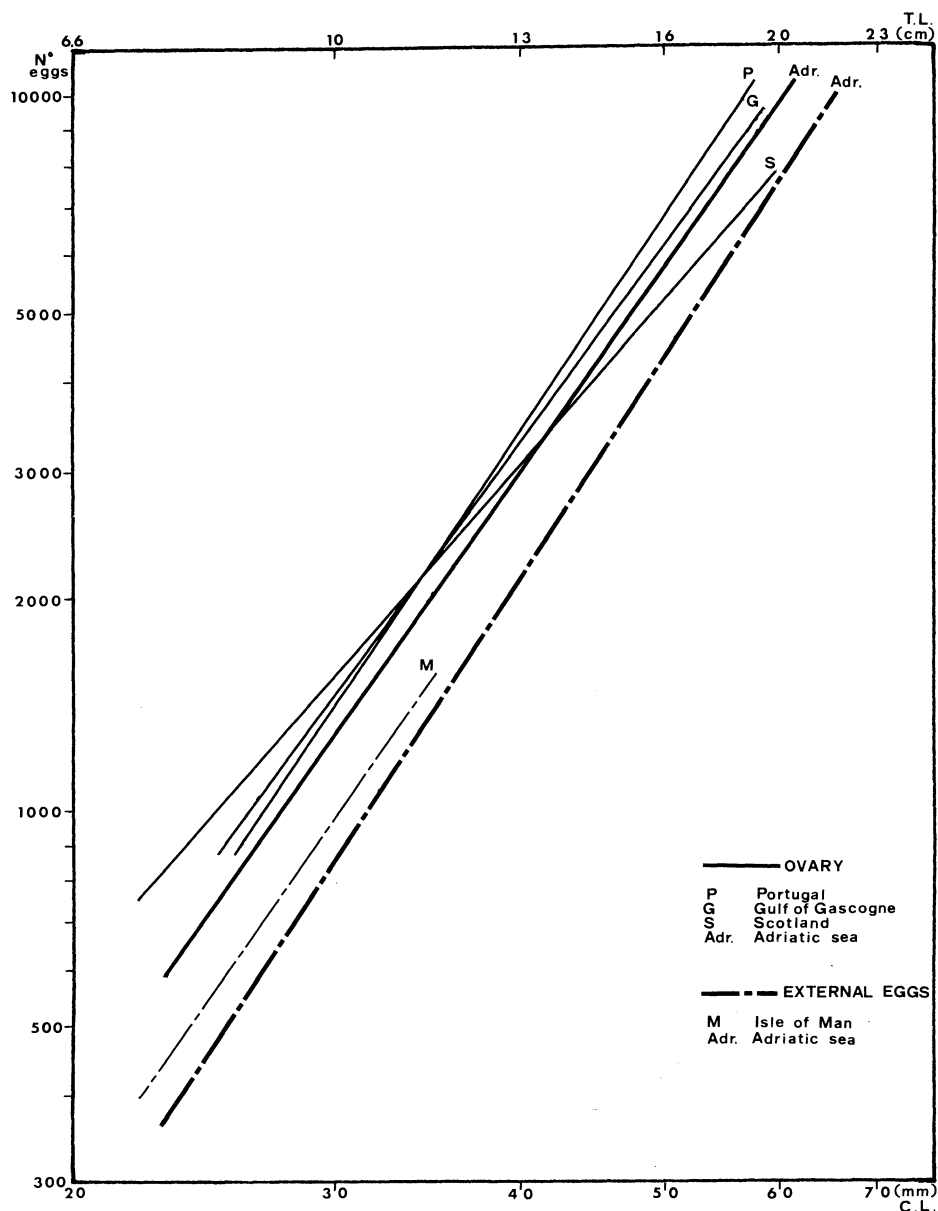


Fig. 1 - Fecundity of Norway lobster.

#### REFERENCES

- FARMER A.S.D., 1974 - Reproduction in *Nephrops norvegicus* (Decapoda: Nephropidae). *J. Zool., Lond.*, 174: 161-183.
- FIGUEIREDO M.J. & H.J. THOMAS, 1967 - *Nephrops norvegicus* (Linnaeus, 1758) Leach - A review. *Oceanogr. Mar. Biol. Ann. Rev.*, 5: 371-407.
- FONTAINE B. & N. WARLUZEL, 1969 - Biologie de la langoustine du golfe de Gascogne. *Rev. Trav. Inst. Pêches marit.*, 33: 223-246.

