

REMARKS ON NEPHROPS NORVEGICUS (L.) AND ITS VARIETY MERIDIONALIS ZARIQUIEY

by

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With 1 textfigure

In 1935 R. Zariquiey Cenarro published a paper in the Spanish language, in which he separated the specimens of *Nephrops norvegicus* occurring in the Mediterranean and the southern Atlantic Ocean as a separate variety *meridionalis* from the typical form of the northern Atlantic. In this paper he remarks that Boas as well as Bouvier stated that the second maxillipede of *Nephrops norvegicus* does not bear a podobranch. When Zariquiey, however, examined material from the Catalonian coast he found that in all his specimens a podobranch was present. For comparison with the northern forms he obtained an adult male and ovigerous female from Danish waters. In these specimens indeed the podobranch was absent, the maxillipede bearing only a rounded tubercle provided with hairs. This he thought of sufficient evidence to separate the southern form as a distinct variety. Furthermore he mentioned the following differences between the two forms: the northern specimens are more robust, their body being much broader than in specimens of the same size from the Mediterranean; the sculpture on the dorsal surface of abdomen and carapace is much stronger in the typical form, in which also the pereopods are much longer. The chelae of specimens of the same size had the same breadth, but were longer in the typical form; the relation between dactylus and propodus was different too in the two forms; the second pincer in the danish specimens was larger and there were also differences in the relation between the breadth and the length of the merus.

The var. *meridionalis* was reported from the Golfe du Lion, from the Catalonian coast, from the waters east of Alicante, from Melilla (Spanish Morocco), from San Sebastian and Coruña (both at the north coast of Spain) and from Huelva (southwest coast of Spain).

Zariquiey's statement that both Boas and Bouvier reported that no podobranch was present on the second maxillipede probably is inspired by Bouvier's (1917, p. 19) remark: "Ainsi que l'a constaté M. Boas (1880,

162) et comme j'ai pu vérifier moi-même, cette espèce est dépourvue de podobranchies à la base des pattes-mâchoires de la 2e paire." Boas (1880, p. 162), however, when giving the situation of the branches of different Decapoda in tabular form, indicates that on the second maxillipede in *Nephrops norvegicus* one podobranch may be absent or present by giving the figure (1) in parenthesis.

For an investigation concerning the question whether the variety *meridionalis* really has to be considered distinct, the following material was at my disposal:

Collection of the Rijksmuseum van Natuurlijke Historie, Leiden:

- a. North Sea; 1923; leg. J. Verwey. — 3 ♂♂ 139-179 mm.
- b. North Sea; October, 1926. — 1 ♂ 179 mm.
- c. North Sea; 1929; leg. G. Stiasny. — 1 ♂ 169 mm.
- d. Ierseke, the Netherlands; leg. J. G. de Man. — 2 ♂♂ 140 & 143 mm.
- e. Cascaes, Portugal; September 18, 1935; leg. G. Stiasny. — 11 ♂♂, 10 ♀♀ 92-158 mm.
- f. Mediterranean; leg. F. Cantraine. — 1 ♂ 150 mm.
- g. Barcelona; leg. P. Antiga. — 1 ♂, 2 ♀♀ 103-116 mm.
- h. Algiers; March and June, 1926, June, 1927; leg. P. Buitendijk. — 3 ♂♂, 1 ♀ 98-113 mm.
- i. Egypt; leg. Clot Bey. — 1 ♂ 221 mm.
- j. Locality unknown. — 1 ♂ 124 mm.

Collection of the Zoological Station of the Nederlandsche Dierkundige Vereeniging (Netherlands Zoological Society), Den Helder:

- a. North Sea. — 5 ♂♂, 2 ♀♀ 142-220 mm.
- b. 57° 36' N, 2° 16' E; depth 86 m; July 7, 1908; cruise of the "Wodan". — 1 ♂ 110 mm.

Collection of the Zoological Museum, Amsterdam:

- a. 59° 30' N, 4° E; November 29, 1934; leg. capt. Gouda, S. S. "Alma". — 1 ♂ 220 mm.
- b. Moray Firth; 1929; don. F. P. Vermeulen. — 1 ♂ 166 mm.
- c. Fladen Grounds, North Sea; 80 fathoms; August, 1924; coll. W. G. N. van der Sleen. — 13 ♂♂, 1 ♀ 126-196 mm.
- d. Clyde, 55° 10' N, 5° 10' W; July, 1932; coll. F. P. Vermeulen. — 2 ♂♂, 1 ♀ 57-165 mm.
- e. North Sea, 54° 44' N, 6° 55' E; leg. S. S. "Freia". — 1 ♂ 183 mm.
- f. North Sea, 54° 30' N, 4° 35' E and 54° 38' N, 4° 45' E; August 25, 1902. — 8 ♂♂, 2 ♀♀ 90-154 mm.

Examination of this material showed that the following specimens were not provided with a podobranch: Egypt (Leiden i), North Sea (Den Helder b), 8 males and 1 female from Fladen Grounds (Amsterdam c). In all other specimens a podobranch was more or less distinct. This shows clearly that the forms with and without podobranchs can not be considered

as geographical forms of one species as both occur throughout the entire range of distribution of *Nephrops norvegicus*. The material studied by me shows moreover that the character of the presence or absence of the podobranch is too variable to be used for systematic distinction. So for instance the material from the Fladen Grounds (Amsterdam c) contains 8 males and one female without podobranchs, two males with the podobranchs poorly developed, and three males with well developed podobranchs. Moreover a specimen from the North Sea (Den Helder a) has the left maxillipede without any trace of a podobranch (fig. 1a), while

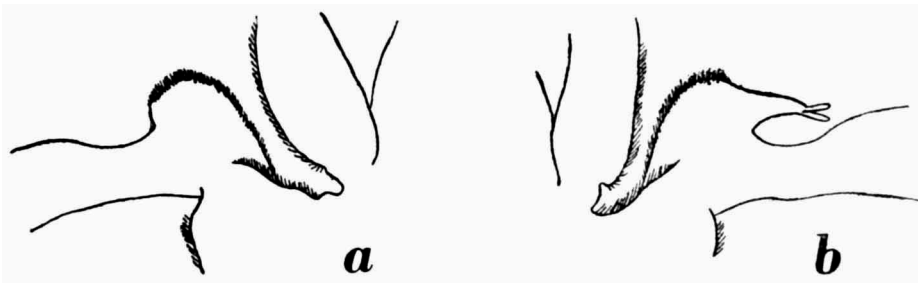


Fig. 1. *Nephrops norvegicus* (L.) from the North Sea. a, base of left second maxillipede; b, base of right second maxillipede of the same specimen. $\times 7\frac{1}{2}$.

the right maxillipede shows a small one (fig. 1b). The other differences mentioned by Zariquiey could not be found in my material; the robustness of the body and the strength of the sculptation and spinulation varies among the specimens, but there are no signs that the northern forms are more robust and more sculptated than the southern or that the specimens without podobranchs differ in that respect from those provided with them. As for the relation of the length of the different parts I got the impression that Zariquiey had too little material to warrant his conclusions. According to his statement the relation between the length of the first pereopod and that of the entire body in the typical form ranges between 1.16 and 1.20 and in the variety between 1.01 and 1.07 (with one specimen with the relation 1.16). In the first place he has interchanged the length of the first pereopod and that of the entire body: in his table the length of the body always is smaller than that of the first chelipede, whereas in my material it is the reverse (except in very large specimens, where the first chelipede is a little longer than the body, but not in the relation given by Zariquiey). We must therefore consider Zariquiey's figures to be the relation between the length of the body against that of the first pereopod. When we take the same relation in our material we obtain the following results: Egypt (Leiden i)

0.89; Algiers (Leiden h) 1.22-1.25; Barcelona (Leiden g) 1.20-1.29; Mediterranean (Leiden f) 1.19; Portugal (Leiden e) 1.09-1.31; Ierseke (Leiden d) 1.04-1.05; North Sea, podobranchs present (Leiden a, b, c, Den Helder a), 0.96-1.23; North Sea, podobranchs absent (Den Helder b) 1.18; North Sea, 54° 30' — 54° 44' N, 4° 35' — 6° 55' E (Amsterdam e, f) 0.92-1.26; Clyde (Amsterdam d) 1.14-1.36; Fladen Grounds, podobranchs present (Amsterdam c) 0.96-1.14; Fladen Grounds, podobranchs absent (Amsterdam c) 1.04-1.30; Moray Firth (Amsterdam b) 1.13; 59° 30' N, 4° E (Amsterdam a) 0.94.

Summarizing we get the following results: the relation in the specimens from the Mediterranean and the southern Atlantic Ocean varies between 0.89 and 1.31, in specimens from northern waters between 0.92 and 1.36; the relation in the specimens with podobranchs between 0.92 and 1.36 and in specimens without them between 0.89 and 1.30. These figures clearly show that there is no relation whatever between the three main characters used by Zariquiey to separate his variety from the typical form. We therefore safely may conclude that *Nephrops norvegicus meridionalis* Zariquiey is a synonym of the typical *Nephrops norvegicus* (L.).

LITERATURE CITED

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