

FIG. 14a-b. — *Nephropsis sulcata* sp. nov., holotype ♂ 30 mm, MUSORSTOM 2, Philippines, Stn 56, 970 m (MNHN-AS 523) : Anterior part of the abdomen : a, dorsal view ; b, lateral view.

FIG. 14c-d. — *Nephropsis malhaensis* Borradaile, holotype ♀ 25 mm, Saya de Malha, 555-925 m (CM-cr 117) : c, anterior part of the carapace, dorsal view ; d, anterior part of the abdomen, dorsal view.

1932 : 59. — VON BONDE & MARCHAND, 1935 : 6. — BARNARD, 1950 : 530, fig. 99 b-e; 1964 : 12. — BRUCE, 1966 d : 223. — KENSLEY, 1981 : 29 (not Norman, 1882).

MATERIAL EXAMINED. — **Madagascar.** *Vauban* : CH 102, 22°20.3' S-42°59' E, 995-1 020 m, 29.11.1973 : 3 ♀ 19 to 30 mm ; 1 ♀ ov. 26 mm (MNHN-AS 493). — CH 124, 17°40' S-43°12' E, 1 075-1 115 m, 15.01.1975 : 9 ♂ 19 to 26 mm ; 7 ♀ ov. 26 to 28 mm ; 10 ♀ 22 to 29 mm (MNHN-AS 490).

Philippines. MUSORSTOM 1 : stn 49, 750-925 m : 1 ♂ 15 mm ; 1 ♀ 23 mm (MNHN-AS 524).

MUSORSTOM 2 : stn CP 50, 810-820 m : 1 ♀ 31 mm (MNHN-AS 518). — Stn CP 55, 825 m : 1 ♀ 19 mm (MNHN-AS 519). — Stn CP 56, 970 m : 2 ♂ 27 and 30 mm (MNHN-AS 523, 545).

MUSORSTOM 3 : stn CP 116, 804-812 m : 1 ♂ broken (MNHN-AS 521).

Albatross : stn 5445, 12°44'42" N-124°59'50" E, 708 m, 03.06.1909 : 1 ♂ 32 mm ; 1 ♀ 37 mm (USNM).

Chesterfield Islands. MUSORSTOM 5 : stn CP 386, 755-770 m : 1 juv. 14 mm (MNHN-AS 520). — Stn CP 387, 650-660 m : 1 ♂ 18 mm (MNHN-AS 522).

New Caledonia. BIOCAL : stn CP 75, 22°19' S-167°23' E, 825-860 m, 04.09.1985 : 1 ♂ 24 mm (MNHN-AS 525).

BIOGEOCAL : stn CP 232, 21°33.81' S-167°27.07' E, 760-790 m, 12.04.1987 : 3 ♂ 26 to 34 mm ; 4 ♀ 20-36 mm (MNHN-AS 530).

Australia. CIDARIS 1 : stn 49-3, 17°51.71' S-148°39.09' E, 881-920 m, 09.05.1986 : 1 ♀ ov. 36 mm ; 2 ♀ 29 and 39 mm (JCU).

Laccadive Sea. *Investigator* : stn 105, 15°02' N-73°34.6' E, 1 369 m : 1 ♂ 35 mm (USNM).

TYPES. — One male from Stn CP 56 (MUSORSTOM 2) with a carapace length of 30 mm (MNHN-AS 523) has been selected as the holotype. The female from Stn CP 50 (MUSORSTOM 2) with a carapace length of 31 mm (MNHN-AS 518) is the allotype. The remaining specimens are paratypes.

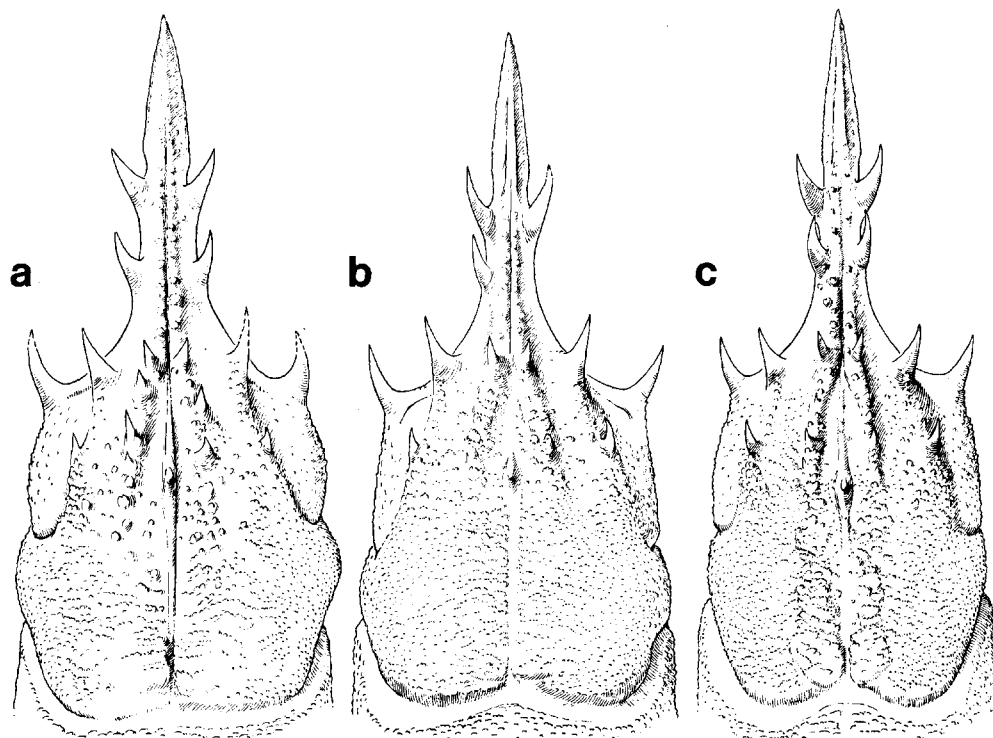


FIG. 15. — Anterior part of the carapace, dorsal view : a, *Nephropsis sulcata* sp. nov., holotype ♂ 30 mm, MUSORSTOM 2, Philippines, Stn 56, 970 m (MNHN-AS 523) ; b, *Ibidem*, paratype ♂ 26 mm, *Vauban*, Madagascar, CH 124, 1 075-1 115 m (MNHN-AS 490) ; c, *N. atlantica* Norman, ♂ 29 mm, *Talisman*, North Atlantic, 1 238 m (MNHN-AS 70) : Anterior part of the carapace, dorsal view.

DESCRIPTION. — Carapace smooth with small granules, sparsely pubescent. Rostrum bearing two pairs of strong lateral spines; the anterior-most pair situated in the middle of the rostrum; the second pair located between the first pair and the supraorbital spines. Median groove overreaching the terminal pair of lateral rostral spines. Rostrum length slightly more than one-half the rest of the carapace. Terminal portion of subdorsal carina on each side finely granulate. Each carina with 6-7 spines of different sizes, the strongest placed at the level of the supraorbital spine and the posteriormost placed at the level of the gastric tubercle. Distance between the level of the supraorbital spines and the gastric tubercle, measured along the median line of the carapace, slightly less than one-half that between gastric tubercle and the postcervical groove. Postorbital spine well-developed, stronger than the post-supraorbital spine. Antennal spine outwardly directed. Postcervical and hepatic grooves deep. Postcervical groove crossing the median line of

the carapace. Intermediate and median carinae somewhat raised, lateral carina well-defined.

Second to sixth abdominal somites with a quite distinct median carina. Anterior margins of the pleura of the 2nd to 5th somites convex, each ending in a long, sharp point. One-two spines on the anterior margin of the second somite; anterior margins of subsequent somites serrate. A spine on the posterior border of the fifth somite. Posterolateral angle of sixth somite bearing a spine.

Carpus of first pereiopod with a large anterodorsal spine and a smaller anteroventral spine. A strong dorsal spine on the terminal border of the carpus. Two anteroventral spines, one on the outer margin, one on the inner margin. Outer surface bearing a spine on the terminal half; two spines on the inner surface. Carpus somewhat shorter than the palm. Chela more or less elongate. All articles bearing numerous small granules. Abundant pubescence, longer on the fingers, but articulations, spines, and granules

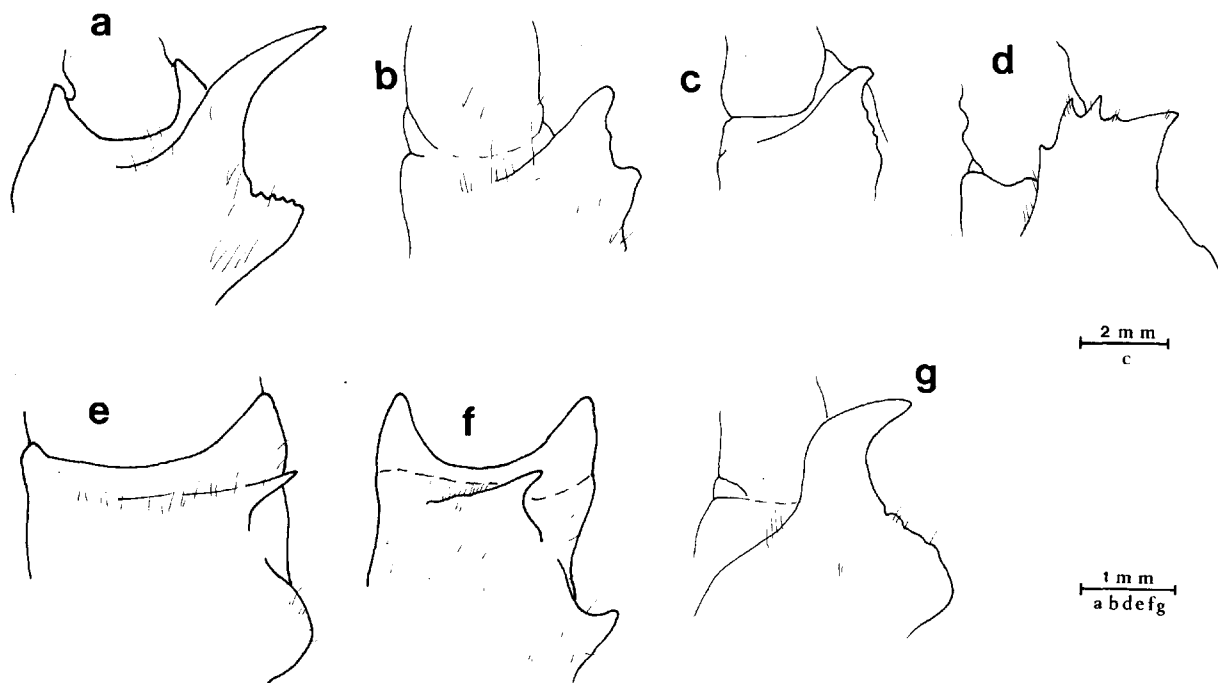


FIG. 16. — Coxa of the third left pereiopod: a, *Nephropsis ensirostris* Alcock, ♂ 26 mm, MUSORSTOM 3, Philippines, Stn CP 128, 815-821 m (MNHN-AS 494); b, *N. suhmi* Bate, ♂ 31 mm, BIOCAL, New Caledonia, Stn CP 69, 1 220-1 225 m (MNHN-AS 509); c, *N. occidentalis* Faxon, ♂ 43 mm, Albatross, Mexico, Stn. 3418, 1 221 m (RMNH 25623); d, *N. acanthura* sp. nov., ♂ 30 mm, MUSORSTOM 5, New Caledonia, Stn CP 323, 970 m (MNHN-AS 517); e, *N. stewarti* Wood Mason, ♂ 39 mm, *Vauban*, Madagascar, CH 33, 600-605 m (MNHN-AS 435); f, *N. carpenteri* Wood Mason, ♂ 30 mm, Bay of Bengal, 357 m (BMNH 1894.5.4.4); g, *N. sulcata* sp. nov., holotype ♂ 30 mm, MUSORSTOM 2, Philippines, Stn 56, 970 m (MNHN-AS 523).

clearly visible. Carpus of second pereopod shorter than the palm. Carpus of third pereopod 0.7 times palm length. Dactyli of fourth and fifth legs 0.5-0.6 times propodus length.

Process on coxa of second pereopod rounded. Process on coxa of third pereopod of males ending in a strong, curved spine.

Thelycum of females raised, bisected anteriorly by a median groove. Posterior incision wide.

Uropodal exopod bearing a distinct and complete diaeresis, with a spine on the outer border. Outer lobe of the uropodal protopodite ending in a spine.

VARIATIONS. — In the specimens collected off Madagascar, the surface of the carapace tends to be very smooth, and the spines on the carapace are less well-developed than those on the specimens caught in the Pacific Ocean. A certain degree of variability has, even so, been observed between specimens from the same locality.

REMARKS. — *N. sulcata* belongs to the group of species with two pairs of lateral spines on the rostrum, a diaeresis on the uropodal exopod, and a median carina on the 2nd to 6th abdominal somites. The closest species is *N. atlantica* Norman, from the Eastern Atlantic Ocean. Comparison of the material of this new species examined with specimens of *N. atlantica* (6 ♂, 1 ♀, RMNH 28740; 3 ♂, RMNH 29389; 2 ♀, RMNH 11381; 5 ♂, 7 ♀, RMNH 29391; 2 ♀, MNHN-AS 69; 1 ♂, MNHN-AS 174; 1 ♂, MNHN-AS 183; 2 ♀,

MNHN-AS 156; 2 ♂, MNHN-AS 70; 1 ♀, MNHN-AS 68; 1 ♀, MNHN-AS 157; 1 ♀, MNHN-AS 176; 1 ♂, MNHN-AS 180; 1 ♂, BMNH 98.5.7; 1 ♀, BMNH 1910.2.4.85; 2 ♀, 1 ♂, ICM 1033; 1 ♀, 2 ♂, ICM 1034) shows both species to be readily differentiable (Figs 13 c-d, 15 c). The differences are as follows :

(a) Median groove on rostrum clearly overreaching the distal pair of lateral rostral spines in *N. sulcata*, reaching only to the proximal pair of lateral spines in *N. atlantica*.

(b) Carpus of second pereopod shorter than the palm in *N. sulcata*, as long as the palm in *N. atlantica*.

(c) Distance between the postsupraorbital spine and the gastric tubercle about 0.6 times the distance between the gastric tubercle and the postcervical groove in *N. atlantica*, less than 0.5 times in this new species.

(d) Median carinae on abdominal somites more distinct in the new species.

ETYMOLOGY. — The name *sulcata* comes from the Latin "sulcus", furrow or groove, in reference to the median groove on the rostrum.

SIZE. — The males examined ranged from 15 to 30 mm, the females from 18 to 34 mm. Oviparous females from 26 mm.

DISTRIBUTION. — Southwestern Indian Ocean, Laccadive Sea, South China Sea, Philippines, New Caledonia. Muddy bottoms at depths between 750 and 1115 m.

GENERAL REMARKS ON THE INDIAN AND PACIFIC SPECIES OF THE GENUS *NEPHROPSIS*

The systematic history of the genus *Nephropsis* can be traced through the works of ALCOCK (1901), DE MAN (1916) and BOUVIER (1917). Our current understanding of the genus is largely due to the revision of HOLTHUIS (1974).

The genus contains 13 species. The great majority are restricted to depths greater than 400 m (Fig. 4). Studies on this genus have consistently found that the use of a few clearly defined characters provided a basis for a classification that has been both reliable and stable. Thus most *Nephropsis* species are clearly defined

and easily distinguished from one to another. The principal characters used to distinguish the species are : spines on the rostrum, position of the gastric tubercle, diaeresis of the exopod of the uropod, median abdominal carina and spines on the anterior margin of the abdominal pleura.

The 8 species present in the Indian and Pacific Oceans are quite differentiated and several groups are observed :

(a) *N. occidentalis* Faxon - *N. acanthura* sp. nov.

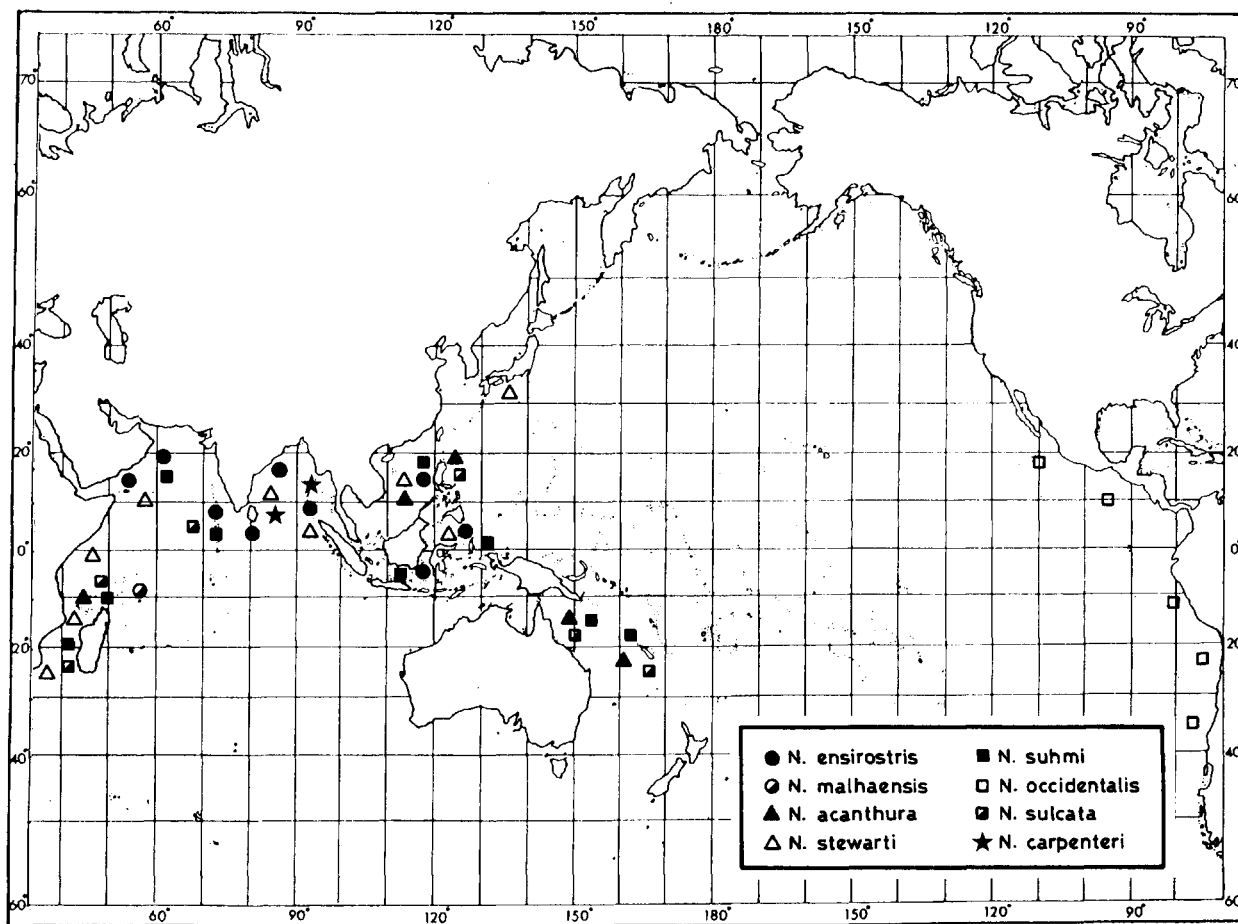


FIG. 17. — Distribution of the species of the genus *Nephropsis* in the Indian and Pacific Oceans.

(b) *N. stewarti* Wood Mason - *N. carpenteri* Wood Mason

(c) *N. malhaensis* Borradaile - *N. sulcata* sp. nov.

(d) Two isolated species : *N. ensirostris* Alcock and *N. suhmi* Bate.

Most species are easily distinguishable from the Atlantic species. The only exception is *N. suhmi*, morphologically very close to *N. agassizii* Smith from the Western Atlantic. The other problematic species is *N. malhaensis*, known exclusively from the type specimen. Although these species are differentiated, a future research with additional material would be desirable.

A zoogeographic evaluation of the *Nephropsis* species from the Indian and Pacific waters at the present time can only be tentative because of the paucity of distributional information on several areas (e.g. Australia, central Pacific). However, based on the geographic distribution of the 8 species some general observations can be made (Fig. 17). Two zoogeographic zones are clearly found : Eastern Pacific (*N. occidentalis*) and Indo-West Pacific (other species). With the exception of two species with restricted geographic distribution (*N. malhaensis* and *N. carpenteri*) the other species have a wide occurrence in the Indian and Western Pacific Oceans.

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