

PRELIMINARY REPORT ON THE LOBSTERS OF WEST PAKISTAN COAST

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Since lobsters are economically important as an article of food, a study of the West Pakistan lobsters is undertaken. The present paper deals with the systematics of the lobsters, based on the collections made by the Zoology Department, University of Karachi and the Marine Fisheries Department Karachi. Three species: *Panulirus polyphagus*, *P. homarus* (family, palinuridae) and *Thenus orientalis* (family scyllaridae) are represented in our collection. Six species of lobsters are recorded from Bombay. *P. versicolor* which is found in Bombay waters and is also reported from Aden is missing in our collection. It seems necessary that a systematic survey of the coast should be made.

Introduction

In order to study the lobsters of Karachi coast a rather extensive survey was made. The large number of collected lobsters pertain to three species, *Panulirus polyphagus*, *P. homarus* (fam. Palinuridae) and *Thenus orientalis* (fam. Scyllaridae). Such a small number of species is rather unexpected. Chhapgar and Deshmukh¹⁻² have described six species of lobsters—four belonging to Palinuridae and two to Scyllaridae, while De Briun³ has reported six species of the genus *Panulirus* alone. The authors hope to continue the study of lobsters and with further collection coming this year there is a chance of getting more species, unless the distribution of lobsters is such that the number of species shows a decrease towards north.

Key to the Identification of the Lobsters of the Karachi Coast

A. Carapace subcylindrical; eyes not enclosed in orbits; antenna with a long whip-like flagellum.
(fam. Palinuridae).

Rostrum wanting; eye-stalks overlapped by anteriorly directed spines of the carapace; carapace with tubercles and spines; second pleopod of female with a reduced appendix interna.

genus, *Panulirus*.

- (i) Antennular plate with two spines; exopod of second maxilliped with a many jointed flagellum; abdominal segments without grooves. *P.*

polyphagus.

- (ii) Antennular plate with four large spines (and a few spinules in between); exopod of second maxilliped without a flagellum; abdominal segments with (uninterrupted) transverse grooves.

P. homarus.

- B. Carapace depressed; eyes in orbits; antenna short, flattened and without whip-like flagellum. (fam. Scyllaridae).

Body strongly depressed; lamellate; carapace broader than long; orbits at outer angles of carapace.

genus, *Thenus*.

- (i) With a single known species (*Thenus orientalis*).

Palinuridae

Holthuis⁴ recognised the following genera of the family Palinuridae: (1) *Jasus* Parker; (2) *Justitia* Holthuis; (3) *Linuparus* White; (4) *Palinurus* Fabricius; (5) *Palinurellus* Von Martens; (6) *Palinustus* H. Milne Edw; (7) *Panulirus*; White; (8) *Puerulus* Ortmann. Since then the following has been added: (9) *Nupalirus* Kubo.⁵

The lobsters of Karachi coast belong to the genus *Panulirus*.

Panulirus

The genus is widely distributed in the tropical and temperate regions, but wanting in Europe. Unfortunately the systematics of this genus is in a

somewhat confused state. The following, however, is a list of the known species:

P. argus, (Latr. 1804); synonyms, *Palinurus americanus* *Palinurus ricordi*, *Senex argus*.

P. cygnus, George.⁶

P. dasyopus, (Latr. 1804); synonyms, *Palinurus dasyopus*. *Senex dasyopus*.

P. echinatus, (Smith 1869), perhaps identical with *Panulirus guttatus*.

P. guttatus, (Latr. 1804); synonyms, *Palinurus guttatus*, *Palinurus inermis*, *Senex guttatus*, *Puerulus inermis*.

P. homarus, (L. 1758); synonyms, *Cancer homarus*, *Palinurus burgeri* *Senex burgeri*, *Panulirus burgeri*.

P. inflatus (Bour. 1895); synonyms, *Palinurus inflatus*, *Palinurus martensi*, *Palinurus paessleri*.

P. interruptus (Rand. 1839); synonyms, *Palinurus interruptus*, *Senex interruptus*.

P. japonicus, (Von Sie. 1824); synonyms, *Palinurus japonicus*, *Palinurus longipes*, *Palinurus fermoristriga*, *Palinurus longitarus*, *Senex japonicus*, *Senex fermoristriga*, *puer pellucidus*, *Puerulus pellucidus*.

P. laevicauda, (Latr. 1817); synonyms, *Palinurus laevicauda*, *Palinurus sp. (ornatus)* *Panulirus ornatus*.

P. marginatus (Quoy and Gaimard) 1825.

P. ornatus, (Fabr. 1798); synonyms, *Palinurus ornatus*, *Palinurus ornatus*, *Palinurus sulcatus*, *palinurus brevipes*.

P. pascuensis, Reed 1954.

P. penicillatus, (Oliv. 1791); synonyms, *Astacus penicillatus*, *Palinurus gigas*, *palinurus penicillatus*, *Palinurus ehrenbergi*, *Senex penicillatus*.

P. polyphagus, (Herbst. 1793); synonyms, *Cancer (Astacus) polyphagus*, *Palinurus fasciatus* Fabr. (1798). *Senex fasciatus*, *Palinurus orientalis*, *panulirus fasciatus* Gruvel.

P. rissonii, (Des. 1825); synonyms, *Palinurus fasciatus*, *Palinurus rissonii*, *Palinurus ornatus*, *Panulirus regius*, *Palinurus longipes*, *Palinustus phoberus*, *Palinurus rigidus*, *Palinostus phoberus*, *Puer atlanticus*, *Puerulus atlanticus*.

P. stimpsoni, Holthuis.⁷

P. versicolor, (Latr. 1804); synonyms, *Palinurus versicolor*, *Palinurus taeniatus*, *Palinurus fasciatus*, *Palinurus ornatus*, var *decoratus*, *Puer spiniger*, *Panulirus demani*, *Senex ornatus* var *laevis* *Puerulus spiniger*, *Panulirus ornatus* Var *taeniatus*.

According to Holthuis⁴ the name *P. homarus* has priority over *P. burgeri*; hence *P. homarus* is used here.

From the available literature it is quite clear that since 1950 the maximum number of species in the Indo-Pacific region are recorded from Japan. Kubo⁵ reports seven species: *P. japonicus*, *versicolor*, *dasyopus*, *polyphagus*, *homarus* (= *burgeri*), *longipes*, *penicillatus*. From Ceylon six species were recorded by De Bruin³, *P. polyphagus*, *dasyopus*, *versicolor*, *ornatus*, *penicillatus*, *japonicus*. According to Chhapgar and and Deshmukh¹, *P. polyphagus*, *dasyopus*, *versicolor* are found in the Bombay waters. At present only two species *P. homarus* and *P. polyphagus* are represented in our collection and it is of interest to note that from Aden *P. homarus* (= *P. burgeri*) is recorded in abundance and *P. versicolor* is "observed infrequently" George⁶.

Panulirus Polyphagus (Herbst)

Panulirus polyphagus.—Holthuis, 1946, p. 136 (see for complete reference); Barnard, 1950, p. 548 (key only); Kubo, 1954 p. 104; Chhapgar and Deshmukh, 1961, p. 634 fig.; Bruin, de 1962 p. 14 fig. 6.

Material.—A good collection of *P. polyphagus* is available. Most of the specimens are males. The largest specimen is a male with the carapace measuring 109 mm. and the smallest is a female being about half as big as the male.

Descriptive Remarks.—The dorsal view of a female is illustrated in Fig. 1A. As can be seen the carapace is furnished with spines which are rather sparse anterior to the cervical groove. The spines situated posterior to eye-stalks are large and overlap the latter. Posterior to the cervical groove the surface of the carapace is more spinose. The abdominal segments are pitted dorsally. The telson is armed with small spines.

The antennal plate is armed with two spines which are situated anteriorly. This is an important taxonomic character. The species can also be identified by the exopod of the second maxilliped which has a distal many jointed flagellum (Fig. 1B). The dactylus of the fifth leg differs

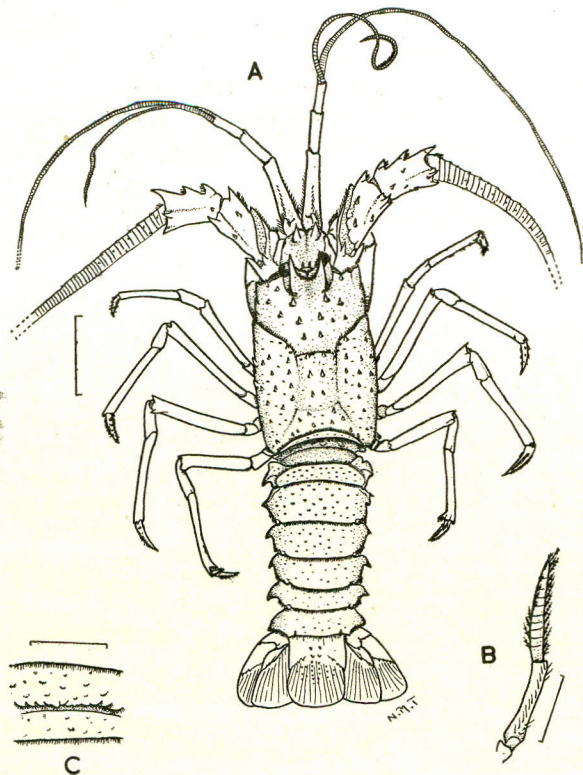


Fig. 1.—*Panulirus polyphagus*.
 A. Female (scale, 35 mm.).
 B. Exopod of the second maxilliped. (Scale, 5 mm.)
Panulirus homarus
 C. Median part of the second abdominal terga. (scale, 25 mm.)

in the two sexes. In the male it is simple and resembles the other dactyli. In the female, however, the dactylus of the fifth leg, instead of being simple and clawlike, has a short, stout spine at the base, and the outer distal margin of the propodus is also produced into a spine like process.

The first abdominal segment is without appendages in both sexes. In the female second to fifth pleopods have an appendix interna on the endopod. The appendix interna of the second pleopod is greatly reduced. The male pleopods are without an endopod.

Colour Pattern.—The carapace is dull bluish in colour. From the posterolateral angle of the carapace a whitish stripe runs parallel to the border immediately above the bases of the legs. Another similar stripe is situated above it. A large white patch with yellowish spots is present at the anterolateral angle of the carapace. Dorsally on each

lateral half of the carapace and situated posterior to the cervical groove is a longitudinal row of six patches. Each patch is at the base of a spine. The colour of the abdomen resembles that of the carapace. The posterior border of each abdominal tergum is brown, anterior to which is a white transverse stripe. The white stripe of the first abdominal segment is discontinuous. The antennular flagella have alternate bands of light yellow and brown. The walking legs are also dull blue in colour and have irregular creamy patches. The pleopods, uropods and the telson have a reddish tinge.

Distribution.—The Indo-Pacific region.

Panulirus homarus (Linnaeus)

Panulirus homarus.—Holthuis, 1946, p. 128 (see for complete reference); Kubo, 1954, p. 102; George 1963, p. 3 fig. 2A, and, 1965, p. 5 and 6 (key).

Panulirus burgeri.—Barnard, 1950, p. 548.

Material.—During the year 1964-1965 quite a large number of specimens, mostly males were collected from the commercial catches. The largest specimen is a female with the carapace length 96 mm. and the smallest is a male carapace measuring 19 mm.

Descriptive Remarks.—*P. homarus* differs from *P. polyphagus* in the following details: the carapace of *P. homarus* is more spiny and the spines anterior to cervical grooves are big and sharp. The uninterrupted grooves of the abdominal terga (Fig. 1C) afford an important diagnostic feature for this species. The pits on the abdominal terga are very conspicuous. The telson is armed with more spines than that of *P. polyphagus*.

The antennal plate is provided with two pairs of large spines of which the anterior pair is slightly larger than the posterior one. A few irregularly arranged spinules can also be seen in between the four large spines. Exopod of the second maxilliped is without a flagellum. The first peraeopod is much stouter than the others. The pleopods are very similar to those of *P. polyphagus*.

Colour Pattern.—The colour of the body and the legs is dull brown with a tinge of blue. A few blue stripes are conspicuous on the antennular plate. A blue stripe is also present on the carapace behind the base of each antenna and extends upto the cervical groove. A conspicuous white

patch is present on each abdominal tergum. It is situated near the anterior margin and immediately above the pleuron.

Distribution.—The Indo-Pacific region.

Scyllaridae

The following is the list of the known genera of the family Scyllaridae:

(1) *Scyllarus* Fabricius; (2) *Scyllarides* Gill; (3) *Ibacus* Leach; (4) *Parribacus* Dana; (5) *Thenus* Leach; (6) *Arctides* Holthuis.

The lobster found on Karachi coast belongs to the genus *Thenus*.

Thenus orientalis Lund

Thenus orientalis Lund.—Holthuis, 1946, p. 106 (see for complete reference).; Barnard, 1950, p. 565 fig. 104, E.; Chhapgar and Deshmukh 1964, p. 206, pl. fig. c.

Material.—The collections were made regularly from Korangi (Karachi) and Pasni (Mekran) during 1964-65. Both sexes including ovigerous female are represented in the collection. Measurements of a few specimens are given here:

Female (ovigerous)	Length of carapace*, 62 mm. Breadth of carapace, 92 mm.
Female (non ovigerous)	Length of carapace, 83 mm. Breadth of carapace, 109 mm.
Male	Length of carapace, 66 mm. Breadth of carapace, 89 mm.

The smallest specimen available in the collection is an ovigerous female with carapace length 62 mm. The largest specimen is an ovigerous female, measuring 83 mm. in carapace length.

Descriptive Remarks.—The dorsal view of an ovigerous female (carapace length, 82 mm.) is illustrated in Fig. 2. In this species the carapace is depressed and gradually widens anteriorly. The antero-lateral margin of the carapace is armed with spines. The dorsal surface of the carapace

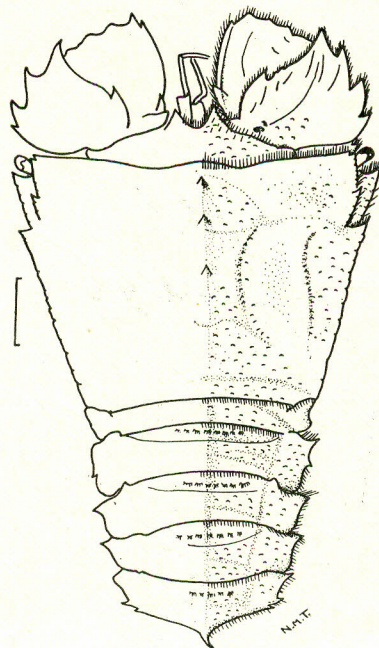


Fig. 2.—*Thenus orientalis* (Female). (Scale—20 mm.)

and abdomen is tuberculated. A mid-dorsal carina is present on the first five abdominal segments. It ends in a sharp median spine on the posterior border of the fifth tergum. Besides this four spines are also present on this border as shown in Fig. 3. The telson is broad and truncate.

The dactylus of the last leg, unlike the clawlike dactyli of the first four pairs, is short and club-shaped. The first pair of abdominal appendages is absent. The second pleopod of female is large and foliaceous. All the pleopods are provided with an appendix interna. That of the second pair is reduced and concealed by long marginal setae of the endopods. In the male pleopods the endopod is long and narrow except in the last pair where it is reduced.

Distribution.—Common in the western Indo-Pacific region.

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*The carapace length is measured from the base of rostral notch to the posterior border, and the maximum breadth lies between the lateral spines situated posterior to eye stalks.

References

1. B.F. Chhapgar and S.K. Deshmukh, *On the Occurrence of Spiny Lobster P. Dasyopus. (M. Edw.) in Bombay Waters with a Note on the Systematic of Bombay Lobsters.* J. Bombay Nat. Hist. Soc., **58**, 632 1 text-fig. (1961).
2. *Further Record of Lobsters From Bombay*, J. Bombay Nat. Hist. Soc., **61**, (1), 203-207, 1 pl. (1964).
3. G.H.P. De Bruin, *Spiny lobsters of Ceylon*, Bull. Fish. Res., St. Fish. Deptt, Ceylon **14**, 28 10 figs. (1962).
4. L.B. Holthuis, *The Stenopodidae, Nephropidae, Scyllardae and Palinuridae, The Decapoda Macrura of the Snellius Expedition, I*, Biological Results of the Snellius Expedition, XIV, Temminckia 7, 1-178, text fig. 1,2, pl. 1-11 (1946).
5. Kubo, I., *Systematic Studies on the Japanese Macrurous Decapod Crustacea*, 3. *On the Palinurid Lobsters*, J. Tokyo Univ. Fisheries, **41**, No. 1 (1954).
6. *Report to the Government of Aden on the Carafish Resources of Eastern Aden Protectorate*, Based on the work of R. W. George Rep. FAO EPTA (1696), p. 23 3 pls. FAO/UN (1963).
7. L.B. Holtruis *Priliminary Description of Some New Species of Palinuridae (Crustacea Decapoda, Macrura, Reptantia)*, Koninkl. Ned. Akad. Wetenschap. Amsterdam, **66** (1), p. 54-60. (1963).
8. R.W. George, and L.B. Holthuis, *A Revision of the Indo-West Pacific Spiny Lobsters of the Panulirus Japonicus Group*, Zoologische Verhandelingen, No. 72, 36 pp., 5 pls. (1965).
9. R.W. George, *Description of Panulirus Cygnus sp. nov. The Commercial Crawfish (or spiny lobster) of Western Australia*, J. Roy. Soc. W. Australia, **4**, pp. 100-110, tex-fig. 1-4, pl. 1,2 (1962).
10. K. H. Barnard, *Descriptive Catalogue of the South African Decapod Crustacea (Crabs & Shrimps)*, Ann. S. Afr. Museum, **38**, p. 857, 154 text-figs. (1950).

(For reference upto 1946 See Holthuis *Temminckia*, 1946)