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# ZOOLOGISCHE MEDEDELINGEN

UITGEGEVEN DOOR HET

RIJKSMUSEUM VAN NATUURLIJKE HISTORIE TE LEIDEN
(MINISTERIE VAN CULTUUR, RECREATIE EN MAATSCHAPPELIJK WERK)

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## BIOLOGICAL RESULTS OF THE SNELLIUS EXPEDITION, XXVI. THE PORTUNIDAE (DECAPODA - BRACHYURA) OF THE SNELLIUS EXPEDITION (PART II)

by




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With 7 text-figures and 3 plates

### INTRODUCTION

In 1940 Leene published Part I of the Snellius portunids, with the stated intention of using the remaining material to produce monographs of the genera *Thalamita* and *Neptunus* (now *Portunus*). These monographs did not eventuate and at the invitation of Dr. L. B. Holthuis the material was made available for study by the author at the Rijksmuseum van Natuurlijke Historie in Leiden. The original intention was to report upon the collections of the Snellius expedition and upon the accrued specimens from the Indo-West Pacific area in the Leiden Museum which belonged to described species. It was then intended to publish separately upon the undescribed species in these and other collections. Instead these undescribed species are included in the present work. The additional species are basically from the collections of the United States National Museum, Smithsonian Institution, but specimens have also been loaned from the Zoologisk Museum, Copenhagen, the Muséum National d'Histoire Naturelle, Paris, the Australian Museum, Sydney, and the Queensland Museum, Brisbane. I am deeply grateful to the Directors of these museums and to their carcinologists for the loan of this material. Particular thanks are due to Mme. Danièle Guinot of Paris for forwarding the male first pleopod from the damaged holotype of *Portunus granulatus* (H. Milne Edwards). I owe especial gratitude to the Leiden Museum, and particularly to Dr. L. B. Holthuis, for friendly and effective collaboration during my visit, and for the loan of critical specimens for further study in Brisbane. Thanks are

also due to the University of Queensland, whose generous provision of study leave made the visit possible.

The present work follows the publication of an extensive check list and key of the Indo-West Pacific portunids (Stephenson, 1972b). In referring to species contained therein, synonymies are now usually excluded together with dates of authors. The present work also follows closely upon a publication upon the Indo-West-Pacific portunids in the Smithsonian Institution of the U. S. National Museum (Stephenson, in press), where certain errors in the 1972 paper are detailed. This information is likewise not repeated in the present paper except where of especial relevance.

Brief reference to the species and locality records of Leene (1940) is necessary. As in the present work, she reported on collections of the Snellius expedition and also the accrued specimens from the Indo-West-Pacific area in the Leiden Museum. Time did not permit re-examination of Leene's material and comments are based on the literature. In order the species she listed were:

(1) *Liocarcinus holsatus* Fabricius= *Macropipus holsatus* (Fabricius) from W. Java, 1894; Leene suggests this was transported by ships. The record was overlooked by Stephenson (1972b).

(2) *Lissocarcinus polybioides* Adams & White.

(3) *Carupa tenuipes* Dana.

(4) Four species of *Lupocyclus* Adams & White. Here a synonymy change is required of *L. rotundatus* Leene to *L. inaequalis* (Walker). The remaining species are *L. quinquedentatus* Rathbun, *L. philippinensis* Semper (attributed to Nauck), and *L. sexspinosus* Leene. The last was described from Snellius specimens.

(5) *Podophthalmus nacreus* Alcock and *P. vigil* (Weber), the latter attributed to Fabricius.

(6) *Scylla serrata* (Forskål).

(7) Eleven species of *Charybdis* de Haan. These are *C. cruciata* (Herbst) now *C. feriatus* (Linnaeus), *C. affinis* Dana, *C. hellerii* (A. Milne Edwards), *C. annulata* (Fabricius), *C. anisodon* (de Haan), *C. orientalis* Dana, *C. callianassa* (Herbst), *C. rosaea* (Hombron & Jacquinot), *C. variegata* (Fabricius), *C. natator* (Herbst) and *C. vadorum* Alcock.

The total number of species Leene considered (21) is considerably less than those here reported (54).

The majority of species recorded below are not "unexpected" in view of their known distributions but there are several interesting features. They include large numbers of small specimens of *Thalamita,* indicating unusually assiduous collecting between tidemarks and in shallow water,

amongst others by Dr. H. Boschma on the Snellius Expedition, by Dr. L. B. Holthuis in Netherlands New Guinea (now West Irian), and by P. Buitendijk in the Netherlands East Indies (now Indonesia). Apart from the new species amongst these small specimens of *Thalamita* there are considerable numbers of species described only fairly recently and also smaller juveniles of larger species than previously seen by the author. The structural features in which the latter differ from larger specimens are briefly detailed.

In the listings which follow, place names are from the original labels, deciphered and translated by Mr. J. A. G. Delfos. Where thought necessary Snellius locality data were checked against the listings by Boschma (1936). Throughout "Dutch" or "Netherlands" or "Nederlands" has been abbreviated to "Ned.", other abbreviations are standard. Depths are given in metres, with conversions from feet or fathoms to the nearest rounded value.

Except for the larger lots (e.g. > 15) numbers of males, females, ovigerous females and juveniles have been given. Data from different lots with identical labels have been combined. Sizes of specimens given in parentheses, are breadths measured between the last anterolateral teeth.

## Systematic Account

Taxa listings follow the order given in Stephenson (1972b).

Recordings of Snellius and non-Snellius collections are kept separate, following Leene (1940) and within each the order of listings is generally chronological except when there are repeated recordings under a given locality or collector.

### Caphyrinae Alcock

#### **Lissocarcinus orbicularis** Dana

Museum Leiden

1 juv., Navy Base, W. of kampong [= village] Sorido, Biak I., Ned. New Guinea, Feb.-May 1952, coll. L. D. Brongersma.

1 ovig. ♀, ½ mile E. Mios Woendi I., Padaido Group, Ned. New Guinea, ca. 1-12 m, Exped. Natural Sci. Foundn.

### Catoptrinae Borradaile

#### **Carupa tenuipes** Dana

Museum Leiden

1♀, reef in front of Navy Base, W. of Sorido, Biak I., Ned. New Guinea, 0-2 m, Feb. 1955, coll. L. B. Holthuis.

**Libystes lepidus** Miyake & Takeda

*Libystes lepidus* Miyake & Takeda, 1970: 30-33, figs. 1, 2 A-G.

Snellius Expedition

1 immature ♂ (5 mm), 1♀ (8.5 mm), near Koepang, Timor, 2 Dec. 1929.

This species was known previously from the two type specimens from Ogasawara (= Bonin) Is. The present material differs from the original description in that the ambulatory legs are less hirsute (presumably due to wear) and that the carapace in the larger specimen has a definite H-shaped separation of gastric and cardiac areas. (The smaller specimen has a soft carapace).

This species was overlooked in the check-list and key of Stephenson (1972b), and because the affinities of the species in the genus are still in doubt, they merit discussion. Six species were listed by Miyake & Takeda: *L. alphonsi* Alcock, 1900; *L. edwardsi* Alcock, 1900; *L. lepidus* Miyake & Takeda, 1970; *L. nitidus* A. Milne Edwards, 1867; *L. paucidentatus* Stephenson & Campbell, 1960, and *L. villosus* Rathbun, 1924. Of these there seems agreement that *L. nitidus* and *L. alphonsi* are probably synonyms (see Serène, 1966; Miyake & Takeda, 1970) but since no firm decision has been reached they are treated as separate below. Serène (1966) has suggested that *L. edwardsi* and *L. paucidentatus* are probably synonyms, but yet this has not received support. While Serène stated (1966: 994) "*Libystes villosus* est sans doute identique avec *nitidus*", Miyake & Takeda (1970) retain it as a separate species and record a female from the Ryukyu Is. The later authors quote Serène's paper, but do not discuss his synonymisation; their separation of the species is based on *L. villosus* having more hairy legs and also having thickly granulated anterolateral areas of the carapace. As regards synonymisation of *L. villosus* with *L. nitidus*, the key below follows Serène. This key replaces that of Stephenson (1972b: 5), includes *L. lepidus*, and mentions additional characters.

Key to Indo-West-Pacific species of the genus *Libystes* A. Milne Edwards

1. Anterolateral border bearing teeth . . . . . 2
— Anterolateral border entire, without teeth (dactyl of fifth leg narrow and curved) 4
2. Anterolateral border with 5 teeth (including extra-orbital angle), front curved . 3
— Anterolateral border with 6 or 7 teeth, front straight (dactyl of fifth leg broad) . . . . . *L. edwardsi* Alcock
3. Dactyl of fifth leg broad . . . . . *L. paucidentatus* Stephenson & Campbell
— Dactyl of fifth leg narrow and sinuous . . . . . *L. lepidus* Miyake & Takeda
4. Carapace elliptical . . . . . *L. nitidus* A. Milne Edwards
— Carapace subquadrilateral . . . . . *L. alphonsi* Alcock

PORTUNINAE Rafinesque

**Charybdis (Charybdis) anisodon** (de Haan)

Museum Leiden

1 ♂, off Cheribon, north coast of Java, Aug. 1910, coll. P. Buitendijk.
1 ♀ (unusual specimen), off Semarang, north coast of Java, Jan. 1912, coll. P. Buitendijk.

The above specimens were compared with museum material previously identified by Leene and by Serène. The unusual specimen is identical in all respects except the front, which is five instead of six-lobed. The lateral lobes are normal, the submedian pair are broader than usual, and the median pair are replaced by a single broad lobe. This is partly overlapped by the submedians.

**Charybdis (C.) callianassa** (Herbst)

Snellius Expedition

1 ♂, Sta. 118, 9°11.0'S 127°51.5'E, 26 Oct. 1929, dipnet.
2 ♀♀, Sta. 320, 4°59.0'S 130°17.0'E, 31 Aug. 1930.
7 ♂♂, 7 ♀♀, Banda, Moluccas, 31 Aug. 1930.

All specimens had been infested with stalked barnacles.

**Charybdis (C.) feriatus** (Linnaeus)

Museum Leiden

1 juv., off Semarang, north coast of Java, Jan. 1912, coll. P. Buitendijk.

**Charybdis (C.) hellerii** (A. Milne Edwards)

Museum Leiden

1 ♀, Kaipoer village, Koeroendo I., Ned. New Guinea, ca. 0.75-1.25 m, black silt and sand, 19 Febr. 1956, Exped. Natural Science Foundn.

**Charybdis (Goniohellenus) longicollis** Leene

Museum Leiden

1 ♂, Persian Gulf, 25°49.5'N 55°46'E, 21 m, 1 Oct. 1966, Royal Dutch Shell Exploration and Production Lab., Sta. T. 1278.

**Portunus emarginatus** Stephenson & Campbell

Museum Leiden

1 ♂, Poeloe Weh, N. Sumatra, July 1915, coll. P. Buitendijk.

Because of its softness, there is some uncertainty over the identity of this specimen.

**Portunus gracilimanus** (Stimpson)

Museum Leiden

1 ♂, Padaido Is., Ned. New Guinea, Jan-Feb. 1956, Exped. Natural Science Foundn.

**Portunus granulatus** (H. Milne Edwards)

This species is referred to following the description of *Portunus suborbicularis* nov. spec. (p. 180).

**Portunus haanii** (Stimpson) = *P. gladiator* auct.

Museum Leiden

1 ♀, Poeloe Weh, N. Sumatra, Oct. 1928, coll. P. Buitendijk.
2 ♂♂, 1 ♀, Padaido Is., Ned. New Guinea, Jan-Feb. 1956, Exped. Natural Science Foundn.
1 ♂, Dahab, Sinai Peninsula, Gulf of Aqaba, 27 April 1973, coll. L. B. Holthuis, sandy beach near waterline.

For synonymy see Stephenson & Cook (1973).

**Portunus hastatoides** Fabricius

Museum Leiden

1 ♂, 1911, 1 ♀, Jan. 1912, off Semarang, north coast of Java, coll. P. Buitendijk.
1 ♂, Tandjong Priok, near Djakarta, Java, Nov. 1925, coll. P. Buitendijk.

**Portunus iranjae** Crosnier

Snellius Expedition

1 ♀, Bongao, Tawitawi, Sulu Is., dipnet, 0-1 m, 9 Sept. 1929.

**Portunus longispinosus** Dana

Museum Leiden

1 ♂, (23 mm), ½ mile E. of Mios Woendi I., Padaido Group, Ned. New Guinea, ca. 1-12 m, Exped. Natural Science Foundn.

See Stephenson (in press) for a recent partial clarification of the synonymy of this species.

This is the largest specimen of this species seen by the author and has, relatively, the longest chelipeds, these being 2.3 times the carapace length. This compares with ca. 2.7 times for a ca. 18 mm male figured by Sakai (1939, pl. 81 fig. 4). It seems probable that Sakai's specimen does belong to the present species, contrary to the opinion of Crosnier (1962). The present specimen has an angular junction at the posterodistal border of the merus of the fifth leg — see Stephenson (in press).

**Portunus macrophthalmus** Rathbun

Snellius Expedition

1 ♂, near Koepang, Timor, small dredge, 10-15 m, 6 Dec. 1929.

Museum Leiden

1 ♂, 1 ♀, 3 juv., reef, near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, Feb. 1955, coll. L. B. Holthuis.

**Portunus minutus** (Shen)

Snellius Expedition

2 ♂♂, 2 ♀♀, near Koepang, Timor, dredged, 6-15 m, 4 Dec. 1929.

Museum Leiden

1 ♂, 1 ovig. ♀, Poeloe Kloeang, W. coast of Atjeh, N. Sumatra, 1895, coll. G. A. J. van der Sande.

**Portunus orbicularis** (Richters)

Museum Leiden

1 ♂, Poeloe Weh, N. Sumatra, 1907, coll. P. Buitendijk.

**Portunus orbitosinus** Rathbun

Snellius Expedition

2 ♂♂, 1 juv., near Koepang, Timor, small dredge, 10-15 m, 2 Dec. 1929.

**Portunus pubescens** (Dana)

Snellius Expedition

2 juv., Sta. 331, W. of Boeroe, Moluccas, 3°40.0'S 124°20.5'E, 19 Sept. 1930.
1 juv., Sta. 363, N. of Tanimbar, 6°02.0'S 131°52.0'E, 22 Oct. 1930.

**Portunus pulchricristatus** (Gordon)

Snellius Expedition

1 ♀, near Koepang, Timor, dredge, 6-15 m, 4 Dec. 1929.
1 ♂, Ake Selaka, Kaoe Bay, Halmahera, N. Moluccas, small dredge, 28 May 1930.

**Portunus rugosus** (A. Milne Edwards)

Museum Leiden

1 ♂, 13 May 1913; 1 ♂, Dec. 1919; 2 ♂♂, May 1922; 1 ♂, 3 ♀♀, April 1928; 1 ♂, Oct. 1928, Poeloe Weh, N. Sumatra, coll. P. Buitendijk.
1 ♂, 1 mile E. of Dauwi I., Padaido Group, Ned. New Guinea, ca. 55-90 m, 4 Feb. 1956, Sta. 490, Exped. Natural Science Foundn.

In this species the larger males have disproportionally longer chelipeds and walking legs than smaller males or females.

**Portunus spinipes** (Miers)

Snellius Expedition

3♂♂, 2♀♀, near Koepang, Timor, dredge, 6-15 m, 4 Dec. 1929.

A single specimen of the very similar species *P. pulchricristatus* was present in the above collection — see earlier.

**Portunus suborbicularis** nov. spec. (pl. 1 fig. 1; text-figs, 1A, D, F, G, 2A, C)

*Portunus* (*Achelous*) *granulatus* — Rathbun, 1906: 871, pl. 12 fig. 2; Edmondson, 1954: 239, figs. 16 a, b. Non *Lupea granulata* H. Milne Edwards (1834: 454).

*Neptunus* (*Achelous*) *granulatus* — Gordon, 1938: 182-185 (in part, fig. 6 b); Sakai, 1939: 397 (in part, pl. 81 fig. 3).

*Portunus granulatus* — Stephenson & Rees, 1967: 25-28 (in part, Hawaiian specimens and fig. 5 a, b).

*Portunus euglyphus* Stephenson, 1927a: 135. Non *Neptunus* (*Amphitrite*) *euglyphus* Laurie (1906: 413-4, figs. 6, 7).

U. S. National Museum, Washington, D. C.

Holotype ♂ (18 mm), Modu Manu I., Hawaiian Is., "Albatross" Sta. 4159, Reg. No. 29681, previously identified by M. J. Rathbun as *Portunus* (*Achelous*) *granulatus* (M. Edw.), photograph in Rathbun 1906, pl. 12 fig. 2.

1♂ (12 mm), Molokai I., Hawaiian Is., "Albatross" Sta. 3850, Reg. No. 29678, previously identified by M. J. Rathbun as *P. granulatus*.

1♀ (12 mm), Modu Manu I., Hawaiian Is., "Albatross" Sta. 4158, Reg. No. 29680. previously identified by M. J. Rathbun as *P. granulatus*.

1♂ (soft, 27 mm), shallow water on reef, Mokuleia, Oahu, Hawaiian Is., 1938, coll. Otto Degener, Reg. No. 111890 (1), previously identified by me as *P. granulatus*.

1♂ (26 mm), 1♀ (ovig., 22 mm), reef, off Mokuleia, Waialua, Oahu, Hawaiian Is., received 23 June 1938, coll. Otto Degener, Reg. No. 111911 (2), previously identified by me as *P. granulatus*.

1♂ (9.5 mm), Arno Atoll, received 1952, coll. R. Hiatt, Reg. No. 111885 (1), previously identified by me as *P. granulatus*.

1♂ (soft, misshapen, 21 mm), E. side Papetoai Bay, Moorea, poison station, shore reef, 1-6 m, 30 May 1957, coll. J. Randall, Reg. No. 111896 (1) previously identified by me as *P. granulatus*.

1♂ (13 mm), MR-108, Midway I., dredge lane No. 5, lagoon of Midway I., 1-6 m, coll. H. S. Todd, 16 Sept. 1965.

1♂ (9 mm), Sta. MI-I, haul 2, Marquesas Exp., 20 Sept. 1967.

Zoologisk Museum, Copenhagen

1♂ (21.5 mm), Honolulu, 17-75 m, coral, 5 May 1915, coll. Th. Mortensen.

1♂ (15 mm), Mauritius, off Cannonier Point, 2-6 m, sand, 26 Oct. 1929, coll. Th. Mortensen. Both specimens previously identified by me as *P. euglyphus* Laurie.

Description. — Front four-lobed, median lobes less than half as broad as laterals, laterals right-angled with rounded tips.

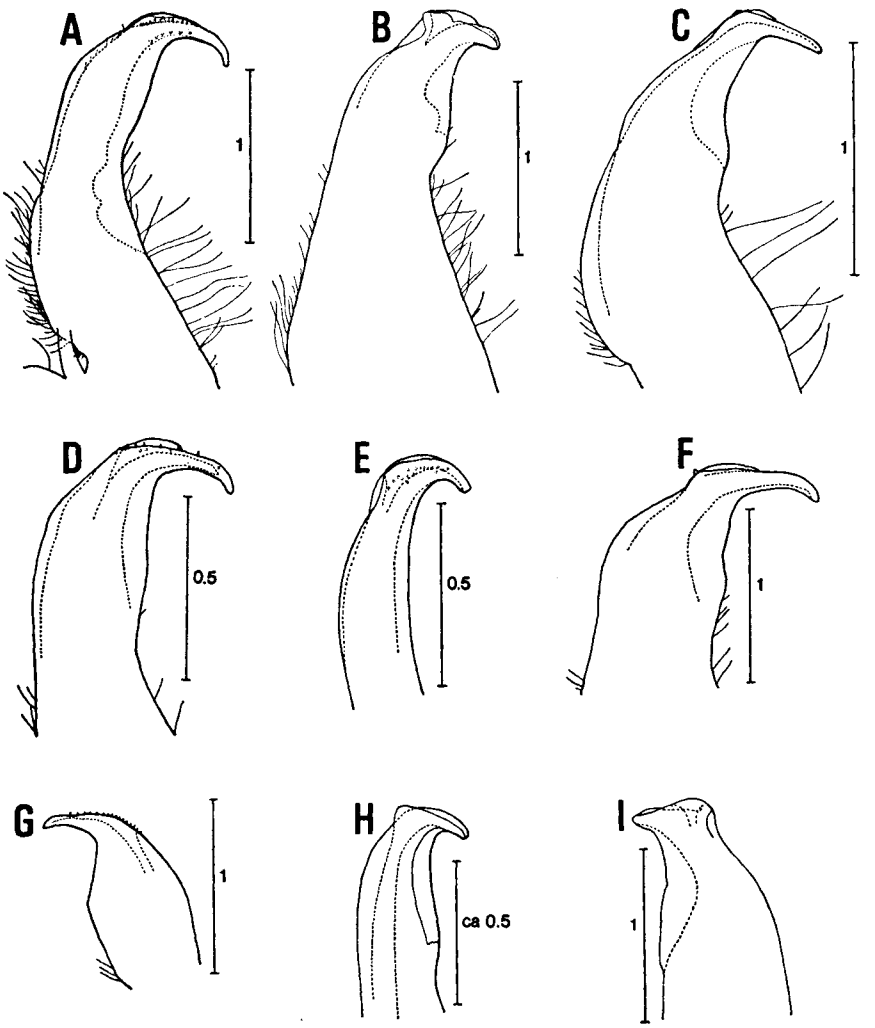


Fig. 1. Male first pleopods, left pleopods, surface views (except for G). A, *Portunus suborbicularis* nov. spec., holotype; B, *P. granulatus* (H. Milne Edwards), Low Is. specimen (Queensland Mus.); C, *P. euglyphus* (Laurie) redrawn as composite from Stephenson & Rees (1967, fig. 4a, b); D, *P. suborbicularis* nov. spec., 9 mm male, Marquesas Exp.; E, *P. granulatus* (H. Milne Edwards), 7.5 mm male, Sorido; F, *P. suborbicularis* nov. spec., USNM Reg. No. 111911 (2); G, right pleopod *P. suborbicularis* nov. spec. (left missing) USNM Reg. No. 111890 (1); H, *P. granulatus* (H. Milne Edwards), after Crosnier (1962, fig. 92) with presumed internal and overlaid structures in broken lines; I, *P. granulatus* (H. Milne Edwards), holotype, right pleopod. Scale lines in mm units.

Orbit. Upper border with 2 incisions, outer one with distinct toothlike inner border. Lower border coarsely granulated and with deep but narrow outer incision.

Anterolateral teeth. First blunt, second to eighth with sharp tips directed more forwards than outwards, second to fourth shorter than fifth to eighth, ninth tooth distinctly the largest (after the first) and most protruding, protruding about twice as much as eighth.

Carapace moderately narrow (breadth ca. 1.4 times length), with almost rounded (suborbicular) outline, postlateral junctions rounded. All granular areas distinct, giving embossed surface; granular patches separated by moderately broad areas bearing a fine pile of hairs; granules in patches relatively large and widely spaced. Short ridges in each protogastric area, and slightly behind in each mesogastric area. Longer ridges in metagastric area. Mesobranchial area with 3 granular patches.

Chelipeds elongate, granular, hirsute except on under surface which is polished and pitted. Two sharp spines on posterior border of arm, one two thirds way along and one distal. Anterior border of arm with 5 spines set amongst spiniform granules, sub-distal spine well separated from 4 others. Wrist with 2 usual spines. Hand strongly carinated, upper surface with 2 strong carinae and third running to tip of immovable finger, inner surface with long hairs partly concealing rows of large rounded granules, these forming a coarsely granular carina on lower margin.

Fifth leg of usual form, posterior border of merus with rounded granules.

Third maxilliped with anteroexternal angle strongly produced laterally.

Male abdomen relatively narrow, penultimate segment distinctly longer than broad.

Male first pleopod in profile view shaped as bird's head with downturned tip to beak. In most specimens a spaced row of short stout bristles visible between two subterminal areas of free membrane; in largest specimen membranes not present and above bristles project on subterminal and most distal portion of appendage. Variable number of bipinnate hairs on basal portions of appendage.

Distribution. — See material examined. This species is not represented in the material of the Snellius expedition, nor in that of the Leiden Museum, Australian Museum and Queensland Museum; this is in contrast with *P. granulatus*.

Remarks. — It has become clear that two closely related species have previously been identified as *Portunus granulatus* (H. Milne Edwards). Recognition of the present species reduces the variability attributed to

*P. granulatus,* which is redescribed. This is followed by a discussion of the two species and of others they resemble.

**Portunus granulatus** (H. Milne Edwards) (pl. 1 fig. 2; text-figs. 1B, E, H, I, 2B, D)

*Lupea granulata* H. Milne Edwards, 1834: 454.
*Amphitrite speciosa* Dana, 1852a:84; Dana, 1852b: 276; Dana, 1855: pl. 17 fig. 1.
*Achelous granulatus* A. Milne Edwards, 1861: 344.
*Portunus (Achelous) granulatus* Rathbun, 1911: 205, pl. 15 fig. 10.
*Neptunus (Achelous) granulatus* Boone, 1934: 60-62, pl. 20; Gordon, 1938: 182-185 (in part, fig. 5e); Sakai, 1939: 397 (in part, fig. 8).
*Cycloachelous granulatus* Barnard, 1954: 124, fig. 3a, b.
*Portunus granulatus* Stephenson & Campbell, 1959: 108-110, text-figs. 21, 31, pl. 3 fig. 1, pls. 4J, 51; Stephenson, 1961: 108; Stephenson & Rees, 1967: 25-27 (in part, fig. 5c, d, e); Stephenson & Rees, 1968: 293-294; Stephenson, 1972a: 136.

The following specimens were examined in detail and used in the description below:

Muséum National d'Histoire Naturelle, Paris

Right pleopod ♂ labelled "*Achelous granulatus* Edw., Ile de France", Mauritius.
1♂ (26 mm), 1♀ (21 mm) labelled "*Neptunus (Achelous) granulatus* Edw., Bouvier det., Port Louis (Thirioux), Ile Maurice, Paul Carée" and "= *Portunus granulatus* (H. Milne Edwards)".

Museum Leiden

1♂ (7.5 mm), 3♀♀ (7-10 mm), reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, coll. L. B. Holthuis, Feb. 1955.

Australian Museum

2♂♂ (24 mm, 25 mm), Murray I., Torres Strait, Aug.-Oct. 1907, coll. Hedley and A. R. McCulloch, Reg. No. P 2785.
1♂ (28 mm), data as above, Reg. No. P 2787.
1♂ (18.5 mm), Solomon Is., coll. Capt. Farrell, Dec. 1908, Reg. No. P. 1752 (part).
1♂ (23.5 mm), Cairns Reef off Cooktown, Queensland, pres. A. R. McCulloch, Aug. 1913, Reg. No. P. 3720.
1♂ (23 mm), Murray I., Torres Strait, pres. M. Ward, Oct. 1928, Reg. No. 12735.
1♂ (23 mm), 1♀ (16.5 mm), Northwest I., Capricorn Group, pres. M. Ward, May 1930, Reg. No. P 12554.
1♂ (23.5 mm), Darnley I., Torres Straits, coll. D. J. Tranter, 6 Oct. 1953, Reg. No. P. 13395.

Queensland Museum

1♂ (22 mm), Low Is., Great Barrier Reef Exped. (1927-28).
1♂ (23.5 mm), 1♀ (23.5 mm), Darnley I., Torres Straits, reefs, coll. D. J. Tranter, 6 Oct. 1953, Reg. No. W 3055.

♂ (30.5 mm), W. side Heron I., half-tide level, reef flat, sandy gravel, coll. W. Stephenson, 7 Oct. 1960, Reg. No. W 2438.

The following additional material was examined in Sept. 1973:

Snellius Expedition

2♂♂, Los, Misool Group, shore and reef, 3 and 6 Oct. 1929.
1♂, 1♀, Sapoeka besar, Postiljon I., shore and reef, 21-23 Dec. 1929.
5♂♂, 1♀, 4 ovig. ♀♀, Koedingareng Lompo, Spermonde Archipelago, near Makassar, shore, 3 Feb. 1930.
2♂♂, 1♀, Gonto Soea, Spermonde Archipelago, near Makassar, shore, 1 March 1930.
1♂, Koedingareng Keke, Spermonde Archipelago, near Makassar, 1 March 1930.
4♂♂, Morotai, 3-10 June 1930.

Museum Leiden

1♂ in Sept. 1922, 3♀♀ in Feb. 1924, 1♂ in March 1924, and 3♂♂, 1♀, 1 ovig. ♀ in May 1927, Poeloe Weh, N. point of Sumatra, coll. P. Buitendijk.

Description. — Front four-lobed, medians less than half width of laterals, laterals with curved outer margin.

Orbit. — Upper border with 2 incisions, outer one generally with

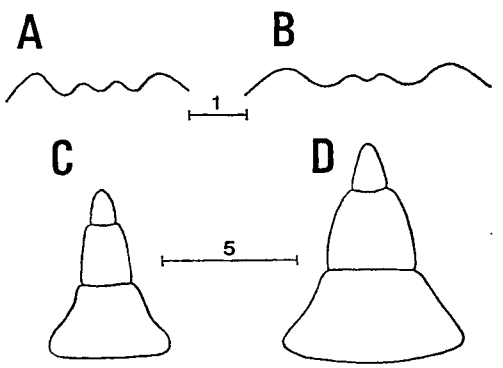


Fig. 2. A, B, front. A, *P. suborbicularis* nov. spec., holotype; B, *P. granulatus* (H. Milne Edwards), Low Is. specimen (Queensland Mus.). C, D, male abdomen; C, *P. suborbicularis* nov. spec., holotype; D, *P. granulatus* (H. Milne Edwards) as above. Scale lines in mm units.

indistinct tooth-like inner border (sometimes a distinct tooth-like border). Lower border minutely granular and with deep outer incision.

Anterolateral teeth. — First blunt, second to eighth stout and with tips more outwardly directed than in *P. suborbicularis,* second to fourth shorter than fifth to eighth, ninth tooth slightly the largest and most protruding, protruding ca. 1 $^1/_3$ times as much as eighth. In smallest specimens examined,

ninth tooth almost as large as in *P. suborbicularis* and protruding almost twice as much as eighth.

Carapace moderately narrow (breadth ca. 1.4 times length), with rounded outlines, postlateral junctions rounded. All granular areas distinct, but generally with a less embossed appearance than in *P. suborbicularis,* this due to wider granular areas, more distinct pile of hairs between them, and granules relatively small and closely spaced. (In one male, Aust. Mus. P2785, granulation generally as in *P. suborbicularis*). Short ridges in protogastric and mesogastric regions sometimes not distinguishable, when present from an interrupted arc. Larger ridges in metagastric area. Mesobranchial area with 3 granular patches.

Chelipeds as in *P. suborbicularis* except hand with smaller rounded granules on under surface and indistinct more finely granular carina on lower margin of this surface.

Fifth leg and third maxilliped as in *P. suborbicularis.*

Male abdomen relatively broad, penultimate segment broader than long.

Male first pleopod in larger specimens readily distinguishable from that of *P. suborbicularis,* in profile view shaped more as a mammalian than a bird head. Tip obscurely flattened, and never with external subterminal bristles, but with a few internal bristles indistinctly visible. Smaller specimens with two subterminal areas of free membrane with numerous short internal spicules, tip of appendage much blunter than in the smallest available specimen of *P. suborbicularis.*

Distribution. — Madagascar and Mauritius to Fiji, including Japan and Australia. Apparently commoner and more ubiquitous than *P. suborbicularis.*

## Discussion of *P. suborbicularis* and *P. granulatus*

Larger males of the two species can be distinguished readily by the form of their abdomens and first pleopods. The pleopods require examination under moderately high power and failure to do so was partly responsible for past confusion by the author. Smaller males are also distinguishable by their pleopods but only with difficulty. Also in general facies small specimens of the two species are remarkably similar. The Leiden Museum specimens of *P. granulatus* which were examined in detail were originally selected as belonging to *P. suborbicularis.*

Ward (1942) stated that two species had been confused under the name *P. granulatus* since the time of H. Milne Edwards (1834) and stated that this would be clarified in a later paper — no such paper has appeared. The confusion begins with de Haan's *Portunus* (*Amphitrite*) *gladiator.* This

encompassed two species, neither of which was either of the species which Fabricius called *gladiator,* viz *Cancer gladiator* Fabricius, 1793, or *Portunus gladiator* Fabricius, 1798 (see Stephenson & Cook, 1973). Of present concern is de Haan's (1837) *P. gladiator* of his pl. 18 fig. 1. A. Milne Edwards (1861) synonymised this with *P. granulatus* (H. Milne Edwards), but Rathbun (1911) showed it belonged to her *P. orbitosinus.* This, like *P. granulatus* has resemblances to *P. suborbicularis* but has conspicuous differences in the male abdomen and first pleopods.

In general facies the three species are separable by the following features:

(a) Carapace granulation. *P. granulatus* has granules covering nearly the whole carapace, with narrow smoother areas between, *P. orbitosinus* has granules in patches separated by broad smooth areas, while *P. suborbicularis* is intermediate. There is some variation and one of the listed specimens of *P. granulatus* has the carapace granulation typical of *P. suborbicularis.*

(b) Space between first and second anterolateral teeth. *P. granulatus* and *P. suborbicularis* have a broad space, while *P. orbitosinus* is generally thought to have a narrow space. However, there again appears to be variation and Stephenson & Rees (1967: 34) state: "Most of the present specimens differ from Crosnier's in having a larger first anterolateral tooth well separated from the second tooth".

(c) Suborbital sinus. *P. granulatus* and *P. suborbicularis* narrow, *P. orbitosinus* broad. (See Gordon 1938, fig. 5 a, b).

(d) Last anterolateral tooth. In *P. granulatus* only slightly larger than eighth tooth (except in small specimens), in *P. orbitosinus* variable, in *P. suborbicularis* about twice the length and breadth of eighth tooth.

With the knowledge of the existence of three very similar species uncertainty arose over which is *P. granulatus* (H. Milne Edwards). This has been resolved through the good offices of Mme. Danièle Guinot who wrote as follows: "Au sujet de *Portunus granulatus* (H. Milne Edwards), le type présumé se trouve bien dans nos collections; il est ainsi étiqueté '*Achelous granulatus* Edw., Ile de France'. Malheureusement, ce crabe, un mâle, est un specimen sec en très mauvais état, avec la carapace en innombrables morceaux... L'abdomen est également cassé; les pl. 1 sont par bonheur entiers." Examination of this pleopod (see fig. 1 I) shows the expected shape. Clearly this specimen, in spite of its fragmentary state, is the holotype of *Lupa granulata* H. Milne Edwards. The labelling as *"Achelous granulatus"* strongly suggests A. Milne Edwards and further validates his description.

The literature from A. Milne Edwards (1861) to Rathbun (1906) does

not permit certain distinction between *P. granulatus, P. orbitosinus* and *P. suborbicularis,* and clarification will depend upon re-examination of material. Rathbun's (1906) specimen of *P. granulatus* can certainly be referred to *P. suborbicularis* — it is the holotype of that species. However, Rathbun's (1911, pl. 15 fig. 10) *P. granulatus* belongs to *P. granulatus* (H. Milne Edwards). Gordon (1938) shows the male pleopod of *P. granulatus* in her fig. 5 e, but what appears to be a typical male abdomen of *P. suborbicularis* in her figure 6 b. Sakai (1939) shows a typical abdomen of *P. granulatus* in his text-fig. 8 b, but the carapace in his photograph (pl. 81 fig. 2) is either *P. suborbicularis* or possibly *P. orbitosinus.* Moreover, Sakai's descriptive comparison of *P. granulatus* with *P. orbitospinus* (sic) [= *P. orbitosinus*] does not agree with his plate. He states of *P. granulatus* that the ninth anterolateral teeth are smaller and the granular patches of the carapace are less distinct than in *P. orbitosinus,* but his plate shows the reverse.

Ward's (1942, pl. 5 fig. 5) material can not with certainty be placed in a species. His material came from Mauritius; both *P. granulatus* and *P. suborbicularis* have been recorded therefrom. Barnard (1954) who used Ward's generic name *Cycloachelous* definitely figures a male first pleopod of *P. granulatus.*

Stephenson & Campbell (1959) added to the confusion by misquoting an illustration; they cited pl. 41 instead of 4J in referring to material which undoubtedly belongs to *P. granulatus.*

Stephenson & Rees (1967) showed a range of male abdomens from broad to narrow and thought these intergrated. In actuality their figures 5a, b show the typically narrow abdomens of *P. suborbicularis* and their material is included in the listed specimens of this species.

Stephenson (1972a) misidentified two specimens of *P. suborbicularis* as *P. euglyphus* (Laurie). On key features this is easy to do. In Stephenson's (1972b) key the critical dichotomy is at 39(30) and between (i) last anterolateral tooth only slightly larger or smaller than other teeth; carapace relatively narrow and (ii) last anterolateral tooth distinctly larger than other teeth; carapace relatively broad. *P. suborbicularis* lies between these, it has a last anterolateral tooth distinctly larger than the other teeth but a relatively narrow carapace. If the second of the alternatives above is taken, male first pleopod structure appears to confirm the incorrect identification of *P. euglyphus.* This species and *P. suborbicularis* have remarkably similar male pleopods, the former differing in that while in profile it is shaped as a bird's head, the tip of the beak is not downturned. In spite of this similarity the species do not appear to be very closely related. *P. euglyphus*

has a much broader carapace, with much larger and more robust last anterolateral teeth, and with much straighter anterolateral borders.

**Portunus tenuipes** (de Haan)

Snellius Expedition

1 ♂, near Koepang, Timor, dredge, 6-15 m, 4 Dec. 1929.

**Portunus trilobatus** Stephenson

Museum Leiden

1 ♀, off Semarang, north coast of Java, Oct. 1907, coll. P. Buitendijk.

**Scylla serrata** (Forskål)

Snellius Expedition

2 juvs., Kaledoepa, Toekang Besi Is., 27 Aug. 1930.

Museum Leiden

1 juv., shore near Tandjong Priok near Batavia (= Djakarta), Java, Sept. 1924, coll. P. Buitendijk.
1 juv., Sea Fisheries Station, Hollandia Haven, Ned. New Guinea, 28 Dec. 1954, don. D. C. Zwollo.
1 juv., Nabire, S. coast of Geelvink Bay, New Guinea, 24 Jan. 1955, coll. L. D. Brongersma.
1 juv., estuary, Port Canning, India, 13 Aug. 1955.

In the juveniles smaller than ca. 40 mm (carapace breadth) there are indications of carinae separating the upper from the other surfaces of the hands of the chelipeds. This approaches the situation in the genus *Portunus*.

**Thalamita admete** (Herbst)

Snellius Expedition

3 ♂♂, 4 ovig. ♀♀, Morotai, northern Moluccas, 3-10 June 1929.
1 ♂, 4 ovig. ♀♀, Mamoedjoe, Celebes, shore and reef, 4-5 Aug. 1929.
2 ♂♂, 2 ovig. ♀♀, Maratoca, N. E. Borneo, 14-18 Aug. 1929.
7 ♂♂, 3♀♀, 2 ovig. ♀♀, Palelch, Celebes, 22 Aug. 1929.
5 ♂♂, 2♀♀, 7 ovig. ♀♀, Sipankot near Sibutu, Sulu Is., shore, 10-14 Sept. 1929.
9 ♂♂, 2♀♀, 3 ovig. ♀♀, Kafal, Misool Group, northern Moluccas, shore and reef, 3-5 Oct. 1929.
1 ♂, Waaf, Misool Group, shore, 5 Oct. 1929.
123 specimens, Sissie, near Misool, shore and reef, 6 Oct. 1929.
2 ♂♂, 5 ovig. ♀♀, near Manoembai, Aroe Is., shore, 11-14 Oct. 1929.
25 specimens, Wotap, Tenimber Is., shore and reef, 20-23 Oct. 1929.
1 ♂, 1♀, Kera near Timor, 11-13 and 15-16 Nov. 1929.
16 specimens, Kera near Timor, 15-16 Nov. 1929.
1 ♂, Atapoepoe, Timor, reef, 19 Nov. 1929.
1 ♂, 1♀, near Koepang, Timor, 18-20 Nov. 1929.
1 ♂, 1♀, 2 ovig. ♀♀, Kera near Koepang, 22-23 Nov. 1929.
1 ovig. ♀, near Koepang, shore, 25 Nov. 1929.

4♂♂, 3♀♀, 5 ovig. ♀♀, Kambang near Timor, reef and shore, 26-28 Nov. 1929.
1♀ (immature), near Koepang, Timor, shore and reef, 3 Dec. 1929.
3♂♂, 4♀♀, 1 ovig. ♀, 2 juvs., Koepang, reef and shore, 5 Dec. 1929.
16 specimens, near Koepang, reef, 8 Dec. 1929.
3♂♂, 1♀, 3 ovig. ♀♀, Koepang, reef, 9 Dec. 1929.
6♂♂, 5 ovig. ♀♀, Sapoeka besar, Postiljon Is., Flores Sea, shore and reef, 21-23 Dec. 1929.
3♂♂, Sarasa, Postiljon Is., shore, 22 Dec. 1929.
1 ovig. ♀, Samalona, Spermonde Archipelago, near Makassar, Celebes, shore, 3 Feb. 1930.
2♂♂, Gonto Soea, Spermonde Archipelago, near Makassar, shore, 1 March 1930.
3♂♂, 2♀♀, 2 ovig. ♀♀, Soela Is., east of Celebes, shore, 18 March 1930.
2♂♂, 1♀, Pasih Ipah, near Soela Mangoli and Taliaboe, east of Celebes, shore, 19 March 1930.
2♂♂, 1 ovig. ♀, Ternate, northern Moluccas, shore, 1-2 April 1930.
3♂♂, 3♀♀, 1 ovig. ♀, Obi latoe, Moluccas, shore and reef, 23-27 April 1930.
1♂, Haroekoe, southern Moluccas, shore and reef, 3-7 May 1930.
1♂, 1 ovig. ♀, Amboina, southern Moluccas, shore and reef (swimming), 0-2 m, 6 May 1930.
4♂♂, 2♀♀, 1 ovig. ♀, 2 *Sacculina* infested specimens, Beo, Karakelong, Talaud Is., shore and reef, 14-21 June 1930.
2♂♂, 1 ovig. ♀, Flores, 18-19 Aug. 1939.
1 ovig. ♀, Kaledoepa, Toekang Besi Is., S. E. Celebes, 27 Aug. 1930.
1♂, Sta. 320, S. E. of Banda, 4°59.0'S 130°17.0'E, 31 Aug. 1930.
26 specimens, Amboina, 11-17 Sept. 1930.
1♂, Laha, Amboina, 13 Sept. 1930.
16 specimens, Ternate, northern Moluccas, 29 Sept. 1930.
2♂♂, 1♀, Boo Is. (Poeloe Bo), N. W. New Guinea, 5 Oct. 1930.
1♂, Amboina, 14-17 Oct. 1930.
1♀, Batoe Merah, Amboina, 15 Oct. 1930.
3♂♂, 2♀♀, 1 ovig. ♀, 1 juv., Roemah tiga, Amboina, 17 Oct. 1930.
20 specimens, Endeh, Flores, 6-8 Nov. 1930.

## Museum Leiden

2 ovig. ♀♀, Kisar, near Timor, Ned. E. Indies, 1898, coll. K. Schädler.
1♂, Bay of Batavia (= Djakarta), Java, Oct. 1908, coll. P. Buitendijk.
1♀, Biak I., Ned. New Guinea, Feb.-May 1954, coll. L. B. Holthuis.
1♂, 1♀, 4 juvs., beach near Base G, N. of Hollandia, Ned. New Guinea, 12 Nov. 1954, coll. L. B. Holthuis.
1♂, 1♀, 6 juvs., reef near Base G, N. of Hollandia, Ned. New Guinea, from coral, 27 Nov. 1954, coll. L. B. Holthuis.
23 specimens (one *Sacculina* infested, sex uncertain, No. 1330 *Sacculina* taken by Dr. H. Boschma), reef in front of Navy Base, W. of Sorido, Biak I., Ned. New Guinea, Jan. 1955, coll. L. B. Holthuis.
64 specimens, reef in front of Navy Base, W. of Sorido, Biak I., Ned. New Guinea, Feb. 1955, coll. L. B. Holthuis.
1♀ (immature), 1 juv., reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, from coral (*Porites* sp.), 22 March 1955, coll. L. B. Holthuis.
1♂, locality as above, between *Montipora* sp., 23 March 1955, coll. L. B. Holthuis.
1♂, 2♀♀ (immature), 1 ovig. ♀, locality as above, March 1955.
1♂, reef near Base G, N. of Hollandia, Ned. New Guinea, April 1955, coll. G. van Hout.

**Thalamita auauensis** Rathbun

Snellius Expedition

2♂♂, 1♀, Bongao, Tawitawi, Sulu Is., dredged, 2 m, 9 Sept. 1929.

**Thalamita bouvieri** Nobili

Snellius Expedition

1♂, 1♀, 1 ovig. ♀, Kera near Timor, 11-13 Nov. 1929.

**Thalamita coeruleipes** Jacquinot

Snellius Expedition

3♀♀, Mamoedjoe, west coast of Celebes, reef and shore, 4-5 Aug. 1929.
1♂, Paleleh, Celebes, 22 Aug. 1929.
1♀, Kafal, Misool Group, northern Moluccas, shore and reef, 3-5 Oct. 1929.
11♂♂, 10♀♀ (including immature), Wotap, Tenimbar Is., 20-23 Oct. 1929.
3♂♂, 3♀♀, Kera near Timor, 15-16 Nov. 1929.
5♂♂, 5♀♀ (including immature), near Koepang, Timor, 18-20 Nov. 1929,
1♂, 1♀, Kera near Koepang, Timor, 22-23 Nov. 1929.
1♂, 1♀, Koepang, Timor, reef, 30 Nov. 1929.
9♂♂, 6♀♀, 2 ovig. ♀♀, Koepang, Timor, reef and shore, 5 Dec. 1929.
1♀, 1 ovig. ♀, Sapoeka Besar, Postiljon Is., Flores Sea, shore and reef, 21-23 Dec. 1929.
1♀, Koedingareng Lompo, Spermonde Archipelago, near Makassar, Celebes, shore, 3 Feb. 1930.
1♂, Pasih Ipah, near Soela Mangoli and Taliaboe, Soela Islands, shore, 19 March 1930.
3♂♂, 3♀♀, 1 juv., Obi latoe, Moluccas, reef and shore, 23-27 April 1930.
1♀, Morotai, northern Moluccas, 3-10 June 1930.
1♂, Amboina, southern Moluccas, 11-17 Sept. 1930.
1♀, Boo Is., N. W. New Guinea, 5 Oct. 1930.

Museum Leiden

1♂, 1♀, reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, from coral, Jan. 1955, coll. L. B. Holthuis.

If all specimens listed above have been correctly identified, there are perplexing differences in the size at which maturity is attained — as indicated by abdominal shapes. In the Snellius specimens from near Koepang, 18-20 Nov. 1929, there were immature females of larger dimensions than ovigerous females from other lots.

**Thalamita crenata** H. Milne Edwards

Snellius Expedition

2♂♂, 1 ovig. ♀, Maratoca, N. E. Borneo, reef, 14-18 Aug. 1929.
1♂, 1 ovig. ♀, island E. of Bongao, Tawitawi, Sulu Is., shore, 16 Sept. 1929.
7♂♂ (1 damaged), near Manoembai, Aroe Is., shore, 11 Oct. 1929*.
1♂ near Hainsisi, Semaoe, near Timor, shore, 27 Nov. 1929.

3♀♀, 1♂, Sapoeka Besar, Postiljon Is., Flores Sea, shore and reef, 21-23 Dec. 1929.
3♂♂, 2♀♀, Bima, Soembawa, shore, 25 Dec. 1929.
2♂♂, 1 ovig. ♀, Pankaja, Spermonde Archipelago, near Makassar, shore, 3 March 1930.
8♂♂, 5♀♀, 2 ovig. ♀♀, Taliaboe, Soela Is., E. of Celebes, shore, 18 March 1930.
1♂, 1 juv. (damaged), Amboina, southern Moluccas, shore, 21 April 1930.
2♂♂, 3♀♀, 3 ovig. ♀♀, Boela, Ceram, southern Moluccas, shore, 29 April 1930.
2♂♂, 3♀♀, 1 juv., 1 specimen (?♀, *Sacculina* infested), Haroekoe, southern Moluccas, shore and reef, 3-7 May 1930.
1♂, Flores, 18-19 Aug. 1930.
8♂♂, 6♀♀, 2 ovig. ♀♀, Kaledoepa, Toekang Besi Is., S. E. of Celebes, 27 Aug. 1930.
61 specimens, Amboina, 11-17 Sept. 1930.
1♀, Amboina, 14-17 Oct. 1939.

3 juv., from the collection indicated *, are referred to this species. They possess carinae on the outer surface of the chelipeds, and in this disagree with one of the diagnostic features of the species. However, they are the smallest specimens of this species seen by the author, and have carapace breadths ca. 1-1.5 mm. Specimens of this species and size are difficult to distinguish from *T. danae* as are small specimens of *T. prymna* (see later).

### **Thalamita danae** Stimpson (text-fig. 5 C)

Snellius Expedition

1 juv., near Sta. 32*, Makassar Strait, 4°24.5'S 118°47.5'E, dipnet at surface, with green algae, 2 Aug. 1929.
1 juv., Mamoedjoe, Celebes, shore, 4 Aug. 1929.
1♂, 1♀, 2 juvs., Mamoedjoe, west coast of Celebes, reef and shore, 4-5 Aug. 1929.
3♂♂, 1 ovig. ♀, 3 juvs., Maratoea, N. E. Borneo, 14-18 Aug. 1929.
2♂♂, 1♀, Paleleh, Celebes, shore, 22 Aug. 1929.
7♂♂, 3♀♀, 1 ovig. ♀, 7 juvs., Sipankot near Sibutu, Sulu Is., shore, 10-14 Sept. 1929.
5♂♂, 6♀♀, 1 ovig. ♀, 3 juvs., Kafal, Misool Group, northern Moluccas, shore and reef, 3-5 Oct. 1929.
1♂, 1♀, Dobo, Aroe Is., shore, 10 Oct. 1929.
5♂♂, 7♀♀, 2 juvs., near Manoembai, Aroe Is., shore, 11-14 Oct. 1929.
1♂, 1♀, 1 ovig. ♀, Wotap, Tenimber Is., shore and reef, 20-23 Oct. 1929.
1♂, 1♀, 2 juvs., Koepang, Timor, shore, 2 Nov. 1929.
1♂, 1 ovig. ♀, 1 juv., Kera near Timor, 11-16 Nov. 1929.
1 juv., Atapoepoe, Timor, 19 Nov. 1929.
3♂♂, 3♀♀, Kambang, near Timor, shore and reef, 26-28 Nov. 1929.
2♂♂ (1 immature), 5♀♀, near Koepang, reef, 8 Dec. 1929.
1 juv., near Koepang, Timor, reef, 9 Dec. 1929.
1♂, Bima, Soembawa, shore, 25 Dec. 1929.
1♂, Koedingareng Lompo, near Makassar, Celebes, shore, 3 Feb. 1930.
2♂♂, 2 ovig. ♀♀, Sarappo, Spermonde Archipelago, near Makassar, shore, 1 March 1930.
1♂, 2♀♀, 2 ovig. ♀♀, Pankaja, Spermonde Archipelago, near Makassar, 3 March 1930.
1♂, Lankadea, Spermonde Archipelago, near Makassar, shore, 3 March 1930.
1 juv., Batoe Ata, S. E. of Celebes, shore, 6 March 1930.
1♂, 1♀, Taliaboe, Soela Is., E. of Celebes, shore, 18 March 1930.

1 ♂, Pasih Ipah, Soela Is., near Soela Mangoli and Taliaboe, shore, 19 March 1930.
1 juv., Ternate, northern Moluccas, shore, 1-2 April 1930.
17 ♂♂, 11♀♀, 1 ovig. ♀, Haroekoe, shore and reef, 3-7 May 1930.
2 ♂♂, Amboina, shore and reef (swimming), 0-2 m, 6 May 1930.
3 ♂♂, 2♀♀, 3 juvs., Kaoe Bay, Halmahera, northern Moluccas, shore and reef, 28 May 1930.
1♀, 1 ovig. ♀, 1 juv., Morotai, 3-10 June 1930.
1 ♂, Beo, Karakelong, Talaud Is., shore and reef, 14-21 June 1930.
4 ♂♂, Flores, 18-19 Aug. 1930.
2 ♂♂, 1 ovig. ♀, Kaledoepa, Toekang Besi Is., 27 Aug. 1930.
1 ♂, small island in Lembeh Strait, near Menado, Celebes, 24-26 Sept. 1939.
1 ovig. ♀, Roemah Tiga, Amboina, 17 Oct. 1930.

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1 ♂, Alkmaar I., Bay of Batavia (= Djakarta), Java, 1906, coll. P. Buitendijk.
1 ♂, Java Sea, coll. P. Buitendijk (no date).
1 ♂, near Seroei-Laut, W. of Seroei, Japen I., Ned. New Guinea, 25 Feb. 1955, coll. L. B. Holthuis.
1♀, Bamburi Beach, 7 miles N. of Mombasa, Kenya, 0-1 m, 19-26 Nov. 1969, coll. L. B. Holthuis.

### **Thalamita demani** Nobili

Museum Leiden

1 ♂, 1 ovig. ♀, Tiwi beach, 10 miles S. of Mombasa, Kenya, 0-0.5 m, 25 Nov. 1969, coll. L. B. Holthuis.

This species is most difficult to distinguish from *T. woodmasoni* Alcock, unless males are present; two lots comprising only females are suspected to belong to *T. demani* but are not reported upon because of this uncertainty. The male first pleopod of *T. demani*, is stouter than that of *T. woodmasoni* but otherwise is very similar.

### **Thalamita foresti** Crosnier (text-fig. 5 B)

Snellius Expedition

2 ♂♂, 1♀, Pasih Ipah, Soela Is., near Soela Mangoli and Taliaboe, shore, 19 March 1930.
1 ♂, Haroekoe, S. Moluccas, shore and reef, 3-7 May 1930.
1 ♂, Morotai, northern Moluccas, 3-10 June 1930.
1 ♂, Ende, Flores, 6-8 Nov. 1930.

### **Thalamita gracilipes** (A. Milne Edwards)

Museum Leiden

1 ♂, 1♀, reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, March 1955, coll. L. B. Holthuis.

### **Thalamita granosimana** Borradaile

Museum Leiden

1 ♂, 9 juvs., reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, from coral, Jan 1955, coll. L. B. Holthuis.

## **Thalamita holthuisi** nov. spec. (pl. 2; text-figs. 3A, B, C, 4A, D, E, F, 5A)

*Thalamita danae* form B Stephenson & Rees, 1967: 70-74, fig. 25b, c, fig. 26c; Stephenson, 1972a: 145-148.

### Snellius Expedition

Holotype ♂ (30.5 mm), Taliaboe, Soela Is., shore, 18 March 1930.
2♂♂ (11.5, 39 mm), 1♀ (ca. 42.5 mm, damaged), 1 unsexed (ca. 15 mm, damaged), Kera near Timor, 15-16 Nov. 1929.
1♂ (34 mm), 1♀ (41.5 mm), Morotai, 3-10 June 1930.
3♂♂ (27.5, 44, 46.5 mm), 2♀♀ (25, 37 mm), locality unknown.

### Museum Leiden

1♂ (35 mm) Owi Is., Ned. New Guinea, 6 April 1952, leg. W. J. Roosdorp.

Two males originally described as *Thalamita danae* form B by Stephenson & Rees (1967) are contained in the U. S. National Museum, Smithsonian Institution. The form was only distinguishable in males, and the material

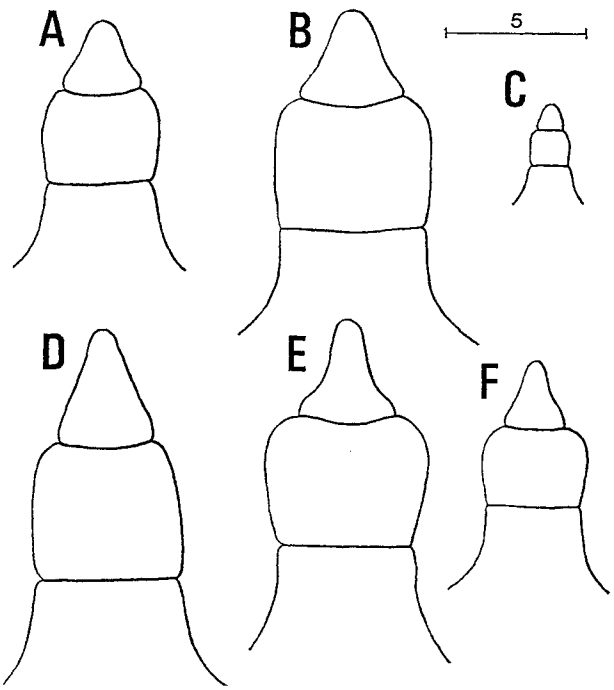


Fig. 3. Male abdomens. A, B, C, *Thalamita holthuisi* nov. spec., A, holotype; B, large ♂ from Kera; C, small ♂ from Kera. D, *T. danae* Stimpson, redrawn from Stephenson & Rees (1967, fig. 26); E, *T. foresti* Crosnier, redrawn from above; F. *T. foresti* Crosnier, redrawn from Crosnier (1962, fig. 223). Scale line in mm units approximate for D, E, F.

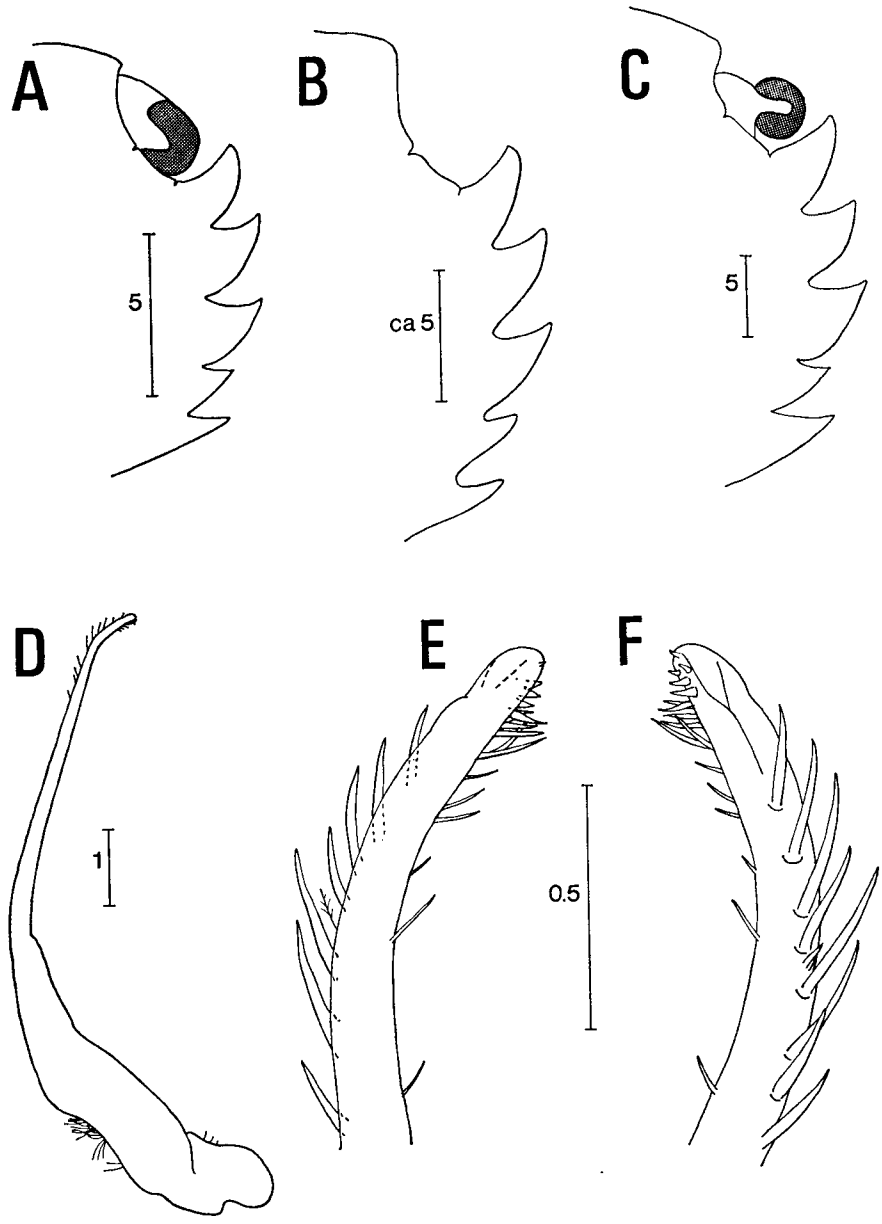


Fig. 4. A-C, anterolateral teeth. A, *Thalamita holthuisi* nov. spec., holotype; B, *T. foresti* Crosnier, after Crosnier; C, *T. danae* Stimpson, nr Yamba, N. S. Wales, Aust. Mus. Reg. No. P 11357. D-F, left male first pleopod, *T. holthuisi* nov. spec., holotype. D, ventral view; E, ventral view tip; F, dorsal view tip. Scale lines in mm units, approximate in B.

was not readily available for reloan. Hence the present species is described from Snellius and Leiden Museum specimens; it is named in honour of Dr. L. B. Holthuis of that Museum.

The decision to raise the status of the "form" to that of a species was a difficult one. Stephenson & Rees (1967: 2) stated with respect to portunid crabs that the concept of a species implies a distinct morphological gap in general facies, as well as in the shape of the male abdomens and structure of the male pleopods, and continued: "If no distinctions were noted in general facies, groups with different pleopods are here recorded as different 'form'. Possibly they are incipient species".

The gap in general facies between *T. danae* and *T. holthuisi* is a narrow one, and the status of *T. foresti* Crosnier is relevant to the situation. Crosnier (1962) described this species as being separable from the very similar *T. danae* on the basis of male pleopods and abdomens which were noticeably different, and on basal antennal joints and fronts which were slightly different. Exactly the same situation applies to the distinctions between *T. holthuisi* and *T. danae,* but with the added complication that two of the distinctions (front and male abdomen) tend to bridge the gap between *T. foresti* and *T. danae.* This is amplified in the Discussion below.

If *T. holthuisi* remained as a form of *T. danae,* then it seemed that *T. foresti* should become another form of *T. danae.* The more acceptable solution is to recognise the present species with the awareness that morphological gaps in general facies have become minimal.

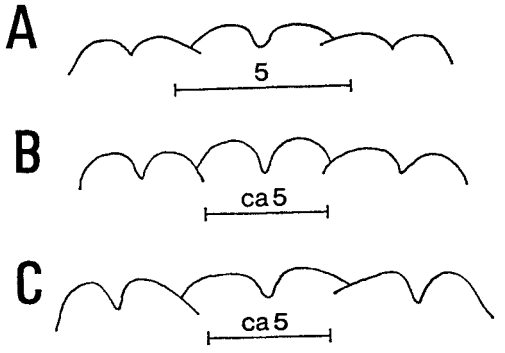


Fig. 5. A-F, front. A, *Thalamita holthuisi* nov. spec., holotype; B, *T. foresti* Crosnier, after Crosnier. C, *T. danae* Stimpson after Crosnier. Scale lines in mm units, approximate in B, C.

Description. — Front six-lobed, median notch deep and wide, median lobes moderately rounded and protruding, submedian lobes slightly truncate with moderately inclined inner margins, lateral lobes rounded and less broad than others. Inner orbital lobes broad and slightly curved.

Anterolateral teeth five, 1-3 large and stout with 1 largest, 4 and 5 smaller, thinner with sharper tips and of equal size.

Carapace, apart from ridges, covered with fine pile of short hairs. Usual ridges present, frontals short, curved and very prominent, protogastrics an irregular line of coarse granules, mesogastrics with a posterior dip in centre but no break, epibranchials interrupted at cervical groove but not medianly, one pair of barely recognisable mesobranchials.

Basal antennal joint wider than major diameter of orbit, bearing sharp curved ridge with slightly irregular row of ca. 15-18 beaded granules. Between ridge and otocyst ca. 8 large rounded granules.

Third maxilliped with merus sparsely hirsute and with numerous small but obvious rounded granules. (In *T. danae* densely hirsute without obvious granules).

Chelipeds. Right larger than left, hairy and granular on all but under surface. Anterior border of arm with 3 usual spines. Wrist with inner and 3 outer spines. Upper surface of hand with 2 granular carinae each bearing 2 spines, outer distal spine often reduced to tubercle; outer surface with 3 carinae with large granules in rows on either side of upper one; inner surface with indistinct central carina again with rows of large granules on either side; under surface smooth but with hint of squamiform markings particularly near inner side.

Fifth leg with ca. 12 spines on posterior border of propodus.

Male abdomen. — Ultimate segment approximately equilateral triangle with margins slightly concave, penultimate segment broader than long, slightly swollen distally. (Small males differ, see fig. 3c).

Male first pleopod elongate, thin, gradually tapering and distinctly curved behind tip. Subterminally on outer side and extending to under side ca. 7 short stout bristles, behind these ca. 6-12 elongate, forwardly directed bristles. Inner side with ca. 10-15 stout, elongate, forwardly directed spines forming an extended row.

Discussion. — As indicated earlier, apart from male first pleopods and male abdomens the features which separate *T. holthuisi, T. foresti* and *T. danae* are few and inconspicuous. It is probable that not all of these can be documented at this stage; this would require an extensive series of each species and particularly of the somewhat variable *T. danae*.

The most conspicuous general diagnostic feature in material at hand

during description was the width and depth of the median frontal notch in *T. holthuisi*. However, Crosnier (1962) has figured a specimen of *T. danae* (here redrawn as fig. 5c) in which the difference is barely detectable. Further regarding the front, in *T. foresti* the frontal lobes as a whole are rounded with the internal border of the submedian lobes very slightly inclined, in *T. danae* the lobes are generally more square-cut and the internal border of the submedian lobes is markedly inclined, in *T. holthuisi* conditions are intermediate in both respects. As regards basal antennal joint, in *T. foresti* there is a more conspicuous crest with sharper granules than in *T. danae,* while in *T. holthuisi* the crest is curved, slightly less conspicuous and with smaller and more numerous granules.

**Thalamita integra** Dana

Snellius Expedition

1♀, 1 ovig. ♀, Maratoea, 14-18 Aug. 1929.
1 ovig. ♀, near Manoembai, Aroe Is., shore, 11-14 Oct. 1929.
2♂♂, Sapoeka besar, Postiljon Is., Flores Sea, shore and reef, 21-23 Dec. 1929.
1♂, Koedingareng Lompo, Spermonde Archipelago, near Makassar, Celebes, shore, 3 Feb. 1930.
1♂, 1♀, Morotai, northern Moluccas, 3-10 June 1930.
3♂♂, 1♀, Kaledoepa, Toekang Besi Is., S.E. of Celebes, 27 Aug. 1930.

Museum Leiden

1♂, 1♀, 1 mile W. of Sowek, Soepiori I., Ned. New Guinea, 6 March 1956, Exped. Natural Science Foundn.
2♂♂, ½ mile from Woendi I., Padaido Group, Ned. Guinea, 1-13 m, Exped. Natural Science Foundn.
1♂, 1♀, ½ mile E. of Oerif I., Mios Woendi Lagoon, Padaido Is., Ned. New Guinea, 7-10 m, 1956, Exped. Natural Science Foundn.

**Thalamita koepangensis** nov. spec. (pl. 3 fig. 1; text-figs. 6 A-C)

Snellius Expedition

Holotype ♂ (7 mm), Koepang, Timor, dredged 10-15 m, 2 Dec. 1929.

Description. — Front bilobed, median notch distinct, lobes somewhat projecting, inclined and with sinuous margins. Inner orbital lobes short, about 1/3 width of orbital lobes.

Anterolateral teeth five. First largest and stoutest, fourth the smallest, and fifth sharpest and most protruding.

Carapace broader than long (1.4 times). With posterior half bearing conspicuous elevated granular areas to give embossed appearance, general surface sparsely granular and with occasional long hairs. Frontal areas

elevated bearing granules, but not forming ridges. Short, widely separated protogastric ridges, mesogastrics with distinct median gap, sinuous and elevated. Epigastrics curved, distinct and elevated. Two separate and elevated metagastrics. One pair of mesobranchial ridges lying posteriorly, with anterior mesobranchial areas swollen and granular. Cardiac regions markedly elevated, almost forming granular tubercles, these bounded anteriorly by ridges. Mesobranchials and cardiacs in line.

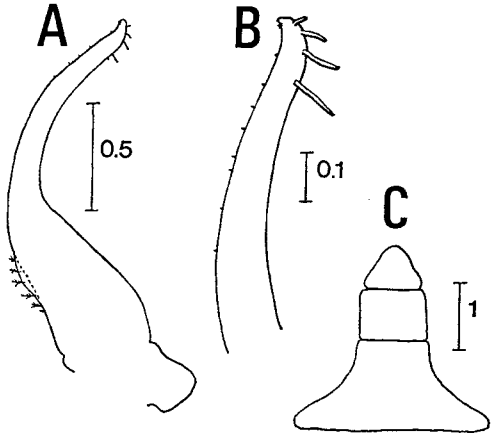


Fig. 6. *Thalamita koepangensis* nov. spec., holotype. A, B, male first pleopod (left), ventral view; C, male abdomen. Scale lines in mm.

Basal antennal joint much shorter than orbit, with minutely granular crest.

Chelipeds. — Right stouter than left, granular, but without squamiform markings. Anterior border of arm with 1 (right) or 2 (left) spines. Wrist with usual spines, these short and robust. Upper surface of hand with 2 granular carinae, each bearing a tubercle on distal third and a terminal tubercle; outer surface with indistinct central carina, and distinct lower carina; inner surface without carinae. Fingers short and stout.

Fifth leg with merus a little more than twice as long as broad. Propodus with 1 (left) to 3 (right) inconspicuous spines on proximal portion of posterior surface.

Male first pleopod curved, with curved (but not recurved) tip. Basal lobes with a few short hairs (some bipinnate), thin, no ornamentation until near tip. Inner surface near tip with minute spines, these widely spaced except for cluster of 3 just behind tip. Outer surface near tip with 4 stout backwardly directed spines, decreasing in length distally.

Male abdomen broad. Penultimate segment an oblong about 1.4 times broader than long. Ultimate segment much broader than long (about 1.3 times).

Discussion. — In Stephenson's (1972b) key this species comes out with *T. iranica* Stephensen, but it differs from this species in many particulars including shape of the front, having relatively shorter protogastric, mesobranchial and cardiac ridges on the carapace, fewer spines on the anterior border of the arm of the cheliped, and a markedly different male first pleopod. It has resemblances to *T. parvidens* as regards front and carapace shape, and has also some resemblances in ridging of the carapace. There are marked differences in male abdomen as well as male pleopods. There are also resemblances to *T. granosimana* in front, anterolateral teeth and carapace ridges. However, the male abdomen is distinctly different as are the details of the male first pleopod. In *T. granosimana* the tip is flared and bristles are more numerous.

### **Thalamita mitsiensis** Crosnier

Snellius Expedition

1 ♂, Bongao, Tawitawi, Sulu Is., 27 m, 9 Sept. 1929, dredged.
1 ♀, Koepang, shore and reef, 5 Dec. 1929.

Museum Leiden

1 ♀, Wamsoi Lagoon, ½ mile E. of Wamsoi I., Padaido Group, Ned. New Guinea, 14 m, 2 Feb. 1956, dredged, on large block of coral, Sta. 495, Exped. Natural Science Foundn.

### **Thalamita parvidens** (Rathbun)

Museum Leiden

1 ♂, May 1922; 1 ♂, Oct. 1923; 1 ♂, March 1924, Poeloe Weh, N. Sumatra, coll. P. Buitendijk.

### **Thalamita picta** Stimpson

Snellius Expedition

1 ♀, Sipankot, near Sibutu, Sulu Is., shore, 10-14 Sept. 1929.
1 ♂, 2 ♀♀, 1 ovig. ♀, 1 juv., Sissie, near Misool, northern Moluccas, shore and reef, 6 Oct. 1929.
1 ♂, Kera, near Koepang, Timor, 22-23 Nov. 1929.
2 ♂♂, 4 ♀♀, 1 ovig. ♀, Pelokan, Postiljon Is., Flores Sea, shore and reef, 20 Dec. 1929.
1 ♂, 1 ♀, 2 ovig. ♀♀, Beo, Karakelong, Talaud Is., shore and reef, 14-21 June 1930.
2 ♂♂, 3 ♀♀, Amboina, southern Moluccas, 11-17 Sept. 1930.
1 ♀ (immature), Ternate, northern Moluccas, 29 Sept. 1930.
1 ♀, 3 ovig. ♀♀, Endeh, Flores, 6-8 Nov. 1930.

Museum Leiden

1♀ (immature), beach near Base G, N. of Hollandia, Ned. New Guinea, 12 Nov. 1954, coll. L. B. Holthuis.

1 ovig. ♀, reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, March 1955.

1♂, off Atjeh (= Atchin), N. Sumatra, coll. K. J. van Rhijn (undated).

**Thalamita platypenis** nov. spec. (pl. 3 fig. 2; text-fig. 7A-H)

U. S. National Museum

Holotype ♂ (10 mm), Iloilo, Panay I., Philippines, April and May 1929, coll. H. C. Kellers, U. S. Navy, USNM Reg. No. 73177 (part), previously identified by M. J. Rathbun as *Thalamonyx arcuata* (de Haan).

Paratypes, data as above, 3♂♂ (7.5-10 mm), 13♀♀ (11-14.5 mm).

Description. — Front 2-lobed, not very protruding, usually with each lobe with lateral indentation, this sometimes approaching 4 lobed condition. Median notch shallow to very shallow. (Left side of front with injury distortion in 2 males). Inner orbital lobes short and curved.

Anterolateral teeth 5, 1 largest and stoutest, 2 and 3 stout and subequal, 4 stout and smallest, 5 thinnest, sharpest and most protruding.

Carapace broad (b/l= ca. 1.6), with sparse covering of short hairs, and few of usual ridges present. No frontal ridges instead raised areas, no protogastrics, mesobranchials or cardiacs. Mesogastrics sinuous, interrupted at mid line. Epibranchials almost continuous, with slight interruption at cervical grooves and obscurity at mid line.

Basal antennal joint short, much shorter than major diameter of orbit, with acute microscopically granular crest.

Chelipeds slender, finely granular, weakly carinate, right usually stronger than left. Anterior border of arm with either single spine and more proximally a tubercle, or with 2 spines (right cheliped of holotype with distal spine bifid). Inner spine of wrist present, outer spines reduced to tubercles. Upper surface of hand with outer and inner carinae, sometimes each bears a small spine two-thirds along length, sometimes inner spine reduced to tubercle, sometimes both so reduced, sometimes not even tubercles detectable; outer surface with three granular carinae in most females, but these not detectable in males; inner surface with indistinct granular carinae in females. Fingers slender, and elongate, particularly in males, bearing numerous small teeth.

Fifth leg. Posterior border of propodus without spinules.

Male abdomen of astonishing breadth, that expectable from juvenile female. Ultimate segment broader than long and deeply indented into penultimate. Penultimate segment with markedly convex borders, breadth at least twice length in mid line.

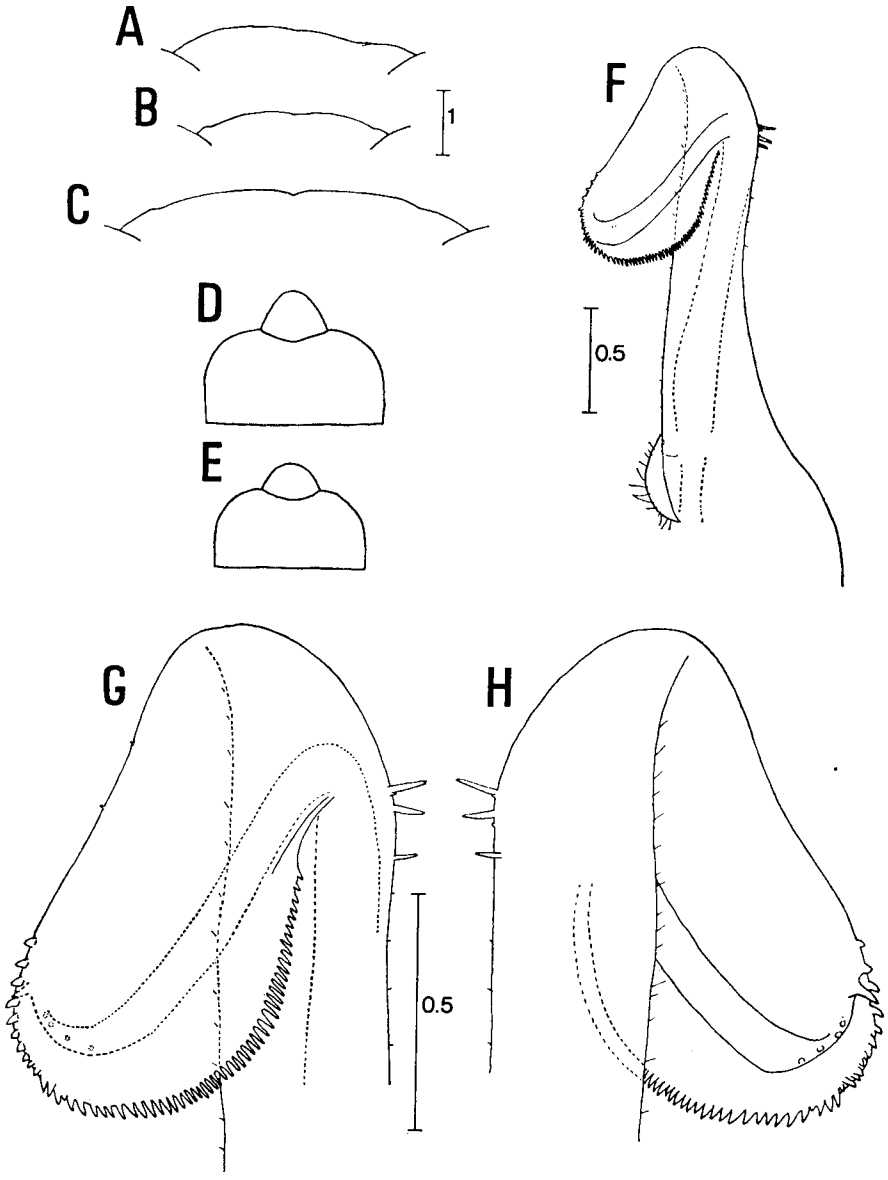


Fig. 7. *Thalamita platypenis* nov. spec. A-C, front. A, holotype; B, ♂ (7.5 mm); C, ♀ (14.5 mm). D, E, male abdomen. D, holotype; E, 7.5 mm specimen. F-H, left first pleopod of male, holotype. F, low power; G, high power upper side; H, high power lower side. Scale lines in mm, line near B refers to A-E.

Male pleopod short, broad, flat, with flattened tip folded backwards and towards centre. Edge of tip bearing continuous row of short spines giving semblance of edge of circular saw. Subterminal, non-folded portion of appendage with ca. 3 stout spiniform bristles on outer side and spaced row of thin bristles on inner side.

Discussion. — This species is unique in the female-like proportions of the male abdomen and in the structure of the male pleopod.

If the front is taken as bilobed, it comes out in Stephenson's (1972b) key at 53(50) with *T. parvidens* and *T. chaptalii*, neither of which it resembles at all closely. If the front is taken as 4-lobed, it keys out as *T. taprobanica* Alcock. From this species, whose male abdomen and male pleopods have not been described, it differs in form of front, fourth anterolateral teeth, carapace ridges, merus of fifth leg, etc.

It is possibly unique in that the chelipeds of the females are more carinate and with more robust fingers than in males.

### **Thalamita poissonii** (Audouin)

Museum Leiden

1 ♂, 1 specimen (damaged, probably ♀), Djeddah (= Jidda), Arabia, Red Sea, 1880, coll. J. E. Kruyt.

### **Thalamita prymna** (Herbst)

Snellius Expedition

1♀, 1 juv., Mamoedjoe, Celebes, shore and reef, 4-5 Aug. 1929.
1 ♂ (immature), Palelch, Celebes, shore, 22 Aug. 1929.
1 ♂ (immature), Tidore, northern Moluccas, shore, 24-29 Sept. 1929.
1 juv., Ternate, northern Moluccas, 0-1 m, dipnet, 25-27 Sept. 1929.
1 ♂, 1♀, 2 juvs., Kafal, Misool Group, northern Moluccas, shore and reef, 3-5 Oct. 1929*.
1 ♂, 1♀, Waaf, Misool Group, shore, 5 Oct. 1929.
1 juv., Sissie, Misool Group, shore and reef, 6 Oct. 1929.
3 ♂ ♂, 1♀, 2 ovig. ♀♀, 3 juvs., Wotap, Tenimber Is., shore and reef, 20-23 Oct. 1929.
1♀, 2 juvs., near Koepang, Timor, 10-20 Nov. 1929*.
1 ♂, Kera, near Timor, 11-16 Nov. 1929.
1 ♂, 1♀, Kera, near Timor, 15-16 Nov. 1929.
1♀ (immature), Koepang, 22-23 Nov. 1929.
2 ♂ ♂, 2♀♀, Koepang, reef, 30 Nov. 1929.
1 ♂, 1♀, 2 juvs., Timor, near Koepang, shore and reef, 3 Dec. 1929.
2 ♂ ♂, 2♀♀ (1 immature), 4 juvs., Koepang, shore and reef, 5 Dec. 1929.
1 juv., near Koepang, reef, 8 Dec. 1929.
2 juvs. (1 damaged), Koepang, reef, 9 Dec. 1929.
2♀♀, Gonto Soea, Spermonde Archipelago, near Makassar, Celebes, shore, 1 March 1930.
1♀, Obi latoe, Moluccas, shore and reef, 23-27 April 1930.

1 juv., Karaton, Nenoesa Is., S. E. of Mindanao, shore, 20 May 1930.
1 ♂, 1 ♀, 1 ovig. ♀, 1 juv., Morotai, northern Moluccas, 3-10 June 1930.
3 ♂ ♂, 1 ♀, 5 juvs., Beo, Karakelong, Talaud Is., shore and reef, 14-21 June 1930*.
1 ♂ (immature), Kaledoepa, Toekang Besi Is., S. E. of Celebes, 27 Aug. 1930.
1 ♂, Amboina, southern Moluccas, 11-17 Sept. 1930.

Museum Leiden

2 ♀♀, W. Java, 1894, coll. J. F. van Bemmelen.
1 juv., reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, March 1955, coll. L. B. Holthuis.

In the Snellius collections marked * the smaller juveniles, with carapace breadths less than 19 mm, have basal antennal joints with a row of granules rather than spines. In this they resemble *T. danae*. Small juveniles from other collections are more typical.

### **Thalamita quadrilobata** Miers

Snellius Expedition

2 ♂ ♂, Wotap, Tenimber Is., shore and reef, 20-23 Oct. 1929.
1 ovig. ♀, Kera near Timor, 11-13 Nov. 1929.

Museum Leiden

1 ♀, Ambai I., south coast of Japen I., east of Seroei, Geelvink Bay, Ned. New Guinea, 1956, 1.5 m, sand, Sta. No. 529, Exped. Natural Science Foundn.

### **Thalamita sexlobata** Miers

Museum Leiden

1 ♂, 1 mile E. of Dauwi, Wamsoi Lagoon, Padaido Group, 60-100 m, 4 Feb. 1956, Ned. Guinea, Sta. 490, Exped. Natural Science Foundn.

### **Thalamita sima** H. Milne Edwards

Snellius Expedition

1 ♂ (immature), near Koepang, Timor, small dredge, 10-15 m, 2 Dec. 1929.

Museum Leiden

2 ♂ ♂, Poeloe Weh, N. Sumatra, March 1924, coll. P. Buitendijk.

### **Thalamita spinimana** Dana

Snellius Expedition

1 ♀, Maratoca, N. E. Borneo, reef, 14-18 Aug. 1929.

### **Thalamita spinimera** Stephenson & Rees

Snellius Expedition

1 ♀, Obi latoe, Moluccas, shore and reef, 23-27 April 1930.

This is only the third known specimen of this species.

**Thalamita stephensoni** Crosnier

Snellius Expedition

1 ♂, Mamoedjoe, Celebes, reef and shore, 4-5 Aug. 1929.
1 ♂, Paleleh, Celebes, shore, 22 Aug. 1929.
10 ♂♂, 9♀♀, 5 ovig. ♀, 1 damaged (unsexable), Sissie, Misool Group, northern Moluccas, 6 Oct. 1929.
1 ♂, Beo, Karakelong, Talaud Is., shore and reef, 14-21 June 1930.

Museum Leiden

6 ♂♂, 3♀♀, 4 juvs., beach near Base G, N. of Hollandia, Ned. New Guinea, 12 Nov. 1954, coll. L. B. Holthuis.
12 ♂♂, 6♀♀, 1 juv., reef near Base G, N. of Hollandia, Ned. New Guinea, 27 Nov. 1954, coll. L. B. Holthuis.
7 ♂♂, 6♀♀, 6 ovig. ♀♀, 1 juv., reef in front of Navy Base, W. of Sorido, Biak I., from coral, Jan. 1955, coll. L. B. Holthuis.
3 ♂♂, 3 ovig. ♀♀, 1 sex uncertain (*Sacculina* infested, *Sacculina* No. 1328 taken by Dr. H. Boschma), reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, Feb. 1955, coll. L. B. Holthuis.
1 ovig. ♀, Kaipoer Village, Koeroedo I., Geelvink Bay, Ned. New Guinea, 19 Feb. 1956, 7-8 m, black silt and sand, Exped. Natural Science Foundn.

**Thalamita woodmasoni** Alcock

Museum Leiden

1 ♂, reef near Navy Base, W. of Sorido, Biak I., Ned. New Guinea, 6 Dec. 1954, coll. L. B. Holthuis.
2 ♂♂, data as above, Feb. 1955, coll. L. B. Holthuis.

See comments under *T. demani*.

**Thalamitoides quadridens** A. Milne Edwards

Snellius Expedition

1 ♂, 1 juv., Kera, near Timor, 11-13 Nov. 1929.
2 ♂♂, 1♀, near Koepang, Timor, 18-20 Nov. 1929.
1 ♂, Koepang, Timor, reef, and shore, 5 Dec. 1929.
1 ♂, 1♀, Obi latoe, shore and reef, 23-27 April 1930

Museum Leiden

1♀, Tomberua, Viti-Levu, Fiji, 18 March 1949, coll. H. Boschma.

**Thalamitoides tridens** A. Milne Edwards

Snellius Expedition

1 ♂, Kera, near Timor, 11-13 Nov. 1929.

Museum Leiden

3 ♂♂, 1♀, 1 ovig. ♀, 1 juv., reef in front of Navy Base, W. of Sorido, Biak I., Ned. New Guinea, Jan. 1955, coll. L. B. Holthuis.
3 ♂♂, 5♀♀, 1 ovig. ♀, data as above, Feb. 1955.
1♀, 1 mile W. of Sowek, Soepiori I., Ned. New Guinea, 6 March 1956, Sta. 576, Exped. Natural Science Foundn.

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Deze uitgave werd mede mogelijk gemaakt door een bijdrage uit het Zoölogisch Insulindefonds.


Fig. 1. *Portunus suborbicularis* nov. spec., holotype.


Fig. 2. *Portunus granulatus* (H. Milne Edwards), Aust. Mus. Reg. No. P 2787.

*Thalamita holthuisi* nov. spec., holotype.

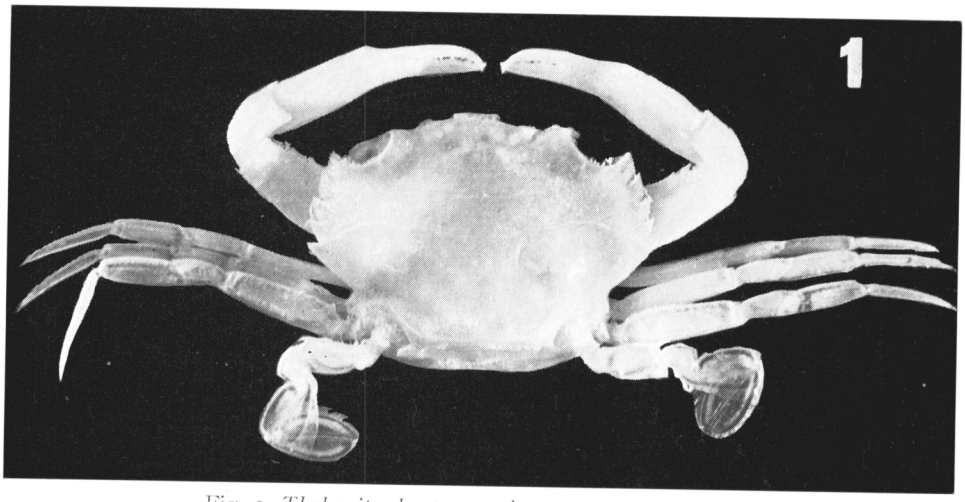


Fig. 1. *Thalamita koepangensis* nov. spec., holotype

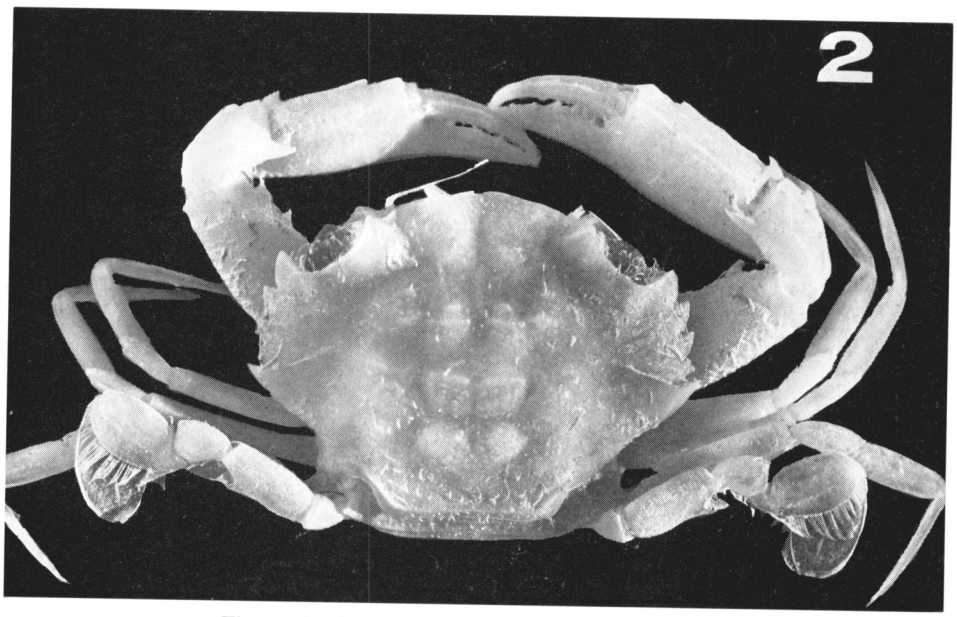


Fig. 2. *Thalamita platypenis* nov. spec., holotype.