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Portunid crabs from the Indo-West-Pacific and Western America in the Zoological Museum, Copenhagen (Decapoda, Brachyura, Portunidae)

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Abstract. 100 species and subspecies are reported from the Indo-West-Pacific and 11 species and subspecies from Western America. Descriptions are given of *Carcinonectes* gen.n., *C. pacificus* sp.n., from S of New Caledonia, and *Portunus trilobatus* sp.n., from Malaysian and Philippine areas. *Thalamita stimpsoni* A. Milne Edwards, 1861, is shown to be the same as *T. danae* Stimpson, 1858, *syn.nov.*

The material on which this report is based comprises extensive collections by both expeditions and individuals (M. Lemche, J. G. Nielsen, G. Thorsen and T. Wolff). Major expeditions include: Dr. Th. Mortensen's Pacific Exp. 1913-1916, Danish Kei Is. Exp. 1922 (Mortensen, 1923), the Dana Exp. 1928-1930 (Schmidt, 1934), Dr. Th. Mortensen's Java-South Africa Exp. 1929-1930, Galathea Exp. 1950-1952 (Bruun, 1958, Wolff, 1964), Noona Dan Exp. 1961-1962 (Wolff, 1966), and 5th Thai-Danish Expedition 1966. Most, but not all, of these collections were examined, some have been reported upon by other workers (e.g. Dell, Griffin and Yaldwyn, 1970).

Only material from the two biogeographical areas indicated in the title has been examined as appropriate to the areas of past work by the author. Because the faunas of these areas are distinct, the areas are treated separately below. Within the areas species are arranged in subfamilies following Stephenson and Campbell (1960) with the modification suggested by Holthuis (1968). Within subfamilies genera are in alphabetical order, and within genera species are also alphabetical.

Dimensions given are carapace breadths in millimetres, to the nearest 0.5 mm. These have only been included for new or relatively rare material.

Editorial policy has required exclusion of references to original and to recent descriptions. With one exception synonymies are also excluded. For Indo-West-Pacific species these data will be published in a Check-list currently in press (Stephenson, 1972), while for Western American species, they are contained in Garth and Stephenson (1966).

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I. INDO-WEST-PACIFIC MATERIAL

This comprehensive collection contains 100 identifiable species and subspecies, among them one new genus and species and one new species, Notes are given upon a further 19 species.

CARCININAE Alcock

Carcinonectes gen.n.

Diagnosis. Carapace longer than wide, with regions ill-defined. Anterolateral borders and front form a curve of short radius. Front protruding, with a median lobe (not notch) and two lateral lobes. Last anterolateral tooth lying well anterior to centre of carapace. Postlateral borders of carapace relatively long. Postlateral junctions of carapace pointed. Four more or less subequal anterolateral teeth. Basal antennal joint freely movable and very narrow, filling only about $\frac{3}{4}$ of the orbital hiatus. Third maxilliped elongate, ischium hollowed on outer surface. Chelipeds relatively short, but robust. Fifth leg partially modified for swimming, with flattened propodus and flattened lanceolate dactyl. Merus of fifth leg very long (length about 4 times breadth).

In addition in the present specimen the carapace and chelipeds are finely granular, and the ischium and merus of the third maxilliped are not hirsute.

Type species: *Carcinonectes pacificus* sp.n.

Remarks. A female specimen with details given below, was originally thought to belong to *Nectocarcinus* A. Milne Edwards. Through the kindness of Drs. J. C. Yaldwyn and D. J. G. Griffin, specimens of all the Australian, New Zealand and Auckland Isl. species of *Nectocarcinus* have been examined. The present specimen differs appreciably from all species of *Nectocarcinus* and merits the creation of a new genus.

Dell, Griffin and Yaldwyn (1970:50–52) defined *Nectocarcinus* as follows:—“Carcinines with carapace somewhat wider than long and with regions well defined. Anterolateral borders and front form a regular curve of short radius; front protruding, either entire or subdivided into lobes. Four more or less subequal anterolateral teeth. Basal antennal article fixed or *free*, not broader than long. Third maxilliped elongate, ischium hollowed on outer surface. Chelipeds relatively short, but robust. Fifth leg *modified for swimming*, but degree of modification varying interspecifically and ranging from slight, with lanceolate dactyl, *to complete with lamellate dactyl*. (Additional or modified generic features in italics)”.

To distinguish *Nectocarcinus* from *Carcinectes* the following should be added to the above definition of *Nectocarcinus*:— Front basically either two or four-lobed, usually with median notch. Last anterolateral tooth in line with approximately the centre of the carapace. Posterolateral borders of carapace relatively short. Postlateral junctions of carapace rounded. Basal antennal joint either fixed or capable of slight movement, and entirely or almost the width of the orbital hiatus. Merus of fifth leg at most reasonably long (length up to $2\frac{1}{2}$ times breadth).

In addition in all the described species of *Nectocarcinus* the carapace and chelipeds are coarsely granular, and the ischium and merus of the third maxillipeds are hirsute.

Carcinectes pacificus sp.n. Fig. 3

Holotype. 1 ♀, 51 mm, S of New Caledonia, $22^{\circ}30'5''S$, $166^{\circ}26'5''E$, 29.xi. 1928, 0930 hr, Monaco trawl, (Dana St. 3615). — In Zoological Museum, Copenhagen.

Description. Front — Trilobed with three lobes equally protruding. Outer lobes broader and more rounded than median which has slightly concave anterior surface.

Anterolateral teeth — Four. First broad, blunt and much the largest. Second slightly larger than third, both bluntly tipped. Conspicuous groove runs posteromedianly from third tooth. Fourth tooth protruding, sharp, lying well anterior to centre of carapace (about $\frac{1}{3}$ of carapace length from front).

Carapace — Long, length 1.1 times breadth, regions ill-defined, without granular ridges, posterolateral borders elongate, postlateral junction pointed.

Without hairs and bearing small granules throughout, these are coarsest on gastric region becoming finer in frontal region and very fine near posterior margin. Ill-defined tubercle in each mesogastric region, tubercles lying far apart. Cervical groove well marked in cardiac region. At its anterior border continuing laterally as a series of interconnected pits, which mark the diversion between elevated anterior branchial and depressed posterior branchial regions, these regions continuing distinctly to posterolateral borders. Two oblique grooves in metagastric region, running outwards shallow depressions lead to anterolateral borders. Three subcircular smooth areas (free of granules) lie on this groove and fourth smaller area lies behind it.

Basal antennal joint — Narrow (barely $\frac{3}{4}$ width of orbital hiatus) very freely moveable, and distally with spine on outer side.

Chelipeds — Right slightly larger than left. Relatively short, robust, smooth and swollen. Arm short, curved and without spines. Wrist inflated and smooth with sharp robust spine on inner side. Hand inflated, smooth, with a single rounded carina separating upper from inner surfaces; carina of left cheliped terminating in a tubercle, otherwise no tubercle on hand. Immobile finger with sinuous lower border; both fingers short and robust with blunt teeth.

Walking legs — Very elongate, all longer than chelipeds and with thin pointed dactyls.

Fifth leg — Elongate; merus about four times as long as broad and carpus

more than twice as long as broad. Propodus flattened. Dactyl flattened, lanceolate, and with pointed tip.

CATOPTRINAE Borradaile

Carupa tenuipes Dana

Material. 2 ♂, 9–10 mm, Honolulu.

Distribution. Madagascar to Hawaii including Japan and Australia.

Libystes edwardsi Alcock

Material. 1 ♀, 5 mm, Gulf of Siam, 35 m, (Galathea St.381).

Distribution. Iranian Gulf, Andamans, Java Sea and China Sea; now Gulf of Siam.

POLYBIINAE Ortmann

Macropipus corrugatus (Pennant)

Material. 1 ♀, 9 mm, SE of Kyushu, 180 m. 1 ♂, 15 mm, Misaka, Sagami Bay, ca. 50 m.

Distribution. Primarily N.Atlantic; Japan and S.Australia.

Ovalipes australiensis Stephenson and Rees

Material. 10 juv., Port Jackson, N.S.Wales, 6–10 m.

Distribution. Southern half of Australia.

Ovalipes iridescens (Miers)

Material. 30 ♂, 2 ♀, off Bonomisaki, Kyushu, 270–440 m. 5 ♂, 2 ♀, 1 juv., Kei Is., 230–350 m, (Kei Is.Exp.Sts.8,50,51,58).

Distribution. S.Africa, Japan, Indonesia, Victoria, Australia.

Ovalipes punctatus (de Haan)

Material. 1 ♂, 2 ♀, Nagasaki.

Distribution. Japan and China.

Parathranites orientalis Miers

Material. 2 ♀, 1 juv., Mauritius, ca. 260 and ca. 400 m. 1 ♀, SE of Kyushu, 180 m. 1 ♂, 1 juv., Kei Is., 90–250 m, (Kei Is.Exp.Sts.2,5).

Distribution. Madagascar, Seychelles, India, Andamans, Kei Is., Japan, Admiralty Is., E.Australia, Solomon Bank.

CAPHYRINAE Alcock

Caphyra fulva Stephenson and Campbell

Material. 1 ♀, Toeal, Kei Is., 1–2 m.

Distribution. Previously only type material from Heron I., Queensland.

Caphyra laevis (A. Milne Edwards)

Material. 1 ♂, Mindoro, 10 m. 1 ♂, 3 ♀ and 1 ovig. ♀, Toeal, Kei Is., 1–2 m.

Distribution. Madagascar and Amboina to Australia, New Caledonia and Fiji.

Lissocarcinus arkati Kemp

Material. 1 ♂, 1 ovig. ♀, Java Sea, 22 m. 2 ♂, Kei Is., 20 m, (Kei Is.Exp.Sts. 19,194).

Distribution. Madagascar, India, Hong Kong, S of Java, Japan, off S. Queensland, Australia.

Lissocarcinus laevis Miers

Material. 1 ♂, Mindoro, 10 m. 1 ♀, off Jolo, Philippines, 50 m.

Distribution. S.E.Africa to Hawaii.

Lissocarcinus orbicularis Dana

Material. 1 ovig. ♀, Suva, Fiji, 3 m.

Distribution. S.E.Africa to Hawaii.

Lissocarcinus polybiodes Adams and White

Material. 1 ♂, 1 ♀, Java Sea, 32 m. 1 ♂, 1 ovig. ♀, Java, 70 m. 2 ♂ (one with parasites in both branchial cavities) and 1 ovig. ♀ (with parasite in left branchial cavity), Jolo, Philippines, 30 m.

Distribution. Madagascar, Seychelles, India, Andamans, Japan and Australia; now also Malaysian and Philippines areas.

PORTUNINAE Stephenson and Campbell

Charybdis (Charybdis) acuta (A. Milne Edwards)

Material. 1 ♂, 15 mm, 1 ♂, 27 mm, 1 ♀, 16 mm, S.Taiwan Strait, 56–70 m.

Distribution. Hong Kong, Taiwan and Japan.

Charybdis (Charybdis) amboinensis Leene

Material. 1 ♂, 44 mm, (with *Sacculina*), off Jolo, Philippines, ca. 50 m, sand and coral, dredged, 19.iii.1914, (Th. Mortensen's Pacific Exp.).

Comments. This specimen differs from the figure and description by Leene (1938:55, fig. 21) in possessing a cluster of flattened granules on the cardiac region of the carapace and a similar cluster which almost forms a ridge on the mesobranchial area. In addition just posterior to the medial termination of the epigastric ridge there is a cluster of seven or eight large granules. Sakai's plate (1939, pl. 84, fig. 1) unfortunately shows no detail of carapace ornamentation behind the epibranchial ridges but his description (p. 402) states definitely that there is no "post branchial" ridge.

The specimen agrees in all other particulars including characteristic granulation of the anterior half of the carapace, granular crest of the basal antennal joint, and distinct rounded lobular tooth on the sub-orbital border.

Charybdis (Charybdis) anisodon (de Haan)

Material. 1 ♂, 1 ♀, 1 juv., Kei Is., 13 and 22 m, (Kei Is.Exp.Sts.105,116). 1 ♂, Onrust, Java Sea, surface. 1 ♀, Padang, Sumatra, (Dana St.3809). 1 ♂, NE of Singapore, 3 m, (Galathea St.349). 1 ♀, Bay of Port Moresby, (Galathea St.524).

Distribution. Red Sea to Japan, Australia and New Caledonia.

Charybdis (Charybdis) callianassa (Herbst)

Material. 11 ♂, 8 ♀, 17 damaged specimens, Banda Sea (Galathea Sts.494, 495).

Distribution. Karachi to Australia.

Charybdis (Charybdis) feriatus (Linnaeus)

Material. 8 ♀, Mekran coast, Pakistan, 10–12 m. 1 ♂, 11 juv., Singapore, 8–14 m, (Galathea Sts.342,346). 6 ♂, 1 ovig. ♀, W of Malay Peninsula, Thailand, 17–25 m. 3 ♀, Namoa, China. 1 ♂, Nagasaki. 1 ♂, Cebu Harbour, Philippines, 10 m, (Galathea St.438). 2 ♂, Java.

Distribution. Madagascar to Japan and Australia.

Charybdis (Charybdis) helleri (A. Milne Edwards)

Material. 4 ♂, 2 ♀ (1 ovig), Java Sea and Sunda Strait, 30–38 m. 1 ♂, 1 ♀, W of Malay Peninsula, Thailand, low water. 1 ♀, N of Taiwan, 86 m. 2 ♂, S. Taiwan Strait, 42–56 m. 1 ♂, Cebu, Philippines.

Distribution. Mediterranean to Hawaii, including Australia.

Charybdis (Charybdis) japonica (A. Milne Edwards)

Material. 1 ♂, 20 mm, W of Malay Peninsula, Thailand. 1 ♂, 37 mm, 1 ♀, 22 mm, Taiwan Strait, 60–70 m. 1 ♂, 74 mm, 2 ♀, 48 mm, Nagasaki.

Remarks. In the 74 mm male from Nagasaki the cheliped palm is more swollen than in Leene's (1938) fig. 5, and the carinae of the palm appear much more conspicuously granular.

Distribution. Red Sea, China, Japan; now Malaysian area.

Charybdis (Charybdis) miles (de Haan)

Material. 1 ♀, 22 mm, Madura Strait, ca. 100 m.

Distribution. Gulf of Oman to Japan, Philippines and Australia.

Charybdis (Charybdis) natator (Herbst)

Material. 4 ♂, Singapore, 1–14 m. 3 ♂ (one with lateral and submedian teeth fused on both sides), W of Malay Peninsula, Thailand, 35 m. 1 ♂, S.Taiwan Strait, 56 m.

Distribution. S.E.Africa to Japan, including Australia and Lord Howe I.

Charybdis (Charybdis) orientalis Dana

Material. 1 ♀, Terytao I., W of Malay Peninsula, Thailand. 2 ♂, 1 ♀, Zambonga, 10 m.

Distribution. E.Africa and Red Sea to Japan, including Australia.

Charybdis (Charybdis) variegata (Fabricius)

Material. 2 ovig. ♀, Namoa, China. 1 ♂, 1 ♀, Taiwan Strait, 50 m. 1 juv., W of Malay Peninsula, Thailand, 15 m. 1 ♂, Manila, 5 m.

Distribution. Iranian Gulf to N.Australia.

Charybdis (Goniohellenus) hongkongensis Shen

Material. 3 ♂, 2 ♀ (1 ovig.), Sunda Strait, 35–49 m, (Kei Is.Exp.Sts.70,81,84, 89). 1 juv., Madura Strait, 15–44 m. 1 ♂, 1 ♀, W of Malay Peninsula, Thailand.

Distribution. Hong Kong, Banda Sea, Sumatra and Malay Peninsula, but not recorded beyond this restricted area.

Charybdis (Goniohellenus) longicollis Leene

Material. 1 ♂, 14 mm, 1 ♀, 9 mm, Iranian Gulf, 12–29 m.

Distribution. E.Mediterranean, Red Sea, Iranian Gulf, Gulf of Oman, E.Africa, Madagascar, and Seychelles.

Charybdis (Goniohellenus) truncata (Fabricius)

Material. 2 ♂, 1 ♀, 1 juv., Sunda Strait, 35–45 m, (Kei Is.Exp.Sts.82,83). 1 ♂, off Singapore, 14 m, (Galathea St.346). 4 ♂, 1 juv., W of Malay Peninsula, Thailand, 22–25 mm.

Distribution. Madagascar, Ceylon, India, Japan, Philippines and Australia.

Charybdis (Goniohellenus) vadorum Alcock

Material. 1 juv., Iranian Strait, 56 m. 20 ♂ (2 with *Sacculina*), 3 ♀ (with *Sacculina*), 3 ovig. ♀, 1 juv., Calcutta, 43–52 m, (Galathea St.305). 1 ♀, W of Malay Peninsula, Thailand, 45 m. 1 ♀, Taiwan Strait, 60 m. 1 ♀, Lampong Bay, 29 m, (Kei Is.Exp.St.96). 2 ♀, Sunda Strait and Java Sea, 22–30 m, (Kei Is.Exp.Sts.77,119).

Distribution. Red Sea, Iranian Gulf to Hong Kong and Philippines; now Java Sea.

Charybdis (Gonioneptunus) bimaculata (Miers)

Material. 1 ♂, Sunda Strait, 47 m, (Kei Is.Exp.St.79). 1 ♂, Kei Is., 196 m, (Kei Is.Exp.St.7). 2 ♂, 2 ♀, (one with *Sacculina*), Madura Strait, 100 and 200 m.

Distribution. India and Maldives to Japan, Philippines and E.Australia.

Lupocyclus inaequalis (Walker)

Material. 4 juv., 5 mm, China Sea, 0°40'S, 107°10'E. 3 ♀, 9–10 mm, Honolulu.

Distribution. Seychelles, Gulf of Martaban, Burma, Singapore, E.Indies and Australia; now from Honolulu.

Lupocyclus philippinensis Semper

Material. 1 juv., Bay of Bengal. 1 juv., W of Malay Peninsula, Thailand, 77 m. 2 ♀, Java Sea, 35 m, (Kei Is.Exp.St.64). 2 ♂, Sunda Strait, 39–49 m, (Kei Is. Exp.Sts.81,84). 1 juv., Madura Strait, ca. 100 m.

Distribution. Madras to Philippines, Japan and Australia.

Lupocyclus rotundatus Adams and White

Material. 1 ♀, Sunda Strait, 35 m, (Kei Is.Exp.St.82). 1 ♂, 2 ♀, Jolo, Philippines, 30–50 m. 1 ♀, 1 juv., Kei Is., (Kei Is.Exp.Sts.10,31). 1 ♀, Dinagat, Philippines, 40 m, (Galathea St.414).

Distribution. Ceylon to Japan and Australia.

Lupocyclus sexspinosus Leene

Material. 1 juv., China Sea, 2°N, 108°E.

Distribution. Ceylon and Philippines, W.Australia; now from China Sea.

Lupocyclus tugelae Barnard

Material. 1 ovig. ♀, off Mombasa, 53 m, (Galathea St.258). 1 ♂, off Jolo, Philippines, 50 m. 1 ♂, 2 ♀, 1 juv., Amboina Bay, 14–20 m, 100–140 m.

Distribution. E.Africa, N.W.Australia; now from Philippines and Amboina.

Portunus acerbiterminalis Stephenson and Rees

Material. 1 ♂, 34 mm, off Bombay, 20–30 m.

Remarks. This specimen differs from the type material (Stephenson & Rees, 1967a) in: (a) median frontal teeth are less rounded than laterals, (b) on the right cheliped upper, inner carina of the palm ends in a spine.

Distribution. E.Africa, Saudi Arabia; now from India.

Portunus argentatus (A. Milne Edwards)

Material. 3 ♂, 1 ♀ (with *Sacculina*), Sunda Strait, 35–52 m, (Kei Is.Exp.Sts. 82,83,103). 23 ♂, 35 ♀, 6 ovig. ♀, 26 juv., Bali Strait, 50–150 m, (4 Sts.). 1 ♂, 1 ♀, off Kerteh, Malaya, 10 m, (Galathea St.373). 1 ♂, W of Malay Peninsula, Thailand, 77 m. 3 ♂, 6 ♀, Amboina Bay, 100–140 m. 2 ♂, 1 ♀, Kei Is., 85–90 m, (Kei Is.Exp.Sts.25,26,53).

Distribution. Natal to Honolulu, including Japan and Australia.

Portunus brockii (de Man)

Material. 1 ♀, 20 mm, Onrust, Java Sea, surface.

Distribution. Andamans, Singapore, Philippines, Amboina, Palau Is. and Australia.

Portunus dubius (Laurie)

Material. 1 ♂, 15 mm, Amboina Bay, ca. 100 m. 1 ovig. ♀, 11 mm, off Kombir, Banda, 70–90 m.

Remarks. A silvery iridescence is present on:— protruding edges of first two abdominal segments, upper surface of immovable finger, carinae on outer side of palm, outer wrist spine, and spine on under surface of arm. Traces are also present on upper surfaces of each joint of the walking legs and on the carpus of the fifth leg.

Distribution. India, Ceylon and Philippines area.

Portunus emarginatus Stephenson and Campbell

Material. 6 ♂, 1 ♀, 1 ovig. ♀, off Mauritius, 2–20 m. 1 ♂, Mindoro, 10 m.

Distribution. Madagascar and N.Australia, now from Mauritius and Philippines.

Remarks. For synonymy, see Stephenson & Rees, 1967a.

Portunus euglyphus (Laurie)

Material. 1 ♂, 14.5 mm, off Cannonier's Pt., Mauritius, 2–6 m. 1 ♂, 21.5 mm, Honolulu, 20–80 m.

Remarks. Serène (1969) in giving a full description of this species apparently overlooked the work of Stephenson and Rees (1967a) who stated (p.23) "... possessing a male pleopod unique to the genus".

There is a conspicuous silvery iridescence on the anterior surfaces of the third maxillipeds, with iridescent traces elsewhere on the body. The male first pleopods of this species are highly characteristic.

Distribution. India, Ceylon, Philippines and Hawaii.

Portunus gladiator Fabricius

Material. 1 ♂, Singapore. 1 ♂, Sunda Strait, 40 m, (Kei Is.Exp.St.75). 1 ♂, off Singapore, 14 m, (Galathea St.346). 6 ♂, 5 ♀, W of Malay Peninsula, Thailand, 17–18 m and 70 m. 2 ♂, 1 ♀, 24 mm, Misaka, Sagami Bay, 6–50 m.

Remarks. A full description of this and a related species is in preparation (Stephenson and Cook, in MS).

Portunus gracilimanus (Stimpson)

Material. 2 ♂, 3 ♀ (2 with heavy epizoitic growth), 1 juv., Singapore. 2 ♂, 2 ♀, off Singapore, 14 m, (Galathea St.346). 2 ♂, 1 ovig. ♀, W of Malay Peninsula, Thailand, 23–25 m. 5 ♂, 2 ♀, 2 juv., Java Sea, 12–50 m, (Kei Is.Exp. Sts.64,66,67,69,110,116,118). 4 ♂ 1 ♀, Sunda Strait, 29–52 m, (Kei Is.Exp. Sts.76,82,103). 6 ♂, 12 ♀, 1 juv., Amboina Bay, 100–140 m, (6 Sts.). 1 ♂, 2 ♀, 1 fragmented specimen, off Pamalona, Makassar, 35 m. 1 ♀, Taka Bakr, Makassar.

Ditribution. Andamans, India, Thailand – S.Vietnam area, Hong Kong, New Guinea and Australia.

Portunus granulatus (H. Milne Edwards)

Material. 2 ♂, Cannonier's Pt., Mauritius, low water. 1 ♂, Great Nicobar I., low water. 1 ♀ (parasite in right branchial cavity), Mindoro. 1 ♂, Zamboanga, low water. 1 ♂ (with parasite in branchial cavity), Dinagat, tidal zone, (Galathea St.415). 1 ♂, Ndrilo I., Bismarck Is., salt water lagoon, (Noona Dan Exp.).

Remarks. Males of this species are immediately recognisable by their characteristic first pleopods, but females are difficult to distinguish from some specimens of *P. orbitosinus*. The easiest diagnostic feature is the hirsute covering of the ischium of the third maxillipeds; sometimes the hairs are long and dense, and sometimes short. In worn specimens pits mark the positions from which the hairs arise.

Distribution. Madagascar, Red Sea to Hawaii, including Japan, Australia, Fiji and Samoa.

Portunus hastatoides Fabricius

Material. 3 ♂, 2 ♀, Madagascar, 6 m, (Galathea Sts.225,226). 1 ♀, Delagoa Bay, 15 m. 3 ♂, 4 ♀, Ceylon and Calcutta, surface and 50 m, (Galathea Sts. 283,305). 1 ♂, 1 juv., Singapore. 4 ♂, 1 ♀ (with *Sacculina*), 1 juv., Singapore and Malaya, 6–14 m, (Galathea Sts.329,346,373). 6 ♂, 1 ♀, 2 ovig. ♀, W of Malay Peninsula, Thailand, 12–23 m. 4 ♂, 5 ♀, 2 ovig. ♀, 3 juv., Sunda Strait, 30–47 m, (Kei Is.Exp.Sts.77,79,84). 7 ♂, 3 ♀, 1 ovig. ♀, 1 juv., Java Sea, 12 and 27 m, (Kei Is.Exp.Sts.110,118). 4 ♂, 3 ♀, 13 juv., Bali Strait, 70 m. 2 ♂, off Samalona, Makassar, 25 m, (Kei Is.Exp.). 1 ♂, Mindanao, surface, (Galathea St.428). 1 ♀, Bay of Port Moresby, 10–15 m, (Galathea St. 524). 1 ♀, Misaki, Sagami Bay, 50 m.

Remarks. In larger specimens the anterior surfaces of the four distal segments of the third maxillipeds show a golden iridescence. In some specimens the two median frontal teeth are separated only by a notch; in the majority they are clearly separated.

Distribution. Madagascar and E.Africa to Japan, Philippines and Australia.

Portunus innominatus Rathbun

Material. 16 ♂, 10 ♀, 5 ovig. ♀, 5 juv., Java Sea, 22–50 m, (Kei Is.Exp.Sts. 64,65,66,67,69,70,106,116,118). 8 ♂, 3 ♀, 1 juv., Sunda Strait, 18–45 m, (Kei Is.Exp.Sts.76,77,79,82,83,89). 1 ♂, W of Malay Peninsula, Thailand, 22 m. 1 ♂, Amboina Bay, 14–20 m. 2 ♂, 6 ♀, Kei Is., 40 m, (Kei Is.Exp.St.14).

Distribution. Andamans, Gulf of Martaban and Arakan Coast, Burma, Gulf of Siam; now Malaysian areas.

Portunus longispinosus Rathbun

Material. 1 ♂, 30 mm, 1 ♀, 32 mm, 1 ovig. ♀, 27 mm, Hawaii. 1 ovig. ♀, 17 mm, Honolulu, coral reef.

Distribution. Hawaiian Is.

Portunus macrophthalmus Rathbun

Material. 3 ♂, 1 ♀, Mauritius, 2–60 m. 1 ovig. ♀, Banda, 13 m.

Distribution. Previously from Hawaii and Philippines.

Remarks. For synonymy, see Stephenson and Rees, 1967a:28–30.

Portunus nipponensis (Sakai)

Material. 1 ♂, 18 mm, 3 ♀, 10, 13 and 13 mm, Tajaude and Banda Is., 15–25 m.

Remarks. This is the only Indo-West Pacific species of *Portunus* known to possess a stridulating ridge on the ventral surface of the carapace.

Distribution. Previously only from Japan; now from Philippine area.

Portunus orbitosinus Rathbun

Material. Form I: 4 ♂, 4 ♀, Mauritius, 2–60 m. 1 ♂, 1 ovig. ♀, W of Malay Peninsula, Thailand, 15–20 m. 4 ♂, 3 ♀, off Jolo, Philippines, 30–50 m. 1 ♂ (with *Sacculina*), 1 juv., Amboina Bay, 14–20 m, and N of Doe Roa, Kei Is., 25 m. 1 ♂ (damaged), Thursday I., (Galathea St.506). – Form II: 4 ♂, 9 ♀, 1 ovig. ♀, Mauritius, 0–20 m.

Distribution. Seychelles to Japan and Australia; now Mauritius.

Remarks. The iridescence of Form I of this species resembles that in *P. euglyphus*, see above.

Portunus pelagicus (Linnaeus)

Material. 1 ♂, Colombo, (Galathea St.285). 2 ♂, 2 ♀, 3 juv., 1 carapace, Singapore. 17 ♂ (one soft), 14 ♀ (2 with heavy epizoitic growth), 1 ovig. ♀, 3 juv., Strait of Malacca (Galathea St.328), Singapore (Galathea Sts.341,346, 349,350,351,352,400,403), off Trengganu (Galathea St.374). 1 ♂, 1 ♀, W of Malay Peninsula, Thailand. 1 ♂, Kei Is. 1 ♂, Mindanao, (Galathea St.428). 1 ♀, Palawan I. 1 ♂, Bismarck Is. 2 ♂, 1 ♀, New Caledonia (Dana Exp.Sts. 3618,3619).

Distribution. E.Africa to Tahiti including Japan, Philippines, Australia and N.New Zealand.

Portunus pseudoargentatus Stephenson

Material. 1 ♂, 18 mm, Java Sea, 27 m. 1 ♂, 18 mm, off Jolo, Philippines, ca. 50 m.

Distribution. Philippines, Japan and Australia.

Remarks. It is probable that this is a synonym of *P. gladiator* Fabricius (Stephenson and Cook, in MS).

Portunus pubescens (Dana)

Material. 1 ♀, 24 mm, Mozambique Channel, surface at light, (Galathea St. 218). 1 ♂, 15.5 mm, Honolulu.

Distribution. From India to Hawaii, including Japan, Philippines and Australia; now Mozambique Channel.

Portunus pulchricristatus (Gordon)

Material. 5 ♂, 1 ovig. ♀, Calcutta, 43–52 m, (Galathea St.305). 5 ♂, 3 ♀, 23 juv., Java, 70 m. 18 ♂, 13 ♀, 5 ovig. ♀, 2 juv., Java Sea, Sunda Strait and Lampong Bay, 18–50 m, (Kei Is.Exp.Sts.64,66,67,69,76,77,79,81,84,89,97). 5 ♂, 1 ovig. ♀ Mindanao, 54 and 80 m. 1 ♂, 1 ovig. ♀, Amboina Bay, 30–40 m, 100 m. 3 ♂, 1 ovig. ♀, Makassar Strait, 50–60 m, (Galathea St.451).

Distribution. Muscat, Madras, Andamans, Burma, Philippines and China.

Portunus rubromarginatus (Lanchester)

Material. 4 ♂, 1 ♀, 11 juv., Java Sea, 33 m, (Kei Is.Exp.Sts.67,106). 2 ♀, Singapore, 15 m, (Galathea St.400). 1 ♂, 1 juv., off Jolo, Philippines, 25–60 m.

Distribution. Malaysia, Hong Kong, S.China Sea, Philippines and N.Australia.

Portunus rugosus (A. Milne Edwards)

Material. Form I: 1 ♀, W of Malay Peninsula, Thailand, 20 m. 1 ♂, 2 ♀, 1 ovig. ♀, 1 juv., Java Sea and Sunda Strait, 27–54 m, (Kei Is.Exp.Sts.66,71,83, 118). 2 ♂, 1 ♀, Jolo, Philippines, 30 m. 1 ♂, 2 ♀, 1 juv., Amboina Bay, 14–100 m. 1 ♂, 2 ♀, 1 ovig. ♀, 1 damaged specimen, Doe Roa Strait, 40 and 85 m, (Kei Is.Exp. Sts. 18,19?,25,53). 1 ♂, New Caledonia, surface, (Dana St. 3617). – Form II: 1 ♂, off Neira, Banda, 100–200 m. 1 ♂, 1 juv., Bay of Port Moresby, 8 m, (Galathea St.530).

Remarks. No constant differences were observed between the lateral frontal teeth in the two forms in the present collections, but the remaining differences as described by Stephenson and Rees (1967a:43–44) stand. Carapace shapes in Form II differ from those in Form I, particularly in the length and direction of the last anterolateral tooth.

Distribution. Philippines, New Caledonia, Torres Straits, Australia; now Malaysian area.

Portunus sanguinolentus sanguinolentus (Herbst)

Material. 1 juv., Karachi, 5–6 m. 2 ♂, Java. 1 ♀, 1 juv., Sumatra, (Dana St. 3809). 1 ♂, 2 ♀, 3 ovig. ♀, Great Nicobar and Malaya, (Galathea Sts.320, 373). 1 ♀, Singapore fish market. 1 ♀, W of Malay Peninsula, Thailand, 10 m. 1 juv., China Sea. 1 ♂, 1 ♀, Banda I. 3 ♂, 1 juv., Bucas Grande, Philippines, 50 m, and Banda Sea, (Galathea Sts.425,495,497). 2 ♂, 1 ♀, 1 juv., New Caledonia.

Remarks. Stephenson (1968:396) in recognising two subspecies of *P. sanguinolentus* used the trinomial of the present subspecies only as a subordinate heading on one page.

Distribution. E.Africa to Japan and Australia.

Portunus sanguinolentus hawaiiensis Stephenson

Material. 4 ♂, 2 ♀, Honolulu, coral reef.

Distribution. Hawaii and Fiji.

Portunus spinipes (Miers)

Material. 3 ♂, 1 ♀, 1 ovig. ♀, Java Sea and off Krakatau, 38–75 m, (Kei Is. Exp.Sts.70,102,113). 6 ♂, 11 ♀, 1 ovig. ♀, 1 juv., Kei Is., 35–85 m, (Kei Is. Exp.Sts.14,31,38,53). 1 ♂, 1 ♀, Amboina Bay, 50–100 m.

Distribution. Philippines; now Malaysian area.

Portunus tenuicaudatus Stephenson

Material. 1 ovig. ♀, Mindoro, 100 m. 2 ovig. ♀, off Jolo, Philippines, 24–30 m, 1 ♀, Amboina, low tide.

Distribution. W.Australia and Philippines.

Remarks. For synonymy, see Stephenson and Rees, 1967a:28–30.

Portunus tenuipes (de Haan)

Material. 1 ♂, 1 ♀, 1 ovig. ♀, Saparoe, E of Amboina.

Distribution. Andamans to Japan and Philippines including Australia.

Portunus trilobatus sp.n. Figs. 1, 2.

Types. Holotype, 1 ♂, 30 mm, Lampong Bay, 25 m, mud, Sigsbee trawl, 1.viii. 1922, (Dan. Kei Is.Exp.St.97). – Paratypes: 1 ♀, Leiden I., 18 m, mud, 20. vii.1922; 2 ♂, 21 and 36 mm, 1 ♀, 25 mm, 1 ovig. ♀, 28 mm, other data as

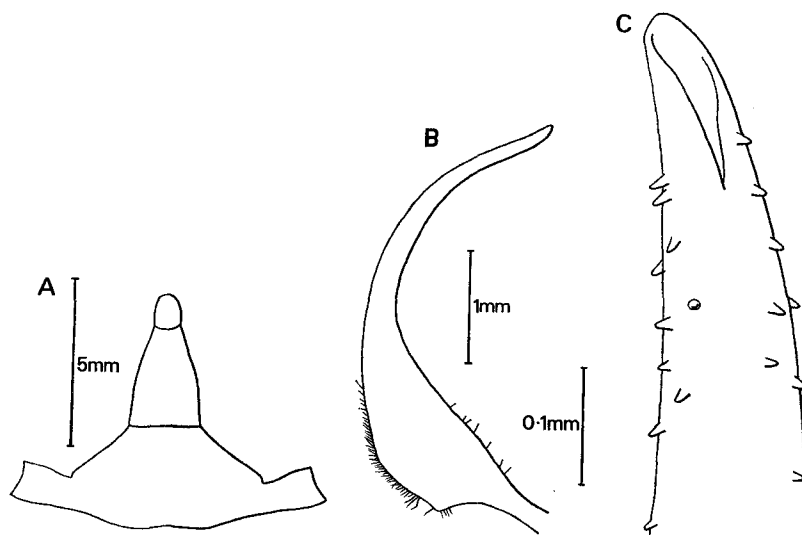


Fig. 1. *Portunus trilobatus* sp.n., holotype. A) abdomen, B) first pleopod from right side, ventral view, C) tip of pleopod, dorsal view.

holotype; 1 ♂, 13 mm, as holotype, but 27 m, 2.viii.1922 (St.98); 11 ♂, 17–24 mm, 5 ♀, 21–27 mm, 4 ovig. ♀, 18–23 mm, Java Sea, near Djakarta, 2–27 m, mud, sand, and sand and shells, 7 and 8.viii.1922 (Dan. Kei Is.Exp.Sts.116, 118,119,122); 1 ovig. ♀, 21 mm, Padang Harbour, Sumatra, 4.x.1929 (Dan St.3809); 37 ♂, 14–24 mm, 14 ♀, 14–21 mm, 16 ovig. ♀, 15–24 mm, 4 juv., 12–14 mm, Manila Bay off Cavite, 10–20 m, mud, 13.ii.1914 (Th. Mortensen's Pacific Exp.); 1 ♂, 16 mm, Taka Bakr, Makassar, ca. 25 m, sandy mud and shell, 27.vi.1922 (Dan. Kei Is.Exp.).

Description. Front – Three rounded lobes with laterals broader than median, usually slightly more prominent than median, but occasionally slightly less so.

Anterolateral teeth – Nine, ninth very long. First larger and more robust than seven succeeding; second to fifth blunt, seventh and eighth sharp. In many specimens second, fourth and sixth smaller than third, fifth and seventh respectively. Ninth 3–8 times length of eighth, relatively longer in smaller specimens. Two ninth teeth comprise 35–40 % of carapace breadth.

Carapace – Broad, breadth 2.5–2.8 times length, mostly covered by fine dense pile of hairs, with elevated granular areas of varying conspicuousness with postlateral junctions strongly spiniform. Indistinct granular patches but no ridge in proto gastric region. Mesogastric area elevated and granular, anterior border usually forming a ridge, but sometimes four short discrete ridges; and with granular midgastric patch leading anteriorly. Metagastric region depressed and bearing short ridge. Anterolateral granular patches close to third and fourth teeth, and fifth and sixth teeth respectively. Epibranchial region with broad granular area rather than ridge. Cardiac areas elevated and granular, each with small tubercle formed of fused granules. Mesobranchial area with four granular patches, two small anterior ones, one small posterior patch, and a large median-lateral area which sometimes bears a tubercle of fused granules. Lateral postcardiac granular patches large, median postcardiac narrow, postlateral patches visible in some specimens.

Chelipeds – Right larger than left, moderately robust, granular on all surfaces, with granules on under surface of palm tending to squamiform. Arm – usually four spines on anterior border, occasionally three: two spines on posterior border. Wrist – usual spine on inner side relatively short, single spine on outer side. Palm – apart from spine at wrist articulation, only single blunt spine on upper inner surface at distal end of granular carina; second granular carina on upper outer surface; outer surface with central and lower granular carinae; second granular carina on upper outer surface; outer surface with central and lower granular carinae; inner surface with two rows of hairs but no carina. Fingers – short.

Fifth leg – Carpus short and broad (approximately as broad as long) with small spines on posterodistal border. Propodus and dactylus with posterior surfaces fringed with hairs but without spinules.

Third maxilliped – Anteroexternal angle of merus produced laterally.

Male abdomen (fig.1A) – Narrow; penultimate segment about 1½ times as long as broad, with convex lateral borders; ultimate segment rounded, about 1¼ times as long as broad, less than half length of penultimate segment.

Male first pleopod (figs. 1 B, C) – Short, stout, moderately strongly curved.

Beyond basal lobes a few short bristles on inner surface, then bare until distal quarter. Inner surface then bears a row of recurved spinules increasing in size distally to become short conical spines just behind tip of appendage where ca. 6 visible in profile view. Spinous area of inner surface extends to upper surface. Outer surface with similar short conical spines, somewhat more densely arranged than those on inner surface.

Remarks. Smaller specimens of the present species have some resemblance to *P. spiniferus* Stephenson and Rees, in possessing a spinous postlateral junction, trilobed front, and an approximation to spiniform areas on the posterior portions of the carapace. These specimens differ from *P. spiniferus* in their extremely long last anterolateral teeth, in the shape of the male abdomen, and in the smaller teeth on the anterior border of the arm.

The species keys out with *P. alcocki* (Nobili) known only from the holotype (which merits redescription) but differs in possessing a single spine on the outer side of the wrist of the cheliped, instead of three spines. It also resembles *P. mariei* Guinot although differing in its rounded median frontal tooth, in possessing a shorter ultimate segment of the male abdomen, and having convex borders to the penultimate segment.

Portunus trituberculatus (Miers)

Material. 6 ♀, Shanghai.

Distribution. Red Sea, Malaysian area, China, Korea and Japan.

Portunus tuberculatus (A. Milne Edwards)

Material. 4 ♂, (one with *Sacculina*), 3 ♀ (one with tube-worms on carapace), Java Sea and Sunda Strait, 16–45 m, (Kei Is.Exp.Sts.66,77,83,84,116,119). 1 ovig. ♀, Madura Strait, 50 m. 1 ovig. ♀, W of Malay Peninsula, Thailand, 35 m. 1 ♀, 1 ovig. ♀, Kei Is., 40 m, (Kei Is.Exp.Sts.14,30). 1 ♀, off Samalorra, Makassar, 35 m. 1 ♀, Makassar Strait, 50–60 m, (Galathea St.451). 2 ♂, Bay of Port Moresby, 25–45 m, (Galathea Sts.524,532).

Distribution. Madagascar to Hawaii including China and Philippines, but not Japan or Australia; now from New Guinea.

Scylla serrata (Forsskål)

Material. 1 ♀, N.Madagascar (Galathea St.222). 4 ♂, 1 ♀, Siam. 1 ♀ (carapace soft), Singapore. 3 ♂, 2 ♀, Singapore I., in prawn pond (Galathea St. 344). 1 ♀, Nagasaki. 4 ♂, 7 ♀, Shanghai. 2 ♀ (one with stalked barnacles on carapace), Onrust, Java Sea, in mangrove. 1 ♂, Manus I. (Noona Dan Exp. St.48a). 1 ♀, Suva, Fiji (Dana St.3594). 1 ♂, New Caledonia, mangrove, (Dana St.3618).

Distribution. E.Africa to Tahiti, including Australia and N.New Zealand.

Thalamita admete (Herbst)

Material. 3 ♂, 1 ovig. ♀, Mauritius, low water. 1 ♀, Mindoro, 10 m. 3 ovig. ♀ off Jolo, Philippines, ca. 50 m. 5 ♂, 6 ♀, Amboina Bay and Saparoe, Banda I., low water, 14–20 m. 1 ♂, 1 ovig. ♀, Dinagat, Philippines, coral reef, (Gala-

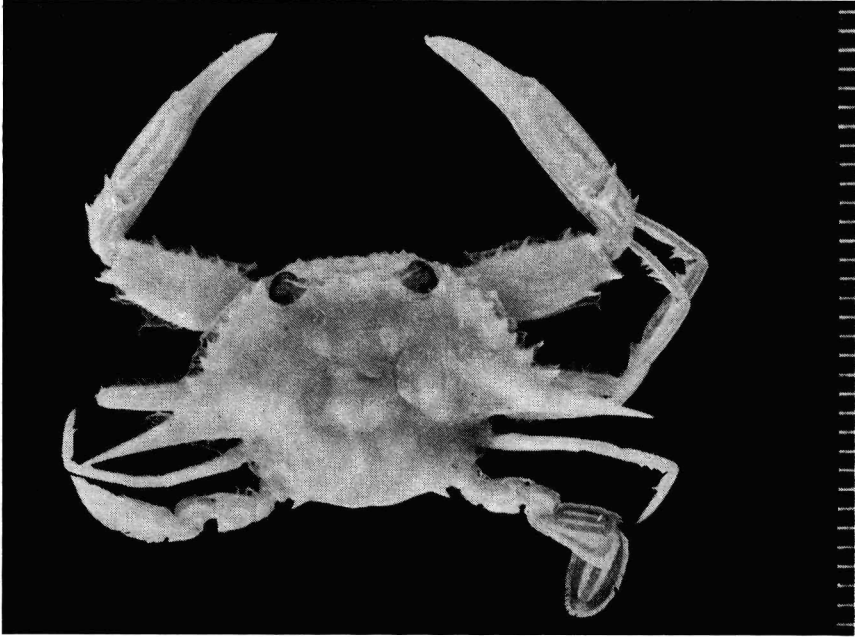


Fig. 2. *Portunus trilobatus* sp.n., holotype.



Fig. 3. *Carcinonectes pacificus* gen.n., sp.n., holotype.



Fig. 4. *Thalamita malaccensis* Gordon.

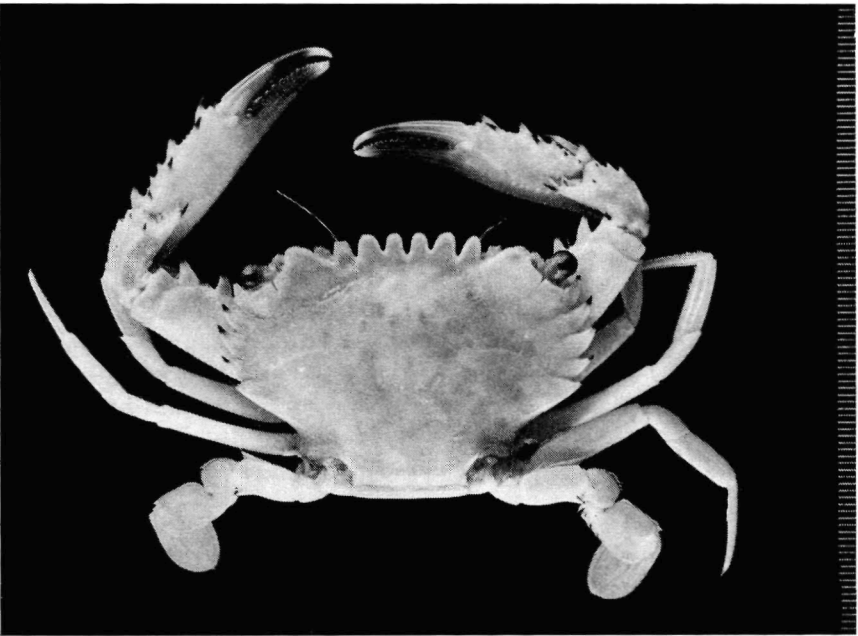


Fig. 5. *Thalamita spinimana* Dana.

thea St.415). 2 ♂, 3 ♀, New Caledonia. 1 ♀, New Hebrides. 2 ♂, Milo, Hawaii. 25 ♂, 14 ♀, 17 ovig. ♀, 2 juv., Honolulu. 10 ♂, 1 ♀, 8 ovig. ♀, Suva, Fiji, reef flat.

Distribution. E.Africa and Red Sea to Hawaii and Tahiti, including Japan and Australia.

Thalamita anomala Stephenson and Hudson

Material. 2 ♂, 7 and 8 mm, damaged, 1 ♂, 6 mm, Honolulu, 20–80 m.

Distribution. New Caledonia and Samoa; now from Honolulu.

Thalamita auauensis Rathbun

Material. 1 ♂, Mombasa, coral reef, 1–2 m, (Galathea St.256). 6 ♂, 2 ♀, 1 ovig. ♀, 2 juv., Honolulu, 20–80 m.

Distribution. China, Philippines, Marianas, Samoa and Hawaii; now from E. Africa.

Thalamita chaptalii (Audouin)

Material. 1 ♀, 12 mm, W of Malay Peninsula, Thailand, 15 m. 1 ♂, 22 mm, Dinagat, Philippines, coral reef, (Galathea St.415). 1 ♂, 6 mm, Suva Bay, Fiji.

Remarks. This species is very close to *T. parvidens* (Rathbun) and previous keys have not effectively separated the species. Stephenson and Hudson (1957) used the presence or absence of the branchial ridge on the carapace in their key based on general features, but in fact these ridges are distinguishable in both species. Crosnier (1962) used the distinctness of the median notch and the curvature of the front, but in the present collection specimens of *T. chaptalii* closely approach *T. parvidens* in this respect. There are differences in the male abdomen which are distinguishable in most specimens, *T. parvidens* having more marked distal convergence of the penultimate segment. However some specimens of *T. chaptalii* closely approach *T. parvidens* in this respect. The only absolute distinction appears to lie in the male first pleopods. In both species there is a strongly recurved tip and in *T. parvidens* the spines are more numerous and better developed on the inner side of the curvature (see e.g. Crosnier, 1962, figs. 185, 186; Stephenson and Rees, 1968a, fig. 20), while in *T. chaptalii* they are more numerous and better developed on the outer side of the curve (see e.g. Crosnier, 1962, fig. 189; Stephenson and Hudson, 1957, fig. 3F). The species may also be separated by the ornamentation of the basal antennal joint which is microscopically granular in *T. chaptalii* and more coarsely granular in *T. parvidens*; once again there tends to be overlap.

Distribution. Madagascar and Red Sea to Australia, New Caledonia, Solomon Is. and Tahiti.

Thalamita corrugata Stephenson and Rees

Material. 1 ♂, 7 mm, 2 ♀, 12 mm, Mombasa, coral reef (Galathea St.255).

2 ♂, 7.5, 8.5 mm, 2 ♀, 7.5, 13 mm, Biaro, Sangihe Is., 11 m, (Dana St.3742). *Distribution.* Australia, Gilbert Is., Tuamotu; now from Mombasa and Sangihe Is., Indonesia.

Thalamita crenata (Latreille)

Material. 1 ♂, Mombasa, mangrove, (Dana St.3945). 2 ♀. N.Madagascar, rocks and stones, (Galathea St.221). 1 ovig. ♀, Karachi, mud flats at low tide. 1 ♂, 1 ovig. ♀, Mount Austin, Singapore. 1 ♂, 3 ♀, NE of Singapore I., sand flats and 5 m, (Galathea Sts.349,351,374). 1 ♂ (stalked barnacles on carapace and legs), W of Malay Peninsula, Thailand, low tide. 1 ♂, 2 ♀, Amboina and Banda, low water. 1 ♀, Bucas Grande, Philippines, tidal zone, (Galathea St.247). 1 ♂, 3 ♀ ("carapace dark green and claws blue"), off Manus I., (Noona Dan Exp.St.45a). 1 ♂, Pacific Ocean. 1 ♀, Niuartobutabu, N.Tonga, tidal flat.

Distribution. S.Africa and Red Sea to Japan, Australia, Hawaii, Tuamotu and Society Is.; now from Tonga.

Thalamita dakini Montgomery

Material. 1 ♀, 15.5 mm, Honolulu.

Distribution. Australia, Marianas, Gilbert Is., Hawaii and Society Is.

Thalamita danae Stimpson. Figs. 6,7.

Thalamita crenata Dana 1852a:282-283, pl. 17 fig. 71,b. non *Portunus crenatus* Latreille 1829.

Thalamita danae Stimpson 1858:37. A. Milne Edwards, 1861:366-367, pl. 36 fig. 1a-c. de Man, 1902:644-645, pl. 21 fig. 28. Stimpson, 1907:85, pl. 11 figs. 1-1a. Shen, 1934:52-54, figs. 15-16. Sakai, 1939:413-415, pl. 85 fig. 3. Stephenson and Hudson, 1957:335-337, figs. 2N, 3N, pl. 3 fig. 1, pls. 7G, 10D. Crosnier, 1962:135-136 (under *T. foresti*) fig. 228. Stephenson and Rees, 1967a:70-74, figs. 25a-e, 26a-c.

Thalamita stimpsoni A. Milne Edwards, 1861:362,367, pl. 35 fig. 34; *syn.nov.* Alcock 1899: 79 (*synon.*) Nobili, 1906:202,205. Sakai 1939:413,416-417. Stephenson and Hudson, 1957: 356-359, figs. 2M, 3M, pl. 6 figs. 1-3, pls. 8R, 9I. Stephenson and Rees, 1967a:98-101, fig. 36. McNeill, 1968:51.

Material. Form A. Males and accompanying females. 1 ♂, Pulau Sudung, Singapore, coral reef, tidal zone, (Galathea St.337). 1 ♂, Puerto Galera, Mindoro, coral. 1 ♂, St.Cruz I., Zamboanga, coral reef. 4 ♂, 9 ♀, Tubajon Bay, Dinagat, Philippines, tidal zone (Galathea St.415). 1 ♂, Amboina, low water. 1 ♂, off Port Moresby, tidal zone, (Galathea St.528). 1 ♂, Malakata, Mus-sau I., fresh water spring, close to the sea, (Noona Dan Exp.St.43. 1 ♂, 1 ♀, 3 juv., Noumea, New Caledonia, (Dana St.3619). 5 ♂, 2 ♀, New Caledonia, ca. 25 m. 1 ♂, Suva Bay, Fiji, low tide, tidal flats, sand and stones. - *Form C. Males and accompanying females.* 3 ♂, 1 ♀, (with *Sacculina*), 1 ovig. ♀, off Jolo, Philippines, ca. 50 m, sand and coral. 1 ♂, 1 ♀, Tubajon Bay, Dinagat, Philippines, tidal zone, coral reef. 1 ♂, Java Sea, W of Djakarta, 54 m, sand and stones, (Kei Is.Exp.St.71). *Females and young, not accompanied by males.* 1 ♂, 2 ♀, Nagasaki. 1 ♀, Puerto Galera, Mindoro, on shore. 2 ♀, St. Cruz I., Zamboanga, coral reef. 2 ♀, 2 ovig. ♀, Jolo, 40-60 m, sand and coral. 1 juv., Amboina, low water. 1 juv., off Samalona, Makassar, ca. 35 m, muddy

sand and shell. 1 ♀, Kerhof I, Java Sea, coral reef.

Remarks. The resemblance between *Thalamita danae* and *T. stimpsoni* is very close, and Stephenson and Hudson (1957:337) commented that the presence of a noticeably small fourth anterolateral tooth in *T. stimpsoni* was the only macroscopic character separating it from *T. danae*. While Miers (1886:238) noted variations in the length of this tooth, Stephenson and Hudson (1957) considered the separation between the species on this feature was sound. This view has been accepted by such later workers as Crosnier (1962) and Stephenson and Rees (1967a). In the present collection there is a complete grada-



Fig. 6. *Thalamita danae* Stimpson, right sides of carapaces of males. A) Tubajon Bay, Dinagat, B) Amboina, C) New Caledonia, 16.vi.1934, D) New Caledonia, 15.vi.1934, E) off Jolo I., F) W of Djakarta. Scale lines 0.5 mm.

tion from specimens in which the fourth tooth is slightly larger than the fifth (fig.6A) to those with equality (fig.6B) and those in which it is noticeably smaller (figs.6C–F). Individuals with a very small fourth tooth are all small specimens, suggesting this is a feature of juvenility.

The male first pleopod offers further possibilities of separating the species, but here there are various “forms” in the sense used by Stephenson and Rees (1967a:2) as follows:– “If no distinctions were noted in general facies, groups with different pleopods are here recorded as different ‘forms’. Possibly they are incipient species.”. Stephenson and Rees (1967a:73) recognised two forms of *T. danae* as follows:–

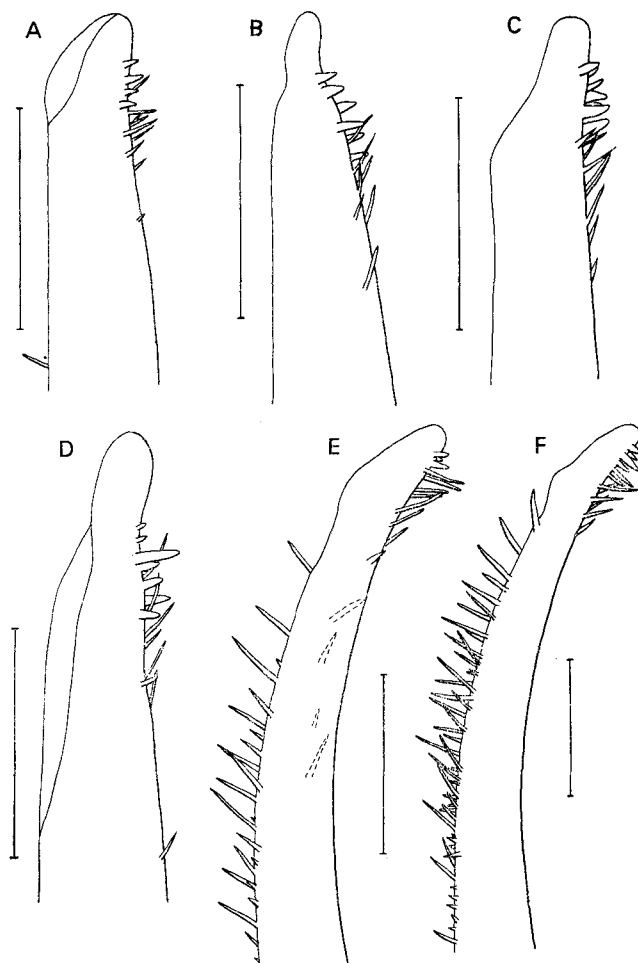


Fig. 7. *Thalamita danae* Stimpson, first pleopods from right side, ventral view. Details of A–F as in fig. 6. Scale lines 0.5 mm.

Form A. Pleopod relatively stout, ending abruptly. Subterminally on outer side ca. six very short, stout, tubercle-like, laterally directed spines, overlapped and succeeded by ca. six bristles mostly forwardly directed. On inner side a few sparsely arranged hairs.

Form B. Pleopod thin, gradually tapering, and distinctly curved near the tip. Subterminally on outer side ca. six stout, elongate, forwardly directed bristles. On inner side an extensive row of elongate forwardly directed bristles.

The same authors (p. 100) recognised two forms of *T. stimpsoni* as follows:—

Form A. Subterminally on outer side none to five short conical spines and many subterminal bristles, inner side with a few sparsely arranged hairs.

Form B. Subterminally on outer side numerous subterminal robust spines, inner side with numerous spines or stout bristles.

Reviewing the above it is evident that *T. danae* Form B is distinctive (thin, tapering, curving near tip, numerous bristles on inner side) as is *T. stimpsoni* Form B (robust, terminating abruptly, straight near tip, numerous bristles on inner side). The distinctions between *T. danae* Form A and *T. stimpsoni* Form A are less clear cut, and rely solely on the subterminal armature of the outer side of the pleopod. *T. danae* Form A has ca. six short stout conical or tubercle like spines and ca. six bristles, while *T. stimpsoni* Form A has zero to five spines and many bristles.

Tabulating these differences and the features of four of the illustrated specimens shows:—

	4th AL tooth	Outer side male first pleopod	
		No. of conical spines	No. of bristles
<i>T. danae</i> Form A	Large	ca. 6	ca. 6
<i>T. stimpsoni</i> Form A	Smaller than 5th	0–5	many
Fig. – 6C; 7C	Large	4	8
Fig. – 6D; 7D	Large	6	7
Fig. – 6E; 7E	Smaller than 5th	3	7
Fig. – 6F; 7F	Smaller than 5th	5	9

It is evident that the combinations of macroscopic and pleopod features previously used for separation are invalid.

At the present stage the solution appears to be to synonymise *T. stimpsoni* with *T. danae* (syn.nov.) and recognise three forms of this species:—

Form A – *T. danae* Form A and *T. stimpsoni* Form A

Form B – *T. danae* Form B previously diagnosed.

Form C – *T. stimpsoni* Form B previously diagnosed.

The male first pleopods of Form C which have not previously been figured are shown in fig. 7E,F.

Distribution. Mozambique and Red Sea to Fiji and Samoa including Japan and Australia.

Thalamita demani Nobili

Material. 2 ♂, 7, 8 mm, 1 ♀, 9 mm, Mauritius, 2–6 m. 2 ♂, 9.5, 11 mm, 3 ♀,

8.5–10.5 mm. 3 ovig. ♀, 11.5–13.5 mm, Dinagat, Philippines, tidal zone, (Galathea St.415).

Distribution. Red Sea, Madagascar, Philippines and Australia; now Mauritius.

Thalamita foresti Crosnier

Material. 1 ♂, 21 mm (damaged), Mombasa (Galathea St.248). 1 ♂, 41 mm, Mindoro, coral.

Distribution. Madagascar, possibly Mozambique and Andamans, Thailand, Hong Kong and Philippines.

Thalamita gatavakensis Nobili

Material. 1 ♂, 18 mm, S of Bali, 19 m, (Galathea St.483). 1 ♂, 8 mm, Mindoro, 1 m. 1 ♂, 11 mm, Jolo, Philippines.

Distribution. Madagascar, W.Australia, Philippines, Tuamotus; now Malaysian area.

Thalamita gracilipes (A. Milne Edwards)

Material. 1 ovig. ♀, 8 mm, 1 juv., 5 mm, Zamboanga, 6–10 m.

Remarks. In the smaller specimen the basal antennal joint does not join the front, as in the smaller specimen examined by Crosnier (1962).

Distribution. Madagascar, Andaman Is., New Caledonia, Tonga I. and Hawaii; now from Philippines.

Thalamita granosimana Borradaile

Material. 1 ♂, 14 mm, off Jolo, Philippines, ca. 50 m. 1 ♂, 8 mm, off Neria, Banda, sand.

Distribution. Madagascar, Maldivo-Laccadive Archipelago and Banda.

Thalamita integra Dana

Material. 1 ♂, 2 ♀, Aden Harbour. 1 ♂, Panban Pass. 8 ♂, 5 ♀, 1 ovig. ♀, Mauritius, 2–6 m. 3 ♂, off Toeal and Banda, low water. 1 ♂, Zamboanga, low water. 1 ♂, 1 juv., Dinagat and Basilan (Galathea Sts.419,446).

Distribution. E.Africa to Tahiti and Hawaii, including Australia.

Thalamita iranica Stephensen

Material. 1 ♂, 6.5 mm, Iranian Gulf.

Distribution. Known only from the Iranian Gulf.

Thalamita malaccensis Gordon. Fig. 6.

Material. 1 ♀, 15 mm, Java Sea, 60 m, coral and clay, (Galathea St.454).

Remarks. This species was previously only known from the type material, obtained close to the present locality. It agrees completely with Gordon's description (1938:176–179, figs. 2c,d,3a,b). The only previous illustrations of this

species are figures of front, anterolateral teeth and abdomens of the holotype female and an immature male.

Distribution. Malay Peninsula; now Java Sea.

Thalamita mitsienseis Crosnier

Material. 1 ♂, 16.5 mm, Java Sea, 35 m, (Kei Is.Exp.St.72).

Remarks. The posterior border of the propodus of the single male examined bears eight spines thus resembling specimens commented upon by Stephenson and Rees (1967a:80). The frontal lobes are more advanced and slightly narrower than in Crosnier (1962, fig.212).

Distribution. From Madagascar and Philippines; now Malaysian area.

Thalamita philippinensis Stephenson and Rees

Material. 1 ♀, 12 mm, (with *Sacculina*), N of Mauritius, 50 m. 2 ♀, 8 and 12 mm, Kei Is., 25–50 m, (Kei Is.Exp.Sts.60,61). 1 ovig. ♀, 9 mm, off Kombir, Banda, 70–90 m.

Distribution. Philippines; now Mauritius, and Banda Sea.

Thalamita picta Stimpson

Material. 3 ♂, Mauritius, coral reef. 1 ♂, Makassar, muddy sand and shells. 1 ♂, New Hebrides. 1 ♂, Suva Harbour, Fiji, reef flat. 3 ♂, 1 ♀, Milo, Hawaii and Honolulu.

Distribution. Madagascar, Mozambique and Red Sea to Tuamotus and Hawaii, including Japan and Australia.

Thalamita poissonii (Audouin and Savigny)

Material. 2 ovig. ♀, 16–18 mm, Mauritius, 2–6 m.

Distribution. Madagascar, Red Sea and Suez, Laccadive Is., Ceylon and Marshall Is.; now Mauritius.

Thalamita prymna (Herbst)

Material. 1 ♂, 1 ♀ (soft and damaged), Mauritius, coral reef. 2 ♂, 1 ♀, Seychelles, (Galathea St.269). 2 ♀, W of Malay Peninsula, Thailand, muddy sand flats. 1 ♂, Krusadai, India. 1 ♀, Misaki, Sagami Bay, Japan. 1 ♂, Zamboanga. 5 ♂, 11 ♀, Dinagat and Mindanao, coral reef and surface by light, (Galathea Sts.414,415,428). 1 ♂, Palawan I. 1 ♂, Pacific Ocean. 5 ♂, 2 ♀, Fiji, 1–2 m, lagoon.

Remarks. Specimens examined vary in the ornamentation of the basal antennal joint. In two females (Misaki and Galathea St.428) there are conspicuous sparsely arranged sharp spines conforming to most recent descriptions such as Stephenson and Hudson (1957) and Crosnier (1962). In the remaining specimens there is an elevated area of fused tubercles and it is difficult to see how this could be derived from the former simply by wear as Stephenson and Rees (1967a) suggested. The possibility that two species have been confused is reduced because of the similarity of the male pleopods.

Distribution. Delagoa, S.Africa and Red Sea to Samoa, including Japan and Australia.

Thalamita pseudopoissonii Stephenson and Rees

Material. 1 ♂, 12.5 mm, Port Moresby, 50 m, mud, (Galathea St.531).

Remarks. The frontal lobes are very concave, and each is almost divisible into a broad median and narrower lateral lobe.

Distribution. Japan, Philippines and Palau I.; now New Guinea.

Thalamita quadrilobata Miers

Material. 1 ♀, 23 mm, Mauritius. 1 ♂, 5 mm, 1 ovig. ♀, 6 mm, Banda, ca. 28 m, sand.

Distribution. Seychelles, Andamans, Philippines, Solomon Is., Palau Is., Gilbert Is., Tuamotus and Society Is., and Australia; now Mauritius.

Thalamita sexlobata Miers

Material. 1 ♂, Iranian Gulf, 250 miles N Jask Leyete, 8 m. 20 ♂, 5 ♀, 2 ovig. ♀, Java Sea and Sunda Strait, 30–52 m, (Kei Is.Exp.Sts.67,69,73,90,103,106). 2 ♂, Jolo, Philippines, 30 m. 1 ♀, 1 ovig. ♀, Makassar, ca. 35 m, sand and shells. 1 ♂, 1 ♀, Honolulu 20–80 m.

Distribution. Madagascar, Iranian Gulf to Tonga Is. and Australia; now from Honolulu.

Thalamita sima H. Milne Edwards

Material. 1 ♀ (badly damaged), Mauritius, 10–20 m. 2 ♂, 4 ♀, 1 juv., Singapore, low water. 4 ♂, 2 ♀, Strait of Malacca, E of Singapore, Singapore and Java Sea, surface by light, (Galathea Sts.328,339,402,454). 6 ♂, 5 ♀, 2 juv., Java Sea, Pulu Balu and Sunda Strait, 17–52 m, (Kei Is.Exp.Sts.65,66,103, 117). 5 ♂, 4 ♀, 6 ovig. ♀, 1 juv., off Jolo, Philippines, 20–60 m. 5 ♂, 3 ♀, 1 ovig. ♀, 3 juv., off Toeal, Kei Is., and Makassar, 20–40 m, (Kei Is.Exp.Sts.11, 14,19,194). 1 ♀, Bucas Grande, Philippines, surface by light, (Galathea St. 425). 5 ♂, 3 ♀, 1 ovig. ♀, Thursday I., 6 m, (Galathea St.506).

Distribution. Madagascar, Mozambique and Red Sea to Hawaii, including Japan and Australia.

Thalamita spinifera Borradaile

Material. 1 ♂, W of Malay Peninsula, Thailand, 30 m. 3 ♂, 1 ♀, 2 ovig. ♀, Java Sea and Sunda Strait, 30–52 m, (Kei Is.Exp.Sts.69,73,82,103). 1 ♂, 1 ovig. ♀, Amboina Bay and Banda, 70–100 m. 1 ♂, 1 ♀, Kei Is., 100 m, (Kei Is.Exp.Sts.17,24). 1 ♂, Honolulu, 20–80 m.

Remarks. The largest specimen examined (26 mm ♂, Kei Is.) has a sufficiently large subsidiary tooth behind the first anterolateral tooth to almost bridge the gap between the genera *Thalamita* and *Charybdis*. It is only fractionally smaller than the second anterolateral tooth of *C. (C.) rathbuni* as figured by

Leene (1938, fig. 52). It is possible that Leene's species known only from the holotype female belongs to the present species.

Distribution. Madagascar, Maldives, Philippines and Hawaii; now from Malaysian area.

Thalamita spinimana Dana. Fig. 5

Material. 2 ♂, W of Malay Peninsula, Thailand, muddy sand flat. 5 ♂, 2 ♀, off Singapore, coral reef, (Galathea St.337). 1 ♂, Zamboanga, coral reef. 1 ♀, Dinagat, surface by light, (Galathea St.414). 1 ♂, 1 ♀, Toeal, Kei Is., 1-2 m. 2 ♂, Doe Roa and S of Doe Roa, 5-20 m, sand, (Kei Is.Exp.St.15). 1 ovig. ♀, Pacific Ocean. 2 ♀, Suva, Fiji, tidal flat and reef flat.

Remarks. The two males (53, 54 mm) from W of Malay Peninsula differ sufficiently from description and illustrations to raise the possibility that they belong to an undescribed species. The illustrated specimen (54 mm) shows long and well-separated frontal teeth, and on the cheliped three black tipped spines on the upper surface of the wrist and seven large and two small spines on the upper surface of the palm. However in other respects including pleopod structure they are identical with typical *T. spinimana*. One of the above males has an abnormality fusion of the submedian and lateral frontal teeth on the right side. Other specimens in the collection show certain of the cheliped features of the above specimens, e.g., the male from Toeal has three spines on the upper surface of one wrist and four on the other, and six large and two small spines on the palm of one cheliped. The largest male from off Singapore has three spines on the upper surface of each wrist and six large and three small on each palm.

Distribution. Malaysia to the Mariana Is., including Australia; now from Fiji.

Thalamita stephensoni Crosnier

Material. 3 juv., 6-10 mm, Honolulu, coral reef.

Distribution. Madagascar, New Georgia, Melanesia and Samoa; now from Honolulu.

Thalamita woodmasoni Alcock

Material. 1 ♂, 15 mm, 1 ♀, 11 mm, Mombasa, coral reef, (Galathea St.255).

Remarks. The specimens show the following features of *T. woodmasoni* which offer distinctions from *T. taprobanica*. (a) less well-marked median frontal notch, (b) granular costae on hand, (c) conspicuous spines on upper surface of hand, especially on outer surface, (d) squamiform markings on upper surface of wrist and hand, although not on under surface of hand.

Alcock and Anderson (1900:48, figs. 1,1a) show a further difference between *T. woodmasoni* and *T. taprobanica* with the latter possessing a continuous cardiac ridge. This is possessed by the present specimens, as well as those of Barnard (1950:177-178) and Crosnier (1962:121-123).

Another difference between the present specimens and *T. taprobanica*, is that they possess transverse striae on the surface of the carapace resembling

those in *T. corrugata* Stephenson and Rees (1961). This does not apply to the material of Barnard or Crosnier.

Distribution. E.Africa, Madagascar, Andamans and Ceylon.

Thalamitoides quadridens A. Milne Edwards

Material. 1 ♂, 1 juv., Waluig, Banda I., 10–15 m. 1 juv., Suva, Fiji, reef flat.

Distribution. Red Sea, Madagascar, Philippines, Amboina, Jalvit, Marshalls, Samoa, Hawaii, Johnston I. and Australia.

Thalamitoides tridens. A. Milne Edwards

Material. 1 ♀, 19 mm, Mauritius, coral reef.

Distribution. Madagascar and Red Sea to Fiji, but not Japan or Australia.

PODOPHTHALMINAE Borradaile

Podophthalmus nacreus Alcock

Material. 1 ♂, 12.5 mm, Sunda Strait, 35 m, (Kei Is.Exp.St.82). 2 ♂, 7 and 7.5 mm, Amboina Bay, 100 m, sand and stones.

Distribution. India and Japan, now from Indonesia.

Podophthalmus vigil (Weber) Fig. 8

Material. 19 ♂, 21 ♀, 2 juv. (some with stalked barnacles), Nancowry Harbour, Nicobars and off Kerteh, Trengganu, Malaya, surface by light, (Gala-

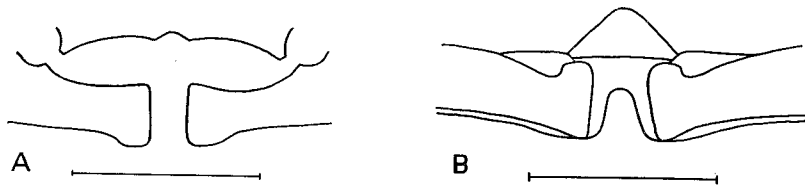


Fig. 8. *Podophthalmus vigil* (Weber), fronts, anterior view. A) normal and B) abnormal specimen, for details see text. Scale lines 5 mm.

thea Sts.319,373). 1 ♂, 1 ♀, 1 juv., W of Malay Peninsula, Thailand, 15–22 m. 1 ♀, 3 juv., Sunda Strait, Bantam Bay and Java Sea, 13–31 m, (Kei Is.Exp. Sts.89,105,119,120). 1 juv., Java, ca. 70 m, sand. 4 ♂, Padang Harbour, Sumatra. 1 ♀, Manila Bay, surface by light, (Galathea St.410). 1 ♂, Nagasaki.

Remarks. On the smaller specimens the spine on the inner surface of the palm is very small, sometimes absent. One male from Trengganu, has an abnormal front and on fig. 8B, this is compared with a normal specimen from the same collection.

Distribution. Red Sea and Madagascar to Hawaii, Samoa and Tahiti, including Japan and Australia.

II. WESTERN AMERICAN MATERIAL

The 11 listed species and subspecies all fall within the known distributional regions, see Garth and Stephenson (1966).

PORTUNINAE Stephenson and Campbell

Arenaeus mexicanus (Gerstaecker)

Material. 1 ♀, 2 ovig. ♀, Pearl Is., sand and mud.

Callinectes arcuatus Ordway

Material. 1 ♂, Panama Harbour, low tide. 1 ♂, Shore of Panama, low tide. 1 ♂, 2 ♀, Taboguilla, Panama, low water. 2 ♂, Taboga, Panama. 1 ♂ (dry and broken), 1 ♀, Bahia de Tumaco, Colombia. 3 ♂, 3 ♀, W coast Colombia, beach and 9 m.

Cronius ruber (Lamarck)

Material. 4 ♀, 1 juv. and 2 damaged specimens, Taboguilla and Taboga, Panama, 8–10 m, sand and shells.

Portunus acuminatus (Stimpson)

Material. 7 ♂, 6 ♀, 2 ovig. ♀ and 1 damaged specimen, Pearl Is., mud and shells.

Portunus asper (A. Milne Edwards)

Material. 2 ♀, W coast Colombia. 19 ♂, 5 ♀, 10 ovig. ♀, 3 juv., Taboga, Taboguilla, Tortola, Melones, all Panama, 2–10 m. 46 ♂, 38 ♀, 10 ovig. ♀, 3 juv., 1 damaged specimen, Pearl Is., 20–50 m, mud and shells.

Portunus brevimanus (Faxon)

Material. 2 ♂, 36 and 41 mm, 1 ovig. ♀, 52 mm, Venada Beach, Panama, low tide, under stones on mud.

Portunus tuberculatus (Stimpson)

Material. 1 ♂, 1 ♀, 1 ovig. ♀, Taboguilla and Taboga, Panama, low water and 10 m. 3 ♀, 1 ovig. ♀, Pearl Is., 20–ca. 70 m.

Portunus xantusii affinis (Faxon)

Material. 1 ovig. ♀, S. of Rey I., Pearl Is., 30 m. 157 ♂ (1 with stalked barnacles), 52 ♀, off Manzanillo and Manzanillo-Acapulco, Mexico, surface by light and stomach contents of *Coryphaena*, (Galathea Sts.710,711,712,719,720, 722).

Portunus xantusii xantusii (Stimpson)

Material. 1 ♂, 2 ♀, La Jolla, 20–50 m, sand and mud. 6 ♂, 3 ♀, 2 ovig. ♀, San Diego Bay, 4–10 m, sand.

PODOPHTHALMINAE Borradaile

Euphylax dovii Stimpson

Material. 2 ♀, Bahia Buenaventura, Colombia. 3 ♀, from stomach of *Acanthocybium solandri* (?), Bahia Solano, Colombia. Carapace and chelipeds only, Gulf of Panama, surface, (Galathea St.726).

Euphylax robustus A. Milne Edwards

Material. 1 ♂, S. of Rey I., Pearl Is., 30 m.

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