

SOME PORTUNIDS (CRUSTACEA: PORTUNIDAE) MOSTLY FROM QUEENSLAND

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(With one text-figure and one plate)

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SYNOPSIS

This paper describes two new Australian species, *Charybdis* (*Charybdis*) *yaldwyni* and *C. (Charybdis) moretonensis*, lists three new records and adds to descriptions or existing records of nine other Australian species of portunids.

INTRODUCTION

Since the publication of the last extensive paper on Australian portunids (Stephenson, 1961) sufficient interesting specimens have been assembled to merit a further report. About half the material has been obtained either during dredging in Southern Queensland by the Department of Zoology, University of Queensland or during experimental trawling in the Gulf of Carpentaria by CSIRO Division of Oceanography and Fisheries. Only one species (*Charybdis variegata*) was not collected in Australia, and it is included because a previous key to Australian species (Stephenson, Hudson & Campbell, 1957) contains an error which was not apparent until this material had been examined.

The genus *Ovalipes* Rathbun, 1898, is not dealt with, although it is known that there are undescribed Australian species. It is hoped to revise this genus on a cosmopolitan basis in a future publication.

Species are listed under subfamilies, in the order given in Stephenson & Campbell (1960) and repeated in Stephenson & Rees (1966). Within subfamilies genera are arranged alphabetically, and within genera, apart from two closely related species, a similar order is followed. Under species, material is listed under states, and within states listing is chronological by dates of collection.

The following abbreviations are used for institutions: AM—Australian Museum, Sydney, and WAM—Western Australian Museum, Perth. Where these abbreviations are followed by a number, this is the Museum's registered number.

Measurements of total breadths of carapace are given to the nearest 0.5 mm.

Synonymy in general is restricted to recent references, but a full synonymy is given for species which are discussed in detail.

Subfamily CATOPTRINAE Borradaile, 1907

***Libystes paucidentatus* Stephenson & Campbell**

Libystes paucidentatus Stephenson & Campbell, 1960, pp. 86-7, figs. 1B, 2D; pl. 1, fig. 4; pl. 5D.

MATERIAL EXAMINED

QUEENSLAND.—Female (20 mm), Moreton Bay, trawled between Peel I. and Green I., 1.ii.1961, L. Wale. Female (17.5 mm), trawled Moreton Bay, late 1962, L. Wale. Three additional specimens were dredged in Moreton Bay in 1962-63, but have not been retained.

COMMENTS

Recorded only from Moreton Bay.

Subfamily MACROPIPINAE Stephenson & Campbell, 1960

Macropipus corrugatus (Pennant)

Cancer corrugatus Pennant, 1777, p. 5, pl. v, fig. 9.

Macropipus corrugatus (Pennant). Stephenson & Campbell, 1960, pp. 92-4, figs. 1E, 2G; pl. 2, fig. 4; pl. 5G (synon.). Sakai, 1965, p. 114, pl. 51, fig. 2.

MATERIAL EXAMINED

WESTERN AUSTRALIA.—Male (28 mm), Beagle I., dredged, Apr. 1962, Poole brothers, WAM 159-62.

COMMENTS

First Western Australian record of a widespread antitropical species.

Subfamily CAPHYRINAE Alcock, 1899

Caphyra laevis (A. Milne Edwards)

Goniosoma laève A. Milne Edwards, 1869, p. 152.

Caphyra octodentata Haswell, 1882, pp. 753-4.

Caphyra laevis (A. Milne Edwards). Stephenson & Campbell, 1960, pp. 97-101, figs. 1G, 2I, 3D-G, 3J; pl. 3, fig. 3; pl. 51. Crosnier, 1962, pp. 32-4, figs. 43a, b.

MATERIAL EXAMINED

QUEENSLAND.—1 male, 1 female (both 8 mm), in "*Xenia*", Low Water Springs, Myora, Stradbroke I., Moreton Bay; 17.vi.1962; W. Stephenson.

COMMENTS

The male possesses four anterolateral teeth on each side, of which the first is much the largest, the second and fourth are subequal, and the third slightly the smallest. This specimen, identical with typical *C. laevis* apart from the four pairs of anterolateral teeth, confirms Stephenson & Campbell's (1960) synonymisation of *C. octodentata* Haswell.

Specimens of "*Xenia*" with the same locality data were sent to Mme. Tixier-Durivault, and are the type material of two new species, *Anthelia densa* and *Heteroxenia multipinnata* (Tixier-Durivault, 1966).

Caphyra yookadai Sakai

Caphyra yookadai Sakai, 1933, pp. 141-3, pl. xiii, fig. 3; 1939, p. 378, pl. xliii, fig. 4. Stephenson & Campbell, 1960, pp. 102-4, figs. 1I, 2K, 3H; pl. 4, fig. 1; pl. 5K. Crosnier, 1962, pp. 31-2, figs. 40-3.

Caphyra rotundifrons (A. Milne Edwards). Barnard, 1957, pp. 2-3, fig. 1. non *Camptonyx rotundifrons* A. Milne Edwards, 1869, p. 156, pl. 7, figs. 11, 12.

MATERIAL EXAMINED

QUEENSLAND.—Female (6 mm); near Myora beacon, Moreton Bay, in soft coral; 8.viii.1961; J. Bishop.

COMMENTS

Only the fourth known Australian record; all records are from Moreton Bay. World distribution:— East coast of South Africa, Madagascar, Moreton Bay, and Japan.

Subfamily PORTUNINAE Stephenson & Campbell, 1960

Charybdis (Charybdis) incisa Rathbun

Plate VII, A

Charybdis (Charybdis) incisa Rathbun, 1923, pp. 131-2, pl. xxxiii, figs. 1-3.

Charybdis (Charybdis) orientalis Dana. Leene, 1938, p. 69, in part, viz. ovig. female, *Siboga* Sta. 179.

MATERIAL EXAMINED

QUEENSLAND.—Female (c. 18 mm); Rainbow Channel, N.E. of Myora Light, Moreton Bay, dredged coarse sand, 6-8 fm; 12.x.1961; W. Stephenson, M. Rees and party.

COMMENTS

Leene (1938) synonymised under *C. orientalis* Dana one species later separated and described as new by Edmondson (1954), viz. *C. hawaiiensis*. Examination of the present specimen shows that *C. incisa* Rathbun, synonymised by Leene with *C. orientalis*, is also a distinct species. The three can be keyed out by the following modification of Leene's key (1938, pp. 19-21):

- I. Antennal flagellum not excluded from orbital hiatus.....*C. bimaculata* (Miers)
- II. Antennal flagellum completely excluded from orbital hiatus; margin of posterior border of cephalothorax forming a curve with posterolateral borders; anterolateral border cut into six teeth (or seven, six of which are large):
 - A. Distinct transverse ridges present on cephalothorax behind last anterolateral teeth several spp.
 - B. No distinct transverse ridges on cephalothorax behind last anterolateral teeth:
 1. First anterolateral teeth more or less truncate.....several spp.
 2. First anterolateral teeth not truncate:
 - a. Second anterolateral tooth about as large as first.....several spp.
 - b. Second anterolateral tooth distinctly smaller than first:
 - a. Last anterolateral tooth a long spine; anterior border of arm of cheliped with two spines; hand with two spines; transverse ridges on cephalothorax hardly distinguishable.....*C. anisodon* de Haan
 - β. Last anterolateral tooth either not more prominent or slightly more prominent than preceding teeth:
 - i. First anterolateral tooth the largest; submedian frontal teeth truncate:
 - a' Outer surface of hand of cheliped strongly squamiform throughout.....*C. yaldwyni* n.sp (see later)
 - b' Outer surface of hand of cheliped coarsely granular on upper half and squamiform on lower half.....*C. jaubertensis* Rathbun
 - ii. First anterolateral tooth not the largest:
 - a' Frontal teeth triangular.....*C. orientalis* Dana
 - b' Frontal teeth rounded:
 - a Inner surface of hand of cheliped smooth.....*C. incisa* Rathbun
 - b Inner surface of hand of cheliped granular.....*C. hawaiiensis* Edmondson
 - c. First and second anterolateral teeth grown together except for distal end, appearing as a bifurcated tooth; upper border of orbit with one incision; lower border of orbit without gap.....*C. heterodon* Nobili

Rathbun's (1923) description and figures are adequate for specific recognition of *C. incisa*. The following points augment her description:— (a) carapace hirsute; (b) pair of frontal ridges, present in this specimen, not mentioned or figured by Rathbun; (c) fifth anterolateral tooth smaller than remainder (excluding second tooth); (d) granulation of cheliped; arm—upper surface sparsely granular, undersurface very finely granular; wrist—upper surface with spiniform carina terminating near spine at wrist articulation; hand—distal spine on upper outer margin reduced to tubercle.

C. incisa differs from *C. orientalis* as follows: (a) frontal teeth blunt and rounded as against triangular; (b) submedian frontal teeth broader than medians, in *C. orientalis* medians broader than or as broad as submedians; (c) fifth anterolateral teeth relatively much smaller; (d) carapace and chelipeds more densely hirsute; (e) outer surface of hand of cheliped more granular; (f) length: breadth ratio of merus of fifth leg 2.66 as against 2.03-2.24 in *C. orientalis*.

As Leene (1938, p. 69) has suggested, there is some variability in the relative sizes of the third and fourth anterolateral teeth in *C. orientalis*.

This species is known only from Southern Queensland and the west coast of Ceram.

***Charybdis jaubertensis* Rathbun and closely related species**

In previous work (Stephenson, Hudson & Campbell, 1957; Stephenson, 1961), two very similar species have been confused, and this has been drawn to our attention by Drs. J. C. Yaldwyn and R. W. George who noted colour differences in live specimens from the Gulf of Carpentaria. Stephenson, Hudson & Campbell (1957) included both species in material they listed, but the description referred to one species only. The material of Stephenson (1961) belongs only to *C. jaubertensis* upon which brief colour notes were given.

***Charybdis (Charybdis) yaldwyni* n. sp.**

Plate VII, C; Text-figure 1, D-F

Charybdis (Charybdis) jaubertensis Rathbun, Stephenson, Hudson & Campbell, 1957, pp. 498, 500, figs. 2A, 3A; pl. 2, fig. 1; pl. 4D (in part).
non *Charybdis (Charybdis) jaubertensis* Rathbun, 1924, p. 23, pl. 1, figs. 10, 11.

MATERIAL EXAMINED

Holotype (figured specimen):— QUEENSLAND.—Male (39.5 mm); C.S.I.R.O. Gulf Carpentaria Prawn Surv., 1963; AM 14956.

Paratypes: QUEENSLAND.—Female (29 mm); dredged 12 fm off Gatcombe Hd., Facing I., Port Curtis; Dec. 1929; pres. M. Ward; AM P.12557. Male (18 mm), juv. (12.5 mm); data as above; AM P.12562. Male (42 mm), female (damaged, c. 36 mm); Pat's Point, Moreton Bay, otter trawl, 4 fm, mud; 24.x.1950; T. Marshall; AM P.13079. Male (29.5 mm); trawled 7 m., 3½ miles S. of Woody Pt. pier, Moreton Bay; 2.vi.1952; E. M. Grant; AM P.13088. 2 females (36.5, 42.5 mm); data as above; 26.x.1952; E. M. Grant; AM P.13081. Ovig. female (44 mm); trawled 12 m. off S.E. edge Pearl Channel, Moreton Bay; 20.xi.1952; E. M. Grant; AM P.13084. Male (32 mm), female (21.5 mm), ovig. female (32 mm); dredged Weipa, Cape York Peninsula; Sept. 1961; E. Gamberg; WAM 3-65. Male (20.5 mm); Albatross Bay, nr. Weipa, Gulf Carpentaria; June 1962-Mar. 1963; H. Foley; AM P.14166. Female (30.5 mm); data as above; AM P.14167. 3 females (35-44.5 mm); trawled between Mud I. and Moreton I., Moreton Bay; 14.xii.1962; W. Stephenson, M. Rees and party, Univ. of Qd. 7 males (29-44 mm), 6 females (27-40 mm); C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 1963; AM 14955. Male (35.5 mm), 3 females (29, 34.5, c. 37.5 mm), ovig. female (31.5 mm); Sta. 1529, 17°12'-18'S, 140° 18'-20'E, 7½ fm, mud and grit; C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 9.xi.1964; R. W. George on "Roma"; WAM 5-65. Ovig. female (33.5 mm); data as above; WAM 11-65. Ovig. female

(33 mm); Sta. 1542, 16° 36-42'S, 140° 12-18'E, 17½ fm, mud and grit; C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 10.xi.1964; R. W. George on "Roma"; WAM 13-65. Female (35 mm); Sta. 1546, 17° 6-12'S, 140° 36-42'E, 6½ fm, mud and grit; C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 15.xi.1964; R. W. George on "Roma"; WAM 12-65. Male (34.5 mm), female (31 mm), 2 ovig. females (29.5, 30 mm), *Sacculina* infested female (30 mm); Sta. 1549, 17° 0-6'S, 140° 36-42'E, 8 fm, mud and grit; C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 16.xi.1964; R. W. George on "Roma"; WAM 9-65.

WESTERN AUSTRALIA.—Female (31.5 mm); trawled Exmouth Gulf; Oct.-Nov. 1958; W. & W. Poole on "Bluefin"; WAM 75-58.

DESCRIPTION

This species is close to *C. jaubertensis* Rathbun, having the following features in common:

Front.—Six lobes with medians and submedians rounded, laterals narrow, and inner orbital lobes broadly triangular. In small specimens median and submedian frontal lobes almost square-cut.

Anterolateral teeth.—Six, second smaller than first, third large, remainder small. In small specimens first tooth sharp.

Carapace.—Relatively narrow, hirsute, mostly minutely pitted, with granular ridges. Posterior-posterolateral junction rounded. Ridges:—frontals short; pair of protogastrics widely separated; mesogastrics almost continuous and straight; metogastrics either straight, sinuous or forming a shallow arc; epibranchials well-developed. Granulated areas on bases of inner supraorbital angles and near bases of anterolateral teeth.

Chelipeds.—Either subequal or one larger than other. Arm—upper surface proximally smooth, distally with transverse granular rows; under surface squamiform, and with spine or tubercle near wrist articulation. Wrist—granular on upper and squamiform on outer surfaces; four spines, largest one at inner angle, two on outer distal margin, one on upper surface; three carinae terminating at inner, upper and proximal outer spines respectively. Hand—five spines or four spines and a tubercle on upper surface, including one at wrist articulation, two on inner margin, two on outer margin both small, with distal one sometimes reduced to a tubercle; upper surface with inner carina granular, outer carina of transverse rows of granules; between carinae usually sparsely granular; outer surface bearing squamiform markings, with indistinct upper and distinct lower carinae; under surface squamiform; inner surface at least partially squamiform, with central carina; finger shorter than palm, deeply grooved, with inwardly curved tips.

Fifth leg.—Merus moderately broad, with large spine on posterior border. Posterior border of propodus bearing spinules.

Male abdomen.—Antepenultimate segment with concave borders, penultimate segment with convex borders, ultimate segment longer than broad.

First male pleopod.—Membrane conspicuous in larger specimens, lip protruding. Tip, upper view: inner surface—spines distal to lip, some spines hidden beneath membrane; outer surface—proximally sparse or scattered row of spines, becoming longer and denser opposite membrane and shorter distally. Tip, under view: inner surface—irregular patch of spines distal to lip.

The differences between the two species are based upon examination of all available Australian material and also Rathbun's holotype of *C. jaubertensis* kindly loaned by the Naturhistoriska Riksmuseet, Stockholm.

Rathbun's holotype is a small male (14.6 mm breadth according to Rathbun, 14.7 mm our measurements) showing certain features of juvenility, with a damaged left frontal region, and with only slight traces of pigmentation. Comparison with Australian specimens of approximately similar size shows that it is identical with *C. jaubertensis* as identified by Stephenson (1961), but not with *C. jaubertensis* as identified by Stephenson, Hudson & Campbell

(1957). This second species has been named *C. yaldwyni* in honour of Dr. John C. Yaldwyn, of the Australian Museum, who drew our attention to most of the diagnostic differences between the species.

The only difference between small Australian specimens of *C. jaubertensis* and Rathbun's holotype is that in the latter the penultimate segment of the male is relatively broad. In the table which follows, comparisons are between large specimens of the two species, with smaller specimens of *C. jaubertensis* differing from larger in having (a) broader submedian frontal lobes with inner borders markedly inclined, in which they resemble larger specimens of *C. yaldwyni*; (b) all anterolateral teeth sharp. The third to sixth teeth are about as sharp as in the adults of *C. yaldwyni*, and are sharper than those in adults of *C. jaubertensis*.

Feature	<i>C. yaldwyni</i> n.sp.	<i>C. jaubertensis</i> Rathbun
<i>Front</i>		
Median lobes	narrow	broad
Breadth submedian lobes	broader than medians	usually as broad as medians, sometimes broader
Inner borders submedian lobes	markedly inclined	usually slightly, occasionally markedly inclined
Notch between submedian and lateral lobes	shallow	deep
<i>Anterolateral teeth</i>		
Breadth of first tooth	broad	very broad
Shape of first tooth	markedly truncate	slightly truncate
Smallest tooth (excluding second)	fifth	sixth
<i>Carapace</i>		
Curvature of postero-lateral borders	relatively straight	relatively curved
Breadth of posterior border	relatively broad	relatively narrow
Frontal ridges	inconspicuous	usually relatively conspicuous
Mesobranchial area	diffusely corrugated, sometimes a short ridge	short ridge
Granules on frontal lobes	usually on bases of submedian lobes, sometimes on bases of median lobes	always on bases of all lobes
Inner ends of epibranchial ridges and cardiac areas	short, irregular, corrugated ridges or corrugated areas	typically granulated
<i>Chelipeds</i>		
General surface	granular, mostly in squamiform arrangement	strongly granular
Hand in larger males	distinctly swollen	slightly swollen
Spine at inner angle of wrist	moderately long	long
Outer carina upper surface of hand	obscure	well developed
Outer surface hand	strongly squamiform throughout	coarsely granular upper half, squamiform lower half
Inner surface hand	strongly squamiform throughout	hirsute upper half, finely squamiform lower half
Central carina inner surface hand	almost smooth or obscure	squamiform granulation
<i>Male abdomen</i>		
Borders of antepenultimate segment	markedly concave	concave

Penultimate segment	broader than long	about as long as broad
Sides of penultimate segment	convex	slightly convex
Sides of ultimate segment	relatively straight	curved
Ratio L. ult./L. penult. segments	0.74-0.86	0.71-0.75
<i>First male pleopod</i>		
General shape	short, stout, sharply curved	long, slender, sinuous
Lip	protruding markedly outward	protruding markedly forward
Upper inner spines proximal to lip	none	inconspicuous well-spaced row
Number upper inner spines distal to lip	6-12	10-13
Number upper inner spines hidden by membrane	3-6	7
Spinulation under surface distal to inner spines	typically incomplete row of c. 5 spinules continuing to tip	none

COMMENTS

Additional features not mentioned previously:— (a) anterolateral teeth: occasionally fifth and sixth teeth of equal size; (b) carapace, length: breadth ratio 0.73—0.77; (c) chelipeds: arm—anterior border typically with three spines, rarely with spine or tubercle between proximal two; hand—upper surface with inner carina strongly granular.

The distribution of this species is North Australian, ranging from Exmouth Gulf (Western Australia) to Moreton Bay (Queensland). Over much of their ranges *C. yaldwyni* and *C. jaubertensis* are sympatric, with the former extending further south on the eastern coastline, and the latter further south in the west.

***Charybdis (Charybdis) jaubertensis* Rathbun**

Plate VII, B; Text-figure 1, A-C

Charybdis (Charybdis) jaubertensis Rathbun, 1924, p. 23, pl. 1, figs. 10, 11. Leene, 1938, pp. 67-8, fig. 31a, b. Stephenson, Hudson & Campbell, 1957, pp. 498, 500, figs. 2A, 3A; pl. 2, fig. 1; pl. 4D (in part). Stephenson, 1961, pp. 116-7.

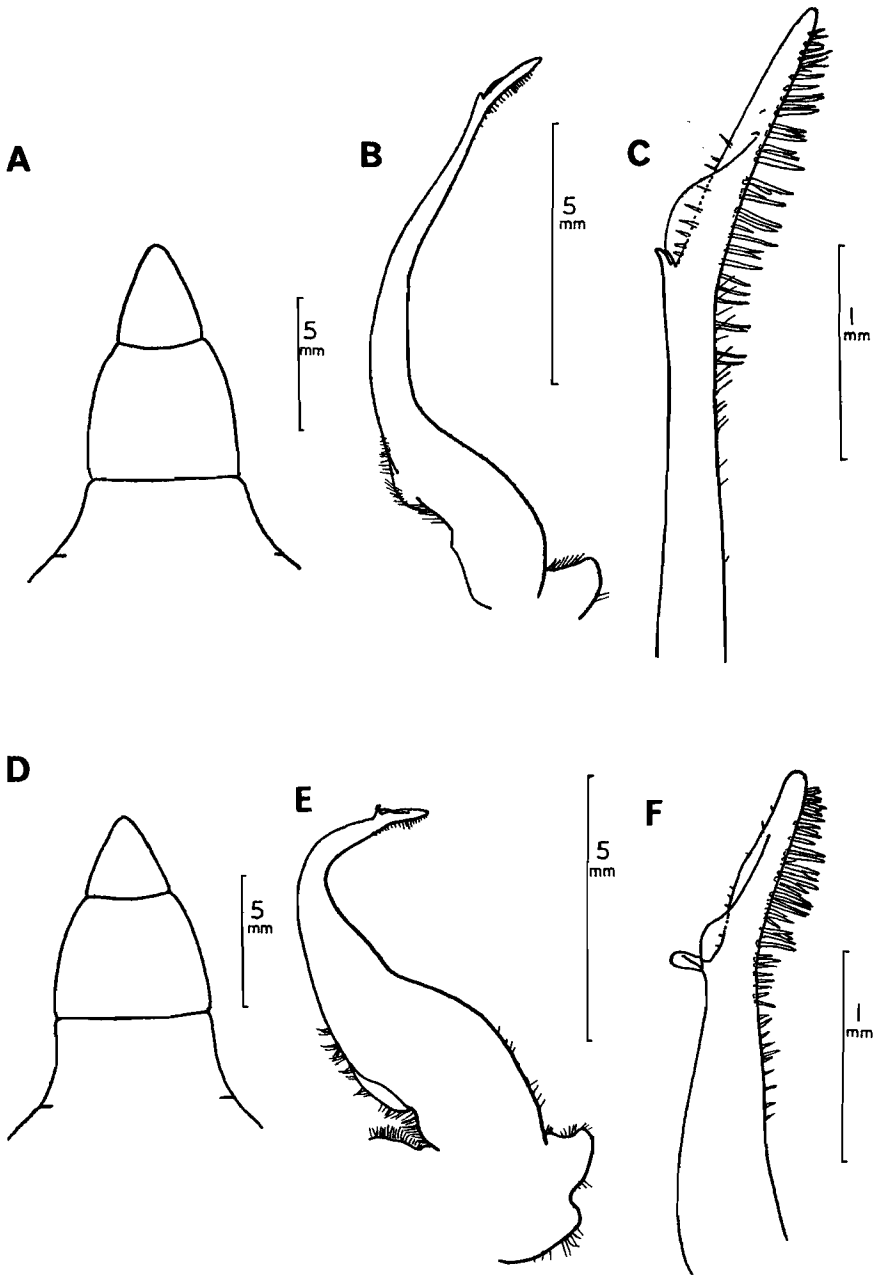
MATERIAL EXAMINED

Holotype: WESTERN AUSTRALIA.—Male (14.7 mm); Cape Jaubert 45 miles W.S.W., 72 ft; 17.vii.1911; Dr. E. Mjöberg's Swedish Scientific Expedition; Naturhistoriska Riksmuseet No. 3972.

QUEENSLAND.—Male (39.5 mm); dredged S.E. Mackay; 24.ii.1964; W. Goode; WAM 7-65. 2 males (42, 42.5 mm), female (36.5 mm); C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 1963; AM P.14775 (42 mm male figured specimen). Male (54 mm), female (42.5 mm), ovig. female (41.5 mm); Sta. 1542, 16° 36-42'S., 140° 12-18'E., 17½ fm, mud and grit, C.S.I.R.O. Gulf Carpentaria Prawn Surv.; 10.xi.1964; R. W. George on "Roma"; WAM 4-65.

NORTHERN TERRITORY.—Female (44 mm); Anson Bay, Peron I., surface, submarine light; 25.ix.1949; G. P. Whitley on "Stanley Fowler"; AM P.12670.

WESTERN AUSTRALIA.—Female (29 mm); 9 fm, entrance Roebuck Bay; 15.viii.1929; A. A. Livingstone; AM P.12638. Juv. (13 mm); dredged 5 fm, 5 miles off shore from Ninety Mile Beach, between Cape Jaubert and Wallal; Sept. 1929; A. A. Livingstone; AM P.12632. 2 juvs. (9, 14.5 mm); Broome; June 1932; pres. Dr. H. L. Clarke, per E. W. Bennett, Univ. W. Aust.; AM P.10197. Male (47 mm); trawled 6 miles S. of Double I. (Barrow I.); 20.ix.1958; R. W. George on "Lancelin"; WAM 74-58. Male (46.5 mm); trawled Exmouth Gulf; Oct.-Nov. 1958; W. & W. Poole on "Bluefin"; WAM 75-58. Male (19 mm); near



Text-figure 1.—A-C, *Charybdis jaubertensis* Rathbun; A, male abdomen; B, first male pleopod; C, tip of pleopod. D-F, *C. yaldwyni* n. sp; D, male abdomen; E, first male pleopod; F, tip of pleopod.

bar of South Passage, Shark Bay; 14.v.1960; R. W. George on "Davena"; WAM 36-60. 2 females (38.5, 46 mm); Shark Bay, TT 26, trawled; 13.iii.1962; F. R. V. "Peron"; WAM 6-65. Female (31.5 mm); mouth of Peron Flats, Shark Bay; July 1962; Poole Brothers; WAM 10-65. Male (38.5 mm); 5 fm near little Turtle I., Port Hedland; 12.x.1962; R. W. George on "Dorothea"; WAM 15-65. 2 juvs. (12.5, c. 18 mm, soft damaged); Broome, sand bar opposite jetty; 15.x.1962; R. W. George on "Dorothea"; WAM 14-65. Male (39.5 mm); trawled Shark Bay; June 1963; W. & W. Poole; WAM 16-65. Female (42 mm); Shark Bay; July 1963; W. & W. Poole; WAM 4-65. 2 juvs. (9.5, 13 mm); dredged between Cape Bossut and Broome; 10.ix.1929; A. A. Livingstone; AM P.12629 (these two juvs. too small to be positively identified).

COMMENTS

Additional features not mentioned previously:— (a) anterolateral teeth: sixth tooth sharpest; (b) carapace: length: breadth ratio 0.72—0.75; (c) chelipeds: arm—anterior border with three or four spines, if four, second most proximal always smaller than remainder; wrist—inner spine less stout in juveniles; hand—upper surface with inner carina composed of transverse granular rows.

The species has been recorded only in northern Australia from Shark Bay (Western Australia) to Mackay (Queensland).

***Charybdis (Charybdis) lucifera* (Fabricius)**

Portunus lucifer Fabricius, 1798, p. 364.

Charybdis (Charybdis) lucifera (Fabricius). Leene, 1938, pp. 57-60, figs. 23-25.

Stephenson, Hudson & Campbell, 1957, p. 500, figs. 2F, 3G; pl. 2, fig. 2; pl. 4E.

MATERIAL EXAMINED

QUEENSLAND.—Female (49.5 mm); Pretty Beach near Cairns; 29.vii.1961; J. Riley. Female (27 mm); Magnetic Island, Cleveland Bay, dredged; 29.iv.1963; K. Bryson.

COMMENTS

The carapace of the 27 mm female has the longer last anterolateral teeth and rounder median frontal lobes typical of juveniles (see Leene, 1938, fig. 25) and in addition the faint epibranchial ridge is not interrupted in the midline. In the larger specimen the gastric section of the epibranchial ridge is absent.

World distribution: India to Japan, including Australia.

***Charybdis (Charybdis) miles* de Haan**

Portunus (Charybdis) miles de Haan, 1835, p. 41, pl. 11, fig. 1.

Charybdis (Charybdis) miles de Haan. Leene, 1938, pp. 38-42, figs. 10-13.

Stephenson, Hudson & Campbell, 1957, pp. 500-1, figs. 2H, 3I; pl. 2, fig. 3; pl. 4F. Sakai, 1965, p. 163, pl. 61. Stephenson & Rees, 1966 (in MS). Stephenson, 1966 (in MS).

MATERIAL EXAMINED

NORTHERN TERRITORY.—Male (54 mm); Arnhem Bay, 10 fm, sand and mud; V. Wells.

COMMENTS

New record for Northern Australia. Previously known from India to Japan including New South Wales.

***Charybdis (Charybdis) moretonensis* n. sp.**

Plate VII, D

MATERIAL EXAMINED

Holotype (figured specimen): QUEENSLAND.—Female (*Sacculina* infested, damaged, c. 35 mm); trawled 7 m., 3½ miles S. Woody Pt. pier, Moreton Bay; 26.x.1952; E. M. Grant; AM P.13081.

DESCRIPTION

Front.—Six lobes; medians narrow, rounded and on a lower plane than submedians; submedians rounded, broader than medians, inner borders inclined; laterals narrower than medians, rounded, and separated from submedians by deep notch; inner orbital angles rounded and sharply arched.

Anterolateral teeth.—Six; first blunt, truncate; second blunt, slightly truncate; remainder all fairly sharp with the fifth broadest and the sixth narrowest and not projecting beyond remainder.

Carapace.—length: breadth ratio 0.68. Hirsute, beneath hairs smooth or minutely pitted and in some areas granular. Posterior-posterolateral junction rounded. Ridges conspicuous and granular as follows:— pair of frontals; pair of widely separated protogastrics inclined posteriorly; broad mesogastric interrupted at midline with outer ends inclined anteriorly; metagastric a shallow arc, inconspicuously interrupted at midline; epibranchials well developed, strongly curved laterally; pair of cardiacs inclined posteriorly; three pairs of mesobranchials, short one just behind inner termination of epibranchial, broad median one, and short posterior one. Small patches of granules present as follows:— on bases of median and submedian frontal teeth; behind lateral frontal teeth in frontal region; on outer borders of inner orbital angle; on bases of anterolateral teeth; between outer terminations of protogastric and mesogastric ridges; an inconspicuous patch between epibranchial and anterior mesobranchial ridges; an inconspicuous patch between cardiac and median mesobranchial ridges.

Chelipeds (only right cheliped present).—Stout, granular, hirsute, hand swollen. Arm—anterior border with four spines increasing in size distally, and a few spiniform tubercles; upper surface smooth proximally, granular distally; outer surface with granules arranged in transverse rows; under surface faintly squamiform, bordered on inner margin by granules, spine at wrist articulation; inner surface very hirsute and granular. Wrist—upper and outer surfaces granular, bearing two spines, one at inner angle, one on upper outer surface some distance in from margin; two tubercles on outer lower margin; three granular carinae, well-developed one terminating at inner spine, inconspicuous one terminating at upper spine, moderately well-developed one terminating at lower outer marginal tubercle. Hand—upper surface with two large spines on inner margin, two smaller spines on outer margin, the more distal a spiniform tubercle, one at wrist articulation; strongly granular carina on inner margin terminating at proximal spine; broad, coarsely granular carina on outer margin terminating at proximal spine; between carinae smooth with few small scattered granules; outer surface, upper half coarsely granular, central granular carina, lower half hirsute and distally granular; under surface strongly squamiform; inner surface hirsute, coarsely granular central carina, remainder of surface with flat granules arranged in squamiform pattern. Fingers stout, slightly shorter than palm, deeply grooved, upper surface of movable finger with proximally granular carinae.

Fifth leg.—Merus moderately broad (length: breadth 1.66), with large posterodistal spine. Posterior border of propodus with 7-11 well-developed spinules.

COMMENTS

Although the present specimen is a damaged parasitised female, it is regarded as a new species because it differs from *C. natator* (Herbst), the closest species, in a number of features which are almost certainly not due to parasitisation:

- (a) Median frontal teeth on a lower plane than submedian (in *C. natator* on the same level).
 (b) Inner orbital angles more acute.
 (c) Anterolateral teeth generally narrower and sharper.
 (d) Last anterolateral tooth more prominent than remainder, as against in *C. natator* last tooth either smaller than or projecting only as far as the remainder.
 (e) Carapace ridges in general more conspicuous.
 (f) Frontal ridges relatively broad, not an inconspicuous tubercular elevation as in *C. natator*.
 (g) Anterior and median mesobranchial ridges broader.
 (h) Outer surface of hand more densely granular.
 (i) Anterior border of arm with four spines as against three.
 (j) Outer surface of wrist with one distinct spine as against three.
 (k) Basal antennal joint broader and bearing finer granules.
 (l) Length: breadth ratio of merus 1.66 as against 1.47 in larger specimens of *C. natator*. (In juvenile *C. natator* length: breadth ratio of merus 1.76).
 This species is also very close to *C. beauforti* Leene & Buitendijk (1949, pp. 293-5, figs. 2, 4b) but differs from it in the following particulars:
 (a) Frontal teeth more rounded.
 (b) Presence of granular patches on anterolateral border.
 (c) Mesogastric ridge interrupted in midline.
 (d) Presence of anterior mesobranchial ridges.
 (e) Anterior border of arm with four spines as against three.
 (f) Outer surface of wrist with one distinct spine as against three.

***Charybdis (Goniohellenus) truncata* (Fabricius)**

Portunus truncatus Fabricius, 1798, p. 365.

Charybdis (Goniohellenus) truncata (Fabricius). Leene, 1938, pp. 118-121, figs. 66, 67a, b. Stephenson, Hudson & Campbell, 1957, pp. 503-4, figs. 2D, 3E; pl. 3, fig. 3; pl. 4I. Sakai, 1965, p. 122, pl. 59, fig. 3. Stephenson, 1966 (in MS).

MATERIAL EXAMINED

QUEENSLAND.—2 males (32, 35.5 mm), ovig. female (32 mm); C.S.I.R.O. Gulf Carpentaria Prawn Surv.; Dec. 1963; AM P.14776.

COMMENTS

The present specimens, which are almost identical with Leene's (1938) description and figures, differ from Stephenson, Hudson & Campbell's (1957) material in the following: (a) posterior border of carapace slightly sinuous; (b) last anterolateral teeth less projecting than remainder—Stephenson, Hudson & Campbell show them as slightly more projecting; (c) borders of penultimate segment of the male abdomen relatively longer; (e) carina on antepenultimate segment of male abdomen shorter than shown by Stephenson, Hudson & Campbell (pl. 4I); (f) male pleopod more sinuous than in Stephenson, Hudson & Campbell (fig. 2D).

World distribution: India to Japan including eastern and northern Australia.

***Charybdis (Charybdis) variegata* (Fabricius)**

Portunus variegatus Fabricius, 1798, p. 364.

Charybdis (Charybdis) variegata (Fabricius). Leene, 1938, pp. 84-8, figs. 44, 45. Stephenson, Hudson & Campbell, 1957, p. 503, fig. 3C; pl. 3, fig. 2. Sakai, 1965, p. 121, pl. 59, fig. 2.

MATERIAL EXAMINED

MALAYSIA.—2 males (34.5, 37 mm), 2 females (23, 31 mm), ovig. female (26 mm); Zoology Department, University of Malaya; 1960; Prof. Hendrickson; WAM 161-62.

COMMENTS

Leene (1938, p. 87) states that the undersurface of hand of cheliped is "bare and nearly smooth". In the present specimens the two large males are strongly squamiform on the undersurface of the hand, while the smaller specimens (females) are faintly but recognisably squamiform.

Stephenson, Hudson & Campbell's (1957) key, based on Leene's description, is misleading, and present specimens would come out with *C. jaubertensis* in this key. However it differs from the latter and *C. yaldwyni* in:

- (a) the presence of conspicuous carapace ridges posterior to epibranchials;
- (b) form of the frontal teeth; in *C. variegata* they are more acute;
- (c) shape of anterolateral teeth; in the present material, the last tooth is much more protruding than remainder;
- (d) the male abdomen; the penultimate segment in *C. variegata* is more convex than in *C. jaubertensis*.

World distribution: Persian Gulf to Northern Australia.

Portunus gracilimanus (Stimpson)

Amphitrite gracilimanus Stimpson, 1858, p. 38; 1907, p. 77, pl. x, fig. 3.

Portunus gracilimanus (Stimpson). Stephenson & Campbell, 1959, pp. 115-6. Stephenson, 1966 (in MS).

MATERIAL EXAMINED

NORTHERN TERRITORY.—Male (47.5 mm), female (36 mm), Arnhem Bay, 10 fm, sand and mud; V. Wells.

COMMENTS

New record for Northern Territory. Previously known from Andamans, east coast of India, Hong Kong, Malaya to New Guinea and Queensland.

Scylla serrata (Forskål)

Cancer serratus Forskål, 1755, p. 90.

Scylla serrata (Forskål). Stephenson & Campbell, 1960, pp. 111-5, fig. 2N; pl. 4, fig. 4; pls. 5N, 6C (including synonymy). Crosnier, 1962, pp. 72-3, figs. 128-9. Sakai, 1965, pp. 115-6, pl. 52. Stephenson & Rees, 1966 (in MS). Stephenson, 1966 (in MS).

MATERIAL EXAMINED

QUEENSLAND.—Female (71.5 mm); Yule Point, near Cairns, sand flat; 18.vi.1961; J. H. Barnes.

COMMENTS

The carapace of the present specimen bears brush-like setae on its anterior half, and a fairly conspicuous H mark on the gastric region. After 3½ years preservation, the colour is a general reddish-orange with white spots scattered variously over the carapace and walking legs, with larger spots on the chelipeds. The fifth legs bear whitish areas bordered by reddish-orange lines.

This pattern of pigmentation, together with the setae, bring this specimen close to *S. oceanica* (Dana) as described by Estampador (1949). Stephenson

& Campbell (1960) noted that mottled forms of this species are commonly seen in northern Queensland inside the Great Barrier Reef but did not have specimens for examination.

World distribution: East Africa to Tahiti, including New Zealand.

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EXPLANATION OF PLATE VII

Dorsal views; scale dimensions, 1 mm; A, *Charybdis incisa* Rathbun; B, *C. jaubertensis* Rathbun; C, *C. yaldwyni* n.sp; D, *C. moretonensis* n.sp.

