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**NOTES ON THE FAMILY
HAPALOCARCINIDAE
(CORAL-INFESTING CRABS)
WITH DESCRIPTIONS OF TWO NEW SPECIES**

by

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NOTES ON THE FAMILY HAPALOCARCINIDAE
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The crabs of the family Hapalocarcinidae usually inhabit the cavities or pits in living coral. Owing to their peculiar habitat, their size is small and the anterior portion is usually depressed and narrower than the posterior, so that the former can come out of the pit and the latter can remain within. The basal segment of the antennula is very large usually spiny and sometimes without armature. The third maxillipeds are widely separate, the ischium is wide and has a rounded internal lobe, the merus is greatly reduced and resembles the three terminal segments, and the exopodite is rudimentary.

Stimpson (1859) established this family for the species *Hapalocarcinus marsupialis* from Hilo, Hawaii, which is so far the only species known in the genus *Hapalocarcinus* Stimpson.

Heller (1860) described another form *Cryptochirus coralliodytes* from the Red Sea.

Milne-Edwards (1863) described the species *Lithoscaptus paradoxus*; it is apparently, as has been pointed out by Calman (1900) identical with or closely allied to *Cryptochirus coralliodytes*.

Verrill (1908) described the species *Troglocarcinus corallicola* from Bermuda and Dominica Islands. In fact, it is not much different from the typical species of *Cryptochirus*, as I have re-examined a male and a female specimen from the gall in *Maeandra areolata*, collected from Tortugas, Florida and deposited in the U. S. National Museum, Washington, D. C., I agree with Edmondson (1933, p. 5) in transferring it to the genus *Cryptochirus* instead of allowing it to remain in *Troglocarcinus*.

Therefore, there are hitherto only two valid genera in this small family. The chief differences between them are shown in the following key:

Family HAPALOCARCINIDAE Stimpson

Key to the genera

- I. Carapace smooth. Front produced far beyond the outer orbital angles. Basal segment of the antennula not bordered with spines. Ambulatory legs slender and smooth. *Hapalocarcinus*.
- II. Carapace more or less granulate. Front slightly produced beyond the outer orbital angles. Basal segment of the antennula bordered with spines. Ambulatory legs stout and armed. *Cryptochirus*.

* This paper was commenced in the British Museum (Nat. Hist.), London, while I was a holder of the Research Fellowship of the China Foundation, and finished in the Department of Biology, National Peking University, Peiping, China.

Genus *Hapalocarcinus* Stimpson.

1859. Stimpson, p. 412.
 1900. Calman, p. 43.
 1908. Verrill, p. 426.

Only one species has hitherto been recorded.

Hapalocarcinus marsupialis Stimpson.

1859. Stimpson, p. 412 (Hilo, Hawaii).
 1900. Calman, p. 43, pl. 3, figs. 29-30 (Torres Straits).
 1907. Stimpson, p. 170, pl. 14, fig. 8 (Hilo, Hawaii).

Material examined: A number of specimens collected from Murray Island, Torres Straits by F. A. Potts, in the British Museum (Nat. Hist.), London.

Distribution: Indo-Pacific region.

Genus *Cryptochirus* Heller.

1860. *Cryptochirus*, Heller, p. 366.
 1863. *Lithoscaptus*, Milne-Edwards, p. 10.
 1908. *Troglocarcinus*, Verrill, p. 427.

This genus comprises about eight species. The species described in this paper are found different from all the known species and so they will be new additions to the following list :

1. *Cryptochirus coralliodytes* Heller.
 1860. *Cryptochirus coralliodytes*, Heller, pp. 370-371, pl. 4, figs. 33-39 (Red Sea).
 1863. *Lithoscaptus paradoxus*, Milne-Edwards, p. 10.
 1925. *Cryptochirus coralliodytes*, Edmondson, p. 32, pl. 1, (Wake Island).
 1933. *Cryptochirus coralliodytes*, Edmondson, p. 14, pl. 4, A.B., text fig. 5.
2. *Cryptochirus dimorphus* Henderson
 1906. Henderson, p. 214, pl. 8 (Andaman Islands).
3. *Cryptochirus corallicola* (Verrill)
 1908. Verrill, p. 427 (Bermuda & Dominica Islands).
4. *Cryptochirus rugosus* Edmondson
 1933. Edmondson, p. 6, pl. 1, text fig. 1 (Washington Island).
5. *Cryptochirus pacificus* Edmondson
 1933. Edmondson, p. 8, pl. 2, text fig. 2 (Palmyra Island, Washington Island).
6. *Cryptochirus pyriformis* Edmondson
 1933. Edmondson, p. 10, pl. 3, A.D. text fig. 3 (Washington Island).
7. *Cryptochirus minutus* Edmondson
 1933. Edmondson, p. 12, pl. 3, E.F. text fig. 4 (Waikiki Reef, Oahu).

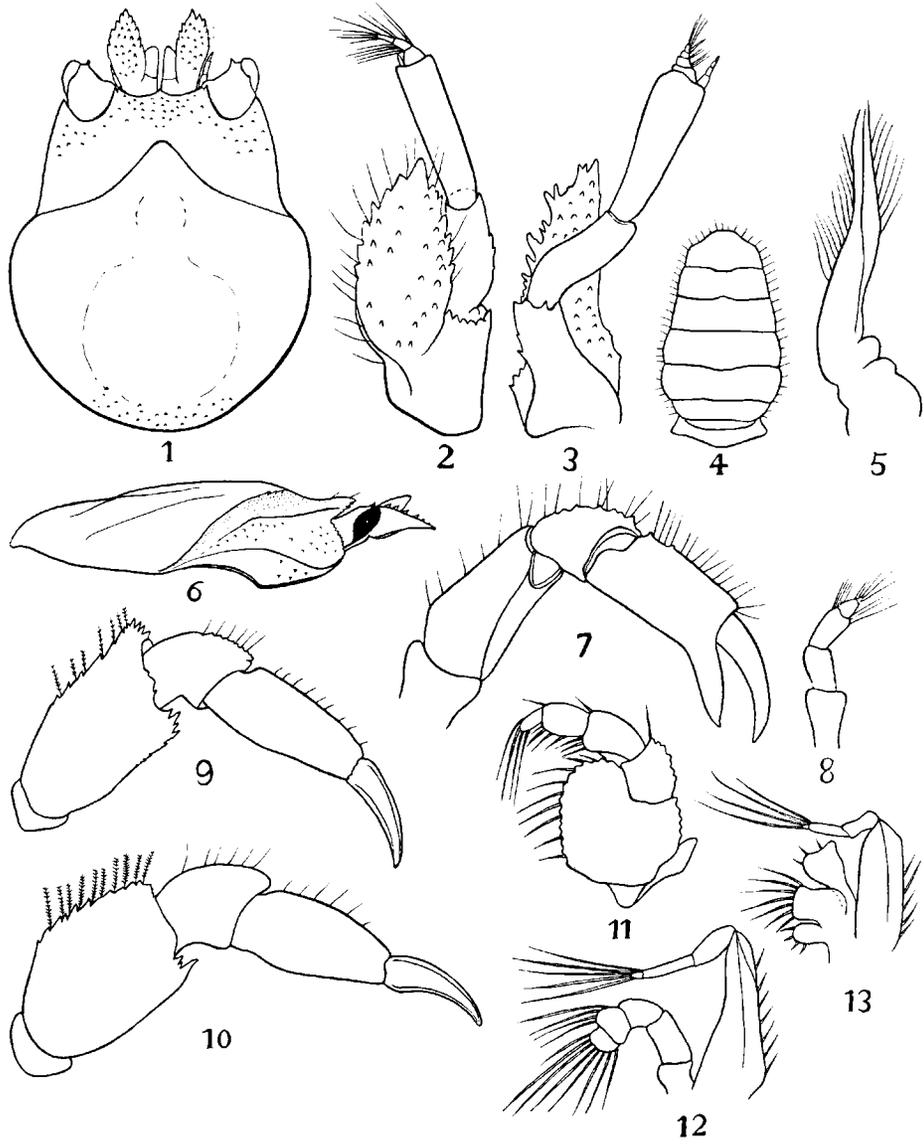


Plate 1. *Cryptochirus hongkongensis*, sp. nov.

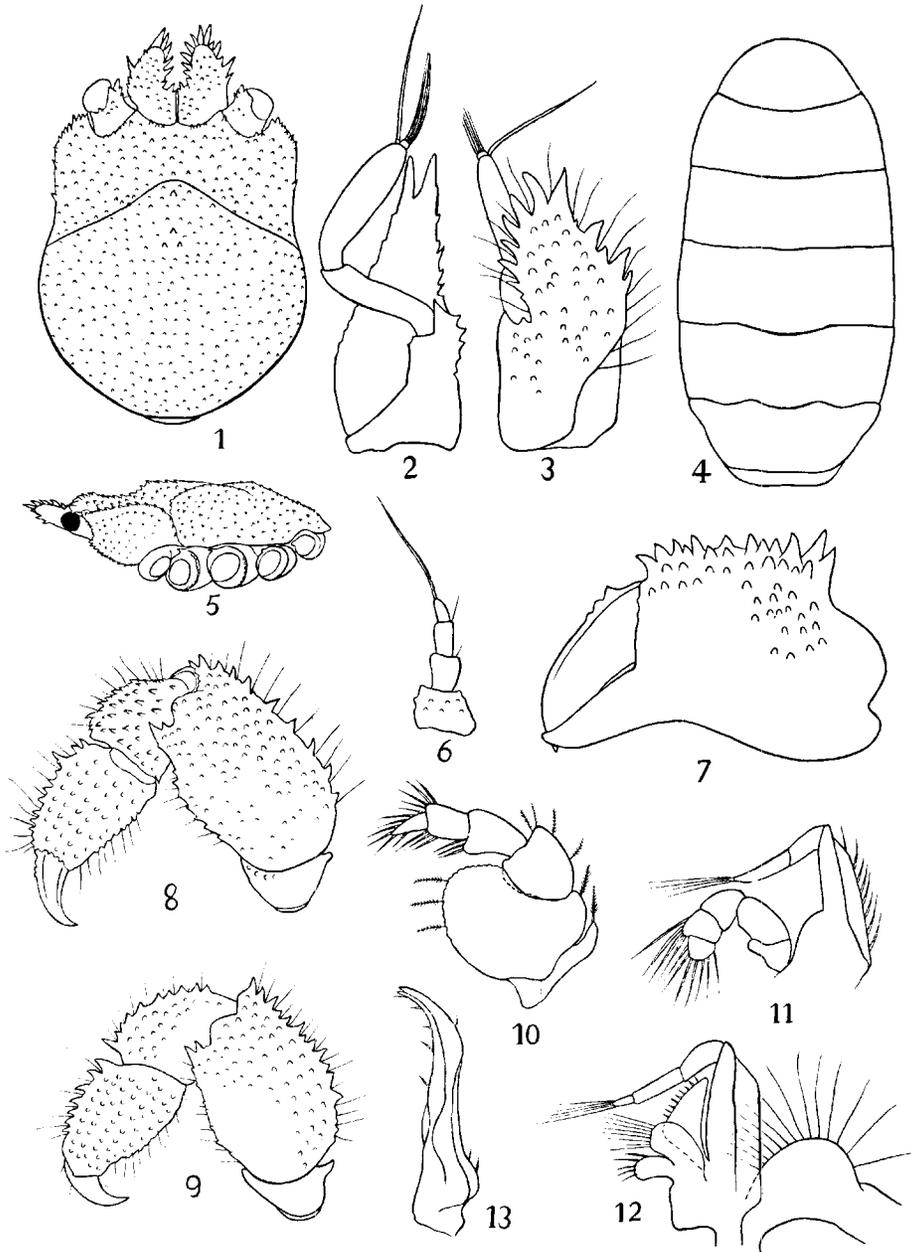


Plate 2. *Cryptochirus granulatus*, sp. nov.

8. *Cryptochirus crescentus* Edmondson

1925. Edmondson, pp. 33-35, pl. 1, fig. 6 (Johnston Island).

1933. Edmondson, p. 16, pl. 4, C.D. (Christmas Island).

9. *Cryptochirus hongkongensis*, sp. nov., Plate I.

Type locality: Hong Kong; 2 ♂♂, 2 ♀♀, collected by Dr. G. A. C. Herklots.

Description of male: Carapace elongate oval, rounded posteriorly and narrowed anteriorly. A constriction is at the anterior one-third of the carapace. The dorsal surface is slightly convex and finely granulate, the granules are more distinct on the anterior and posterior regions than elsewhere (pl. 1, figs. 1, 6).

The frontal and hepatic regions depressed and therefore they are at a level lower than the posterior regions (pl. 1, figs. 1, 6). The front is slightly produced beyond the outer orbital angles, margin concave, the middle and lateral angles all pointed forwards and almost on the same line (pl. 1, fig. 1).

The upper orbital margin is strongly concave (pl. 1, fig. 1), a small tooth is at the inner angle.

The antero- and postero-lateral margins of carapace entire (pl. 1, fig. 1).

The basal segment of the antennula is produced antero-laterally into an olive-shaped process which is bordered with stout spines and covered with prominent tubercles on the surface (pl. 1, figs. 2, 3). Antenna small, the basal segment is longer than broad (pl. 1, fig. 8).

The ischium of the third maxilliped is as long as broad, the inner and outer margins finely serrate; merus small, inserted at outer distal angle of the ischium (pl. 1, fig. 11), its outer margin also finely serrate. The second and first maxillae are as shown in pl. 1, figs. 12, 13.

Chelipeds slender. Manus longer than height (pl. 1, fig. 7). Fingers toothless, the top of the movable finger is on the inner side of that of the immovable, when they closed (pl. 1, fig. 10).

The merus of the ambulatory leg is serrate on the anterior margin, the distal lobe, on the posterior margin, is prominently denticulate (pl. 1, figs. 9, 10).

Male abdomen elongate (pl. 1, fig. 4). The male appendage is as shown in pl. 1, fig. 5.

Habitat: The male is as big as the female. This would lead us to suppose that they must live in a wider space than in the usual case. The exact condition of their association with other animals needs further investigation.

Measurements: Length of carapace 2.3 mm. breadth 2.0 mm.

10. *Cryptochirus granulatus*, sp. nov., Plate II.

Type locality: Christmas Island, 1 ♂, in British Museum (Nat. Hist.), London.

Description of male: Carapace longer than broad, rounded posteriorly. A sinus is at the anterior one-third of the carapace. The dorsal surface and subhepatal regions are all covered with granules (pl. II, figs. 1, 5).

The frontal and hepatal regions depressed and a ridge is thus formed to separate the anterior from the posterior regions of carapace. The front is strongly convex, the lateral angles are produced much beyond the middle one, and slightly beyond the outer orbital angle, the latter is broad and bordered with spinules (pl. II, fig. 1).

The basal segment of the antennula is armed with very strong spines and covered with prominent tubercles on the dorsal surface (pl. II, figs. 2, 3). Antenna small, the basal segment is broader than long (pl. II, fig. 6).

The ischium of the third maxilliped has a large round lobe produced inwards, the lobe is finely serrate; merus narrow and inserted at outer distal angle of the ischium (pl. II, fig. 10). The second and first maxillae are as shown in pl. II, figs. 11, 12.

Chelipeds stout. Manus armed with strong spines on the dorsal margin and large tubercles on the outer surface. Fingers crossed, the tip of the movable finger is on the inner side of that of the immovable, when they are closed (pl. II, fig. 7).

Ambulatory legs serrate on the margins and granulate on the surfaces. Dactylus incurved. (pl. II, figs. 8, 9).

Abdomen elongate oval (pl. II, fig. 4); the male appendage is as shown in pl. II, fig. 13.

Habitat: Unknown.

Measurements: Length of carapace 2.6 mm., breadth 1.8 mm.

Acknowledgment: I wish to take this opportunity to express my thanks to Dr. G. A. C. Herklots for giving me the specimens of *Cryptochirus* from Hong Kong for determination. I acknowledge also with thanks the authorities of the British Museum (Nat. Hist.), London, for placing the materials of *Hapalocarcinus* from Murray Island and *Cryptochirus* from Christmas Island at my disposal, and to the authorities of the U. S. National Museum, Washington, D. C. for the loan of the male and female *Troglocarcinus corallicola* Verrill.

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EXPLANATION OF PLATE I.

Cryptochirus hongkongensis, sp. nov.

- Fig. 1. Carapace, dorsal view, $\times 19$.
Fig. 2. Antennula, dorsal view, $\times 58$.
Fig. 3. Antennula, medial view, $\times 58$.
Fig. 4. Abdomen, $\times 19$.
Fig. 5. First male appendage, $\times 41.5$.
Fig. 6. Carapace, lateral view, $\times 19$.
Fig. 7. Right cheliped, $\times 41.5$.
Fig. 8. Antenna, $\times 58$.
Fig. 9. First ambulatory leg, $\times 17$.
Fig. 10. Second ambulatory leg, $\times 17$.
Fig. 11. Third maxilliped, $\times 41.5$.
Fig. 12. Second maxilliped, $\times 41.5$.
Fig. 13. First maxilliped, $\times 41.5$.

EXPLANATION OF PLATE II.

Cryptochirus granulatus, sp. nov.

- Fig. 1. Carapace, dorsal view, $\times 19$.
Fig. 2. Antennula, medial view, $\times 55.4$.
Fig. 3. Antennula, dorsal view, $\times 55.4$.
Fig. 4. Abdomen, $\times 38$.
Fig. 5. Carapace, lateral view, $\times 19$.
Fig. 6. Antenna, $\times 55.4$.
Fig. 7. Chela, $\times 53.3$.
Fig. 8. First ambulatory leg, $\times 38$.
Fig. 9. Second ambulatory leg, $\times 38$.
Fig. 10. Third maxilliped, $\times 38$.
Fig. 11. Second maxilliped, $\times 38$.
Fig. 12. First maxilliped, $\times 38$.
Fig. 13. First male appendage, $\times 55.4$.

