

**REPRINTED FROM**  
**THE**  
**SARAWAK MUSEUM JOURNAL**  
**VOL. V, NO. 2.**  
**SEPTEMBER 1950.**

# Grapsoid crabs from Labuan and Sarawak

BY

M. W. F. TWEEDIE, M.A., C.M.Z.S.

(Raffles Museum, Singapore.)

In August 1938 Mr. G. Nunong, a collector on the staff of Raffles Museum, visited the island of Labuan and made a large collection of crabs in mangrove swamp there. This collection was found to be still in good condition after the Japanese occupation. In December 1948 the writer visited Kuching in Sarawak and made small collections in mangrove and nipah swamp bordering the river below Kuching and beside the road named Jalan Satok.

The material from these three localities is listed and described in the present report. The following forms are described as new :

## Family Grapsidae :

*Sesarma rectipectinata* sp.n., Labuan.

*Sesarma lepida* sp.n., Labuan.

*Sesarma kraussi borneensis* subsp.n., Labuan.

*Metaplox tredecim* sp.n., Labuan.

## Family Ocypodidae :

*Uca rhizophorae* sp.n., Kuching.

*Ilyoplax spinimera* sp.n., Kuching.

*Dotilloplax kempi* gen. et sp. nov., Kuching.

The types of the new species will be deposited in the British Museum.

The Occurrence of so many new species in these collections, some of them apparently locally abundant, strengthens an impression, gathered from previous studies of paludicolous Grapsoids, that many of these mangrove-haunting crabs have a limited distribution. Insufficient collecting, and insufficiently critical determination of Grapsoids in much of the earlier literature, render it impossible to say how far regional differentiation has determined their distribution. If, as I believe likely, their larvae are for the most part not pelagic (as are those of most Xanthids, Portunids etc.) but are distributed along coast lines, a study of the mangrove crabs in the Indopacific area might contribute substantially to zoogeography.

When the present collections are compared with those made on the Malayan coasts a large number of species is found in common, but a considerable number remains whose abundance in the one area would lead one to expect them to be present in a representative collection from the other if they occur there, and yet they are absent. Further, in three cases where subspecific distinctions occur (*Sesarma kraussi*, *Ilyoplax delsmanni* and *Uca triangularis*), the Bornean form is distinct from that found on the Malayan west coast and in two of them agrees with that found at Singapore (*S. kraussi borneensis*) or on the east coast (*I. delsmanni serrata*); *U. triangularis variabilis* has not been collected in Malaya. Six species of Grapsoids are known from the west coast and not from the east or from Singapore, none of these is represented in the Borneo collections. Less collecting has been done on Malaya's east coast and I know of no Grapsoids occurring there which are absent from Singapore and the west. If such species are found I venture a prediction that some at least of them will belong to the new species described in this paper or to those recorded therein and not yet known from Malaya.

The tidal freshwater fauna found in a ditch in Kuching shows a remarkably close correspondence with a tidal freshwater swamp and swamp forest fauna collected in 1938 near the river Sedili in south-east Johore. In this area the following species were taken: *Sesarma crassimana*, *S. granosimana*, *S. sediliensis*, *S. inermis*, *S. moeschii*, *S. polita* and *Potamocypoda pugil*. The five species taken at Kuching comprise the same list with the exception of the two last named *Sesarma*, and *S. sediliensis* and *P. pugil* have been recorded only from these two localities.

The abbreviations cl. (carapace length), cb. (carapace breadth), acb. (anterior carapace breadth), and mcb. (maximum carapace breadth) have been used.

My thanks are due to Mr. R. W. Jakeman for accommodating Mr. Nunong in Labuan and to Mr. Tom Harrisson, Curator of the Sarawak Museum, for making my visit to Kuching possible and helping me in every way while I stayed with him.

### Family **Grapsidae**.

#### Genus **Metopograpsus** H.M.E.

#### **Metopograpsus gracilipes** De Man.

Tweedie 1949, p. 470.

A male and six females from Labuan.

**Metopograpsus latifrons** (White).

Tweedie 1949, p. 468.

Four specimens from Labuan and eight from the river below Kuching.

This seems to be the mangrove-haunting species of the genus.

Genus **Sesarma** Say**Sesarma indica** H.M.E.

De Man 1883, p. 166.

Rathbun 1913b, p. 355 (*S. tiomanense*).

Tesch 1917, p. 159.

Tweedie 1936, p. 51 (*S. tiomanensis*).

Two females from Labuan, the larger with mcb. 41 mm.

The characters adduced by Rathbun to distinguish *S. tiomanense* from this species do not suggest that the single specimen from Tioman Island differs specifically from those described by De Man and Tesch.

**Sesarma eumolpe** De Man.

Tweedie 1936, p. 66.

One small male from Labuan.

This species is known from Singapore and both coasts of Malaya and also from Java.

**Sesarma lanchesteri** Tweedie. Fig. 1, a.

Lanchester 1900, p. 757 (*S. calypso*).

Tweedie 1936, p. 62 (*S. (Parasesarma) calypso lanchesteri*).

Four males, four females and two juveniles from the river below Kuching, the largest a male of 16.5 mm. acb.

The most characteristic feature of this crab is the presence on the carapace of numerous small, isolated patches of hair, velvet-like and subsymmetrically arranged, mainly transverse in direction but conforming to the sculpture defining the gastric region in the centre. The front is broadly emarginate in the middle and the inner post-frontal lobes are much broader than the outer. The lateral margins are slightly notched behind the extraorbital angles, but not so deeply as to form an epibranchial tooth.

The male chela bears three parallel pectinated ridges and in large specimens a few additional chitinous denticles may be disposed in short rows proximally to them. The male chelar dactylus has 8 (rarely 9) low, rounded tubercles, the most distal of which are so weakly developed that they are only visible in profile. The

proximal slope of each of these tubercles is crossed transversely by two or three raised lines, the ends of which curve forward so as to partly embrace the smooth apex and distal slope of the tubercle. This ornamentation is very similar to that seen in *S. calypso* De Man. A row of simple dentiform tubercles runs along the dactylus, internally to the ornamented ones, for about half its length. Both surfaces of the palm are granular and on the inner surface there is a transverse alignment of granules near the dactylar articulation.

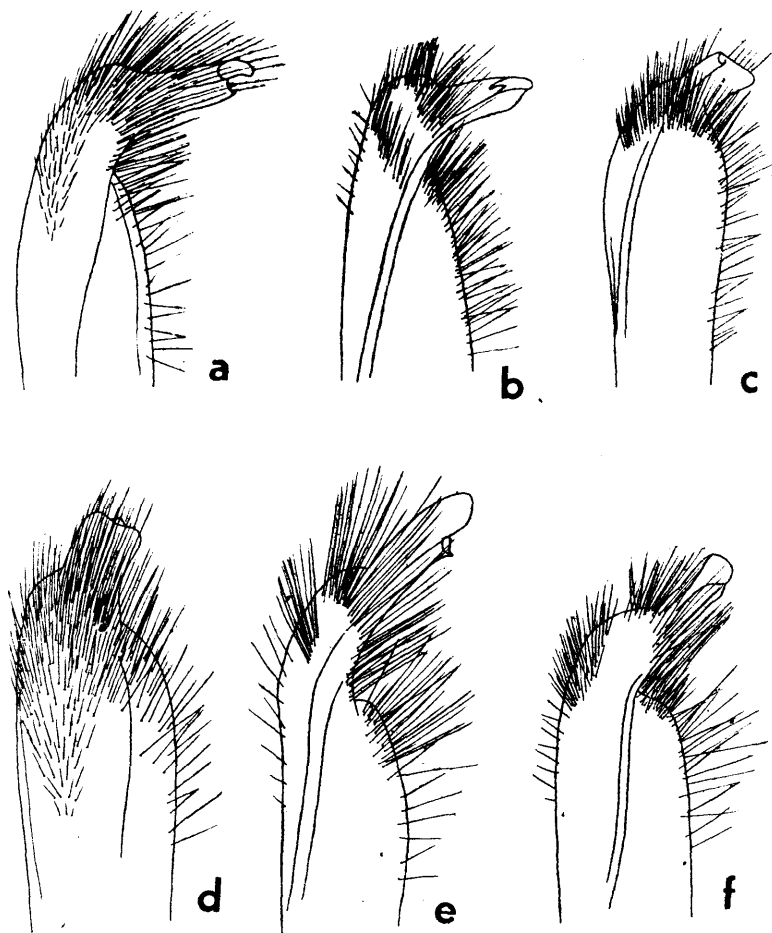


Fig. 1.

Male first pleopods of *Sesarma* spp. a. *S. lanchesteri*; b. *S. rutilimana*; c. *S. fasciata*; d. *S. gemmifera*; e. *S. semperi*; f. *S. bidens indiarum*.

In life the chelae are bright red and the wrists ochreous.

I described this *Sesarma* as a subspecies of *calypso*, but now consider that it is better regarded as a distinct species.

***Sesarma rutilimana*** Tweedie. Fig. 1, b.

Tweedie 1936, p. 63.

About seventy specimens from Labuan.

Previously known only from Singapore and the east coast of Johore.

***Sesarma fasciata*** Lanchester. Fig. 1, c.

Rathbun 1910b, p. 328 (*S. siamense*).

Tweedie 1936, p. 66.

Sixty-two specimens from Labuan, the largest a male of acb. 12 mm.

***Sesarma johorensis*** Tweedie.

Tweedie 1940, p. 103.

Three adult and two juvenile males from Labuan. The prominent tooth at the base of the immovable finger is sharper and more erect than is shown in the original figure (i.e. fig. 9c).

***Sesarma sediliensis*** Tweedie.

Tweedie 1940, p. 100.

Forty-six specimens from a freshwater ditch at Kuching, Sarawak.

***Sesarma versicolor*** Tweedie.

Tweedie 1940, p. 98.

A young female from the river below Kuching.

***Sesarma gemmifera*** Tweedie. Fig. 1, d.

Tweedie 1936, p. 58.

An immature male from the river below Kuching.

***Sesarma semperi*** Burger. Fig. 1, e.

De Man, 1902, p. 542.

Tesch, 1917, p. 198, 257.

Nine males and four females from Labuan, the largest a male of ab. 15.6 mm. Two small males and a female from Singapore, hitherto not reported, also belong to this species.

De Man's table of measurements indicates that his specimen from the original series has a rather broader carapace than any of the present ones, but his description convinces me that they are correctly identified.

Well preserved specimens have the carapace ornamented with small tufts of hair; when they are detached the scattered punctate areas described by De Man are seen in their place. Most of the series have the seven rounded dactylar tubercles originally described, but in some of the males an extra, much smaller tubercle is present at the base of the dactylus. The male first pleopod is figured.

The species was known hitherto only from Bohol in the Philippines.

**Sesarma palawanensis** Rathbun.

Tweedie 1940, p. 95.

One immature female from Labuan.

**Sesarma granosimana** Miers. Fig. 2, a.

Tweedie 1940, p. 92.

Two males and four females from a freshwater ditch at Kuching.

**Sesarma crassimana** De Man. Fig. 2, b.

Tweedie, 1940, p. 92.

Twenty-six specimens from a freshwater ditch at Kuching. I have already discussed (l.c.) the close resemblance between this species and the last. That they are specifically distinct is shown by the difference in the male first pleopods, which I have examined both in these specimens and in those from Johore previously reported on.

The availability of a good series of *crassimana* enables me to confirm the difference already noted in the proportions of the ambulatory meri, which are broader in *granosimana*. To this feature, and to the presence of an epibranchial tooth in *crassimana* and its absence in the allied species, may be added a difference in the shape of the male chela. In the present species the immov-

able finger is slightly turned down, so that the lower border of the chela has the form of a sigmoid curve. In *granosimana* the finger is quite straight, its lower border following the curve of that of the palm. Finally, the outer surface of the palm is more sharply granular in *granosimana*.

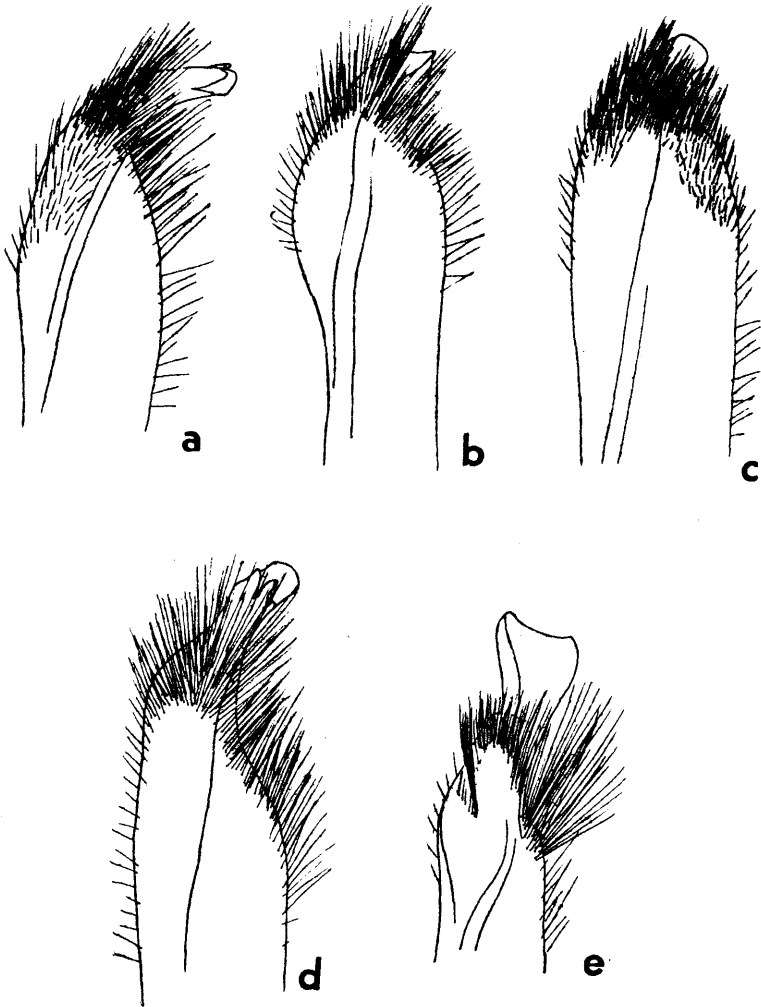
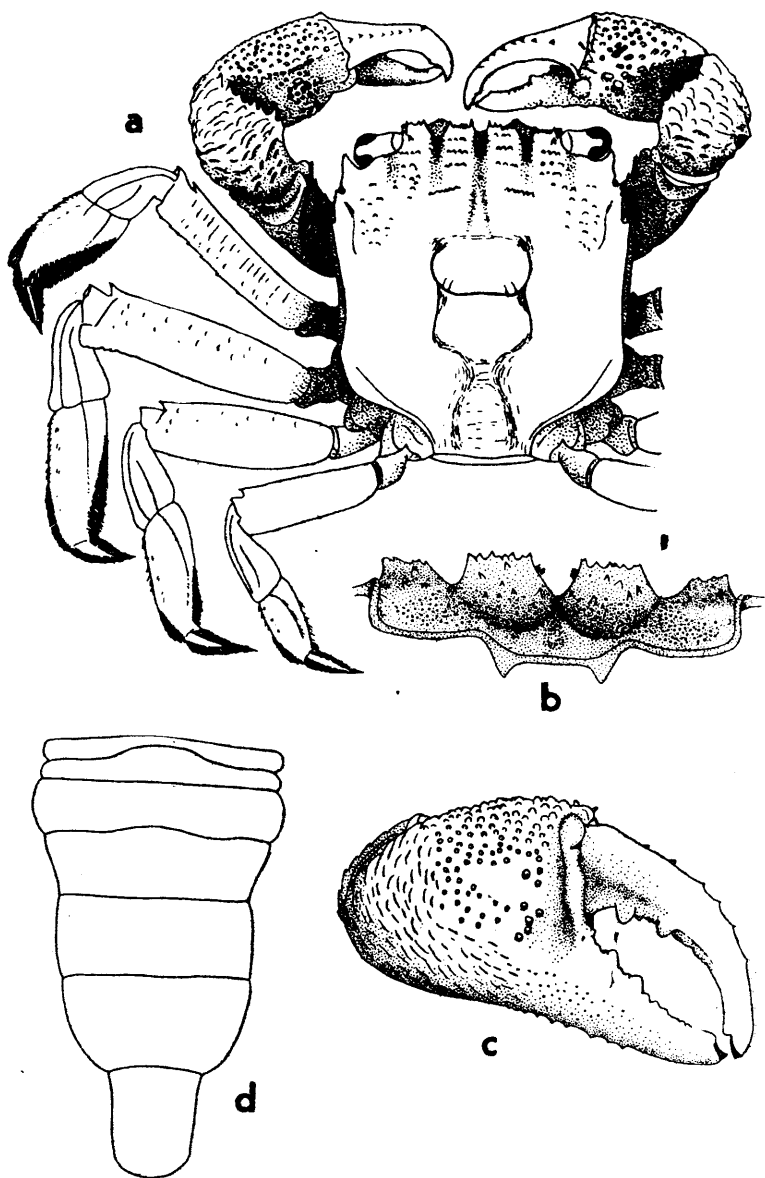


Fig. 2.

Male first pleopods of *Sesarma* spp. a. *S. granosimana*; b. *S. crassimana*; c. *S. polita*; d. *S. rectipectinata*; e. *S. lepida*.





*Fig. 3.*

- a. *Sesarma polita* De Man; b. frontal region in anterior view; c. right chela of male; d. outline of male abdomen. (See also fig. 2c).

**Sesarma polita** De Man. Fig. 2c, 3, a—d.

De Man, 1887-88, p. 189.

Tweedie, 1940, p. 93.

Three males and three females from Labuan, the largest male with acb. 33, mcb. 36.5 and cl. 42 mm.

The specimen recorded by me (1940) from Johore is a juvenile, and De Man's largest specimen measures  $24\frac{1}{2}$  mm. acb. and is thus not fully adult. This fact is clearly shown by the condition of the chela figured on pl. 13, fig 9 of De Man 1887-88, as well as by its size. In the largest male from Labuan the chelae are equal, each being 35 mm. long, and the fingers gape widely (fig. 3, c). The outline of the abdominal segments (fig. 3, d) in this specimen is not as shown in De Man's figure, which however, fairly well represents the condition in the smaller specimens in this series.

**Sesarma bidens indiarum** Tweedie. Fig. 1, f.

Tweedie, 1940, p. 93.

Over two hundred specimens from Labuan, including a male of acb. 24 mm. which is the largest I have seen.

When the specimens were fresh the chelae were coloured violet rather than red, which is the colour I have encountered in this crab in Malaya.

**Sesarma andersoni** De Man.

De Man 1887-1888, p. 172.

Kemp 1918, p. 234.

nec Tweedie 1940, p. 89.

I sent one of these and a specimen of the series reported by me in 1940 from Penang to Dr. K. K. Tiwari of the Zoological Survey of India for comparison with cotypes of *S. andersoni*. He confirmed my suspicion that the form from Sarawak is indeed *S. andersoni* and that from Penang a distinct species, which I believe to be undescribed.

**Sesarma edamensis** De Man.

De Man 1888, p. 379.

A male and a female, respectively 7.3 and 9.3 mm. acb. from Labuan.

This species was described by De Man from the north coast of Java from a male and a female measuring 6.75 and 9.3 mm. acb. The present specimens differ from his description in some respects, but I believe this to be due to their larger size and to an expected degree of variability within the species.

The frontal margin is nearly straight, as described, in the female but has a distinct median embayment in the male; the lateral margins are as described in the male but in the female there are two faint prominences indicative of epibranchial teeth. The meri of the walking legs carry three sharp teeth on their hinder borders, diminishing in size distally, but in the female specimen tooth. The chelae of the male carry 15-16 dactylar tubercles (11-13 are described) and the granular ridge on the outer lower surface of the palm is quite distinct in both the Labuan specimens, whereas it was hardly perceptible in the original male.

**Sesarma kraussi borneensis** subsp. n.

*Cotypes.* A male of 14 mm. acb. and a female from Labuan.

*Material.* Two additional males and two females from Labuan and a male from Singapore.

The new subspecies differs from *S. k. kraussi* de Man, described from Mergui and represented in the Raffles Museum collection by a series from the west coast of Malaya, by the following characters.

On the outer side of the immovable finger of male *kraussi* there is a row of 8-13 small, conical tubercles; these are represented in *borneensis* by three or four (in one case five on one chela, four on the other) much larger, elongate tubercles. Secondly, the abdomen of the male is differently shaped, being broader in *borneensis*; the ratio length/basal breadth of the penultimate segment is 0.52 in *kraussi* and 0.46-0.47 in the new subspecies. Finally, the specimens of *borneensis* are everywhere less hairy than those of the *forma typica*.

The fact that the Singapore specimen is referable to the Bornean race and distinct from the west Malayan and Mergui one is of zoogeographical interest.

**Sesarma rectipectinata** sp. n. Fig. 2, d, 4, a-c.

*Cotypes*.—An adult male and female collected at Labuan.

*Material*.—A subadult male and female in addition to the types.

*Description*.—The carapace is slightly convex both longitudinally and from side to side, broader than long, cl : acb about 0.85 : 1. A single small tooth is present on each side behind the anterolateral angles, the lateral margins are nearly parallel. The front is steeply deflexed, only narrowly visible in dorsal view, its free edge nearly straight with a shallow median embayment. The sculpture of the carapace is confined to a rather faint outlining of the mesogastric, cardiac and intestinal areas, and to the grooves separating the post-frontal lobes and defining the outer margins of the lateral pair behind the inner angle of the orbit. The lobes themselves are equal in breadth and their anterior margins lie almost in a straight line. Of the usual raised lines on the branchial regions the anterior one is short and runs out at the tip of the epibranchial tooth, and a rather longer one lies a little behind it; behind this are about four or five more lines, low and irregularly disposed and partly concealed by hair. The carapace is beset with variously sized tufts of short setae, most numerous on the hepatic and branchial regions and the anterior margins of the post-frontal lobes.

The chelipeds are equal. The upper border of the arm ends in a small, sharp spine, the outer border is finely and evenly denticulate, the inner less finely so and expanded and flattened at its distal end; the outer surface of the arm is covered with transverse rows of squamiform granules. The wrist is granular above, its inner angle compressed. The chela of the male is nearly smooth externally with only some fine granulation on the proximal and upper part; internally it is finely and evenly granular, none of the granules forming a transverse row or ridge. The upper surface of the palm bears a single long, perfectly straight pectinated ridge consisting of about 60 small denticles, quite fused together except at their tips, where they are still very closely approximated. Internally to the ridge there is a narrow smooth area separating it from the granular inner surface of the palm.

The upper border of the dactylus carries nine elongated tubercles both in the type and the smaller male. Viewed in profile their proximal slope is seen to be longer than the distal. From above they are roughly triangular, the apices of the triangles pointing distad. On the apex and proximal slope of each tubercle is an elongated low prominence, dark coloured and polished; two

very faint curved impressed lines are visible on the proximal surface. The 4th, 5th and 6th tubercles are the largest (fig. 4,c).

In the female the chelae are small and slender, a granular ridge replaces the pectinated ridge of the male and the dactylar tubercles are small and low and lack the ornamentation described for the male.

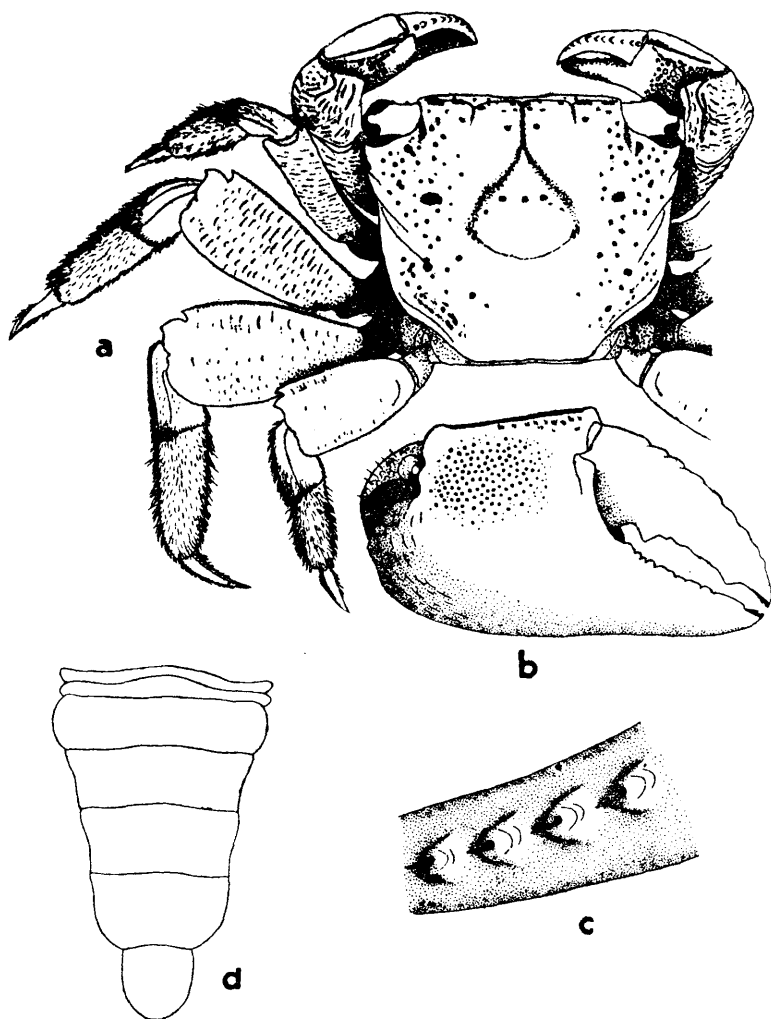


Fig. 4.

a. *Sesarma rectipectinata* sp. n.; b. right chela of male; c. 4th to 7th dactylar tubercles of male chela; d. outline of male abdomen. (See also fig. 2, d).

The walking legs are short, the meri very broad and carrying an anterior subdistal spine. The propodi and distal part of the carpi are covered with a mat of hairs, an adaptation for walking in soft mud often seen mangrove-living *Sesarmae*.

The long, straight pectinated ridge on the male chela, with its very numerous, closely set denticles, and the number and ornamentation of the dactylar tubercles are the characters which best distinguish the species.

*Affinities.* *S. rectipectinata* belongs to that not very numerous group of the genus having an epibranchial tooth and a single pectinated ridge on the palm of the male. It differs from *S. gemmifera* Tweedie by the far longer pectinated ridge, the differently ornamented dactylar tubercles and the less hairy body and legs; from *S. brockii* De Man by the smaller number and different ornamentation of the dactylar tubercles, the longer pectinated ridge with more numerous denticles and the shorter and stouter walking legs; also the body and legs of *brockii* are far less hairy. Its smaller size alone distinguishes *rectipectinata* from the species of the *mederi* group (Tweedie 1940, p. 94); in all of these the dactylar tubercles in the adult male are more numerous, far more so except in *S. tetragona* Fabr.

Measurements of male cotype:

*Carapace:*

Anterior breadth	...	...	21.4 mm.
Breadth between epibrachial teeth	...	...	21.2
Length	...	...	18.1
Breadth of front	...	...	13.8

*Abdomen:*

Median length of sixth segment	...	...	3.0
Basal breadth of sixth segment	...	...	5.7
Length of last segment	...	...	3.4

*Chela:*

Total length of chela	...	...	13.8
Height of palm	...	...	7.5
Length of dactylus	...	...	8.0

*Penultimate walking leg:*

Length of merus	...	...	14.0
Breadth of merus	...	...	7.0
Combined length of carpus and propodus	...	...	15.5
Length of dactylus	...	...	5.7

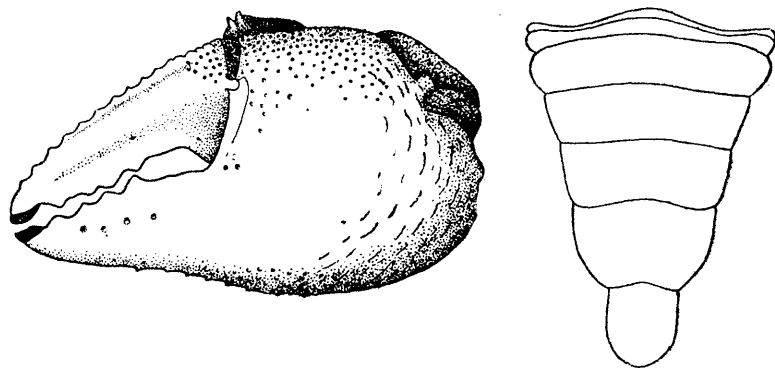
**Sesarma lepida** sp.n. Fig. 2,e; 5,a,b.

*Cotypes.* A male and a female from Labuan.

*Material.* Thirty seven additional specimens from the type locality.

*Description.* The carapace is rather flat and broader than long, cl: acb about 0.8: 1. The lateral margins are not dentate behind the extraorbital angles and are almost parallel. The frontal margin is visible in dorsal view and is nearly straight, exhibiting only a slight convexity on each side opposite the grooves separating the inner and outer post-frontal lobes. The mesogastric region is well defined, its anterior prolongation narrow and tapering. The inner post-frontal lobes are a little broader than the outer, the margins of the four lying almost in a straight line; their surfaces, and to a lesser degree that of the whole gastric region, are punctate-rugose, elsewhere the carapace is merely punctate. On the surface of the front, above each of the marginal convexities, is a transverse rugose tubercle. The raised lines on the branchial regions number six or seven, the anterior one running onto the margin of the extraorbital tooth. The carapace carries only a few widely scattered hairs and setae.

The outline of the male abdominal segments and the first pleopod are figured. The chitinous projection of the latter is unusually large and prominent.



*Fig. 5.*

*Sesarma lepida* sp. n. left chela of male and outline of male abdomen. (See also fig. 2, e).

The chelipeds are equal or subequal; in that of the male the inner border of the arm ends in a flattened dentate process but the upper border has no subdistal tooth. The upper surface of the carpus is granular-rugose and the outer surface of the palm is finely and irregularly granular near its upper margin and near carpal articulation; the granulation diminishes distally and below and the immovable finger is smooth with scattered punctae. The lower border of the palm and finger are again granular, some of the granules sharp and subspiniiform. The inner surface of the palm is sparsely granular but has no ridge or alignment of granules. On the upper surface of the palm there are three short pectinated ridges, the anterior one the largest consisting of about fifteen denticles; the ridges are not parallel but diverge a little outwardly and at the inner end of each is a small denticulate crest. The spaces between the ridges are smooth.

The male chelar dactylus bears 17-18 tubercles; the proximal two or three are small and the ornamentation of the distal four or five is obscure, but the intervening ones each bear a low transverse crest which is indented in its longer axis by a minute furrow and is finely, but rather irregularly, striated in a direction parallel to the axis of the finger. Seen in profile these crested tubercles appear quite symmetrical and the hollows between them are polished and smoothly curved. The outer surface of the dactylus is smooth but there are some granules on the upper surface near the base.

On the female chela, which is relatively small and slender, the pectinated ridges are absent and the dactylar tubercles are clear and regularly spaced but very small; although they cease some distance before the tip of the finger they are more numerous than in the male, numbering about twenty.

The walking legs are normally proportioned, setose but nowhere hairy and there is a small subdistal spine on the anterior border of the meri. The ratio of breadth to length of the penultimate merus is as 0.45:1.

The specimens are bleached and nothing is known of the colours in life.

*S. lepida* belongs to the group (*Parasesarma*) in which the absence of an epibranchial tooth is combined with the presence of two or more chelar pectinated ridges.



## Measurements of male cotype:

<i>Carapace</i> :	anterior breadth	...	...	11 mm.
	length	...	...	8.7
	breadth of front	...	...	5.9
<i>Abdomen</i> :	length of sixth segment	...	...	1.55
	basal breadth of sixth segment	...	...	3.0
	length of last segment	...	...	1.5
<i>Chela</i> :	total length	...	...	8.4
	height of palm	...	...	4.8
	length of dactylus	...	...	5.0

*Penultimate walking leg* :

length of merus	...	...	7.0
breadth of merus	...	...	3.2
combined length of carpus and propodus	...	...	7.3
length of dactylus	...	...	4.5

**Sesarma (Sarmatium) punctata** (A.M.E.).

Tweedie 1940, p. 109.

Six males and five females from Labuan, the largest a male of mch. 20 mm.

**Sesarma (Sarmatium) inermis** De Man.

Tweedie 1940, p. 109.

A small male and a subadult female from a freshwater ditch at Kuching, Sarawak.

Genus **Clistocoeloma** A.M.E.**Clistocoeloma merguiense** De Man.

De Man 1887-88, p. 195.

Chopra and Das 1937, p. 431.

Over a hundred specimens from Labuan the largest males measure about 16 mm. mch.

The species was previously known from the Bay of Bengal and the Malayan coasts.

Genus **Metaplex** H.M.E.**Metaplex elegans** De Man.

De Man 1887-88, p. 164; 1895, p. 596.

Numerous specimens from Labuan and from mangrove and nipah swamp by the river below Kuching. *M. elegans* frequents the banks of tidal ditches and the edge of the mangrove vegetation

which stands above the exposed river mud, where it is associated with *Uca manii*, which, however, ventures further out onto the mud than *elegans*.

**Metaplex tredecim** sp.n. Fig. 6.

*Cotypes.* An adult male and female respectively of 18.4 and 18.8 mm. mcb. from Labuan.

*Material.* A series of eight males and nine females in addition to the cotypes, from the type locality.

*Description.* The proportions and sculpture of the carapace are shown in the table of measurements and at fig. 6; the inter-regional grooves are well marked and the median frontal furrow is deep. In the male the suborbital stridulating ridge consists of 12 to 14, usually 13, tubercles comprised as follows: the innermost tubercle is the largest and consists of an outer smooth, polished and inflated part and an inwardly and upwardly directed prolongation which is finely granular; the whole of all the remaining tubercles are smooth and polished. The second is scarcely smaller



*Fig. 6.*

*Metaplex tredecim* sp. n. and right chela of male.

than the first and the third is about equal to the smooth inflated outer part of the first. External to the third the tubercles diminish rapidly in size, the outer seven or eight being minute and very close together. These smallest tubercles are round or even higher than long, but the inner five are elongated and, with the exception of the innermost, have the curve of their profile steep inwardly and gentle outwardly. In the female the suborbital ridge bears about twenty small, evenly spaced tubercles which merge inwardly into the granules of a prolongation similar to that of the male.

The adult male chela is figured; it is very finely granular on its outer surface and hardly less so on its inner. The apposed edges of the fingers are denticulate but carry no enlarged teeth. The arm has the usual musical ridge and on the left side of the type it is worn in the centre where it has played against the suborbital tubercles.

The walking legs are slender and quite devoid of any spines, but the meri are granular along their anterior margins; this feature is only weakly developed in the male and the granules are hidden by hair, but in the female they are strong and sharp and quite obvious.

The species is nearest to *M. sheni* Gordon (1930. p. 525, 1931, p. 553). The infra-orbital ridge, though similarly constituted differs in the number of tubercles (15-19 in *sheni*). The carapace is longer in proportion to its breadth in *tredecim* and the species is much larger than *sheni*. A male of the latter species is in the Raffles Museum collection, which has its chelipeds large and fully developed and is only 9.5 mm. cb. A juvenile male of *tredecim* is 12.5 mm. cb. and its secondary sexual characters are quite undeveloped.

Measurements of the male cotype :

*Carapace :*

Anterior breadth	...	...	...	17.2 mm
Greatest breadth	...	...	...	18.4
Length	...	...	...	13.5

*Chela :*

Total length	...	...	...	17.6
Height of palm	...	...	...	7.7
Length of dactylus	...	...	...	10.0

*Penultimate walking leg :*

Length of merus	...	...	...	14.3
Breadth of merus	...	...	...	3.5
Combined length of carpus and propodus	...	...	...	13.0
Length of dactylus	...	...	...	6.5

Genus **Utica** White.**Utica borneensis** De Man.

Tweedie 1940, p. 110.

Three males and four juveniles from Labuan.

Family **Ocypodidae**.Genus **Uca** Leach.**Uca annulipes** (Latr.).Tweedie 1937, p. 141 (*Gelasimus annulipes*).

Seven males from Labuan.

**Uca marionis nitidus** Dana.Tweedie 1937, p. 143 (*Gelasimus marionis* var. *nitidus*).

Nine males and three females from Labuan.

**Uca dussumieri** (H.M.E.). Fig. 7, d,e.Gordon 1934, p. 12 (*Gelasimus dussumieri*).Tweedie 1937, p. 141 (*G. dussumieri*).

Series from Labuan and from the river below Kuching, where it is abundant in the soft mud between the swamp vegetation and the edge of the water at low tide, but above the waters edge zone of *Hoyplax* and *Dotilloplax*.

Living colours: carapace and legs largely brilliant blue, partly replaced by dark green irregular markings in old specimens; palm and immovable finger of male chela, light brown, dactylus white.

**Uca manii** Rathbun.Tweedie 1937, p.143 (*Gelasimus manii*).

Series from Labuan and from the river below Kuching, where it is found in the mud at the edge of the swamp vegetation and within the vegetation itself, consistently further from the water's edge than *U. dussumieri*.

Living colours: carapace and legs black, anterior half of the carapace with a subsymmetrical pattern of yellow spots. A sharp delimitation between spotted and unspotted parts; eyes bright red;

palm of male chela brown in upper third, lower two thirds dark purple, fingers white.

***Uca angustifrons* (De Man).**

De Man 1891, p. 38 (*Gelasimus signatus* var. *angustifrons*).

Gordon 1934, p. 13 (*G. s.* var. *angustifrons*).

Eight males and four females from Labuan, the two largest males 18.5 acb.

Gordon has shown that the first male pleopods of *signatus* Hess (an Australian species) and of the present form are quite different, and I consider that the two are best regarded as specifically distinct.

***Uca ? coarctata* (H.M.E.).**

Gordon 1934 p. 11 (*Gelasimus coarctatus*).

Tweedie 1937, p. 143 (*G. coarctatus*).

A subadult and a juvenile male and three small females from Labuan, which I refer with some hesitation to this species. The frontal furrow is much broader in these specimens than in those from Simalur Island on which I reported previously.

***Uca triangularis variabilis* (De Man).**

De Man 1891, p. 47 (*Gelasimus triangularis* var. *variabilis*).

Tweedie, 1937, p. 144 (*G. t. variabilis*).

Eleven males and six females from Labuan.

***Uca rhizophorae* sp. n. Fig. 7, a-c.**

*Type.* A male from mangrove and nipah swamp by the river below Kuching.

*Material.* Two males in addition to the type.

*Description.* The new species belongs to the section of the genus having a narrow front and no accessory row of granules on the floor of the orbit. It is close to *Uca dussumieri* and the description will be in terms of comparison with that species.

The proportions of the carapace are similar in both, the lateral margins being a little more convergent and the breadth a trifle more relative to the length in *rhizophorae*; there is an overlap in the calculated ratios (cf. Tweedie 1937, p. 145) in both cases and these characters are not of specific value. The front is shorter and less constricted in the new species and the frontal furrow is broader than is usual in *dussumieri* and its sides are convergent, not parallel (fig. 7, c-e). The suborbital margin in *rhizophorae* is beset with rather broad, spatulate denticles on its outer part and on its inner with a prominent horizontal trenchant ridge which

occupies more than one third of the length of the margin; in *dussumieri* the margin may be finely denticulate or granular throughout, or, if the granules coalesce to form a ridge inwardly, this is never prominent and trenchant and occupies at the most a quarter of the extent of the margin.

The male chela is everywhere much more finely granular in *rhizophorae* and the granulation does not extend at all onto either of the fingers, which are smooth and polished. On the external surface of the dactylus there is only one, rather faint longitudinal groove; a very short basal groove, almost superior in position, represents the distinct second groove invariably present in *dussumieri* (Tweedie 1937, fig 2b). This is the most obvious morphological character separating the two. The dentition of the fingers, very variable in *dussumieri*, shows some range of variation in the three specimens of *rhizophorae*. That of the type is figured

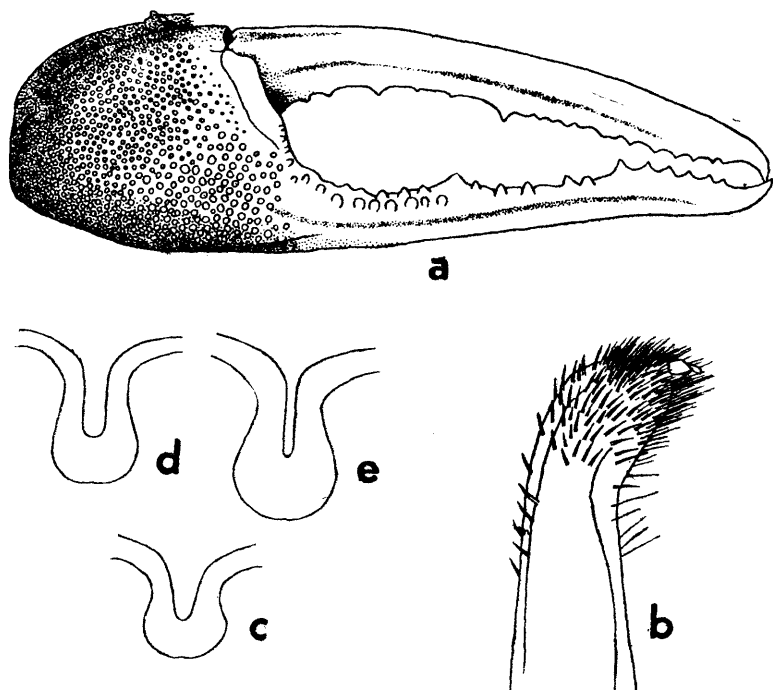


Fig. 7.

*Uca rhizophorae* sp. n. a. enlarged chela of type; b. tip of right male first pleopod; c. frontal lobe. *Uca dussumieri* (H.M.E.). d, e. frontal lobes of two specimens showing range of variation in breadth of median furrow.

and in the other two the more proximal of the teeth are wanting. It appears to be a feature of the new species that the distal third to half of the apposed edges of both fingers are evenly and sharply denticulate, the proximal part being unarmed or having only a few irregularly disposed denticles. The fingers are slender with hooked tips and they gape rather widely in their basal two thirds.

*Rhizophorac* is by far the smaller species. The type (acb 17.5, length of chela 31 mm.) is clearly adult. A specimen of *dussumieri* of this size from the same locality has the chela just equal to acb, and fully developed males have acb between 25 and 30 mm.

The colours of *Uca*, though unfortunately fugitive in alcohol, are certainly specific. The pattern of the present species is abundantly distinct from that of *dussumieri* and *manii*. A field note records them: carapace black in its posterior one third, yellowish anteriorly with a black, subsymmetrical reticulate pattern; palm of enlarged chela light brown, fingers white.

Measurements of the type:

<i>Carapace</i> :	anterior breadth	...	...	17.5 mm.
	length	...	...	10.2
	distance between the terminations of the			
	postero-lateral margins on the carapace	...	...	8.4
<i>Enlarged chela</i> :	length	...	...	31.0
	height of palm	...	...	9.0
	length of dactylus	...	...	22.7

#### Genus **Macrophthalmus** Latr.

#### **Macrophthalmus ? pacificus** Dana.

De Man 1890, p. 79.

Tesch 1915, p. 190.

A small male and a female from Labuan.

These specimens appear to be conspecific with those described by De Man and Tesch under this name from an unknown locality. It seems to me to be very doubtful if they really belong to Dana's species from Samoa. It has also been suggested (De Man 1902, p. 496) that the present species is really Heller's *bicarinatus*. The original descriptions and figures of both these species are unsatisfactory and the matter will remain in doubt until the types, or failing them topo-typical material, are carefully described. *Bicarinatus* was described from the Nicobar Islands.

**Macrophthalmus ? crinitus** Rathbun.

Rathbun 1910a, p. 307 (*M. pacificus*); 1913a, p. 618.

Seven females from Labuan, the largest 18.5 mm. mcb.

The characters of the carapace and legs are just as described and figured for *crinitus*, but the unfortunate absence of a male in the series renders the determination uncertain.

Genus **Paracleistostoma** De Man.**Paracleistostoma microcheirum** Tweedie.

Tweedie 1937, p. 159.

Three males and three females from Labuan.

Two of the males and one female are larger than any of the original series, the largest male being 8.8 mm. mcb. In this specimen the remarkable first pleopod is greatly thickened and dilated at the tip, far more so than the one portrayed in the figure accompanying the description.

**Paracleistostoma** sp.

A single female of mcb. 9.5 mm. from Labuan, having as its most noticeable character a very distinct short transverse ridge on the cardiac region. It belongs to an un-named species, but I do not propose to describe it in the absence of the male.

Genus **Potamocypoda** Tweedie.**Potamocypoda pugil** Tweedie.

Tweedie 1938, p. 198.

Three males and three females from a freshwater ditch at Kuching. One of the males is unusual in having both claws unmodified, as in the female, but the other two are identical with specimens of the original series from Johore.

Genus **Scopimera** De Haan.**Scopimera intermedia** Balss.

Balss 1934, p. 233.

Tweedie 1937, p. 146 (*S. tuberculata*).

Shen 1935, p. 36 (*S. tuberculata*).

Three specimens from Labuan.

These belong to the same species as I reported in 1937 under the name *tuberculata* Stimpson, at the same time reducing *S. intermedia* Balss to the synonymy of that species. I am now convinced that I was wrong in doing this as Sakai (1939, p. 637) has adduced good reasons for supposing that *tuberculata*, which was described from Japan, is a synonym of *globosa* De Haan.



The present species of *Scopimera* is abundant on sandy beaches around Singapore, Johore and the east coast of Malaya, and I have found no other species in this region, though *S. proxima* takes its place on the west coast.

Singapore specimens were examined by Dr. Balss and pronounced identical with his *intermedia* and also with specimens from China sent to him by Dr. C. J. Shen. I also sent material to Dr. Shen who identified it as *tuberculata*, and when examined in the light of his comparison of *tuberculata* and *globosa* (1935, p. 36) the Malayan and Bornean specimens correspond with the former. While I accept Sakai's opinion that *tuberculata* and *globosa* are identical, I do not agree that the two forms compared by Shen fall within the range of a single species, but believe, rather, that he had two species, *globosa* and another which remained un-named until Balss described *intermedia* from Johore in 1934.

In describing *intermedia* Balss states that the carapace is quite smooth and without tubercles. This is only true of a small minority of specimens; most have a granular eminence overhanging the extra-orbital angle, and more or less scattered granules on the anterior part of the carapace. Further, the chelipeds are finely granular and the chela more curved than is shown in fig. 9 on p. 234 of Balss 1934. Shen's figures (1935, figs 14, 15, *S. tuberculata*) well display some of the characters, but a point missed by both authors is the peculiar form of the front, which is concave on its upper surface with a low smooth ridge standing in the centre of the concavity.

### Genus **Ilyoplax** Stimpson.

#### **Ilyoplax orientalis** De Man.

Tweedie 1935, p. 55; 1937, p. 151.

River below Kuching, two males.

#### **Ilyoplax delsmanni serrata** Shen.

Tweedie 1937, p. 151.

River below Kuching, one male.

#### **Ilyoplax spinimera** sp.n. Fig. 8, a-f.

*Cotypes.* A male and a female from mud at the edge of mangrove swamp bordering the river below Kuching.

*Material.* Seven males and six females, in addition to the types, from the type locality.

*Description.* The proportions of the carapace are normal for the genus, but the front is unusually narrow (a character shared with *I. stercens* (Kemp, 19)). The orbits are transverse and there is a beaded notch behind each orbital angle; behind this notch the lateral margins diverge on each side, so that the greatest breadth of the carapace is far back. Usually in *Hyoplax* the lateral margin bifurcates posteriorly, the two branches ending over the bases of the second or third and the last legs, and enclosing a hepatic pect. In *spinimera* the margin runs back from the epibranchial notch and turns down, following the usual course of the outer branch. The inner branch is discontinuous with the margin, and is represented by an isolated raised sinuous line, beaded on its outer part and ending in a smooth transverse ridge over the base of the last leg and in front of the usual posterior submarginal ridge. The front is sharply grooved in the middle line, and has a very distinct broad, smooth border. The surface of the carapace is punctate, finely on the median parts, more coarsely on the branchial and hepatic regions. Two bands of fine, crowded punctae run back on each side of the gastric region from the front. Two rather obscurely defined transverse furrows lie on each branchial region, and the hinder of these furrows is bounded posteriorly by an ill-defined ridge which ends externally in an oblique granular tubercle; behind this tubercle on the hepatic region, is another, similar one.

The orbit is deep so that the retracted eye is wholly contained in it. The infra-orbital ridge, which is similar in both sexes, is granular and is not produced at its outer end; there is an accessory granular ridge on the floor of the orbit. A short tapering furrow runs from the outer angles of the buccal cavern below the orbit for about half its length. The lower margin of the epistome forms a simple curve, there being no development of the downwardly directed median tooth seen in *I. orientalis*, *I. delsmanni* and others of the genus. The third maxillipeds are normal except that the usual setose line on the ischium is wanting.

The outline of the abdominal segments (fig. 8, e, f) is, as usual, characteristic of the species in both sexes.

The chelipeds are equal. In those of the male all three surfaces of the arm are smooth, its edges sharply granular. The length of the carpus is less than twice its breadth and it carries no flattened internal tooth. The palm is smooth externally its upper margin granular and its lower surface rounded and thickly set with minute, sharp granules which extend more than half way along the lower border of the finger, where they are more

closely set than proximally. On the inner surface of the palm a separate band of granules occupies a low ridge running obliquely up from the finger. The upper part of the inner surface presents another low but sharply defined granular and setose ridge running down towards the dactylar articulation. Both fingers are strongly curved inwards and expanded externally at the tips forming a double spoon. The expanded margins have a narrow chitinous border, and each finger has some bristles at the tip. The immovable one is granular beneath as already described and the dactylus is granular above with a smooth central furrow on its proximal part. The apposed edges of the fingers are denticulate behind the expanded tips and the dactylus has a low, finely denticulate tooth near the base.

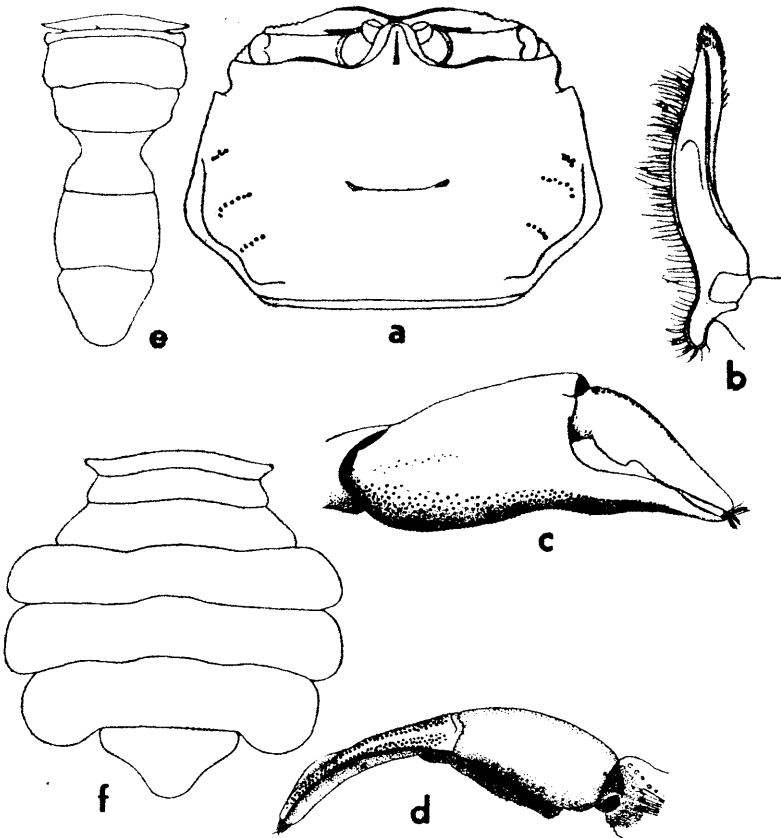


Fig. 8.

*Nyoplar spinimera* sp. n. a. carapace; b. male first pleopod; c, d. right chela of male; e, f. outline of male and female abdomen.

The female chelipeds are very small and slender, rather hairy and spoon-shaped after the usual fashion of mud-feeding Ocypodids.

The proportions of the walking legs are given in the table of measurements. The meri are without any trace of tympana and those of the first three pairs bear spinules on their anterior and posterior margins, rather similar to those seen in the common Grapsid, *Metaplar elegans*. As in that species the development of the spinules is greater in the female than in the male, where they may be largely replaced by sharp granules, but one or two spinules are almost always present near the distal ends of the meri. In one of the male paratypes, somewhat damaged and showing clear signs of old age (large size and heavy growth of attached organisms) the spines are represented only by a few stumps. In this specimen the chelae are proportionately longer than those of the one figured; it measures 10.8 mm. mcb, and is by far the largest *Ilyoplar* I have seen.

The male chelae are pale blue with white fingers.

The distinctive characters of the species are the unusually narrow front, the absence of a median lobe at the epistomial margin and the presence of spinules on the margins of the ambulatory meri. The form and ornamentation of the male chelipeds is very characteristic and the outline of the abdominal segments in both sexes is distinct from all the species in which I have examined this character.

Measurements in mm.

	male cotype	female cotype
Breadth between the extra-orbital angles	... 7.3	8.0
Greatest breadth of carapace	... 9.8	10.1
Length of carapace	... 6.8	7.0
Length of carpus of cheliped	... 2.9	
Breadth of carpus	... 1.75	
Length of chela	... 6.4	
Height of palm	... 2.8	
Length of dactylus	... 3.6	
Length of merus of third walking leg	... 6.0	5.5
Breadth of merus	... 2.5	2.5
Combined length of carpus and propodus	... 6.0	5.6
Length of dactylus	... 2.5	2.7

(Genus **Dotilloplax** gen. nov. (Ocypodidae, Scopimerinae)

Genotype *Dotilloplax kemp* sp.n., *infra*.

The characters of this genus are easily defined: they are those of *Ilyoplax* Stimpson except that the side walls of the carapace and the meri of the third maxillipeds present the deep convolute sculpture characteristic of *Dotilla* and *Dotillopsis*. It cannot be included in the latter genus as the fourth segment of the male abdomen is not expanded and the form of the second maxilliped, which is as in *Ilyoplax* and *Dotillopsis*, excludes it from *Scopimera* and *Dotilla*. The fusion of the fifth and sixth abdominal segments is an unusual feature, but I think to cite it as a generic character while the genus remains monotypic would be to circumscribe the genus too strictly.

Considered in the light of Kemp's classification of the subfamily, the new genus is intermediate between *Ilyoplax* and *Dotillopsis* just as the latter is "in some respects intermediate between *Dotilla* and *Tympanomerus*" (= *Ilyoplax*) Kemp 1919, p. 334).

This is the third Scopimerine genus to be described since Kemp's revision. The other two, *Pseudogelasimus* (Tweedie 1937, p. 153) and *Potamocypoda* (Tweedie 1938, p. 198) are both characterised by an *Uca*-like hypertrophy of one male cheliped. They are separated from each other mainly by the anomalous development of the antennal region in *Potamocypoda*.

**Dotilloplax kemp** sp.n. Fig. 9, a-d.

*Cotypes*. A male and a female from mud at the edge of mangrove swamp bordering the Kuching River.

*Material*. Four males and one female in addition to the types, from the type locality.

*Description*. In dorsal aspect the carapace is wholly *Ilyoplax*-like. The front is fairly narrow with a broad median sulcus. There is a well-marked rounded notch behind the external orbital angle, and the lateral margins, which are slightly sinuous, do not diverge posteriorly, so that the carapace is widest between the teeth behind the epibranchial notch on each side. Here, as in *Ilyoplax spinimera*, the bifurcation of the lateral margin is not normally developed (i.e. for *Ilyoplax*). But in this case the lower branch of the bifurcation is discontinuous with the margin, which is thus continuous from the epibranchial tooth to the postero-lateral angle. The lower branch is indicated only by a setose line, and the hepatic facet, which is open anteriorly, is nearly vertical and hardly seen

in dorsal view. The orbital margins are sinuous and rather oblique and the posterior submarginal ridge cuts off a rather wide posterior border. The surface of the carapace is smooth, sparsely punctate and very obscurely sculptured, though the gastric region is defined behind by a well marked transverse groove. There are a longitudinal and two oblique lines of setae on the lateral parts of the carapace.

The infra-orbital ridge is evenly granular and there is an accessory row of granules within the orbit. The margin of the epistome is angulate, but not dentiform, in the middle line and is strongly emarginate on each side of the median angle. The pterygostomian regions have a complicated convolute sculpture comprising the following elements: a deep furrow runs outward from the anterior angle of the buccal cavern below the orbit and bifurcates about a third the way along it; a narrow groove runs parallel and close to the side of the buccal cavern and another runs along the border of the inhalent branchial opening at the base of the chelipeds; from near the inner end of the latter groove, a deep furrow runs upwards and bifurcates below the outer part of the

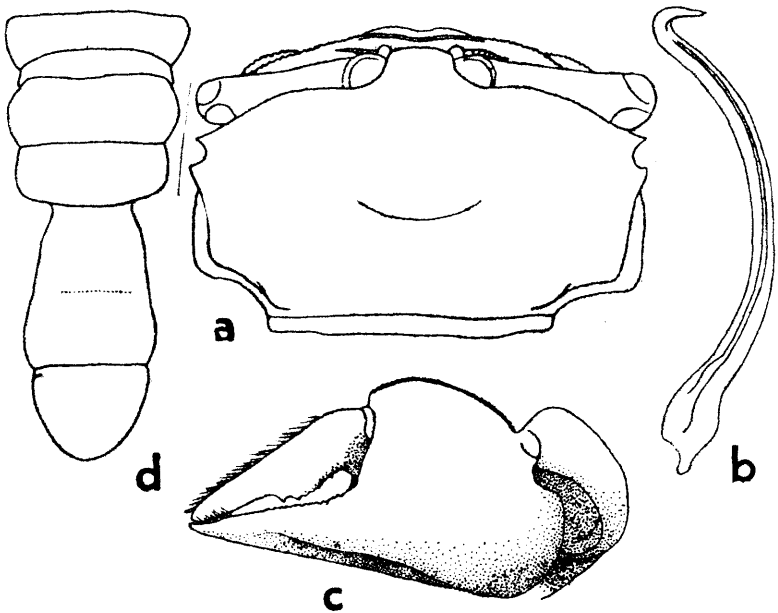


Fig. 9.

*Dotilloplax kempi* gen. et sp. nov. a. carapace; b. male first pleopod; c. left chela of male; d. outline of male abdomen.

orbit. The meri of the external maxillipeds have a proximal median furrow the anterior end of which is embraced by a curved furrow running more or less parallel to the outer, anterior and inner margins. The arrangement is very like that described and figured by Kemp (1919, p. 340) for *I. sterensi*, but in *kempii* the furrows are much more deeply impressed. An oblique setose line is present on the ischium.

The outline of the male abdominal segments (fig. 9, d) is characteristic of the species and consistent with the condition usually found in *Ilyoplax*. The abdomen is unusual, however, in having the fifth and sixth segments fused together; the suture is faintly indicated by an impressed line, but forms no line of flexure. The female abdomen is very broad, almost completely covering the thoracic sternal segments; all the segments are separate and the abdomen like that of the male, is stiff and well calcified.

In the chelipeds of the male the surfaces of the arm are smooth, its borders granular. The upper surface of the carpus is rhomboid and little longer than broad. On its inner surface there is a granular ridge in place of the flattened tooth found in certain species of *Ilyoplax*. The chelar palm is smooth on both its outer and inner surfaces; it is bordered above by a sharp, finely beaded crest and the lower surface of the hand has three raised lines, in part smooth, in part very finely beaded or denticulate. The outer of these extends from near the carpal articulation, along the outer side of the finger to a point just short of its terminal expansion; another runs along the lower margin of the finger, extending a little way onto the palm, and a third, internal to, and rather shorter than, the second, runs obliquely to it and joins it about half way along the finger. The dactylus carries a double row of very fine granules on the proximal part of its upper margin, and both fingers are incurved and spooned and setose at the tips. Their apposed edges are rather coarsely denticulate just proximally to the spooned part, and the dactylus bears a low, finely denticulate prominence near its base.

The meri of the walking legs are remarkably broad, their breadth more than half their length, granular near, and denticulate along, their borders, with rather obscurely developed Scopimerine tympana. The borders of the carpi are granular and on the second and third legs, patches of mud-caked tomentum with sparse, long black setae are present on the posterior part of the meri and on the carpi and propodi on each side of their articulation. Measurements in mm.

		Male cotype	Female cotype
Breadth between the extra-orbital angles	...	6.4	7.2
Greatest breadth of carapace	...	6.5	7.3
Length of carapace	...	4.2	4.5
Length of carpus of cheliped	...	2.0	
Breadth of carpus	...	1.5	
Length of chela	...	4.2	
Height of palm	...	2.3	
Length of dactylus	...	2.3	
Length of merus of third walking leg	...	4.5	4.6
Breadth of merus	...	2.5	2.7
Combined length of carpus and propodus	...	4.4	4.3
Length of dactylus	...	2.0	1.8

### References.

- Balss, H. 1934. 'Die Krabben der Reise J. W. Harms' nach der Christmas Insel und dem Malaisischen Archipel'. Zool. Anzeig., 106 : 225-237.
- Chopra, B. N. & Das, K. N. 1937. 'On three collections of crabs from Tavoy and Mergui Archipelago'. Rec. Ind. Mus., 39 : 377-434.
- Gordon, I. 1930. 'New species of Brachyura from China'. Ann. Mag. Nat. Hist. 10, 6 : 519-525.
- " 1924. 'Res. Sci. Voyage Indes Orientales Neerlandaises, Crustacea Brachyura'. Mem. Mus. Roy. Hist. Nat. Belg., 3, fasc. 15.
- Kemp, S. 1919. 'Notes on Crustacea Decapoda in the Indian Museum, 12, Scopimerinae'. Rec. Ind. Mus., 16 : 383-394.
- Lanchester, W. F. 1900. 'On a collection of crustaceans made at Singapore and Malacca, 1, Crustacea Brachyura'. Proc. Zool. Soc. London, 1900 : 719-770.
- De Man, J. G. 1883. 'Carcinological Studies in the Leyden Museum, 3'. Notes Leyden Museum 5 : 150-169.
- " 1887-88. 'Report on the Podophthalmous Crustacea of the Mergui Archipelago'. Jour. Linn. Soc. London (Zool.), 22 : 1-312.
- " 1888. Bericht über die im indischen Archipel von Dr. J. Brock gesammelten Decapoden und Stomatopoden'. Arch. f. Naturg., Jahrg. 53 : 215-600.
- " 1890. 'Carcinological Studies in the Leyden Museum, 4'. Notes Leyden Mus., 12 : 49-126.
- " 1891. 'Carcinological Studies in the Leyden Museum, 5'. Notes Leyden Mus., 13 : 1-64.



- De Man, J. G. 1895. 'Bericht über die von Herrn Schiffs-capitan Storm..... gesammelten Dekapoden und Stomatopoden'. Zool. Jahrb., Syst., 8 : 485-609.
- " 1902. 'Die von Herrn Prof. Kükenhal im Indischen Archipel gesammelten Dekapoden und Stomatopoden'. Abh. Senckenb. Ges., Frankfurt, 25 : 467-929.
- Rathbun, M. J. 1910A. 'Decapod Crustaceans collected in Dutch East India and elsewhere by Mr. Thomas Barbour'. Bull. Mus. Comp. Zool. Harvard, 52 : 305-317.
- " 1910B. 'The Danish Expedition to Siam 1899-1900, 5. Brachyura'. K. Danske vid Selsk. Skr., 7, vol. 5 : 303-367.
- " 1913A. 'Descriptions of new species of crabs of the family Ocypodidae'. Proc. U.S. Nat. Mus., 44 : 615-620.
- " 1913B. 'Descriptions of new species of crabs of the families Grapsidae and Ocypodidae'. Proc. U.S. Nat. Mus., 46 : 353-358.
- Sakai, T. 1939. 'Studies on the crabs of Japan, 4, Brachygnatha, Brachyrhyncha'. Tokyo, 1939.
- Shen, C. J. 1935. 'On some new and rare crabs of the families Pinnotheridae, Grapsidae and Ocypodidae'. Chinese Journ. Zool., 1 : 19-40.
- Tesch, J. J. 1915. 'The Catometopous genus *Macrophthalmus* as represented in the collection of the Leiden Museum'. Zool. Meded., Leiden, 1 : 149-204.
- " 1917. 'Synopsis of the genera *Sesarma*, *Metasesarma*, *Sarmatium* and *Clistocoleoma*'. Zool. Meded., Leiden, 3 : 127-260.
- Tweedie, M. W. F. 1935. 'Notes on the genus *Ilyoplax* Stimpson'. Bull. Raffles. Mus. 10 : 53-61.
- " 1936. 'On the crabs of the family Grapsidae in the collection of the Raffles Museum'. Bull. Raffles. Mus., 12 : 44-70.
- " 1937. 'On the crabs of the family Ocypodidae in the Raffles Museum'. Bull. Raffles Mus., 13 : 140-170.
- " 1938. 'A new Scopinerine crab from the Malay Peninsula'. Bull. Raffles. Mus., 14 : 198-202.
- " 1940. 'New and interesting Malaysian species of *Sesarma* and *Utica* (Crustacea Brachyura)'. Bull. Raffles Mus., 16 : 88-113.
- " 1949. 'The species of *Metopograpsus* (Crustacea, Brachyura)'. Bidr. tot de Dierkunde, 28 : 466-471.