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### XVII.—Revision of the Plagusiinæ

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abdomen 20; length of tegmina 56, breadth of tegmina 23, of their marginal area 8; length of stigma 3·75; of fore coxa 21·5, femur 24·3; of intermediate femur 21, tibia 18; of posterior femur 25, tibia 25.

Dried specimen.

*Hab.* Ceylon. Communicated by Mr. F. M. Mackwood, of Colombo.

#### 6. *Hierodula trimacula*.

*Hierodula trimacula*, Saussure, Mélanges Orthopt. i. 3<sup>e</sup> fasc. p. 82, pl. v. fig. 29, ♀.

*Hab.* Omán, Arabia, obtained by Colonel Miles, the British Resident at that place. The species was described from a specimen in the Paris Museum, marked "China?"

### XVII.—*Revision of the Plagusiinæ.* By EDWARD J. MIERS, F.L.S., F.Z.S., Assistant in the Zoological Department, British Museum.

THE following is a synonymic list, with brief diagnoses and remarks, of the species of this small and well-defined group, which belongs to the subtribe Catometopa, or Grapsoid Bra-chyura, and is peculiar on account of the remarkably flattened carapace and of the position of the antennules, which are exposed in deep longitudinal clefts or sinuses of the front and are visible in a dorsal view. It contains but two genera, *Plagusia* and *Leiolophus*\*

In determining and naming the species in the collection of the British Museum, I found that several of those recorded had apparently been established on insufficient grounds, and that of others the commonly received designations could not be retained; and I think it will be useful to place these observations on record, and at the same time indicate those characters which I have found most constant and reliable for distinguishing the species.

\* The curious genus *Crossotonotus*, recently established by M. A. Milne-Edwards (Nouv. Archiv. Mus. Hist. Nat. ix. p. 282, 1873) for a species (*C. compressipes*) from the Samoa Islands and New Caledonia, presents many affinities with the Plagusiinæ, but cannot be referred to this group, on account of the absence of the frontal sinuses. The genus *Plagusetes*, based on a species from Chili (*P. elatus*), described by Heller in the preliminary synopsis of the Crustacea of the 'Novara' Voyage (Verh. zool.-bot. Gesell. Wien, xii. p. 522, 1862), is not mentioned in his final report, but seems to have been based on specimens subsequently referred to *Acanthocyclus Gayi*, a genus belonging to the Cancroidea, but possessing some affinities with the Plagusiinæ.

The crustaceans of this group are found in nearly all the tropical and warmer temperate seas of the globe.

PLAGUSIA.

*Plagusia*, Latr. (part), Gen. Crust. et Ins. i. p. 33 (1806); M.-Edw. (part), Hist. Nat. Crust. ii. p. 90 (1837); Ann. Sci. Nat. (sér. 3) Zool. xx. p. 178 (1853), &c.

*Philyra* (subgen.), De Haan, Faun. Japon. Crust. decas ii. p. 31 (1835).

Outer maxillipeds with the third or merus joint well developed, as broad as the preceding joint. (Male genital appendages of the first pair without a terminal claw.)

§ 1. *Merus joint of the ambulatory legs with a terminal and subterminal spine on its upper margin.*

*Plagusia tuberculata.*

*Plagusia squamosa*, Lamarck, Hist. An. sans Vert. p. 246 (1818); M.-Edw. Hist. Nat. Crust. ii. p. 94 (1837), nec Herbst.

*Plagusia tuberculata*, Lamarck, l. c. p. 247 (1818); Latr. Encycl. Méth. x. p. 146 (1825), Atlas, Crust. pl. cccv. fig. 1 (1818); M.-Edw. Hist. Nat. Crust. ii. p. 94 (1837).

*Plagusia orientalis*, Stimpson, Proc. Ac. Nat. Sci. Phil. p. 103 (1858); Ann. Lyc. Nat. Hist. New York, vii. p. 231 (1860).

The carapace is covered with numerous small, often depressed tubercles, each of which is bordered by a fringe of short stiff hairs. The lobe above the bases of the second and third ambulatory legs is prominent, subacute, and not dentated. The terminal segment of the male postabdomen is broadly semioval and rounded at its distal extremity.

This species is probably common and widely distributed throughout the whole Indo-Pacific region.

Specimens are in the British-Museum collection from the Mauritius (*Leach's coll.*), Red Sea (*Burton*), Australia (*Gould*).

It has been recorded by Milne-Edwards from the Indian Ocean; and by Stimpson (under the name of *P. orientalis*) from Hong Kong, the Hawaiian Islands, and Cape St. Lucas in California. Probably also the specimens recorded by Heller (*Voy. Novara*) from the Red Sea, Nicobars, Madras, and Sydney belong here.

This species was first distinctly characterized by Stimpson under the name of *P. orientalis*; but it would appear that Lamarck's earlier name of *P. tuberculata* must be adopted for it. His specimen was from the Mauritius, and is referred by Milne-Edwards to his *Plagusia squamosa*.

*Plagusia depressa.*

- ? *Cancer depressus*, Fabr. Syst. Ent. p. 406 (1775); Ent. Syst. Suppl. p. 343 (1798).  
 ? *Cancer squamosus*, Herbst, Naturg. Krabben u. Krebse, i. p. 260, pl. xx. fig. 113 (1790).  
*Plagusia depressa*, Say, Journ. Ac. Nat. Sci. Phil. i. p. 100 (1815).  
*Plagusia Sayi*, DeKay, Zool. N.Y. Fauna, vi. Crust. p. 16 (1844); M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 179 (1853); Stimpson, Ann. Lyc. Nat. Hist. New York, vii. p. 64 (1859).  
*Plagusia squamosa*, Latr. Encycl. Méth. x. p. 145 (1825); Dana, U.S. Expl. Exp. xiii. Crust. i. p. 368 (1852).  
*Plagusia gracilis*, Saussure, Mém. Soc. Phys. et Hist. Nat. Genève, xiv. p. 449 (1858).

This species very closely resembles the preceding, but is distinguished, as Mr. Stimpson, in his "Notes on the North-American Crustacea," has pointed out, by the following characters. There is a series of about six prominent acute tubercles arranged in the form of an arc across the front of the gastric region; and the lobe above the bases of the second and third ambulatory legs is broader and regularly dentated. The terminal segment of the postabdomen in the male is, I may add, narrower, with the sides more distinctly convergent to the distal extremity.

*Hab.* This species inhabits what may be denominated, in contradistinction to the *Indo-Pacific*, the *Atlantic* region. Specimens are in the British Museum from the Tortugas, Garden Key (*Smithson. Inst.*), Jamaica (*Gosse*), Madeira (*Rev. R. T. Lowe, Dr. Halley, Blewitt*), Brava Island (*Rev. R. T. Lowe*), St. Helena (*Melliss*).

It is recorded from Charleston Harbour, South Carolina (*Gibbes*), and Brazil (*Lichtenstein*, fide *Latreille*).

In one adult specimen from Madeira in the Museum collection the teeth of the superior lobes of the ambulatory legs are nearly obsolete; but even in this instance, in their broader and more truncated apices, they differ from the same lobes in the preceding species.

On account of the habitat ("*in mare Mediterraneo, Americano*"), the *Cancer depressus* of Fabricius, Syst. Ent. p. 406 (1775), and Ent. Syst. Suppl. p. 343 (1798), probably belongs to this species; and I adopt his name for it the more readily as Say, in 1815, employed it for specimens from the coast of the United States. The figure of Herbst's *Cancer squamosus* distinctly represents the lobe at base of the ambulatory legs as dentated, and hence is to be referred to this species; but as the habitat is given as "*Ost-Indien*," there can be little doubt that Herbst, like most later authors, failed to appreciate its distinctive characteristics, and united under one name the Atlantic and Indo-Pacific forms.

Von Martens remarks (Arch. f. Naturg. xxxviii. p. 112, 1872) that he found it impossible to find constant characters to separate specimens (referred by him to *Plagusia squamosa*) from Cuba, Brazil, Madeira, and the Red Sea. As, however, he had seen only a male and a female from the last-mentioned locality, and had seen no specimens of the *Plagusia orientalis* of Stimpson, it is probable that he may have overlooked the characters derived from the superior lobes of the ambulatory legs and terminal postabdominal segment in the male (*vide* also 'Preuss. Exped. nach Ostasien,' zoolog. Theil, i. p. 22, 1876).

*Plagusia immaculata.*

*Plagusia immaculata*, Lam. Hist. An. sans Vert. v. p. 247 (1818).

*Plagusia depressa*, Latr. Encycl. Méth. x. p. 145 (1825); M.-Edw. Hist. Nat. Crust. ii. p. 93 (1837); Ann. Sci. Nat. (sér. 3) Zool. xx. p. 179 (1853); Dana, U.S. Expl. Exp. xiii. Crust. i. p. 369 (1852); Stimpson, Proc. Ac. Nat. Sci. Phil. p. 103 (1858); nec *Cancer depressus*, Fabricius.

In this species the carapace is more convex than in either of the preceding, the tubercles much depressed, quite naked, often almost obsolete upon the gastric and cardiac regions. The lobe above the bases of the second and third pairs of ambulatory legs is small and not dentated.

The series in the British-Museum collection includes specimens from Ceylon (*Holdsworth*), Torres Straits (*Jukes*), Philippine Islands (*Adams*), Timor Island (*Rayner*), Louisiade archipelago (*Macgillivray*), Sandwich Islands, Honolulu (*Lieut. Strickland*).

According to Stimpson, specimens found on the west coast of Central America by Capt. Dow belong to this species. It inhabits the seas of China, New Guinea, and the Indian Ocean (*M.-Edw.*); the islands of Loochoo and New Ireland (*Stimpson*); the Straits of Sunda (*Dana*), Nicobars, Shanghai, and Punipet (*Heller*).

Milne-Edwards has pointed out the unsuitability of the name of *P. depressa* for this species, which is the most convex of any of the Plagusiinæ; and as it is not the *Cancer depressus* of Fabricius, nor (probably) of Herbst, it appears necessary to adopt Lamarck's name of *P. immaculata*, which is quoted as a synonym of the species by Milne-Edwards (Hist. Nat. des Crustacés).

I transcribe the following MS. note of the colours (when fresh) of a specimen found on the ship's bottom, off Redscar Point, in the Louisiade archipelago, and now in the British-Museum collection:—

“Colour pale green, mottled with reddish brown. Tarsi

above dark purplish brown, with small markings of very pale bluish green. Carapace mottled and washed with pale dirty green, dark reddish brown, and straw-colour, with a few orange dots." This specimen, in its dried state, is of a nearly uniform dull chestnut-brown.

M. Brocchi (Ann. Sci. Nat. sér. 6, Zool. ii. p. 80, pl. xix. figs. 168-170, 1875) figures the male genital appendages of specimens both of this species and of *P. Sayi* from Guadeloupe. In the specimens referred by this author to *P. depressa* the first pair of genital appendages are of peculiar shape, constricted in their subterminal half, and with the distal extremity of an oval form (fig. 170); whereas in male individuals I have examined this pair of appendages scarcely differ in form from those of *P. squamosa*; that is to say, they are, as in the Atlantic species, strongly contorted and truncated at the extremity.

#### *Plagusia speciosa.*

*Plagusia speciosa*, Dana, Proc. Ac. Nat. Sci. Phil. v. p. 252 (1851); U.S. Expl. Exp. xiii. Crust. i. p. 369, pl. xxiii. fig. 9 (1852); M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 179 (1853).

This species is distinguished from all its congeners by having only three teeth upon the antero-lateral margins of the carapace, including the outer orbital tooth.

*Hab.* Paumotu archipelago, Waterland Island (*Dana*).

Only a carapace of this species is known. The disposition of the tubercles on the dorsal surface, as described by Dana, differs somewhat from that usual in *P. squamosa*.

#### *Plagusia glabra.*

*Plagusia glabra*, Dana, Proc. Ac. Nat. Sci. Phil. p. 252 (1851); U.S. Expl. Exp. xiii. Crust. i. p. 371, pl. xxiii. fig. 10 (1852); M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 179 (1853).

Is described by Dana as having the carapace smooth and glabrous, antero-lateral margin quadridentate, front above obliquely subcristate, not spinigerous. Anterior legs of male very short, part of hand preceding fingers shorter than its height, granulate above, smooth externally and not costate; wrist nearly smooth. Third joint of eight posterior legs smooth. Third joint of outer maxillipeds quadrate, slightly oblong.

*Hab.* New South Wales (*Dana*), Australia (*coll. Brit. Mus.*).

The male specimen described by Dana measured about 9 lines. The specimen in the British-Museum collection is a female of much larger size (1 inch 7 lines), and is closely

speckled with red. There is an irregular granulated ridge on the upper surface of the wrist, and an abrupt prominence behind the upper orbital margin, which is beaded. The buccal organs are wanting. This species is at once distinguished by the smooth and naked carapace, less deeply incised frontal sinuses, and the form of the hands, and appears to establish the transition from the Plagusinæ to the Grapsinæ, through *Cyrtograpsus*.

§ 2. *Merus joint of the ambulatory legs with a series of spines on its upper margin (carapace almost entirely destitute of tubercles).*

*Plagusia chabrus.*

*Cancer chabrus*, Linn. Mus. Lud. Ulr. p. 438 (1764); Syst. Nat. p. 1044 (1766).

*Plagusia tomentosa*, M.-Edw. Hist. Nat. Crust. ii. p. 92 (1837); Ann. Sci. Nat. (sér. 3) Zool. xx. p. 178 (1853).

*Plagusia capensis*, De Haan, Faun. Japon. Crust. p. 58 (1835).

*Plagusia chabrus*, White, Ann. & Mag. Nat. Hist. xvii. p. 497 (1846).

Carapace covered with a very short close pubescence, and without tubercles. Front armed above with two small spines, and with a series of small tubercles on its anterior margin. Anterior legs tuberculated. Lobes above the bases of the second and third ambulatory legs terminating in a short spine.

Specimens of this species are in the British Museum from the Cape of Good Hope (*Sir A. Smith, Capt. Carmichael, Dr. P. Hahn*), New Zealand (*Dr. Sinclair*), and Tasmania, near George Town (*R. Gunn*).

It has been recorded from New South Wales (*Dana*), Chili (*M.-Edwards*).

It is probable that the species briefly characterized by Milne-Edwards (Ann. Sci. Nat. sér. 3, Zool. xx. p. 178, 1853) under the name of *P. Gaimardi*, from Tongatabu, is only a variety of the above.

The first pair of genital appendages in the male are not twisted as in *P. squamosa*, and their inferior margins are thin and sharp-edged; they are sometimes very slightly constricted towards the distal extremity, which is obtuse and subtruncated.

*Plagusia dentipes.*

*Grapsus (Plagusia) dentipes*, De Haan, Faun. Japon. Crust. decas 2, p. 58, pl. viii. fig. 1 (1835).

*Plagusia dentipes*, M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 178 (1853); Stimpson, Proc. Ac. Nat. Sci. Phil. p. 103 (1858).

This species is distinguished from the preceding by having



a group of tubercles on the hepatic region of the carapace, near the base of the outer orbital tooth; and the spines upon the upper margins of the merus joints of the ambulatory legs are much stronger.

*Hab.* Japan (*De Haan*), Simoda (*Stimpson*).

I have seen no specimens.

#### LEIOLOPHUS.

*Acanthopus*, De Haan, Faun. Japon. Crust. p. 29 (1835); M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 180 (1853); nom. præoccupatum.

*Leiolphus*, Miers, Cat. New-Zeal. Crust. p. 46 (1876).

Outer maxillipeds with the merus joint very small and much narrower than the preceding joint. (Carapace with smooth naked ridges on its upper surface, but without numerous tubercles. Merus joints of the ambulatory legs with a series of spines on their upper margins. Male genital appendages of the first pair not twisted, with a terminal claw.)

#### *Leiolphus planissimus*.

*Cancer planissimus*, Herbst, Naturg. Krabben und Krebse, iii. pl. lix. fig. 3 (1804).

*Plagusia serripes*, Lam. Hist. An. sans Vert. p. 247 (1818).

*Plagusia clavimana*, Desm. Consid. Crust. p. 127, pl. xiv. fig. 2 (1825); M.-Edw. Hist. Nat. Crust. ii. p. 92 (1837); Atlas in Cuvier, R. A. pl. xxiii. fig. 3.

*Acanthopus planissimus*, De Haan, Faun. Japon. Crust. p. 30 (1835); Dana, U.S. Expl. Exp. xiii. Crust. p. 372 (1852); M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 180 (1853).

*Acanthopus Gibbesi*, M.-Edw. Ann. Sci. Nat. t. c. p. 180 (1853).

*Leiolphus planissimus*, Miers, Cat. New-Zeal. Crust. p. 46 (1876).

Hands in the male strong; the palms compressed and considerably dilated, much broader than the wrist, not sulcated on their upper margins. Greatest width of the abdomen of the male exceeding its length to the base of the last segment.

Specimens are in the British Museum from Mauritius (*Lady F. Cole*), Torres Straits (*Jukes*), Keeling or Cocos Island (*Lieut. Burnaby*), Pacific Ocean (*Smithsonian Inst.*), Madeira (*Rev. R. T. Lowe*), Jamaica (*purchased*).

It is abundant in the Polynesian archipelago, having been recorded from islands in the Paumotu, Society, Samoan, and Hawaiian groups (*Dana*), also from Cape St. Lucas and the coast of Florida, Key Biscayne (*Stimpson*).

In male specimens of large size from Madeira, the genital appendages of the first pair differ slightly from those of *L. abbreviatus* and Brocchi's figure (*l. c.* fig. 171), in being slender, more curved, and narrower in the middle than at either extremity.

Unfortunately, in the British-Museum copy of Herbst's work, the concluding part, containing the description and figure of his *C. planissimus*, is wanting; I have therefore not been able to verify the reference, which is quoted from Milne-Edwards.

*Leiolphus abbreviatus.*

*Acanthopus abbreviatus*, Dana, Proc. Ac. Nat. Sci. Phil. p. 252 (1851);  
U.S. Expl. Exp. xiii. Crust. i. p. 373, pl. xxiii. fig. 11 (1852);  
M.-Edw. Ann. Sci. Nat. (sér. 3) Zool. xx. p. 181 (1853).

Hands in the male small, the palm not dilated, and longitudinally sulcated on the upper margin in both sexes. Abdomen of the male rather narrow, its greatest width not quite equalling its length to the base of the last segment.

There are specimens in the British Museum from the Mauritius, Moluccas, Gilolo (*Adams*), Philippines, Guimaras (*Cuming*), Fiji Islands (*H.M.S. 'Herald'*).

Most of the specimens in the collection are females. In one male adult example, whose genital appendages I have examined, these organs are exactly of the form figured by Brocchi (*l. c.* fig. 171) in specimens referred by him to *L. planissimus*.

*Leiolphus pilimanus.*

*Acanthopus pilimanus*, A. M.-Edw. Nouv. Archiv. Mus. Hist. Nat. ix. p. 300, pl. xiv. fig. 5 (1873).

This species, in the dilated hands of the male, resembles *L. planissimus*, but is distinguished from it and from all its congeners by the existence of a large patch of thick hair upon the inner surface of the palms. There is a row of small spines upon the inner margins of the antennular cavities. The abdomen is also said to be narrower than in *L. planissimus*.

*Hab.* New Caledonia (*M. Balansa*).

The male only is known of this large species. I have seen no specimens.

The characters assigned by M. Milne-Edwards to his *Acanthopus affinis* (Ann. Sci. Nat. sér. 3, Zool. xx. p. 180, 1853) from the Sandwich Islands, and *A. tenuifrons* (*l. c.*) from the Marquesas, do not appear to me to be of specific importance.

The *Leiolphus spinosus* (*Plagusia spinosa* of M'Leay, in Smith's Zool. S. Africa, Annulosa, p. 66, 1838) would seem to be a distinct species, if the character "*clypei lateribus bidentatis*" be correct. It is stated by its author to be nearly allied to the *L. planissimus* (*P. clavimana* of Desmarest), with which it is united by Krauss (Südafrik. Crust. p. 42, 1843).