

Cilicaeopsis corpulentis, n. sp.

Pl. xlv., figs. 1-7.

Body very convex transversely and longitudinally, covered with a fine woolly tomentum which in some specimens is scanty.

The head is broad, gradually declivous in front, with a sulcation across the forehead, it is about as long as the 1st thoracic segment; the antennular and rostral region projects a little. The segments of thorax do not differ much in length after the 1st. The epimera are vertical in direction, obtuse, and marked off by distinct sutural lines; those of the 7th segment are not so deep.

The anterior division of the abdomen is produced behind as a process which is adherent and curved to the general surface and does not reach its end; below this in the median region is a depression which divides the posterior division into 2 lobes which, though well marked, are not tumid. The posterior margin is broad, obtuse, with a broad shallow insinuation shown below and visible from behind. The cavity of the abdomen has thick walls.

The epistome is rather small, anteriorly truncate, the upper lip large.

The 1st antennular joint is broad and short, the 2nd joint not much embraced by the 1st, the 3rd joint is long. Flagellum of 18 joints. The antennal flagellum has 15 joints.

The mandibles show a concentration of strength in the incisory processes; these are highly chitinised and distally overlap. There is a strong spine row on the right mandible, but the molar is small and the palp very small. The secondary plate on left mandible is trifold.

1st maxilla of moderate size, distal spines of outer ramus highly chitinised, inner ramus is comparatively feeble.

The maxilliped is rather slender.

The legs are robust and strongly spined with strong dactyli.

The pleopods are broad in general aspect. The endopod of the 1st is triangular, about as long as broad, with a fold on the inner margin and a small distal emargination like as shown by Stebbing in *C. latreillei* (Ceylon Fisheries). Exopod with strong outstanding spine, inner angle of peduncle with 3 coupling spines.

The appendix on the 2nd pleopod is long and whip-like, its base is strong and downward depressed, its distal portion channelled with marginal setules.

The 3rd pleopod has broad rami as in *Paracilicaea*.

The 4th pleopod bears two distal plumose setae on the exopod, the endopod is thick and much folded.

The uropods are much reduced, the outer ramus is subcylindrical, the inner is also thick and reaches to end of abdomen.

This species is near *C. dakini*, Tattersall; it also much resembles the two species of *Paracilicaea* of this account, especially *P. pubescens*, Ml. Edw. In epistome, antennules, antennae, legs, pleopods, etc., it is difficult to distinguish from those of *Cilicaea latreillei*, Leach.

Length, 14 mm.; breadth, 9 mm.

There are three specimens from Port Stephens, New South Wales.

The type is in the Australian Museum, Sydney.

Cilicaeopsis halei, n. sp.

Pl. xlii., figs. 6, 8, 9.

Body almost glabrous; there are a few longish hairs on the uropods.

The head is rather long, a little umbonate above. The eyes are large. The 1st segment of thorax is a little longer than those which follow, the last is shorter and narrower, faintly sinuous on posterior margin. The epimera have each a small prominence and the lower lateral margin of 1st segment is turned up.

The anterior division of abdomen has the median region raised and is produced behind to 2 small projections with another median, and above, which is flanked by 2 obscure ones near its sides; this division also carries 2 obscure lateral tubercles. The posterior division has two submedian bosses; medianly it becomes abruptly declivous, then gradually so to the pointed end. There is an insinuation in the vertical direction which medianly is a channel, but there is no notch.

The 1st joint of the antennule has its distal angles not much produced. The flagellum has 10 joints. The antenna is robust with longish peduncular joints and a flagellum of 11 joints.

The epistome is anteriorly broad with a small tubercle on each side.

The right mandible has incisory plate 2 or 3 dentate. The left is entire with a long bifid secondary plate. The molars are very large.

The palp of maxilliped has long lobed joints nearly as in *Cymodoce tuberculosa*, Stebbing.

The legs are sparsely spined, not differing much from each other except that the 1st pair is a little weaker.

The 1st pleopod is more thickened than those that follow, the external spine of the exopod is small and non-projecting. There are 3 coupling spines in the peduncle, and externally it is destitute of the group of soft hairs. The exopod of the 3rd pleopod has the division well towards the middle of lamina, the endopod is broad and its outer margin slightly insinuate. The next 2 pleopods are hemibranchiate, the 4th having broad rami. On the exopod of the 5th there are 4 setuliferous lobes, one of which is outstanding; the external margin of this lamina has fine hairs.

The uropod is as in *Cilicæa*, a short inner ramus with the external ramus much longer, slender and a little curved.

Length, 6 mm.

The type, which is placed in the Australian Museum, Sydney, is one female specimen from Port Jackson.

This species seems to be near *C. dakini*, Tattersall, and *C. ornata*, Whitelegge.

PARACILICÆA (?) PUBESCENS, Ml. Edw.

Pl. xliii., figs. 8-11; pl. xlvi., fig. 1.

Sphacroma pubescens, Ml. Edw., Hist. Nat. Crust., t. iii., p. 209, 1840.

Cymodoce pubescens, Haswell, Proc. Linn. Soc. N.S. Wales, vol. v., p. 473 pl. xvi., fig. 1, 1881.

C. latreillei, Miers, Zool. H.M.S. "Alert," pp. 308-310, 1884.

C. pubescens, Hansen, Quat. Jnl. Micro. Sci., vol. xlix., pt. i., p. 122, 1905.

C. pubescens, Stebbing, Trans. Linn. Soc., vol. xiv., pt. i., p. 104, 1910.

C. pubescens, Stebbing, Ceylon Pearl Fisheries, Sup Repts. No. xxiii., p. 38, 1902.

The adult male of this species does not seem heretofore to be known. The following characters are taken from a specimen which, I believe, to have that standing:—

The pubescence of the body is very distinctive, short, thick, the individual hairs are like scales on stalks; the surface of the body is also granulate. In the abdomen the mesial lobe of the notch falls short of the sides.

The mandibles are normal, rather short, with incisory processes entire, secondary plate and spine row on the left well developed, the molar strong.

On the 1st leg on the 3rd, 4th, 5th, and 6th joints the spines are numerous; on the others the spines, although small, are also numerous on 4th, 5th, and 6th joints. The dactyli are short.

The pleopods resemble closely those of *C. latreillei*, including the very slight insinuation on the distal end of endopod of 1st pair.

The uropods have the cilicæiform characters.

The female of this species is of a more ovate shape, the anterior division of the abdomen is shorter and not so much produced backwards, the bosses on the posterior division are not so large. The mouth parts are much altered and the brood is internal. These females are also scarcely to be distinguished from those of *C. latreillei*, Leach; the pubescence, of course, is very different.

In the collection of the South Australian Museum are some specimens which I refer to this species somewhat doubtfully, a juvenile (see pl. xliii., fig. 11; pl. xlvi., fig. 1).

The New South Wales specimens are from Port Jackson and Port Stephens, and are common on the eastern coast.

Since writing the above I have observed two male specimens which, although preserving closely the structure of the female, yet, by the development of the *appendix masculina*—which has the long whip-like character—it would indicate their at least nearness to the adult state. Alternatively the inference might be drawn that there are 2 forms of the male. Further observation it will be seen is necessary. I must say that I have not seen the above *Cilicæa* form of male among specimens from the southern coast.

Paracilicæa stebbingi, n. sp.

Pl. xliii., figs. 3-7.

The body is smooth, glabrous. Head rounded anteriorly, rather short. Eyes of moderate size.

The 1st segment of thorax is the longest, the following 3 subequal in length, the last 2 are shorter, the last is obscurely tuberculate on posterior margin with 2 lateral tubercles more pronounced. Anterior division of abdomen short, with 6 distinct tubercles on the posterior margin, with 2 above laterally placed, and between the 2 submedian there are 2 very small ones away from the posterior margin and 2 lateral tubercles on each side. The suppressed segments are distinctly marked. The posterior division is marked by 8 longitudinal ridges; there are two short submedian, two long outward from these, these end posteriorly in 2 large bosses which project beyond the end of abdomen, another pair of short ridges, then a pair of strong longer ones whose posterior ends project a little over the peduncles of the uropods. The bosses are separated by a median sulcation which descends abruptly to the posterior notch, which is deep, widening inwardly with a median lobe which only slightly projects but which nearly fills the widened basal part. The sides of the notch and the median process are slightly raised.

The epistome is of moderate size, its apical portion forms a continuous surface with the head and basal antennular joints. The upper lip is large.

The basal joint of the antennule has its lower distal angle produced to a point but falling short of the end of 2nd joint. The flagellum has 19 joints. The antenna is moderately robust, its flagellum has 19 joints.

Mandibles with incisory processes entire, and strong molars; the right spine row, the left with bifid secondary process besides.

The legs are of the usual pattern, the 7th bears long spines in the usual positions.

The appendages of the 7th thoracic sternum are long and slender.

The endopod of the 1st pleopod about as broad as long with a strong fold on inner margin; exopod with strong proximal outstanding spine. There are 5 coupling spines on the inner side of the peduncle and dense hairs on the outer side. The 2nd pleopod has the *appendix* slender exceeding the endopod in length, its basal portion moderately bulbous. In the 3rd pleopod the rami are very broad; the exopod division is near the end. Exopod of 5th pleopod with 5 outstanding setuliferous lobes.

The exopod of uropod is large, curved, and subcylindrical. The endopod is short, not wholly visible from above.

The female differs from the male as the figure shows. The mouth parts are modified and the marsupial plates overlap.

Length of male, 11 mm.

The specimens—two—were collected by Mr. A. R. McCulloch, from Cairns Reef, Cooktown, Queensland.

Type is in the Australian Museum, Sydney.

Cymodopsis, n. gen.

Epistome variable, sometimes elongate, with a small but distinct forward projecting free portion.

End of abdomen pointed obtusely, with a more or less deep exit channel to cavity of abdomen cut in vertical direction, the end of abdomen in a lateral view often projecting slightly above and beyond the immediate exit; or it may be regarded thus, the end of abdomen is a pointed median process which has completely obliterated a notch.

The endopod of 1st pleopod is usually rather narrow-elongate.

Uropods variable, scarcely foliate, often not reaching as far as end of abdomen. Exopod reduced, much altered or rudimentary, the endopod remaining normal:

Type of genus, *Cymodopsis latifrons*, Whitelegge.

CYMODOPSIS LATIFRONS, Whitelegge.

Pl xlv., figs. 1-5.

Sphaeroma latifrons, Whitelegge, "Thetis" Scientific Results Isopoda, pt. ii., p. 252.

The following characters may be added to those of Whitelegge:—

The epimeral portion of the 1st thoracic segment is thickened with a swelling on the lower margin. All the epimera are vertical in direction and, except the 1st, are marked off by suture lines.

The posterior division of the abdomen is gradually declivous to an obtuse point where the deep channel exit is in the vertical direction.

The epistome is of unusual shape, it has a free obtuse upper portion which projects obliquely downward.

The pleopods as a whole are narrow. In the 1st the endopod is twice as long as broad, ciliate, and slightly folded on its inner margin. The exopod has a very long outstanding spine on the proximal external angle. The peduncle has 4 coupling spines on the inner angle and the outer side has a bent appearance noticed in other species and is furry. The plumose setae of both rami are very long.

In the 2nd pleopod the endopod is also narrow with a slight ledge near the inner margin, the *appendix* is very attenuate at the end. In the 3rd pleopod the endopod is more obtuse at the distal end, the plumose setae on the exopod reach thickly to the base of the lamina on the outer side, as also do those of the 1st and 2nd pairs. The distal division of the exopod of the 5th pleopod has 3 outstanding lobes.

The inner ramus of uropod is rather broad, distally truncate with a faint emargination, the exopod is awl-shaped in outline but is a little flattened with a slight ridge on the underside and reaches well beyond the inner ramus.

The female has much more slender legs than the male. The outer ramus of uropod is small, ovate, and much shorter than the inner.

In the single female specimen there is no sign of brood, the marsupial plates are not formed, and mouth parts are normal.

CYMODOPSIS PLUMOSA, Whitelegge.

Pl. xlv., figs. 6-9.

Sphaeroma plumosa, Whitelegge, "Thetis" Scientific Results Isopoda, pt. ii., p. 254.

Body slightly hairy in tufts (the hairs plumose), convex.

Head with a rostral prominence seen from above and another behind on the forehead. Eyes large, rounded, protruding. 1st segment of thorax a little longer than each of those that follow except the last. The epimera of 2nd, 3rd, 4th, and 6th segments rather acute; all are well separated from each other. The last segment of thorax is much shorter. Anterior division of abdomen short, rather tumid medianly near posterior border. The posterior division is dome-shaped and has 2 obscure tubercles medianly, behind this the surface shelves away to an obtusely pointed end slightly insinuate at the sides, below there is a short channel which is rather deep. A transverse ridge near the exit of cavity of abdomen carries a row of curious setules with knobbed heads.

The epistome is very long with large upper lip and a rounded apex not visible in a view from above.

1st joint of antennule broad and short, minutely granular with flagellum of 7 joints. Antennal flagellum of 10 joints.

The mandibles are weak, incisory process 3 or 4 dentate; a secondary plate is on the left mandible; a molar is present.

The maxilliped has its palp with moderately long lobes.

The legs are strong and uniform with strong dactyli, sparsely spined and furred.

The pleopods have the endopod of the 1st not quite twice as long as broad; the exopod is broad with its proximal spine weak and not projecting. There are 3 coupling spines on the inner angle of the peduncle and the outer side is cut away and non-setose. In the 2nd pleopods the *appendix* is indicated but not separate from the lamina of the endopod (this condition also occurs in a cotype specimen). There are only indistinct folds on the endopod of the 4th, but the lamina itself is large and evidently respiratory, there is a division on the exopod and both rami are tipped with a few plumose setae, the distal emargination of the endopod is shallow. The 5th pleopod has endopod with oblique folds faintly discernable, the setuliferous lobes on the exopod are not well defined.

The rami of the uropods are subequal in length, both distally truncate, and not reaching end of abdomen.

In a female (damaged cotype) the young were in the body, the mouth parts were normal. In another male specimen examined, the respiratory folds were more developed, but the appendix was quite as much undetached as in the above, although the appendages of the 7th sternum were more developed. The sexes are similar. Length, 7 mm.

From trawl net "Goonambee," 70-80 faths., off Port Jackson, C. W. Mulvey; also one cotype, 39-46 faths., off Green Cape, New South Wales, A. A. Livingstone and H. A. Fletcher. A specimen is in the Adelaide Museum from Mr. M. Ward, Sydney.

Cymodopsis gorgoniae, n. sp.

Pl. xlv., figs. 10-13

28

The body is granulate on exposed parts, the smooth areas on segments indicating that the animal is capable of bending in opposition to the usual direction, especially about the middle of the body. There are few scattered setae on the abdomen and epimera. It is highly calcareous.

The head abruptly descends in front, the basal joints of the antennules and rostrum being quite underneath; on the forehead are two low tubercles with a smaller one behind. The eyes are medium in size and projecting. The 1st

thoracic segment is nearly as long as the 3 which follow together, the others are short, especially the last. The epimera are marked off by distinct suture lines and are a little turned in below, those of the 2nd, 3rd, and 4th are subacute, those of the 5th, 6th, and 7th obtuse and rounded, that of the 7th not reaching the level of the preceding. The anterior division of abdomen is short, medianly a little projecting behind, and there inclined to divide into 2 tubercles. The posterior division has 2 submedian bosses somewhat pointed behind with a rather deep sulcation between them. The end is obtusely pointed, below it shows an exit of channel which is rather narrow, the end being a ledge sloping upward.

The basal antennular joint is broad and short, the 2nd joint is rather quadrate in shape, the 3rd is longish; the flagellum has 6 joints. The antennal flagellum has 10 joints.

The epistome is rather tumid in the middle with small labrum.

The mandibles and other mouth part are metamorphosed.

The legs are long and moderately spined.

The 1st pleopod has the rami marked with minute areolae, the exopod has a small outstanding spine. The endopod is a little longer than broad; the peduncle has 4 long coupling spines on the inner angle and the usual mass of hair on the outer side. In the 2nd and 3rd pleopods the endopods are broad and distally truncate, in the 3rd the division is near the end of exopod and the endopod is very convex on its outer margin. In the 4th the exopod is tipped with 2 or 3 setae, the endopod has a distal gap which is rather wide and one setum. The exopod of the 5th is narrow with 3 or 4 outstanding lobes.

The uropod is small, indurated, and does not reach the end of abdomen, the inner ramus is distally rounded, as also is the outer.

The single specimen is an ovigerous female with marsupial plates and young in the body.

In a smaller non-ovigerous female in the same tube, the ledge-like termination of abdomen is not developed, so that there is a simple notch visible from behind forming the exit to channel; also in this specimen the end of inner ramus of uropod is truncate and the outer is more ovate and a little serrate on margin. The tip of epistome is also more acute.

Length of type specimen, 6 mm., placed in Australian Museum, Sydney.

From Long Reef, New South Wales, associated with *Gorgonias*.

There may be noted two deviations in the same sex; more may be expected in the undiscovered male. The species is here placed in the genus *Cymodopsis* provisionally.

Cymodopsis crassa, n. sp.

Pl. xlvii, figs. 1-11.

The body of the female is almost glabrous, dorso ventrally thick, especially in the region of the 1st thoracic segment, strongly declivous anteriorly from the 2nd thoracic segment and gradually declivous posteriorly. Epimeral portions of segments deep, nearly vertical in direction, the 2nd to 7th marked by distinct sutural lines.

Head short, with a very slight transverse depression between the eyes.

The segments of thorax become shorter in posterior direction, the 7th being very short.

The anterior portion of abdomen is short without any projections, the posterior bears 2 conical bosses, the depression between them being shallow; behind these the surface is abruptly declivous, then gradually so to the very obtusely pointed end which has a wide, rounded, shallow insinuation in the vertical direction.

The epistome is rounded and rather tumid anteriorly, bearing a large upper lip.

The 1st antennular joint is short and broad, its distal end moderately embracing the 2nd joint, the 3rd joint is as long again as the 2nd. The flagellum has about 27 short setose joints, the 1st of which is half as long as the preceding peduncular joint.

The peduncle of the antenna is longer than that of the antennule, its 5th joint reaching its whole length beyond the peduncle of the antennule, its flagellum has about 20 joints sparingly setose.

The maxillipeds have rather long palpal joints sparingly setose.

The legs are of the usual type with strong dactyli and sparingly spined.

The inner ramus of uropod is slightly falcate, not reaching the end of abdomen; it has a slight groove or slit at the end. The outer ramus is rudimentary.

The following details refer to the male:—

The right mandible has incisory plate obliquely entire, there follow 7 stout curved pectinate spines, the molar is short and strong.

The 1st pleopod is large, with exopod longer than broad with a strong projecting spine at the exerted proximal angle. The endopod is twice as long as broad. The peduncle is narrow and carries 4 coupling spines on the inner angle; the outer side has a dropped-down appearance and does not reach the angle of the exopod; it is sparingly hairy.

The endopod of the 2nd pleopod has a long whip-like appendix.

The exopods of 3rd, 4th, and 5th pleopods have each a division, that of the 4th acuminate to an acute point and that of the 5th is rather narrow with 1 setuliferous lobe on the inner distal angle of the proximal portion and 2 on the terminal.

The uropod is as in the female.

In the female, though of large size, there are no marsupial plates and the mouth parts are normal. The male specimen was much damaged, and except for some mounted parts has, unfortunately, been lost. The larger female measures 12 by 8 mm.; it was pink in colour with very small dark spots when fresh.

Dredged in about 6 faths., Gulf St. Vincent, by H. M. Hale.

Type in South Australian Museum, Reg. No., C. 573.

Cymodopsis wardii, n. sp.

Pl. xlvii., fig. 12; pl. xlviii., figs. 1, 2.

The body is rather broad. The head has a transverse ridge anteriorly which forms on each side a subacute angle. The eyes are large and prominent. The segments of thorax do not differ much in length except the last, which is very short. The epimera are well defined from the tergites, obliquely projecting; those of the 2nd, 3rd, and 4th are subacute, the others more obtuse, the last is quite short. The anterior division of the abdomen is short and unarmed. The posterior division is dome-shaped with 2 submedian bosses not very strongly marked, and from these the surface descends rather abruptly to the pointed end which below is widely insinuate, in the vertical direction medianly there is a very short exit channel but no notch in the usual sense. The cavity of the abdomen is deep and the uropods are capable of a vertical position, thus acting as props.

The epistome is very long, especially in its anterior part; broadly rounded anteriorly and projects a little beyond the front of the head.

The antennular peduncle is robust, its 1st joint broad and granular, the 1st joint of flagellum is half as long as 3rd joint of peduncle; it is composed of 4 long joints. The antenna also is unusually robust, its 1st joint of flagellum is subequal in length to the last peduncular joint; there are 11 joints.