

TERRESTRIAL TALITRIDAE FROM THE MARQUESAS *

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The name "sandhoppers" characterizes a large number of the species of Talitridae very well, as they are commonly found on the shore hopping in the sand. Numerous species, however, live near the shore, swimming in the water, others are found in the open ocean, and still others live in fresh water. A list of the fresh-water and terrestrial species is given by Spandl.¹

A number of species have truly terrestrial habits; these belong to the four genera, *Orchestia*, *Parorchestia*, *Talorchestia*, and *Talitrus* (including *Talitriator*).

The extensive material collected by the Pacific Entomological Survey in the Marquesas in the south-central Pacific includes three species, one of which (*Orchestia marquesana*) is new to science, another contains a previously undescribed form (*O. floresiana* form *monospina*), and all are new records for the Marquesas.

Genus TALITRUS Latreille

Talitrus, Stebbing: Amphipoda I. Gammaridea, Das Tierreich, Lief. 21, p. 524, 1906. Hunt: Mar. Biol. Assoc. Plymouth, Jour., vol. 13, no. 4, p. 861, key to all species, 1925.

Talitrus sylvaticus Haswell (figs. 1-3).

Talitrus sylvaticus Stebbing: Amphipoda I. Gammaridea, Das Tierreich, Lief. 21, p. 524, 1906. Sayce: Roy. Soc. Victoria, Proc., vol. 22 (new ser.), pt. 1, p. 30, pl. 11, 1909. Chilton: Roy. Soc. New South Wales, Jour. Proc., vol. 50, p. 83, figs., 1916. Chilton: Rec. Australian Mus., vol. 14, no. 2, p. 89, 1923. Hunt: Mar. Biol. Assoc. Plymouth, Jour., vol. 13, no. 4, p. 858, figs., 1925.

Talitrus dorrieni Hunt: Mar. Biol. Assoc. Plymouth, Jour., vol. 13, no. 4, p. 854, figs., 1925 (see Schellenberg, Zool. Anz., vol. 105, p. 159, 1934.)

Ovigerous female

Length about 10 mm. Head about $1\frac{3}{4}$ times as long as 1st mesosome segment. Eyes black, rather large, separated dorsally by a distance almost equal to their smallest diameter (fig. 1).

¹ Spandl, H., Studien über Süßwasser-amphipoden I: Sitz-ber. Akad. Wiss. Wien., Math.-Naturwiss. Kl., Abt. 1, vol. 133, pt. 9, pp. 460-474, 516-517, 1924.

* Pacific Entomological Survey Publication 8, article 3. Issued January 10, 1935.

Antenna 1 reaches distal end of ultimate joint of peduncle of antenna 2; the 3 joints of the peduncle subequal in length, the flagellum as long as the peduncle, 8-articulate; joint 8 extremely short. Antenna 2 almost as long as the head and 5 mesosome segments combined; the 3 distal joints of the peduncle are increasing in length (length ratio about 2:3:4); the flagellum longer than the peduncle, with about 15 joints.

The oral parts were not dissected out, except the maxillipeds, which have a small 4th joint in the palp, with a few setae.

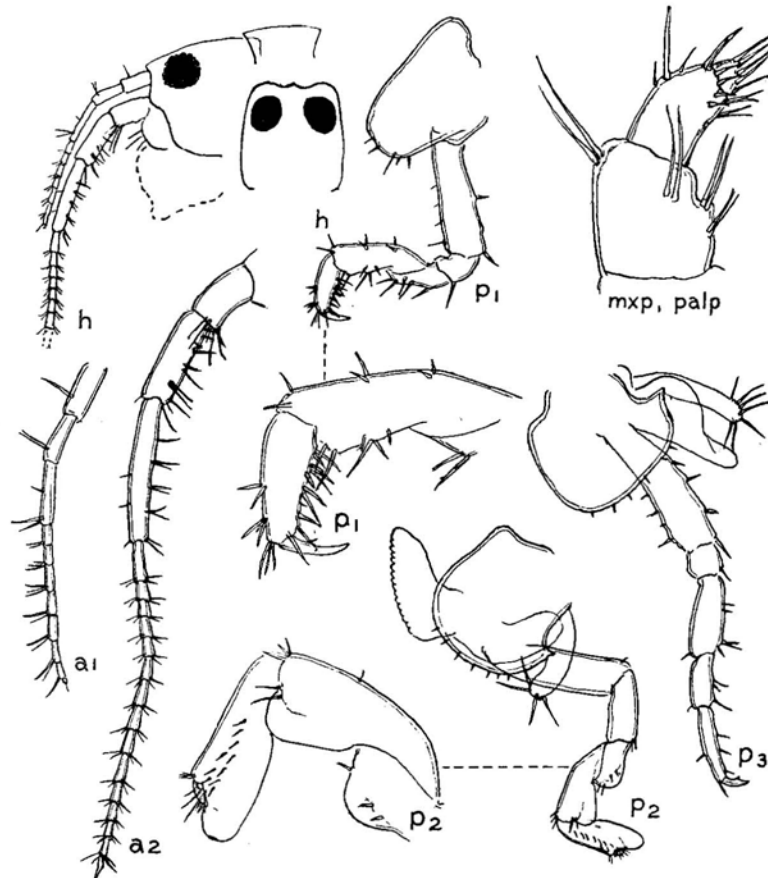


FIGURE 1.—*Talitrus sylvaticus* Haswell, female (Teavaione, Omoa (Omoa) Valley, Fathuiva): *h*, head; *a1*, *a2*, antennae 1-2; *mxp*, *palp*, apex of the palp of the maxillipeds; *p1*-*p3*, pereopods 1-3.

Pereiopod 1: the side plate is apically somewhat tapering, with rounded corners, and about 5 spines on the under margin; joint 2 not quite as long as the 3 next joints combined; joint 5 as long as 3 and 4 together, with the margins almost parallel (there are no lobes on joints 4 and 5); joint 6 distally tapering, only a trifle more than half as long as 5; the finger half as long as 6.

Pereiopod 2: the side plate (which is of the same shape as those of pereopod 3-4) has an acute projection on the hind margin and 6-7 spines on the under margin. Joint 2 longer than the 2 next joints combined, 3 longer than 4, 5 somewhat shorter than 4 and 5

combined, 6 equals 5 in length. Joints 4, 5, and 6 have prominent chagreened expansions, that of 6 projecting far beyond the rather short finger.

Pereiopods 3-4: nothing specially to remark.

Pereiopod 5: longer than pereiopod 3, the two lobes of the side plate equally deep; joint 2 oval (the length is $1\frac{1}{2}$ times the breadth), on the fore margin with a few spines, on the hind margin with about 8 serrations (each with a seta or small spine in the bottom fig. 2).

Pereiopod 6: much longer than pereiopod 5 (which is as long as the 5 first joints combined); the side plate not as deep as 5. Joint 2 oval, the length more than $1\frac{1}{2}$ times the breadth, the fore margin with about 8 spines and a few serrations, the hind margin with about 5 spines but only very slight serrations.

Pereiopod 7: only a trifle longer than pereiopod 6; joint 2 almost circular in outline (the length is $12/11$ times the breadth); the fore margin with about 10 spines (or pairs of spines) and a few serrations, the hind margin with about 11 serrations each with a spine.

The gills are of the ordinary shape; that of pereiopod 2 has the fore lobe strongly projecting forward. The marsupial plates are small, short, with a few setae on the tips.

The metasome segments have the hind margins quite even, but each has a small tooth on the lower hind corner.

Pleopods 1-2 are somewhat normal, quite equal in shape and length. The peduncles have on the median margin a few (pleopod 1) or no (pleopod 2) setae, on the outer margin some feathered setae; the outer ramus about as long as the peduncle, with numerous pairs of feathery setae but (probably) no real segmentation; the inner ramus half as long as the outer ramus, with 5-6 pairs of feathery setae (fig. 3).

Pleopod 3 short and degraded, reaching to the under margin of the epimeral part of the segment, consisting of a peduncle and an extremely short outer ramus; there are no setae.

Uropod 1 has the rami as long as the peduncle; the inner ramus has 5 marginal spines, the outer ramus is quite naked (except for the apical spines). In uropod 2 also, the outer ramus has no marginal spines. Uropod 3 is a trifle more than half as long as the telson; the peduncle is twice as long as the ramus, with 3 spines; the very short ramus has 2 minute apical spines.

The telson is as long as broad, distally tapering, cleft in about $1/3$ of the length; there are 2-3 pairs of marginal spines and 1 pair of apical spines.

The antennae have kept traces of red color, and there is a broad red transverse band on the head and on each of the mesosome segments.

Male

Not markedly different from the female, but larger: length up to about 13 mm. Antenna 2 has the ultimate joint of the peduncle about twice as long as the penultimate joint, and the flagellum has about 20 joints.

Uapou: Vaihakaatiki, Hakahetau Valley, November 15, 1931, 1 male, LeBronnec.

Hivaoa: Tapeata, on east side of Mount Ootua, altitude 2250 feet, May 15, 1929, 1 specimen; Maunaofefe, altitude 2000 feet, September 14, 1929, in dead petioles of *Angiopteris* species, about 10 specimens; Mumford and Adamson.

Fatuhiva: Omoa [Oomoa] Valley, Vaikoao, altitude 1500 feet, August 30, 1930, in rotten branches of *Angiopteris* species, about 10 specimens, Punahitahi, altitude 650 feet, August 18, 1930, under dead leaves, about 10

specimens including ovigerous female, Tepeia, altitude 600 feet, August 16, 1930, under dead leaves, 3 specimens, Teavaione, altitude 1700 feet, August 29, 1930, in leaves of *Angiopteris* species, numerous specimens; Hanavave Valley, Teatou, altitude 1000 feet, September 9, 1930, under dried dead leaves on the ground, about 25 specimens, Ihiota, altitude 950 feet, September 10, 1930, in leaves of *Angiopteris* species, several specimens including ovigerous female; LeBronnec.

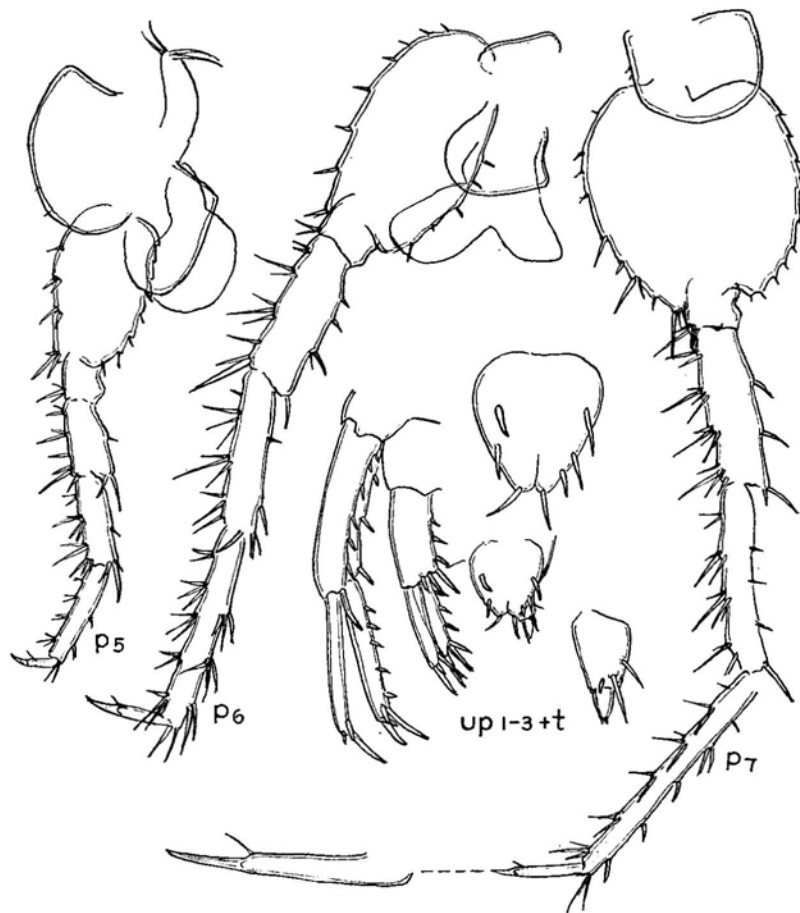


FIGURE 2.—*Talitrus sylvaticus* Haswell, female: *p*5-*p*7, pereopods 5-7; *up*. 1-3 + *t*, uropods 1-3 and telson.

The species was taken under dead leaves and in similar habitats; the altitudes (when noted) were from 600 to 2000 feet.

Also recorded from:

New South Wales: on moist ground in woods and scrubs; at Rootyhill, over 50 km from the coast (Stebbing); Barrington Tops, altitude about 1500 meters (Chilton).

Victoria (Sayce):

Very common throughout Victoria at all elevations, under logs and dead leaves in forest and scrub lands, preferably in damp situations, but also frequent in dry places, and often in association with *T. kershawi*. I have also found them just above the tide level at several places on our coast, under dead seaweed, lying on the sand.

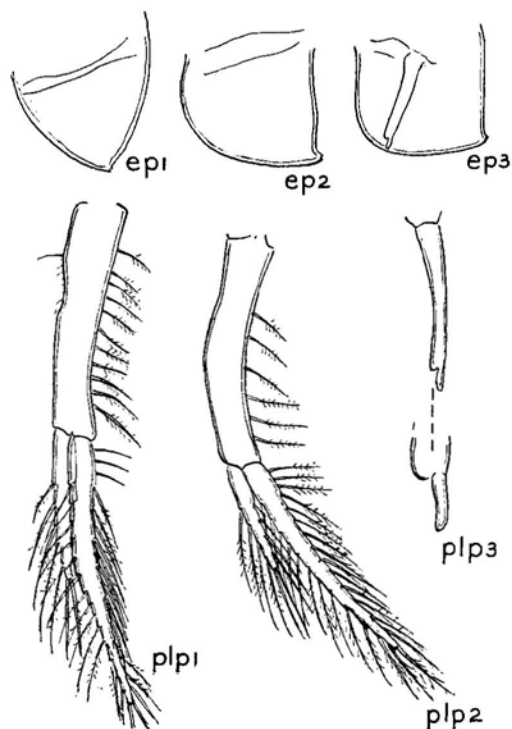


FIGURE 3.—*Talitrus sylvaticus* Haswell, female: *ep1-ep3*, epimeral parts of the metasome segments 1-3; *plp1-plp3*, pleopods.

Tasmania: very common (Sayce). On Mount Kosciusko and to a height of 760 meters on Mount Wellington (Stebbing).

Hawaii: in a forest in the mountains behind Honolulu, Oahu, under wood, March 27, 1915, 2 ovigerous females, Dr. Mortensen (in the Zool. Museum, Copenhagen).

The species is ordinarily of terrestrial habit, the altitudes (when noted) about 200-1500 meters, but it may be found on the coast just above the tide mark.

In trying to identify the present species from Hunt's key² we came to the conclusion that it is *Talitrus sylvaticus*, and it probably is in reality this species. In comparing the material with the rather brief description and the figures given by Sayce³ we do not find any important difference. Apart from the telson (described and drawn as having the "margin entire"), there is no discrepancy other than the shape of the pleopoda: the second pair is described as "considerably shorter than the first, but of a similar form and clothing. No vestige of a third pair is to be found." Hunt⁴ has given figures of the pleopoda in which pleopoda 1-2 agree with Sayce's description, but pleopod 3 is represented by small vestiges, with 1-2 setae but no rami; Chilton⁵ describes pleopod 3 as "quite small, with the branches vestigial."

If we bear in mind the great variation of the pleopoda of the well-known *T. alluaudi*, common in hothouses in Europe and other localities, it is possible that a similar variation is also present in other species, and that the Marquesan *Talitrus* species is *T. sylvaticus*.

Genus ORCHESTIA Leach

Orchestia, Stebbing: Amphipoda I. Gammaridea, Das Tierreich, Lief. 21, p. 530, 1906.

Orchestia floresiana Weber (figs. 4-6).

Orchestia floresiana Max Weber: Zool. Ergebn. einer Reise in Niederl. Ost-Indien, vol. 2, pp. 562-564, figs., Leiden, 1892. Stebbing: Amphipoda I. Gammaridea, Das Tierreich, Lief. 21, p. 539, 1906.

Orchestia anomala Chevreux: Soc. Zool. France, Mém., vol. 14, pp. 393-397, figs., 1901.

Orchestia malayensis (Tattersall) variety *thienemanni* Schellenberg: Archiv. f. Hydrobiol., suppl. Bd. 8, "Tropische Binnengewasser Bd. I," pp. 498-502, figs., 1931.

Male

Eyes separated dorsally by a distance of about $1/3$ — $1/4$ their diameter, but sometimes (even in the female) the eyes are almost contiguous.

Antenna 1 (fig. 4) reaches to the distal end of penultimate joint of peduncle of antenna 2; joint 3 of the peduncle about as long as the 2 first joints combined. Flagellum is a trifle shorter than the peduncle, 4-articulate, with the joints more slender than those of the peduncle; the apical (4) joint is quite minute.

² Hunt, O. D., On the amphipod genus *Talitrus*, with a description of a new species from the Scilly Isles, *T. dorrieni*, new species: Mar. Biol. Assoc. Plymouth, Jour., vol. 13, no. 4, p. 861, 1925.

³ Sayce, O. A., Description of two terrestrial species of Talitridae from Victoria: Roy. Soc. Victoria, Proc., vol. 22 (new ser.), pt. 1, p. 30, pl. 11, 1909.

⁴ Hunt, O. D., On the amphipod genus *Talitrus*, with a description of a new species from the Scilly Isles, *T. dorrieni*, new species: Mar. Biol. Assoc. Plymouth, Jour., vol. 13, no. 4, pp. 854-869, text-fig. 4, 1925.

⁵ Chilton, Charles, Occasional notes on Australian Amphipoda: Australian Mus., Rec., vol. 14, no. 2, p. 90, 1923.

Antenna 2, the ultimate joint of the peduncle in length equals the two preceding joints combined; the flagellum about as long as the peduncle (or somewhat longer), with about 17-18 articles. In a few specimens (both male and female) the antennae are much more slender and elongate than drawn in the figure.

The oral parts were not dissected out, except the maxillipeds; the palp of these has a very small, bud or scalelike joint 4. (See fig. 6.)

On pereiopods 1-2 (Weber, gnathopods 1-2) there is nothing to remark; in a few specimens the hind corner of the 4th joint of pereiopod 1 is much more prominent (bud-like) than drawn in the figure; thus it may have a form like that of *O. floresiana* form *monospina* (fig. 7). The end of the finger in pereiopod 2 is apparently rather feeble and slender, somewhat irregularly curved.

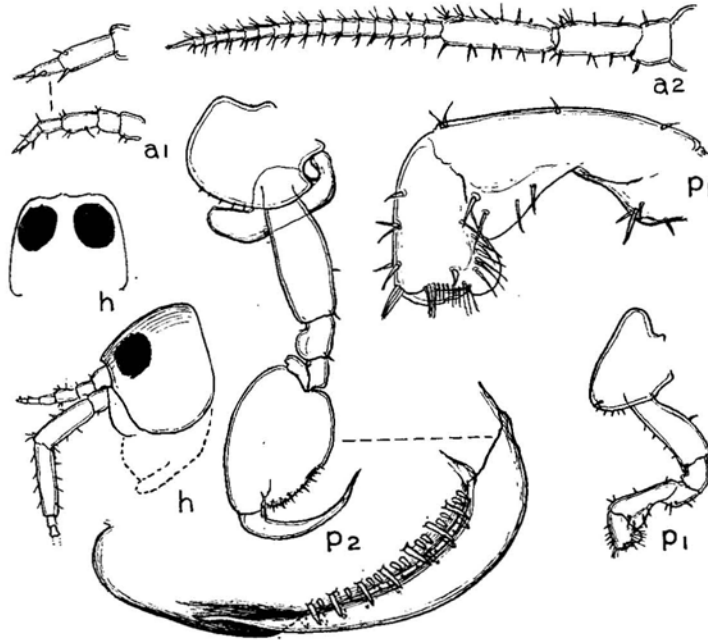


FIGURE 4.—*Orchestia floresiana* Weber, male (Mount Temetiu, Hivaoa): a1-a2, antennae 1-2; h, head; p1-p2, pereiopods 1-2.

On pereiopods 3-6 (not described by Weber) there is nothing especially remarkable except that the side plates of pereiopods 3-4 have the hind corners somewhat acute; pereiopods 3-5 are of about equal length, pereiopod 6 longer. Pereiopod 5 has joint 2 broadened, the length being $1\frac{1}{4}$ times the breadth, with the fore margin almost straight and with about 5 teeth (each with a spine), and the hind margin very slightly convex, with about 10 small teeth. Pereiopod 6 is very similar to pereiopod 5, but longer; joint 2 has on the fore margin about 10 spines, and on the hind margin about 10 (or a few more) small teeth and spines. Pereiopod 7 is nearly as long as pereiopod 6 and of a similar shape, except that joint 2 is much broader, almost circular in outline, the fore margin with about 10 larger spines, and with hind margin very densely serrate, with about 35 small denticles, each having a small spine in the bottom (Weber, "25-28 small spines"). None of the joints of pereiopods 6-7 are specially broadened, except joint 2 (fig. 5, pereiopods 3-7).

The hind edge of the epimeral parts of metasome segment 1 is even, in segment 2-3 finely dentate in the lower part (Weber, "quite even in all the 3 segments"), but the lower hind corner of all the 3 segments are somewhat produced, with a blunt tooth. Along the lower margin of these 3 segments (especially in segment 2) is a row of small, vertical fissures, probably the openings of small oval glands (these glands are not mentioned in the literature, but they are present also in the specimens in the Copenhagen Zool. Museum). The pleopoda are normal, but the rami are rather short, with 4-6 pairs of feathered setae.

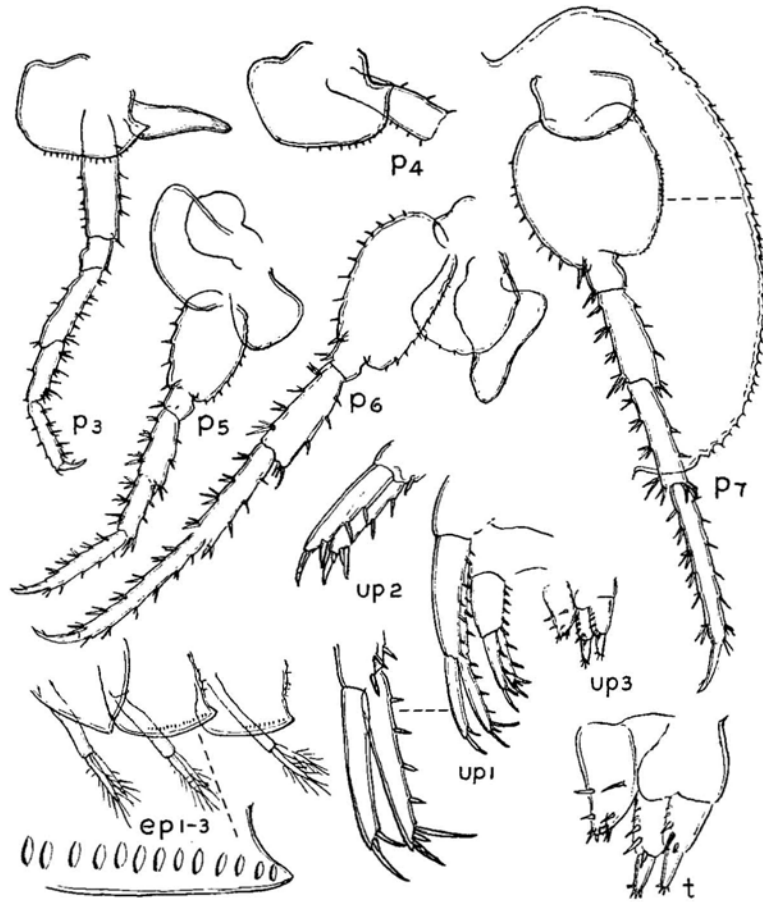


FIGURE 5.—*Orchestia floresiana* Weber, male: *p3-p7*, pereiopods 3-7; *ep1-3*, epimeral parts of the metasome segments 1-3, with the pleopods; *up1-3+t*, uropods 1-3 and telson (*t*, telson, left; uropods, right).

Uropod 1 has in the outer ramus no marginal spines. Uropod 2 has on the peduncle 5 marginal spines and 1 apical spine (Weber, "3-4 larger and smaller apical spines"), and on each ramus 2 spines, besides the apical spines (Weber, "inner ramus has 5, outer ramus 2 spines"). Uropod 3 has on the peduncle a row of about 2-5 spines, on the ramus 4 small apical spines (Weber, "the peduncle and the short ramus are spinose on the outer margins").

The telson (not mentioned by Weber) is oval, cleft in about $\frac{1}{4}$ of the length, with 2 pairs of marginal spines and about 3 pairs of apical spines.

The length is up to about 10-11 mm. (Weber, "up to 8 mm").

Female

The female agrees fully with the male, except in pereopods 1-2; in 1 the very short palm is not concave, but somewhat straight. Uropod 3 and the telson have some fewer spines than the male. Length up to about 12 mm. (Weber, "up to 8 mm") (fig. 6).

Nukuhiva: Teuanui, 'Tovii [Toovii], altitude 2000 feet, October 27, 1929, under dead leaves, 1 male; Ooumu, altitude 4050 feet, November 12, 1929, among dead leaves, 1 male, about 10 females, altitude 3700-4000 feet, about 10 females; Mumford and Adamson.

Uapou: Vaihakaatiki, Hakahetau Valley, altitude 3010 feet, November 18, 1931, under dead leaves, 1 female; Tekohepu Summit, altitude 3300 feet, September 21, 1931, 1 male, 2 females; LeBronnec.

Hivaoo: Matauuna, altitude 3760 feet, August 1, 1929, among dead leaves, 2 males, about 10 females and juveniles; Mounaofefe [Maunaofefe], altitude 2000 feet, September 14, 1929, in dead petioles of *Angiopteris* species, 2 females; Tapeata, on east side of Mount Ootua, altitude 2250 feet, May 15, 1929, 2 females; Mount Ootua Summit, altitude 3032 feet, February 13, 1930, at base of *Asplenium nidus*, 1 male, 6 females; Mumford and Adamson. Feani Summit, altitude 3900 feet, January 21, 1932, 2 males, 2 females, LeBronnec; Mount Temetiu, altitude 3750 feet, December 27, 1930, 1 male, several females, H. Tauraa.

Tahuata: Hanamiai Valley, altitude 1000 feet, May 18, 1930, under rotten leaves, 3 juveniles (and 1 female ?); Vaitupaahei, altitude 2000 feet, July 2, 1930, in dead stipes of *Angiopteris* species, 2 males, several females; Amatea, altitude 2000 feet, June 28, 1930, 1 male, 1 female, altitude 2500 feet, July 9, 1930, 1 male, 7 females, altitude 2700 feet, July 7, 1930, on *Metrosideros collina*, 3 females; LeBronnec and H. Tauraa.

Fatuhiva: Ihiota, Hanavave Valley, altitude 930 feet, September 10, 1930, in leaves of *Angiopteris* species, 1 male, 1 female; Vaikoao, Omoa [Oomoa] Valley, altitude 1700 feet, August 29, 1930, in leaves of *Angiopteris* species, 4 males, 7 females; Teavaipuhiau, altitude 2150 feet, July 25, 1930, in rotten leaves of *Angiopteris* species, 1 male, 3 females; ridge east of Omoa [Oomoa] Valley, altitude 3000 feet, August 28, 1930, in *Freycinetia* species, 2 males, 4 females, altitude 300 feet, August 27, 1930, on *Freycinetia* species, 3 males, 1 female, altitude 3100 feet, on the ground, 2 males, 4 females; LeBronnec.

Also recorded from:

Seychelles: Île Ronde, on the beach, under algae; La Digue, under similar conditions; Mahé, sand and algae, 2-3 meters (*O. anomala*, Chevreux).

Gulf of Siam: Koh Kut, stony coast, January 1, 1900, 1 male, 1 female, Dr. Mortensen (Zool. Museum, Copenhagen; K. Stephensen determination).

Java, Bali, and Westflores: 18 localities, in rivulets, fountains, and waterfalls, in moss, etc., the altitudes above sea level (when noted) 980-1787 meters (*O. malayensis* variety *thienemanni* Schellenberg).

Flores: on the edge of a fresh-water pool in a small forest near the shore, and in the rivulet Lella near its mouth (*O. floresiana* Max Weber).

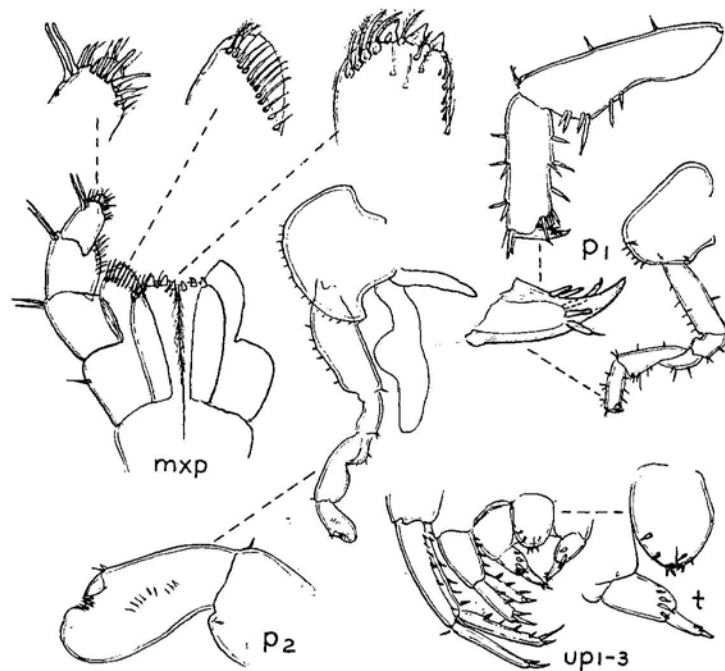


FIGURE 6.—*Orchestia floresiana* Weber, female (Mount Temetiu, Hivaoa): *mxp*, maxilliped; *p1*, *p2*, pereopods; *up1-3+t*, uropods 1-3 and telson.

New Britain: Mövehafen, several specimens, and Arawe, from the stomach of the lizard *Lygosoma atrocostatum* several specimens, Dr. H. Hediger collector, 1931 (Basel Museum and Zool. Museum, Copenhagen; K. Stephensen determination).

According to the above records this species is distributed in the tropical islands of the Indo-Pacific from the Seychelles to the Marquesas, under very variable conditions, from the shore up to forests at an altitude of about 1800 meters above sea level.

No doubt the material belongs to the species cited above; the original description is, however, rather brief and provided with only 4 figures (pereio-

Pods 1-2 in male and female). Thus it was considered proper to give new figures of all the appendages and other details with some supplementary remarks.

There does not seem to be any doubt as to the correctness of the determination, for there is a very close agreement with Weber's original description, especially as to the two most important characters, the long and apically almost filiform finger of pereopod 2 in the male, and the very densely serrate hind margin of joint 2 of pereopod 7 in both sexes.

No doubt *O. floresiana* Weber 1892 (from Flores) is synonymous with *O. anomala* Chevreux 1901 (from the Seychelles) and *O. malayensis* (Tattersall) variety *thienemanni* Schellenberg (from Java, etc., = *O. parvispinosa* Chilton 1912, from Java, non *O. parvispinosa* Weber 1892).

The agreement with *O. anomala* male is very striking; the essentials are quite alike; the shape of pereopod 2 in the male (Chevreux "gnathopode postérieur"), with the long, apically slender finger; the shape of the finger of pereopod 1 in female (Chevreux, "gnathopode antérieur"), provided with 5 (not 6) spines; and the densely dentate hind margin of joint 2 of pereopod 7. The disagreements are rather few and not of any importance, and some of them are probably not quite constant; the flagellum of antenna 1 has 4 (not 3) joints; the palm of pereopod 1 has more numerous spines; pereopod 2 has the hind margin of joint 2 not very convex; joint 2 of pereopod 6 has the hind margin not even but dentate; outer ramus of uropod 1 has distally 3 spines (Chevreux writes 2, but his figure shows 3); uropod 3, number of spines on the ramus rather inconstant, varying from 2 to 5 (Chevreux: 3); the number of spines on the ramus is also rather variable; the telson is a trifle narrower than in Chevreux's species, and the number of spines varies to some extent.

The agreement with *O. malayensis* (Tattersall) variety *thienemanni* Schellenberg is also very striking, but there are a few discrepancies: the hind margin of the epimeral parts of metasome segments 2-3 is not quite even; the telson is longer than broad (the length not equal to the breadth); the joints of the flagellum of antenna 2 are not markedly longer than broad (this is possibly an age character); the joints of the palps of the maxillipeds are not extremely broad; the palm of pereopod 1 in the male is not slightly concave; the finger of pereopod 2 in the male is apically not quite straight; pereopod 7 has on the hind margin more than 30 small denticles (Schellenberg, "about 20"); the uropods 1-2 have not quite as many spines as recorded by Schellenberg.

Schellenberg⁶ writes that his species is very close to *O. anomala*, and that

⁶ Schellenberg, A., Amphipoden der Sunda-Expeditionen Thienemann und Rensch.: Archiv. f. Hydrobiol. suppl. Bd. 8, "Tropische Binnengewässer Bd. I," p. 502, 1931.

he finds important discrepancies only in the shape of the finger of pereiopod 2 in male; he dare not consider them synonymous. I cannot see why he considers his species identical with *O. parvispinosa* Chilton, for pereiopod 2 in the male is very different in the two species.

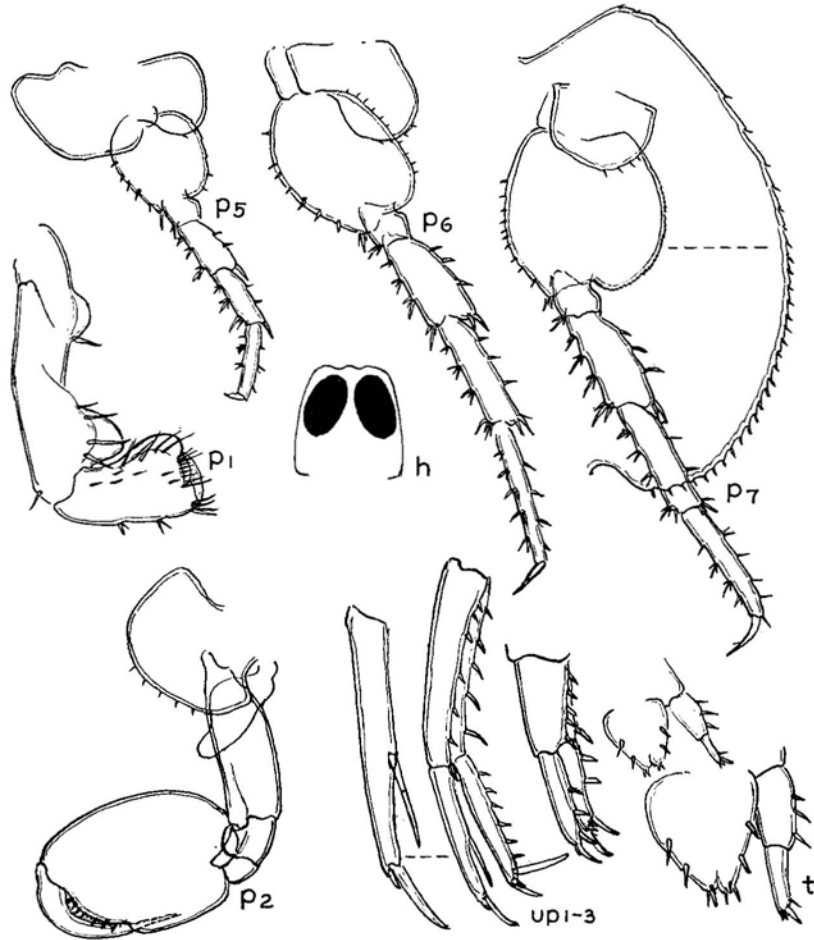


FIGURE 7.—*Orchestia floresiana* form *monospina* new form, male, (Uapou, Tekohepu Summit): *h*, head; *p1*, *p2*, *p5*, *p6*, *p7*, pereiopods 1, 2, and 5-7; *up1-3* + *t*, uropods 1-3 and telson.

***Orchestia floresiana* form *monospina*, new form (fig. 7).**

The specimens (3 males, no females) agree well with the majority of the specimens of *O. floresiana*, as described above, with the following exceptions:

Eyes enormous, contiguous at the top of the head. Antenna 1 somewhat more slender, but not longer. Antenna 2, the flagellum a trifle shorter than the peduncle, 10- or 11-articulate. Maxillipeds quite identical with those of *O. floresiana*. Pereiopod 1: the processes or lobes on the hind margin of joints 4 and 5 larger and more sharply con-

stricted than ordinarily in *O. floresiana*; but in some specimens of *O. floresiana* these processes have the same shape. Pereiopod 2; joint 6 a trifle more elongate; on pereiopods 3-4 there is nothing to remark. Pereiopods 5-7 somewhat more stout than in *O. floresiana*; especially joint 2 in pereiopod 5-6 is considerably broader. Pleopods 1-3 are longer, in that the rami are as long as the peduncles. Uropod 1 has on the outer ramus 1 long marginal spine, placed near the centre of the joint, and apically 1 very short and only 1 long spine (not 2). Uropods 2-3 and telson not differing from those of *O. floresiana*. Length up to about 9 mm.

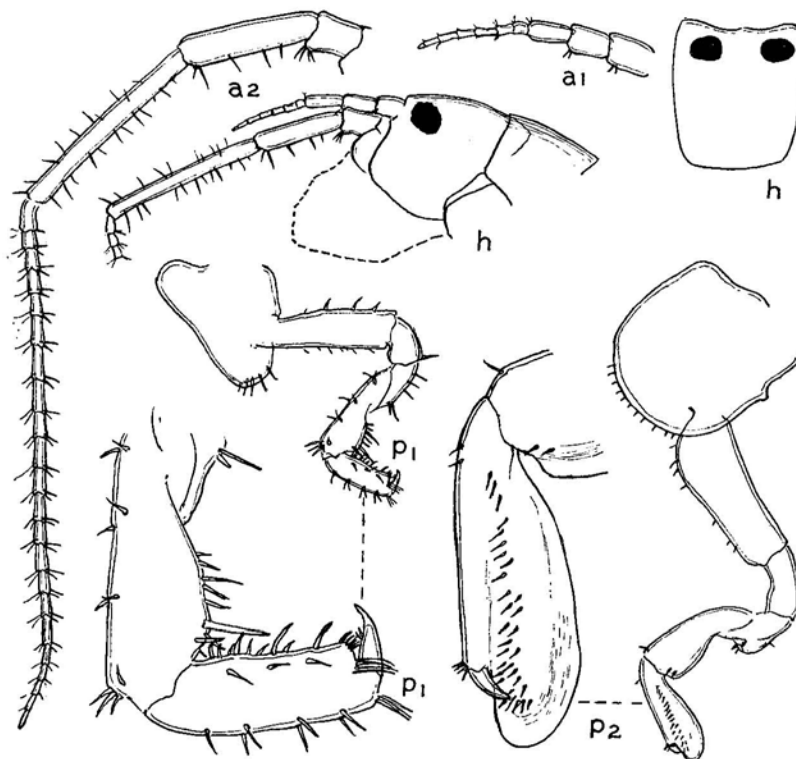


FIGURE 8.—*Orchestia marquesana*, new species, female (Uapou, Teavaituhai, Hakahetau Valley): a1, a2, antennae 1-2; h, head; p1, p2, pereiopods 1-2.

Uapou: Tekohepu Summit, altitude 3300 feet, November 21, 1931, 2 males, LeBronnec.

Uahuka: Hitikau, altitude 2900 feet, March 3, 1931, 1 male, LeBronnec and H. Tauraa.

Of the discrepancies recorded above, probably few are due to more than individual variation; the broad joint 2 in pereiopods 5-6, and especially the long marginal spine of the outer ramus of uropod 1 (no other species of *Orchestia* and the allied genera has 1 long marginal spine; the ramus is either naked, apart from the apical spines, or there is a row of spines).

I dare not establish this form as a new species and prefer to call it *Orchestia floresiana monospina*, new form (*monospina* was chosen in allusion to the single marginal spine mentioned above).

Orchestia marquesana, new species (figs. 8-10).

Female

Marsupium well developed. Body quite even. The head is a trifle longer than 1st mesosome segment. Usually the eyes are moderately large (fig. 8), separated dorsally by a distance almost equal to their greatest diameter, but sometimes they are much larger, and then the distance between them is only half of their greatest diameter.

In most of the specimens the eyes are black, but in some they are quite colorless (in spirits), and yet it was not possible to find any other differences between the two sorts of specimens. Reduced eyes have been found in a few other species: *Orchestia japonica* Tattersall and *Talorchestia parvispinosa* Chilton.

Antenna 1 reaches a trifle beyond the penultimate joint of the peduncle of antenna 2. The peduncle is as long as the flagellum; the 3 joints are of almost equal length, joint 3 somewhat more slender than the others. The flagellum has 7 equal-sized joints; only joint 7 is very minute.

Antenna 2 is as long as the head plus the mesosome. The ultimate joint of the peduncle is very slender and as long as or a trifle longer than the 2 preceding joints together; the flagellum is longer than the peduncle, with about 22 rather elongate joints.

On the oral parts there is nothing to remark; the palp of the maxillipeds has a minute, scalelike 4th joint.

Pereiopod 1 has the side plate ventrally tapering, with a few spines. The limb is rather slender; none of the joints are especially widened. There is no pellucid lobe on joint 4. Joint 5 is not much shorter than 2, distally very slightly widened, with a few smaller and a single larger spine. Joint 6 is about $\frac{2}{3}$ as long as joint 5, with parallel margins and some spines, and the transversal palm about half as long as the breadth of the joint. The finger is moderately stout, as long as joint 6 is broad.

Pereiopod 2 has the side plate ventrally rounded, with about 10 spines, and on the hind margin a minute triangular process (similar processes are probably not present in the side plates of pereiopods 3-4). Joint 4 has a lobe, joint 5 is distally somewhat widened; joint 6 is as long as 5, not very broad; there is no distinct palm, and the finger is half as long as the distal lobe of joint 6.

On pereiopods 3-4 there is nothing specially to remark.

Pereiopods 5-6 have joint 2 oval, with spines on the fore margins and with about 10-12 denticles on the hind margins. Joint 2 of pereiopod 7 is much broader, but with a similar armature on the margins. Pereiopod 7 is somewhat longer than pereiopod 6 (fig. 9).

Metasome segments 1-3 have the hind margins provided with about 5-7 serrations; the lower hind corners are almost rectangular, very little protruding, rounded at the apex. The pleopoda are rather reduced and not reaching the under margin of the epimeral plates. They are quite alike, but somewhat decreasing in length from 1 to 3. Each pleopod has a long peduncle, with a single pair of minute coupling-spines; there are 2 small single-jointed rami of about equal length (about $\frac{1}{4}$ as long as the peduncle) each with 1-3 feathered setae.

The uropoda are normal. Uropod 1 has the peduncle and the two rami of almost equal length (the same applies to uropod 2). Each of the two rami has 3-4 spines; the inner ramus has 4 marginal spines, the outer ramus is quite naked, except for the apical spines. Uropod 2 has two marginal spines on each ramus. Uropod 3 has the peduncle heavy, with 1-2 spines; the ramus is of almost equal length, with 3-5 spines.

The telson is oval, with the length a trifle greater than the breadth, and distally with a minute fissure. There are 1-2 pairs of dorsal spines and 2-3 pairs of apical spines. Length to about 14 mm (fig. 10).

Nukuhiva: Ooumu, altitude 3700-4000 feet, November 13, 1929, among wet herbage, 8 females, eyes black; Teuanui, Tovii [Toovii], altitude 2000 feet, October 22, 1929, under dead leaves, about 15 females, eyes black; Mumford and Adamson.

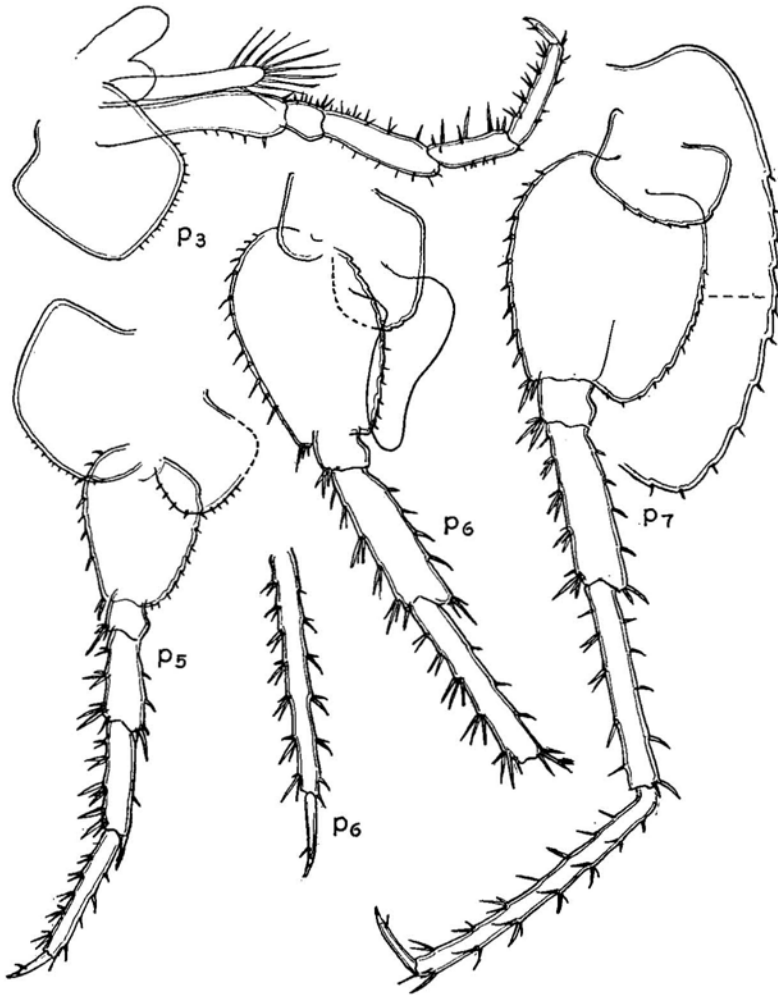


FIGURE 9.—*Orchestia marquesana*, new species, female: p3, p5, p6, p7, pereopods 3, 5-7.

Uahuka: Hitikau, altitude 2900 feet, March 3, 1931, 5 females, eyes black; Penau, Hane Valley, altitude 1820 feet, February 27, 1931, under dead leaves, about 20 females, eyes black; LeBronnec and H. Tauraa.

Uapou: Vaihakaatiki, altitude 3020 feet, November 18, 1931, 3 females,

eyes black, about 15 females with eyes colorless; Vaihakaatiki, Hakahetau Valley, altitude 3020 feet, November 18, 1931, under dead leaves, about 10 females, eyes black, 1 female, eyes colorless; Teavaituhai, Hakahetau Valley, altitude 3020 feet, November 19, 1931, 7 females, 6 with eyes black; Tekohepu Summit, altitude 3300 feet, November 21, 1931, 7 females, eyes colorless; Tekohepu Summit, altitude 3200 feet, November 28, 1931, under rotting leaves, 3 females, eyes black, 6 females, eyes colorless, LeBronnec. Hakahetau Valley, altitude 2700 feet, July 8, 1929, in dead stipes of *Cyathea* species, 1 female, eyes black, Adamson.

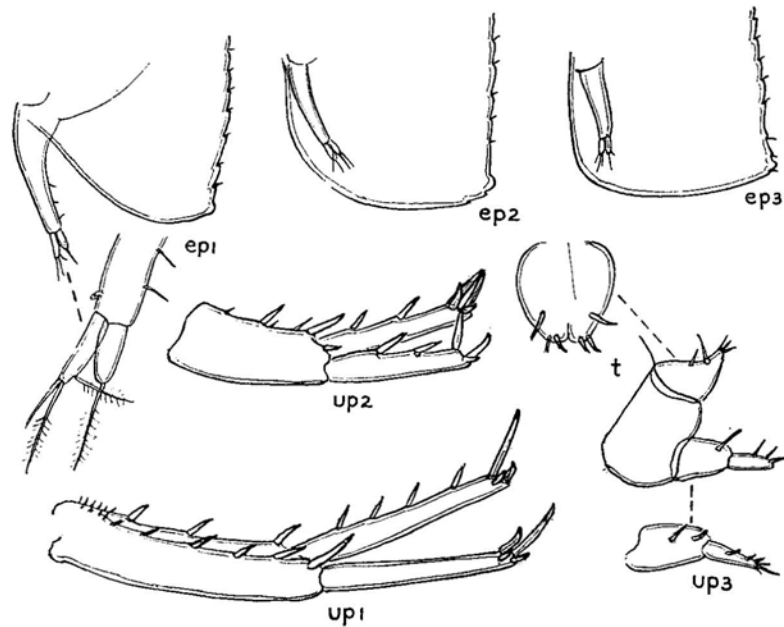


FIGURE 10.—*Orchestia marquesana*, new species, female *ep1-ep3*, epimeral parts of the metasome segments 1-3 with the pleopods; *up1-3 + t*, uropods 1-3 and telson.

On account of the shape of the minute 4th joint of the palp in the maxillipeds and of the distinct transversal palm of pereopod 1 in the female, the species must belong to the genus *Orchestia*; but unfortunately there is no male. It belongs to the group without marginal spines on the outer ramus of uropod 1. The most important character is the degraded pleopoda, a character not found in any other *Orchestia*, but in species of the genera *Talitrus* and *Talorchestia*. An exception is *Parorchestia luzonensis*⁷ which would seem to belong to the genus *Orchestia* (palm of pereopod 1, female); here the pleopods are said to be "not half the size of those of *P. lagunae* (which are not described), but otherwise normal."

⁷ Baker, C. F., Two Amphipoda of Luzon: Philip. Jour. Sci., sect. D, vol. 10, p. 253, figs., 1915.