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On Hippolytid prawns of the genus Ligur, Sarato.

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(With 2 Text-figures)

(*a*) ON *LIGUR UVEAE* FROM FIJI. (Fig. 1.)

Some time ago I received from Mr. R. W. Paine two prawns from Fiji, which proved to belong to the somewhat rare genus *Ligur*. Only two species of the genus are known, namely, *L. edwardsii* Sarato, from deep Mediterranean waters, and *L. uveae* (Borradaile). The specimens from Fiji belong to the latter, a species with an apparently wide distribution in the Indo-Pacific region. *L. uveae* was first recorded from the Loyalty Islands and briefly described by Borradaile, who, however, omitted to mention that the propodi of the slender walking legs are multi-articulate. This omission was later made good by the same author when he recorded the species from Aldabra in the western Indian Ocean. But he did not mention that, in having the propodi of peraeopods 3–5 segmented, *Ligur uveae* is unique amongst the Caridea.

I have thought it necessary to extend the short description given by Borradaile and, as nothing was hitherto known of the habitat of this striking prawn, I add notes from a letter received from Mr. Paine. In contrast to *L. edwardsii* the Indo-Pacific species appears to be a shallow-water form.

My thanks are due to Mr. Paine for sending the specimens, together with data as to its habitat and occurrence in Fiji, to the British Museum, and also to Mr. J. H. Lochhead of the University Museum of Zoology, Cambridge, for sending me specimens of *L. uveae* from the Percy Sladen Trust Collection.

Ligur uveae (Borradaile).

Parhippolyte uveae Borradaile, 1900, in Willey's Zool. Results, pt. iv, p. 414 ; pl. xxxviii, figs. 11 *a–g*.

Ligur uveae Kemp, 1914, Rec. Ind. Mus. Calcutta, x, pt. ii, no. 4, p. 123 ; Borradaile, 1917, Trans. Linn. Soc. London, (2) Zool. vol. xvii, p. 401.

Material examined :—(*a*) 2 ♀ from Fiji, collected by R. W. Paine, Esq. (l.=106 and 86 mm. respectively). (*b*) 2 ♀ from

Uvea, Loyalty Is. (co-types, without peraeopods). (*c*) 1 ♀ from Aldabra * and 2 ♀ (one ovigerous) from the 'western Indian Ocean' * determined by Borradaile.

Description of female.—The *rostrum* is short, straight, and compressed, reaching approximately to the distal end of the penultimate segment of the antennular peduncle. It is continued backwards as a low keel terminating just beyond the middle of the carapace. The rostral formula is, as a rule, $\frac{2+1}{4-6}$; in one specimen from the western Indian Ocean there are two additional teeth on the proximal half of the upper border, so that the formula is $\frac{2+3}{5}$.

The *orbital border* is continued anteriorly as a low but distinct ridge on each side of the rostrum. The inferior orbital angle is a large obtuse lobe quite distinct from the 'postocular' † or antennal spine and, in some specimens, armed with a spinule (fig. 1 *a*). The branchiostegal spine projects slightly beyond the margin of the carapace and is continued backwards for a considerable distance as a prominent keel (fig. 1 *a*). Both supra-ocular and pterygostomial spines are absent.

The *stylocerite* is lateral to the basal segment of the antennular peduncle, is strongly compressed and carinate distally, terminating in a small spine (fig. 1 *b*). The penultimate and ultimate segments of the peduncle are short and subequal; the two flagella are long—probably almost, or quite as long as the body when complete,—and the upper has a fringe of short hairs for some distance along the proximal ventral margin.

The *antennal scale* is nearly twice as long as the antennular peduncle, broad near the base, and much narrowed distally; the length is approximately three times the greatest width. The antennal peduncle is very short and the flagellum at least twice as long as the body.

The *mouth-parts*, with the exception of the first maxilliped, have been figured by Borradaile (1900, pl. xxxviii, fig. 11 *c–g*).

The *first peraeopods* may be subequal as in the third specimen in Table I, or appreciably unequal as in the first and largest specimen measured. They extend to, or slightly beyond, the apex of the antennal scale. The dactylus has two dark horny claws at the apex, while the immovable finger has one large and one minute claw. The fingers are rather shorter than the palm.

* Borradaile, 1917, p. 401, simply states that the specimens are all from Aldabra.

† Borradaile (1900, p. 414) refers to 'antennal' and 'postocular' spines; from their relative positions in *L. edwardsii* they would appear to be the branchiostegal and antennal spines respectively.

The *second peraeopods* are long, slender, and rather unequal. The carpus, merus,and distal end of the ischium are subdivided. The total number of segments may be approximately equal

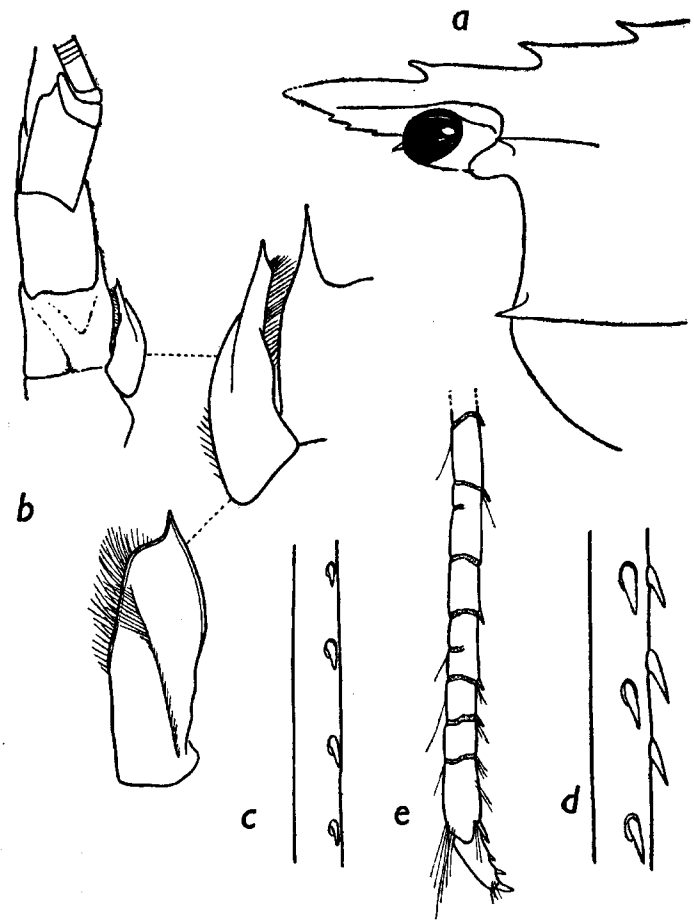

FIG. 1.—*Ligur uveae* (Borradaile), ♀. *a*, rostrum and antero-lateral margin of carapace, ×4; *b*, antennular peduncle and stylocerite with enlarged figure of the latter in dorsal and lateral aspects, ×4 & 9; *c*, merus of fourth peraeopod with one row of spines, ×9; *d*, merus of third peraeopod with two rows of spines, ×9; *e*, dactylus and distal end of propodus of fifth peraeopod, to show segmentation of the latter, ×9.

in the right and left peraeopods as in the first specimen in Table I (50 and 52), or markedly unequal as in the second specimen (41 and 51). The distal segment of the carpus is subequal to the palm, which is slightly longer than the fingers.

The single terminal claw on the immovable finger interlocks with the two similar claws on the dactylus.

The *third peraeopod* is rather more robust than either of the following legs; the merus is long and armed with two rows of spines (one ventral, the other lateral), as represented in fig. 1 *d*. The carpus is rather longer than the propodus and the latter is subdivided into segments of rather unequal length (*cf.* fig. 1 *e*). The dactylus is of approximately the same length in all three walking legs, and has two small spines on the ventral margin in addition to the terminal claw (fig. 1 *e*).

The *fourth peraeopod*, in the largest specimen measured, is subequal to the third. It is clear from Table II, however, that the segments differ appreciably in length. The merus and carpus are shorter, the ischium and propodus longer, in the fourth than in the third peraeopod. The merus is more slender and, as a rule, has only one row of spines near the ventral margin (fig. 1 *c*). In one specimen there is a trace of the second series of spines (Table II, *l*=76 mm.).

The *fifth peraeopod* is very slender and considerably longer than either of the preceding, due largely to the elongation of the propodus, the distal five-sixths of which are subdivided into 21–25 segments. In two of the three specimens measured, the carpus is rather longer than in the fourth peraeopod (Table II).

The postero-lateral angles of the fifth and sixth *abdominal pleura* are acutely spinose.

The *telson* is much narrowed distally and almost as long as the endopod of the uropod. There are two pairs of spinules on the distal third of the dorsal surface in all the specimens examined (*cf.* Borradaile, 1900, p. 414). The apex is spinose and bears a long outer, and short inner, pair of terminal spines; dorso-lateral to the former is a pair of small subterminal spines.

The *pleopods* are long and narrow. The endopod of the first pair is about half the length of the exopod; that of the second pair is much longer—at least three-fourths of the exopod—and bears a conspicuous appendix interna.

The *branchial formula* agrees with that of *L. edwardsii* (Senna, 1903, Bull. soc. ent. Ital. xxxiv, p. 321, fig. 6).

Table I (p. 105) shows (in mm.) the length and breadth of the merus, carpus, and chela of the first peraeopods and the length of the ischium, merus, and carpus of the second peraeopods in three females of *L. ligur*. The numbers in brackets refer to the subdivisions present in the second peraeopods.

Table II (p. 105) shows the lengths of the main segments of the walking legs of the same three specimens. The numbers in ( ) refer to the 1–2 rows of spines on the merus; those in [ ] to the subdivisions or segments of the propodus.

Table I.

Length of specimen.	Segment of peraeopod.	First peraeopod.		Second peraeopod.	
		Right.	Left.	Right.	Left.
106 mm. (Fiji).	Ischium ...	....	....	12·00 (3)	10·88 (3)
	Merus	11·60 × 2·08	10·88 × 1·52	11·52 (15)	10·64 (15)
	Carpus	9·60 × 1·76	8·48 × 1·44	22·80 (32)	21·60 (34)
	Chela	8·16 × 2·40	7·20 × 1·76	....	....
76 mm.	Ischium ...	....	....	10·40 (4)	10·64 (3)
	Merus	8·52 × 1·52	8·56 × 1·52	10·00 (12)	10·00 (16)
	Carpus	7·20 × 1·44	7·44 × 1·50	20·00 (25)	21·92 (32)
	Chela	6·72 × 1·60	6·80 × 1·68	....	....
76·5 mm. (ovig. ♀).	Ischium ...	....	....	(missing.)	11·20 (3)
	Merus	8·80 × 1·44	8·88 × 1·40	....	11·28 (13)
	Carpus	7·60 × 1·36	7·60 × 1·28	....	22·88 (26)
	Chela	6·48 × 1·60	6·48 × 1·60	....	....
Ligur edwardsii (l. = 88 mm.).	Ischium ...	....	....	10·56 (9)	11·28 (8)
	Merus	8·80 × 1·20	8·80 × 1·04	9·68 (28)	10·80 (30)
	Carpus	8·32 × 1·15	8·16 × 1·04	20·80 (44)	22·40 (44)
	Chela	6·63 × 1·28	6·48 × 1·20	....	....

Table II.

Length of specimen.	Segment of peraeopod.	Peraeopod 3.	Peraeopod 4.	Peraeopod 5.
106 mm. (Fiji).	Ischium	5·76	6·40	8·00
	Merus	24·80 $\binom{12}{11}$	22·40 (12)	21·20 (10)
	Carpus	16·00	14·64	15·20
	Propodus	14·40 [14]	17·20 [19]	24·40 [23]
76 mm.	Ischium	4·80	5·44	6·40
	Merus	20·80 $\binom{9}{13}$	19·04 $\binom{3}{12}$	17·20 (10)
	Carpus	13·40	11·92	11·44
	Propodus	....	15·20 [15]	19·36 [21]
76·5 mm. (ovig. ♀).	Ischium	4·72	5·60	6·16
	Merus	22·00 $\binom{8}{10}$	19·52 (7)	18·00 (7)
	Carpus	13·56	12·16	12·72
	Propodus	....	14·80 [21]	21·44 [25]
Ligur edwardsii (l. = 88 mm.).	Ischium	6·24	7·20	8·24
	Merus	16·00 (9)	17·12 (8)	16·80 (4)
	Carpus	9·06	9·20	10·56
	Propodus	17·44	20·00	24·80

Occurrence in Fiji.—I received the following data from Mr. Paine :—' This prawn occurs, as far as is known, in only three places in the group—on the islands Vatulele, Vanua Vatu and Vanau Levu. On the first mentioned island it is regarded by the natives as a " tevora " (devil) and the capture or eating of it is strictly " tabu." A native legend says that whoever captures it will suffer shipwreck when he sails from the island. Being in nature of a rose-red colour the Fijians refer to it as " ura damudamu " (lit.=prawn red). The reluctance of the Fijians to touch it accounts for the fact that, although it has been known in the group for many years, very few specimens have been procured by collectors from the relatively inaccessible localities in which it is known to occur.

' It is found in land-locked pools of salt water shut off from the sea by coral rocks, through which, however, there is sufficiently rapid seepage to render the water level in the pools influenced by the rise and fall of tides.'—7. vii. 32.

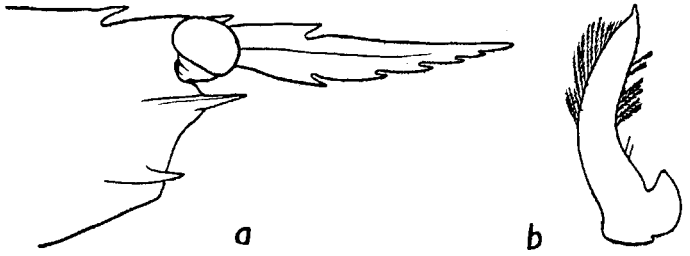

FIG. 2.—*Ligur edwardsii* Sarato, ♀. *a*, rostrum and antero-lateral margin of carapace, × 3; *b*, left stylocerite in lateral aspect, × 9.

(*b*) NOTE ON *LIGUR EDWARDSII* SARATO. (Fig. 2.)

In the British Museum Collection are two ovigerous females that were obtained from Nice (Gal frères) in 1890, as ' *Palaemon*' *edwardsii*, by the late Canon Norman. One specimen is imperfect, the other is almost complete. There can be no doubt as to the identity of these specimens with *Ligur edwardsii* as described by Senna (1903, Bull. Soc. entom. Ital., ann. xxxiv, p. 321 ; pl. xvii, figs. 1–17). There is one error in the artist's figure of the entire animal that gives a wrong impression (Senna, 1903, pl. xvii, fig. 1). The propodi of the walking legs are shown as tapering very much in the distal half, whereas they are of almost uniform diameter throughout and very slightly enlarged at the proximal and distal articulations.

Ligur edwardsii differs from *L. uveae* chiefly in the following respects :—(1) The rostrum is longer and more slender, and reaches almost to the apex of the antennal scale. (2) The

antennal spine is placed ventral to the rather rounded lower orbital angle and projects well beyond the anterior margin of the carapace * (*cf.* figs. 1 *a* & 2 *a*). (3) The branchiostegal spine is continued backwards for a much shorter distance. (4) The stylocerite is much narrower, crescentic, and possesses a proximal dorsal lobule, but no carina (*cf.* figs. 2 *b* & 1 *b*). (5) The subdivisions of the carpus, merus, and distal end of the ischium of the second peraeopod are more numerous (see Table I). (6) The propodus of each walking leg is simple (*cf.* fig. 1 *e*), and is always longer than the merus (see Table II).

* In *L. uveae* the orbital lobe is entire. In *L. edwardsii*, however, there is a hint of the separation of the inferior orbital angle from the lower part of the lobe that bears the antennal spine. In *Periclimenes longicaudatus* Stimpson the antennal lobe is distinct from the orbital lobe.