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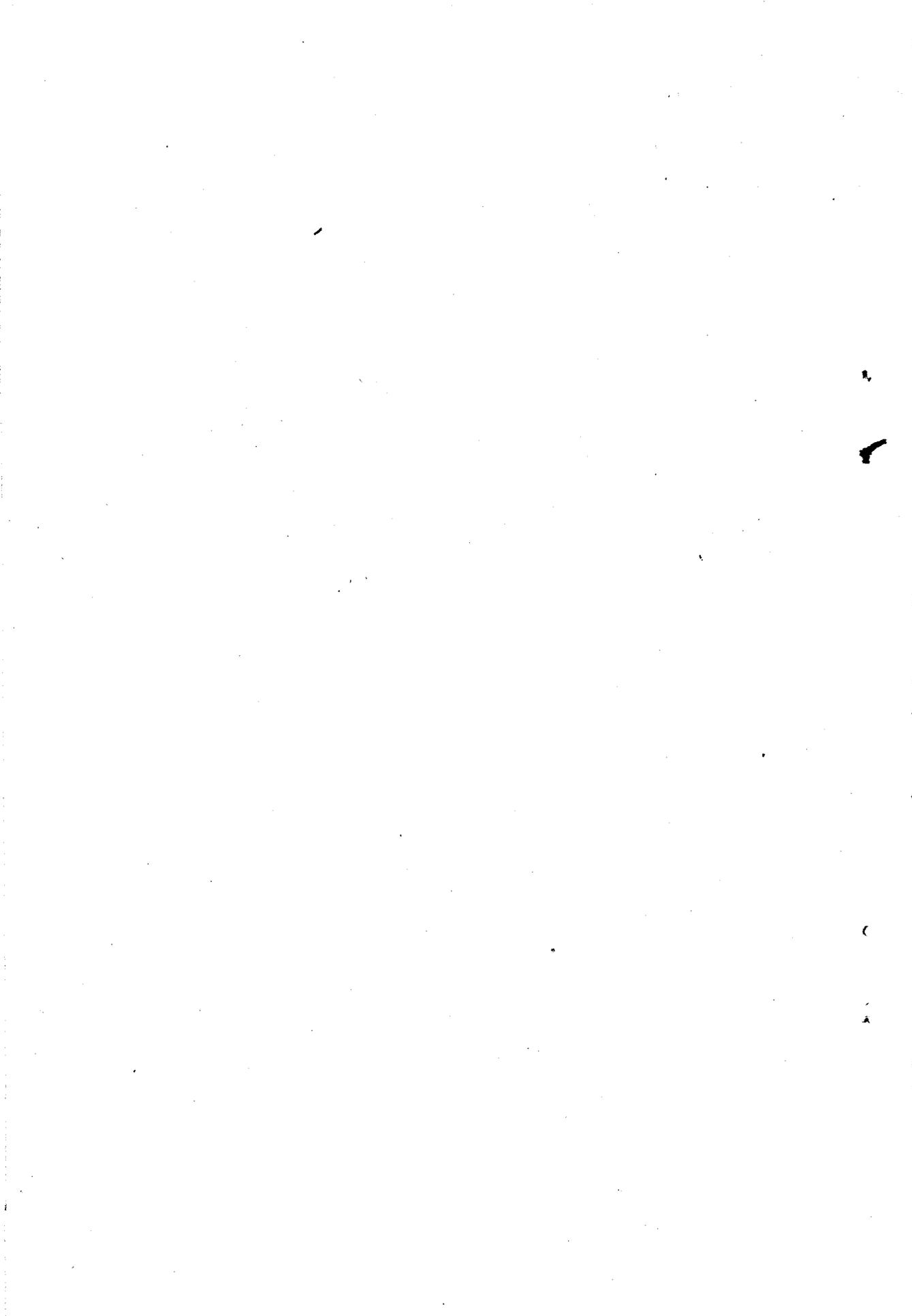
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SYSTEMATIC POSITION OF THREE SPECIES OF PALÆMONID
PRAWNS FROM THE PHILIPPINES AND CHINA.

By KRISHNA KANT TIWARI, M.Sc., Zoological Survey of India, Calcutta.

This short note deals with the systematic position of three species of palæmonid prawns, two described by Blanco from the Philippines and one by Yü from Yunnan. Blanco's two species, *Palaemon luzonensis* and *P. lagdaoensis*, are referable to the genus *Leander* (Desm.), whereas Yü's *P. yunnanensis* is identical with de Man's *P. hendersoni*. These conclusions are elucidated in the following systematic accounts of the species.

Leander luzonensis (Blanco).

1938. *Palaemon luzonensis*, Blanco, *Philippine J. Sci.* LXVII, pp. 201-203, pl. i, figs. 1-11.

Blanco, while giving the diagnostic features of *Palaemon luzonensis*, refers to the absence of a hepatic spine and the presence of a branchiostegal spine. His figure also shows only a branchiostegal spine in the usual position. This species is, therefore, referable to the genus *Leander* (Desm.) as defined by Stimpson¹ (p. 40). Its estuarine habitat also lends support to its being a *Leander*. Unfortunately, I have not examined any specimens of this species, but Blanco's description and figures, although not quite complete in certain details, are adequate for its correct diagnosis.

This species comes under the 'Styliferus' group of Leanders, since it possesses a dorsal crest on the rostrum². Its closest allies appear to be *L. annandeli* Kemp³, *L. tenuipes* Henderson⁴ and *L. hastatus* Aurivillius⁵, and in some respects it is an intermediate form between *L. annandeli* and the above mentioned two species. From *L. hastatus* it differs in the presence of lesser number of teeth on the dorsal crest of the rostrum and in having four to five teeth on the carapace, against one in *hastatus*.

L. luzonensis differs from *L. tenuipes* in the following characters:—

1. *Rostrum*.—Rostrum appears to be somewhat shorter than in *L. tenuipes*. The number of teeth on the carapace is larger (four to five) than in *L. tenuipes* (two to four).

2. *Eyes*.—There is a well marked ocellus in the eye of *L. luzonensis*. Kemp (*op. cit.*) did not notice any visible ocellus in the case of *L. tenuipes*.

¹ Stimpson, W., *Proc. Acad. Nat. Sci. Philadelphia*, pp. 22-47 (1860).

² Kemp, S., *Rec. Ind. Mus.* XIII, pp. 203-231, pl. viii-x (1917).

³ Kemp, S., *ibid.*, pp. 211-213.

⁴ Henderson, J. R., *Trans. Linn. Soc., Zool.* (2), V, p. 440, pl. xl, figs. 14, 15, (1893); also Kemp, S., *loc. cit.*, pp. 206-210, pl. viii, fig. 1.

⁵ Aurivillius, C., *Bihang till K. Svenska Vet.-Akad. Handl.* XXXIV afd. iv., no. 1, p. 27, pl. iv, figs. 3-6 (1898).

3. *Antennule*.—The lateral spine on the basal segment of the peduncle is well developed in *L. luzonensis*, while it is 'very inconspicuous' in *L. tenuipes*. The shorter branch of the flagellum is *unsegmented* in *luzonensis* whereas it is *segmented* in *tenuipes*.

4. *Second pair of peraeopods*.—In the structure of the second pair of peraeopods, *L. luzonensis* appears to be more allied to *hastatus*, for, in the latter, fingers are less than twice the length of palm. The following are the proportions of various segments of second leg in *L. luzonensis* (after Blanco) and *L. tenuipes* (after Kemp) :—

	<i>L. luzonensis</i> .	<i>L. tenuipes</i> .
Finger	1.75 times as long as palm	About 2.0 times as long as palm in females; a trifle longer in males.
Carpus	2.66 in merus	4.0 in merus in males; 3.2 in females.

5. *Third, fourth and fifth pairs of peraeopods*.—As in *L. tenuipes*, the peraeopods are long and slender, the fifth being the longest. In *tenuipes* the dactyli are very long and slender, being twice as long as the propodus and much longer than the combined length of carapace and rostrum in the fifth peraeopod. In *L. luzonensis*, on the other hand, the dactylus is only slightly longer than propodus and considerably shorter than the combined length of carapace and rostrum. This condition of posterior peraeopods resembles that in *L. hastatus*. In *L. luzonensis*, however, these segments are more slender and somewhat longer. In *L. annandeli*, the third pair of peraeopods is normal, the fourth shows an increase in the length of propodus and dactylus, and in the fifth both the propodus and dactylus are still longer and more slender. This condition of the posterior three pairs of peraeopods in *L. luzonensis* is, thus, intermediate between that in *L. annandeli* and *L. tenuipes*.

6. *Pleopods*.—In *L. tenuipes* the pleopods are very long, the first being one and a half times as long as carapace. In *L. luzonensis* although the pleopods appear to be long, they are proportionately shorter than in *L. tenuipes*.

7. *Abdominal somites*.—It appears from Blanco's figure (Pl. I, fig. 1) that the pleura are rather shallow. The shape of the second abdominal somite appears to be somewhat different.

8. *L. luzonensis*, although very closely allied to *L. tenuipes*, possesses certain distinctive features which justify its retention as a distinct species. The discovery of this species which serves as a connecting link between the Chinese *L. annandeli* and Indian *L. tenuipes*, is very interesting, for it demonstrates how a form like *L. tenuipes* with peculiar propodites and dactyli of posterior three pairs of peraeopods, could be derived from normal ancestors.

Distribution.—*L. tenuipes* is widely distributed along the West and East coast of India, and along the Burma Coast. *L. luzonensis* was recorded by Blanco from the estuarine waters of the Luzon Island in the Philippines. *L. annandeli* was described by Kemp from Shanghai.

***Leander lagdaoensis* (Blanco).**

1939. *Palaemon lagdaoensis*, Blanco, *Philippine J. Sci.* LXIX, pp. 17, 168, pl. I, figs. 1-6.

Blanco's *Palaemon lagdaoensis* is a *Leander*, for it possesses a branchios-tegal spine and inhabits estuaries. In the dentition of the rostrum and the structure of the second pair of peraeopods it appears to be closely allied to *Leander concinnus* (Dana) from Fiji Islands, and *L. potitinga* Ortmann from Brazil. In the absence of any specimen for examination and relying only on description and figures given by Blanco, I am unable to comment upon the specific identity of this species in relation to earlier known forms.

***Palaemon hendersoni* deMan.**

1907. *Palaemon* (*Parapalaemon*?) *hendersoni*, deMan, *Trans. Linn. Soc. Zool.* (2), IX, p. 446, pl. xxxiii, figs. 66-68.
1910. *Bithynis* (*Parapalaemon*) *hendersoni*, Rathbun, *Bull. Mus. comp. Zool. Harvard* LII, p. 316, pl. v, fig. 3.
1913. *Palaemon hendersoni*, Kemp, *Rec. Ind. Mus.* VIII, pp. 303-305, pl. xix, figs. 19-23.
1918. *Palaemon hendersoni*, Kemp, *Rec. Ind. Mus.* XIV, pp. 95, 96.
1936. *Palaemon yunnanensis*, Yü, *Bull. Fan Mem. Inst. Biol., Peiping* VI, pp. 303-311, figs. 3, 4.

The species described by Yü from the Yunnan Province in South China agrees in almost all details with the description of *Palaemon hendersoni* deMan, redescribed by Kemp (1913) from Abor region in Assam. The only character in which Yü's examples differ from those collected in the Abor country is the length of the dactylus which is a trifle longer than palm in the Assamese examples. In this character, however, the Chinese examples appear to agree with those described by Rathbun from Gotkeik gorge, on the border of southern Shan States in Burma, as also with deMan's original examples from Darjeeling. As such differences are within the range of variation of a species, I am definitely of the opinion that Yü's *Palaemon yunnanensis* is referable to *P. hendersoni* deMan.

Distribution.—*P. hendersoni* is recorded from Darjeeling (deMan), Abor country in Assam (Kemp, 1913), Yawngwe State in Burma (Kemp, 1918) and Gotkeik gorge on the border of North Shan States, Burma (Rathbun). Extension of its range to Yunnan district of China is very interesting from the zoo-geographical point of view. In the un-named collection of Palaemons in the Zoological Survey of India, there is a large series of specimens of this species from different localities in Burma, Assam, Bengal, Eastern Himalayas and the Satpura-Vindhya trend of mountains in Bihar, the United Provinces and the Central Provinces

The range of distribution of this species fits in with Hora's¹ concept of the origin and migration of hill stream fish fauna of India. *P. hendersoni* is exclusively a hill-stream prawn, and its distribution is governed, in general, by factors affecting the distribution of other aquatic animals inhabiting hill-streams. In the course of my examination of a large number of examples of this species from different localities in India and Burma, I have noticed interesting variations in the form and dentition of the rostrum which appear to be correlated with variations in habitats and geographical distribution.

¹Hora, S. L., *Proc. Nat. Inst. Sci. India* X, pp. 423-434 (1944).

