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NOTES AND NEWS

ROSTRAL VARIATION IN *PALAEMON CONCINNUS* DANA, 1852 (DECAPODA, PALAEMONIDAE) ¹⁾

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In many species of Palaemonidae, the rostrum exhibits considerable variation in shape and relative length, as well as in the number, position, and size of the rostral teeth. As the variability of these characters was not always recognized by the older authors, some species were established solely on the basis of rostral characteristics, for instance, *Palaemon exilimanus* Dana, 1852 was based on a single aberrant individual of *Palaemon concinnus* Dana, 1852 (cf. Holthuis, 1950). Recent keys to Indo-Pacific Palaemoninae have relied more heavily on other morphological characters (Chace & Bruce, 1993), although some reference to rostral dentition is usually made.

Within the genus *Palaemon* Fabricius, 1798, previous detailed treatments of rostral variation are restricted to the works of De Man (1915, 1925), Gurney (1923), Kubo (1942), and Yaldwyn (1957).

A total of 240 specimens of *Palaemon concinnus*, a widespread, euryhaline Indo-Pacific species, were collected by traditional throwing net methods from the estuarine reaches of the Nubia River, Madang Province, Papua New Guinea (4°11.62'S 144°51.46'E) during October 1993 (KBIN IG28056/NAT66). Post-orbital carapace length (pocl) was measured from the orbital socket to the edge of the carapace. Rostral formulae are given as post-orbital teeth + dorsal teeth + sub-apical tooth/ventral teeth.

The collection consisted of 136 females and 104 males, with males being significantly smaller than females (*t*-test 3.830, *df* 238, *P* < 0.0001). The mean post-orbital carapace length (\pm Standard Error) is 5.79 mm (\pm 0.09) for females (range 3.40-9.40) and 5.32 mm (\pm 0.09) for males (range 3.70-8.00).

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The range of rostral variation is illustrated in fig. 1. In the majority of specimens, the rostrum ascends in the anterior 1/2-1/3 and is 1.26 (mean value) \times poel in females and males, with a minimum-maximum of 1.07-1.53 in females and 1.04-1.56 in males. A single post-orbital tooth is present in all specimens, with the second tooth of the dorsal series approximately situated at the level of the post-orbital angle, although in five specimens the second dorsal tooth was situated more anteriorly (fig. 1p). In all specimens a single, sub-apical tooth was present, with the exception of two specimens (fig. 1n, x) in which a small denticle was present, perhaps indicating damage to the apical part of the rostrum and subsequent regeneration.

A considerable gap is usually present between the last tooth of the dorsal series and the sub-apical tooth, although in a few specimens this gap is between the second last and the last tooth (fig. 1d, j), in which case the last tooth is situated close to the sub-apical tooth. Only in a few individuals were the dorsal teeth more evenly distributed across the dorsal margin (fig. 1q). The ventral series does not usually extend into the proximal half of the rostrum, although the distance between the last tooth and the apex varies considerably (fig. 1).

Excluding the two specimens harbouring no sub-apical tooth, the total variation in rostral dentition within the population studied is 1 + 3-7 + 1/4-7, with the most frequently encountered combination in both females and males being 1 + 5 + 1/5 (table I). A sexual difference appears to be present in terms of the percentages of each combination (table I).

Although rostral variation in *P. concinnus* has been noted in numerous taxonomic descriptions, few comments were based on a sufficiently large sample size. Based on an acceptable sample size, Chace & Bruce (1993) stated that specimens

TABLE I

Percentage frequency of rostral combinations in the population of *Palaemon concinnus* Dana, 1852, studied herein. Number of dorsal teeth excludes sub-apical and post-orbital teeth

Ventral	Dorsal				
	3	4	5	6	7
Females					
7			0.74		0.74
6		0.74	9.63	4.44	
5	0.74	8.89	54.81	7.41	
4		5.19	4.44	2.23	
Males					
7			2.91		
6		0.97	6.80	1.94	
5		10.68	51.46	2.91	
4		1.94	17.48	2.91	

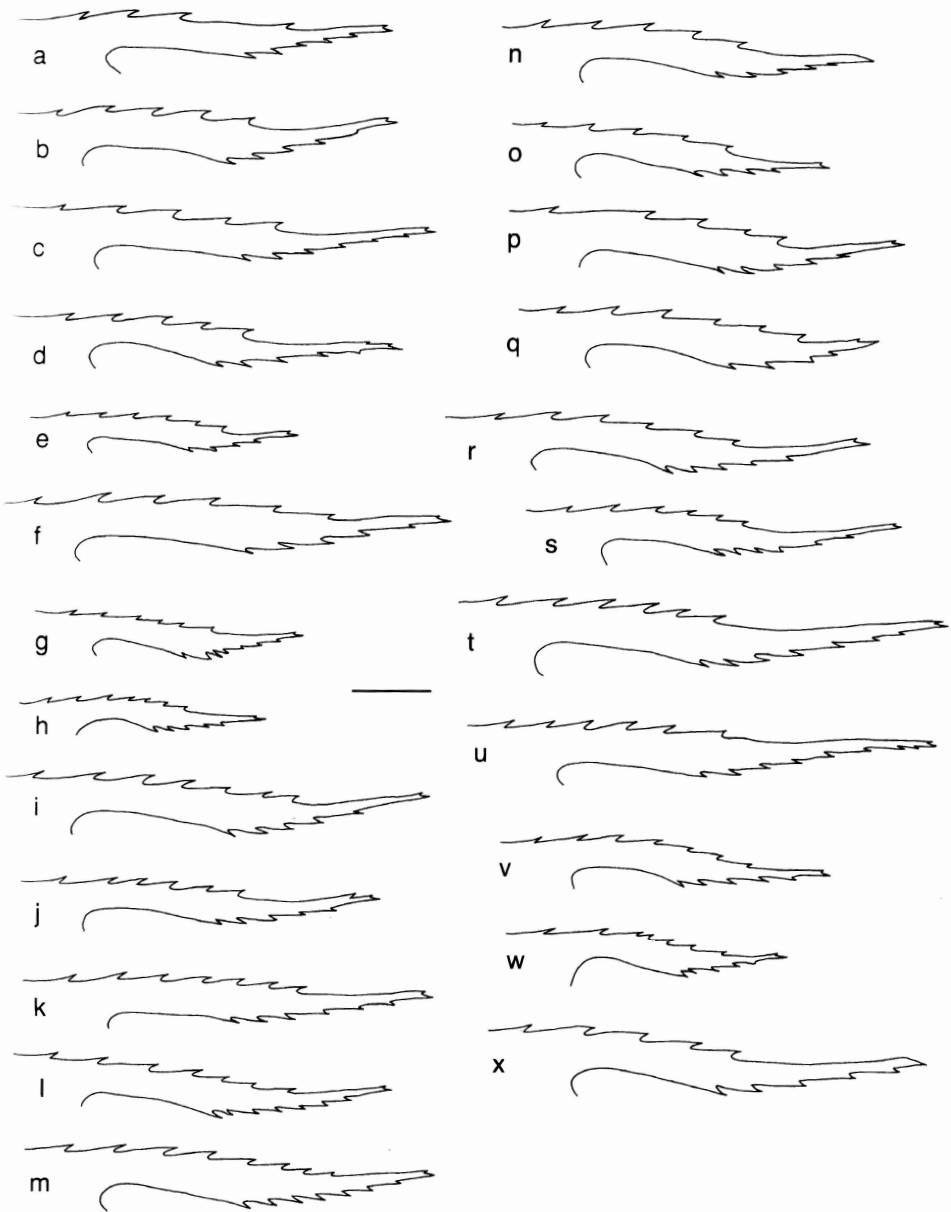


Fig. 1. *Palaemon concinnus* Dana, 1852. Nubia River, Papua New Guinea. a-n females; o-x, males; a, 5.5 mm post-orbital carapace length; b, 6.3 mm; c, 6.1 mm; d, 5.8 mm; e, 4.3 mm; f, 7.5 mm; g, 4.1 mm; h, 4.1 mm; i, 7.0 mm; j, 5.2 mm; k, 6.5 mm; l, 5.8 mm; m, 6.4 mm; n, 5.8 mm; o, 5.1 mm; p, 6.2 mm; q, 6.5 mm; r, 5.7 mm; s, 5.8 mm; t, 7.0 mm; u, 7.0 mm; v, 5.4 mm; w, 4.6 mm; x, 6.8 mm. Scale bar indicates 2 mm.

from the Philippines exhibit a rostral variation of $1 + 4-7 + 1/3-7$, while Holthuis (1950) stated the variation as $1 + 3-7 + 1/3-7$ from the same region with 6 dorsal and 4-5 ventral teeth being the most frequently encountered. Van Xuân (1992) found Vietnamese specimens to exhibit a range of $1 + 6-8 + 1/4-7$, with 6-7 dorsal and 5-6 ventral teeth being the most frequently met with. Tattersall (1921), on the basis of only 23 specimens from Sudan (Red Sea), found the variation to be $1 + 4-7 + 1/3-5$, with two specimens exhibiting a trifold apex.

Although the total variation thus appears to be quite similar in at least some geographical locations, differences in the most frequently encountered number of dorsal and ventral teeth between the present study and previous work were observed. The present study illustrates that rostral dentition is a relatively constant character in *P. concinnus* and could potentially be used to aid in species discrimination, if, in addition, it would be relatively constant in the other Indo-West Pacific species, a fact which remains to be established.

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