ON SOME FRESH AND BRACKISH WATER CRUSTACEANS FROM CEYLON

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During 1952-53 one of the authors (C.H.F.) made a small collection of crustaceans from various localities in Ceylon. This collection was found to contain two additions to the Ceylon fauna, namely, examples of the grapsoid crab *Sesarma edwardsi crassimana* De Man, collected from a brackish-water canal at Kirillapone and several specimens of the aegiid isopod *Alitropus typus* H. Milne Edwards from a freshwater reservoir at Angunuwila. The collection also contained several specimens of *Caridina nilotica simoni* Bouvier and a large male specimen of *Macrobrachium scabriculum* (Heller), both from a freshwater pond at Nugegoda, Western Province, Colombo District.

While this paper was being prepared one of us (R.W.I.) examined a further collection of *Caridina* specimens from Ambanganga Anicut, near Polonnarrawa collected by C.H.F. in 1962. Five of these specimens have been identified as *Caridina fernandoi* Arudpragasam & Costa; the remainder are *C. nilotica simoni* Bouvier.

Specimens of the species mentioned above with the exception of the *Macrobrachium scabriculum* are deposited in the collections of the British Museum (Natural History).

DECAPODA

Grapsidae

*Sesarma (Sesarma) edwardsi crassimana* De Man (figs. 1, 2)

*Sesarma edwardsi crassimana* De Man, 1887: 649; De Man, 1888: 188, pl. 13 figs. 5-6; Zehntner, 1894: 180; Lanchester, 1900: 758.

*Sesarma edwardsi brevipes*, Laurie, 1906: 429.

*Sesarma (Sesarma) edwardsi crassimana*, Tesch, 1917: 148, 247.

*Sesarma crassimana*, Tweedie, 1940: 92; Tweedie, 1950: 343, fig. 2 b.

Material examined.

Ceylon: 9 ♂ ♀ 10-12 mm, 11 ♂ ♂ 10-17 mm (total lengths of carapace); brackish water canal, Kirillapone, 3 miles west of Colombo City; leg. C. H. Fernando, 1955. 1 ♂ 9.5 mm, mouth of stream near Galle, Ceylon (det. by Laurie as var. *brevipes* de Man).
Other localities: 2 ♂♂ 15-17 mm, 2 ♀♀ 11-15 mm, syntypes, Zediwon, mangrove swamps, Mergui Archipelago; B.M. (N.H.) Colln. reg. no. 86.52. 1 ♂ 11 mm, 1 ♀ 7 mm, Malacca, from stomach of Varanus sp.; leg. F. B. Bedford & W. F. Lanchester. 1 ♂, 1 ♀ 14 mm, Kuching, Sarawak, from a freshwater ditch; leg. M. W. F. Tweedie, 1948.

Remarks. — The specimens listed above agree in nearly every detail with De Man's description of the variety crassimana. In particular, the penultimate segment of the abdomen of all the males is exactly as described by De Man (1888: 189); the length of this segment is slightly more than one third of its maximum width (fig. 1 b). In all the specimens examined the inner edges of the fingers of the chelipeds have strong denticles and the immobile finger is armed with three strong teeth and many subsidiary ones. In the freshly preserved specimens from Kirillapone the red colour on the palms of the chelipeds does not extend beyond the bases of the fingers.

When the Ceylon specimens were compared with four syntypes of S.e. crassimana in the B.M. (N.H.) collection they were found to agree in every detail except in the structure of the first pleopod of the males. Fig. 1 c shows in situ the first pleopod of a male from Kirillapone and figs. 2 a and b show the apex of this pleopod from abdominal and thoracic aspects respectively, at a higher magnification. The apex of the first pleopod of one of the male syntypes is shown in figs. 2 c and d for comparison with figs. 2 a and b. The pleopods thus seem to be of two distinct morphological forms. The overall shape of the first pair of pleopods is the same in both the Ceylon and the type specimens, the differences are seen only in the terminal chitinous portions.

The male specimen from Galle, Ceylon, determined by Laurie (1906: 429) as the variety brevipes De Man, agrees in nearly every detail with S.e. crassimana. The first pair of pleopods are of the same shape as in the Kirillapone specimens. In contrast, the chitinous portion of the first pleopod of the male from Kuching is shaped as shown in figs. 2 c, d and thus agrees with the syntypes. Finally, the first pleopod of the small male from Malacca is quite different from that of any of the other specimens, it is considerably shorter and is probably very immature.

Discussion. — Both Gordon (1937) and Tweedie (1940, 1950) have shown the importance of the male pleopods in separating closely related species of Sesarma. As far as we are aware the kind of specific dimorphism described above has not been mentioned previously in the Sesarminae, nor has it received special study in other Brachyura. Kemp (1919: 331) drew attention to the existence of a "high" and a "low" form in the males of Dotilla intermedia De Man. He separated the two forms on the shape of the first pleopod and the abdominal sternum respectively and suggested that the "low" form was a non-breeding phase. Specific dimorphism in the males of many species of Cambarus (Cambarinae: Astacidae), in which there is a sexually active and a non-active phase, is well known. It is also known that males can change from one phase to the other by molting (Williams, 1954: 803).

It is possible that the males of S.e. crassimana from Ceylon are in a breeding