On two species of *Archipelothelphusa* Bott, 1969 (Crustacea: Decapoda: Brachyura: Sundathelphusidae) from Luzon, Philippines

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The taxonomic problems concerning freshwater crabs of the genus *Archipelothelphusa* Bott, 1969 (Gecarcinucoidea: Sundathelphusidae) are discussed. The identity of *Para-Bary-thelphusa grapsoides* subsp. *longipes* Balss, 1937, is clarified, and a new species, *A. celer* spec. nov. is described from Luzon, Philippines.

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Introduction

Archipelothelphusa Bott, 1969 was established for sundathelphusid species from the Philippines. These have a relatively rough and flat carapace with a sharp epibranchial tooth on each side, presence of postorbital cristae, and ambulatory legs which have no subterminal meral spines (Bott, 1969: 363, 1970: 70). Three species were recognized, viz.: *A. grapsoides* (H. Milne Edwards, 1853) (type species) (Luzon), *A. wolterecki* (Balss, 1937) (Mindanao), and *A. sutteri* Bott, 1970 (Luzon), all from the Philippines. Takeda (1983) described a fourth species, a troglobite, *A. cavernicola*, from the island of Bohol, Philippines. The genus, as defined by Bott (1969, 1970), is far from being satisfactorily delimited (see also Ng, 1990).

The taxonomic status of the type species, *A. grapsoides*, is confused. Balss (1937: 153) examined the type of *Thelphusa subquadratus* Gerstaecker, 1856, and pronounced it conspecific with *A. grapsoides*. Bott (1970: 71) synonymised *Thelphusa subquadratus*, *Thelphusa chilensis* Heller, 1862, *Thelphusa jagori* von Martens, 1868, *Telphusa philippina* Bürger, 1894, and *Potamon (Potamon) antipoloensis* Rathbun, 1904, with *A. grapsoides*, although he had apparently not examined any of the types other than that of *A. grapsoides*. The present author prefers to regard *T. jagori*, *T. philippina* and *P. antipoloensis* as separate species until their types have been re-examined.

The identity of *Thelphusa chilensis* is difficult to ascertain. The type locality of "Chili" (Chile, South America) is probably incorrect (see Ng, 1989: 122). Bott (1970: 72) commented that the two specimens in the Berlin Museum of "*Archipelothelphusa grapsoides*" agree very well with the original figures, but noted that the variablility of the species makes any decision on their status difficult. Without precise locality data, it is perhaps better to regard the identity of *Thelphusa chilensis* as incerta sedis for the time being, rather than considering it tentatively as a *Archipelothelphusa* species.

Another problem exists with regard to the identity of Bott's specimens of "*A. grapsoides*". The type specimen of *A. grapsoides*, first described by H. Milne Edwards (1853: 212) and later figured by A. Milne Edwards (1869: pl. VIII fig. 2, 2a) as *Thelphusa grapsoides*, is very different from that figured by Bott (1970: pl. 14 fig. 61-63). The descriptions and figures of the species by Rathbun (1904: 300, fig. 31, pl. XIII fig. 9; as *Potamon (Potamon) grapsoides*) agree with H. Milne Edwards' and A. Milne Edwards' observations in almost all respects. Although Bott figured the first pleopod of the holotype male in the Paris Museum (Bott, 1970: pl. 28 fig. 51), he also figured another specimen present in the Berlin Museum to show the external characteristics, (l.c., pl. 14 figs. 61-63). The latter figure shows longer ambulatory legs and a more quadrilateral carapace compared to A. Milne Edwards' figure of *T. grapsoides*. Present studies show that the specimen studied by Bott is probably conspecific with *Parabarythelphusa grapsoides longipes* Balss, 1937, which is here recognised as a valid species, not synonymous with *A. grapsoides* as suggested by Bott (1970: 71).

Archipelothelphusa sutteri is known only from one adult female (33.0 by 23.0 mm, Basel Museum number 35a) collected from Baguio and has never been reported since. Bott (1970: 73) commented that while the data on the label indicated the locality site Baguio as being in Luzon, this was probably a mistake, as his atlas showed it to be a town in Mindanao. However, there is a major town called Baguio City in northwestern Luzon. He also suggested that the specimen of *Parabarythelphusa grapsoides longipes* figured by Balss (1937: 156, fig. 15) was probably this specimen, the Berlin Museum catalogue number cited by Balss (No. 10074) being incorrect. This is unlikely as Balss' figure of *A. longipes* and Bott's figures of *A. sutteri* (Bott, 1970: pl. 15 figs. 73-75) seem to indicate different taxa. The swollen carapace, well developed and almost confluent epigastric and postorbital cristae are very characteristic of *A. sutteri*. The carapace of *A. sutteri* also is much broader. The male first pleopod of *A. sutteri*, however, is not known, and hence this species is tentatively retained in the genus *Archipelothelphusa*.

The genus *Archipelothelphusa* sensu lato contains nine species: *Archipelothelphusa grapsoides* (H. Milne Edwards, 1853);*A. jagori* (von Martens, 1868); *A. philippina* (Bürger, 1894); *A. antipoloensis* (Rathbun, 1904); *A. longipes* (Balss, 1937); *A. wolterecki* (Balss, 1937); *A. sutteri* Bott, 1970; *A. cavernicola* Takeda, 1983, and *A. celer* spec. nov.

The present note serves to discuss the taxonomy of two species collected from Luzon recently sent to the author for study. One of them proved to be an undescribed species.

The abbreviations G1 and G2 are used for the male first and second pleopods respectively. All measurements are in millimetres, and taken with vernier callipers. The material studied is deposited in the Nationaal Natuurhistorisch Museum (Rijksmuseum van Natuurlijke Historie), Leiden, The Netherlands (RMNH) and the Zoological Reference Collection, Department of Zoology, National University of Singapore (ZRC).

Descriptive part

Family **Sundathelphusidae** Bott, 1970
Genus **Archipelothelphusa** Bott, 1969

Archipelothelphusa longipes (Balss, 1937)
(figs. 1, 3A-B, 4)

Para-Bary-thelphusa grapsoides subsp. *longipes* Balss, 1937: 156, figs. 15, 16.
Archipelothelphusa grapsoides; Bott, 1970: 71 (part), pl. 14 figs. 61-63 (not *Thelphusa grapsoides* H. Milne Edwards, 1853: 212).

Material.— 1 ♂ (C-0081) (ZRC 1989.2167), Bautakay Cave, Station Catalina, Atimonau, Quezon Province, Luzon Island, Philippines, leg. D. S. Balete, 22.v.1987 (24.3 by 19.4 mm) ; 1 ♀ (C-054) (ZRC 1989.2168), National Botanic Gardens, Real, Quezon Province, Luzon Island, Philippines, leg. D. S. Balete, 9.viii.1987 (23.1 by 18.6 mm).

Diagnosis.— Carapace distinctly transverse; dorsal surface slightly convex; regions well defined, lateral regions covered with weak oblique striae, dorsal surfaces appearing smooth. H-shaped central depression developed; cervical grooves distinct. Epigastric cristae distinct, separated by distinct groove; postorbital cristae low but visible, gradually curving towards and confluent with epigastric cristae and epibranchial teeth. Frontal margin sinuous, sharply deflexed, forming sharp non-cristate edge which demarcates upper margin of broad, well defined frontal median triangle. External orbital angle triangular; outer margin straight or gently concave, separated from small but distinct epibranchial tooth; anterolateral margin distinctly convex, serrated; postero-lateral margins converging towards almost straight posterior carapace margin. Posterior margin of epistome with well developed triangular median tooth; sides straight, separated from sinuous lateral lobes by distinct cleft. Surfaces of third maxilliped covered with very low but distinct pubescence; exopod with well developed flagellum. Ambulatory legs very long; merus of second and third pair slightly shorter than length of carapace. Meri without produced subterminal spines, upper surfaces rugose, upper margin gently serrate. Ventral margin of second propodus with three to four forwardly directed spinules; second dactylus with nine small spinules on dorsal margin, 8 strong spinules on ventral margin. Male abdomen broadly T-shape. G1 slender, gradually tapering subterminally; terminal segment distinctly separated from subterminal segment, tapering, slightly bent outwards, similar in shape to subterminal segment. G2 with distinct distal segment, but shorter than basal segment.

Remarks.— Bott (1970: 72) commented that *Parabarythelphusa grapsoides longipes* Balss, 1937, is identical with *Archipelothelphusa grapsoides* sensu stricto, and synonymised the two taxa. He concluded, after seeing the Berlin specimen, that the specimen figured by Balss (1937: 156 fig. 15) indicated with Berlin Museum number 10074, is in fact a specimen in the Basel Museum collected by Ernst Sutter. Bott (1970: 73) named Sutter's specimen as a new species, *A. sutteri*. The present author does not agree with this action since Bott had no clear evidence that the Basel Museum specimen was indeed the specimen figured by Balss. A comparison of the specimens in

Balss' fig. 15 and Bott's pl. 15 figs. 73-75 shows some very distinct differences in their carapace features. The carapace of *A. sutteri* is broader, the antero-lateral margins more distinctly convex, the epigastric cristae are distinctly below the level of the epibranchial tooth, the epigastric and postorbital cristae form a broad semilunate curve, and the frontal margin is slightly below the margin of the external orbital angle. According to the figures of Balss and Bott, the ratio of the distance between the tip of the external orbital angle and the outermost edge of the antero-lateral margin and the width of the carapace of *A. sutteri* is 0.21, whereas for *A. longipes*, it is 0.16. Balss (1937: 156), in the original description of the new subspecies *P. grapsoides longipes*, listed the examined material, all from the Berlin Museum, but did not select a holotype.

The specimen from the Berlin Museum figured by Bott (1970: pl. 14 figs. 61-63) agrees quite well with the two specimens recently sent to the author by Mr D. Balete, University of the Philippines, Luzon, which obviously belong to a species different from *A. grapsoides* sensu stricto. Bott's specimen also resembles *A. celer* spec. nov., especially with regard to its slightly more rugose carapace and the length of the ambulatory legs. The form of the epigastric and postorbital cristae, and the longer ambulatory propodi and dactyli, however, show that the present specimens are closer to Balss' (1937) *A. longipes*, and they are here identified with that taxon.

The length of the ambulatory legs as a taxonomic character must be used carefully. Direct comparisons between the males of *A. longipes* and *A. celer* show slight but noticeable differences in the proportions of some segments, notably between their second propodi and dactyli, both of which are proportionately longer in *A. longipes* (tables 1-3). The female specimen of *A. longipes*, however, has leg segments intermediate in proportion between those of the males of the two species (tables 1-3). More specimens will have to be obtained to ascertain the value of this character in separating the two species. All the other non-sexual features of the female specimen, especially the form of the epigastric and postorbital cristae, agree with the male of *A. longipes* and the original description. Other differences between *A. longipes* and *A. celer* are discussed under *A. celer*.

Mr. Balete (in litt. 23 June 1987) appends the following observations on the two specimens. The female [ZRC 1989.2168]: "One crab, a female, is entirely reddish orange dorsally including the walking legs and chelae. It is lighter ventrally. This was collected in a shallow stream at the National Botanic Gardens at Luzon, ± 500 m above sea level, on 9 August 1986. Its carapace is about 23 mm wide. Both its chelae were severed but are preserved together with the body"; and the male [ZRC 1989.2167]: "The other crab is light reddish dorsally and lighter still ventrally. All its walking legs, including the chelae are purplish. The same colour marks the last segment of the abdomen nearest the carapace. It was collected inside Bantakay Cave, Sta. Catalina, Atimonan, Quezon Province, Luzon, ± 100 m from the cave's entrance on 22 May 1987. The shallow puddle of water where this crab was collected was situated very near the main underground stream. Two juveniles of this species were observed on higher puddles above the stream. The crab is a male with a carapace of about 24 mm in width."

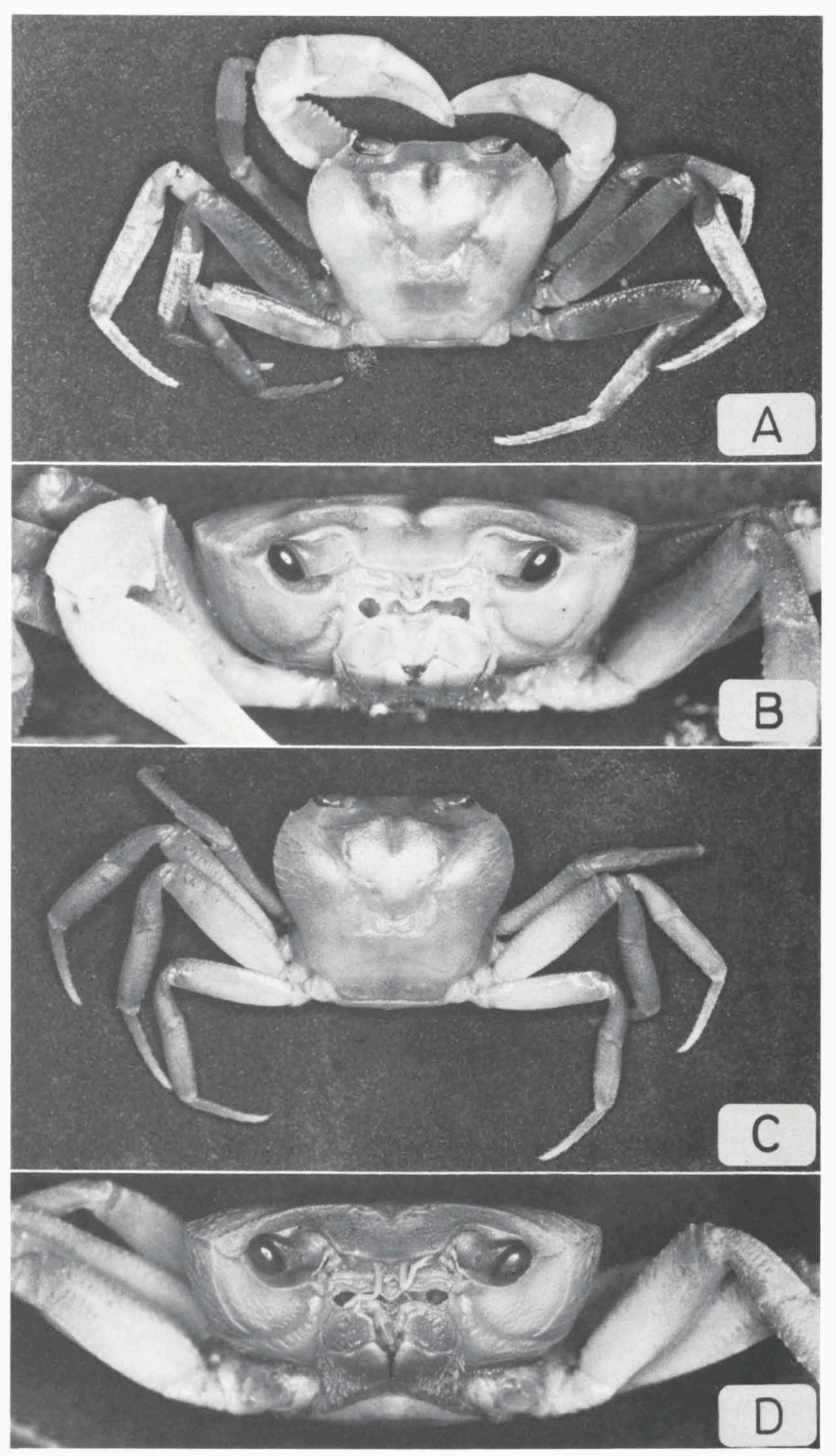

Fig. 1. *Archipelothelphusa longipes* (Balss, 1937). A-B, ♂, ZRC 1989.2167, 24.3 by 19.4 mm; C-D, ♀, ZRC 1989.2168, 23.1 by 18.6 mm.

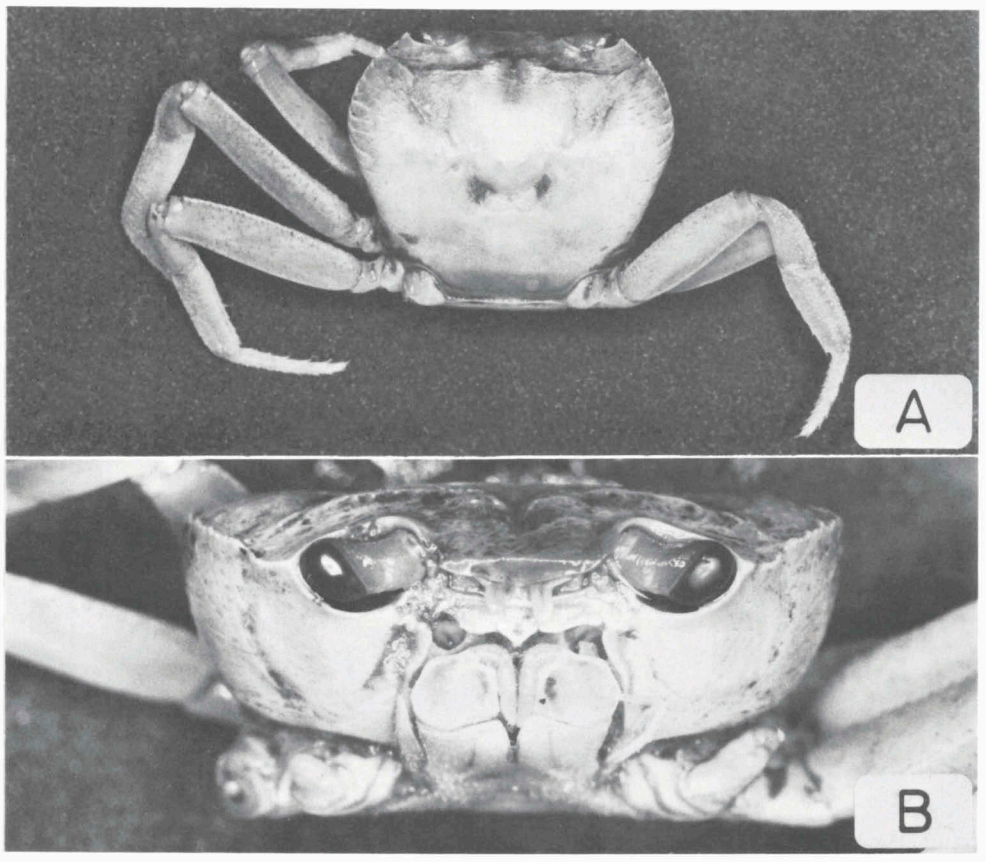

Fig. 2. *Archipelothelphusa celer* spec. nov. A-B, holotype ♂, RMNH D 36577, 23.7 by 18.7 mm.

Archipelothelphusa celer spec. nov.
(figs. 2, 3C-D, 5)

Material.— Holotype, ♂ (C-08) (RMNH D 36577), in hollow of tree, well above the ground and away from water in forest of Los Banos, near University of the Philippines, southern shore of Laguna de Bay, Laguna Province, Luzon Island, Philippines, leg. D. S. Balete, 8.vi.1986 (23.7 by 18.7 mm).

Diagnosis.— Carapace distinctly transverse; dorsal surface slightly convex; regions well defined; lateral regions covered with well developed and distinct striae, surface appearing rough. H-shaped central depression developed, cervical grooves pronounced. Epigastric cristae very strong, at rear separated by distinct groove, separated from postorbital cristae which are strong, sharp, almost straight and largely parallel to frontal margin, curving obliquely sharply to meet the epibranchial teeth as it approaches antero-lateral margins. Frontal margin sinuous, sharply deflexed, forming sharp non-cristate edge which demarcates upper margin of broad, well defined frontal median triangle. External orbital angle triangular, separated from

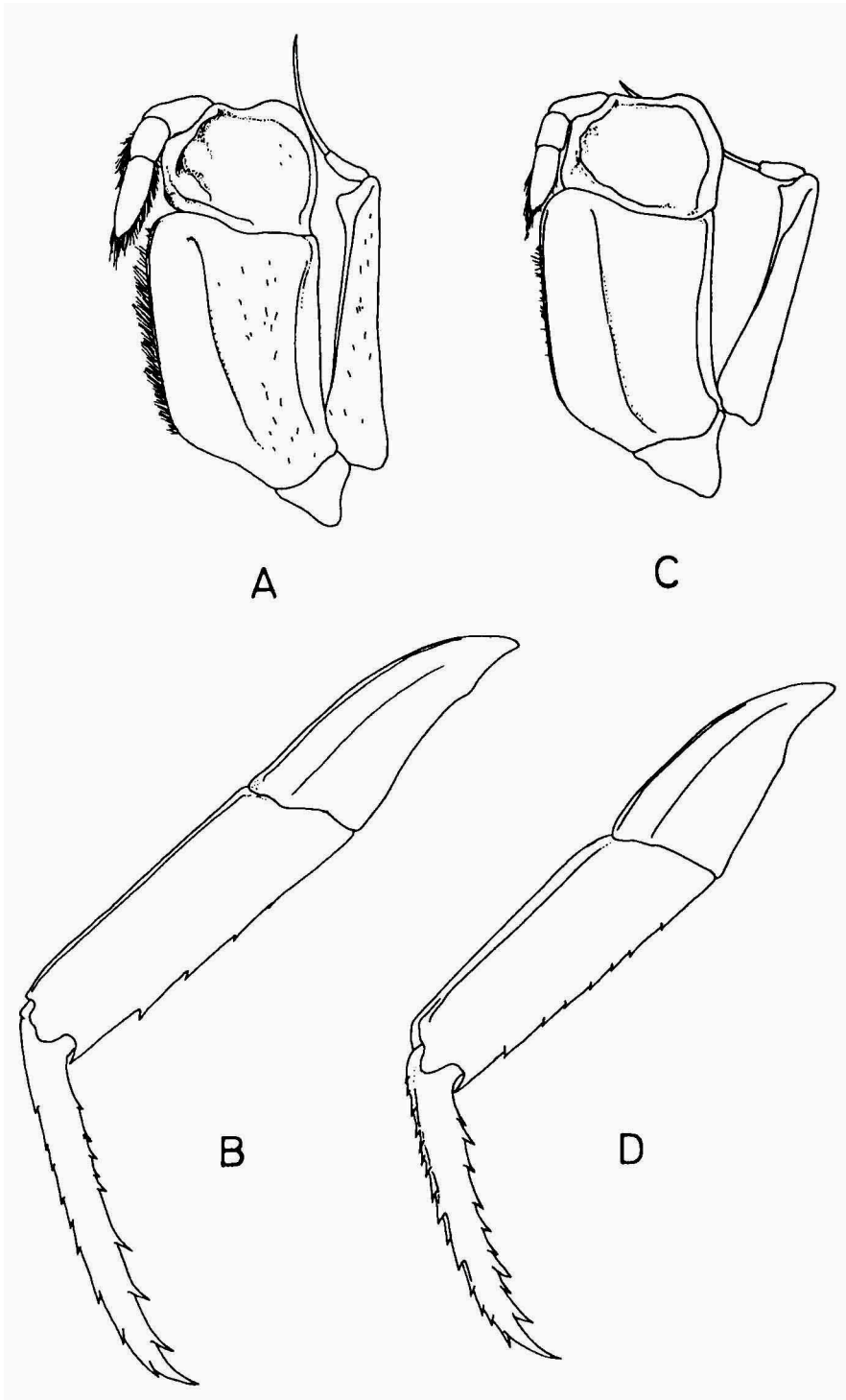

Fig. 3. A-B, *Archipelothelphusa longipes* (Balss, 1937), ♂, ZRC 1989.2167, 24.3 by 19.4 mm. C, D, *Archipelothelphusa celer* spec. nov., holotype, ♂, RMNH D 36577, 23.7 by 18.7 mm. A, C, left third maxilliped; B, D, left second ambulatory leg.

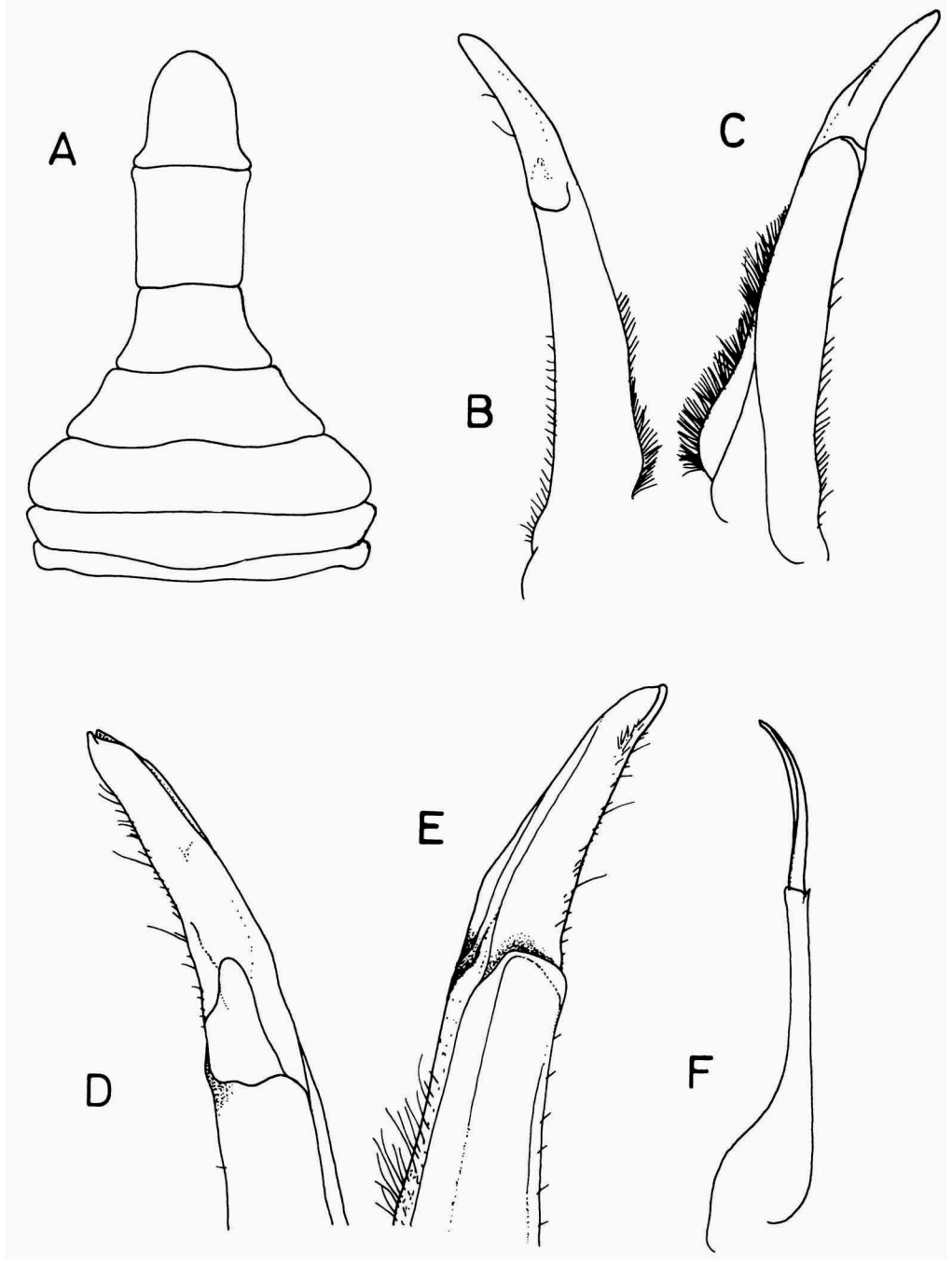

Fig. 4. *Archipelothelphusa longipes* (Balss, 1937), ♂, ZRC 1989.2167, 24.3 by 19.4 mm. A, abdomen; B, D, dorsal view of left G1; C, E, ventral view of left G1; F, left G2.

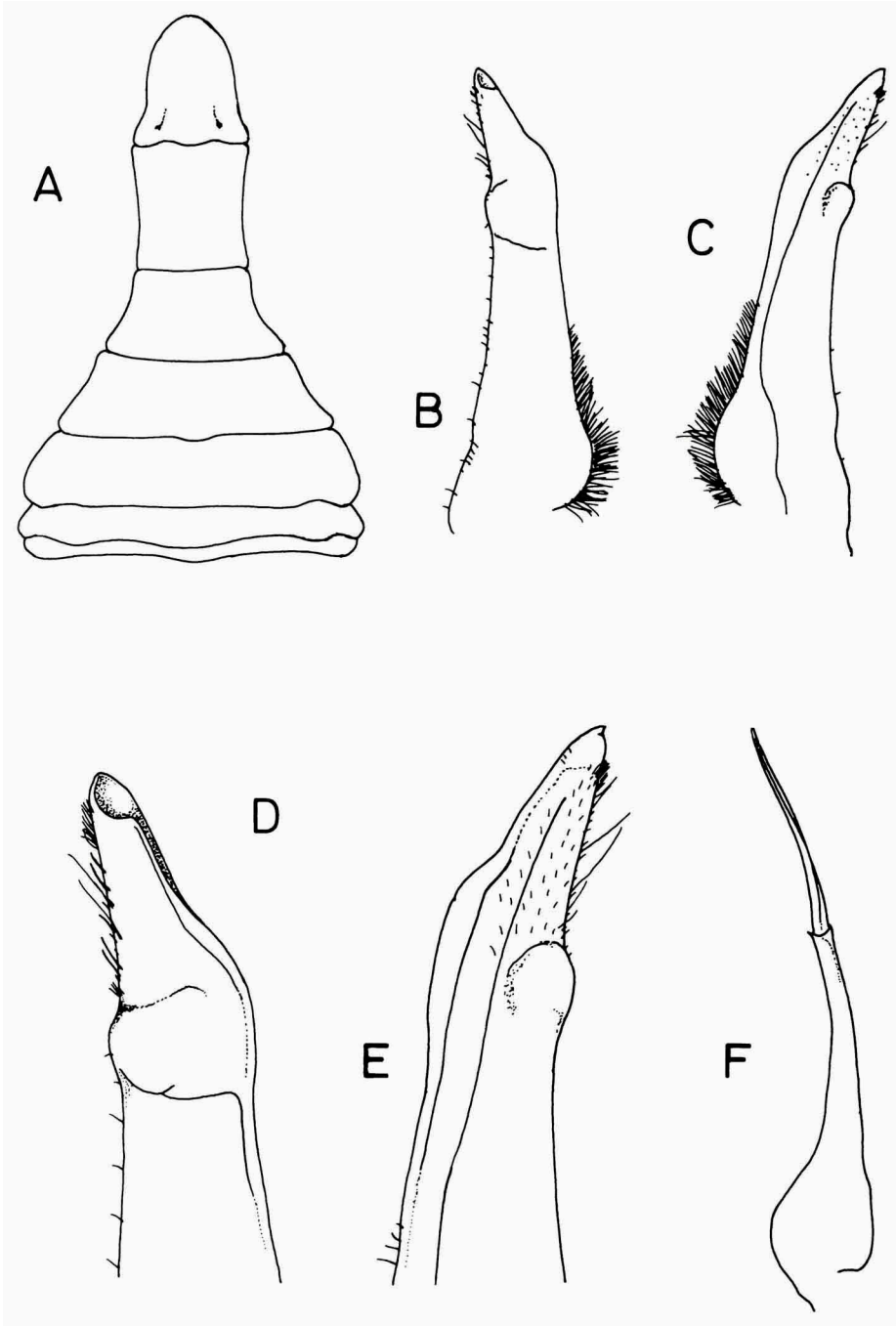

Fig. 5. *Archipelothelphusa celer* spec. nov. A-B, holotype, ♂, RMNH D 36577, 23.7 by 18.7 mm. A, abdomen; B, D, dorsal view of left G1; C, E, ventral view of left G1; F, left G2.

small but distinct epibranchial tooth; outer margin gently concave, antero-lateral margin distinctly convex, serrated. Postero-lateral margins straight or gently convex, converging towards straight posterior carapace margin. Pterogostomial margins very rugose. Surface of third maxilliped smooth, exopod with well developed flagellum. Posterior margin of epistome with well developed triangular median tooth; sides of tooth gently concave, separated from sinuous lateral lobes by deep but narrow clefts. Ambulatory legs very long; merus of second and third pair slightly shorter than length of carapace; meri rugose, without distinct subterminal spine, dorsal margins gently serrated; ventral margin of second propodus with seven forwardly directed spinules; second dactylus with nine strong spinules on ventral margin, and approximately 15 strong spinules on dorsal margin. Male abdomen broadly T-shape. G1 relatively short, stout; subterminal segment gradually tapering towards distal part; terminal segment distinctly separated from subterminal segment; ventral margin of junction between two segments with distinct swelling, tapering, slightly bent outwards, shorter than subterminal segment but longer than half its length. G2 with distinct distal segment, but shorter than basal segment.

Remarks.— The type specimen of *A. celer* spec. nov. resembles *A. longipes* externally, but *A. celer* can easily be separated by its differently structured epigastric-postorbital cristae structure, more distinctly rugose carapace and pterygostomial surfaces, shape of the posterior epistomal median triangle, proportions of its ambulatory dactyli and propodi (tables 1-3), and by the form of its G1. Since all the type specimens of both species are of about equal size, the differences cited here are unlikely to be associated with growth or age. The non-sexual differences appear to be valid for both sexes. The present female specimen of *A. longipes* is fully mature. Both *A. longipes* and *A. celer* are unusual among the known *Archipelothelphusa* species in their possession of long ambulatory legs.

Interestingly, White (1847: 30) describes a new species from an unspecified site in the Philippines under the name *"Thelphusa gracilipes"*, but since he did neither furnish a figure, nor any description, the name is a nomen nudum, as already noted by Rathbun (1906: 73) and cannot therefore affect the present classification. Considering White's choice of the specific name, it is likely that his *"T. gracilipes"* is conspecific with either *A. longipes* or *A. celer*.

The G1 of *A. celer* is distinctly more slender than in with *A. grapsoides* sensu stricto and *A. wolterecki*, but the proportions of the terminal and subterminal segments agree quite well with these species, and warrant its placement in the genus *Archipelothelphusa* as defined at present.

Etymology.— The species name is derived from the Latin "celer", meaning swift, alluding to the long legs of the species.

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Table 1. Measurements of carapace and left ambulatory leg segments (in mm) of *Archipelothelphusa longipes* and *A. celer*.

	A. longipes (♂) ZRC 1989.2167	*A. longipes* (♀) ZRC 1989.2168	*A. celer* (♂) RMNH D 36577
WD	24.30	23.10	23.70
LT	19.40	18.60	18.70
PC	9.30	9.80	8.60
1M	13.10	12.90	11.90
1C	6.70	5.70	6.40
1P	7.50	6.70	7.00
1D	9.30	8.50	8.00
2M	17.20	15.60	16.10
2C	8.20	8.10	8.20
2P	11.40	9.70	9.50
2D	12.30	10.90	10.10
3M	16.30	15.00	15.00
3C	8.20	8.30	7.60
3P	10.50	10.00	9.50
3D	12.00	11.20	10.20
4M	13.10	12.20	12.00
4C	7.80	6.90	7.30
4P	8.20	8.20	7.80
4D	9.50	8.80	8.30

WD = carapace width; LT = carapace length; PC = width of posterior margin of carapace; M = merus; C = carpus; P = propodus; D = dactylus; numbers refer to the respective legs.

Table 2. Ratio of length of respective leg segments and carapace length of *Archipelothelphusa longipes* and *A. celer*. For abbreviations used, see table 1.

	A. longipes (♂) ZRC 1989.2167	*A. longipes* (♀) ZRC 1989.2168	*A. celer* (♂) RMNH D 36577
1M	0.68	0.69	0.64
1C	0.35	0.31	0.34
1P	0.39	0.36	0.37
1D	0.50	0.46	0.43
2M	0.89	0.84	0.85
2C	0.42	0.44	0.42
2P	0.59	0.52	0.51
2D	0.63	0.59	0.57
3M	0.84	0.81	0.80
3C	0.42	0.45	0.41
3P	0.54	0.54	0.51
3D	0.62	0.60	0.55
4M	0.68	0.66	0.61
4C	0.40	0.37	0.37
4P	0.42	0.44	0.40
4D	0.49	0.47	0.44

Table 3. Ratio of length of respective leg segments and width of posterior margin of carapace of *Archipelothelphusa longipes* and *A. celer*.

	A. longipes (♂) ZRC 1989.2167	*A. longipes* (♀) ZRC 1989.2168	*A. celer* (♂) RMNH D 36577
1M	1.40	1.32	1.38
1C	0.72	0.58	0.74
1P	0.81	0.68	0.81
1D	1.00	0.87	0.93
2M	1.85	1.59	1.85
2C	0.88	0.83	0.91
2P	1.22	0.99	1.10
2D	1.32	1.11	1.24
3M	1.75	1.53	1.74
3C	0.88	0.85	0.88
3P	1.13	1.02	1.10
3D	1.29	1.14	1.19
4M	1.41	1.24	1.34
4C	0.84	0.70	0.81
4P	0.88	0.84	0.87
4D	1.02	0.90	0.95

M = merus; C = carpus; P = propodus; D = dactylus; numbers refer to the respective legs.

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