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Supplement I

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SUMMARY

A new species, *Alpheus brucei*, in the Sulcatus Group, is described from Heron Island, Queensland, on the Great Barrier Reef.

INTRODUCTION

The following species was received too late for its description to be included in the foregoing paper, so it is being issued as a separate supplement.

***Alpheus brucei* sp. nov.**

Fig. 1

HOLOTYPE: 24 mm ovigerous female from Heron Island reef flat, at 0.5 m, from a head of *Porites andrewsi* Vaughn. Collected by A. J. Bruce, 1/9/78.

DIAGNOSIS: Rostrum acute, 3.4 times as long as broad at base, reaching to end of first quarter of second antennular article, with rounded carina extending posteriorly well behind corneas. Orbitorostral grooves rounded, broad and moderately deep, eyehoods moderately inflated. Anterior margin of orbital hoods bearing teeth 0.3 as long as rostrum and directed slightly inwards. Margin between orbital teeth and rostrum extended as convex, flattened prominences that curve deeply at base of rostrum. Eystalk bearing rounded, finger-like process that in lateral view juts out beyond margin of carapace and reaches to level of middle of orbital teeth in lateral view, but is concealed by orbital teeth in dorsal view; distal portions of process bearing short setae. First 2 antennular articles nearly equal in length, third a little shorter, second article 1.7 times as long as broad. Stylocerite with acute tip reaching to middle of second antennular article. Scaphocerite with lateral margins straight, lateral tooth extending just past end of antennular peduncle but well beyond squame; squame narrow, not reaching end of antennular peduncle. Carpocerite as long as lateral tooth of scaphocerite. Basicerite with acute tip of tooth reaching past end of first antennular article.

Ratio of third maxillipeds: 10:3:5. Inferointernal margin of first article terminates in a small acute tooth. Tip of third article bearing tuft of long hairs.

Large chela slightly compressed, 3.7 times as long as broad with fingers occupying the distal third. Surface smooth and bearing only sparse setae. Palm bearing strong, well-developed transverse groove proximal to the dactylus. Dactylus high, laterally compressed, superior surface a rounded carina, tip broadly rounded; plunger low, truncate. Both fingers with opposite faces distal to plunger and socket developed into thin knife-like ridges that shear when fingers close. Merus 2.2 times as long as broad; superior margin

projecting as strong, acute and curved tooth, inferointernal margin terminating in similar tooth and bearing proximally a few rounded protuberances, each bearing a slight seta; inferoexternal margin distally without tooth but with a slight rounded terminal extension.

Small chela 5.2 times as long as broad with fingers slightly longer than palm; surfaces smooth without sculpturing and with only scattered hairs. Palm bearing acute tooth medial to dactylar articulation, small rounded protuberance lateral to articulation. Medial edge of dactylus developed as knife-like ridge, shearing past corresponding ridge to fit into narrow well-defined groove on propodal finger when chela is closed; ridges best developed in distal half, except just proximal to curved tips where dactylar ridge crosses over propodal ridge from groove, allowing tip to lie on medial side of propodal tip. Merus almost 3 times as long as broad; superior margin terminating in small, curved tooth; inferointernal margin bearing protuberances, 3 of which bear short articulated spines, the others stiff setae and terminating in low angular tooth; inferoexternal margin smooth and with slight terminal projection.

Ratio of carpal articles of second leg: 10:5:3:3:5.

Ischium of third leg armed with spine. Merus unarmed, 5.3 times as long as broad. Carpus half as long as merus, terminating distally in slight rounded projections. Propodus 0.8 as long as merus, bearing on its inferior margin 7 slender spines and a pair distally, superior margin bearing several long fine hairs. Dactylus 0.3 as long as propodus, simple but bearing on its superior margin two-thirds of distance from tip a small patch of setae.

Telson 2.1 times as long as posterior margin is broad. Posterior margin only slightly arcuate, inner spine of posterolateral pair 0.3 as long as posterior margin is wide, outer spine about half as long as inner; first pair of dorsal spines placed anterior to middle. Diaeresis of outer uropod scalloped, external spine dark brown.

Colour notes (from a colour transparency, taken in life from dorsal view by A. J. Bruce): Two broad dark brown bands, at times tinged with dark red, run dorsally the entire length of body from antennular and antennal basal articles and margins of scaphocerite to sixth abdominal segment and the anteriormost portion of the telson. These bands are separated mid-dorsally with a translucent band starting between eyes and terminating in the middle of the sixth abdominal segment; in the posterior portion of the carapace the yellow-orange ovaries can be seen, and in portions of the abdomen the intestine is visible. The orbital hoods and the portion of the carapace posterior to them is transparent, but surrounded on either side with the dark bands. The telson immediately posterior to termination of the coalesced bands, and the proximal ends of the uropods, have a narrow transverse band of similar transparency, but the entire caudal fan beyond is of the same colour as the longitudinal bands; outer spine of outer uropod possibly slightly darker than band and proximal to this spine is a small area near the margin of a dark red. Both of the chelae have a pink to almost purple cast with the fingers being darker and somewhat yellowed. The meri of the chelipeds and the thoracic legs are light pink. The lateral portions of the body are not visible in the transparency. (In nine months of alcoholic preservation the dark bands have faded to a dusty pink and there is no indication of colour on the lateral sides of the carapace or abdomen; however, the eggs have a slight pink cast and the spine on the outer uropod remains dark brown, almost black).

The species is named in honour of its collector, A. J. Bruce, Director, Heron Island Research Station, who has lent us many specimens and been most helpful in our work. The holotype will be placed in the Australian Museum.

DISCUSSION: The shape of the anterior portion of the carapace, the shape of the large chela and the dark spine on the outer margin of the uropods place this species in the *Sulcatus* Group. Within the *Sulcatus* Group it is related to the Indo-Pacific species that have teeth on the orbitorostral margin, no teeth on the merus and a simple dactylus on the third legs. These

include *A. facetus* De Man, 1908, 1911; *A. splendidus* Coutière, 1897; *A. edmondsoni* (Banner) 1953 and *A. supachai* Banner and Banner 1966. It is separated from all four species by two characteristics: the transverse groove on the large chela and the large finger-like process on the eyestalk. Within the Sulcatus Group, the presence or absence of a transverse groove on the large chela appears to be a firm characteristic within the species, and to our knowledge is not variable. The other four related species have a process on the eyestalk (called a "saillie epineuse" by Coutière and labelled in the drawings of his *Theses* as "epc" — 1899; 112, Fig. 98 and elsewhere), but in all it is low, thicker and rounded, and never extends so far anterior to the carapace. Other characteristics also separate this species from the latter three: *A. splendidus* bears its orbital teeth on the curvature of the orbital hoods, superior to the anterior margin itself, rather than as a projection of the margin; both *A. edmondsoni* and *A. supachai* lack of the shelf-like projection of the margin of the carapace between the orbital hoods and rostrum, as found in this species.

However, except for the characteristics of the large cheliped and the size of the extracorneal process, this specimen is almost identical with *A. facetus*. In *A. facetus* the palm of the large cheliped bears on the more proximal portions of the superior surface two longitudinal ridges with a shallow groove between and no vestige of a transverse groove, and the inferoventral margin of the merus bears short spines; however, the development of spines on the merus is variable. Usually the spine at the articulation of the outer uropod is colourless in *A. facetus*, but it may be brown or black. The colour pattern of the two species is quite similar, as well. Notes on the collections of the two species are not sufficiently detailed to indicate any ecological separation.

This species may be inserted in our key to the species of *Alpheus* (Banner and Banner, 1981) by inserting a new couplet under dichotomy 12:

- 12.(11) Large chela with conspicuous transverse groove proximal to dactylar articulation; with the abrupt sides of groove lying at right angles to surrounding palmar margins.
*A. brucei*
- Large chela either without any indication of transverse groove, or with shallow transverse depression; with margins of depression confluent with surrounding palmar margins.
12a

The present couplet 12 then should be renumbered 12a.

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Banner, D. M. and Banner, A. H., 1981. The alpheid shrimp of Australia. Part III. The remaining alpheids, principally the genus *Alpheus*, and the family Ogyrididae. *Rec. Aust. Mus.* 34(2):1-357, 95 Figs.

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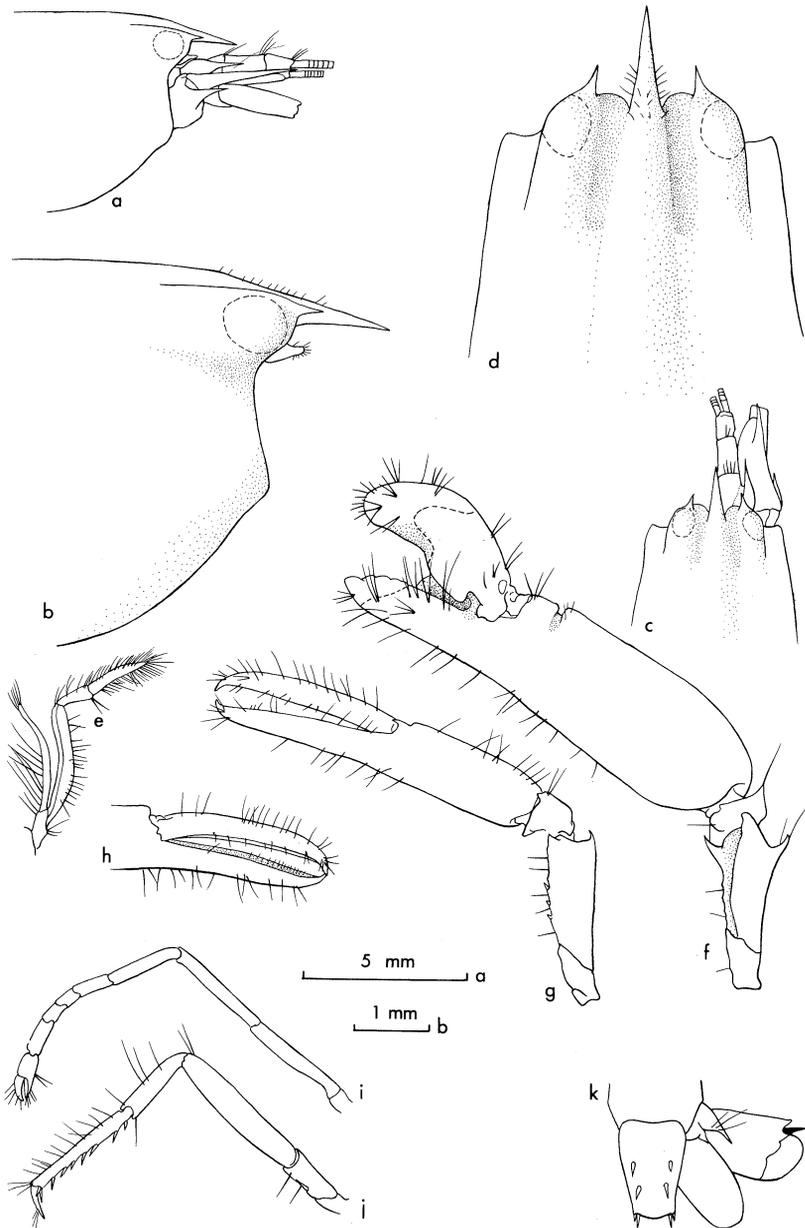


Fig. 1 *Alpheus brucei* sp. nov.

Holotype. a,b. Anterior region, lateral view; c, d. anterior region, dorsal view; e. third maxilliped, lateral face; f. large cheliped, lateral face; g. small cheliped, medial face; h. distal end of small chela, lateral face; i. second leg; j. third leg; k. telson and uropods. a, c, e, f, g, h, i, j, k scale a; b, d scale b.