

## The Indo-Pacific Pilumnidae XIV. On a new species of *Actumnus* (Crustacea: Decapoda: Brachyura) from Taiwan

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*Abstract.*—A new species of pilumnid crab, *Actumnus taiwanensis*, is described from southern Taiwan. The species is allied to *A. setifer* (De Haan, 1835) and *A. digitalis* (Rathbun, 1907), but can easily be distinguished by its flattened dorsal carapace surface, low frontal and anterolateral margins, characteristic form of the chela and diagnostic structure of the male first pleopod.

In a recent synopsis of the Taiwanese xanthoid fauna, Ho et al. (2000) listed 18 species of pilumnid crabs from this island. Ng (2000) subsequently described another species of *Pilumnus*. Of these, only one species of *Actumnus* was recorded, *A. squamosus* (De Haan, 1835). Over the years, however, the authors have been aware of an unusual species of *Actumnus* from southern Taiwan which superficially resembles *Actumnus setifer* (De Haan, 1835), a species with a wide Indo-West Pacific distribution. In recent months, through the help of various colleagues, we have finally managed to obtain a good series of specimens to enable us to describe this new taxon.

Specimens are deposited in the Taiwan Museum, Taipei (TMCD); Taiwan Endemic Species Research Institute, Nantou (TESRI); National Taiwan Ocean University, Keelung (NTOU); National Kaohsiung Institute of Marine Technology, Kaohsiung (NKMT); National Sun Yet-Sen University, Kaohsiung (NSYSU); National Museum of Natural Science, Taichung (NMNS); and Zoological Reference Collection of the Raffles Museum, National University of Singapore (ZRC). Specimens of *Actumnus setifer* and *A. amirantensis* used for direct

comparisons with the new species are deposited in the ZRC. The measurements are cited in the order cw (carapace width)  $\times$  cl (carapace length). The abbreviations G1 and G2 are used for the male first and second pleopods respectively.

### *Actumnus taiwanensis*, new species Figs. 1–3

*Material examined.*—Holotype: male, 25.2  $\times$  18.1 mm, TMCD (ex NTOU CX 9203-01-27), 20 m, Nanliao, Kaohsiung County, coll. 30 Jan 1992. Paratypes: 2 males, 24.3–21.8  $\times$  17.5–15.9 mm, 2 females, 18.2–17.6  $\times$  13.0–12.7 mm, ZRC 2000.2511–2514. 3 males, 1 female, NKMT, Mituo, Kaohsiung County, coll. J.-F. Huang, 2 May 1996. 2 males, 23.1–28.1  $\times$  16.7–20.4 mm, TMCD, 30 m, Tsoying, Kaohsiung City, coll. H.-T. Shih, 1 Feb 1997. 2 males, 23.8–22.2 mm  $\times$  16.9–15.6 mm, NSYSU 980210B, 30 m, Tsoying, Kaohsiung City, coll. H.-T. Shih, 10 Feb 1998. 1 male, TESRI, 30 m, Tsoying, Kaohsiung City, coll. H.-T. Shih, 10 Dec 1996. 1 male, 1 female, TESRI, 10 m, Darlinpu, Kaohsiung City, coll. H.-T. Shih, 11 Dec 1996. 2 males, 27.9–26.8  $\times$  19.7–18.5 mm,

NMNS, 30 m, Tsoying, Kaohsiung City, coll. H.-T. Shih, 1 Feb 1997.

*Description.*—Carapace transversely ovoid, regions well demarcated, surface almost smooth, covered with very short pubescence. Frontal margin finely granulated, with 4 lobes just discernible; median lobes low, separated by broad, shallow cleft; lateral lobes separated from supraorbital margin by small cleft. Supraorbital margin granulated, with 1 deep median V-shaped cleft and shallower outer cleft. Anterolateral margin granulated to varying degrees, distinctly arcuate, distinctly demarcated from posterolateral margin, cut into 4 teeth (including external orbital tooth), separated by deep V- or U-shaped clefts; length of first to third teeth progressively shorter; first anterolateral tooth (external orbital tooth) low, subtruncate, anterior edge not produced; second tooth subtruncate; granules on third tooth largest; fourth tooth appearing very broad, with posterior part almost straight and subparallel to equivalent part of same tooth on other side of carapace. Posterolateral margin gently concave, distinctly converging towards posterior carapace margin.

Suborbital margin granulated, without pronounced tooth or spine present. Suborbital regions finely granulated. Basal antennal segment (true fused second and third antennal segments) subrectangular, just entering orbital hiatus. Orbits relatively large, transverse; eyes filling entire orbital space. Posterior margin of epistome with broad median lobe. Endostomial ridges discernible, but relatively weak, short. Third maxilliped completely covering buccal cavity when closed; ischium subrectangular, no distinct median longitudinal sulcus visible, smooth, inner margin weakly serrated; merus squarish, smooth, without distinct median depression; exopod stout, distal edge reaching anterior edge of merus, inner subdistal tooth prominent.

Surface of anterior thoracic sternites finely granulated, more so on lateral areas. Sternites 2 and 3 completely fused; sternites 3 and 4 separated by shallow but distinct

groove which slopes to median part of abdominal cavity; male sternite 4 relatively narrow. Male abdominal cavity reaching to distal margin of sternite 4.

Chelipeds subequal in size or 1 slightly unequal in males. Anterior margin of fused basis-ischium gently granulated. Anterior margin of merus gently granulated, with 1 low subdistal tooth. Anterior margin of carpus granulated, with 2 distinct facets from dorsal view; inner facet narrower; inner distal angle with slightly larger granule but no distinct tooth or spine apparent. Entire outer surface of palm of chela distinctly granulated except for smooth, slightly flattened median part; outer surfaces covered with dense, very short pubescence not obscuring granules, pubescence on median part more prominent. Fingers shorter than palm; dactylus with 2 deep, pubescent longitudinal grooves and 3 flattened longitudinal carinae (median one broadest), proximal part of inner carina (nearest to carapace) distinctly granulated with rest of margin smooth, proximal part of median carina less weakly granulated.

Ambulatory legs not elongate, second leg longest. Margins of meri, carpi, propodi and dactyli lined with setae, particularly denser and longer on dorsal margins and ventral margins of propodus and dactylus; setae on dorsal (outer) margin of dactylus much denser than elsewhere, completely obscuring margin. Fourth dactylus shorter than those of other legs, dactylus of first and second leg substyliiform, dactylus of second leg longest, distinctly styliiform.

Male abdomen relatively narrow, surfaces relatively smooth; telson triangular, tip rounded; segment 6 squarish, lateral margins gently concave; segment 5 rectangular, lateral margins gently concave; segment 4 rectangular, lateral margins gently convex; segment 3 transversely subrectangular, strongly inflated, high, lateral margins strongly convex; segment 2 subtrapezoidal with rounded lateral margins; segment 1 trapezoidal with concave lateral margins.

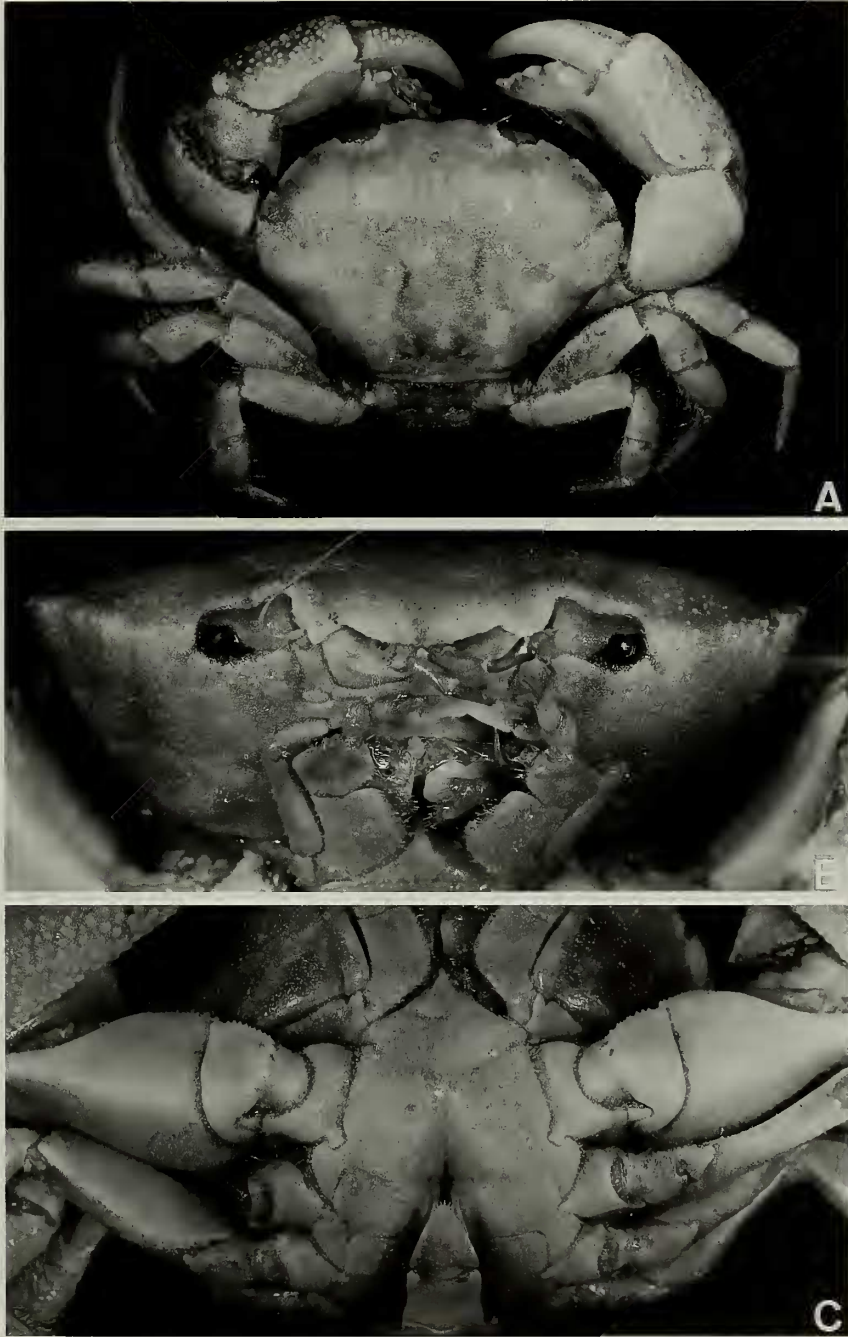


Fig. 1. *Actumnus taiwanensis*, new species. Paratype male, 24.3 × 17.5 mm, ZRC 2000.2511, A, dorsal view; B, frontal view; C, ventral view.



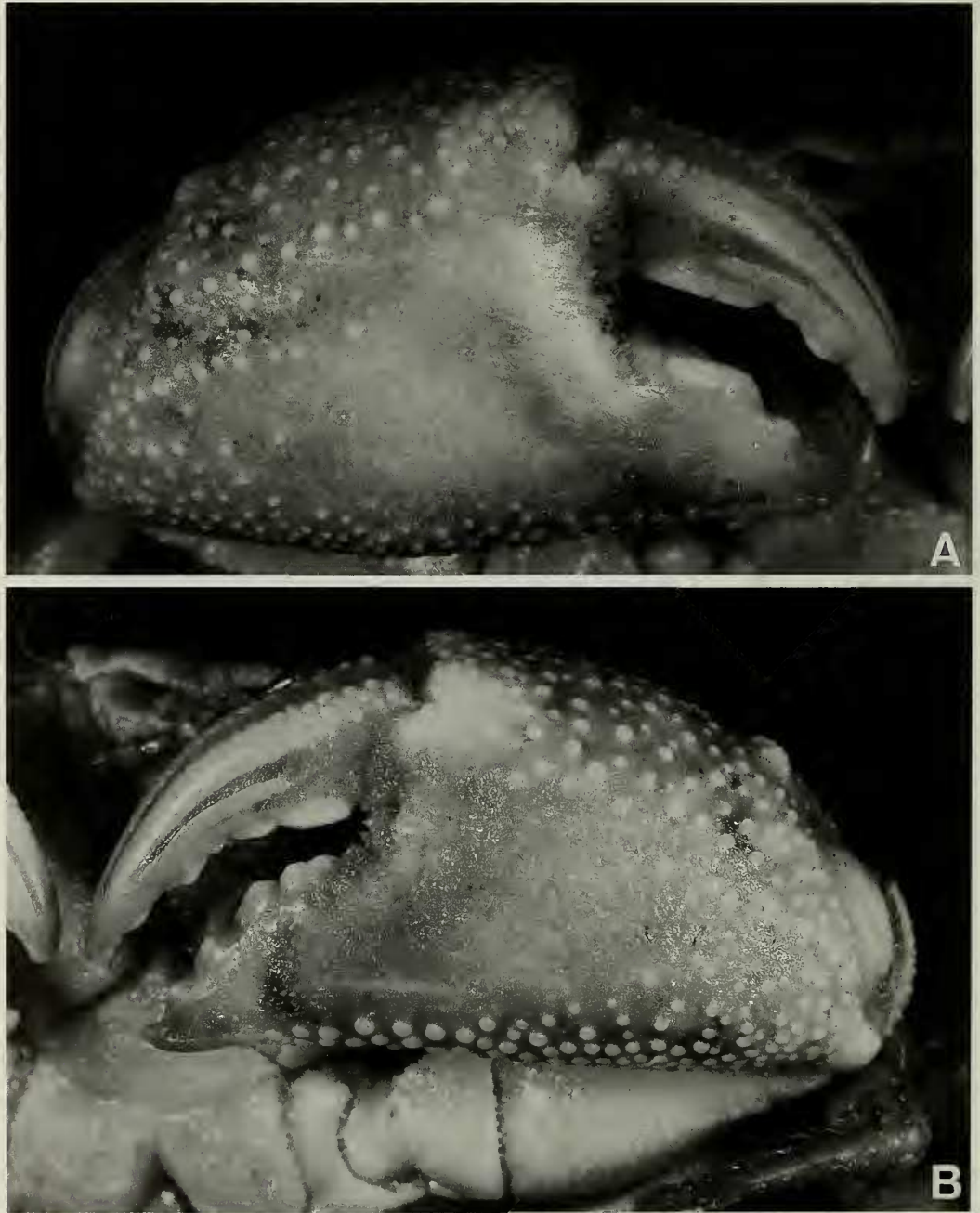


Fig. 2. *Actumnus taiwanensis*, new species. Paratype male, 24.3 × 17.5 mm, ZRC 2000.2511, A, right chela; B, left chela.

Female abdomen almost completely covering thoracic sternum; telson semicircular.

G1 very slender, strongly sinuous; distal part distinctly hooked, tip subtruncate; in-

ner margin of distal part lined with numerous short, stiff setae. G2 very short, sigmoid; distal part spatuliform, tip rounded.

*Color.*—In life, uniform dull brown on

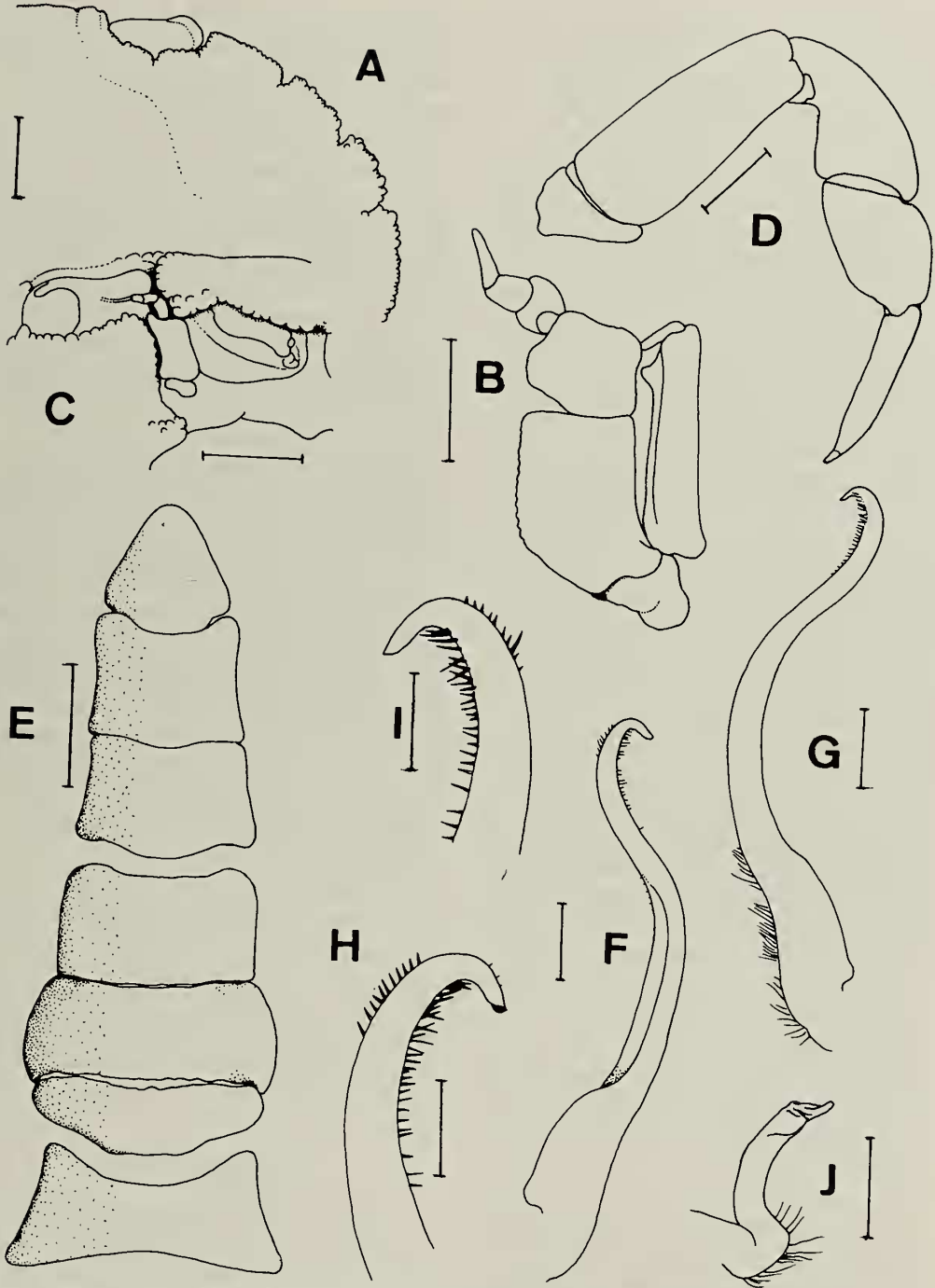


Fig. 3. *Actumnus taiwanensis*, new species. A, holotype male, 25.2 × 18.1 mm, TMCD; B–J, paratype male, 24.3 × 17.5 mm, ZRC 2000.2511. A, right side of carapace; B, left third maxilliped; C, frontal view showing antennae and antennules; D, right fourth ambulatory leg; E, abdomen; F, G, left G1; H, I, distal part of left G1; J, left G2. All structures (except gonopods) denuded of setae. Scales: A–E = 2.5 mm, F, G, J = 1.0 mm, H, I = 0.5 mm.

all dorsal surfaces; the ventral surface being dirty white.

*Etymology.*—The species is named after the island of Taiwan.

*Remarks.*—*Actumnus taiwanensis* is characterized by its low and poorly demarcated frontal margin, low anterolateral margins, relatively flat carapace and unusually sculptured chela. With regards to its frontal and anterolateral margins, it bears a close resemblance to the two known species in the genus *Neoactumnus* Sakai, 1965a, *N. convexus* Sakai, 1965a (type species of genus) and *N. unispinosa* Garth & Kim, 1983. *Neoactumnus* is characterized primarily by its entire frontal margin and a G1 which is not very sinuous and has a subtruncate tip (at least for *N. convexus*; as *N. unispinosa* is known only from a female). Although the frontal lobes of *A. taiwanensis* are poorly demarcated, they are nevertheless still clearly discernible, and as such, this species cannot be confidently referred to *Neoactumnus* as defined at present. In any case, *A. taiwanensis* also differs from both *N. convexus* and *N. unispinosa* in having the dorsal surface of the carapace much flatter (vs. distinctly convex, appearing swollen), the anterolateral teeth are separated by V-shaped clefts (vs. narrow fissures), proportionately longer ambulatory dactyli and a very sinuous G1 with the distal part hooked (vs. distinctly less sinuous with the distal part not hooked) (cf. Sakai 1965a:105, figs. 4a–d; 1965b:153, pl. 76 fig. 1, text fig. 18; 1976:498, pl. 177 fig. 4, text figs. 267a–c; Takeda 1982:189; Garth & Kim 1983:699, Fig. 8; Miyake 1983:133, pl. 45 fig. 3; Utsumi 1990:140).

With regards to its low anterolateral teeth, *A. taiwanensis* also bears a close resemblance to *A. setifer* and *A. digitalis*. *Actumnus taiwanensis* can be distinguished from *A. setifer* by its dorsal carapace surface being almost flat (vs. strongly convex), weaker carapace areolation (vs. very distinct), more prominent frontal lobes separated by deep clefts (vs. lower lobes and shallow cleft), and the outer surface of the

cheliped has the median part flattened and smooth (vs. uniformly convex and granulated) (cf. Takeda & Miyake 1969:115, Fig. 9d–f; Sakai 1976:496, pl. 177 fig. 2; Takeda, 1982:189; Miyake 1983:133, pl. 45 fig. 1). *Actumnus amirantensis* Rathbun, 1911, was regarded by Takeda & Miyake (1969) as a possible subspecies of *A. setifer*, but there are enough differences to regard *A. setifer* and *A. amirantensis* as separate species (P. K. L. Ng, personal observation). In any case, the differences enumerated between *A. taiwanensis* and *A. setifer* are also valid for *A. taiwanensis* and *A. amirantensis*.

*Actumnus taiwanensis* can be readily distinguished from *A. digitalis* by its dorsal carapace surface being almost flat (vs. strongly convex), anterolateral teeth being separated by V-shaped clefts (vs. narrow fissures), the much lower and less dense pubescence on the dorsal carapace surface, the outer surface of the cheliped having the median part flattened and smooth (vs. uniformly convex and granulated), and the distal part of the G1 is more strongly hooked (vs. bent gently) (cf. Rathbun 1907:38, pl. 1 fig. 6, pl. 9 fig. 4; Takeda & Miyake 1968:102, Figs. 3, 4).

*Actumnus taiwanensis* was obtained from relatively shallow waters with soft, muddy substrates. It was collected with another 39 species of crabs including the rare xanthid *Zalasia sakaii* (Balss) (H.-T. Shih, J.-F. Huang, pers. comm.). Among the sympatric species, half of them are swimming crabs (Portunidae).

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