

A New Spider Crab of the Genus *Achaeus* (Crustacea, Decapoda, Brachyura) from the Kermadec Islands

Richard Webber¹ and Masatsune Takeda²

¹Museum of New Zealand Te Papa Tongarewa
PO Box 467, Wellington, New Zealand
e-mail: rickw@tepapa.govt.nz

²Department of Zoology, National Science Museum, Tokyo
3–23–1 Hyakunincho, Shinjuku-ku, Tokyo, 169–0073 Japan
e-mail: takeda@kahaku.go.jp

Abstract A new species of crab in the genus *Achaeus* (Crustacea, Decapoda, Brachyura, Inachidae) is described from a male holotype collected at the Kermadec Islands in the South Pacific. The species, named *A. kermadecensis*, is noticeably small in size among its congeners and most unusual in having very strong gastric and cardiac protuberances.

Key words: *Achaeus*, Inachidae, spider crab, new species, Kermadec Islands, New Zealand, South Pacific.

While examining crabs in the collections of the Museum of New Zealand Te Papa Tongarewa, from the Kermadec Islands, northwest of New Zealand in the South Pacific, we encountered a very small male of a unique spider crab belonging to the family Inachidae. In spite of its small size, the first pleopod is particularly well developed; a distinctive specific character together with exceptionally strong and tall gastric and cardiac protuberances. Examination of the literature indicated that this sole specimen represents a new species in the genus *Achaeus* Leach, 1817, which is composed of no less than 27 Indo-West Pacific species (Griffin & Tranter, 1984) and 7 East Atlantic species (Manning & Holthuis, 1981).

In the following account we describe the new species under the name *Achaeus kermadecensis*, after the type locality.

Achaeus kermadecensis sp. nov.

(Figs. 1–3)

Material examined. One male, holotype (NMNZ CR. 10009) (carapace length, from tip of rostrum to posterior margin of carapace, 4.78

mm; carapace width, across branchial regions of both sides, 3.36 mm), R.V. *Acheron* Bottom Station 307, Kermadec Islands, Raoul Island, between Meteorological Station and Hutchinson Bluff, 4 April 1973, 146–110 m, beam trawl.

Description. Carapace (Figs. 1a, b, 2a, b) elongate-pear-shaped, length 1.42 times of greatest width; median hepatic region drawn to a tall, peak-like protuberance, cardiac region encompassed by and produced into a similarly tall, broad-based, posteriorly biased protuberance, carapace otherwise without prominent protuberances. Dorsal and lateral surfaces more or less completely covered by unevenly sized, mostly round-topped tiny tubercles, lowest and spaced out in flattened area between hepatic and cardiac protuberances, virtually absent in grooves behind hepatic regions and on branchial regions lateral to cardiac protuberance.

Rostrum curving downwards anteriorly to house antennular fossa, rostral lobes blunt, unevenly tuberculate, separated by a notch with a shallow groove posterior to notch narrowing posteriorly, closing at level of eyes. Supraorbital cave flared, arching over eye, roughened dorsally and at edges by uneven, sometimes elongate tiny

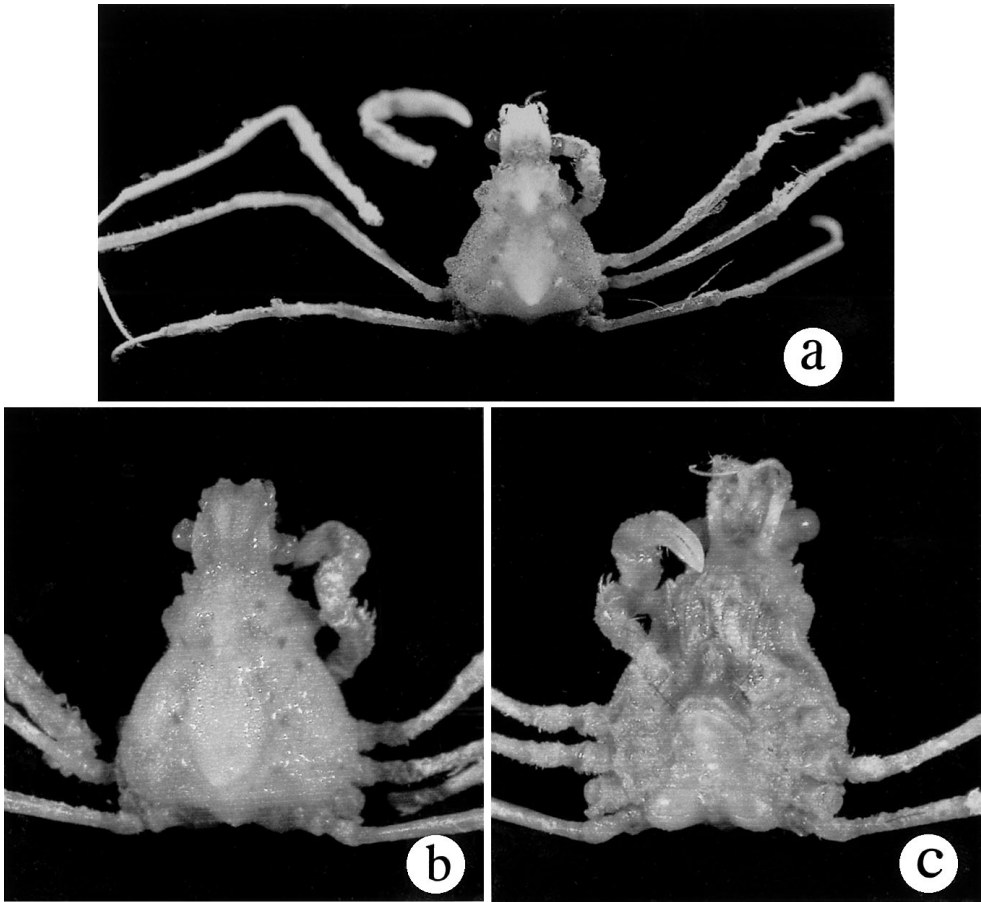


Fig. 1. *Achaeus kermadecensis* sp. nov., holotype, ♂ (NMNZ CR. 10009; 4.78 mm in carapace length and 3.36 mm in carapace width), dorsal (a, b) and ventral (c) views.

tubercles. Eyestalks short, stout (right eyestalk twisted back in holotype), a prominent tubercle protruding dorsally from eye (Fig. 2a, b), a second small tubercle near eye on anterior surface of eyestalk, a third small tubercle between eye and midpoint on posterior surface of eyestalk (Fig. 2c).

Region between eyes and hepatic region constricted, cuticle smooth ventrolaterally, a horizontal, unevenly tuberculate prominence in proto-gastric region produced behind eye, extending posteriorly above hepatic regions. Hepatic regions inflated, with a tubercle anterolaterally in pterygostomial area of inflation almost overwhelmed by uneven, tiny tubercles.

Carapace constricted behind hepatic inflations,

with an almost vertical groove above the constriction running up behind protogastric region, more or less lacking tiny tubercles, petering out short of midline. Anteromedial part of branchial regions behind almost vertical groove, raised to a low, tuberculate hummock, posteromedial branchial regions lateral to intestinal region also vaguely hummocked; branchial regions expanded laterally, only slightly inflated.

A few, very small, straight hairs scattered among tubercles on branchial region, carapace otherwise lacking hairs.

Antennular fossa (Fig. 2c) elongate oval, thin-lipped, edges roughened by tubercles, smooth internally; basal segment of each antennule roughened by tiny tubercles over whole anterior

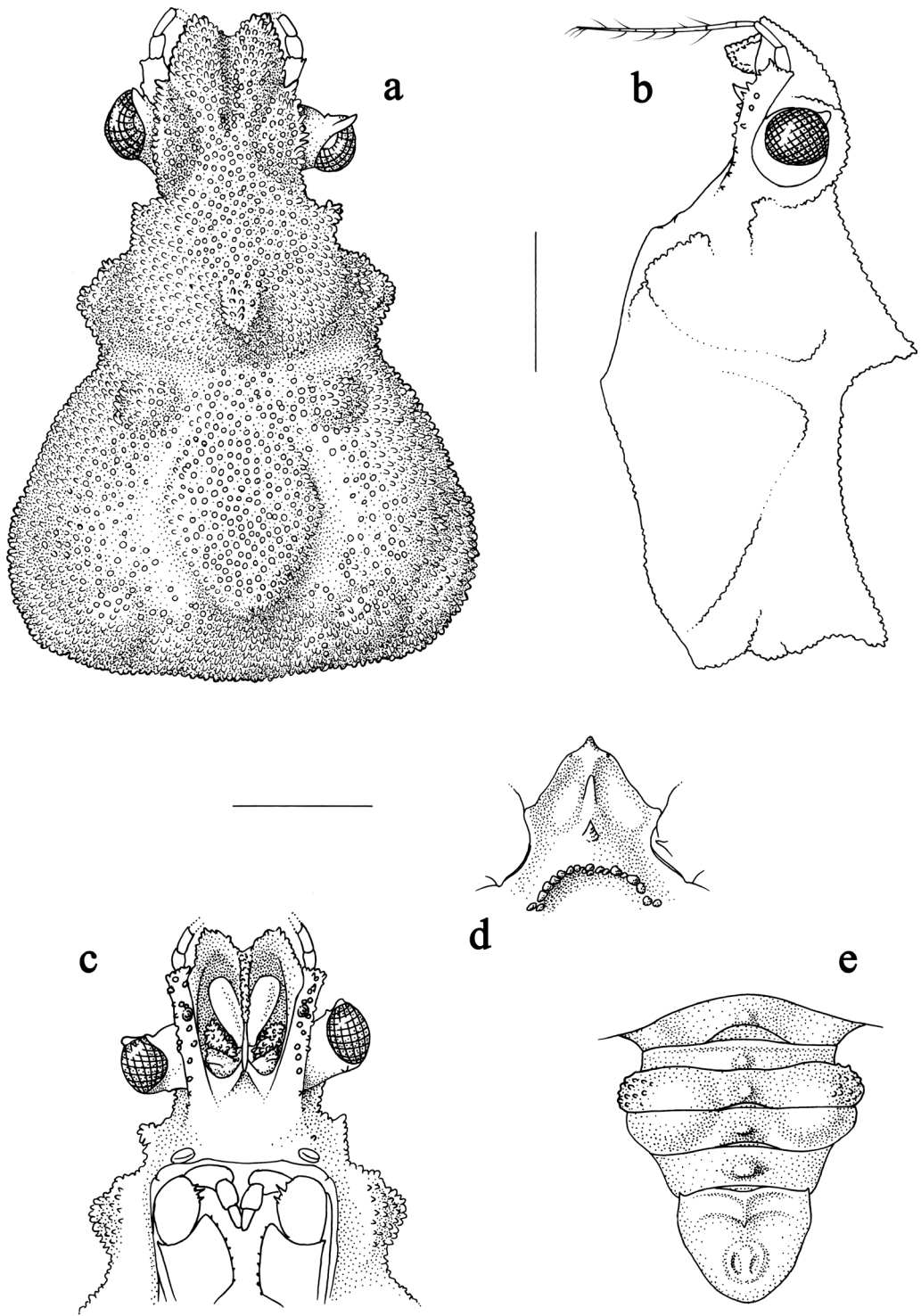


Fig. 2. *Achaeus kermadecensis* sp. nov., holotype, ♂ (NMNZ CR. 10009). a, carapace, dorsal view (antennal flagella not shown); b, carapace, lateral view; c, front, ventral view; d, thoracic sternum between cheliped coxae, ventral view; e, abdomen, posterior (dorsal) view. (Scales=1 mm).

surface, antennular partition drawn downwards into a blunt-tipped blade (Fig. 2b), roughened by low-set tiny tubercles on edges and submarginally.

Thoracic sternum between cheliped coxae (Fig. 2d) with, in anterior half, an oval depression either side of a low, flat-topped, forwardly directed fin-like spine, a small, sharp spine posterior to fin-like spine at base of posterior half of sternum which rises steeply to edge of abdominal fossa; edge of deep abdominal fossa armed with close-set, unevenly sized and distributed tubercles.

Abdomen (Figs. 1c, 2e) with first to fifth segments short, much wider than long, sixth (final) segment slightly wider than long, third and fourth together convex laterally, third widest, together wider than remainder, borders of sixth slightly convex anteriorly, distal margin evenly rounded; third and fourth segments combine to form a round bulge either side of midline (visible as cup-like hollows on ventral surface of abdomen), an area of blunt, tiny tubercles laterally on third; first segment drawn into an inconspicuous median tubercle, second to fifth segments each with a more prominent median tubercle, tallest on fifth segment; sixth with a short median ridge in anterior half rising posteriorly to a small, bluntly pointed spine, raised area in posterior half of sixth segment encompassing a pair of shallow, longitudinal pits adjacent to midline.

Basal antennal articles (Fig. 2b, c) with a strong ventral spine one third from distal margin with, anterior and posterior to it, about 15–20 smaller, unevenly sized and spaced tubercles ventrally and ventrolaterally, smallest most proximal where article becomes continuous with epistome. Antennal flagellum (Fig. 2b) fine, short, little more than one quarter length of carapace, of seven–eight segments, bearing a few very fine hairs. Epistome of similar length and breadth, a tiny tubercle anterior to green gland opening on left side only, cuticular surface otherwise smooth.

Ischium of third maxilliped endopod with dished anterior surface (Fig. 3a), posterior (external) surface (Fig. 3b) with a slight median, longitudinal, shallow, unarmed depression; posterior

two thirds of depression bordered by small spines, about three near joint with basis, a lateral submarginal row of five, two tiny blunt spines proximally on lateral margin, a single tiny spine at distolateral corner of ischium, three small spines along distal margin adjacent to joint with merus, eight to nine small spines in an uneven row median to shallow depression, a scattering of at least 12 additional tiny, blunt tubercles between this row and median margin of ischium, median margin with seven small, well spaced teeth (a double-sized space between distal two and proximal five teeth); merus with lateral margin slightly produced distally, bordered by six well spaced, very small spines, shallow longitudinal groove on external surface one third from median margin, rising medially to support submarginal row of robust, sharp spines, proximal four small, fifth long, sixth very long, seventh short, broad-based, near joint with carpus (palp); carpus with a small, inconspicuous spine distally on medial margin; propodus with two tiny spines in similar position to carpal spine; dactylus without spines. Ischium with numerous fine hairs on medial margin and submarginally on anterior and posterior surfaces, merus with a denser patch of hairs submarginally on anterior surface, three segments of palp armed with similar patches of dense, long, hairs on distal, anterior surfaces (on carpus overlapping those of propodus, on propodus overlapping those of dactylus) to form continuous, distally directed ‘brush’ of hairs; remaining endopod surfaces with very few hairs. Exopod with about three tiny blunt tubercles posteriorly near base, a small, inconspicuous flagellum originating subterminally, lateral edge of exopod with hairs spaced along two thirds of length with a few submarginal.

Chelipeds (Figs. 1, 3c, d) more robust than ambulatory legs but not swollen, about half length of carapace; merus (not illustrated) with a dorsolateral, longitudinal row of small, blunt spines, a second uneven, longitudinal row of larger tubercles ventrolaterally; carpus (Fig. 3c) with several small, blunt, and one larger spine dorsomedially, an interrupted row of tubercles di-

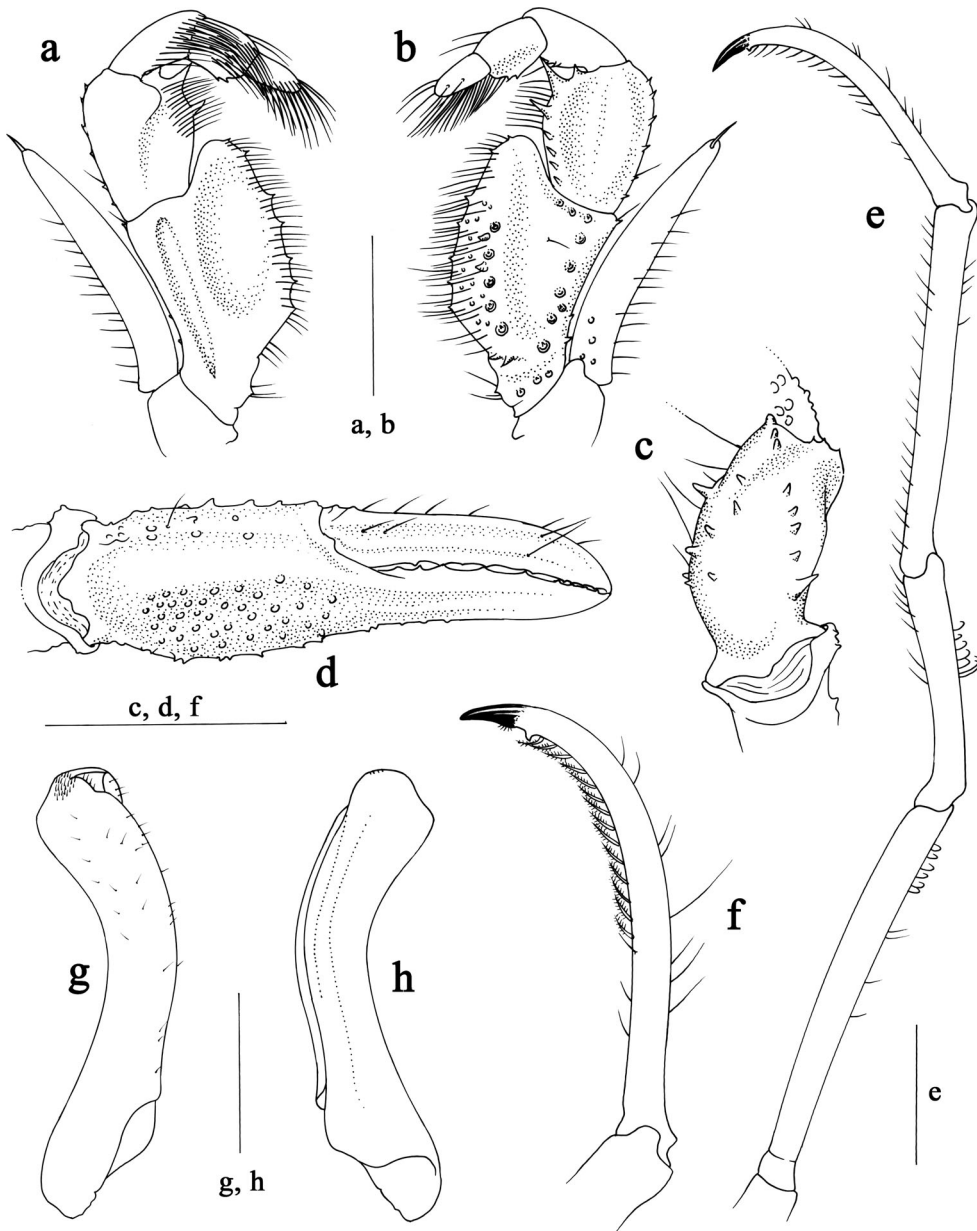


Fig. 3. *Achaeus kermadecensis* sp. nov., holotype, ♂ (NMNZ CR. 10009). a, b, left third maxilliped, anterior (inner) (a) and posterior (b) views; c, carpus of right cheliped, dorsal view; d, right chela, lateral view; e, fourth ambulatory leg left side, posterior view; f, dactylus of fourth ambulatory leg, left side; g, h, right first pleopod, abdominal (g) and sternal (h) views. (Scales. a, b, and g, h=0.5 mm; c, d, f, and e=1 mm).

agonally from dorsal hinge with chela towards lateral hinge with merus, proximal spine much larger than other spines in row; chela (Fig. 3d) slightly compressed, fingers curving medially, palm twice as long as high with inconspicuous

small tubercles dorsally, dorsolaterally, ventrolaterally, ventrally; fingers half length of chela, gaping very narrowly in proximal two thirds, a few ventral tubercles on proximal half of fixed finger; cutting edge of fixed finger with nine, unevenly

distributed, low-profile teeth, of movable finger with eight such teeth, otherwise fingers unarmed, chela with very few hairs, most occurring dorsally and laterally on movable finger.

Ambulatory legs (Fig. 1a) long and slender, first longest, approximately 2.7 times length of carapace; second to fourth (last) decreasing in size, fourth (Fig. 3e) approximately 1.8 times length of carapace. First to third legs with a few curled hairs singly and in groups dorsally on meri, carpi and propodi, curled hairs on merus and carpus of fourth leg (Fig. 3e), straight hairs on legs, scattered on dorsal surfaces and most numerous ventrally on propodi; dactylus of first ambulatory leg nearly straight for most of length, curved near tip, those of second to fourth legs (Fig. 3f) progressively more curved, dactyli of all ambulatory legs each with a single straight or slightly hooked spine ventrally adjacent to darkly pigmented tip of each dactylus, distal to this spine a slight swelling bearing minute hairs, proximal to this spine a ventral row of strong, articulated, plumose setae in distal half to two thirds of dactylus.

First pleopod (Fig. 3g, h) large and robust, distinctly curved around mid length, tip rounded, aperture partly shielded by cuticle of rounded tip, abdominal edge of aperture with a row of tiny hairs, a gathering of minute hairs about lateral edge of aperture, abdominal surface of pleopod with scattered tiny hairs mainly in distal half, otherwise naked.

Colour. Animal preserved in ethanol with no

colour apparent.

Remarks. The triangular shape of the postorbital carapace is not much different from that of the typical *Achaeus* species, but the tall gastric and cardiac tubercles are characteristic of this species. In some species the cardiac region may be more or less raised and tipped with one or two papillate small tubercles, but neither tall nor densely tuberculated as in this species. In *A. kermadecensis* the gastric tubercle is considerably less broad-based or robust than the cardiac tubercle, but the gastric tubercle is at least as tall as the cardiac tubercle and of similar shape in profile, which also distinguishes this species from all others in the genus.

Acknowledgements

We are grateful to the authorities of the Museum of New Zealand Te Papa Tongarewa and the National Science Museum, Tokyo, for the opportunity for Masatsune Takeda to visit Te Papa and Richard Webber to visit the National Science Museum.

References

- Griffin, D. J. G. & H. A. Tranter, 1986. The Decapoda Brachyura of the Siboga Expedition. Part VIII. Majidae. *Siboga-Exp.*, **39** (C4): 1–335.
- Manning, R. B. & L. B. Holthuis, 1981. West African brachyuran crabs (Crustacea: Decapoda). *Smiths. Contr. Zool.*, (306): i–xii+1–379.