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A New Crab of the Genus Trichopeltarion from New Zealand

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Abstract

A new species of crab of the genus *Trichopeltarion* is described from New Zealand. The species is known from Kaipara Heads and the Bay of Plenty south to Foveaux Strait, and from off the Chatham Islands.

THE species described in the present paper first came to light in 1949 when a specimen was discovered in the stomach of a dogfish. This specimen was briefly mentioned by Richardson and Kreft (1949). Subsequently Mr F. Abernethy, collected several specimens during commercial trawling operations in Cook Strait and presented them to one of us (L. R. R.). A preliminary description was prepared. During the Chatham Island Expedition, 1954, further specimens were collected in 330 fathoms, and were written up by the other author (R. K. D.). Discussion between the two present writers showed that we were both working on the same form and it was decided to prepare a joint account. The appearance of this description has been delayed for a variety of reasons, and in the meantime many additional specimens have come to light. The present account can therefore give more morphological and distributional details of what is now known to be one of the characteristic deep water crabs of New Zealand.

Genus TRICHOPELTARION Milne-Edwards, 1880

Bull. Mus. comp. Zool. 8, p. 19.

Type species (monotypy) *Trichopeltarion nobile* Milne-Edwards, 1880.

These crabs are rather confusing to encounter. The trifid rostrum, incised and spined orbit, the decorations of the carapace, the short and snugly folded legs and the bent hands are all suggestive of a majoid crab, a conclusion which in the case of the New Zealand species is strengthened by the fact that the carapace is normally covered by a thin film of mud.

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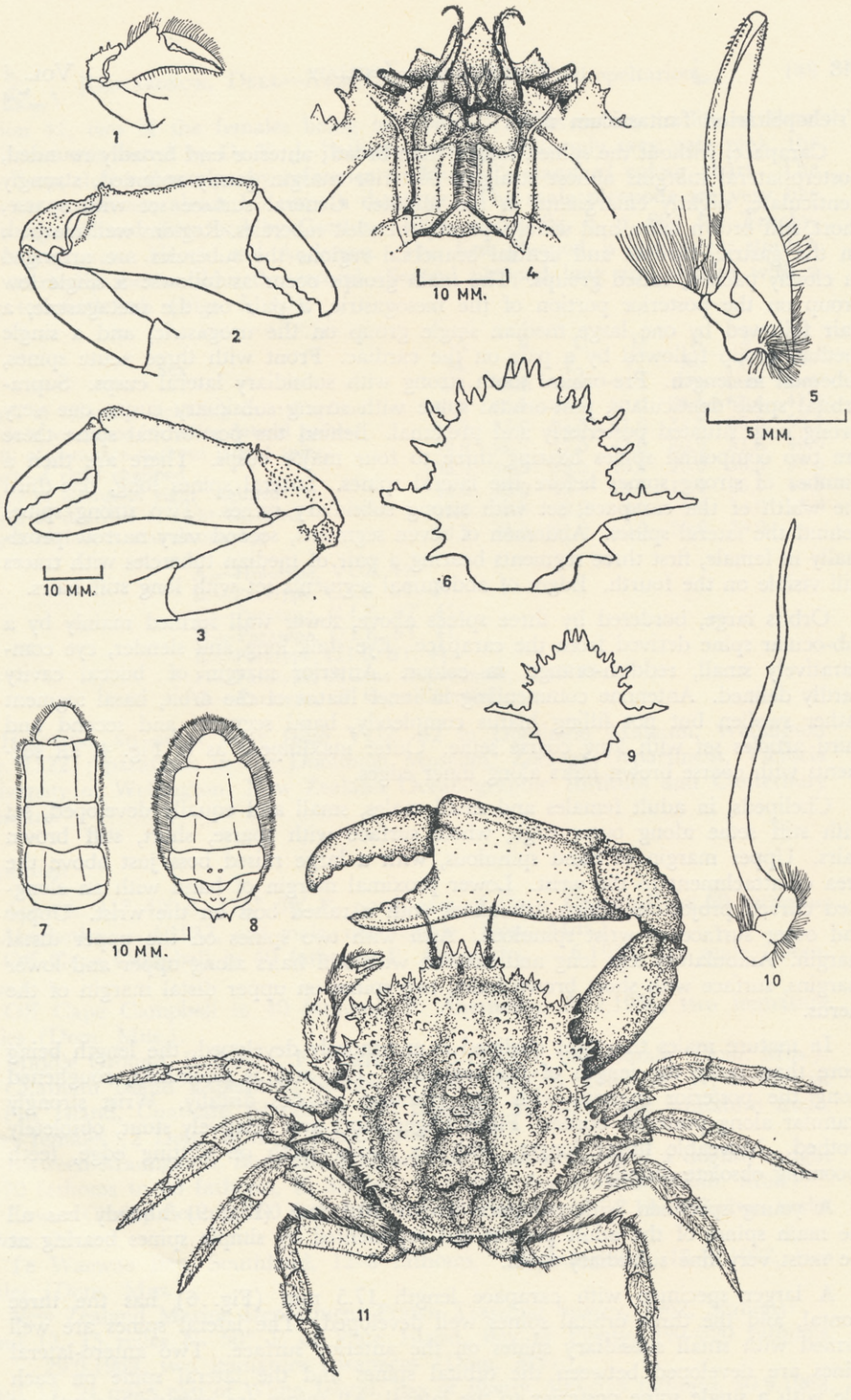
It is not surprising that this and allied crabs have presented major systematic difficulties, since even Milne-Edwards initially placed his genus *Trichopeltarion* in the Oxystoma when he defined the genus on the basis of a single male specimen 66 mm in length, taken off St. Lucia from 151 fathoms during the "Blake" expedition of 1877–79. This specimen described as *Trichopeltarion nobile* has a much swollen carapace, covered with a fine velvet as in *Dromia*, with a median carina and only a few spines on the dorsal surface restricted to marginal areas. The rostrum is trifid, the median spine being shorter than the laterals; the orbit is divided into distinct teeth, and the margin carries both simple and multidentate spines including a prominent polyspinous spine (lateral spine) at the junction of the antero-lateral and postero-lateral borders. Other striking features are the reduction of the epistome and the wedging of the basal element of the antenna into the medial corner of the orbit.

There is no occasion here to trace the lengthy history of the several genera which are now assembled together in the Brachyrhyncha as the Family Atelecyclidae, although some European workers still prefer to include them in a separate tribe, the Corystoidea. At the same time it may be pointed out that the distinctions maintained by such workers as Rathbun (1930, p. 149) between *Peltarion* Jacquinot, 1847, *Trichopeltarion* Milne-Edwards, 1880 and *Trachycarcinus* Faxon, 1893, seem rather arbitrary, as Rathbun herself (1930, p. 165, footnote) indicates.

The new species seems reasonably well placed in the genus *Trichopeltarion* since it possesses transverse orbits, long lateral spines, an orbicular carapace, bearing fine though sparse, short hairs. It also lacks a wing-like projection of the basal antennal segment blocking the inner orbital hiatus. It differs from the type species of *Trichopeltarion* in the equivalence of the three rostral spines, which are flattened, the absence of a median carina and the presence of tubercles over the entire surface of the carapace. The hairs on the carapace although present cannot be said to form "a velvet as in *Dromia*". The absence of such a velvet and the tubercles over the carapace would ally it more with *Trachycarcinus*. However, the general structure of the orbit seems of greater importance than the presence or absence of velvet and the distribution of tubercles, and this former character has influenced us in placing the new species in the genus *Trichopeltarion*. The distinguishing features between *Trichopeltarion* and *Trachycarcinus* are largely based upon the characters of the respective type species and may not prove to be relevant when all the species concerned are considered. Unfortunately the known species of *Trichopeltarion* and *Trachycarcinus* are not well covered in the literature available to us. The species of these two genera which we have been able to trace are as follows (genera largely those in which the original authors placed their respective species):

Trichopeltarion nobile Milne-Edwards, 1880, West Indies, 151 fathoms.
Trichopeltarion ovale Anderson, 1896, off Ceylon.
Trichopeltarion alcocki Doflein, 1903, west of Sumatra in 750 fathoms.
Trachycarcinus corallinus Faxon, 1893, Bay of Panama, 546 and 695 fathoms.
Trachycarcinus spinulifera Rathbun, 1898, off the Delta of the Mississippi, 324 fathoms.
Trachycarcinus glaucus Alcock and Anderson, 1899, off Travancore, 430 fathoms.
Trachycarcinus balssi Rathbun, 1930 (Bull. U.S. Nat. Mus., 152, p. 152 and later 1932), Japan.
Trachycarcinus sagamiensis Rathbun, 1932, Japan.
Trachycarcinus decorus Rathbun, 1945, fossil, Fiji.



Trichopeltarion fantasticum n. sp.

Fig. 1.—Right female chela, to same scale as Figs. 2, 3. Figs. 2, 3.—Right male chela. Fig. 4.—Mouthparts. Fig. 5.—First pleopod. Fig. 6.—Outline of carapace, of young specimen (length 17.5 mm). Fig. 7.—Male abdomen. Fig. 8.—Female abdomen. Fig. 9.—Outline of carapace of young specimen (length 10.2 mm). Fig. 10.—Second pleopod, to same scale as Fig. 5. Fig. 11.—Holotype.

Trichopeltarion fantasticum n. sp.

Carapace, without the spines, longer than broad; anterior end broadly rounded, postero-lateral margins almost straight, posterior margin gently rounded, strongly denticulate, slightly emarginate in the middle. General surface set with sparse, short, stiff brown hairs, and widely spaced, rounded tubercles. Regions well marked. In the gastric, cardiac and central branchial regions the tubercles are arranged in closely packed, raised groups. The main groups occur as follows: a single low group on the posterior portion of the mesogastric, a pair on the metagastric, a pair followed by one large median single group on the urogastric, and a single median group followed by a pair on the cardiac. Front with three acute spines, subequal in length. Pre-orbital tooth strong with subsidiary lateral cusps. Supra-orbital spine denticulate, post-orbital spine with strong subsidiary cusps, one very strong cusp situated posteriorly and proximal. Behind the post-orbital spine there are two compound spines bearing three to four major cusps. There are then a number of strong spines before the lateral spines. Lateral spines long, one-third the width of the carapace, set with strong subsidiary spines. Two strong spines behind the lateral spines. Abdomen of seven segments, second very narrow proximally in female, first three segments bearing a pair of median tubercles with traces still visible on the fourth. Edges of abdominal segments set with long stiff hairs.

Orbits large, bordered by three spines above, lower wall formed mainly by a sub-ocular spine derived from the carapace. Eye stalk long and slender, eye comparatively small, reddish-orange in colour. Anterior margin of buccal cavity hardly defined. Antennae commencing in inner hiatus of the orbit, basal segment rather swollen but not filling hiatus completely, basal segment and second and third articles set with long coarse setae. Outer maxillipeds as in Fig. 4, all segments with coarse brown hairs along inner edges.

Chelipeds, in adult females and small males, small and equally developed, set with stiff setae along outer edge, whole surface with sparse, short, stiff brown hairs. Upper margin of hand spinulous, with a large raised boss just above the area of attachment to the wrist. Lower proximal margin of hand with an elongated curved projection which articulates with a raised boss on the wrist. Upper and outer surface of wrist spinulous. Arm with two spines on the upper distal margin. Ambulatory legs long and slender, with stiff hairs along upper and lower margins, surface with short brown hairs, two spines on upper distal margin of the merus.

In mature males the right cheliped is enormously developed, the length being more than twice the length of the carapace. The arm is smoothish, roughened along the posterior margin, with two granular patches distally. Wrist strongly granular along posterior border. Fixed finger short and relatively stout, obsoletely toothed. Moveable finger longer, with six strong teeth on cutting edge, teeth becoming obsolete distally.

A young specimen with carapace length 10.2 mm (Fig. 9) already has all the main spines of the adult present but represented by simple spines bearing at the most very fine subsidiary teeth.

A larger specimen with carapace length 17.5 mm (Fig. 6) has the three frontal, and the three orbital spines well developed. The lateral spines are well formed with small subsidiary spines on the anterior surface. Two antero-lateral spines are developed between the orbital spines and the lateral spine on each side with a single spine posterior to the lateral. All spines are essentially simple at this growth stage but already bear small subsidiary spines.

Four females and a small male were collected at Chatham Island Expedition

Station 41, two of the females being in "berry". The colour in life of these specimens was noted by Dr E. J. Batham as being uniformly very pale pink, the eggs deep, dull red-orange by reference to Munsell's standard colour chart. The eggs are numerous, about 1.3 mm in diameter. The male pleopods are very like those figured and described by Gordon (1953, p. 51, fig. 6, p. 60) for *Trachycarcinus glaucus* Alcock and Anderson. The first pleopod is straighter, stouter, and markedly shorter than the second. Second pleopod long and slender with a long terminal lash (Figs. 5, 10).

Sex	A M.	B F.	C F.	D F.	E M.	F F.	G M.
	mm	mm	mm	mm	mm	mm	mm
Length of carapace including frontal spines	48.5	43.5	45.0	50.0	26.5	67.4	47.0
Width of carapace including lateral spines	54.5	57.0	61.5	61.0	33.3	86.0	53.5
Width of carapace without lateral spines	39.0	36.5	37.0	43.0	20.9	57.8	40.0
Length of right cheliped	106.0	34.5	38.5	40.5	20.0	58.5	97.0
Length of manus of right cheliped	49.0	15.0	15.7	19.5	10.0	26.0	44.5
Length of dactylus of right cheliped	26.0	6.5	9.0	9.0	5.0	14.0	25.0
Length of fourth ambulatory leg	53.5	43.0	51.0	50.0	29.0	79.0	—

A.—Holotype, VUZ. 42.
B.—Paratype, C.I.E. ST. 41.
C.—Paratype, C.I.E. ST. 41.
D.—Paratype, C.I.E. ST. 41.
E.—Paratype, C.I.E. ST. 41.
F.—Paratype, Marine Department, Haul 14.
G.—Paratype, off Cape Campbell.

Holotype, an adult male from VUZ. 42 in Dominion Museum, Wellington (Cr. 1322); paratypes in the Dominion Museum; Zoology Department, Victoria University of Wellington; New Zealand Oceanographic Institute and Canterbury Museum.

Localities.

Approx. 41° 40′ S, 174° 30′ E, north-east of Cape Campbell in 60 fathoms, F. Abernethy, —.4.1957, one male, one female (Dom. Mus.).

Off Cape Campbell in 40 fathoms, F. Abernethy, —.6.1955, one male (Dom. Mus.).

Off Cape Campbell in 40 fathoms, F. Abernethy, 5.12.1956, two immature males (Dom. Mus.).

Middle Ground, Kaikoura, F. Abernethy, 3.12.1957, one female (Dom. Mus.).

Chatham Island Expedition Station 41, 44° 35.5′ S, 176° 04′ W, south-east of Pitt Island, Chatham Islands in 330 fathoms, 3.2.1954, one immature male, three females (2 Dom. Mus., 2 Cant. Mus.).

Between Maunganui, Bluff and Kaipara Bar, from stomach of a dogfish caught in 70 fathoms to 80 fathoms, F. Shirley, 27.2.1958, five females (Dom. Mus.).

Lower Chalky Sound, 160 fathoms, N.Z. Marine Dept., 12.12.1962, two males (Dom. Mus.).

Te Waewae Bay, Southland, 12–8 fathoms, "Nightingale", 18.12.1962, two males (Dom. Mus.).

New Zealand Marine Department Prawn Trawling Survey, 1962, Stations:

Haul 12, 15 miles N. 50° E of Plate Island, Bay of Plenty, 340–320 fathoms, 29.9.1962, two immature carapaces (Dom. Mus.).

Haul 13, 9½ miles east of White Island, Bay of Plenty, 400–328 fathoms, 30.9.1962, two females (Dom. Mus.).

Haul 14, 8 miles east of White Island, Bay of Plenty, 344–300 fathoms, 30.9.1962, three females (Dom. Mus.).

Stations of Zoology Department, Victoria University of Wellington:
VUZ 42, 41° 32′ 30″ S, 174° 52′ E, Palliser Bay in c. 100 fathoms, 19.1.1956, Holotype male (Dom. Mus.) and three smaller males (Vict. Univ.).

New Zealand Oceanographic Institute Stations:
C.412, 41° 36′ S, 174° 34.5′ E, in 123 fathoms, one female (ovigerous) (N.Z.O.I.).
C.605, 43° 40′ S, 179° 30′ E, in 440–460 metres, 26.4.61, one immature (N.Z.O.I.).
C.690, 42° 33.2′ S, 173° 33.8′ E, in 400–180 metres, 18.6.61, one female (N.Z.O.I.).
C.701 40° 40.4′ S, 173° 32.4′ E, in 180–120 metres, 19.6.61, one immature male, one female (ovigerous) (N.Z.O.I.).
C.705, 42° 27′ S, 173° 37.4′ E, in 180–140 metres, 20.6.61, one female (ovigerous) (N.Z.O.I.).
A.759A, 43° 16′ S, 176° 11′ E, in 192 fathoms, 21.11.62, one female (N.Z.O.I.).
A.759B, 43° 16′ S, 176° 11′ E, in 192 fathoms, 21.11.1962, one male, four females (N.Z.O.I.).
A.760, 43° 11′ S, 176° 09′ E, in 202 fathoms, 21.11.1962, one female (N.Z.O.I.).

The species can therefore be recorded from New Zealand at least from Kaipara on the West Coast and the Bay of Plenty on the east coast to as far south as Foveaux Strait and Fiordland and from deep water off the Chatham Islands. From the Bay of Plenty it has been collected only from depths between 300 and 400 fathoms.

In the region of Cook Strait and the Chatham Rise specimens have been collected from 40 to 330 fathoms, while in southern New Zealand it has been collected rarely in depths between 8 and 160 fathoms. While it is obviously a typical crab from deep water (100 to 400 fathoms) is also obviously occurs not infrequently on the shelf in much shallower depths.

No species of *Trichopeltarion* (nor of *Trachycarcinus*) has yet been recorded from Australian waters. Species of the group will almost certainly be collected there when deeper-water biological explorations are carried out. Until its presence in Australian waters is demonstrated or disproved the zoogeographical relationship of *Trichopeltarion fantasticum* cannot be properly discussed. The relationships of a majority of the members of the New Zealand deep water crab fauna are obviously with Australia.

The present material differs clearly from *T. nobile* in many respects. When the spines are disregarded, the carapace of *T. nobile* is almost circular, the width closely approximating to the length. The median rostral spine is clearly shorter than the lateral spines, about one-half their length. The carapace is carinate, free from adornment excepting on the marginal areas. *T. fantasticum* as well as being only sparsely hairy, has a carapace which is distinctly longer than wide, lacks a carina, has equivalent rostral spines; and is well ornamented on the dorsal surface. Anderson expressed uncertainty in the generic status of his *T. ovale*, but if it still remains a species in *Trichopeltarion*, it resembles the present material in general form and ornamentation, since *T. ovale* has the rostral spines at least of equal length, a carapace longer than wide, and ornamented above much in the manner of *T. fantasticum*. The careful description lacks proportional measurements of such features as the orbital details, and comparison is not possible on such points, but at least *fantasticum* lacks any indication in the female of "four rows of small tubercles on its outer side" such as are described for *T. ovale*. The chelae of *T. fantasticum* are smooth on the outer surface.

Trichopeltarion alcocki Doflein (which Rathbun, 1930, p. 165 considers should be placed in *Trachycarcinus*) looks superficially like *fantasticum* but lacks the strong lateral spines.

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