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Crustacea

SOME DEEP-WATER CRABS (CRUSTACEA, BRACHYURA) FROM NEW ZEALAND

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ABSTRACT

Several crabs are recorded from depths greater than 100 fathoms in New Zealand. *Latreillia australiensis* is recorded for the first time in New Zealand and a new species of *Platymaia* is described. New records are given for *Carcinoplax victoriensis* and *Latreillopsis petterdi*. A list of the species so far recorded from depths greater than 100 fathoms is given.

INTRODUCTION

DURING 1962 and 1963 the New Zealand Marine Department has been carrying out exploratory survey work in connection with a Prawn Survey, mostly in northern New Zealand. Amongst other material collected during this work and presented to the Dominion Museum was a collection of crabs. Some of these represented new species, some new records for New Zealand and others provided new distributional data. The material obtained from depths greater than 100 fathoms is reported on in the present paper together with some other material in the Dominion Museum collections.

SYSTEMATICS

Family: RANINIDAE

Genus: *Lyreidus* de Haan

1841 de Haan, Fauna Japonica, Crustacea, p. 138.

Type species (original designation) *Lyreidus tridentatus* de Haan.

Lyreidus tridentatus de Haan

1841 *Lyreidus tridentatus* de Haan, Fauna Japonica Crustacea, p. 140, pl. 35, fig. 6.

1906 *Lyreidus tridentatus*; Chilton, Trans. N.Z. Inst., 38, p. 266.

1933 *Lyreidus australiensis* Ward, Aust. Zool., 7 (5), p. 377.

1947 *Lyreidus* sp., Powell, Rec. Auck. Inst. Mus., 3 (3), p. 170.

- 1949 *Lyreidus australiensis*: Richardson and Kreft, *Tuatara*, 2 (2), p. 69, figs. 1-4.
- 1949 *Lyreidus tridentatus*: Powell, *Rec. Auck. Inst. Mus.*, 3 (6), p. 371.
- 1955 *Lyreidus tridentatus*: Dell, *Rec. Dominion Mus.*, 2 (3), p. 148.

Only literature relevant to the New Zealand occurrences has been cited above. This species proves to be very common on soft sediments in the Bay of Plenty in depths between 40 and 120 fathoms. Its known geographic range in New Zealand waters is from the Poor Knights to Cape Campbell. Several collections have now been made from slightly deeper than 100 fathoms and Chilton's first New Zealand specimen came from 120 fathoms, but on the whole *Lyreidus tridentatus* seems to be most common near the outer limits of the shelf. The species is now represented in the Dominion Museum by some 60 specimens.

A careful study of the systematics of this species, which is thought to be widely distributed from Japan to Australia and New Zealand is urgently required so that the name to be used for the New Zealand form can be stabilised. This will involve study of Japanese and Australian material and this is not available in this country.

Deep water localities:

Dominion Museum B.S.208, off White Island, Bay of Plenty in 113 to 120 fathoms;

Three miles N.E. of Hicks Bay in 100 to 120 fathoms, N.Z. Marine Dept., 4/4/1963.

Fourteen miles east of Whale Island in 105 fathoms, N.Z. Marine Dept., 3/4/1963.

Family: LATREILLIDAE

Genus: *Latreillopsis* Henderson

1888 Rep. Anomura, Challenger, p. 21.

Type species (monotypy) *Latreillopsis bispinosa* Henderson.

Latreillopsis petterdi Grant

- 1905 *Latreillopsis petterdi* Grant, *Proc. Linn. Soc. N.S.W.* 30, p. 317, pl. 10.
- 1907 *Latreillopsis petterdi*: McCullough, *Rec. Austr. Mus.*, 6, p. 353.
- 1923 *Latreillopsis petterdi*: Rathbun, *Biol. Res. Fish. Expt. F.I.S. Endeavour*, 1909-14, 5 (3), p. 140, pl. 36.
- 1955 *Latreillopsis petterdi*: Dell, *Rec. Dominion Mus.*, 2 (3), p. 147, fig. 1.

The writer recorded this species from New Zealand on the basis of a single very large male specimen from off Cape Palliser collected in 1929. For many years this was the only specimen known from New Zealand waters. Recently several additional specimens have come to light, though none has proved as large as the original. Females do not have the greatly enlarged manus, nor do half-grown males.

It is now known in New Zealand from off the Cavalli Islands to off Banks Peninsula in depths from 100 to 296 fathoms (based only upon the records where the depth is moderately accurately known).

Localities:

- Off Cape Palliser, ?/3/1929 (Dell, 1955);
 35 miles east of Banks Peninsula in 70-200 fathoms, *Taiaroa*, B.
 R. Tunbridge, 27/8/1959 (*Dom. Mus.*).
 Bay of Plenty in 250 fathoms, soft grey mud, N.Z. Marine Dept.,
 13/6/1962.

N.Z. Marine Department Prawn Trawling Stations:

- Haul 5—Between Alderman and Red Mercury Islands in 200
 fathoms, 26/9/1962.
- Haul 7—Between Alderman and Red Mercury Islands in 100
 fathoms, 26/9/1962.
- Haul 21—30 miles E.N.E. of Poor Knights in 280 fathoms,
 11/11/1962.
- Haul 23—23 miles N.E. of Poor Knights in 296 to 276 fathoms,
 11/11/1962.
- Haul 25—33 miles E.N.E. of Poor Knights in 265 fathoms,
 13/11/1962.
- Haul 31—17 miles N.E. of Cavalli Islands in 260 fathoms,
 22/11/1962.

Genus: *Latreillia* Roux

1828 Crustacés de la Méditerranée et de son Littoral, 5, pl. 22.

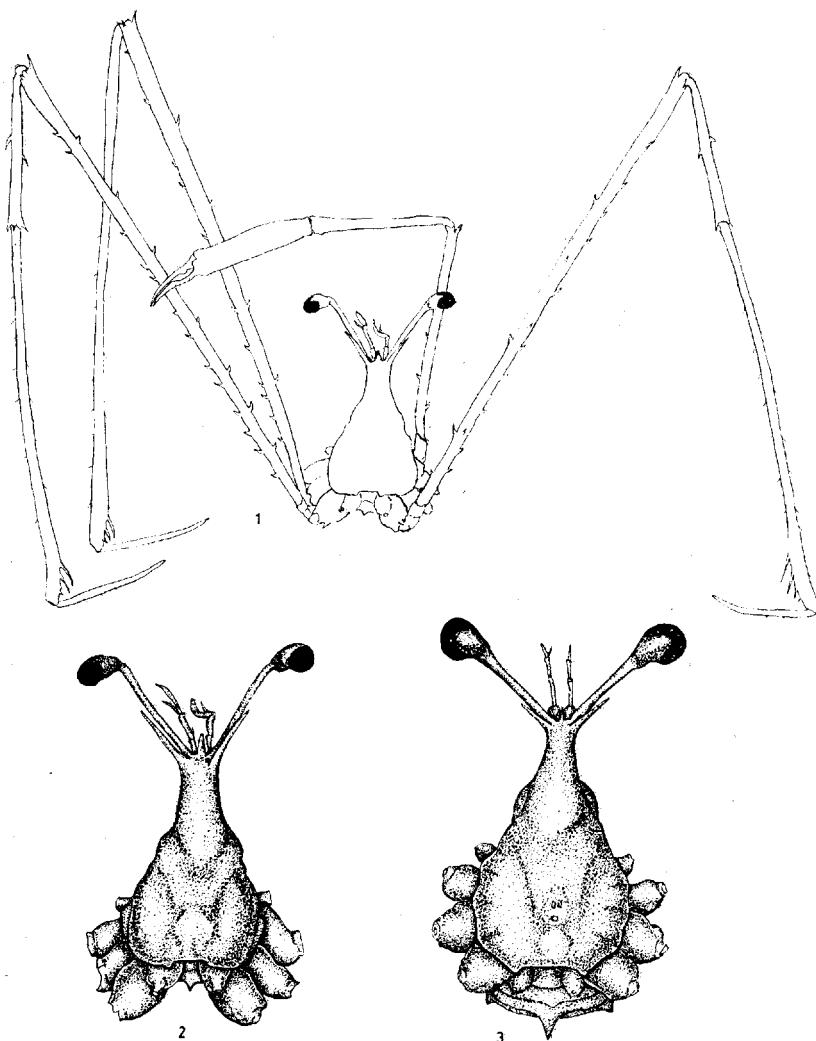
Type species (monotypy). *Latreillia elegans* Roux, Mediterranean.

Latreillia australiensis Henderson, 1888. Figs. 1-3.

- 1888 *Latreillia australiensis* Henderson. *Challenger Rep. Zool.* 27. p.
 24, pl. 2, fig. 4.
- 1900 *Latreillia australiensis*: Whitelegge, *Mem. Austr. Mus.*, 4, p. 165.
- 1923 *Latreillia australiensis*: Rathbun, *Biol. Res. Fishing Expt. F.I.S. Endeavour*, 1909-14, 5, p. 139.

This species can now be added to the New Zealand fauna on the basis of five specimens obtained by the Marine Department investigations in northern New Zealand. It has previously been known from off south eastern Australia in depths from 30 to 150 fathoms.

The New Zealand specimens agree very well with Henderson's original description and figures, except that the chela in the New Zealand male specimens is larger and more inflated than is shown in Henderson's figure. It would appear, however, that Henderson (1888, pl. 2, fig. 4) figured a female. On the evidence available it would appear that the carapace in the male is smaller and proportionately narrower than in the female with the buccal or subhepatic swelling more pronounced in the female. In addition more joints of the abdomen are visible from the dorsal surface in the female, the spine of the third abdominal segment appearing terminal although part of the lateral aspects of the fourth abdominal segment together with the small spine on each side is also visible. In the male the abdomen is much more constricted and the spine on the second abdominal segment is terminal from the dorsal aspect. The differences result in a very different ventral outline in the two sexes.



Latreillia australiensis Henderson

Fig. 1. Male specimen from Haul 26.

Fig. 2. Carapace of male, Haul 26.

Fig. 3. Carapace of female, Haul 26.

Rathbun (1923, p. 140) states that there is considerable variation in the length of the supraorbital spines from two thirds as long, to just as long as the ocular peduncles. In the New Zealand examples the supraorbital spines are only about half as long as the ocular peduncles. There is some variation, however, in the relative length of the rostrum. The last pair of legs is missing in all the specimens but the legs were mostly separated from the bodies when received,

Measurement of male and female from Haul 26:

	<i>Male</i>	<i>Female</i>
Length of Carapace	15.3 mm.	19 mm.
Length of Cheliped	51 mm.	46 mm.
Length of fourth leg	106 mm.	106 mm.
Length of ocular peduncle	4 mm.	4 mm.

Localities:

N.Z. Marine Dept. Prawn Trawling Survey, 1962.

Haul 19, 25 miles N.E. of Arid Island, Bay of Plenty in 150 to 168 fathoms, 9/11/1962 (one ovigerous female);

Haul 26, 12 miles S.E. of Poor Knights Islands in 90 fathoms, 20/11/1962 (one male and one ovigerous female); N.Z. Marine Dept., D7-8, off Doubtless Bay in 86 to 88 fathoms, 7/2/1963.

This is the first record of the genus *Latreillia* from New Zealand waters. Four other species of the genus have been described, *elegans* Roux from the Mediterranean and North Atlantic; *pennifera* Alcock from the Indian Ocean and South Africa; *valida* de Haan from Japan and the Indo-Malayan Archipelago; and *phalangium* de Haan from Japan. Dr J. C. Yaldwyn informs me that the range for *L. australiensis* in Australia is from Bass Strait to New South Wales.

Family: MAJIDAE

Subfamily: *Inachinac*

Genus: ***Platymaia*** Meirs

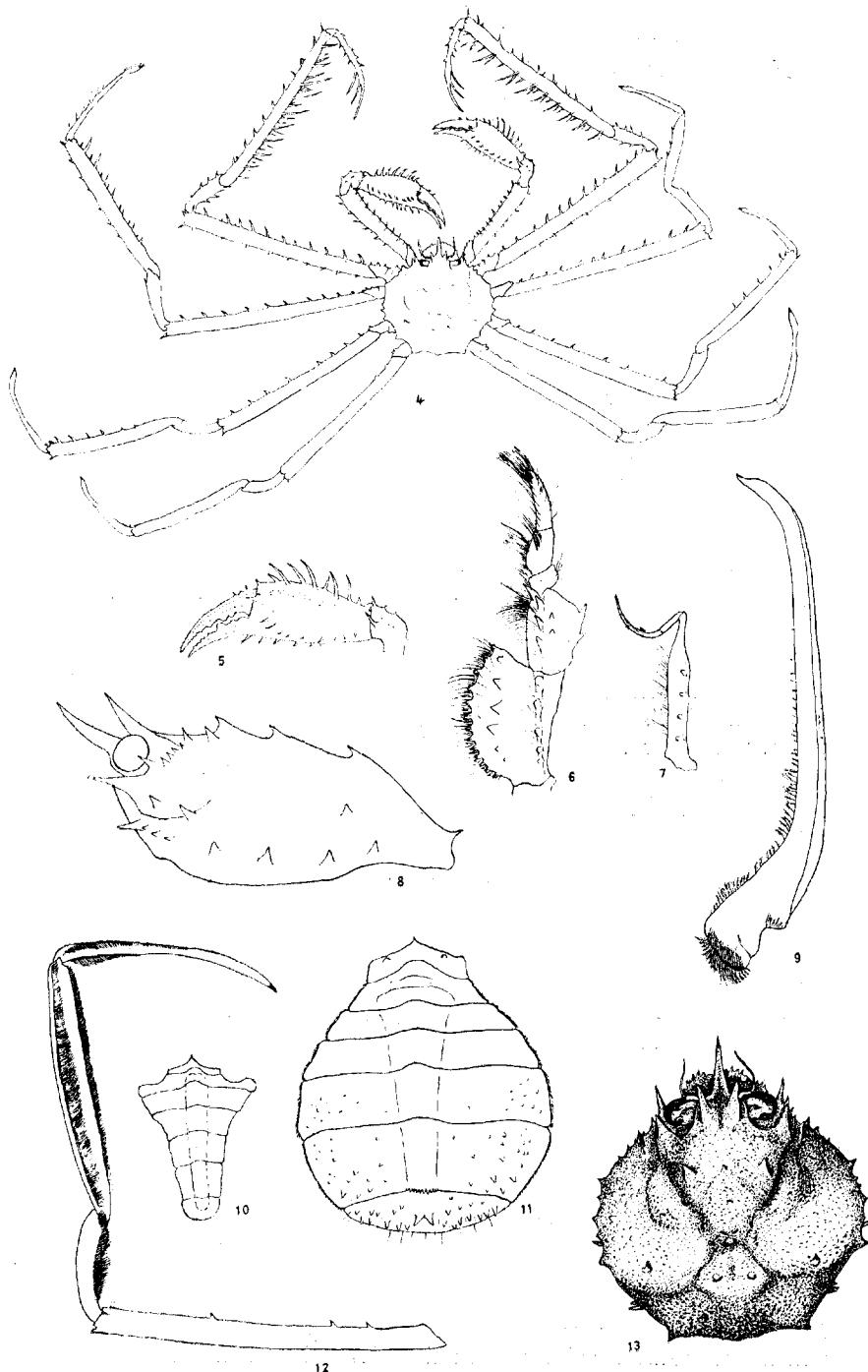
1886 Challenger Rep. Zool., vol. 17, p. 12.

Type species (monotypy) *Platymaia iwyvillethomsoni* Miers, north of the Admiralty Island in 150 fathoms.

Platymaia maoria n.sp. Figs. 4-13.

Carapace subcircular except from rostrum, irregularly granular, with sparse spines. Median spine of rostrum about twice as long as lateral spines, at first running straight forward in continuation of line of carapace, then curving upwards. Lateral spines extending obliquely upwards from carapace, the tips of the central spine and the two lateral spines terminating in a plane roughly parallel with the plane of the abdomen. All three spines long, narrow and regularly tapering. A row of three spines on the mesogastric region, a single central spine on the metagastric, two spines on the cardiac, a single spine on each epibranchial and a large spine and several smaller ones on the mesobranchial regions. Urogastric and posterior parts of the cardiac regions smooth. Rest of carapace except for rostrum sculptured with low granules which are transformed into wrinkles along the boundaries of the cardiac and intestinal regions. Sides of carapace with five medium spines along the anterolateral margin, a single prominent spine on the postero-lateral margin. Orbita defined by the base of the rostrum which is hollowed out laterally, and the large hepatic spines, the lower the most prominent. Hepatic margin of carapace with two prominent spines.

Eyes large with short stalks, the corneae mainly ventrally directed.



Platymaia maoria, n. sp.

- Fig. 4. Holotype male.
- Fig. 5. Right chela of holotype.
- Fig. 6, 7. Left outer maxilliped.
- Fig. 8. Lateral aspect of carapace of paratype female, Haul 22.
- Fig. 9. First pleopod.
- Fig. 10. Male abdomen.
- Fig. 11. Female abdomen.
- Fig. 12. Fourth left walking leg of paratype female, Haul 22.
- Fig. 13. Outline of carapace of holotype, toothed outer edges of maxillipeds shown below rostrum.

Antennae short. Merus of external maxillipede about half as wide as ischium. Internal edge of ischium bearing some 14 strong teeth and numerous coarse brown hairs along inner edge. A row of strong spines runs close to the outer edge of the ischium, this row being continued close to the inner edge of the merus. Outer edge of merus with a second row of strong spines. Epistome bordered by a thin flange.

Chelipeds spinous, somewhat less than twice the length of the carapace; except for the manus and carpus somewhat less robust than first walking legs. Merus strongly spinous, spines arranged in four rows, one along the antero-dorsal margin being the strongest developed, the spines increasing in strength distally; another prominent row postero-dorsally; a relatively weak row antero-ventrally, and a rather obsolete row postero-ventrally. Carpus with one strong spine on inner margin, upper surface sparsely spinous. Manus with three rows of spines, upper margin with a row of long spines alternately bent inwards and outwards; lower margin with a double row of relatively small spines not extending on to fixed finger; a row of well developed spines running medianly on the inner face. Dactylus with three short spines above. Cutting edge of fingers with strong, rounded teeth.

Walking legs long and flattened. First pair 4·4 times the length of the carapace, merus with four rows of spines, the antero-dorsal row the strongest developed, carpus strongly spinous, propodus with two rows on anterior face, a double row on posterior face and a much sparser row on the upper surface, nearer to the posterior margin than the anterior. The antero-dorsal row is very strongly developed, the largest spine, two to three times the width of the propodus, the spines in the row alternately long and short, the long spines increasing in length gradually along the length of the propodus, propodus almost exactly twice the length of the dactylus. Dactylus with three rows of spines, the most distally placed exceedingly long.

Second and third legs with the front edges of the merus spinous, bearing 10 spines on the second pair and 8 on the third. Propodus of second pair with a row of spines on the anterior face and a row of poorly developed spines on the posterior face, the propodus of the third pair spinous along anterior face only. Dactylus of second pair of legs spinous along posterior face only. Dactyli of second, third and fourth pairs of legs attenuated towards distal third, then expanding again to contract towards the tip. Fourth pair of legs lacking spines except for a few small spines along the anterior edge of the merus proximally, and spines at the distal extremities of the merus and propodus.

Male abdomen seven-jointed, the first narrow, bearing a single median tubercle, the second rapidly expanding and subsequent segments gradually and evenly narrowing. Thoracic sterna with two to three small spines. First pleopods almost as long as abdomen, narrow, slowly tapering over most of length, then suddenly tapering distally, bearing fine, feathery hairs proximally. Second pleopod minute.

Female abdomen seven-jointed, first and second segments comparatively narrow, thence rapidly expanding to cover thoracic sterna almost completely, sixth segment by far the longest. First segment bearing a centre spine with a small spine on each side. Proximal half of

sixth and whole of seventh segment bearing small spines, seventh segment with a pair of larger spines in the centre.

Colour when received dull white, carapace with greyish undertones, tips of dactyli of walking legs brown, tips of all long spines pinkish.

On the larger specimens there are faint remnants of hairs near the distal extremities of the propodi of the second, third and fourth pairs of walking legs. On younger specimens fringes of fine hairs are developed along the front edges of the merus, carpus and propodus of each of the second, third and fourth pairs of walking legs and to a lesser extent on the dactyli. In addition, a well marked fringe originates near the upper posterior edge of the propodus and dactylus and lies over the upper surface of the limbs.

In the female specimens the chelipeds are only weakly developed.

MEASUREMENTS (*Holotype Male*)

Length of carapace	.....	.....	57.6 mm.
Width of carapace	.....	.....	51 mm.
Distance between tips of innermost spines of orbit	.....	.....	22.8 mm.
Length of cheliped	.....	.....	99 mm.
Length of merus	.....	.....	40 mm.
Length of manus (upper edge) and dactylus	.....	.....	45.4 mm.
Height of manus (including spines)	.....	.....	23.4 mm.
Length of first leg	.....	.....	257 mm.
Length of merus	.....	.....	95.5 mm.
Length of propodus	.....	.....	89 mm.
Length of dactylus	.....	.....	45 mm.
Length of second leg	.....	.....	258 mm.
Length of merus	.....	.....	98 mm.
Length of propodus	.....	.....	74 mm.
Length of dactylus	.....	.....	53 mm.
Length of third leg	.....	.....	224 mm.
Length of merus	.....	.....	87 mm.
Length of propodus	.....	.....	63 mm.
Length of dactylus	.....	.....	59 mm.
Length of fourth leg	.....	.....	208 mm.
Length of merus	.....	.....	77 mm.
Length of propodus	.....	.....	49 mm.
Length of dactylus	.....	.....	45 mm.

Localities:

New Zealand Marine Department Prawn Trawling Survey Stations, 1962.

- Haul 21—30 miles E.N.E. of Poor Knights in 280 fathoms, 11/11/1962
(one large male paratype.)
- Haul 22—28 miles E.N.E. of Poor Knights in 305 to 340 fathoms, 11/11/1962 (holotype male, one young male paratype, one ovigerous female paratype.)
- Haul 29—20 miles north of Cape Brett in 400 fathoms, 22/11/1962
(four male paratypes, one immature male.)
- Haul 31—17 miles N.E. of Cavalli Islands in 260 fathoms, 27/11/1962
(one young male.)

The species is thus known from an area between the Poor Knights and the Cavalli Islands in depths from 260 to 400 fathoms.

Holotype (Cr. 1364) and paratypes in Dominion Museum, Wellington.

The described species of *Platymaia* are:—

P. wyvillethomsoni Miers, 1886, off Admiralty Islands and southern Australia.

P. turbyncei Stebbing, 1902, off South Africa.

P. alcocki Rathbun, 1916, Central East Africa and India.

P. bartschi Rathbun, 1916, China Sea off southern Luzon, 198 fathoms. oms.

P. fimbriata Rathbun, 1916, off Borneo in 415 fathoms.

P. remifera Rathbun, 1916, between Cebu and Bohol in 175 fathoms.

The three latter species do not appear to have been figured. Judging by the descriptions alone, *maoria* appears closest to *bartschi* Rathbun. It differs from *bartschi* in the following points; there are more spines on the carapace and the surface of the carapace is not smooth (as described for *bartschi*); the chelipeds are relatively shorter in *maoria* and the walking legs are all longer in relation to the width of the carapace than they are in *bartschi*. In addition the first abdominal segment in *bartschi* bears three spines, while in *maoria* there is a single median tubercle. Other differences would probably be apparent if comparison of specimens were possible or if a figure of *bartschi* were available.

P. remifera was described as close to *bartschi* and *maoria* differs from this species in much the same details. From *P. fimbriata* Rathbun, *maoria* differs in not having the carapace covered with spines and in having the legs much less spinous.

From *P. wyvillethomsoni* Miers, which is the closest known form geographically, *maoria* differs in lacking the "outward pointing, transversely-placed spine on the inner sinus of the orbit, or at the posterior end of the preorbital lobe" as described by Rathbun (1918, p. 8). In addition the central rostral spine is longer and the carapace is more triangular in outline.

It may be distinguished from *turbynei* Stebbing, judging by the figures given by Barnard (1950, p. 32, fig. 6), by the presence of additional spines around the orbit. In addition, the distal leg segments in this species are more elongate. The central spine of the rostrum is much more prominent than it is in *alcocki* Rathbun and the carapace is more triangular in outline.

Family: GONEPLACIDAE

Genus: *Carcinoplax* Milne-Edwards 1837.

1837 Milne-Edwards, *Hist. Nat. Crust.*, 2, p. 60.

Carcinoplax victoriensis Rathbun

1923 *Carcinoplax victoriensis* Rathbun, *Biol. Res. Fish. Expl. F.I.S. Endeavour* 1909-14, S, p. 101, pl. 19.

1960 *Carcinoplax victoriensis* Dell, *N.Z. Dept. Scient. Ind. Res. Bull.* 139, p. 4, pl. 1.

The writer recorded this crab from New Zealand for the first time on the basis of specimens taken by the Chatham Island Expedition, 1954, on the Chatham Rise in 220 and 320 fathoms. It can now be recorded from the Bay of Plenty to Chalky Sound in depths from 70 to 400 fathoms, but it is much more abundant between 200 and 400 fathoms. The tips of the fixed and movable fingers are stained dark brown in life but this fades rapidly in preservative. This is undoubtedly one of the typical deep water crabs in the New Zealand area.

Localities:

- Lower Chalky Sound in 160 fathoms, N.Z. Marine Dept., 12/12/1962.
- Twelve miles E.N.E. Marua Point in 70 fathoms, N.Z. Marine Dept., 5/4/1963.
- Three miles east of Ariel Reef, in 78 fathoms, N.Z. Marine Dept., 6/4/1963.

New Zealand Marine Dept. Prawn Trawling Stations:

- Haul 3—Between Alderman and Red Mercury Islands in 250 fathoms, 25/9/1962.
- Haul 7—Between Alderman and Red Mercury Islands in 100 fathoms, 26/9/1962.
- Haul 11—14 miles N. 20° E. of Motiti Island in 290 fathoms, 29/9/1962.
- Haul 12—15 miles N. 50° E. of Plate Island in 340 to 320 fathoms, 29/9/1962.
- Haul 13—9½ miles east of White Island in 400 to 328 fathoms, 30/9/1962.
- Haul 14—8 miles east of White Island in 344 to 300 fathoms, 30/9/1962.
- Haul 16—23 miles N.E. of Cuvier Island in 260 to 270 fathoms, 8/11/1962.
- Haul 22—28 miles E.N.E. of Poor Knights in 205 to 340 fathoms, 11/11/1962.

DISCUSSION

The Brachyura recorded from depths greater than 100 fathoms in New Zealand waters are listed below. The list is incomplete since a number of other species are in the process of being recorded by other workers.

Ebalia cheesemani (Filhol) (Dell 1960)

Lyreidus tridentatus de Haan

Latreillopsis petterdi Grant

Latreillia australiensis Henderson

Trichopeltarion sp. (Richardson and Dell, in press)

Platymaia maoria n. sp.

Leptomithrax richardsoni Dell (Dell 1960)

Leptomithrax longipes (Thomson) (B.S. 189 off east Otago in 120 fathoms; B.S. 191, off east Otago in 250-300 fathoms)

Jacquinotia edwardsi (Jacquinot) (B.S. 189; B.S. 191)

Carcinoplax victoriensis Rathbun

Ommatocarcinus macgillivrayi White (Dell 1960)

Nectocarcinus antarcticus (Jacquinot and Lucas) (B.S. 189, off east Otago in 120 fathoms).

It is perhaps premature to discuss the composition of this deep water fauna but certain trends are discernible. In general much the same elements may be detected in the crabs as were analysed for the much richer molluscan fauna (Dell 1956). There does not appear to be any clear cut boundary between the distribution of shelf and deep water forms. Some shelf forms extend into deep water to varying degrees, e.g. *Ebalia cheesemani* (to 205 fathoms), *Lyreidus tridentatus* (to 120 fathoms), *Leptomithrax longipes* (to 300 fathoms), *Ommatocarcinus macgillivrayi* (to 330 fathoms) and *Nectocarcinus antarcticus* (to 120 fathoms). There is a strong element including *Latreillopsis petterdi*, *Latrellia australiensis*, *Trichopeltarion*, *Platymaia maoria*, *Leptomithrax richardsoni* and *Carcinoplax victoriensis* which are typical deep water forms. Some of these species occasionally extend on to the shelf. *Latreillopsis*, *Latrellia*, and *Carcinoplax* form a very distinctive Australian element in the deep water group in direct comparison with the mollusca. At the same time the Australian element in the shelf and shallow water crabs is much stronger than the similar element in mollusca. *Jacquinotia* is common in shallow water in the Subantarctic Islands of Campbell and the Aucklands. Its occurrence in much deeper water in southern New Zealand demonstrates a similar pattern to that seen in some mollusca (Dell, 1956, p. 188).

ACKNOWLEDGMENTS

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INVERTEBRATE
ZOOLOGY
Crustacea