

New Zealand Journal of Marine and Freshwater Research

Publication details, including instructions for
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Version of record first published: 29 Mar 2010

To cite this article: Craig B. Kensler (1967): The distribution of spiny lobsters in New Zealand waters (Crustacea: Decapoda: Palinuridae), New Zealand Journal of Marine and Freshwater Research, 1:4, 412-420

To link to this article: <http://dx.doi.org/10.1080/00288330.1967.9515216>

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THE DISTRIBUTION OF SPINY LOBSTERS IN NEW ZEALAND WATERS (CRUSTACEA: DECAPODA: PALINURIDAE)

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(Received for publication 26 July 1967)

SUMMARY

Two species of spiny lobsters (marine crayfish) inhabit New Zealand waters: *Jasus edwardsii* (Hutton, 1875), and *J. verreauxi* (H. Milne Edwards, 1851). *J. edwardsii*, the more common species, is present along most rocky coastlines in New Zealand, but is more abundant in the south-west of the South Island and at the Chatham Islands. The species apparently reaches its northern limit of distribution at the Three Kings Islands (34°S) and its southern limit at the Auckland Islands (51°S).

J. verreauxi, the less common species, is almost solely restricted in New Zealand waters to the north-east coast of the North Island. It is uncommon in the west and the south of the North Island, and is rare in the South Island. *J. verreauxi* apparently reaches its northern limit of distribution at the Kermadec Islands (31°S), and its southern limit near Bluff (47°S) in the South Island.

INTRODUCTION

Only two species of spiny lobsters (marine crayfish) are found in New Zealand and off-shore island territory waters. Both are of the wide-spread Southern Hemisphere genus *Jasus*. The valid scientific names, standard common names, and synonyms for them are given in Table 1. The more common species is *J. edwardsii* (Hutton, 1875), the red spiny lobster (Fig. 1), which is reported to be endemic to New Zealand waters (Holthuis 1963). The species is readily distinguished by (a) its reddish-brown colouration, (b) the narrow spiny carapace which is always much shorter than the abdomen, and (c) the characteristic squamiform sculpturing of the dorsal surface of each abdominal somite (Fig. 1). *J. verreauxi* (H. Milne Edwards, 1851), the "packhorse"

TABLE 1—Valid scientific names, synonyms, and standard common names of the species

Valid scientific name	Synonyms	Standard common names
<i>Jasus edwardsii</i>	<i>J. lalandii</i> <i>J. lalandei frontalis</i>	red crayfish, spiny crayfish, common crayfish
<i>J. verreauxi</i>	<i>J. hügelii</i> <i>J. tumidus</i>	packhorse crayfish, green crayfish, smooth tailed cray- fish

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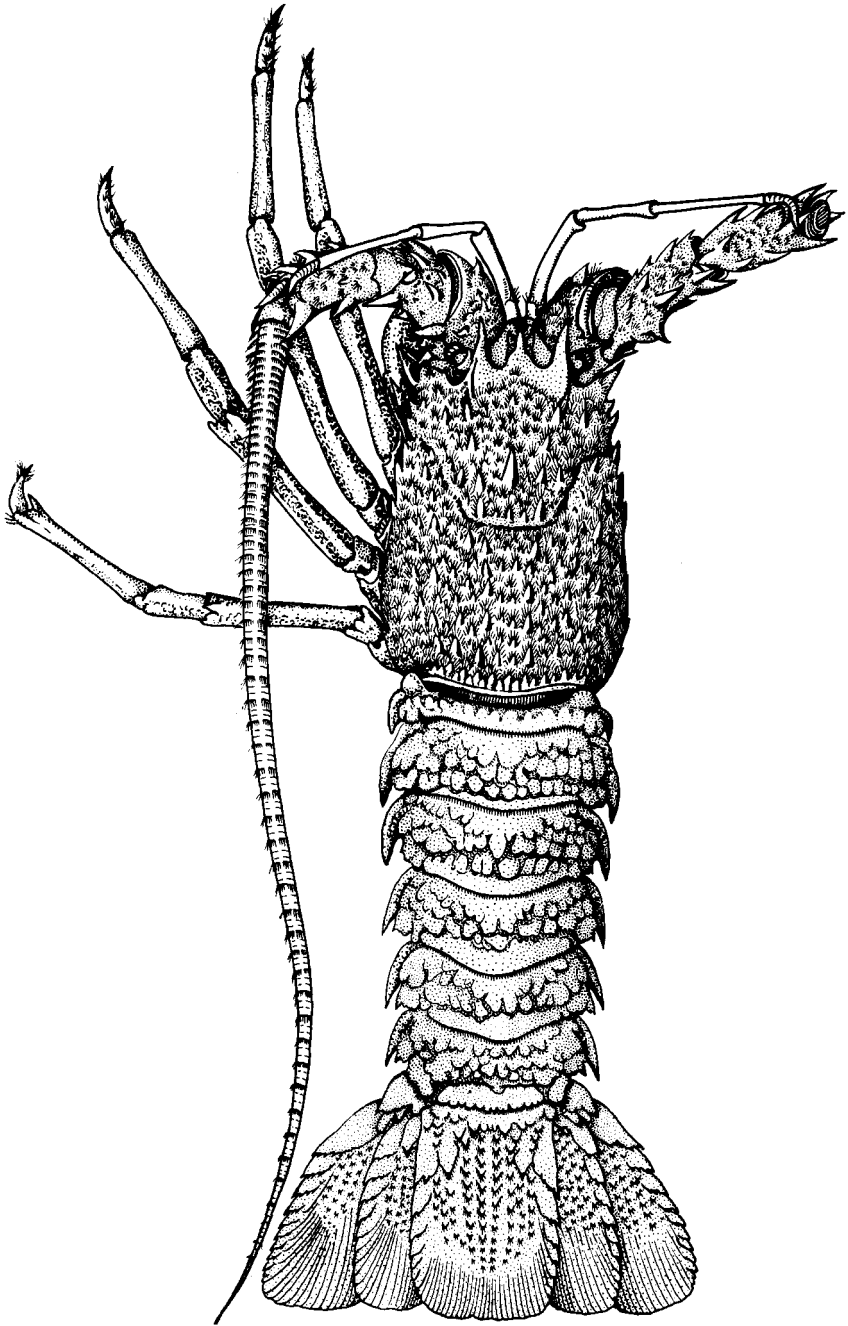


FIG. 1—Mature female *Jasus edwardsii* from Wellington, New Zealand. Total length 25.4 cm measured from tip of rostrum to tip of telson.

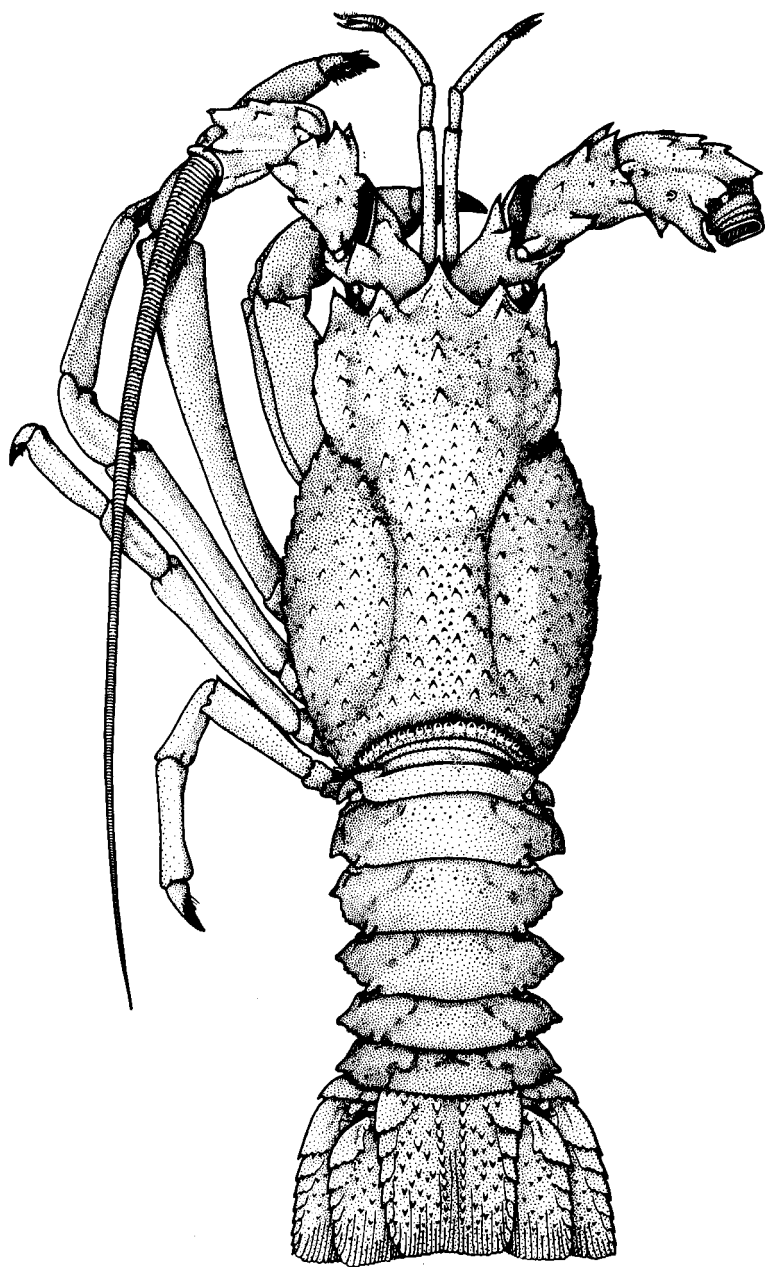


FIG. 2.—Mature male *Jasus verreauxi* from the Coromandel Peninsula, New Zealand. Total length 50.8 cm, measured from tip of rostrum to tip of telson.

spiny lobster (Fig. 2), is the less common species. Outside of New Zealand waters it is found in New South Wales and adjacent coasts, Australia (George 1966). *J. verreauxi* is easily identified by (a) its colouration, which is green in smaller individuals and yellowish-brown in larger specimens, (b) the wide carapace which is only slightly shorter than the abdomen, and (c) the smooth dorsal surface of each abdominal somite (Fig. 2).

The range and detailed distribution of each spiny lobster has not previously been documented, although several papers have stated the presence or the absence of the two species at various localities. Kensler (1967a, 1967b, 1967c) summarised the broad New Zealand distribution of each species by reporting that *J. edwardsii* was present along most New Zealand rocky coastlines, but predominantly in the colder waters of the south South Island and at the Chatham Islands, whereas *J. verreauxi* was almost solely confined to the warmer waters of the north-eastern North Island. The present short paper delineates the entire known range and discusses the detailed distribution of *J. edwardsii* and *J. verreauxi* in New Zealand waters. No attempt is made to explain the distributions in relation to the ecology of each species or to abiotic environmental factors, as such data are not known.

As a rule, adults of the two species are usually not caught together at the same locality, although they may inhabit the same general area of coastline. *J. edwardsii* is almost always caught on a rocky substrate, but at the Chatham Islands it is also found on a sand or shell bottom. *J. verreauxi* is usually caught on a sand or gravel substrate, although smaller (immature) specimens can sometimes be taken around rocky localities.

AREA OF STUDY

The area discussed in this paper (Fig. 3) includes the North and South Islands of New Zealand, and a number of off-shore island territories; the study area extends from the subtropical Kermadec Islands (31°S, 178°W) in the north, to the Chatham Islands (44°S, 176°W) in the east, and to the subantarctic Auckland Islands (51°S, 166°E) in the south and west. A larger scale map of the North and South Islands is shown in Fig. 4, and is used in discussing and outlining the detailed distributions of the two species.

THE DISTRIBUTION OF *J. edwardsii*

NORTHERN DISTRIBUTION

The most northern New Zealand record for *J. edwardsii* appears to be the Three Kings Islands (Fig. 3), where a few live specimens were caught and examined in November 1965 when I was aboard the Fisheries Research Division vessel *Ikatere*, and where in recent years a limited number have been taken by commercial fishermen. *J. edwardsii* has not been reported from the subtropical Kermadec Islands (Chilton

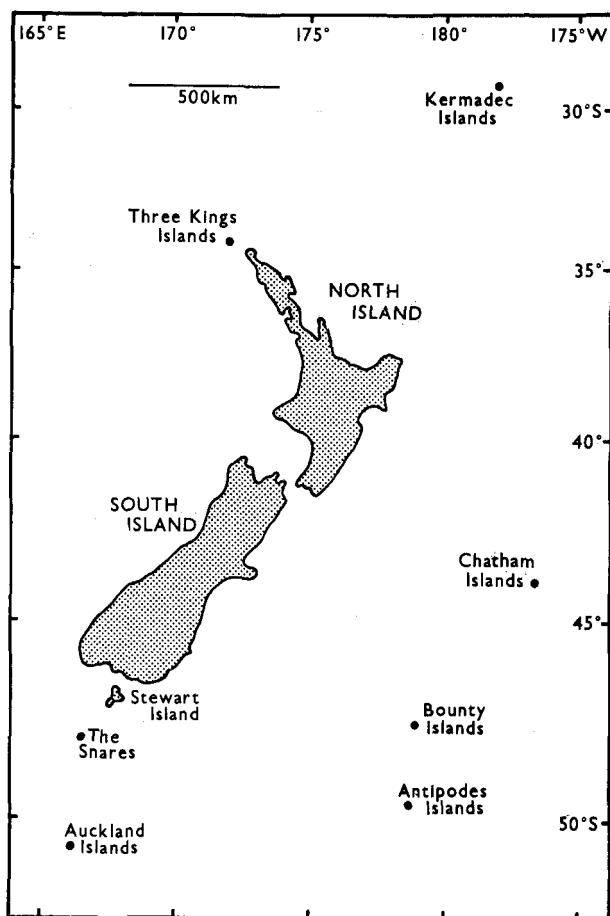


FIG. 3—Map of the entire area discussed in the text, showing New Zealand and a number of off-shore island territories.

1911), about 1,000 km to the north-east of the Three Kings Islands, nor was any evidence of the species or any other member of the Palinuridae noted by Mr J. H. Sorensen (pers. comm.) who thoroughly searched suitable intertidal localities during a ten-month stay on Raoul Island (northernmost of the Kermadec Islands) in 1944.

J. edwardsii is very much more abundant on the east coast than on the west coast of the North Island, New Zealand. It is commonly found along all suitable rocky coastlines on the east coast and, in general, becomes more abundant with increasing distance south, i.e. from North Cape to the Coromandel Peninsula, on to East Cape, Castlepoint, and the Wellington region (Fig. 4). *J. edwardsii* is particularly numerous

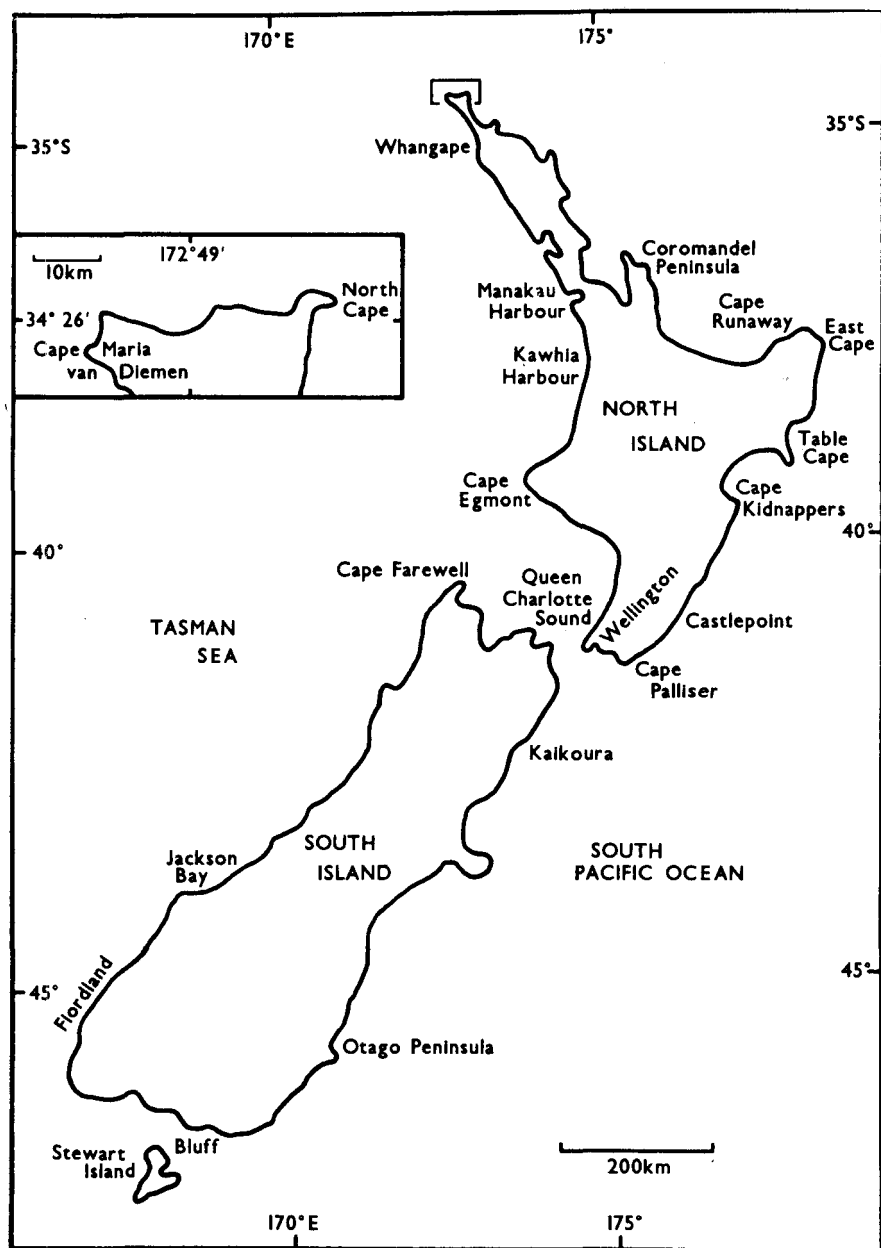


FIG. 4—Map of the North and South Islands, New Zealand, showing localities mentioned in the text.

along coastlines south of Cape Runaway, and reaches its present peak of North Island commercial abundance around the rocky coasts of the Wellington region (Marine Department 1965).

The distribution of *J. edwardsii* is sporadic along the west coast of the North Island (Fig. 4), and comparatively few animals are present. Small stocks only are found around Cape Maria van Diemen, Whangape, Manukau Harbour, Kawhia Harbour, and Cape Egmont.

SOUTHERN DISTRIBUTION

J. edwardsii is very much more common in the South Island than in the North Island, and becomes increasingly abundant further and further south along suitable rocky coastlines of the South Island (Fig. 4), i.e. from Kaikoura to Otago Peninsula on the east coast, and from Cape Farewell to Jackson Bay on the west coast. The species reaches its South Island peak of abundance in the south-western region of the Island, i.e. the area extending from Bluff, including Stewart Island, westward around Fiordland up to Jackson Bay (Fig. 4).

J. edwardsii is also present at the Chatham Islands (Chilton 1911; Young 1926; Kensler, in press) which lie 770 km due east of the South Island (Fig. 3). The species is very abundant at this locality which, since late 1965 when the islands were first fished commercially on a large scale, has grown to be the centre of New Zealand's large and valuable spiny lobster fishery (Kensler, in prep.).

Distributional records of *J. edwardsii* from New Zealand subantarctic islands (Fig. 3) have been reviewed and discussed by Yaldwyn (1958, 1965) who reported the species present at the Chatham, Snares, Bounty, Antipodes, and Auckland Islands, and absent from Campbell Island. Fig. 3 does not show Campbell Island (52°33'S, 169°E) which is about 300 km south-south-east of the Auckland Islands. The Auckland Island record (Yaldwyn 1958) was based on a dried exoskeleton of the abdominal segments and tail fan of *J. lalandei frontalis* (= *J. edwardsii*) found in seal vomit. Since the publication of Yaldwyn's paper it has been suggested that the seal could possibly have caught the *J. edwardsii* specimen further north (i.e. The Snares) and transported it in its stomach to the Auckland Islands, in which case the southern record would be misleading. Although this is a possible explanation it seems unlikely because of the reason put forward by Yaldwyn (1958, p. 123) and in the light of recent additional evidence. In February 1966 I received four specimens of *J. edwardsii* (two immature males and two immature females) which had been caught at the Auckland Islands by a South Island fisherman. It is now certain, therefore, that at least a small number of *J. edwardsii* are present at the Auckland Islands where, in the absence of a positive Campbell Island record, it apparently reaches its southern limit of distribution.

Yaldwyn (1965, p. 331) records the Snares Islands as the most southerly substantiated record for the entire decapod family Palinuridae.

The recent finding of *J. edwardsii* at the Auckland Islands therefore represents a new substantiated southern record for the family.

THE DISTRIBUTION OF *J. verreauxi*

NORTHERN DISTRIBUTION

The northernmost record for *J. verreauxi* in New Zealand waters is from Raoul or Sunday Island (Chilton 1911) (Fig. 3). The record is based on a single small specimen (deposited in the Canterbury Museum, Christchurch) and the dried abdomen of another. Mr J. H. Sorensen (Marine Department) informed me (pers. comm.) that he saw no evidence of the species during his ten-month stay on Raoul Island in 1944.

J. verreauxi appears to be restricted in its New Zealand distribution to the warmer northern waters of the east coast, North Island (Kensler 1967a, 1967b, 1967c). The species is present in limited numbers at Three Kings Islands (Fig. 3), but is commonly found in New Zealand waters only in the region from Cape Maria van Diemen, south-east to Cape Runaway (Fig. 4). Within this region it reaches its present peak of abundance in the small area between Cape Maria van Diemen and North Cape (Fig. 4), where 80% of the total New Zealand 1966 *J. verreauxi* landings were caught (Kensler and Skrzynski, in prep.). The species is present in "patches" or isolated groups along suitable coastlines south from North Cape to the Coromandel Peninsula, and on to Cape Runaway (Fig. 4); this large area accounted for 19% of the total New Zealand 1966 *J. verreauxi* landings (Kensler and Skrzynski, in prep.). It is rarely caught south of Cape Runaway, although a few immature specimens have been taken at Table Cape, Cape Kidnappers, and Castlepoint (Fig. 4), localities where small immature populations are known to occur. Dr R. B. Pike (pers. comm.) informs me that he has never examined a mature specimen from south of Table Cape.

On the west coast of the northern North Island *J. verreauxi* is present only in small isolated groups from Cape Maria van Diemen south to Manukau Harbour (Fig. 4). Only 1.97% of the total 1966 *J. verreauxi* landings were caught in this entire area (Kensler and Skrzynski, in prep.). A few immature specimens have been taken in the vicinity of Cape Egmont (Fig. 4), and an occasional *J. verreauxi* turns up in the Wellington catch of *J. edwardsii*.

SOUTHERN DISTRIBUTION

Until recently *J. verreauxi* had never been reported from any South Island locality, but with the increase in fishing pressure over the last few years, several specimens of the species have been caught in South Island waters. A few immature *J. verreauxi* have been taken by skin divers at the mouth of Queen Charlotte Sound in the Cook Strait region (Fig. 4), and at least one specimen has been caught at Kaikoura (pers.

comm. Dr R. B. Pike). My colleague Mr H. J. Cranfield informs me (pers. comm.) that six immature *J. verreauxi* were accidentally taken in 1966 by a commercial fisherman trawling between Bluff and Stewart Island (Fig. 4). The species apparently reaches its southern limit of distribution near Bluff, as it has never been reported further south at the Bounty, Snares, Antipodes, or Auckland Islands (Yaldwyn 1965).

ACKNOWLEDGMENTS

I wish to thank Dr R. B. Pike, of Victoria University of Wellington, for permitting me to include in this paper his fine drawings of *J. edwardsii* and *J. verreauxi*.

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