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Kermadec Biodiscovery Expedition 2011

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Introduction to the Kermadec Biodiscovery Expedition 2011

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INTRODUCTION

The Kermadec Islands are located midway between Tonga and the North Island of New Zealand. These subtropical islands are the northern-most extension of New Zealand's Exclusive Economic Zone and they are potential stepping-stones in the migration pathways for species between the tropical islands to the north and temperate mainland of New Zealand. Alternatively, the isolation of the Kermadec Islands presents opportunities for vicariant speciation; the nearest islands are Norfolk Island about 1,300 km to the west, the Tongan islands of Minerva Reefs and Ata Island, respectively 650 km and 870 km to the north, Niue 1,500 km to the northeast and northern New Zealand 900 km to the south. The islands were gazetted as a Marine Reserve in 1990 following a proposal by Francis (1985). The territorial waters (12 nautical miles) around the emergent islands together constitute the largest no-take marine reserve in New

Zealand, covering a total area of 748,000 hectares. It is one of only four marine protected areas in the world with all of the five factors that are correlated with measurable positive effects on fish size, biomass, diversity and the number of sharks (Edgar *et al.*, 2014).

The initial proposal to undertake a detailed coastal survey of marine communities in the Kermadec Islands was suggested in late 2007. But it took over three years to assemble the survey team, generate sufficient financial support and secure a suitable research vessel. The resulting expedition on the RV *Braveheart* had a complement of 14 scientists and a photographer, and was titled the *Kermadec Biodiscovery Expedition 2011*. We departed Tauranga on 9 May 2011 and spent a full 15 days at the Kermadec Islands, fortunately during a remarkably long spell of calm weather; however, conditions on the journey to and from the islands challenged the constitution of most of us. The composition of the crew and research team is listed in Table 1.

Table 1. Crew and researchers on board the RV *Braveheart* for the Kermadec Biodiscovery Expedition 2011.

Name	Role	Institution	Specialisation
Tom Trnski	Expedition Leader / Dive supervisor	Auckland Museum	Fishes
Stephen Ullrich	Diver collector	Auckland Museum	Fishes
Ged Wiren	Diver collector	Auckland Museum	Fishes
Stephen Keable	Diver collector	Australian Museum	Crustacea
Mark McGrouther	Diver collector	Australian Museum	Fishes
Mandy Reid	Diver collector	Australian Museum	Molluscs
Warren Chinn	Terrestrial survey	Department of Conservation	Insects
Peter de Lange	Terrestrial survey	Department of Conservation	Bryophytes, lichens and vascular plants
Clinton Duffy	Diver collector	Department of Conservation	Sharks, fish surveys
Richard Robinson	Photographer	depth.co.nz	Underwater photography
Charles Bedford	Diver collector	National Museum of NZ	Fishes
Carl Struthers	Diver collector	National Museum of NZ	Fishes
Vincent Zintzen	Diver collector	National Museum of NZ	Fishes
Malcolm Francis	Diver collector	NIWA	Algae, fishes
Alison Ballance	Diver collector	Radio New Zealand	Science communicator
Matthew Jolly	Skipper	RV <i>Braveheart</i>	
Ashley Mangnall	Engineer	RV <i>Braveheart</i>	
Broughton Lattey	Crew and medic	RV <i>Braveheart</i>	
Gary Melville	Crew and cook	RV <i>Braveheart</i>	
Karl Rogers	Crew	RV <i>Braveheart</i>	

The Kermadec Biodiscovery Expedition 2011 was not the first biological survey of the islands, but it was easily the largest survey of the shallow water (to a depth of 50m) marine communities. In addition to the marine researchers, a botanist and entomologist (a.k.a. ‘the extra-terrestrials’) were invited (Table 1) to document changes in flora and invertebrate fauna compared to preceding terrestrial surveys, and also to survey islands that had been rarely or never surveyed. Interest in biodiversity of the Kermadec Islands stems from their relative isolation, where the marine communities are untouched by human influence so they present a natural laboratory for documenting an unexploited ecosystem. They are also a stepping-stone for marine species migration between the tropics and northern New Zealand, and they present an opportunity to study species dispersal and ecological connectivity.

The following 23 papers in this issue of the *Bulletin of the Auckland Museum* present the results of the Kermadec Biodiscovery Expedition 2011 that was complemented by unpublished data from other recent surveys. The results are stunning: we have significantly increased the known species of coastal fishes and invertebrates, and terrestrial invertebrates at the Kermadec Islands, among which are many new species that are described in this Bulletin. The vascular flora has been well studied and documented but is still yielding a number of new discoveries, including two new endemic species, one described in this Bulletin (*Pittosporum rangitahua*), and a range of ferns, grasses, herbs and orchids new to the islands but found elsewhere in New Zealand and/or the South Pacific. Specimens collected during this expedition helped clarify the taxonomic status of a number of plants resulting in the formal recognition of a new endemic cress, *Lepidium castellanum* (de Lange *et al.*, 2013) and several new combinations for plants found on the islands.

Considering the remoteness of the islands and limited opportunities to visit them, these results may

not be so surprising. Similar results may be expected in any remote area where there has been relatively low sampling effort to document diversity. A highlight has been the recording of 15 new species that are described in this issue of the Bulletin (Table 2), and there are additional species that have been described elsewhere, or evidence gathered during this expedition has justified elevation of taxonomic rank (de Lange *et al.*, 2013; de Lange *et al.*, 2015), while others remain to be described. Finally, new evidence is presented to support multi-directional human migration between New Zealand and the Kermadec Islands (Furey *et al.*, 2015).

Given the large number of additions to the known diversity from this two-week survey, it is clear that we are still in the discovery phase of documenting all of the species in the Kermadec Islands. We expect future surveys will document additional species and, likely, an increasing number of tropical species will be recorded as the effects of global climate change – with the predicted increases in regional sea temperatures and intensity of climatic events – will enhance dispersal from the tropics to the Kermadec Islands, and further south to northern New Zealand.

The publication of this volume has taken longer than anticipated. Most of the contributions were submitted within 14 months of the completion of the survey. Most authors have updated their manuscripts during the subsequent three years, but not all authors had the opportunity to do so. Thus for a few papers, the data presented and literature cited relates to the state of knowledge in late 2012.

The following sections establish the biogeographic setting and summarise previous surveys of the Kermadec Islands of both the marine and terrestrial environments. In addition, the collection sites and methods are described for the marine surveys. An engaging summary of the human and natural history of the Kermadec Islands was recently published by Gentry (2013).

Table 2. New species described in this issue of the *Bulletin of the Auckland Museum*.

Taxonomic group	Taxon	Author(s)	Page reference
Vascular plant	<i>Pittosporum rangitahua</i>	Cameron & Sykes	
Sponge	<i>Suberea meandrina</i>	Kelly <i>et al.</i>	
Hydroid coral	<i>Halecium fijiensis</i>	Watson	
Gastropoda	<i>Nassarius berniceae</i>	Willan & Beechey	
Tanaidacea	<i>Aparatanais tetradonta</i>	Bird	
Tanaidacea	<i>Leptochelia acrolophus</i>	Bird	
Tanaidacea	<i>Metapseudes progenitor</i>	Bird	
Tanaidacea	<i>Paradoxapseudes floppae</i>	Bird	
Tanaidacea	<i>Zeuxo kermadecensis</i>	Bird	
Decapod crustacea	<i>Anachlorocurtus australis</i>	Ahyong	
Decapod crustacea	<i>Athanas mendax</i>	Ahyong	
Decapod crustacea	<i>Gnathophyllum oceanicum</i>	Ahyong	
Decapod crustacea	<i>Nannocassiope neozelandica</i>	Ahyong	
Decapod crustacea	<i>Rhynchocinetes okuno</i>	Ahyong	
Cephalopoda	<i>Octopus jollyorum</i>	Reid & Wilson	

PHYSICAL AND BIOGEOGRAPHIC SETTING

The Kermadec Islands are a remote and widely scattered oceanic archipelago of islands, islets and rock stacks (Figure 1). The islands lie between latitude 29°15'S and 31°21'S and longitudes 177°55'W and 178°50'W (<http://doc.govt.nz/parks-and-recreation/places-to-go/auckland/places/kermadec-islands/>). Geologically they are mostly andesitic volcanic islands resulting from ongoing subduction between the overriding Indo-Australian Plate and the subducted Pacific Plate (Lloyd & Nathan, 1981). As the islands form two broad groupings, a northern cluster and a more widely scattered and distinctly separate southern chain, the islands are sometimes referred as belonging to the Northern and Southern groups. Within the Northern Group the largest of the Kermadec Islands is the volcanically active Raoul Island (2,940 ha, about 520 m above sea level (a.s.l.)). To the northeast lie Nugent and Napier islands, and eight smaller vegetated islands and islets – the Meyer Islands and Herald Islets. About 100 km SSW of Raoul Island is Macauley Island, the largest island of the Southern Group (300 ha, 238 m a.s.l.); roughly circular in shape this island is composed of thick arc tholeiite basalts, overlaid by a complex sequence of interbedded pinkish dacitic tephra, pyroclastic dacitic surge deposits (these often admixed with a heterogeneous assemblage of basalt and coarse grained peridotite xenoliths), and finally further dacitic tephra sequences (Lloyd *et al.*, 1996; de Lange, 2015a). Curtis (38 ha, 137 m a.s.l.) and nearby Cheeseman (8 ha) islands are about 35 km SSW of Macauley Island, and L'Esperance Island (4.8 ha, 70 m a.s.l.) and Havre Rock, which barely breaks the surface at low tide, are about a further 80 km SSW. Also volcanogenic, their geology is briefly described by de Lange (2015b, 2015c).

Collectively the terrestrial biota of the Kermadec Islands has a well-known strong connection to New Zealand (Oliver, 1910; Sykes, 1977; Beever *et al.*, 1996), then the South Pacific and finally northeastern Australia. Discoveries within the cryptogamic flora collected during this expedition have highlighted the role cyclones may play in dispersing propagules from northeastern Australia, New Caledonia and Fiji to the Kermadec Islands (de Lange & Beever, 2015; de Lange & Galloway, 2015). One anomaly is the inclusion of the Kermadec Islands within the 'New Zealand Botanical Region' by Allan (1961). Geologically, they have no relationship to New Zealand, being Pleistocene and Holocene age oceanic islands (Brothers & Martin, 1970; Brothers & Searle, 1970; Doyle *et al.*, 1979; Lloyd & Nathan, 1981; Brook, 1998a). That the terrestrial biota of the Islands has a strong connection to New Zealand is undisputed. However, based partly on the flora and mycobiota discoveries made recently and during this expedition (de Lange *et al.*, 2004; de Lange *et al.*, 2005; de Lange & Beever, 2015; de Lange & Blanchon, 2015; de Lange & Galloway, 2015), it is clear that the islands have stronger relationships with eastern Australia, Norfolk Island, and indeed many other island groups of the South Pacific, than had been appreciated previously (Hooker, 1856; Cheeseman, 1887; Oliver, 1910; Sykes,

1977). We suggest that it is better to regard the Kermadec Islands as oceanic systems whose biota reflects proximity to adjacent land masses and chance dispersals rather than an extension of mainland New Zealand.

The marine biota has affinities with other islands in the Southwest Pacific region. Given the tectonic history of this region, the northern Tasman Sea has supported the same marine communities for the last 78 million years. The large continental block of Zealandia linked the Lord Howe Ridge, New Caledonia, Norfolk Ridge, and continental New Zealand. Subsequently, New Zealand and Tonga became connected through the Kermadec Islands and the adjacent subduction zone (Coleman, 1980). This shared history is best demonstrated by the species that are endemic to the oceanic islands of Lord Howe, Norfolk and the Kermadec islands, for example fishes (Francis, 1991, 1993; Francis & Duffy, 2015).

The Kermadec Islands have a mean sea surface temperature that varies between 17° and 23°C. The eastward-flowing Tasman Front is the dominant current affecting the Kermadec Islands and was first characterised and named by Denham and Crook (1976). The Tasman Front is derived from the southward-flowing East Australian Current (EAC), and is relatively stronger when the EAC is weak, related to variability in the El Niño Southern Oscillation (Ridgeway & Hill, 2009; Hill *et al.*, 2011). The Tasman Front is centred at about 32–34°C and averages 20–25 cm.s⁻¹, but is not a conveyor belt of eastward-flowing water; rather it is best described as a meander with large variations in current directions and velocity (Andrews *et al.*, 1980; Mulhearn, 1987; Sutton & Bowen, 2014). North of mainland New Zealand, the Tasman Front splits to the south and feeds the East Auckland Current and East Cape Current, and their related eddies (Chiswell & Sutton, 2015; Tilburg *et al.*, 2001), and a portion of the Tasman front continues eastward across the Kermadec Ridge. Ultimately both of these branches of the Tasman Front feed into the western portion of the counter-clockwise South Pacific Gyre (Ridgeway & Hill, 2009).

The Tasman Front entrains warm water and larvae (Mullaney *et al.*, 2011) that are potentially transported between the east coast of Australia, Lord Howe, Norfolk and the Kermadec Islands, and northern New Zealand – these islands acting as potential stepping stones in the eastward dispersal of marine species (Trnski *et al.*, 2010). A model of potential exchange of larvae among the Kermadec Islands indicates transport times of between 1 and 10 days, and between the Kermadec Islands and northern New Zealand of between 20 and 50 days (Sutton *et al.*, 2012). The latter is beyond the larval duration of most marine species. This model assumed passive dispersal of larvae; incorporating larval behaviour and swimming into the model may reduce the transit time. Evidence that dispersal occurs in both directions between the Kermadec Islands and northern New Zealand is provided by the observation of endemic Kermadec species in northern New Zealand, and vice versa (Francis, 2012). Based on the dominant influence of the Tasman Front on regional hydrodynamics, the assumption has been that the arrival of tropical species to the Kermadec

Islands is solely from the west (Francis, 1993). However, this may be an over-simplification as there is seasonal southwest-ward flow in the Trade Wind Drift (Ridgeway & Heath, 1975), which may explain the dispersal of crown-of-thorns starfish to the Kermadec Islands from populations to the north (Liggins *et al.*, 2014).

PREVIOUS SURVEYS

HMS *Herald* visited Raoul Island in 1854 under the command of Captain Henry Denham. Naturalists on board were John MacGillivray, his assistant John Milne, and artist Glen Wilson. They collected plants and birds, illustrated fishes, and charted for the first time the islands and the coastal waters around Raoul Island. The plants were deposited at the Royal Botanic Gardens, Kew, and Joseph Hooker published the first paper on the natural history of the islands, identifying 42 vascular plants, four of which were new species, and declared that the botanical affinities were most strong with that of New Zealand (Hooker, 1856).

The HMS *Challenger* arrived at the Kermadec Islands in 1874 but made no landfall. Specimens collected included many deepwater species that were the first, and sometimes only, records of marine foraminifera, sponges, cnidaria, nematodes, polychaetes and fishes from the region (see species listed in Duffy & Ah Yong, 2015). Collections included two trawls cast between Raoul and Macauley Islands in about 900–1,000 m depth, and a third trawl cast north of Raoul Island in about 1,100 m. A large hexactinellid sponge collected by the *Challenger* resides in the collections of the Museum of New Zealand Te Papa Tongarewa.

Thomas Cheeseman, curator of the Auckland Museum, and Percy Smith, Assistant Surveyor-General, joined the August 1887 annexation expedition to report on the "nature and capabilities" of the Kermadec Islands. The vessel SS *Stella* was commanded by Captain John Fairchild. Most of the collections were made on Raoul Island, with brief stops and small collections made on Macauley and Curtis islands. Shortly after the voyage, Smith reported on the geology (Smith, 1887) and Cheeseman on the flora (Cheeseman, 1888, 1892) and fauna (Cheeseman, 1888, 1891) of the islands. Cheeseman described the flora and collected plant specimens that are housed in the Auckland Museum herbarium: 248 vascular plants, 25 mosses and an alga, with many duplicates held at the Kew herbarium. Six new species were described from these collections. Cheeseman agreed with Hooker that the flora had New Zealand affinities with a small influence from regional Polynesia. They reported an abundance of fish, and that the "kahiwa" were larger than in New Zealand (this has been recognised since 1993 as a separate species, *Arripis xylabion*).

The first dedicated scientific expedition to the Kermadec Islands was undertaken by Reg and Sidney Oliver, Tom Iredale, Walter Wallace and Charles Warden. The "Oliver Expedition" landed at Denham Bay on 31 December 1907 on board the *Hinemoa* during her annual servicing trip to the island. They spent over 10 months surveying and collecting at Raoul and adjacent islands, greatly assisted by the resident Bell family.

They collected rocks, plants and animals on land, and dredged and visited the islands off Raoul with the aid of the *Princess Ida*, a 17-foot cutter. The specimens were prepared, photographed and catalogued during their stay. On the return journey on the *Hinemoa*, they landed briefly on Macauley, Curtis and L'Esperance islands. A large number of papers documenting the flora, fauna and geology followed (Iredale, 1910; Oliver, 1910; Gepp & Gepp, 1911; Oliver, 1911a, b, c, 1912; Iredale, 1913, 1914), and other publications are summarised in Gentry (2013). Waite (1910, 1912, 1916) reported 32 coastal fish species based on the Oliver collections, supplemented by collections by Raoul Island residents. A large number of marine molluscs recorded from the Kermadecs were first reported by Berry (1913, 1914, 1916) including several mesopelagic cephalopods that were first described from beach cast specimens collected on Raoul Island.

The Danish research vessel *Galathea* dredged in water 58–85 m deep in 1952 off Raoul Island. Powell (1958) described many new mollusc species from this small number of samples. The *Galathea* also sampled in deeper trench depths, even beyond 8,000 m, and many new species were described (for example: Wolff, 1956; Lang, 1968).

The Ornithological Society of New Zealand supported two expeditions to the Kermadec Islands in the mid-1960s. In 1964 a team of 10 ornithologists, jointly led by Fred Kinsky of the Dominion Museum and Gordon Williams of Lincoln College, and a botanist, entomologist and geologist, sailed to Raoul Island on board the HMNZS *Lachlan*. This expedition was prematurely aborted due to a sudden volcanic eruption at Raoul Island (Edgar *et al.*, 1965). Don Merton led the second expedition with a smaller team of seven, plus a botanist and entomologist. They arrived on board the HMNZS *Inverell* in November 1966 and based their camps on Raoul and Meyer islands. The focus was on recording bird distributions and ecology, the distribution, abundance and impact of introduced mammals, and botanical (Sykes, 1977) and entomological (Watt, 1972, 1975a, b) distributions. Following 11 weeks of research, the many published papers documented the degradation of the islands and generated the impetus to eradicate the introduced mammals from the islands and to manage the many invasive plants (Gentry, 2013).

So far most of the surveys of the islands had concentrated on the terrestrial flora and fauna, which was reasonably well documented by this stage. In March 1984, Howard Choat, Mike Kingsford and David Schiel of the Leigh Marine Laboratory, University of Auckland, spent a week documenting the diversity, distribution and abundance of coastal algae, benthic invertebrate and fish communities at Boat Cove, Raoul Island. Their vessel, the MV *Shiner*, sank in Boat Cove shortly after they arrived and they returned to New Zealand with the assistance of another vessel. They recorded 45 species of fishes and published the first survey of the shallow subtidal zone of any island in the Kermadecs (Schiel *et al.*, 1986).

Other members of the Leigh Marine Laboratory followed to study the subtidal zone of the Kermadec Islands during an active period of research visits to the islands. Roger Grace spent five days in October 1984

at the four island groups (Raoul, Macauley, Curtis-Cheeseman and L'Esperance). Malcolm Francis spent three days at Raoul Island in August 1985. Roger Grace and Malcolm Francis spent a total of 25 days at the four island groups in October 1985; Russell Cole and colleagues spent seven days at Raoul, Macauley and Cheeseman islands in May-June 1992. There were a number of papers published on a range of topics from these voyages, including: diversity and abundance of fishes (Francis *et al.*, 1987; Francis, 1991, 1993); sex change in the endemic limpet (Creese *et al.*, 1990); abundance of marine invertebrates and fishes (Cole *et al.*, 1992); abundance of herbivorous fishes (Cole, 2001).

The earliest published accounts of algae of the Kermadec Islands were by Gepp and Gepp (1911), Cotton (1912) and Chapman (1961). Nelson and Adams (1984) built on this background and produced a list of 144 vouchered species, with some additional unsubstantiated records, based on collections made by Oliver in 1908, Sorenson in 1944, Bergquist and Cooper in 1956, Sykes in 1966, the Museum of New Zealand on board the RV *Acheron* in 1970, 1972, 1975, and 1976, and during the RV *Tangaroa* cruises 1022 and 1132 in 1974 and 1982, respectively.

Fred Brook of the Department of Conservation made four visits to the islands between 1988 and 1995. He subsequently described the molluscan fauna, and coral distribution and abundance (Brook, 1998a, 1999).

In July of 2002, Jonathan Gardner and colleagues sailed to Raoul Island on the RV *Braveheart*. They spent five days at West Chanter and Meyer Islands. They

described shallow invertebrate community structure and water column characteristics (Gardner *et al.*, 2006).

An eight-day visit in November 2004 to Raoul, Macauley and Cheeseman islands on the *Southern Salvor* was jointly coordinated by Victoria University of Wellington, NIWA and the Museum of New Zealand Te Papa Tongarewa. They recorded 53 fish species, 15 of which were new records for the islands (Duffy, 2005; Trnski *et al.*, 2015). They also collected algal samples and sessile marine invertebrates.

Tyler Eddy of Victoria University of Wellington documented reef fish abundance and trophic structure at three sites around Raoul Island over five days in March 2008. He visited the islands as a passenger on the cruise ship *Spirit of Enderby*. He recorded 41 fish species (Eddy, 2011), none of which were new records.

This summary of biodiversity expeditions to the Kermadec Islands focussed on the terrestrial and coastal flora and fauna. There also have been recent deep sea surveys that are not covered here, though the results of these surveys are summarised in Beaumont *et al.* (2012).

COASTAL MARINE SURVEY

Methods

The main goal of the expedition was to document the coastal biodiversity of the Kermadec Islands. To achieve this goal we sampled as many varied habitats as time and sea conditions would allow, and by using a variety of techniques (Table 3). We focussed our efforts on SCUBA diving depths to a maximum of 30 m, but also used traps

Table 3. Description of the collection methods for the marine survey.

Method	Description	Water depth	Target species
Rotenone and hand nets	Up to 4 kg of rotenone powder per site with a maximum of 2 sites per station.	1–30 m	Small fishes <25 cm
Airlift	Uses compressed air (from SCUBA tanks) to suck up interstitial fauna from fine sediment and three dimensional habitats (such as algae). Area sampled per site is about 1 m ² .	1–30 m	Small (<2 cm) invertebrates
Hand collecting	Targets individuals of a range of species to increase diversity coverage not collected by other methods.	0–30 m	Invertebrates and algae
Spear fishing	Larger fishes collected by spear on snorkel or SCUBA diving.	1–30 m	Fishes 10–100 cm
Line fishing	1. Droplines to 600 m. 2. Rod, hook and line to 300 m.	20–600 m	Fishes and sharks
Invertebrate trap	Cylindrical baited traps with 2 cm openings. Can be used in tandem with fish trap and Fathom Plus invertebrate trap.	10–300 m	Small (<5 cm) invertebrates
Fathom Plus trap	Baited traps with larger openings. See http://www.fathomplus.com/specifications.html	10–300 m	Invertebrates 5–50 cm
Plankton net	Mouth area 2 m ² , mesh size 0.8 mm.	0–1 m	Planktonic fish larvae and invertebrate
Vertical set net (gill net)	10 x 30 m set net with 2.5–7.5 cm mesh.	0–80 m	Small-moderate pelagic fishes to 50 cm
Nightlight and dip net	Bright surface lights attract midwater and surface fishes, larvae and invertebrates that are captured in a long-handled net.	0–1 m	Small fish <10 cm and invertebrates
Biopsy samples	Opportunistic sampling of large fish that are then released. Sample usually a small fin clip.	5–50 m	Large fish and sharks

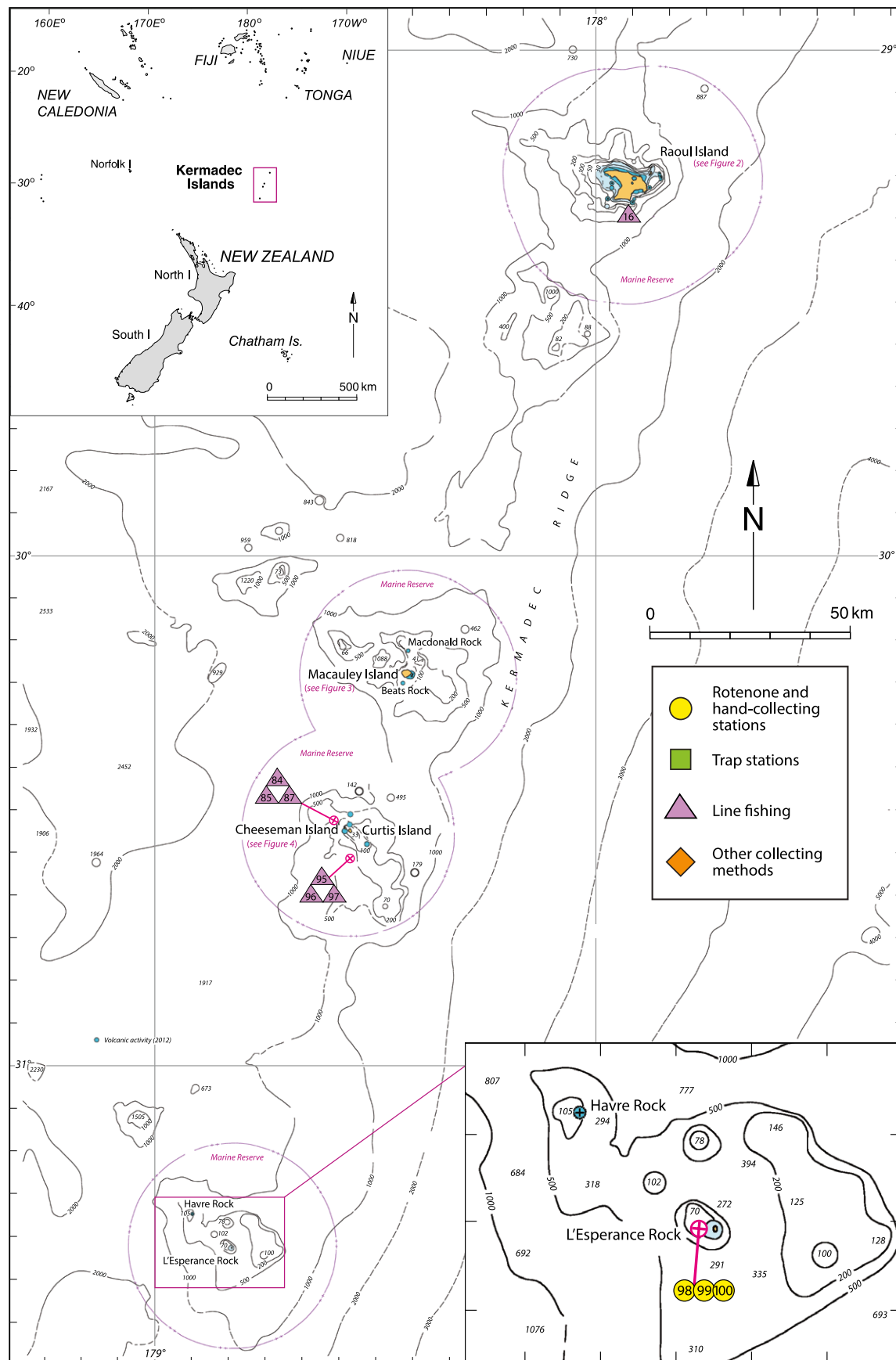
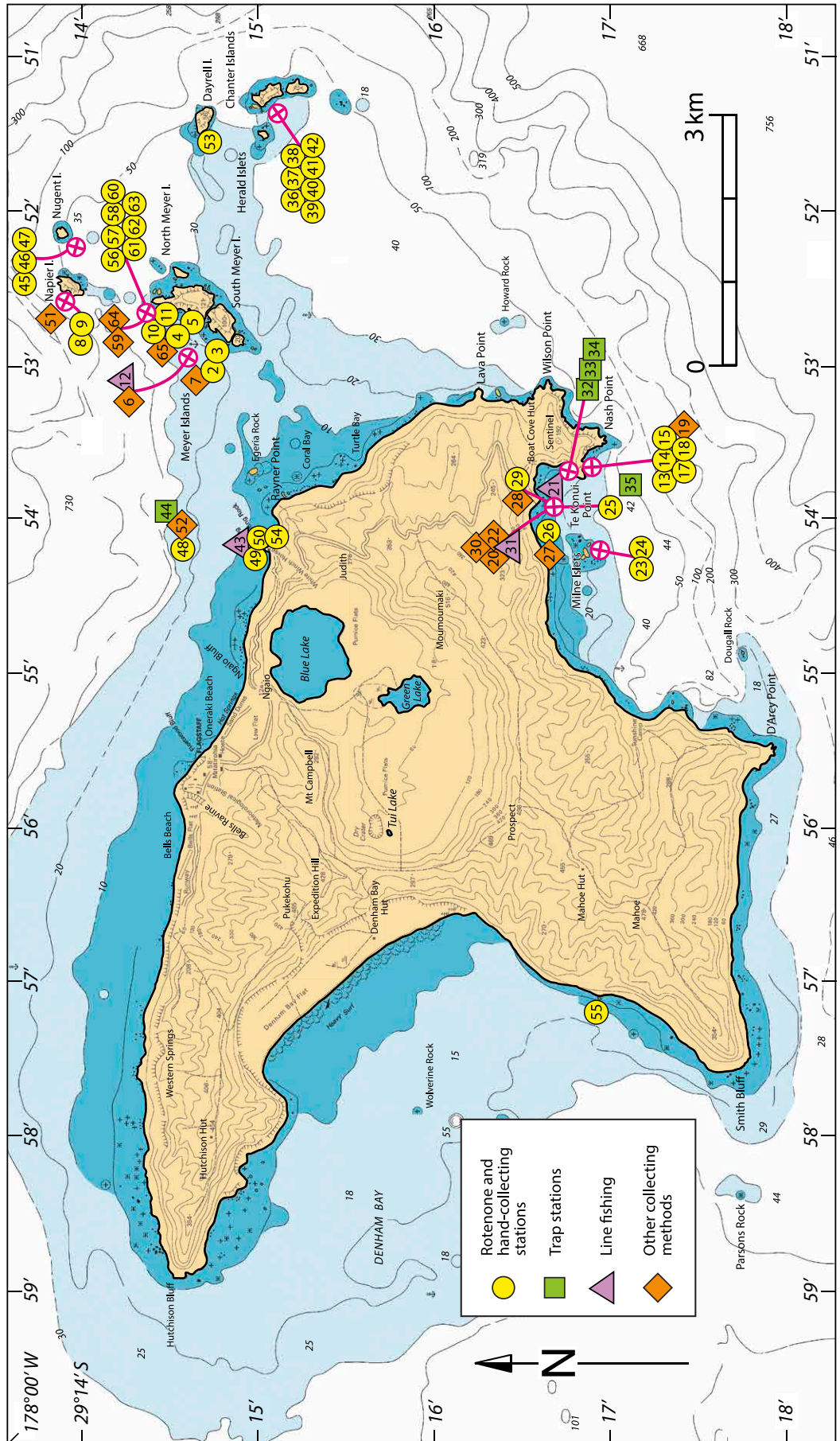


Figure 2. Map of Raoul Island and associated islands showing collecting stations listed in Table 4. Bathymetric depth in metres. The map is based on chart NZ 2225 from Land Information New Zealand.



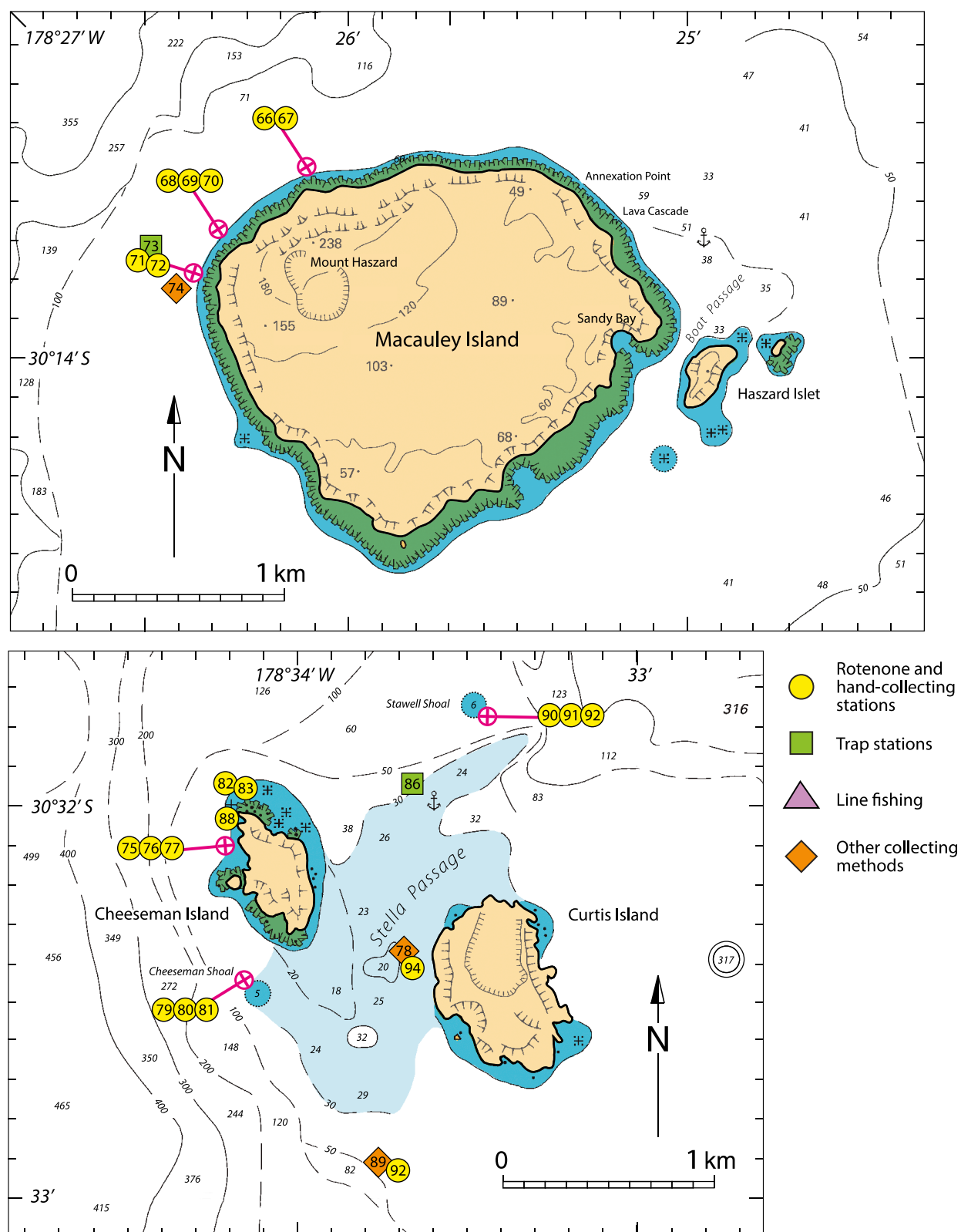


Figure 3. Maps of Macauley Island (top) and (lower) Cheeseman and Curtis Islands showing collecting stations listed in Table 4. Bathymetric depth in metres. The map is based on chart NZ 2225 from Land Information New Zealand.

Table 4. Field station numbers, site details and collection methods of the Kermadec Biodiscovery Expedition 2011. Collectors: AB (A Ballance), AM (A Mangnall), AS (A Smith), CB (C Bedford), CD (C Duffy), CS (C Struthers), GW (G Wren), KR (K Rogers), MF (M Francis), MJ (M Jolly), MM (M McGrouther), MR (M Reid), RR (R Robinson), SK (S Keable), SU (S Ullrich), TT (T Trnski), WC (W Chinn), VZ (V Zintzen). Samples were sorted shortly after capture, and counted, identified and measured on board (in the case of fishes and larger invertebrates), or once they were returned to the laboratory (almost all other groups). Smaller specimens were fixed or preserved on board the RV *Braveheart*, in either formalin, ethanol or dried. Specific details on preservation methods are outlined in the individual papers. Larger specimens were frozen shortly after capture and fixed in the laboratory. Tissue samples were opportunistically collected and are housed at one of the three participating museums.

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-1	11–12 May	18:00–08:00	Found on deck of RV <i>Braveheart</i>	Between Curtis Island and Raoul Island					RR	Pelagic
K2011-2	12 May	11:52–13:35	3 kg rotenone and hand nets; hand collecting	West side of South Meyer Island	29°14.800'S	177°52.906'W	22.4	20–22.4	AB, CD, GW, MF, MM, MR, SK, SU, TT	Vertical rock wall with a few shallow grooves. Margin at base of sand to gravel with emergent rocks
K2011-3	12 May	11:52–13:35	2 kg rotenone and hand nets; hand collecting	West side of South Meyer Island	29°14.789'S	177°52.883'W	12	10–12	AB, CD, GW, MF, MM, MR, SK, SU, TT	Rock-lined gutter about 10 m long, 30 cm deep
K2011-4	12 May	15:42–16:44	3 kg rotenone and hand nets	North side of North Meyer Island	29°14.580'S	177°52.712'W	16.4	14–16.4	AB, GW, MF, MM, RR, SU, TT	Vertical rock wall and boulders with a bottom of cobble and small rocks
K2011-5	12 May	16:40–17:05	Hand net and hand collecting	West side of North Meyer Island at Department of Conservation Landing site	29°14.674'S	177°52.688'W	1	0–1	GW, TT	Intertidal rockpools
K2011-6	12 May	20:30–22:00	Night light and dip net	North side of North Meyer Island, from deck of RV <i>Braveheart</i>	29°14.614'S	177°52.903'W	21	0–0.5	MR, SK	
K2011-7	12 May	21:00–22:50	Rod, hook and line	Found on deck of RV <i>Braveheart</i>	29°14.594'S	177°52.918'W	21	21	CD, KR	
K2011-8	13 May	09:00–10:05	3 kg rotenone and hand nets	SW side of Napier Island	29°13.985'S	177°57.570'W	22.4	18–22.4	AB, GW, MM, SU, TT	Steep rock wall with crevices and attached invertebrate coverage
K2011-9	13 May	09:30–09:50	3 kg rotenone and hand nets	SW side of Napier Island	29°13.985'S	177°57.570'W	12	10–12	GW, TT	Steep rock wall with crevices and attached invertebrate coverage. Two vertical gutters with a deep bowl at base. This site not found by second group of divers so there were few fish collected.
K2011-10	13 May	12:20–13:35	3.5 kg rotenone and hand nets	NW corner of North Meyer Island	29°14.499'S	177°52.673'W	15.5	13.5–15.5	GW, MF, MM, SU, TT	Sheer rock walls, boulders and cobble. Gutters and steep drop offs. Many Galapagos sharks: 12 at end of dive.

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-11	13 May	16:00–16:55	2 kg rotenone and hand nets	NW side of North Meyer Island	29°14.674'S	177°52.688'W	1.4	0–1.4	GW, MM, SU, TT	Rockpools. One rockpool about 20 m long, 1 m wide, max depth 1.3 m. Second rockpool figure 8 shape, about 2.5 m long, max width 1.2 m, max depth 1.4 m.
K2011-12	13 May	19:50–21:30	Rod, hook and line	From deck of RV <i>Braveheart</i>	29°14.613'S	177°52.904'W	22.5	22.5	AM, CD	Line fishing for sharks
K2011-13	14 May	09:05–10:42	3 kg rotenone and hand nets	Raoul Island, south side of Te Konui Point	29°16.384'S	177°55.580'W	27	22–27	AS, CB, CS, GW, MM, SU, TT, VZ	Rock pinnacle about 10x5 m and 4m high. Encrusted with corals, anemones, turf and tufting algae
K2011-14	14 May	09:30–10:42	3 kg rotenone and hand nets	Raoul Island, south side of Te Konui Point	29°16.384'S	177°55.580'W	27	10–15	AS, CB, CS, GW, MM, SU, TT, VZ	Sheer rock wall encrusted with invertebrates. Some small crevices and overhangs.
K2011-15	14 May	09:07–09:54	Hand collecting for invertebrates	Raoul Island, south side of Te Konui Point	29°16.384'S	177°55.580'W	27	5–21	MR, SK	Base of sheer rock wall with rubble and coarse sand base. Wall encrusted with invertebrates and tufting algae.
K2011-16	14 May	09:30–14:00	Dropline: 600 m float line, 25 hooks	East of Raoul Island	29°17.997'S	177°54.434'W	350	350	CD	
K2011-17	14 May	15:00–16:00	3 kg rotenone and hand nets	Raoul Island, south side of Te Konui Point	29°18.541'S	177°53.744'W	22	18–22	CB, CS, GW, MM, SU, TT, VZ	Boulder 10–12 m diameter with deep overhangs. Rotenone spread around base. Wall encrusted with invertebrates and tufting algae.
K2011-18	14 May	15:25–16:30	3 kg rotenone and hand nets	Raoul Island, south side of Te Konui Point	29°18.541'S	177°53.744'W	11	7–11	CB, CS, GW, MM, SU, TT, VZ	Vertical rock wall with crevices and holes, encrusted with invertebrates.
K2011-19	14 May	14:55–15:30	Airlift on SCUBA	Raoul Island, south side of Te Konui Point	29°18.541'S	177°53.744'W	21	21	MR, SK	Base of boulders with coarse sand and gravel, tufting algae.
K2011-20	14 May	19:00–21:00	Night light and dip net	Raoul Island, Boat Cove. RV <i>Braveheart</i> anchorage.	29°16.714'S	177°53.883'W	20	0–0.5	AM, KR, MR, SK	
K2011-21	14 May	21:00–21:20	Rod, hook and line	Raoul Island, Boat Cove. RV <i>Braveheart</i> anchorage.	29°16.714'S	177°53.883'W	20	0–20	CD	
K2011-22	15 May	07:50–08:00	Spear gun	Raoul Island, Boat Cove. RV <i>Braveheart</i> anchorage.	29°16.779'S	177°53.841'W	18	1–2	MJ	
K2011-23	15 May	09:30–10:15	3 kg rotenone and hand nets; hand-collecting for invertebrates	Raoul Island, Milne Islets	29°16.942'S	177°54.171'W	27	22–27	CB, CS, GW, MM, MR, SK, SU, TT, VZ	Base of vertical rock wall. Rocks, cobble and coarse sand at base. Tufting algae.
K2011-24	15 May	09:55–10:35	3 kg rotenone and hand nets	Raoul Island, Milne Islets	29°16.942'S	177°54.171'W	13	6–13	CB, CS, GW, MM, SU, TT, VZ	Vertical wall encrusted with invertebrates. Shallow vertical groove and a few small holes.

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-25	15 May	14:20–15:40	3 kg rotenone and hand nets	Raoul Island, Boat Cove	29°16.792'S	177°53.829'W	22	20–22	CB, GW, MM, SU, TT, VZ	Sand with occasional rock outcrops.
K2011-26	15 May	09:30–10:30	Hand collecting for invertebrates	Raoul Island, Boat Cove near Milne Islets	29°16.735'S	177°54.331'W	5	5	CD	
K2011-27	15 May	14:30–15:50	Hawaiian sling and spear gun	Raoul Island, Boat Cove near Milne Islets	29°16.735'S	177°54.331'W	5	2–5	CD, CS	
K2011-28	15 May	16:00–17:00	Airlift on SCUBA	Raoul Island, Boat Cove	29°16.67'S	177°53.71'W	10	10	SK	
K2011-29	15 May	16:00–17:00	Hand collecting for invertebrates	Raoul Island, Boat Cove	29°16.67'S	177°53.71'W	10	10	AB, MF, MR	
K2011-30	15 May	20:30–21:00	Night light and dip net	Raoul Island, Boat Cove. RV <i>Braveheart</i> anchorage.	29°16.792'S	177°53.829'W	20	0–0.3	MM, TT	
K2011-31	15 May	20:45–22:30	Rod, hook and line	Raoul Island, Boat Cove. RV <i>Braveheart</i> anchorage.	29°16.792'S	177°53.829'W	20	2–20	CD	
K2011-32	15–16 May	16:00–09:00	Fathom Plus and invertebrate traps; trap 8	Raoul Island, Boat Cove	29°16.901'S	177°53.55'W	10	10	AM, MJ, MR, SK	
K2011-33	15–16 May	16:00–09:00	Fathom Plus and invertebrate traps; trap 2	Raoul Island, Boat Cove	29°16.895'S	177°53.55'W	20	20	AM, MJ, MR, SK	
K2011-34	15–16 May	16:00–09:00	Fathom Plus and invertebrate traps; trap 6	Raoul Island, Boat Cove	29°16.890'S	177°53.55'W	20	20	AM, MJ, MR, SK	
K2011-35	15–16 May	16:00–09:00	Fathom Plus and invertebrate traps; trap 10	Raoul Island, Boat Cove	29°17.234'S	177°53.939'W	50	50	AM, MJ, MR, SK	
K2011-36	16 May	09:45–10:40	Hand collecting for invertebrates	Herald Islands, west side of North Chanter Island	29°15.140'S	177°51.301'W	23.9	23.9	CD	
K2011-37	16 May	10:10–11:20	4 kg rotenone and hand nets	Herald Islands, west side of North Chanter Island	29°15.098'S	177°51.353'W	23.6	21–23.6	AB, CB, CS, GW, MM, SU, TT, VZ	Sandy patch with coarse gravelly coral sand surrounded on two sides by rocks and plate corals and a few massive corals.
K2011-38	16 May	10:30–11:45	2 kg rotenone and hand nets	Herald Islands, west side of North Chanter Island	29°15.098'S	177°51.353'W	12	1–12	AB, CB, CS, GW, MM, SU, TT, VZ	Base of vertical wall with deep crevices. Bottom of rocks and boulders.
K2011-39	16 May	10:15–11:00	Hand collecting for invertebrates	Herald Islands, west side of North Chanter Island	29°15.098'S	177°51.353'W	21	21	MR, SK	
K2011-40	16 May	10:27–10:58	Hand collecting for invertebrates	Herald Islands, west side of North Chanter Island	29°15.098'S	177°51.353'W	12	12	MR, SK	

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-41	16 May	14:40–15:40	3 kg rotenone and hand nets	Herald Islands, west side of North Chanter Island	29°15.156'S	177°51.316'W	26	24–26	CB, CS, GW, MM, SU, TT, VZ	Sand with occasional rock outcrops, fringed with emergent rocks.
K2011-42	16 May	14:40–15:04	Hand collecting for invertebrates	Herald Islands, west side of North Chanter Island	29°15.098'S	177°51.353'W	10	10	AB, SK	
K2011-43	16 May	17:55–22:30	Rod, hook and line from deck of RV <i>Braveheart</i>	Raoul Island, north of Fishing Rock	29°14.853'S	177°54.329'W	11.5	1–11	GW	
K2011-44	16–17 May	17:00–08:00	Fathom Plus and invertebrate traps	Raoul Island, north of Fishing Rock	29°14.552 to 29°14.857'S	177°53.684 to 177°54.005'W	20–70	20–70	MR, SK	
K2011-45	17 May	09:45–10:45	3 kg rotenone and hand nets	SW side of Nugent Island	29°14.550'S	177°53.688'W	31	27–31	AB, CB, CS, GW, MM, SU, TT, VZ	Boulders and rock crevices with bottom of coarse sand and gravel.
K2011-46	17 May	10:00–10:50	3 kg rotenone and hand nets	SW side of Nugent Island	29°13.891'S	177°52.219'W	16	12–16	AB, CB, CS, GW, MM, SU, TT, VZ	Rock and boulder barrens coated with crustose coralline algae and many <i>Centrostephanus rodgersii</i>
K2011-47	17 May	09:30–10:20	Hand collecting for invertebrates	SW side of Nugent Island	29°13.891'S	177°52.219'W	23.7	15–23.7	MR, SK	
K2011-48	17 May	16:00–16:45	2.5 kg rotenone and hand nets	Raoul Island, north of Fishing Rock	29°14.652'S	177°54.273'W	23	20–23	CS, GW, MM, SU, TT	Grey sand of consistent grain size and low ripple contours
K2011-49	17 May	16:00–16:45	Hand collecting for invertebrates	Raoul Island, Fishing Rock landing	29°15.052'S	177°54.215'W	5	5	CB, MR, SK, VZ	
K2011-50	17 May	16:00–17:00	0.5 kg rotenone and hand nets	Raoul Island, Fishing Rock landing	29°15.052'S	177°54.215'W	1.3	0–1.3	GW, MF, MM, TT	Rockpool, 10 x 1 m x 1 m deep. Relatively high intertidal zone.
K2011-51	17–18 May	16:30–07:00	Bottom-set gill net, 60 x 2.5 m, 75 mm mesh	West of Napier Island	29°13.95'S	177°52.80'W	55–80	55–80	CD on RV <i>Braveheart</i>	Sloping sandy bottom
K2011-52	18 May	09:00–10:10	Plankton net, 2 x 1 m mouth, 0.8 mm mesh.	Raoul Island, off Fishing Rock, 50m NE of RV <i>Braveheart</i> anchorage	29°14.646'S	177°54.268'W	21	0.2–1.2	TT from RV <i>Braveheart</i> tender	
K2011-53	18 May	09:00–10:30	Hand collecting	Dayrell Island	29°14.70'S	177°51.5'W	0.5	0–0.5	MM	Intertidal rockpools
K2011-54	18 May	12:00–14:30	1 kg rotenone and hand nets; hand collecting	Raoul Island, Fishing Rock landing	29°14.552'S	177°54.215'W	1	0–1	CS, GW, MF, MM, MR, SK, SU, TT	Rockpools beside Fishing Rock. Largest pool approx 6 x 2 m x 1.5 m deep. Some loose rocks and coral cover in pool.
K2011-55	19 May	09:00–10:30	3 kg rotenone and hand nets; hand-collecting for invertebrates	Raoul Island, southern Denham Bay	29°16.944'S	177°57.162'W	22	20–22	AB, CB, CS, GW, MM, MR, SK, SU, TT, VZ	
K2011-56	19 May	14:23–15:18	Hand collecting on SCUBA	NW corner of North Meyer Island	29°14.419'S	177°52.673'W	15	6–15	MR, SK	In rock walls with narrow (1–2 m wide) canyon

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-57	19 May	14:40–16:00	2 kg rotenone and hand nets	NW corner of North Meyer Island	29°14.489'S	177°52.723'W	18	16–18	AB, CB, CS, GW, MM, SU, TT, VZ	Rocky bottom interspersed with sand and gravel, corals and seaweeds.
K2011-58	19 May	15:05–16:15	3 kg rotenone and hand nets	NW corner of North Meyer Island	29°14.489'S	177°52.723'W	14	10–14	AB, CB, CS, GW, MM, SU, TT, VZ	Rocky overhang with gorgonians and sponges. Boulders at base interspersed with sand.
K2011-59	19 May	15:13–18:00	Rod, hook and line	NW of Meyer Islands, from deck of RV <i>Braveheart</i>	29°14.550'S	177°52.813'W	28	27–28	CD, GW	
K2011-60	20 May	09:05–10:50	2 kg rotenone and hand nets; microsphear	NW corner of North Meyer Island	29°14.499'S	177°52.673'W	33	27–33	CB, CS, GW, MM, SU, TT, VZ	Steep-walled rocky reef and boulders; patchy sand and fan corals
K2011-61	20 May	09:17–10:12	Airlift on SCUBA	NW corner of North Meyer Island	29°14.499'S	177°52.673'W	10	10	MR, SK	Gutter through reef flat
K2011-62	20 May	09:17–10:12	Hand collecting on SCUBA	NW corner of North Meyer Island	29°14.499'S	177°52.673'W	10	10	MR, SK	Gutter through reef flat
K2011-63	20 May	09:17–10:12	Hand collecting on SCUBA	NW corner of North Meyer Island	29°14.499'S	177°52.673'W	6	6	CD	Reef flat, coral samples
K2011-64	20 May	08:00–08:30	Snorkel and spear gun	Between <i>Braveheart</i> anchorage and North Meyer Island	29°14.519'S	177°52.806'W	15–20	0–5	MJ	
K2011-65	20 May	16:20–17:00	Microsphear and Hawaiian sling	West side of North Meyer Island	29°14.54'S	177°52.78'W	18	18	GW, SU	
K2011-66	21 May	09:20–10:30	3 kg rotenone and hand nets; microsphear	NW side of Macauley Island	30°13.464'S	178°26.337'W	33	29–33	AB, CB, CS, GW, MM, SU, TT, VZ	Lava rock flows interspersed with sand plus some boulders
K2011-67	21 May	09:24–10:00	Hand collecting on SCUBA	NW side of Macauley Island	30°13.464'S	178°26.337'W	21	21	MR, SK	
K2011-68	21 May	14:25–15:10	3 kg rotenone and hand nets	WNW side of Macauley Island	30°13.897'S	178°26.338'W	23	21–23	AB, CB, CS, GW, MM, SU, TT, VZ	Coarse sand to gravel field with a few emergent rocks 1–2 m in diameter. Rotenone drifted over an adjacent reef.
K2011-69	21 May	14:50–15:25	3 kg rotenone and hand nets	WNW side of Macauley Island (50m east of K2011-68)	30°13.668'S	178°26.338'W	17	15–17	AB, CB, CS, GW, MM, SU, TT, VZ	Huge boulder and overhang with base of rocks and boulders. Not all divers found site.
K2011-70	21 May	14:24–14:54	Airlift on SCUBA and hand collecting	Macauley Island	30°13.663'S	178°26.339'W	21.2	21.2	MR, SK	
K2011-71	22 May	11:00–12:30	3 kg rotenone and hand nets; microsphear. Hand collecting for invertebrates	West side Macauley Island	30°13.704'S	178°26.433'W	24.7	21–24.7	AB, CB, CD, CS, GW, MM, MR, SK, SU, TT, VZ	Boulders surrounded by coarse sand and gravel

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-72	22 May	15:30–16:35	3 kg rotenone and hand nets; microsphear.	West side Macauley Island	30°13.704'S	178°26.433'W	10	6–10	CB, CS, GW, MM, SU, TT, VZ	
K2011-73	21–22 May	15:00–16:00	Fathom Plus and small invertebrate traps	West side Macauley Island	30°13.547 to 30°13.548'S	178°26.422 to 178°26.416'W	40–120	40–120	KR, MJ, MR, SK	
K2011-74	22 May	20:30–22:00	Night light and dip net	West side Macauley Island from deck of RV <i>Braveheart</i>	30°13.709'S	178°26.511'W	30	0–0.3	MR, SK	
K2011-75	23 May	13:30–14:30	3 kg rotenone and hand nets.	West side of Cheeseman Island	30°32.096'S	178°34.183'W	35	31–35	AB, CB, CS, GW, MM, SU, TT, VZ	Sheer to very steep rock wall with a few shallow cracks and valleys. Rotenone laid around a few rocks in a shallow depression. No invertebrate cover or algae.
K2011-76	23 May	13:50–14:50	3 kg rotenone and hand nets.	West side of Cheeseman Island	30°32.096'S	178°34.183'W	17	12–17	AB, CB, CS, GW, MM, SU, TT, VZ	Sheer to very steep rock wall with no invertebrate cover nor algae. A few depressions and shallow grooves.
K2011-77	23 May	13:39–14:14	Hand collecting on SCUBA	West side of Cheeseman Island	30°32.096'S	178°34.183'W	24	24	MR, SK	
K2011-78	23 May	20:00–20:30	Night light and dip net	Stella Passage between Curtis and Cheeseman islands	30°32.265'S	178°33.695'W	20	0–0.5	MR, SK	
K2011-79	24 May	09:00–09:50	3 kg rotenone and hand nets.	Cheeseman Shoal	30°32.467'S	178°34.174'W	35	30–35	AB, CB, CS, GW, MM, SU, TT, VZ	Very steep rock wall dropping off into depths unknown. A few small cracks and indentations. One lush black coral about 1 m long and a sea whip about 1 m long; no visible fishes on these corals.
K2011-80	24 May	09:15–10:10	3 kg rotenone and hand nets.	Cheeseman Shoal	30°32.467'S	178°34.174'W	24	20–24	AB, CB, CS, GW, MM, SU, TT, VZ	Steeply sloping rock face with shallow depressions and indentations. One sea whip.
K2011-81	24 May	09:00–09:35	Hand collecting on SCUBA	Cheeseman Shoal	30°32.453'S	178°34.155'W	24	17–24	MR, SK	Rocky reef from rocks and under rocks.
K2011-82	24 May	13:55–14:50	3 kg rotenone and hand nets; spear gun	North side Cheeseman Island	30°31.981'S	178°34.256'W	27	21–25	CB, CS, GW, MM, SU, TT, VZ	Boulders and pinnacles on a steep slope of sand.
K2011-83	24 May	13:30–15:15	Hand collecting on SCUBA	NW side Cheeseman Island	30°32.096'S	178°34.183'W	21	9–21	MR, SK	
K2011-84	24 May	13:30–15:10	Dropline: 600 m float line, 25 hooks	NW of Cheeseman Island	30°30.754 to 30°30.825'S	178°35.692 to 178°35.979'W	210–230	210–230	CD on RV <i>Braveheart</i>	
K2011-85	24 May	13:45–15:10	Rod, hook and line	NW of Cheeseman Island	30°30.778'S	178°36.080'W	230	230	CD on RV <i>Braveheart</i>	

Station No.	Date	Time	Method	Locality	Latitude	Longitude	Water depth, m	Sampling depth, m	Collectors	Habitat notes
K2011-86	23–24 May	15:00–16:00	Fathom Plus and small invertebrate traps	Stella Passage between Curtis and Cheeseman islands	30°31.93'S	178°33.72'W	30–40	30–40	SK	
K2011-87	24 May	16:35–17:20	Rod, hook and line	NW of Cheeseman Island	30°30.807 to 30°30.853'S	178°36.423 to 178°37.414'W	227–240	227–240	CD on RV <i>Braveheart</i>	
K2011-88	24 May	16:00–16:35	Hand collecting on SCUBA	NW side Cheeseman Island	30°32.096'S	178°34.183'W	23	23	MR, SK	
K2011-89	24 May	20:15–22:20	Night light and dip net	Stella Passage between Curtis and Cheeseman islands, From deck of RV <i>Braveheart</i> .	30°32.302'S	178°33.732'W	18	0–0.3	GW, MR, SK	
K2011-90	25 May	09:30–10:20	3 kg rotenone and hand nets.	Stawell Shoal, N of Stella Passage	30°31.778'S	178°33.570'W	35	28–35	AB, CB, CS, GW, MM, SU, TT, VZ	Fragile volcanic rock. Very steep rock wall with occasional crevices and indentations. Strong surging current.
K2011-91	25 May	09:50–10:45	3 kg rotenone and hand nets.	Stawell Shoal, N of Stella Passage	30°31.778'S	178°33.570'W	18	14–18	AB, CB, CS, GW, MM, SU, TT, VZ	Fragile volcanic rock. Very steep rock wall with occasional crevices and indentations. Strong surging current.
K2011-92	25 May	09:45–10:45	Hand collecting on SCUBA	Stawell Shoal, N of Stella Passage	30°31.778'S	178°33.570'W	21–24	21–24	MR, SK	From sides and overhang of large boulder.
K2011-93	25 May	12:40	Hand net	Stella Passage between Curtis and Cheeseman islands,	30°32.286'S	178°33.723'W	15	0	AM, CS, WC	Floating plastic bottle with attached gooseneck barnacles and polychaetes.
K2011-94	25 May	14:20–15:20	3 kg rotenone and hand nets; microsphear. Hand-collecting for invertebrates.	Stella Passage, west side of Curtis Island	30°32.337'S	178°33.646'W	15	13–15	CB, CS, GW, KR, MR, SK, SU, TT, VZ	Rock and cobble field interspersed with coarse sand. Strongly surging current.
K2011-95	25 May	16:30–18:00	Rod, hook and line	South of Curtis and Cheeseman Islands	30°33.876'S	178°35.455'W	237–250	237–250	AM, CD, CS	
K2011-96	25 May	18:00–18:30	Rod, hook and line	South of Curtis and Cheeseman Islands	30°34.45'S	178°35.355'W	455	455	GW	
K2011-97	25 May	19:15–19:30	Rod, hook and line	South of Curtis and Cheeseman Islands	30°34.61'S	178°35.71'W	227	227	CB	
K2011-98	26 May	08:50–09:50	3 kg rotenone and hand nets.	West side of L'Esperance Island	31°21.252'S	178°49.593'W	28	23–28	AB, CB, CS, GW, MM, SU, TT, VZ	A few large boulders and overhangs surrounded by sandy habitat.
K2011-99	26 May	12:50–13:57	Hand-collecting for invertebrates.	West side of L'Esperance Island	31°21.252'S	178°49.593'W	12–20	12–20	MR, SK	Rock walls, shelly sediment, sponges and coral scrapings.
K2011-100	26 May	13:09–14:25	3 kg rotenone and hand nets.	West side of L'Esperance Island	31°25.257'S	178°49.563'W	22.5	18–22.5	AB, CB, CS, GW, MM, SU, TT, VZ	Boulder and cobble field about 15 m in diameter with shelly and gravel base. Surrounded by steep rock wall.

and lines to sample deeper (Figure 1, Table 4). Most days involved two SCUBA dives focussed on rotenone and hand collecting, followed by other techniques later in the day or at night.

A total of 100 marine stations were sampled in the 15 days at the Kermadec Islands (Table 4, Figure 1). Sixty-four stations were sampled at and around Raoul Island, 9 at Macauley Island, 23 at Curtis and Cheeseman islands, and 3 at L'Esperance Island. Forty-four rotenone (a total of 123.5 kg was used), 29 hand-collections, 13 hook and line, 6 night light, 6 trap, 4 airlift, 11 spear, 1 gill net and 1 plankton net stations were sampled (Table 4).

Samples were sorted shortly after capture, and counted, identified and measured on board (in the case of fishes and larger invertebrates), or once they were returned to the laboratory (almost all other groups). Smaller specimens were fixed or preserved on board the RV *Braveheart*, in either formalin, ethanol or dried. Specific details on preservation methods are outlined in the individual papers. Larger specimens were frozen shortly after capture and fixed in the laboratory. Tissue samples were opportunistically collected and are housed at one of the three participating museums.

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