Port of Tauranga

Baseline survey for non-indigenous marine species (Research Project ZBS2000/04)

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Contents

Executive Summary

This report describes the results of a March 2002 survey to provide a baseline inventory of native, non-indigenous and cryptogenic marine species within the Port of Tauranga.

- The survey is part of a nationwide investigation of native and non-native marine biodiversity in 13 international shipping ports and three marinas of first entry for yachts entering New Zealand from overseas.

- Sampling methods used in these surveys were based on protocols developed by the Australian Centre for Research on Introduced Marine Pests (CRIMP) for baseline surveys of non-indigenous species in ports. Modifications were made to the CRIMP protocols for use in New Zealand port conditions.

- A wide range of sampling techniques was used to collect marine organisms from a range of habitats within the Port of Tauranga. Fouling assemblages were scraped from hard substrata by divers, benthic assemblages were sampled using a sled and benthic grabs, and a gravity corer was used to sample for dinoflagellate cysts. Mobile predators and scavengers were sampled using baited fish, crab, starfish and shrimp traps.

- The distribution of sampling effort in the Port of Tauranga was designed to maximise the chances of detecting non-indigenous species and concentrated on high-risk locations and habitats where non-indigenous species were most likely to be found.

- Organisms collected during the survey were sent to local and international taxonomic experts for identification.

- A total of 316 species or higher taxa were identified from the Tauranga Port survey. They consisted of 202 native species, 12 non-indigenous species, 40 cryptogenic species (those whose geographic origins are uncertain) and 62 species indeterminata (taxa for which there is insufficient taxonomic or systematic information available to allow identification to species level).

- Twenty two species collected from the Port of Tauranga have not previously been described from New Zealand waters. Seventeen of these were species of sponge that are thought to be new to science. The other first records for New Zealand were a cryptogenic ascidian (*Microcosmus squamiger*) and amphipod (*Meridiolembos* sp. aff. *acherontis*), and three non-indigenous species; the hydroids *Clytia ?linearis* and *Eudendrium capillare*, and the ascidian, *Cnemidocarpa sp.*.

- The 12 non-indigenous organisms described from the Port of Tauranga included representatives of seven phyla. The non-indigenous species detected (ordered alphabetically by phylum, class, order, family, genus and species) were: (Annelida) *Dipolydora flava* and *Polydora hoplura*, (Bryozoa) *Bugula flabellata, Bugula neritina,* and *Watersipora subtorquata,* (Cnidaria) *Clytia ?linearis* and *Eudendrium capillare*, (Crustacea) *Apocorophium acutum* and *Monocorophium acherusicum,* (Phycophyta) *Codium fragile tomentasoides,* (Porifera) *Cliona celata,* (Urochordata) *Cnemidocarpa sp.*

- There were no species from the Port of Tauaranga on the New Zealand register of unwanted marine organisms.

- Most non-indigenous species located in the Port are likely to have been introduced to New Zealand accidentally by international shipping or through domestic translocation or spread from other locations in New Zealand.

- Approximately 75 % (nine of 12 species) of NIS in the Port of Tauaranga are likely to have been introduced in hull fouling assemblages and 25 % could have been introduced by either ballast water or hull fouling vectors.

- The predominance of hull fouling species in the introduced biota of the Port of Tauranga (as opposed to ballast water introductions) is consistent with findings from similar port baseline studies overseas.

Introduction

Introduced (non-indigenous) plants and animals are now recognised as one of the most serious threats to the natural ecology of biological systems worldwide (Wilcove et al 1998, Mack et al 2000). Growing international trade and trans-continental travel mean that humans now intentionally and unintentionally transport a wide range of species outside their natural biogeographic ranges to regions where they did not previously occur. A proportion of these species are capable of causing serious harm to native biodiversity, industries and human health. Recent studies suggest that coastal marine environments may be among the most heavily invaded ecosystems, as a consequence of the long history of transport of marine species by international shipping (Carlton and Geller 1993, Grosholz 2002). Ocean-going vessels transport marine species in ballast water, in sea chests and other recesses in the hull structure, and as fouling communities attached to submerged parts of their hulls (Carlton 1985, 1999, AMOG Consulting 2002, Coutts et al 2003). These shipping transport mechanisms have enabled hundreds of marine species to spread worldwide and establish populations in shipping ports and coastal environments outside their natural range (Cohen and Carlton 1995, Hewitt et al 1999, Eldredge and Carlton 2002, Leppäkoski et al 2002).

Biosecurity[1] is important to all New Zealanders. New Zealand's geographic isolation makes it particularly vulnerable to marine introductions because more than 95% of its trade in commodities is transported by shipping, with several thousand international vessels arriving and departing from more than 13 ports and recreational boat marinas of first entry (Inglis 2001). The country's geographic remoteness also means that its marine biota and ecosystems have evolved in relative isolation from other coastal ecosystems. New Zealand's marine biota is as unique and distinctive as its terrestrial biota, with large numbers of native marine species occurring nowhere else in the world.

The numbers, identity, distribution and impacts of non-indigenous species in New Zealand's marine environments are poorly known. A recent review of existing records suggested that by 1998, at least 148 species had been deliberately or accidentally introduced to New Zealand's coastal waters, with around 90 % of these establishing permanent populations (Cranfield et al 1998). To manage the risk from these and other non-indigenous species, better information is needed on the current diversity and distribution of species present within New Zealand.

BIOLOGICAL BASELINE SURVEYS FOR NON-INDIGENOUS MARINE SPECIES

In 1997, the International Maritime Organisation (IMO) released guidelines for ballast water management (Resolution A868-20) encouraging countries to undertake biological surveys of port environments for potentially harmful non-indigenous aquatic species. As part of its comprehensive five-year Biodiversity Strategy package on conservation, environment, fisheries, and biosecurity released in 2000, the New Zealand Government funded a national series of baseline surveys. These surveys aimed to determine the identity, prevalence and distribution of native, cryptogenic and non-indigenous species in New Zealand's major shipping ports and other high risk points of entry. The government department responsible for biosecurity in the marine environment at the time, the New Zealand Ministry of Fisheries (MFish), commissioned NIWA to undertake biological baseline surveys in 13 ports and three marinas that are first ports of entry for vessels entering New Zealand from overseas (Fig. 1). Marine biosecurity functions are now vested in Biosecurity New Zealand.

[1] Biosecurity is the management of risks posed by introduced species to environmental, economic, social, and cultural values.

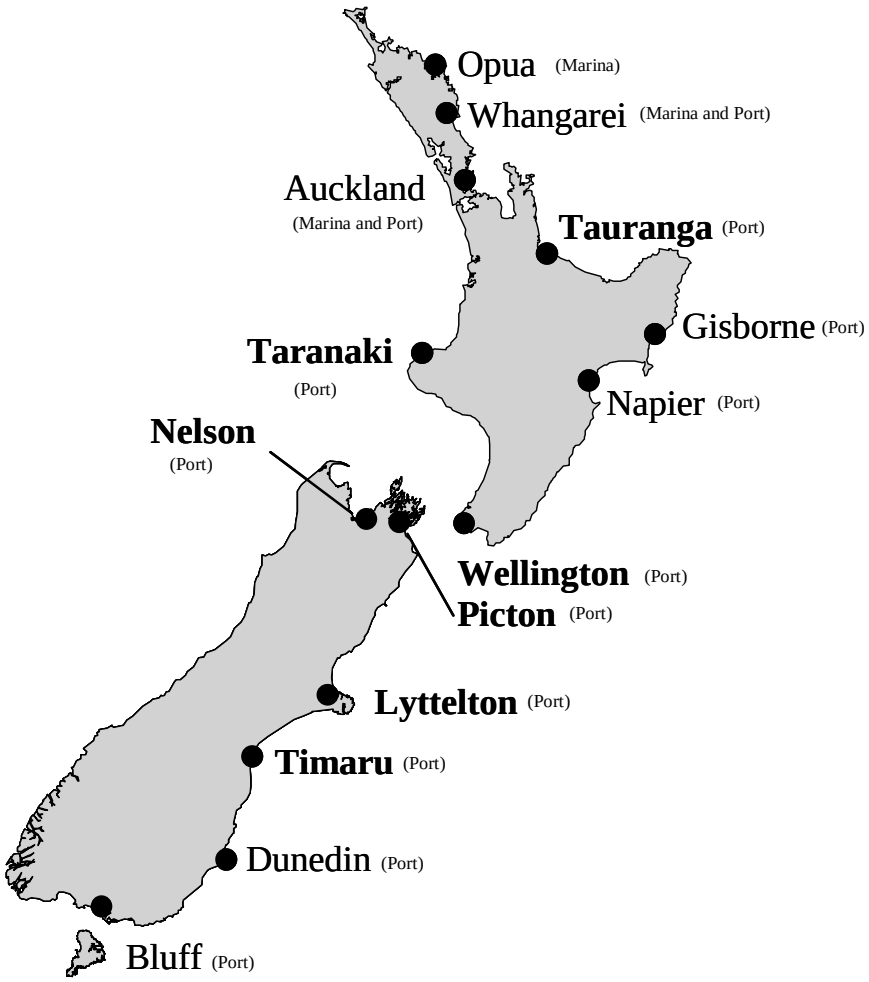

Figure 1: Commercial shipping ports in New Zealand where baseline non-indigenous species surveys have been conducted. Group 1 ports surveyed in the summer of 2001/2002 are indicated in bold and group 2 ports surveyed in the summer of 2002/2003 are indicated in plain font. Marinas were also surveyed for NIS in Auckland, Opua and Whangarei in 2002/2003.

The port surveys have two principal objectives:

i. To provide a baseline assessment of native, non-indigenous and cryptogenic[2] species, and
ii. To determine the distribution and relative abundance of a limited number of target species in shipping ports and other high risk points of entry for non-indigenous marine species.

The surveys will form a baseline for future monitoring of new incursions by non-indigenous marine species in port environments nationwide, and will assist international risk profiling of problem species through the sharing of information with other shipping nations.
This report summarises the results of the Port of Tauranga survey and provides an inventory of species detected in the Port. It identifies and categorises native, introduced ("non-indigenous") and cryptogenic species. Organisms that could not be identified to species level are also listed as species indeterminata.

[2] "Cryptogenic:" species are species whose geographic origins are uncertain (Carlton 1996).

DESCRIPTION OF THE PORT OF TAURANGA

Tauranga Harbour is a long, crescent-shaped inlet on the west edge of the Bay of Plenty, on New Zealand's North Island (37° 40'S. 176° 10'E). The harbour is protected along its seaward side by Matakana Island and shipping traffic can enter the harbour around either the northern or southern tips of the island (Fig. 2). Both harbour entrances are approximately 800 m across, with tidal scour ensuring that deep channels are maintained in each. The rest of the harbour is consistently shallow (Thompson 1981), typically less than 10 m deep. The Port of Tauranga is located near Mount Maunganui at the south-eastern end of the harbour, in an extensive mudflat area approximately 30 km long and 5 km wide (Thompson 1981). The Port is one of the biggest commercial enterprises in the Bay of Plenty, and New Zealand's largest combined export-import port (Healy 1994). At the southern end of the commercial port, there is the 500-berth Tauranga Bridge Marina, which has a range of floating concrete berths from 10.5 to 37 m with treated pine piling, enclosed by an oblong floating concrete breakwater (www.marina.co.nz).

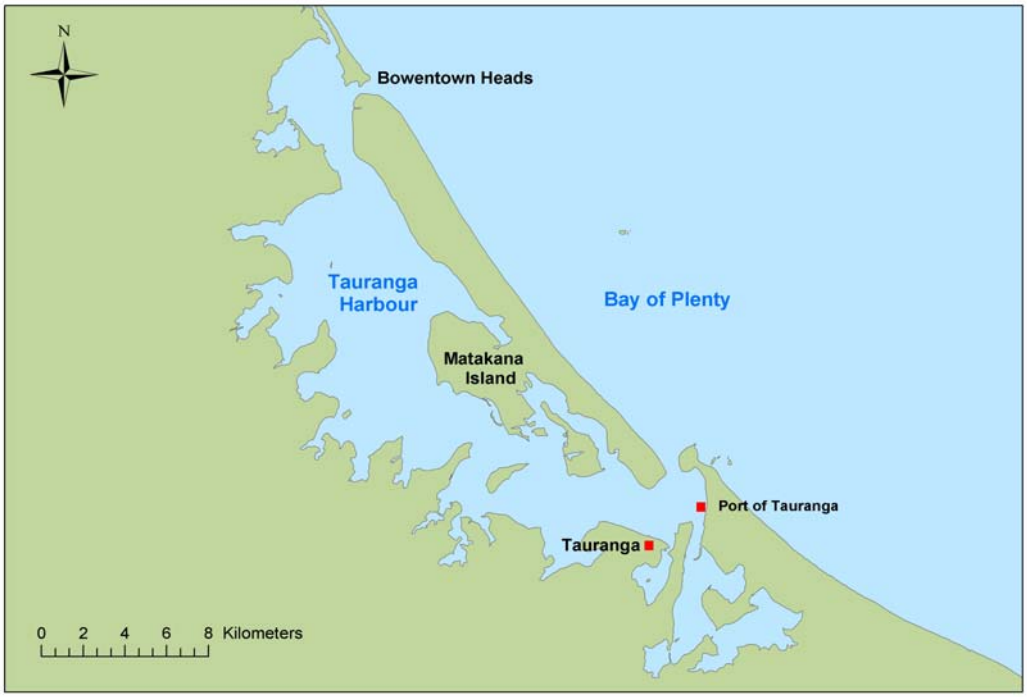

Figure 2: Tauranga Harbour and Bay of Plenty map.

PORT OPERATION AND SHIPPING MOVEMENTS

The Port of Tauranga was officially established in 1873. In 1927, a railway wharf at Tauranga was constructed, largely for coastal shipping use. In 1953, the first wharf structure was initiated at Mount Maunganui. In 1957, the first log shipment to Japan occurred, and in 1967 the first container was unloaded (www.port-tauranga.co.nz).

In 1988, the Bay of Plenty Harbour Board was disestablished and the Port of Tauranga Ltd began operations with control over the port. In 1992 the Tauranga terminal development was completed at Sulphur Point and associated wharves opened for shipping. In 1999, the Port of Tauranga established New Zealand's first fully integrated inland port service – MetroPort Auckland – which provides for storage and transfer of cargo between Auckland and Tauranga. In 2000, the Port of Tauranga entered into a joint venture with Northland Port

Corporation (NZ) Ltd to develop a deepwater commercial port at Marsden Point in Whangarei Harbour (www.port-tauranga.co.nz).

The Port of Tauranga currently consists of two separate wharves, divided by a tidal channel in the Tauranga Harbour (Fig. 3). On the Mount Maunganui side of the harbour, the Port has 2,055 m of continuous berth face, with twelve berths. Sulphur Point facilities on the western side of the channel feature 600 m of heavy-duty wharf, with three berths. Maximum draught at high water at each set of wharves is 13m, and the maximum vessel length capability is 290 m. Berth construction is predominantly concrete deck on wood and concrete piles, with a mixture of wood and steel/wood fender piling. The original piling wood is hardwood, but replacement when required is with treated pine piles. Details of the berthing facilities available in the Port are summarised in Table 1.

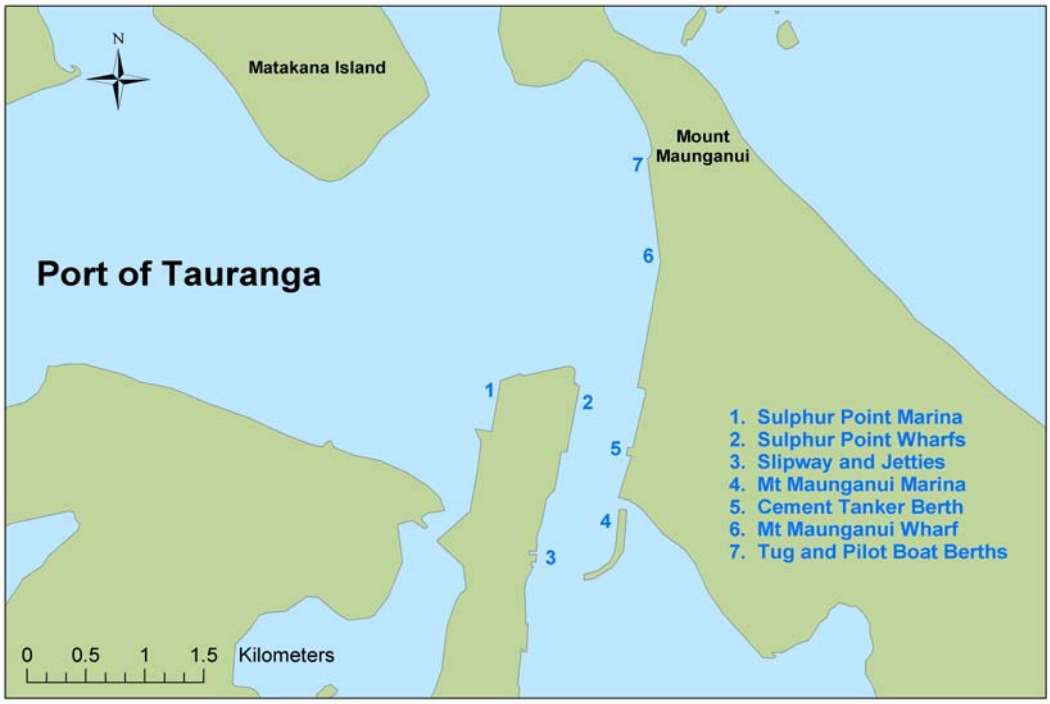

Figure 3: Port of Tauranga map

Tauranga Port is New Zealand's largest export port with forestry, kiwifruit, dairy and steel exports accounting for about 70 % of the annual cargo throughput (www.port-tauranga.co.nz). Much of this cargo is destined for Japan, South Korea, South East Asia, Australia and the Pacific Islands. Imports include petroleum, fertiliser, dry bulk goods and a range of other products from countries such as Australia and the Pacific Islands, the Americas, Asia, the Middle East, Africa and Europe, as well as other coastal areas around New Zealand.

Initial analyses of shipping arrivals to the Port of Tauranga show that most commercial vessels visiting the port arrive from Australia (35 %), followed by the northwest Pacific (24 %), northeast Pacific (15 %), south Pacific (13 %), east Asian Seas (3 %) and other New Zealand ports (Inglis 2001). Recent analyses (Campbell 2004) of shipping arrivals to the Port of Tauranga show that there was a total of 457 international ship visits during 2002/2003 (434 merchant, 14 pleasure, and 9 fishing vessels) with essentially the same source country proportions as in Inglis (2001). In 2001, a total of 1259 cargo ships used the Port, with a combined gross weight of 11,176 million tonnes. This was a 15 % increase from 2000 and helped establish the Port of Tauranga as one of the fastest-growing container ports in the world (www.port-tauranga.co.nz), with a 250 % increase in units handled to more than

340,000 TEU over the past five years (Boreham 2005). In the year to 30 June 2004, some 1,244 vessels loaded and/or discharged cargoes totalling close to 12.25 million tonnes at the Port of Tauranga. In 2004, 14 cruise ships visited Tauranga with a similar number expected in 2005 (Boreham 2005). In 2000, there were two registered fishing vessels in the Port of Tauranga (Sinner et al 2000).

Vessels unable to be berthed immediately in the port may anchor outside the port at three designated anchorages (or wherever practicable outside shipping lanes if these anchorages are full): 37°36.49'S, 176°13.71'E; 37°37.49'S, 176°15.21'E; 37°38.29'S, 176°16.91'E. Pilotage is compulsory on vessels over 100 GRT unless the Master holds a pilot exemption certificate.

Vessels are expected to comply with the Voluntary Controls on the Discharge of Ballast Water in New Zealand (www.fish.govt.nz/sustainability/biosecurity/); vessels are requested to exchange ballast water in mid-ocean (away from coastal influences) en route to New Zealand and discharge only the exchanged water while in port. According to Inglis (2001), a total volume of 335,410 m^3 of ballast water was discharged in the Port of Tauranga in 1999, with the largest country-of-origin volumes of 135,850 m^3 from Japan, 80,725 m^3 from South Korea, 27,477 m^3 from Australia, and 61,112 m^3 unspecified.

Within the port, there is on-going maintenance dredging as required. This usually occurs every 18 months, with the removal of approximately 200,000 m^3. The majority of spoil is deposited in various consented off-shore spoil sites (not marked on nautical charts), although up to 50,000 m^3 of clean sand spoil is deposited on-shore at Sulphur Point for use in beach renourishment (Nigel Drake, Port of Tauranga Ltd, pers comm.).

There is a current emphasis on increasing productivity and efficiency within the Port of Tauranga, with reduced turnaround times for visiting vessels a priority to increase trading competitiveness (in 2003, an Australian Productivity Commission benchmarking study rated Sulphur Point as the most efficient container handling facility in Australasia). A new high-speed container crane has been purchased with existing cranes being upgraded, and five new straddle cranes have also been purchased. There is a rail siding expansion at Sulphur Point occurring, and a coal-handling facility has been developed for the importation of coal for use in the Huntly Power Station (www.port-tauranga.co.nz). There are plans for berth expansion (e.g. the major extension of Sulphur Point), but only if certain trade volume triggers are met (Nigel Drake, Port of Tauranga Ltd, pers comm.).

PHYSICAL ENVIRONMENT OF TAURANGA HARBOUR

Tauranga Harbour is a moderately tidal estuarine lagoon with two entrances, covering a total area of 201 km^2. It is predominantly shallow, with intertidal flats comprising approximately 66 % of its total area. Three main harbour basins exist, with intertidal flats separating the larger northern and southern basins. The third smaller basin includes several bays and sub-estuaries (Park 2003). Maritime marshes cover extensive areas of the harbour, playing an important role in the harbour ecosystem by providing buffer zones between the land and open water and important habitat for marine invertebrates. Mangrove marshes are also extensive in the harbour, providing sheltered habitat for a variety of fauna and flora (Barker and Larcombe 1976). The harbour also has several areas of seagrass beds (Park 2000), which are more extensive than in any other New Zealand harbour (Barker and Larcombe 1976). Tauranga harbour sediments are generally sandy mud and shell based (Park 2000, 2003). Almost 120,000 tonnes of sediment washes into the harbour each year, mostly from farmland and forested areas via rivers and streams (Environment BOP 1999). The harbour suffers from large blooms of *Ulva lactuca* (sea lettuce) that are thought to be linked to El Nino weather patterns and the high nutrient content of the harbour (Environment BOP 1999).

Hydrodynamics in the area are dominated by tidal currents and wind generated waves, and a variety of minor water movements also occur, including tidal wave surge, harbour resonance and estuarine circulation (Davies-Colley and Healy 1978).

EXISTING BIOLOGICAL INFORMATION

Environment Bay of Plenty regularly monitors the biodiversity of the Tauranga Harbour, and has undertaken many of the previous biological studies to date. Below we review biological studies conducted in the harbour.

Hatton et al (1975) conducted an ecological survey of Tauranga Harbour in areas where seasonal ecological variation had been noted in previous surveys. Their report is one of a series describing the ecology of harbours, estuaries, and the lower reaches of major rivers in the Bay of Plenty. They monitored density of algae and grazing gastropod molluscs at the Rereatukahia Inlet and Waikareao Inlet, and attributed fluctuations in the abundance of algae and gastropods to seasonal phenomena, such as changes in water temperatures and nutrient availability. The following year, the ecology of the Tauranga Harbour was examined by Barker and Larcombe (1976), who collated previously obtained information and provide species lists for each of eight major habitat types or zones identified in the harbour.

Roper (1990) reported on the benthos associated with an estuarine outfall discharging municipal sewage into Tauranga Harbour. Species lists were produced and 124 taxa were identified, with crustaceans being the most diverse group with 51 species present. Many mollusc species were also found, with total numbers dominated by the bivalve *Nucula hartvigiana*. The non-indigenous bivalve *Theora lubrica* was already present in the harbour at this time. The study concluded that the outfall had little effect on the distribution, numbers of taxa or total numbers of individuals present in the harbour. The composition of macro-invertebrate assemblages was unaffected by the outfall, and thought to be more closely related to natural variability in sediment particle size and sorting.

Park and Donald (1994) of Environment Bay of Plenty reviewed the general ecology of Tauranga Harbour, focussing on the extensive soft-shore benthic macrofaunal communities and algae of the harbour and the freshwater ecology of the northern harbour catchment streams. They noted that previous studies of the harbour's ecology were either descriptive or qualitative in nature (see Barker and Larcombe 1976), or quantitative and focused on certain components of benthic communities or confined to small areas of the harbour (see Hatton et al 1975). Their investigations of the macrofauna revealed a series of communities that reflected prevailing current velocities and sediments within the harbour channels. Macrofaunal communities were similar to those described from the same types of habitat found elsewhere in northern New Zealand. Cockle-wedge shell and seagrass macrofaunal communities dominated extensive intertidal areas. Seagrasses covered 22.5 % of the entire harbour area, with the next most common alga being sea lettuce (*Ulva lactuca*). Species lists are included in their report.

Healy (1994) reviewed some of the major environmental concerns relating to the dredging programme operating in the Port of Tauranga, which were raised in a previous environmental impact assessment. The main biological concerns related to erosion of some beaches and the migration of dumped dredge spoil onto others. This movement of sediments was highlighted by the presence of bivalve shells of estuarine origin on the ocean beach. Further biological concerns were discussed in relation to the placement of the dredge mound and the effects this may have on emergent reefs and their ecology. It was concluded that transport rates were insufficient to affect the ecology of these habitats, but that ongoing monitoring will be necessary to ensure that the dumped dredge spoil is not having an unacceptable adverse effect.

Environment Bay of Plenty surveys yearly for the presence of dinoflagellate cysts in Tauranga harbour. Park (1998) reported on the monitoring program in the Port for the period 1993 to 1998. The samples were collected in areas of reduced current velocities (where settlement of fine suspended particles is more likely to occur) using a box core, taken to a depth of 2cm. All the dinoflagellate cysts collected were found to be types commonly observed in New Zealand coastal sediments. Species lists were produced. Taylor & MacKenzie (2001) also tested the Port of Tauaranga for the presence of the toxic blooming dinoflagellate *Gymnodinium catenatum*, and did not detect any resting cysts (sediment samples) or motile cells (phytoplankton samples).

Park (1999) reported on changes in the abundance of seagrass beds throughout the Tauranga harbour between 1959 and 1996. Thirty-four percent of seagrass beds were thought to have been lost in the harbour over this 37-year period. Subtidal areas suffered the highest loss with 90 % reduction in this habitat over the entire harbour. Evidence points to sediment and nutrient runoff as the main factor in these losses, with the magnitude of loss representing a potentially serious impact on harbour ecology. The report includes maps of the harbour showing seagrass changes between 1959 and 1996.

Fifteen estuarine sites are regularly assessed by Environment Bay of Plenty to determine the variety and numbers of benthic macrofauna present. Park (2000) reported on the results of the programme over a ten-year period (1990 – 2000). The results suggested that the harbour environment provided habitat of a good quality. Species richness was found to be stable. The report focuses on general species richness and therefore does not include species lists.

Studies by the University of Waikato examined the effect of the Port's activity on sea life in Tauranga Harbour and surrounding waters, mainly focussing on the environmental impacts of dredging and inner shelf disposal. We have been unable to obtain copies of their reports to date.

Survey methods

SURVEY METHOD DEVELOPMENT

The sampling methods used in this survey were based on the CSIRO Centre for Research on Introduced Marine Pests (CRIMP) protocols developed for baseline port surveys in Australia (Hewitt and Martin 1996, 2001). CRIMP protocols have been adopted as a standard by the International Maritime Organisation's Global Ballast Water Management Programme (GloBallast). Variations of these protocols are being applied to port surveys in many other nations. A group of New Zealand marine scientists reviewed the CRIMP protocols and conducted a workshop in September 2001 to assess their feasibility for surveys in this country (Gust et al. 2001). A number of recommendations for modifications to the protocols ensued from the workshop and were implemented in surveys throughout New Zealand. The modifications were intended to ensure cost effective and efficient collection of baseline species data for New Zealand ports and marinas. The modifications made to the CRIMP protocols and reasons for the changes are summarised in Table 2. Further details are provided in Gust et al. (2001).

Baseline survey protocols are intended to sample a variety of habitats within ports or marinas, including epibenthic fouling communities on hard substrata, soft-sediment communities, mobile invertebrates and fishes, and dinoflagellates. Below, we describe the methods and sampling effort used for the Port of Tauranga survey. The survey was undertaken between March 4th and 8th 2002. Most sampling was concentrated on six main berths: Wharf berths 1, 3, 7, 11, 16 and 24, although additional trapping also took place around two other locations; the 'sorting shed' wharf (so named due to its close proximity to the field laboratory where we sorted samples into broad taxonomic groups) and the rocky breakwall south of Wharf 11 (see Fig. 3).

DIVER OBSERVATIONS AND COLLECTIONS ON WHARF PILES

Fouling assemblages were sampled on four pilings at each berth. Selected pilings were separated by 10 – 15 m and comprised two pilings on the outer face of the berth and, where possible, two inner pilings beneath the berth (Gust et al 2001). On each piling, four quadrats (40 cm x 25 cm) were fixed to the outer surface of the pile at water depths of approximately -0.5 m, -1.5 m, -3.0 m and -7 m. A diver descended slowly down the outer surface of each pile and filmed a vertical transect from approximately high water to the base of the pile, using a digital video camera in an underwater housing. On reaching the sea floor, the diver then ascended slowly and captured high-resolution still images of each quadrat using the photo capture mechanism on the video camera. Because of limited visibility, four overlapping still images, each covering approximately ¼ of the area of the quadrat were taken for each quadrat. A second diver then removed fouling organisms from the piling by scraping the organisms inside each quadrat into a 1-mm mesh collection bag, attached to the base of the quadrat (Fig. 4). Once scraping was completed, the sample bag was sealed and returned to the laboratory for processing. The second diver also made a visual search of each piling for potential invasive species and collected samples of large conspicuous organisms not represented in quadrats. Opportunistic visual searches were also made of breakwalls and rock facings within the commercial port area. Divers swam vertical profiles of the structures and collected specimens that could not be identified reliably in the field.

BENTHIC INFAUNA

Benthic infauna was sampled using a Shipek grab sampler (Fig. 5), with samples collected from within 5m of the edge of the berth. The Shipek grab removes a sediment sample of ~3 *l* and covers an area of approximately 0.04 m^2 on the seafloor to a depth of about 10 cm. It is designed to sample unconsolidated sediments ranging from fine muds and sands to hard-packed clays and small cobbles. Because of the strong torsion springs and single, rotating scoop action, the Shipek grab is generally more efficient at retaining samples intact than conventional VanVeen or Smith McIntyre grabs with double jaws (Fenwick *pers obs*). The Shipek grab was deployed from a research vessel moored adjacent to the berth, three grab samples were taken at haphazard locations along each sampled berth. Sediment samples were washed through a 1 mm mesh sieve and animals retained on the sieve were returned to the field laboratory for sorting and preservation.

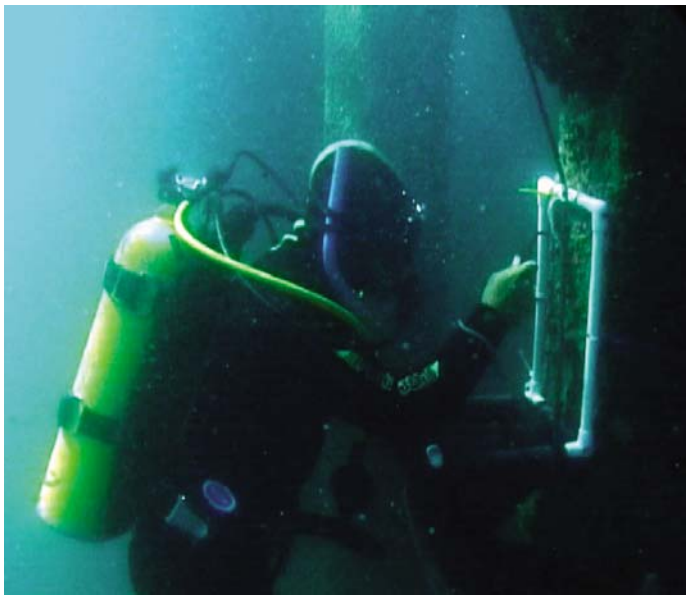

Figure 4: Diver sampling organisms on pier piles.

Figure 5: Shipek grab sampler: releasing benthic sample into bucket

EPIBENTHOS

Larger benthic organisms were sampled using an Ocklemann sled (hereafter referred to as a "sled"). The sled is approximately one meter long with an entrance width of ~0.7 m x 0.2 m. A short yoke of heavy chain connects the sled to a tow line (Fig. 6). The mouth of the sled partially digs into the sediment and collects organisms in the surface layers to a depth of a few centimetres. Runners on each side of the sled prevent it from sinking completely into the sediment so that shallow burrowing organisms and small, epibenthic fauna pass into the exposed mouth. Sediment and other material that enters the sled is passed through a mesh basket that retains organisms larger than about two mm. Sleds were towed for a standard time of two minutes at approximately two knots. During this time, the sled typically traversed between 80 – 100 m of seafloor before being retrieved. Two to three sled tows were completed adjacent to each sampled berth within the port, and the entire contents were sorted.

SEDIMENT SAMPLING FOR CYST-FORMING SPECIES

A TFO gravity corer (hereafter referred to as a "javelin corer") was used to take small sediment cores for dinoflagellate cysts (Fig. 7). The corer consists of a 1.0-m long x 1.5-cm diameter hollow stainless steel shaft with a detachable 0.5-m long head (total length = 1.5 m). Directional fins on the shaft ensure that the javelin travels vertically through the water so that the point of the sampler makes first contact with the seafloor. The detachable tip of the javelin is weighted and tapered to ensure rapid penetration of unconsolidated sediments to a depth of 20 to 30 cm. A thin (1.2 cm diameter) sediment core is retained in a perspex tube within the hollow spearhead. In muddy sediments, the corer preserves the vertical structure of the sediments and fine flocculant material on the sediment surface more effectively than hand-held coring devices (Matsuoka and Fukuyo 2000). The javelin corer is deployed and retrieved from a small research vessel. Cyst sample sites were not constrained to the berths sampled by

pile scraping and trapping techniques. Sampling focused on high sedimentation areas within the Port and avoided areas subject to strong tidal flow. On retrieval, the perspex tube was removed from the spearhead and the top 5 cm of sediment retained for analysis. Sediment samples were kept on ice and refrigerated prior to culturing. Culture procedures generally followed those described by Hewitt and Martin (2001).

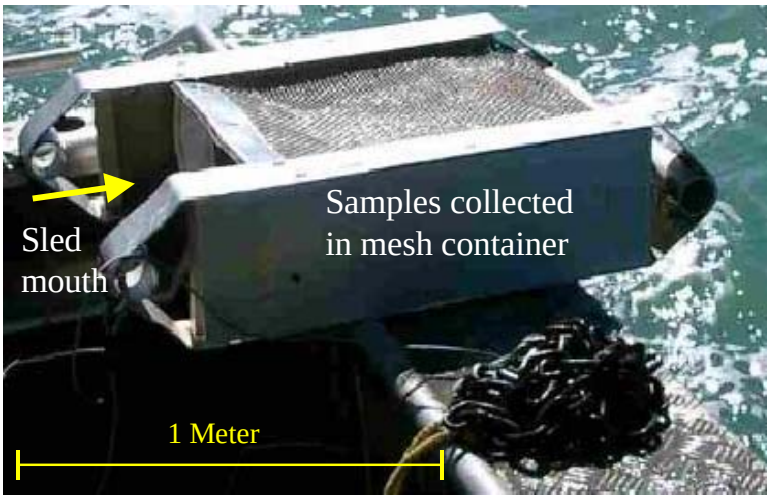

Figure 6: Benthic sled

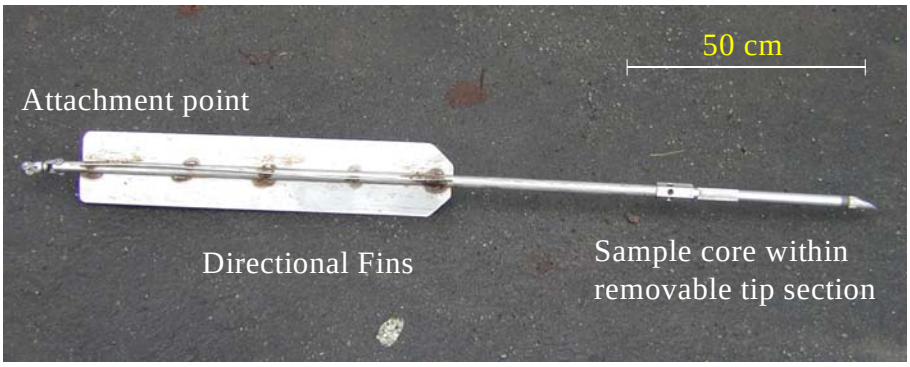

Figure 7: Javelin corer

MOBILE EPIBENTHOS

Benthic scavengers and fishes were sampled using a variety of baited trap designs described below.

Opera house fish traps

Opera house fish traps (1.2 m long x 0.8 m wide x 0.6 m high) were used to sample fishes and other bentho-pelagic scavengers (Fig. 8). These traps were covered in 1 cm^2 mesh netting and had entrances on each end consisting of 0.25 m long tunnels that tapered in diameter from 40 to 14 cm. The trap was baited with two dead pilchards (*Sardinops neopilchardus*) held in plastic mesh suspended in the centre of the trap. Two trap lines, each containing two opera house traps were set for a period of 1 hour at each site before retrieval. Previous studies have shown opera house traps to be more effective than other types of fish trap and that consistent catches are achieved with soak times of 20 to 50 minutes (Ferrell et al 1994; Thrush et al 2002).

Box traps

Fukui-designed box traps (63 cm x 42 cm x 20 cm) with a 1.3 cm mesh netting were used to sample mobile crabs and other small epibenthic scavengers (Fig. 8). A central mesh bait

holder containing two dead pilchards was secured inside the trap. Organisms attracted to the bait enter the traps through slits in inward sloping panels at each end. Two trap lines, each containing two box traps, were set on the sea floor at each site and left to soak overnight before retrieval.

Starfish traps

Starfish traps designed by Whayman-Holdsworth were used to catch asteroids and other large benthic scavengers (Fig. 8). These are circular hoop traps with a basal diameter of 100 cm and an opening on the top of 60 cm diameter. The sides and bottom of the trap are covered with 26 mm mesh and a plastic, screw-top bait holder is secured in the centre of the trap entrance (Andrews et al 1996). Each trap was baited with two dead pilchards. Two trap lines, each with two starfish traps were set on the sea floor at each site and left to soak overnight before retrieval.

Shrimp traps

Shrimp traps were used to sample small, mobile crustaceans. They consisted of a 15 cm plastic cylinder with a 5-cm diameter screw top lid in which a funnel had been fitted. The funnel had a 20-cm entrance that tapered in diameter to 1 cm. The entrance was covered with 1-cm plastic mesh to prevent larger animals from entering and becoming trapped in the funnel entrance. Each trap was baited with a single dead pilchard. Two trap lines, each containing two scavenger traps, were set on the sea floor at each site and left to soak overnight before retrieval.

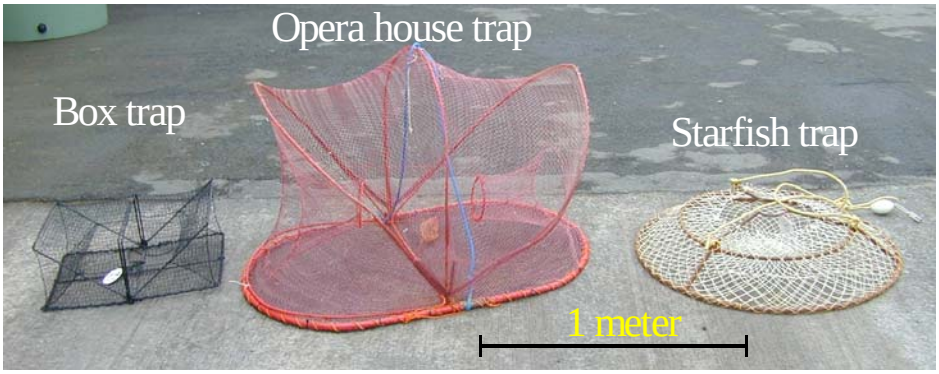

Figure 8: Trap types deployed in the port.

SAMPLING EFFORT

A summary of sampling effort within the Port of Tauranga is provided in Tables 3 a,b. We particularly focused sampling effort on hard substrata within ports (such as pier piles and wharves) where invasive species are likely to be found (Hewitt and Martin 2001), and increased the number of quadrats sampled on each pile relative to the CRIMP protocols, as well as sampling both shaded and unshaded piles. The distribution of effort within ports aimed to maximise spatial coverage and represent the diversity of active berthing sites within the area. Total sampling effort was constrained by the costs of processing and identifying specimens obtained during the survey.

The spatial distribution of sampling effort for each of the sample methods in the Port of Tauranga is indicated in the following figures: diver pile scrapings (Fig. 9), benthic sledding (Fig. 10), box, starfish and shrimp trapping (Fig. 11), opera house fish trapping (Fig. 12), shipek grab sampling (Fig. 13) and javelin cyst coring (Fig. 14). Sampling effort was varied between ports and marinas on the basis of risk assessments (Inglis 2001) to maximise the search efficiency for NIS nationwide. Sampling effort in each of the thirteen Ports and three marinas surveyed over two summers is summarised in Table 3c.

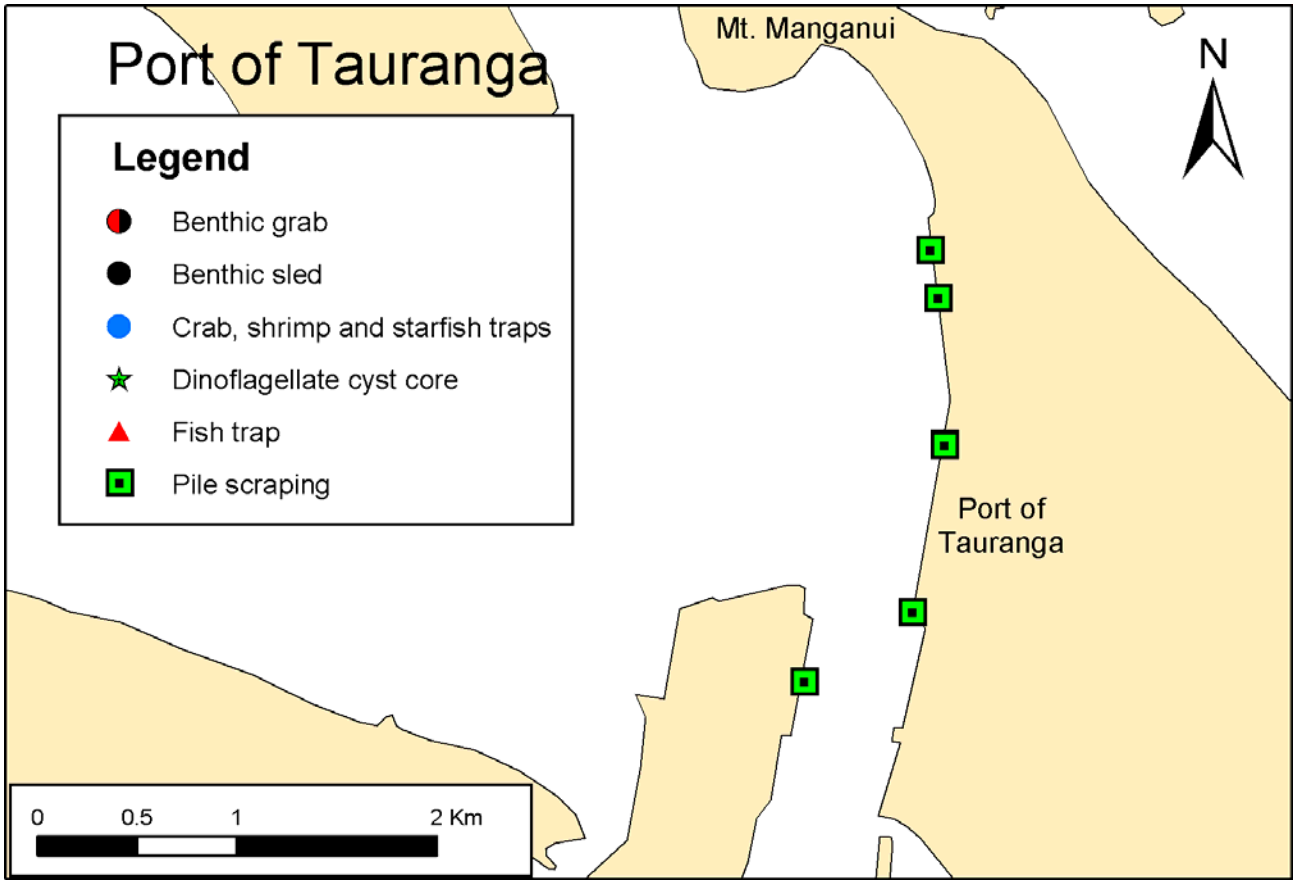

Figure 9: Diver pile scraping sites

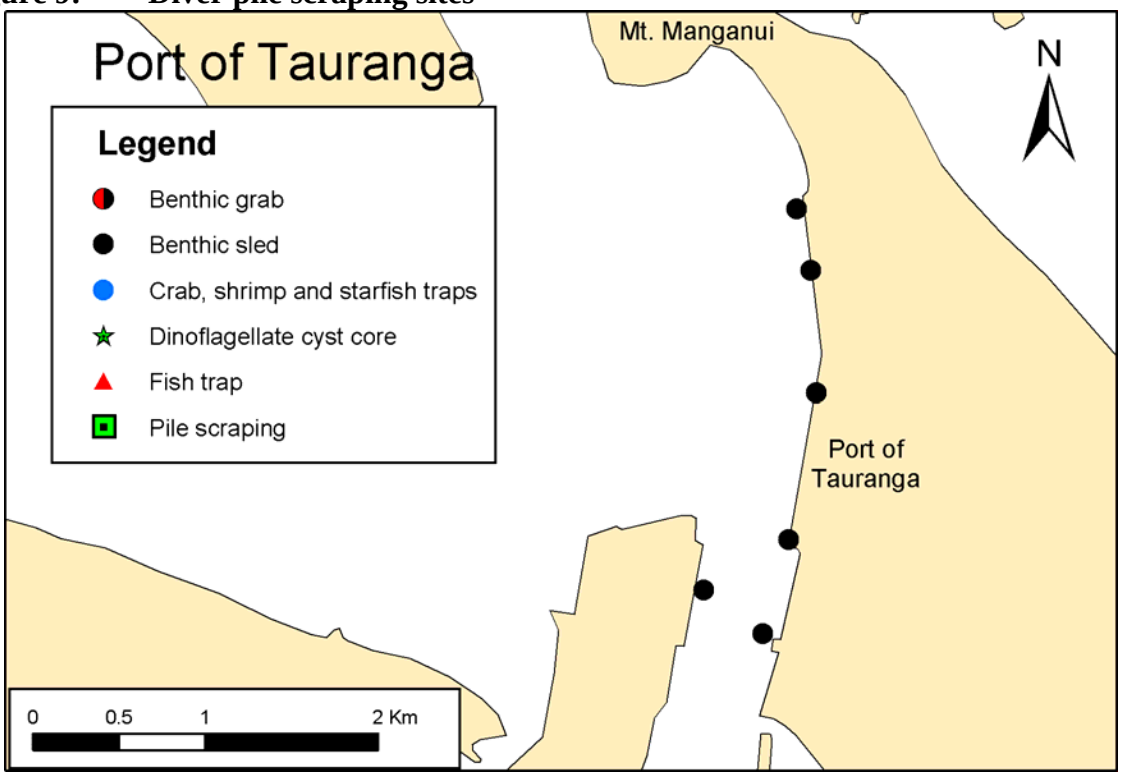

Figure 10: Benthic sledding sites.

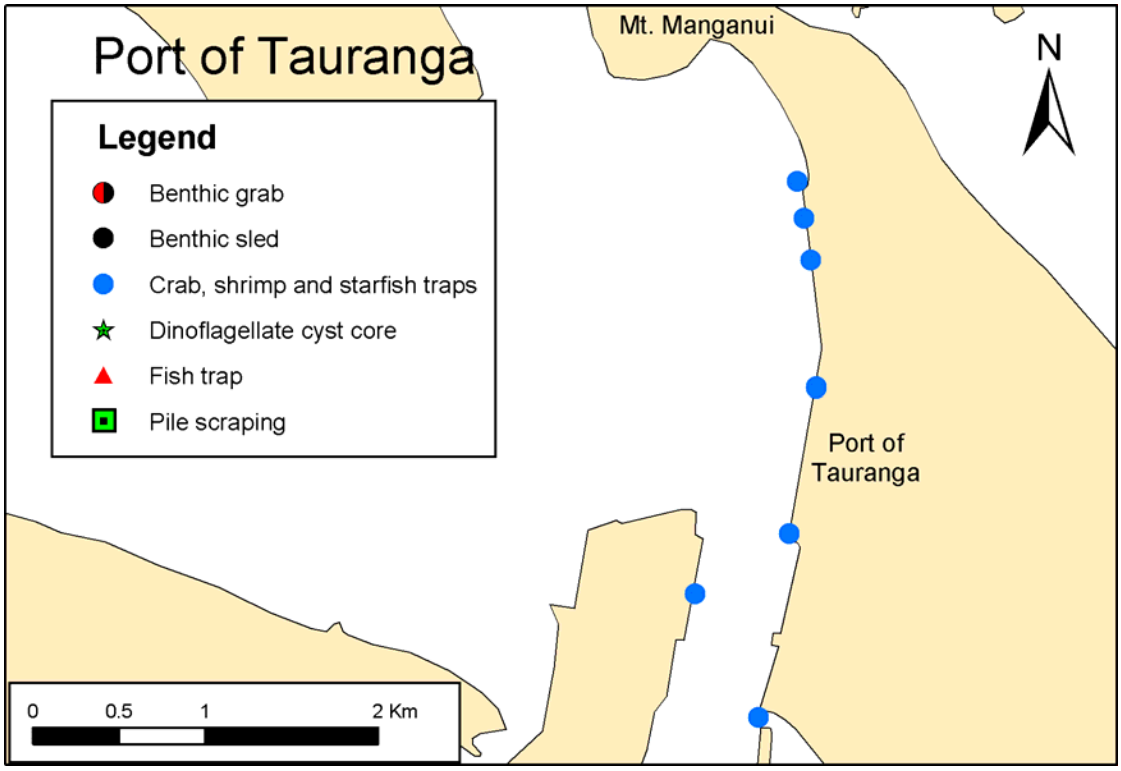

Figure 11: Box (crab), starfish and shrimp trapping sites.

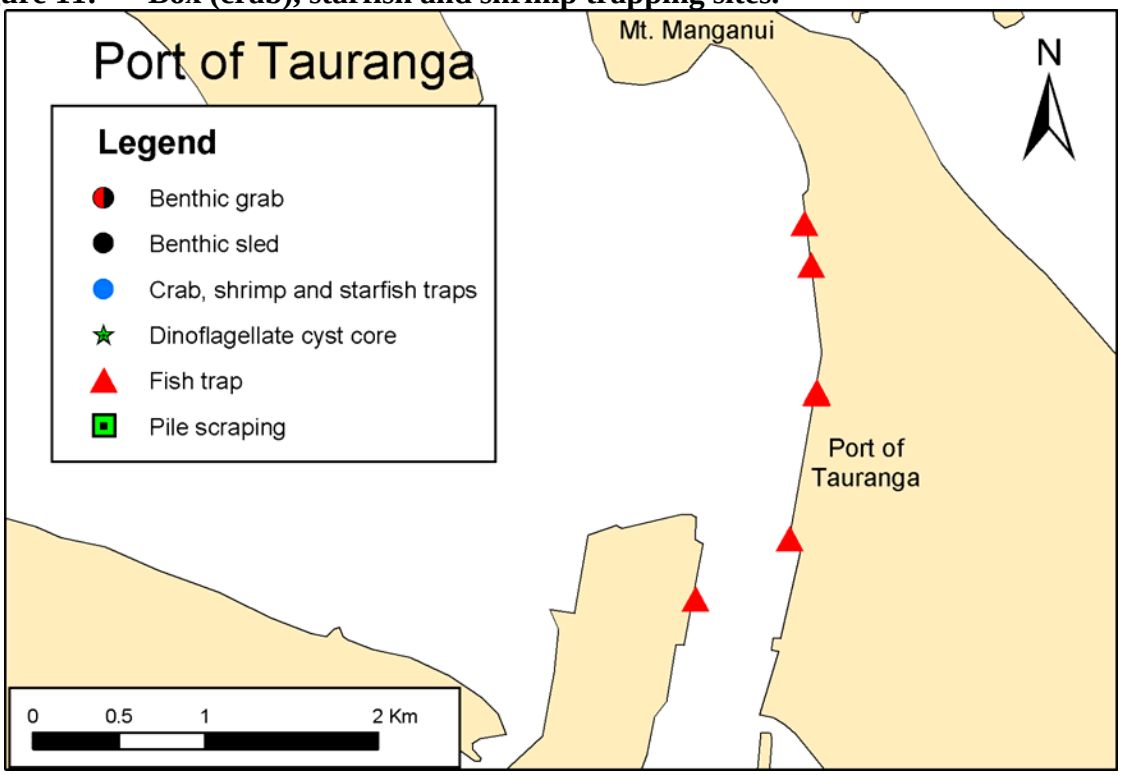

Figure 12: Opera house fish trapping sites.

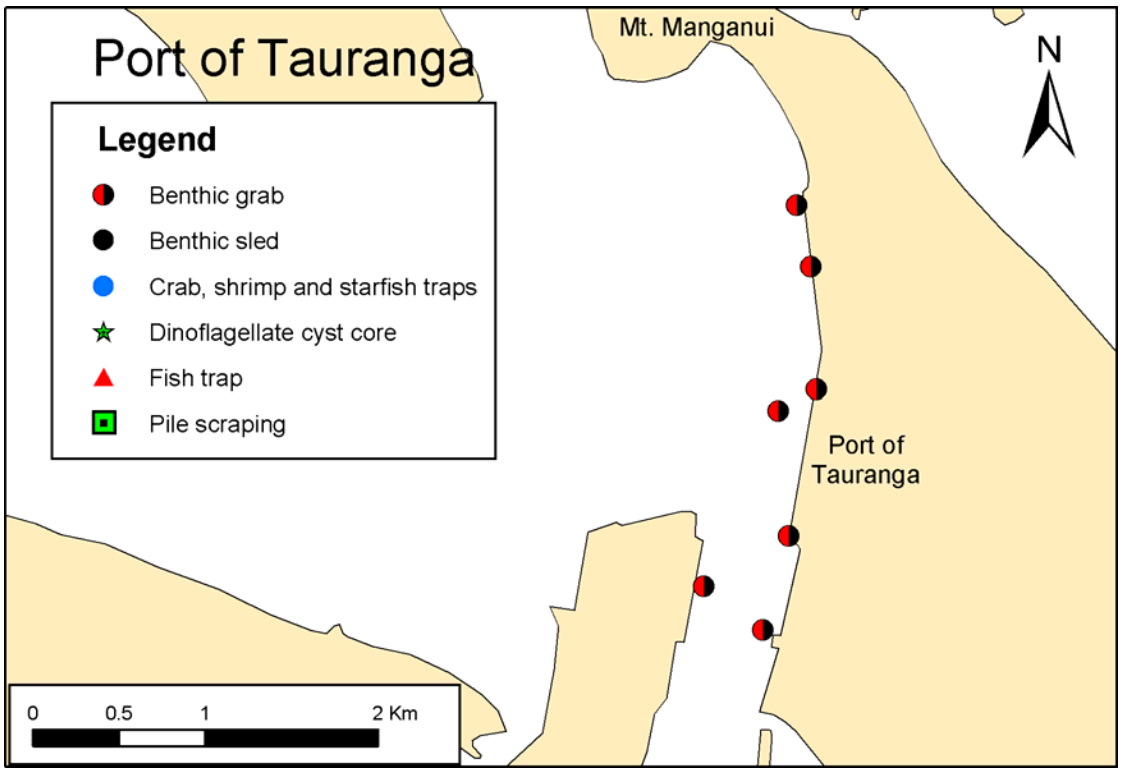

Figure 13: Shipek benthic grab sampling sites.

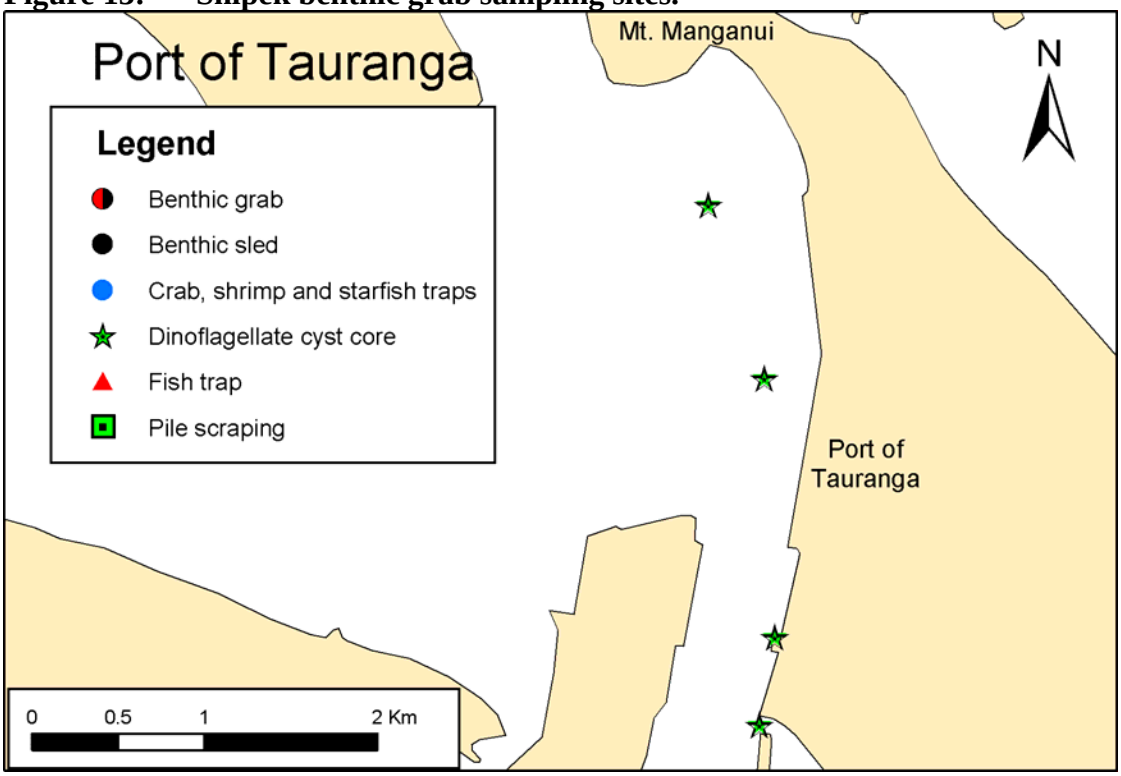

Figure 14: Javelin corer sample sites for dinoflagellate cysts

SORTING AND IDENTIFICATION OF SPECIMENS

Each sample collected in the diver pile scrapings, benthic sleds, box, starfish and shrimp traps, opera house fish traps, shipek grabs and javelin cores was allocated a unique identifying code on waterproof labels and transported to a nearby field laboratory where it was sorted by a team into broad taxonomic groups (e.g. ascidians, barnacles, sponges etc.). These groups were then preserved and individually labelled. Details of the preservation techniques varied for many of the major taxonomic groups collected, and the protocols adopted and preservative solutions used are indicated in Table 4. Specimens were subsequently sent to over 25 taxonomic experts (Appendix 1) for identification to species or lowest taxonomic unit (LTU). We also sought information from each taxonomist on the known biogeography of each species within New Zealand and overseas. Species lists compiled for each port were compared with the marine species listed on the New Zealand register of unwanted organisms under the Biosecurity Act 1993 (Table 5a) and the marine pest list produced by the Australian Ballast Water Management Advisory Council (Table 5b).

DEFINITIONS OF SPECIES CATEGORIES

Each species recovered during the survey was classified into one of four categories that reflected its known or suspected geographic origin. To do this we used the experience of taxonomic experts and reviewed published literature and unpublished reports to collate information on the species' biogeography.

Patterns of species distribution and diversity in the oceans are complex and still poorly understood (Warwick 1996). Worldwide, many species still remain undescribed or undiscovered and their biogeography is incomplete. These gaps in global marine taxonomy and biogeography make it difficult to reliably determine the true range and origin of many species. The four categories we used reflect this uncertainty. Species that were not demonstrably native or non-indigenous were classified as "cryptogenic" (sensu Carlton 1996). Cryptogenesis can arise because the species was spread globally by humans before scientific descriptions of marine flora and fauna began in earnest (i.e. historical introductions). Alternatively the species may have been discovered relatively recently and there is insufficient biogeographic information to determine its native range. We have used two categories of cryptogenesis to distinguish these different sources of uncertainty. In addition, a fifth category ("species indeterminata") was used for specimens that could not be identified to species-level. Formal definitions for each category are given below.

Native species

Native species are known to be endemic to the New Zealand biogeographical region and have not been introduced to coastal waters by human mediated transport.

Non-indigenous species (NIS)

Non-indigenous species (NIS) are known or suspected to have been introduced to New Zealand as a result of human activities. They were determined using a series of questions posed by Chapman and Carlton (1991, 1994) as a guide; as exemplified by Cranfield et al (1998).

1. Has the species suddenly appeared locally where it has not been found before?
2. Has the species spread subsequently?
3. Is the species' distribution associated with human mechanisms of dispersal?
4. Is the species associated with, or dependent on, other non-indigenous species?
5. Is the species prevalent in, or restricted to, new or artificial environments?

6. Is the species' distribution restricted compared to natives?

The worldwide distribution of the species was tested by a further three criteria:

7. Does the species have a disjunctive worldwide distribution?
8. Are dispersal mechanisms of the species inadequate to reach New Zealand, and is passive dispersal in ocean currents unlikely to bridge ocean gaps to reach New Zealand?
9. Is the species isolated from the genetically and morphologically most similar species elsewhere in the world?

In this report we distinguish two categories of NIS. "NIS" refers to non-indigenous species previously recorded from New Zealand waters, and "NIS (new)" refers to non-indigenous species first discovered in New Zealand waters during this project.

Cryptogenic species Category 1

Species previously recorded from New Zealand whose identity as either native or non-indigenous is ambiguous. In many cases this status may have resulted from their spread around the world in the era of sailing vessels prior to scientific survey (Chapman and Carlton 1991, Carlton 1992), such that it is no longer possible to determine their original native distribution. Also included in this category are newly described species that exhibited invasive behaviour in New Zealand (Criteria 1 and 2 above), but for which there are no known records outside the New Zealand region.

Cryptogenic species Category 2

Species that have recently been discovered but for which there is insufficient systematic or biogeographic information to determine whether New Zealand lies within their native range. This category includes previously undescribed species that are new to New Zealand and/or science.

Species indeterminata

Specimens that could not be reliably identified to species level. This group includes: (1) organisms that were damaged or juvenile and lacked morphological characteristics necessary for identification, and (2) taxa for which there is not sufficient taxonomic or systematic information available to allow identification to species level.

Survey results

A total of 316 species or higher taxa were identified from the Tauranga Port survey. This collection consisted of 202 native (Table 6), 40 cryptogenic (Table 7), 12 non-indigenous species (Table 8) and 62 species indeterminata (Table 9, Fig. 15). The biota included a diverse array of organisms from 12 Phyla (Fig. 16). Twenty-two species from the Port of Tauranga had not previously been described from New Zealand waters. These included 17 species of sponge that are thought to be new to science (Table 7), a cryptogenic ascidian (*Microcosmus squamiger*) and amphipod (*Meridiolembos* sp. aff. *acherontis*) and three non-indigenous species (the hydroids *Eudendrium capillare* and *Clytia ?linearis*, and the ascidian *Cnemidocarpa* sp.)

For general descriptions of the main groups of organisms (Phyla) encountered during this study refer to Appendix 2.

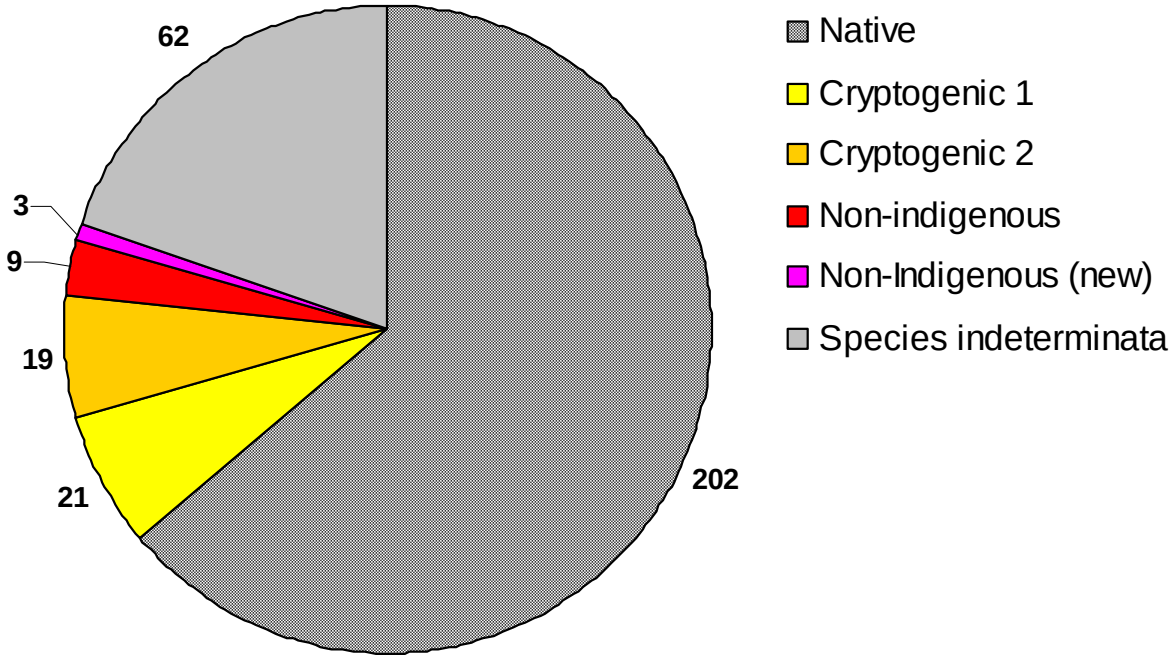

Figure 15: **Diversity of marine species sampled in the Port of Tauranga. Values indicate the number of species in native, cryptogenic, non-indigenous and species indeterminata categories.**

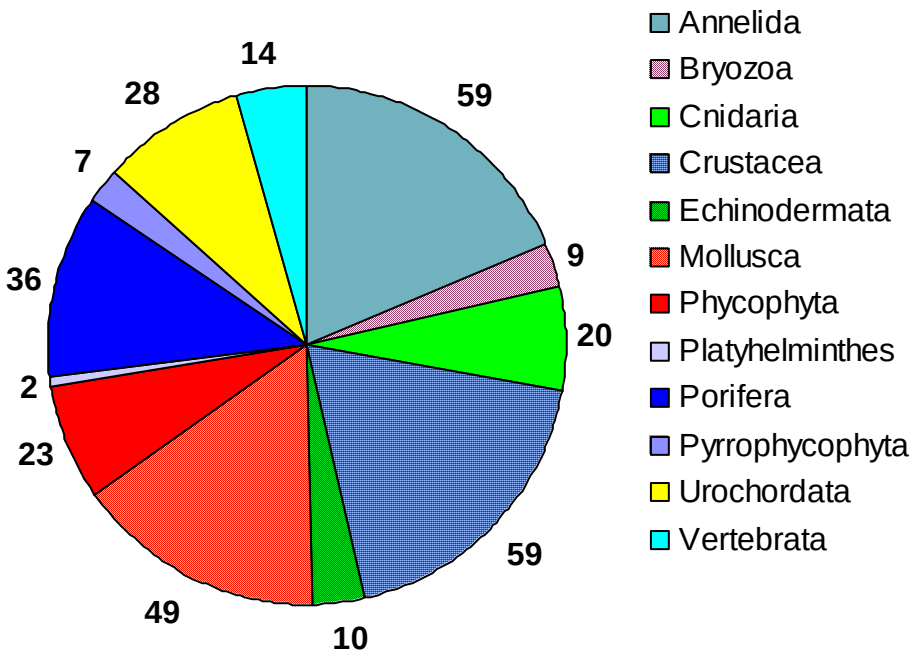

Figure 16: **Marine Phyla sampled in the Port of Tauranga. Values indicate the number of species in each of the major taxonomic groups.**

NATIVE SPECIES

A total of 202 native species was identified from the Port of Tauranga. Native species represent 63.9 % of all species identified from this location (Table 6) and included highly diverse assemblages of annelids (32 species), crustaceans (39 species), molluscs (48 species), phycophyta (12 species), porifera (15 species), urochordates (17 species) and vertebrates (13 species). A number of other less diverse phyla including bryozoans, cnidarians, echinoderms, and pyrrophycophyta were also sampled from the Port (Table 6).

CRYPTOGENIC SPECIES

Forty cryptogenic species were discovered in the Port of Tauranga. Cryptogenic species represent 12.7 % of all species or higher taxa identified from the Port. The cryptogenic organisms identified included 21 Category 1 and 19 Category 2 species as defined in Section 2.9 above. These organisms included one annelid, one bryozoan, three cnidarians, 20 porifera and nine urochordate species (Table 7). Many of the Category 1 cryptogenic species (e.g. the ascidians *Aplydium phortax*, *Astereocarpa cerea*, *Botrylloides leachii*, and *Corella eumyota*; and the hydroids *Halecium delicatum* and *Plumularia setacea*) have been present in New Zealand for more than 100 years but have distributions outside New Zealand that suggest non-native origins (Cranfield et al. 1998).

The colonial ascidians *Didemnum vexillum* (Kott, 2002) and *Didemnum incanum* were among the cryptogenic Category 1 species recorded from Port Tauranga. *D. vexillum* was first described in 2001 when it formed nuisance growths on ship's hulls, wharf piles and other submerged structures in Whangamata, New Zealand (Kott 2002). It has subsequently been reported from several other port environments in the Bay of Plenty and upper South Island (Port Nelson and Shakespeare Bay, Picton) and a local control programme was trialled in the Marlborough Sounds to prevent its spread to aquaculture sites (Coutts 2002). The appearance of *D. vexillum* in New Zealand was followed closely by reports of other nuisance species in this genus from the Atlantic coast of the USA, Mediterranean, North Sea and English Channel, but these now appear to be different species (Kott 2004). Although the type specimen of *D. vexillum* was described from New Zealand, we have included it in the Cryptogenic 1 category because of uncertainty about its true geographic origins. In the Port of Tauranga, *D. vexillum* occurred in pile scrapes taken from berths 3 and 16 at the Mount Maunganui port and berth 24 at Sulphur Point.

The large, tube-building polychaete, *Chaetopterus* sp. A, present in Tauranga, was also considered cryptogenic. This species came to the attention of New Zealand scientists in 1997 when commercial scallop fishers reported dense tube mats that appeared suddenly in scallop grounds in the Hauraki Gulf. It subsequently spread rapidly to other coastal areas of northeastern New Zealand from Bream Head, in the north, to the Motiti Islands in the South (Tricklebank et al. 2001). There is some uncertainty about the taxonomy of this species, since museum specimens and holotypes are often poorly preserved making comparisons with other species difficult. In the Port of Tauranga, *Chaetopterus* sp. A was a dominant component of fouling assemblages on wharf piles. It occurred in pile scrapes from berths 1, 2, 11, 16 and 24, and was present in a sled sample from near berth 24.

NON-INDIGENOUS SPECIES

Twelve non-indigenous species (NIS) were recorded from the Port of Tauranga (Table 8). NIS represent 3.8 % of all identified species from this location. Three of these species, the cnidarians *Clytia ?linearis* and *Eudendrium capillare*, and the ascidian *Cnemidocarpa sp.*, were not previously known from New Zealand. NIS included two annelids, three bryozoans, two cnidarians, two crustaceans, one mollusc, one phycophyta, one porifera, and one urochordate. A list of Chapman and Carlton's (1994) criteria (see Section 2.9.2) that were met

by the non-indigenous species sampled in this survey is given in Appendix 3. Below we summarise available information on the biology of each of these species, providing images where available, and indicate what is known about their distribution, habitat preferences and impacts. This information was sourced from published literature, the taxonomists listed in Appendix 1 and from regional databases on non-indigenous marine species in Australia (National Introduced Marine Pest Information System; http://www.crimp.marine.csiro.au/nimpis) and the USA (National Exotic Marine and Estuarine Species Information System; http://invasions.si.edu/nemesis). Distribution maps for each NIS in the port are composites of multiple replicate samples. Where overlayed presence and absence symbols occur on the map, this indicates the NIS was found in at least one, but not all replicates at that GPS location. NIS are presented below by phyla in the same order as Table 8.

***Dipolydora flava* (Claparède, 1870)**

No image available.

Dipolydora flava is a spionidae polychaete worm that occurs in subtidal muds and in the shells of molluscs. Like other species in this genus, *D. flava* burrows into the shells of oysters, mussels and other bivalves causing blistering on the internal surfaces. It can be a significant pest of mollusc aquaculture. The type specimen for this species was recorded from the Gulf of Naples, Italy (Claparède, E. 1870), but it is distributed widely in temperate and warm temperate seas, occuring in Japan, Indonesia, Sri Lanka, Uruguay, Argentina, and southern Australia (Australian Faunal Directory 2005). During the baseline port surveys, *D. flava* was recorded from the ports of Picton and Tauranga (Table 10). In Tauranga *D. flava* occurred in benthic grabs samples from berth 3 and pile scrapings from berth 7 (Fig. 17).

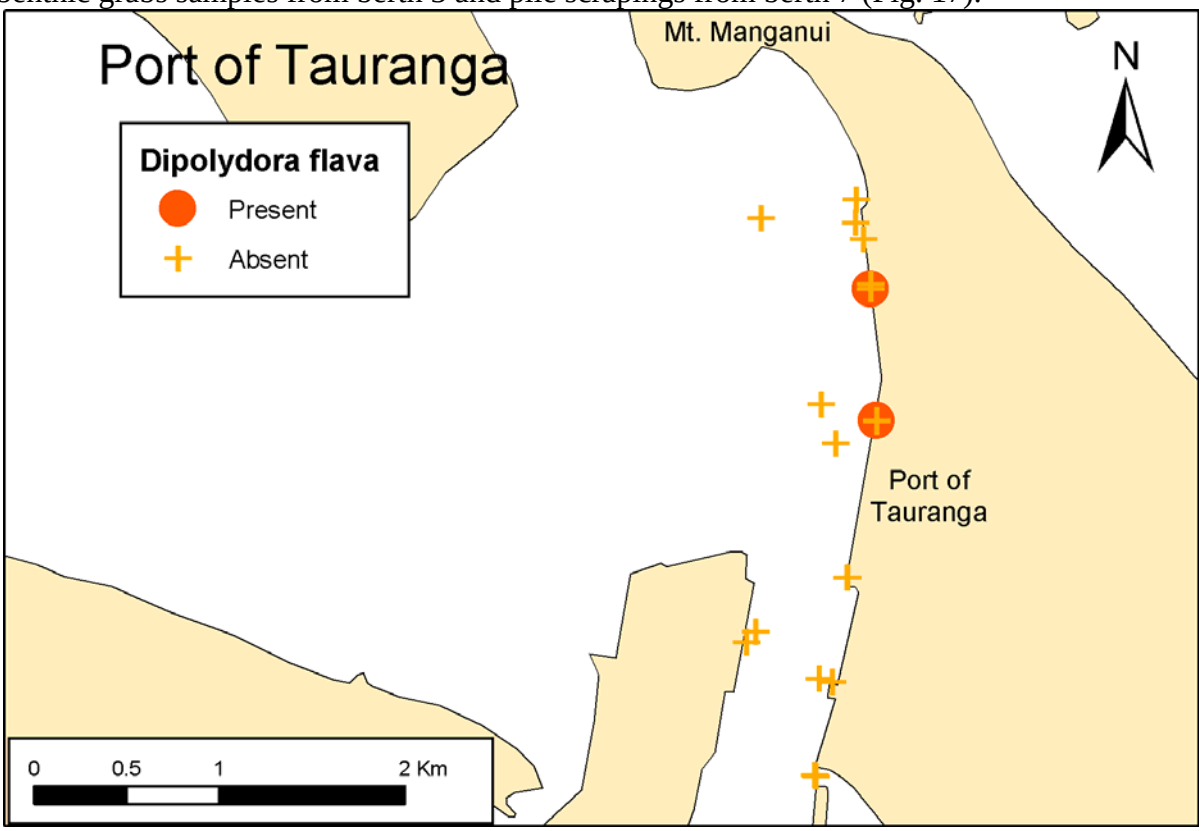

Figure 17: ***Dipolydora flava* distribution in the Port of Tauranga**

***Polydora hoplura* (Claparède, 1870)**

No image available.

Polydora hoplura is a spionid polychaete worm that bores into the shells of molluscs. It is a common pest of shellfish mariculture as its burrows cause blisters in the shells of farmed oysters, mussels and abalone (Pregenzer 1983, Handley 1995, Lleonart et al. 2003). The type specimen for this species was recorded from the Gulf of Naples, Italy (Claparède, E. 1870). Its native range is thought to be the Atlantic coast of Europe and the Mediterranean (Cranfield et al. 1998). *P. hoplura* has also been recorded from South Africa, South Eastern Australia (Bass Strait and Victoria, Central East Coast, Southern Gulf Coast, and Tasmania; Australian Faunal Directory 2005) and New Zealand where it is thought to have been introduced. It is not known when *P. hoplura* first arrived in New Zealand. In Europe and New Zealand, *P. hoplura* is often associated with shells of the introduced Pacific oyster *Crassostrea gigas* (Handley 1995).

Polydora hoplura had previously been recorded from Wellington and the Marlborough Sounds (Cranfield et al. 1998) and was recorded from Whangarei, Tauranga, Wellington, Picton, Nelson and Dunedin during the baseline port surveys (Table 10). In the Port of Tauranga it occurred in pile scrapings taken from berth 1 (Fig. 18).

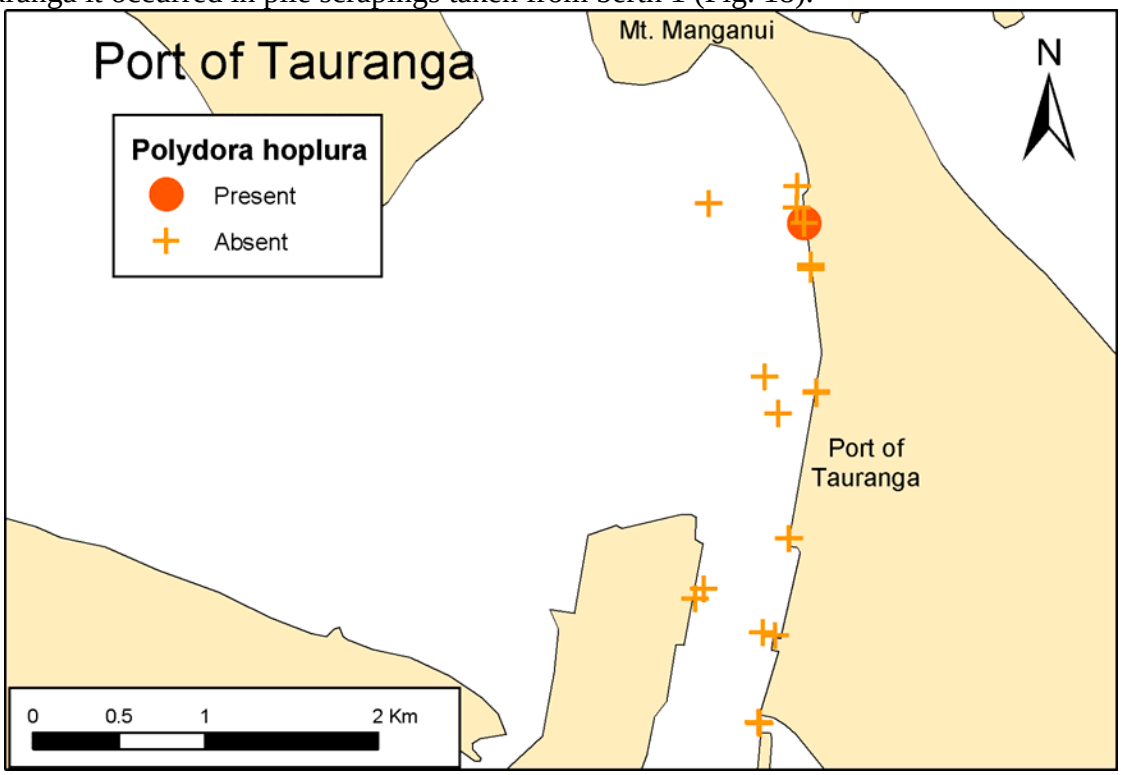

Figure 18: *Polydora hoplura* distribution in the Port of Tauranga

***Bugula flabellata* (Thompson in Gray, 1847)**

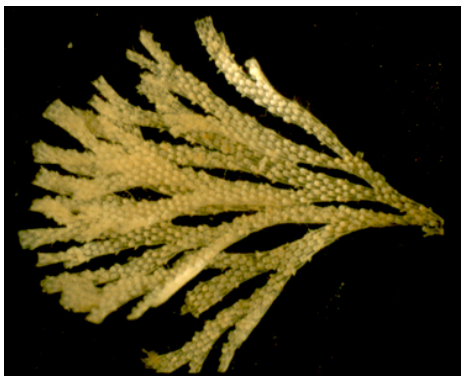

Image and information: NIMPIS (2002a)

Bugula flabellata is an erect bryozoan with broad, flat branches. It is a colonial organism and consists of numerous 'zooids' connected to one another. It is pale pink and can grow to about 4 cm high and attaches to hard surfaces such as rocks, pilings and pontoons or the shells of other marine organisms. *Bugula flabellata* is a major fouling bryozoan in ports and harbours, particularly on vessel hulls, pilings and pontoons and has also been reported from off-shore oil platforms. It is often found growing with other erect bryozoan species such as *B. neritina* (see below) or growing on encrusting bryozoans. Vertical, shaded, sub-littoral rock surfaces also form substrata for this species. It has been recorded down to 35 m. *Bugula flabellata* is native to the British Isles and North Sea and has been introduced to Chile, Florida and the Caribbean and the northern east and west coasts of the USA, as well as Australia and New Zealand. It is cryptogenic on the Atlantic coasts of Spain, Portugal and France. There have been no recorded impacts from *B. flabellata. B. flabellata* is known from all New Zealand ports. In the Port of Tauranga, *B flabellata* it occurred in benthic sled samples and pile scrapes taken from the Mt Maunganui berths, the Tug and Pilot Boat berths and the Sulphur Point berths (Fig. 19).

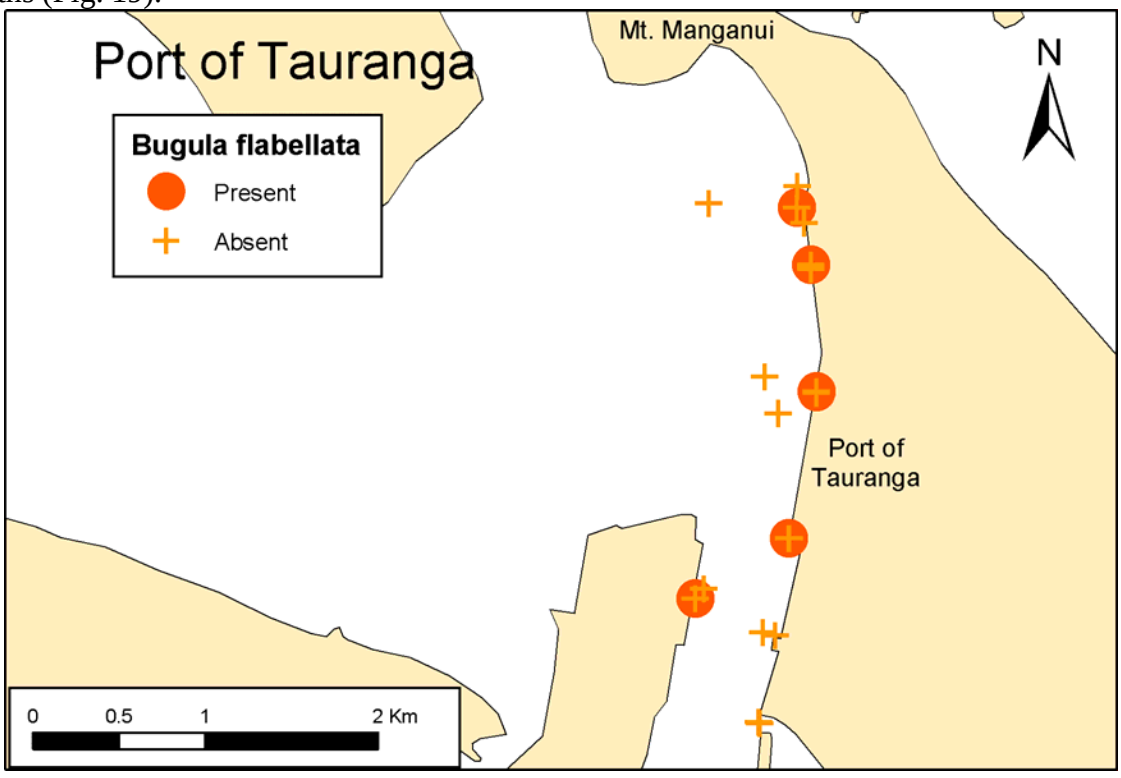

Figure 19: *Bugula flabellata* distribution in the Port of Tauranga

***Bugula neritina* (Linnaeus, 1758)**

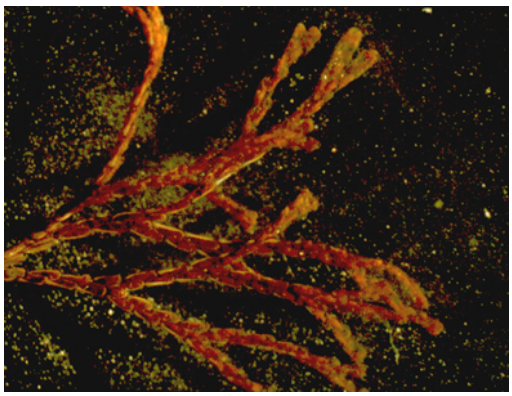

Image and information: NIMPIS (2002b)

Bugula neritina is an erect, bushy, red-purple-brown bryozoan. Branching is dichotomous (in series of two) and zooids alternate in two rows on the branches. Unlike all other species of *Bugula*, *B. neritina* has no avicularia (defensive structures) or spines, but there is a single pointed tip on the outer corner of zooids. Ovicells (reproductive structures) are large, globular and white. They often appear in such high numbers that they resemble small snails or beads. *Bugula neritina* is native to the Mediterranean Sea. It has been introduced to most of North America, Hawaii, India, the Japanese and China Seas, Australia and New Zealand. It is cryptogenic in the British Isles. *Bugula neritina* is one of the most abundant bryozoans in ports and harbours and an important member of the fouling community. The species colonises any available substratum and can form extensive monospecific growths. It grows well on pier piles, vessel hulls, buoys and similar submerged surfaces. It even grows heavily in ships' intake pipes and condenser chambers. In North America, *B. neritina* occurs on rocky reefs and seagrass leaves. In Australia, it occurs primarily on artificial substrata. B. neritina occurs in all New Zealand ports. In the Port of Tauranga, it occurred in pile scrapes taken from berths 11, 16, and 24, and in benthic sled samples from Sulphur Point (Fig. 20).

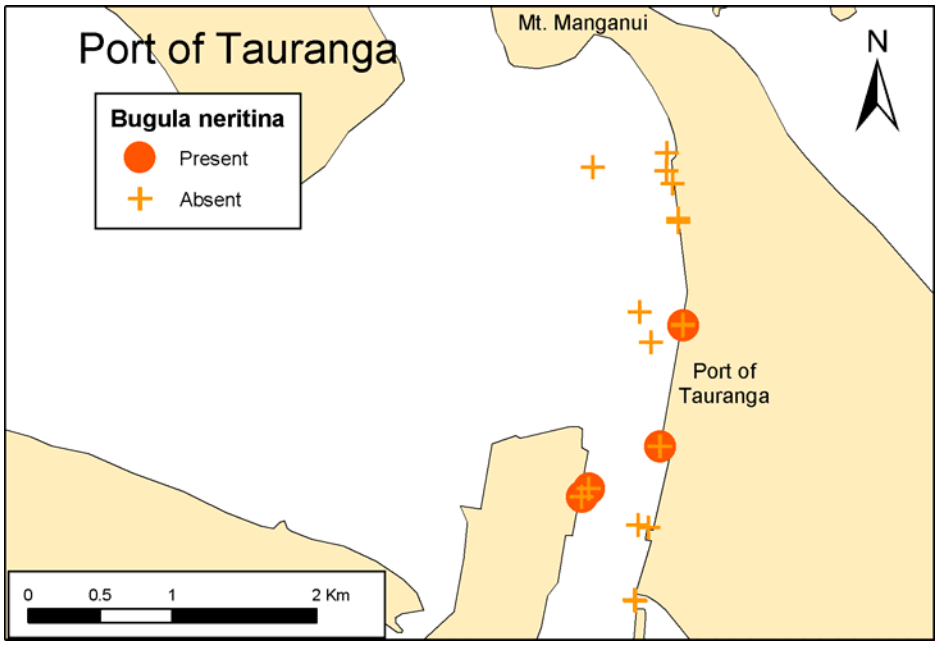

Figure 20: ***Bugula neritina* distribution in the Port of Tauranga**

***Watersipora subtorquata* (d'Orbigny, 1842)**

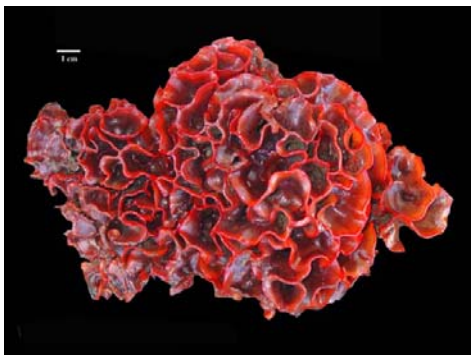

Image: California Academy of Sciences.
Information: Gordon and Matawari (1992)

Watersipora subtorquata is a loosely encrusting bryozoan capable of forming single or multiple layer colonies. The colonies are usually dark red-brown, with a black centre and a thin, bright red margin. The operculum is dark, with a darker mushroom shaped area centrally. *Watersipora subtorquata* has no spines, avicularia or ovicells. The native range of the species is unknown, but is thought to include the wider Caribbean and South Atlantic. The type specimen was described from Rio de Janeiro, Brazil (Gordon and Matawari 1992). It also occurs in the north-western Pacific, Torres Strait and north-eastern and southern Australia.

W. subtorquata is an important marine fouling species in ports and harbours. It occurs on vessel hulls, pilings and pontoons. This species can also be found attached to rocks and seaweeds. They form substantial colonies on these surfaces, typically around the low water mark. *Watersipora subtorquata* is also an abundant fouling organism and is resistant to a range of antifouling toxins. It can therefore spread rapidly on vessel hulls and provide an area for other species to settle onto which can adversely impact on vessel maintenance and speed, as fouling assemblages can build up on the hull.

W. subtorquata has been present in New Zealand since at least 1982 and is now present in most ports from Opua to Bluff (Gordon and Matawari 1992). In the Port of Tauranga this species was recovered from pile scrapings taken along the Mt Maunganui wharves, the Sulphur Point Wharves, and at the Tug and Pilot Boat berths (Fig 23).

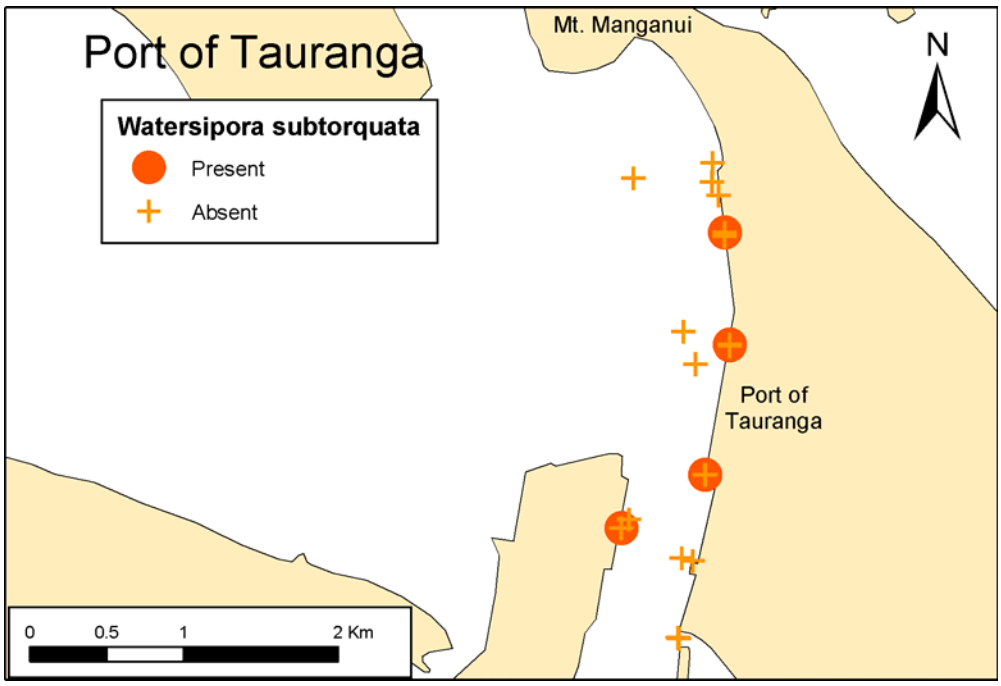

Figure 21: ***Watersipora subtorquata*** **distribution in the Port of Tauranga**

Clytia ?linearis **(Thornely, 1900)**

No image available.

This hydroid is in the family Campanulariidae. It has a circumtropical distribution and has been recorded from the western Atlantic, eastern Atlantic, Indian Ocean, western Pacific, eastern Pacific (Kelmo and Attrill 2003). Its habitat preferences and impacts are unknown, although its life cycle has been examined (Lindner and Migotto, 2002). During the baseline port surveys, only a single specimen of *C. ?linearis* was recorded from pile scraping taken from Sulphur Point in the Port of Tauranga (Fig. 22). This is the first record of its presence in New Zealand.

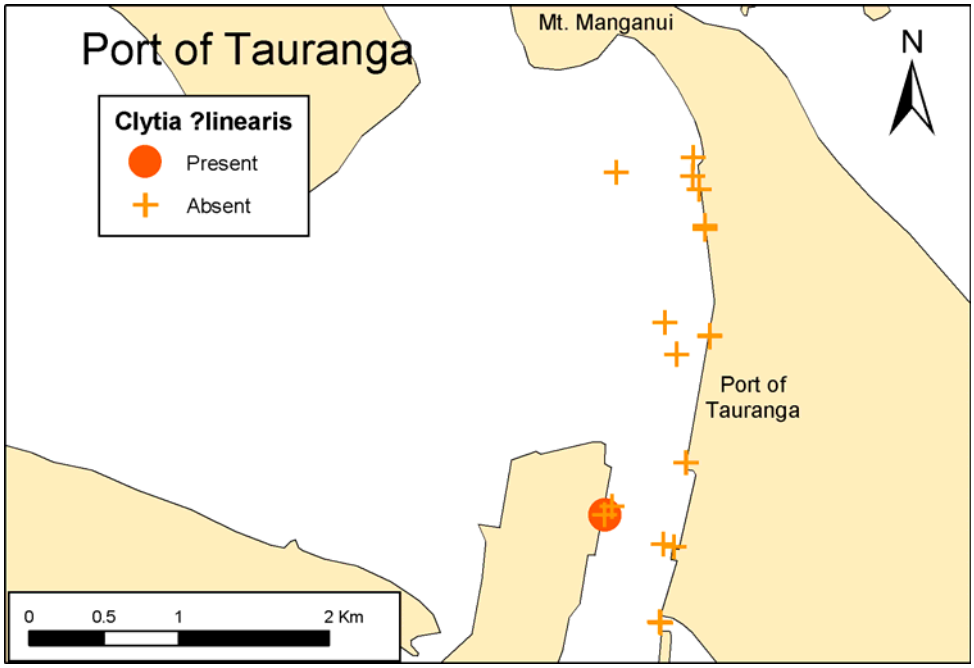

Figure 22: ***Clytia ?linearis*** **distribution in the Port of Tauranga**

Eudendrium capillare **(Alder, 1856)**

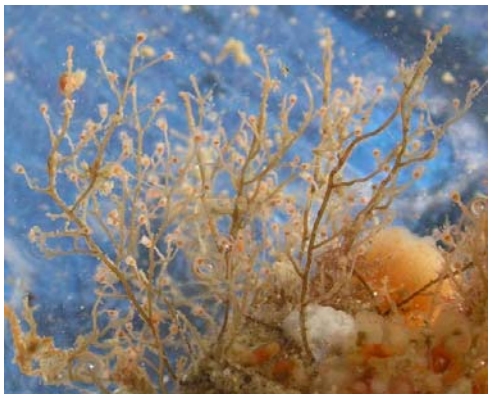

Image: http://www.unige.ch

Eudendrium capillare is an athecate hydroid in the family Eudendriidae. It has a cosmopolitan distribution and is known from the Western Atlantic, Eastern Atlantic, Indian Ocean, Western Pacific, Eastern Pacific, Bermudas, and Brazil. It is also common in southern Australia (J. Watson, Hydrozoan Research Laboratory, pers. comm.). During the baseline port surveys, it was recorded from Tauranga, Taranaki and Wellington. These are the first known records of

its presence in New Zealand. In the Port of Tauranga, *E. capillare* occurred in pile scrape samples taken from the Tug and Pilot Boat Berths (Fig. 23).

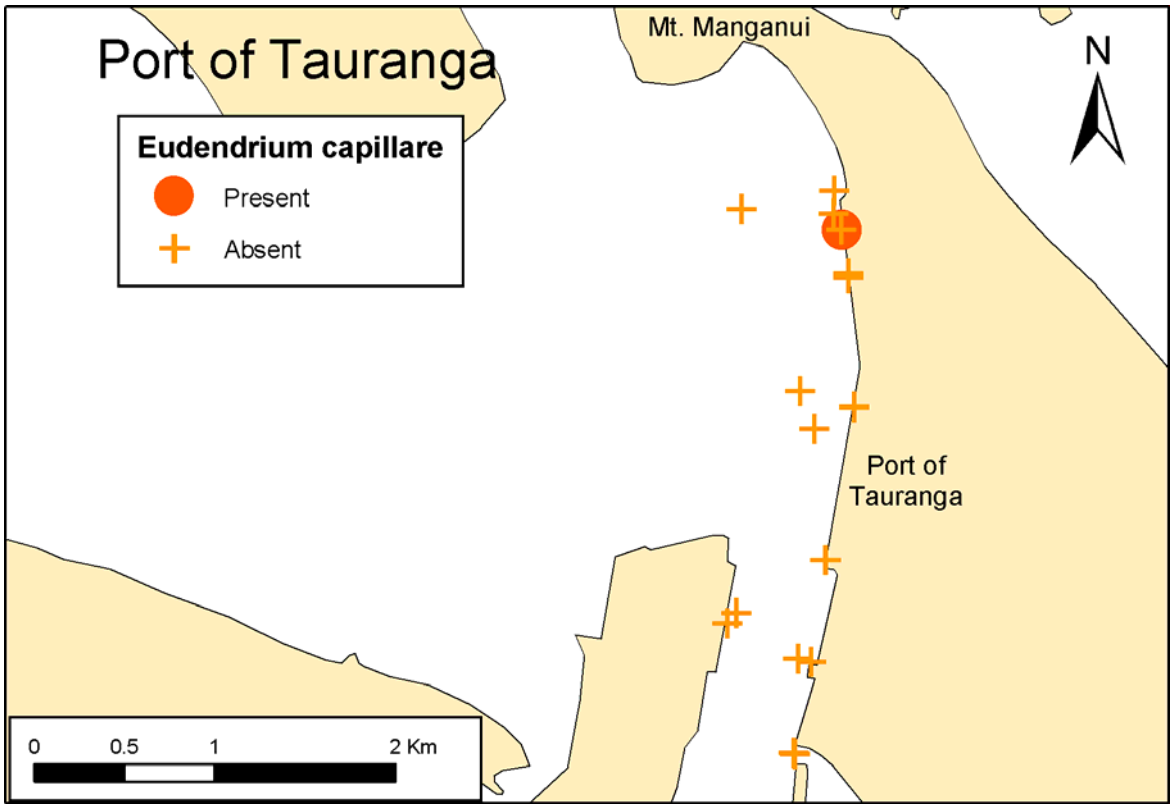

Figure 23: ***Eudendrium capillare*** **distribution in the Port of Tauranga**

Apocorophium acutum **(Chevreux, 1908)**

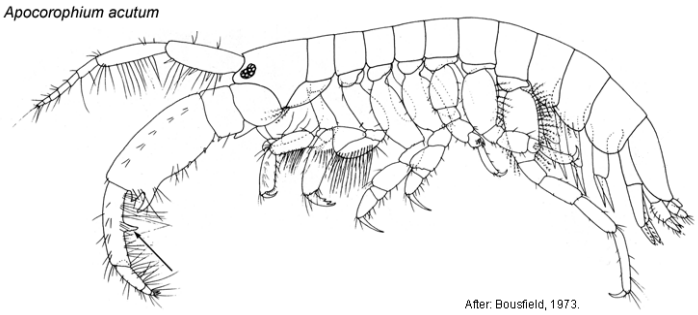

Image and information: Keys to the Northeast Atlantic and Mediterranean amphipods. [http://www.amphipoda.com/acutum.html]

Apocorophium acutum is a corophiid amphipod, known from the Atlantic Ocean (England, France, North America, Brazil, South Africa), Pacific Ocean (New Zealand) and the Mediterranean Sea. The exact native range of this species is not known. *A. acutum* inhabits marine sediments in estuarine mudflats and brackish water where it builds muddy tubes. It has no known documented impacts. During the baseline port surveys, *A. acutum* was recorded from the ports of Otago, Lyttelton, Tauranga and Timaru, and from the Opua and Gulf Harbour marinas. In Tauranga, it was found in pile scrape samples taken from Berth 11 at Mt Maunganui (Fig. 24).

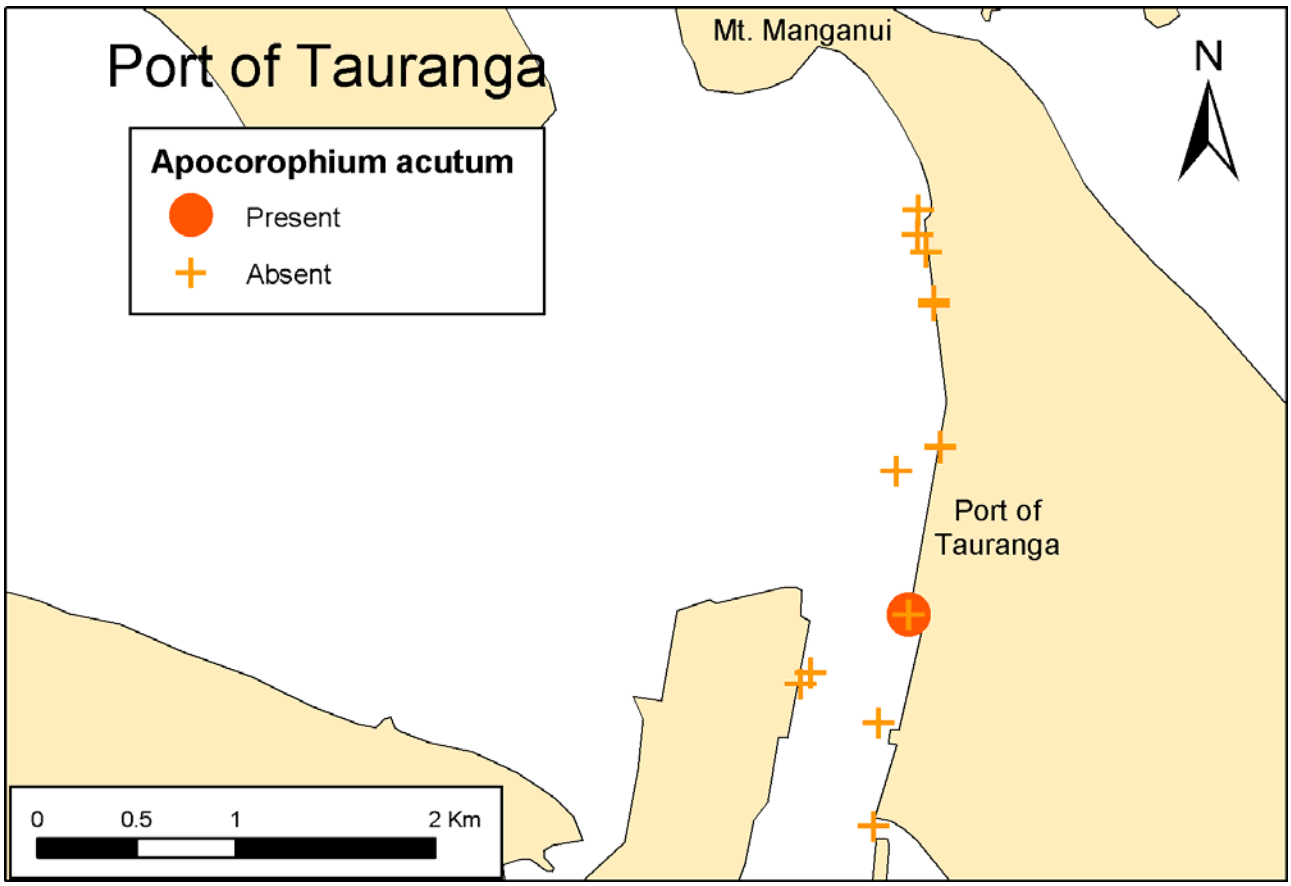

Figure 24: ***Apocorophium acutum*** **distribution in the Port of Tauranga**

Monocorophium acherusicum **(A. Costa, 1851)**

Image and information: NIMPIS (2002d)

Monocorophium acherusicum is a flat, yellowish-brown amphipod crustacean that lives amongst assemblages of marine invertebrates and plants or in soft-bottom habitats, and feeds by grazing on bacteria on sediment particles or on organic matter suspended in the water column. *Monocorophium acherusicum* is native to the northeast Atlantic, the Mediterranean and the northwest African coast and has been introduced to Brazil, southeast Africa, India, the Japan and China Seas, Australia and New Zealand. It is cryptogenic in the Baltic Sea, the Caribbean and the east and northwest coasts of the USA. *Monocorophium acherusicum* occurs subtidally on sediments or where silt and detritus accumulate among fouling communities such as algae, ascidians and bryozoans, and man-made installations eg. wharf pylons, rafts and buoys. It is a tube-building species constructing conspicuous, fragile U-shaped tubes of silk, mud and sand particles. It can reach high abundances and tolerate a wide range of salinities. Pilisuctorid cilates are parasites on this species in the Black Sea, but it is unknown whether these parasites could transfer to native species and cause negative impacts in New Zealand. During the baseline port surveys it was recorded from the ports of Otago,

Gisborne, Lyttelton, Tauranga and Timaru and from the Whangarei Town Basin marina. In the Port of Tauranga, it occurred in pile scrape samples taken from berth 16 at Mt Maunganui (Fig. 25).

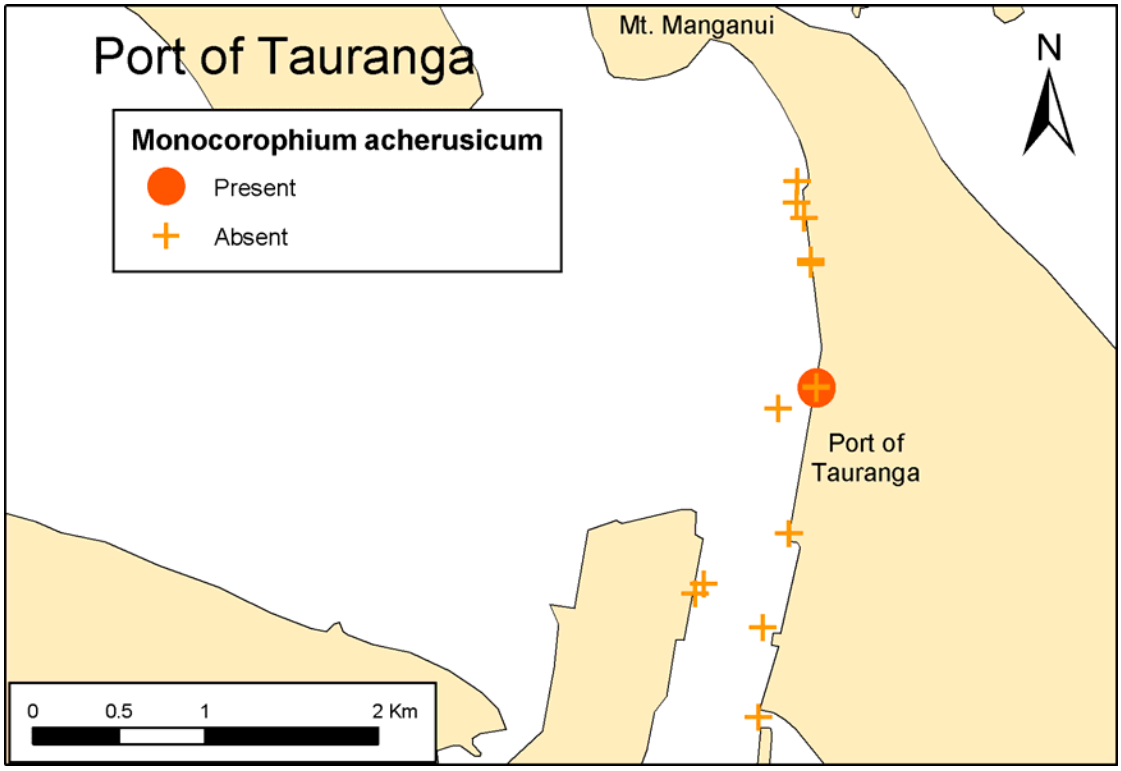

Figure 25: ***Monocorophium acherusicum*** **distribution in the Port of Tauranga**

Codium fragile tomentosoides? **((van Goor) Silva)**

Image: http://www.massbay.mit.edu
Information: NIMPIS (2002c)

Codium fragile tomentosoides is a large dichotomously branching green alga that can attain almost 1 m in length and weight up to 3.5 kg. This *C. fragile* subspecies probably originated in Japan and is regarded as one of the most invasive of all algal species. It is utilised as a food in some Asian countries. It has spread to Africa, the northeastern and northwestern Atlantic, North and South America, the Mediterranean, eastern Pacific, Australia and New Zealand. There is some evidence that this subspecies can prevent the re-establishment of native algal species, but not competitively exclude them. It is found in a wide variety of areas, from very protected through to intermediately wave-exposed in both intertidal and subtidal habitats. It grows profusely on any hard substrate including rocky reefs, boulders, cobbles, shellfish, wharf pylons and marine farming equipment. This species has wide environmental tolerances (estuarine to fully marine), occurs in intertidal and subtidal habitats, growing profusely over natural and artificial substrates. During the baseline port surveys, it was recovered only from

the Port of Tauranga, where it found in a visual search of the breakwall near berth 11 (Fig. 26).

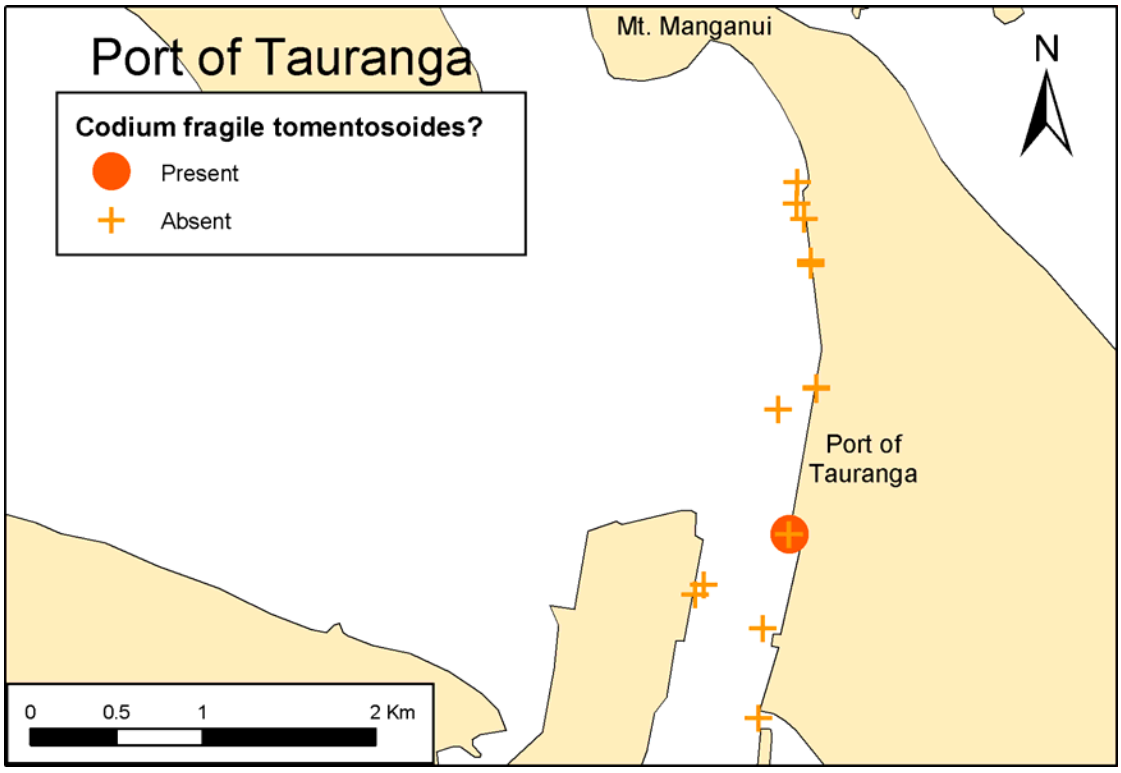

Figure 26: ***Codium fragile tomentosoides?*** **distribution in the Port of Tauranga**

Cliona celata **(Grant, 1826)**

Image and information: Encyclopedia of Marine Life of Britain and Ireland [http://www.habitas.org.uk/marinelife/]

Cliona celata is a bright yellow boring sponge that excavates tunnels in calcareous material such as the shells of bivalves and other molluscs. The exposed part of colonies can reach 20 cm in diameter. *Cliona celata* is common around the Arctic, Atlantic coast of Europe and North America, West Indies, Indian Ocean, the Red Sea, Malaya, Australia and New Guinea. It is present throughout New Zealand coastal waters and was recorded from Whangarei and Tauranga during the port baseline surveys. In the Port of Tauranga, it occurred in pile scrape samples taken from the Tug and Pilot Boat berths (Fig. 27).

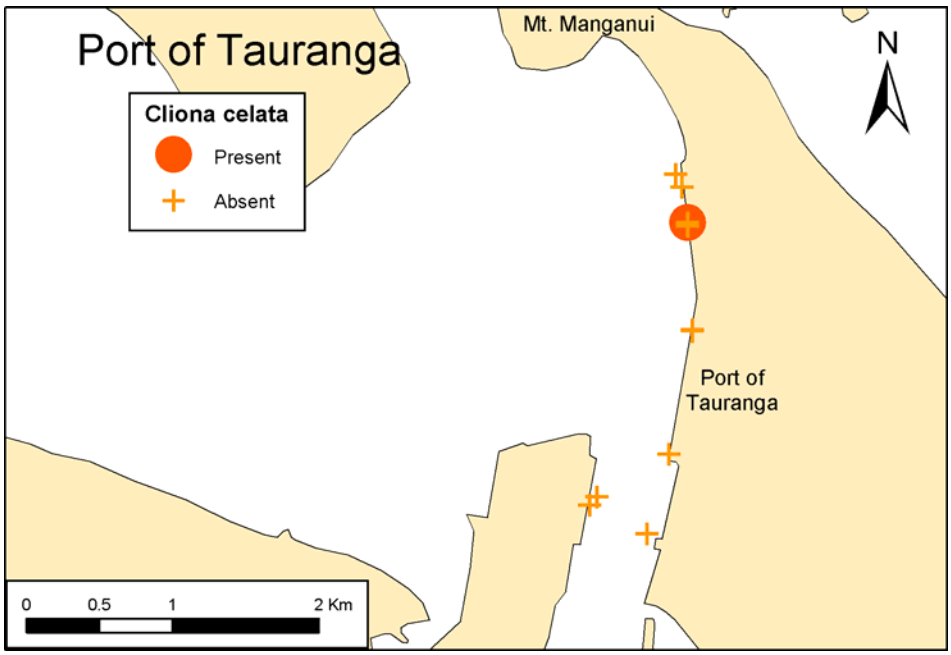

Figure 27: ***Cliona celata*** **distribution in the Port of Tauranga**

Cnemidocarpa **sp. (Kott, 1952)**

No image available.

This ascidian is in the family Styelidae. It appears to be a new species that is closely related to *C. nisiotus*, but varies from this species in gonad structure, the number of branchial tentacles and shape of rectal opening. It is not similar to any species described in Australia, Japan or South Africa. Its native distribution, habitat preferences and impacts are unknown. Specimens matching this description were also recovered from Gulf Harbour marina, Auckland, Nelson, Gisborne, Taranaki, Picton, Lyttelton and Timaru during the port baseline surveys. In Port Tauranga, specimens of *Cnemidocarpa* sp. were recovered from pile scrapings taken at berths 11 and 16 (Fig 29). (Fig. 28).

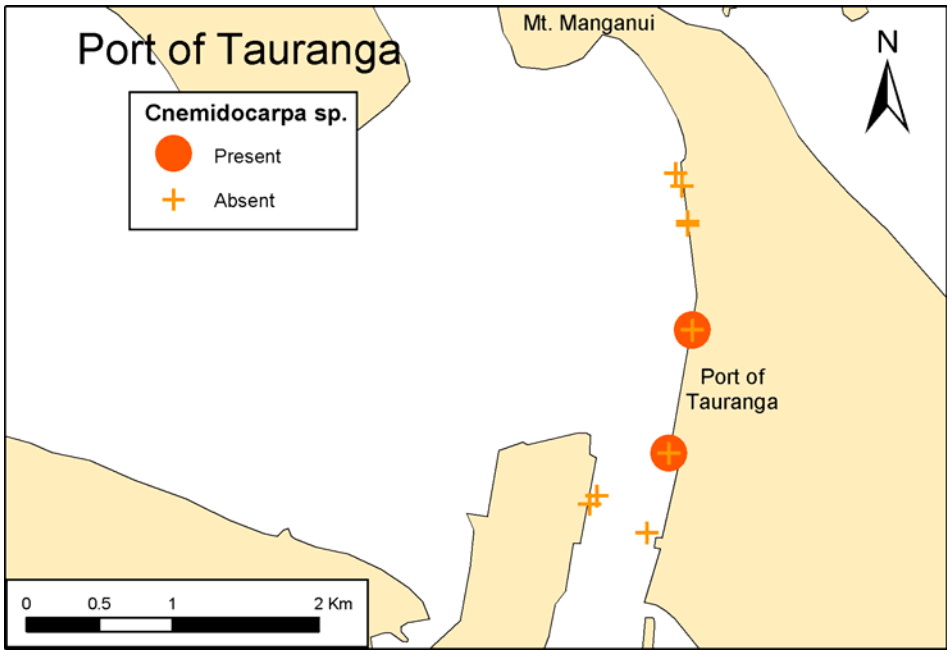

Figure 28: ***Cnemidocarpa*** **sp. distribution in the Port of Tauranga**

SPECIES INDETERMINATA

Sixty-two organisms from the Port of Tauranga were classified as species indeterminata. If each of these organisms is considered a species of unresolved identity, then together they represent 19.6 % of all species collected from this survey (Fig 15). Species indeterminata from the Port of Tauranga included 24 Annelida, seven Cnidaria, 13 Crustacea, three Echinodermata, one Mollusca, ten Phycophyta, two Platyhelminth, one Urochordata, and one Vertebrata species (Table 9).

NOTIFIABLE AND UNWANTED SPECIES

None of the 12 non-indigenous species identified from the Port of Tauranga is currently listed as unwanted species on either the New Zealand register of unwanted organisms (Table 5a) or the ABWMAC Australian list of pest species (Table 5b).

SPECIES NEW TO NEW ZEALAND

Three non-indigenous species from the Port of Tauranga had not previously been recorded from New Zealand waters: the hydrozoan cnidarians *Clytia ?linearis* and *Eudendrium capillare* and the ascidian *Cnemidocarpa* sp. (Table 7).

In addition, 17 species of sponge recorded from Tauranga (*Adocia* n. sp. 1, *Adocia* n. sp. 2, *Clathria* n. sp. 1, *Clathria* n .sp. 2, *Clathria* n. sp. 3, *Dysidea* n. sp. 1, *Dysidea* n. sp. 2, *Esperopsis* n. sp. 1, *Euryspongia* n. sp. 3, *Halichondria* n. sp. 1, *Halichondria* n. sp. 3, *Haliclona* n. sp. 3, *Haliclona* n. sp. 4, *Haliclona* n. sp. 5, *Haliclona* n. sp. 6) did not match existing species descriptions from New Zealand or overseas and may be new to science.

CYST-FORMING SPECIES

Cysts of seven species of dinoflagellate were collected during this survey. They are indicated as members of the Pyrrophycophyta in Table 6. The motile forms of two of these species (*Protoceratium reticulum* and *Lingulodinium polyedrum*) are known or thought to produce toxins that cause diarrhetic shellfish poisoning. Blooms can cause problems for aquaculture and recreational harvesting of shellfish.

POSSIBLE VECTORS FOR THE INTRODUCTION OF NON-INDIGENOUS SPECIES TO THE PORT

The non-indigenous species located in the Port are thought to have arrived in New Zealand via international shipping. Table 8 indicates possible vectors for the introduction of each NIS into the Port. Likely vectors of introduction are largely derived from Cranfield et al (1998) and indicate that approximately 75 % probably were introduced to New Zealand waters via hull fouling, and 25 % could have arrived via either hull fouling or via ballast water.

COMPARISON WITH OTHER PORTS

Sixteen locations (13 ports and three marinas) were surveyed during this project (Fig. 1). The total number of species identified in these surveys varied from 336 in the Port of Wellington to 56 in Whangarei town basin Marina (Fig. 29a). The number of species recorded in each location reflects sampling effort (Table 3c) and local patterns of marine biodiversity within the ports and marinas. Sampling effort alone (expressed as the total number of registered samples in each port), accounted for significant proportions of variation in the numbers of native (linear regression; $F_{1,14} = 33.14$, $P < 0.001$, $R^2 = 0.703$), Cryptogenic 1 ($F_{1,14} = 5.94$, $P = 0.029$, $R^2 = 0.298$) and Cryptogenic 2 ($F_{1,14} = 7.37$, $P = 0.017$, $R^2 = 0.345$) species recorded in the different locations. However differing sampling effort between locations did not explain differences in the numbers of NIS found there ($F_{1,14} = 0.77$, $P = 0.394$, $R^2 = 0.052$). Relative to the other ports and marinas surveyed, the Port of Tauranga had a smaller than average number of NIS, and a larger than average diversity of native and Cryptogenic 1

species (Fig 30a, c). An average number of Cryptogenic 2 species was encountered (Fig. 30d). Largest numbers of NIS were reported from the ports of Lyttelton and Whangarei, but significantly more Cryptogenic 1 species were recorded in Whangarei Port than in other surveyed locations (Fig 30c, Studentised residual = 3.87).

Native organisms represented over 60 % of the species diversity sampled in each surveyed location, with a minimum contribution of 61.0 % in the Port of Lyttelton and a maximum of 68.5 % in Picton (Fig. 29b). Species indeterminata organisms represented between 10.6 % and 25.6 % of the sampled diversity in each location. Non-indigenous and category 1 and 2 cryptogenic species were present in each port and marina, although their relative contributions differed between locations (Fig. 29b). The port of Lyttelton's 20 NIS was the highest diversity of non-indigenous species recorded from any of the locations surveyed. Non-indigenous species represented between 3.6 % of all identified species in Bluff and 16.1 % in Whangarei Marina. NIS comprised 3.8 % of the total sampled diversity in the Port of Tauranga (Fig. 29b), ranking it 2nd lowest in percentage composition of NIS from the sixteen locations surveyed.

Assessment of the risk of new introductions to the port

Many NIS introduced to New Zealand ports, through hull fouling, ships' sea chests, or ballast water discharge, probably do not survive to establish self-sustaining local populations. Those that do, often come from coastlines that have similar marine environments to New Zealand. For example, approximately 80% of the marine NIS known to be present within New Zealand are native to temperate coastlines of Europe, the North West Pacific, and southern Australia (Cranfield et al. 1998).

Commercial shipping arriving in the port of Tauranga from overseas comes predominantly from the temperate regions of Australia (35 %), northwest Pacific (24 %), and northeast Pacific (15 %); environments which are broadly compatible with those in the Port of Tauranga. In addition, relative to other ports in New Zealand, the Port of Tauranga has a high trade volume of bulk cargoes. Tauranga Port is New Zealand's largest export port with forestry, kiwifruit, dairy and steel exports accounting for about 70 % of the annual cargo throughput (www.port-tauranga.co.nz). Much of this cargo is destined for Japan, South Korea, southeast Asia, Australia and the Pacific Islands. Imports include petroleum, fertiliser, dry bulk goods and a range of other products from countries such as Australia and the Pacific Islands, the Americas, Asia, the Middle East, Africa and Europe, as well as other coastal areas around New Zealand. This is reflected in the relatively high volume of ballast that is discharged in the Port of Tauranga. According to Inglis (2001), a total volume of 335,410 m^3 of ballast water was discharged in the Port of Tauranga in 1999, with the largest country-of-origin volumes of 135,850 m^3 from Japan, 80,725 m^3 from South Korea, and 27,477 m^3 from Australia, and 61,112 m^3 unspecified. Shipping from these regions presents an on-going risk of introduction of new NIS to the Port of Tauranga.

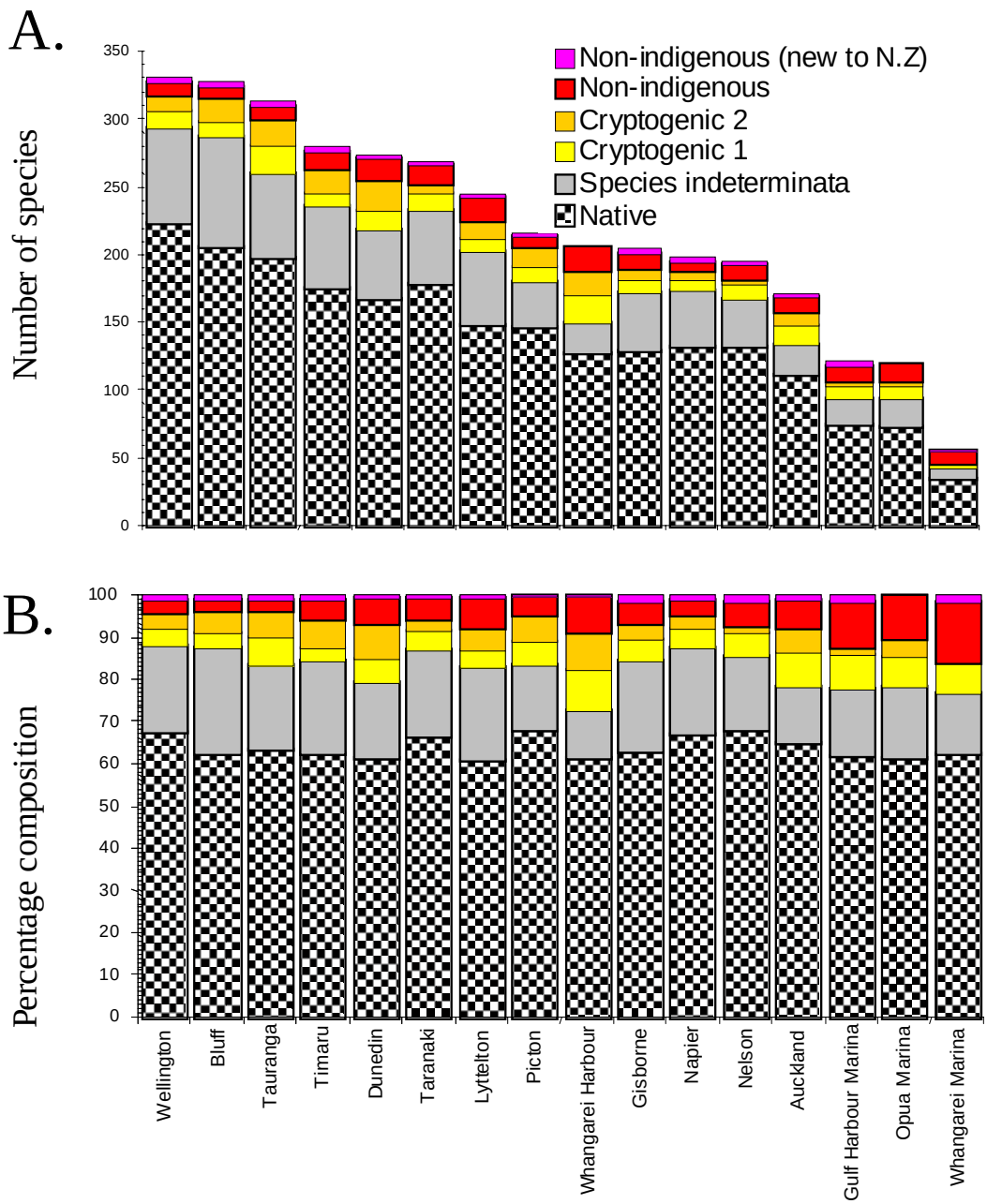

Figure 29: **Differences in (a) the number of species, and (b) the relative proportions of non-indigenous, cryptogenic, species indeterminata and native categories among the sixteen locations sampled over the summers of 2001 – 2002, and 2002-2003. Locations are presented in order of decreasing species diversity sampled.**

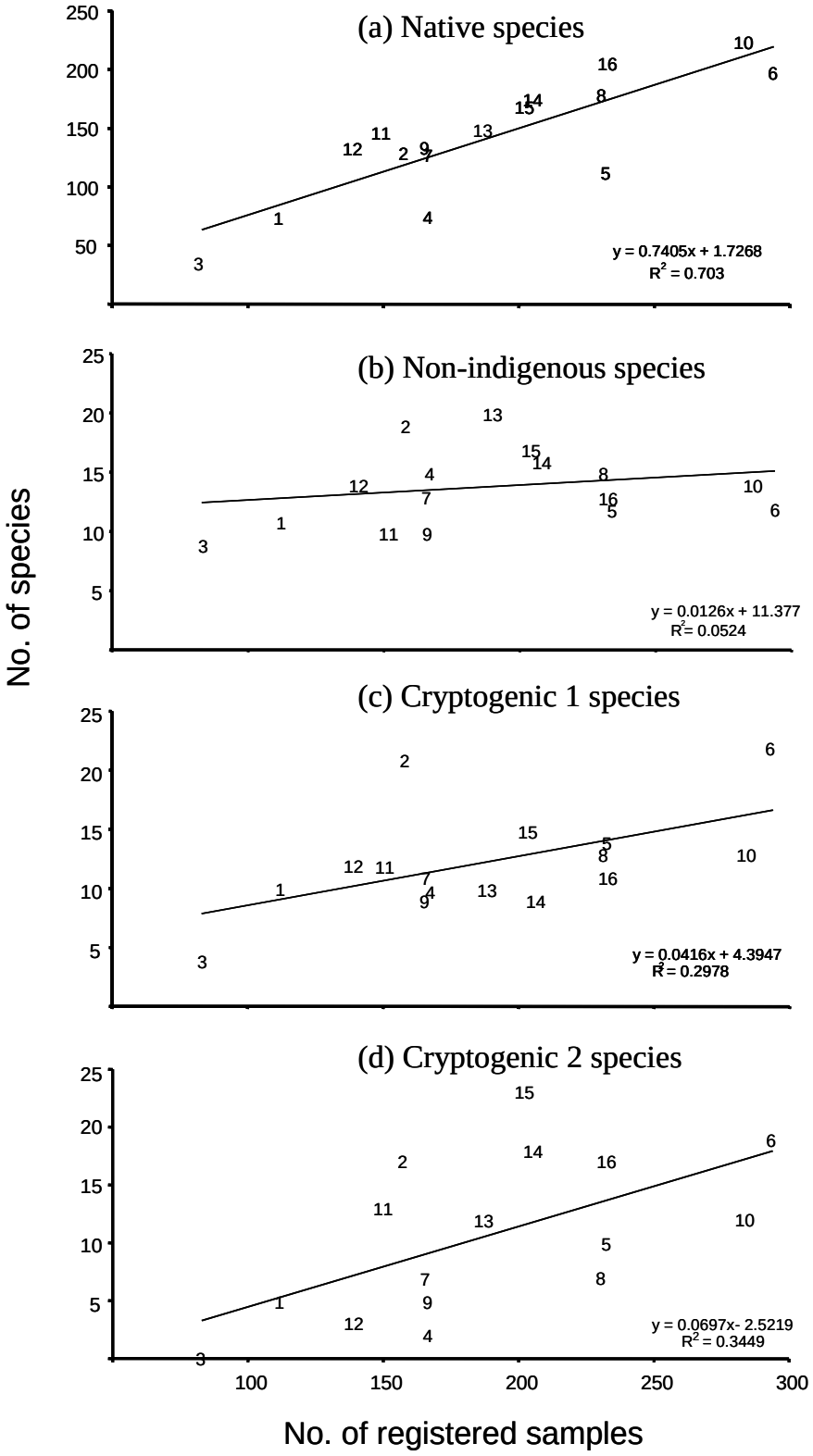

Figure 30. Linear regression equations relating numbers of species detected to sample effort at the 16 locations surveyed nation-wide. Location codes are as follows; 1 = Opua Marina, 2 = Whangarei Port, 3 = Whangarei Marina, 4 = Gulf Harbour Marina, 5 = Auckland Port, 6 = Tauranga Port, 7 = Gisborne Port, 8 = Taranaki Port, 9 = Napier Port, 10 = Wellington Port, 11 = Picton Port, 12 = Nelson Port, 13 = Lyttelton Port, 14 = Timaru Port, 15 = Dunedin Port, 16 = Bluff Port

Assessment of translocation risk for non-indigenous species found in the port

As a major hub port, the Port of Tauranga is connected directly to the ports of Auckland, Lyttelton, Gisborne and Whangarei by regular coastal shipping and is indirectly connected to most other domestic ports throughout mainland New Zealand (Dodgshun et al. 2004). Although many of the non-indigenous species found in the Port of Tauranga survey have been recorded previously in New Zealand, there were notable exceptions. The hydroids *Clytia ?linearis* and *Eudendrium capillare* were both first described from New Zealand waters during these port surveys. *Clytia ?linearis* was only found in the Port of Tauranga, while *Eudendrium capillare* was also found in the ports of Taranaki and Wellington (Table 10). Very little is currently known about the impacts of either of these species in New Zealand. The ascidian *Cnemidocarpa sp*. was also first described from New Zealand waters during these port surveys, and was found to be present in Auckland, Gisborne, Gulf Harbour Marina, Nelson, Picton, Tauranga, Taranaki, Timaru and Wellington. Little is currently known about this species either, although it now appears be widely spread through New Zealand's shipping ports where it may be competing with native fauna for space in fouling assemblages.

Vessels departing from the Port of Tauranga after having spent time at berth within the port may pose a significant risk of spreading the hydroids and ascidian mentioned above to ports within New Zealand that remain uninfested. The risk of translocation of fouling species is highest for slow-moving vessels, such as yachts and barges, and vessels that have long residence times in port. In Tauranga barges, recreational craft, and seasonal fishing vessels that are laid up for significant periods of time and are not antifouled before moving to other ports or marinas pose a particular risk for the spread of these species.

Management of existing non-indigenous species in the port

Most of the NIS detected in this survey appear to be established in the Port of Tauranga. For most marine NIS eradication by physical removal or chemical treatment is not yet a cost-effective option. Many of the species recorded in the Port of Tauranga are widespread and local population controls are unlikely to be effective. Management should be directed toward preventing spread of species established in the Port of Tauranga to locations where they do not presently occur. Although none of the species present in the Port of Tauranga are currently on the New Zealand register of unwanted species, several species have exhibited invasive behaviour (e.g. rapid spread and high abundance), are restricted in their current New Zealand distribution, and may be capable of causing impacts to natural ecosystems and valued fisheries. These include the cryptogenic tube-building polychaete *Chaetopterus* sp. A. (Tricklebank et al. 2001) and the colonial ascidian *Didemnum vexillum* (Coutts 2002). Managing the risk of spreading these species to other ports will require better understanding of the frequency of movements by vessels of different types from the Port of Tauranga to other domestic and international locations and improved procedures for hull maintenance and domestic ballast transfer by vessels leaving this port, particularly for slow moving vessels that have been moored for some time within the port or harbour area.

Prevention of new introductions

Interception of unwanted species transported by shipping is best achieved offshore, through control and treatment of ships destined for the Port of Tauranga from high-risk locations elsewhere in New Zealand or overseas. Under the Biosecurity Act 1993, the New Zealand Government has developed an Import Health Standard for ballast water that requires large ships to exchange foreign coastal ballast water with oceanic water prior to entering New Zealand, unless exempted on safety grounds. This procedure ("ballast exchange") does not remove all risk, but does reduce the abundance and diversity of coastal species that may be

discharged with ballast. Ballast exchange requirements do not currently apply to ballast water that is uptaken domestically. Globally, shipping nations are moving toward implementing the International Convention for the Control and Management of Ships Ballast Water & Sediments that was recently adopted by the International Maritime Organisation (IMO). By 2016 all merchant vessels will be required to meet discharge standards for ballast water that are stipulated within the agreement.

Options are currently lacking, however, for effective in-situ treatment of biofouling and sea-chests. Biosecurity New Zealand has recently embarked on a national survey of hull fouling on vessels entering New Zealand from overseas. The study will characterise risks from this pathway (including high risk source regions and vessel types) and identify predictors of risk that may be used to manage problem vessels. Shipping companies and vessel owners can reduce the risk of transporting NIS in hull fouling or sea chests through regular maintenance and antifouling of their vessels.
Overseas studies have suggested that changes in trade routes can herald an influx of new NIS from regions that have not traditionally had major shipping links with the country or port (Carlton 1987). The growing number of baseline port surveys internationally and an associated increase in published literature on marine NIS means that information is becoming available that will allow more robust risk assessments to be carried out for new shipping routes. We recommend that port companies consider undertaking such assessments for their ports when new import or export markets are forecast to develop. The assessment would allow potential problem species to be identified and appropriate management and monitoring requirements to be put in place.

Conclusions and recommendations

The national biological baseline surveys have significantly increased our understanding of the identity, prevalence and distribution of introduced species in New Zealand's shipping ports. They represent a first step towards a comprehensive assessment of the risks posed to native coastal marine ecosystems from non-indigenous marine species. Although measures are being taken by the New Zealand government to reduce the rate of new incursions, foreign species are likely to continue being introduced to New Zealand waters by shipping, especially considering the lack of management options for hull fouling introductions. There is a need for continued monitoring of marine NIS in port environments to allow for (1) early detection and control of harmful or potentially harmful non-indigenous species, (2) to provide on-going evaluation of the efficacy of management activities, and (3) to allow trading partners to be notified of species that may be potentially harmful. Baseline inventories, like this one, facilitate the second and third of these two purposes. They become outdated when new introductions occur and, therefore, should be repeated on a regular basis to ensure they remain current. Hewitt and Martin (2001) recommend an interval of three to five years between repeat surveys.

The predominance of hull fouling as a likely introduction vector for NIS encountered in the Port of Tauranga (probably responsible for 75% of the NIS introductions) is consistent with previous findings from a range of overseas locations. For instance, Hewitt et al (1999) attributed the introduction of 77 % of the 99 NIS encountered in Port Phillip Bay (Australia) to hull fouling, and only 20 % to ballast water. Similarly, 61 % of the 348 marine and brackish water NIS established in the Hawaiian Islands are thought to have arrived on ships' hulls, but only 5 % in ballast water (Eldredge and Carlton 2002). However, ballast water is thought to be responsible for the introduction of 30 % of the 212 marine NIS established in San Fransisco Bay (USA), compared to 34 % for hull fouling (Cohen and Carlton 1995). The high percentages of NIS thought to have been introduced by hull fouling in Australasia may reflect the fact that hull fouling has a far longer history (~200 years) as an introduction vector

than ballast water (~40 years). However, the fact that some of New Zealand and Australia's most recent marine NIS introductions (e.g. *Undaria pinnatifida*, *Codium fragile sp. tomentosoides*) have been facilitated by hull fouling suggests that it has remained an important transport mechanism (Cranfield et al 1998; Hewitt et al 1999).

Non-indigenous marine species can have a range of adverse impacts through interactions with native organisms. For instance, NIS can cause ecological impacts through competition, predator-prey interactions, hybridisation, parasitism or toxicity and can modify the physical environment through altering habitat structure (Ruiz et al 1999; Ricciardi 2001). Assessing the impact of a NIS in a given location ideally requires information on a range of factors, including the mechanism of their impact and their local abundance and distribution (Parker et al 1999). To predict or quantify NIS impacts over larger areas or longer time scales requires additional information on the species' seasonality, population size and mechanisms of dispersal (Mack et al 2000). Further studies may be warranted to establish the abundance and potential impacts of the non-indigenous species encountered in this port to determine the threat they represent to New Zealand's native ecosystems.

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References

AMOG Consulting (2002). Hull fouling as a vector for the translocation of marine organisms. Phase I: Hull fouling research. Ballast Water Research Series, Report No. 14, Department of Agriculture, Fisheries and Forestry Australia, Canberra.

Andrews, D.; Whayman, G.; Edgar, G. (1996) Assessment of optimal trapping techniques to control densities of the northern Pacific seastars on marine farm leases. Report No. FRDC 95/066

Australian Faunal Directory. Australian Biological Resources Study. Viewed 22 July 2005. http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/index.html

Barker, M.F.; Larcombe, M.F. (1976). Aspects of the ecology of Tauranga Harbour. Prepared for Bay of Plenty Catchment Commission and Regional Water Board. Bioresearches Ltd, Auckland

Boreham, R. (2005). Port of Tauranga: star performer of the NZ port industry. *Coastal Bay of Plenty 2005*: 18-19.

Campbell, M. (2004). Analysis of vessel entries into New Zealand between 1998 and 2003. Unpublished report, Ministry of Fisheries, Wellington.

Carlton, J.T. (1985). Transoceanic and inter-oceanic dispersal of coastal marine organisms: the biology of ballast water. *Oceanography and Marine Biology Annual Reviews 23*: 313-371.

Carlton J.T. (1987) Patterns of transoceanic marine biological invasions in the Pacific Ocean. Bulletin of Marine Science 41:452-465

Carlton, J.T. (1992). Blue immigrants: the marine biology of maritime history. *The Log of Mystic Seaport Museum 44*: 31-36.

Carlton, J.T (1996) Biological invasions and cryptogenic species. *Ecology 77*:1653-1655.

Carlton, J.T. (1999). The scale and ecological consequences of biological invasions in the world's oceans. Pp. 195-212. *In*: Invasive species and biodiversity management. Sandlund, T.; Schei, P.J.; Viken, A. (Eds.). Kluwer Academic, Dordrecht.

Carlton, J.T.; Geller, J. (1993). Ecological roulette: The global transport of non-indigenous marine organisms. *Science 261*: 78-82.

Chapman, J.W.; Carlton, J.T. (1991). A test of criteria for introduced species: the global invasion by the isopod *Synidotea laevidorsalis* (Miers, 1881). *Journal of Crustacean Biology 11*: 386-400.

Chapman, J.W.; Carlton, J.T. (1994). Predicted discoveries of the introduced isopod *Synidotea laevidorsalis* (Miers, 1881). *Journal of Crustacean Biology 14*: 700-714.

Cohen, A.N.; Carlton, J.T. (1995). Non-indigenous Aquatic Species in a United States Estuary: A Case Study of the Biological Invasions of the San Francisco Bay and Delta.

Cohen, A.; Carlton, J. (1998). Accelerating invasion rate in a highly invaded estuary. *Science 279*: 555-558.

Coutts, A.D.M., 2002. A biosecurity investigation of a barge in the Marlborough Sounds: Cawthron Institute Report 744, 68 p.

Coutts, A.; Moore, K.; Hewitt, C. (2003). Ships' sea chests: an overlooked transfer mechanisms for non-indigenous marine species? *Marine Pollution Bulletin 46*: 1504-1515.

Cranfield, H.; Gordon, D.; Willan, R.; Marshall, B.; Battershill, C.; Francis, M.; Glasby, G.; Read, G. (1998). Adventive marine species in New Zealand. *NIWA Wellington Technical Report No. 34*.

Davies-Colley, R.J.; Healy, T.R. (1978). Sediment and hydrodynamics of the Tauranga Entrance to Tauranga Harbour. *New Zealand Journal of Marine and Freshwater Research 12*: 225-236

Dodgshun T, Taylor M, Forrest B (2004) Human-mediated pathways of spread for non-indigenous marine species in New Zealand. Cawthron Report 700, prepared for the Department of Conservation. Cawthron Institute, Nelson. 39 pp.

Eldredge, L.; Carlton, J.T. (2002). Hawaiian marine bioinvasions: a preliminary assessment. *Pacific Science 56*: 211-212.

Environment B.O.P. (1999). The state of Tauranga Harbour's environment. Environment B.O.P, Whakatane

Ferrell, D.; Avery, R.; Blount, C.; Hayes, L.; Pratt, R. (1994). The utility of small, baited traps for surveys of snapper (*Pagrus auratus*) and other demersal fishes. NSW Fisheries Research Institute Report. NSW Fisheries Research Institute, Cronulla, NSW, Australia.

Gordon, D.; Matawari, S. (1992). Atlas of marine fouling bryozoa of New Zealand Ports and Harbours. Miscellaneous Publications of the New Zealand Oceanographic Institute. New Zealand Oceanographic Institute. 52 p.

Grosholz, E. (2002) Ecological and evolutionary consequences of coastal invasions. *Trends in Ecology and Evolution 17*:22-27.

Gust, N.; Inglis, G.; Hayden, B. (2001). Design of baseline surveys for exotic marine organisms. Final research report for MFISH project ZBS2000/04. National Institute of Water and Atmospheric Research, Christchurch.

Hatton, C.; Thomson, M.; Donovan, W.F.; Larcombe, M.F. (1975). Ecological monitoring survey of the lower reaches of the major Bay of Plenty rivers, the Ohau Channel, and parts of the Tauranga Harbour (Winter 1975). Bioresearches Ltd, Auckland

Healy, T. (1994). Channel dredging, dredge spoil migration and downdrift. Impacts at a large tidal inlet, Tauranga Harbour, New Zealand. *New Zealand Geographer 50*: 3-6

Hewitt, C.; Campbell, M.; Thresher, R.; Martin, R. (1999). Marine biological invasions of Port Phillip Bay, Victoria. Report No. 20, Centre for Research on Introduced Marine Pests, Hobart.

Hewitt C; Martin R (1996) Port surveys for introduced marine species - background considerations and sampling protocols. CRIMP technical report no 4. CSIRO Division of Fisheries, Hobart.

Hewitt, C.; Martin, R. (2001). Revised protocols for baseline surveys for introduced marine species- survey design, sampling protocols and specimen handling. Report No. 22, Centre for Research on Introduced Marine Pests, Hobart.

Inglis,G. (2001). Criteria for selecting New Zealand ports and other points of entry that have a high risk of invasion by new exotic marine organisms. Final research report for Ministry of Fisheries research project ZBS2000/01A, objectives 1 & 2. NIWA, Wellington. 27pgs.

Kelmo, F., Attrill M. J. (2003). Shallow-water Campanulariidae (Hydrozoa, Leptothecatae) from Northern Bahía, Brazil. *Revista de Biologia Tropical 51(1)*: 123-146.

Kott, P. 2002. A complex didemnid ascidian from Whangamata, New Zealand. *Journal of Marine Biology Association of the United Kingdom* 82: 625-628.

Kott, P. 2004. A new species of *Didemnum* (Ascidiacea, Tunicata) from the Atlantic coast of North America. *Zootaxa* 732: 1-10.

Leppäkoski, E.; Gollasch, S.; Gruszka, P.; Ojaveer, H.; Olenin, S.; Panov, V. (2002). The Baltic - a sea of invaders. *Canadian Journal of Fisheries and Aquatic Sciences 59*: 1175-1188.

Lindner, A.; Migotto, A.E. (2002). The life cycle of *Clytia linearis* and *Clytia noliformis*: metagenic campanulariids (Cnidaria: Hydrozoa) with contrasting polyp and medusa stages. *Journal of the Marine Biological Association, U.K. 82(4)*: 541-553.

Mack, R.; Simberloff, D.; Lonsdale, W.; Evans, H.; Clout, M.; Bazzaz, F. (2000). Biotic invasions: causes, epidemiology, global consequences and control. *Ecological Applications 10*: 689-710.

Matsuoka K, Fukuyo Y (2000) Technical guide for modern dinoflagellate cyst study. Report prepared for the WESTPAC-HAB Project. WESTPAC-HAB/WESTPAC/IOC <http://dinos.anesc.u-tokyo.ac.jp/technical_guide/main.pdf> 77p.

NIMPIS (2002a). *Bugula flabellata* species summary. National Introduced Marine Pest Information System. Hewitt, C.L.; Martin, R.B.; Sliwa, C.; McEnnulty, F.R.; Murphy, N.E.; Jones, T.; Cooper, S. (Eds:). Web publication <http://crimp.marine.csiro.au/nimpis>

NIMPIS (2002b). *Bugula neritina* species summary. National Introduced Marine Pest Information System. Hewitt, C.L.; Martin, R.B.; Sliwa, C.; McEnnulty, F.R.; Murphy, N.E.; Jones, T.; Cooper, S. (Eds.). Web publication <http://crimp.marine.csiro.au/nimpis>

NIMPIS (2002c). *Codium fragile ssp tomentosoides* species summary. National Introduced Marine Pest Information System (Eds: Hewitt C.L., Martin R.B., Sliwa C., McEnnulty, F.R., Murphy, N.E., Jones T. & Cooper, S.). Web publication <http://crimp.marine.csiro.au/nimpis>, Date of access: 8/1/2005

NIMPIS (2002d). Monocorophium *acherusicum* species summary. National Introduced Marine Pest Information System. Hewitt, C.L.; Martin, R.B.; Sliwa, C.; McEnnulty, F.R.; Murphy, N.E.; Jones, T.; Cooper, S. (Eds.). Web publication <http://crimp.marine.csiro.au/nimpis>

Park, S. (1998). Dinoflagellate cyst monitoring in Tauranga harbour: 1993-1998. Environment B.O.P, Whakatane

Park, S. (2003). Marine sediment and contaminants survey (2001-03) of Tauranga Harbour. Environment B.O.P, Whakatane

Park, S.; Donald, R. (1994). Tauranga Harbour Regional Plan. Environmental investigations: ecology of Tauranga Harbour. Environment B.O.P, Whakatane

Park, S.G. (1999). Changes in abundance of seagrass (*Zostera* spp.) in Tauranga Harbour from 1956 - 96. Environment B.O.P, Whakatane

Park, S.G. (2000). Benthic macrofauna monitoring. Environment B.O.P, Whakatane

Parker, I.; Simberloff, D.; Lonsdale, W.; Goodell, K.; Wonham, M.; Kareiva, P.; Williamson, M.; Holle, B.V.; Moyle, P.; Byers, J.; Goldwasser, L. (1999). Impact: Toward a Framework for Understanding the Ecological Effects of Invaders. *Biological Invasions 1*: 3-19.

Ricciardi A (2001) Facilitative interactions among aquatic invaders: is an "invasional meltdown" occurring in the Great Lakes? *Canadian Journal of Fisheries and Aquatic Sciences 58*: 2513-2525.

Roper, D. (1990). Benthos associated with an estuarine outfall, Tauranga harbour, New Zealand. *New Zealand Journal of Marine and Freshwater Research 24*: 487-498

Ruiz, G.; Fofonoff, P. Hines, A.; Grosholz, E. (1999). Non-indigenous species as stressors in estuarine and marine communities: assessing invasion impacts and interactions. *Limnology and Oceanography 44*: 950-972.

Sinner, J.; Forrest, B.; Taylor, M. (2000). A strategy for managing the Asian kelp Undaria: final report. Cawthron Report 578, 119pp. Prepared for Ministry of Fisheries.

Taylor, M.; MacKenzie, L. (2001). Delimitation survey of the toxic dinoflagellate Gymnodinium catenatum in New Zealand. Cawthron Report 661, 12pp. Prepared for Ministry of Fisheries.

Thompson, R.M.C. (1981). A bibliography of the major ports and harbours of New Zealand (marine geology, physical oceanography and related topics). New Zealand Oceanographic Institute, Wellington

Thrush, S.F.; Schultz, D.; Hewitt, J.E.; Talley, D. (2002). Habitat structure in soft sediment environments and abundance of juvenile snapper *Pagrus auratus*. *Marine Ecology Progress Series 245*: 273-280.

Tricklebank, K. A.; Nesbit, G.; Read, G.; Acosta, H. 2001. The distribution of the parchment tubeworm *Chaetopterus* off the coast of northeastern New Zealand. Final Research Report to the Ministry of Fisheries. Auckland Uniservices Ltd, Auckland, New Zealand. 47 p.

Warwick RM (1996) Marine biodiversity: a selection of papers presented at the conference "Marine Biodiversity: causes and consequences", York, U.K. 30 August - 2 September 1994. Journal of Experimental Marine Biology and Ecology 202:IX-X

Wilcove, D.; Rothstein, D.; Dubow, J.; Phillips, A.; Losos, E. (1998). Quantifying threats to imperiled species in the United States. *Bioscience 48*: 607-615.

<www.fish.govt.nz/sustainability/biosecurity>: Ministry of Fisheries website. Accessed 07/06/05.

<www.marina.co.nz>: website of the Tauranga Bridge Marina. Accessed 14/06/05.

<www.port-tauranga.co.nz>: Port of Tauranga website. Accessed 14/06/05.

Tables

Table 1: Berthage facilities in the Port of Tauranga.

Berth	Berth No.	Purpose	Construction	Length of Berth (m)	Depth (m)
Mt Maunganui	1	General, containers	Concrete deck/wood piles + wood fenders	170	10.4
	2		Concrete deck/wood piles + wood fenders	170	10.4
	3		Concrete deck/wood piles + wood fenders	170	12.5
	4		Concrete deck/wood piles + wood fenders	170	9.5-12.5
	5		Concrete deck/wood piles + wood fenders	228	9.5
	6		Concrete deck/wood piles + wood fenders	150	10.4
	7	General, containers, bulk cargoes	Concrete deck/wood piles + wood fenders	160	10.4
	8		Concrete deck/wood piles + wood fenders	180	12.5
	9	Logs, bulk cargoes	Concrete deck/wood piles + wood fenders	180	11.6
	10		Concrete deck/wood piles + wood fenders	200	11.6
	11		Concrete deck/wood piles + wood fenders	223	12.5
	Cement/ Tankers	Petrochemicals, cement, woodchips	Concrete deck/wood piles + wood fenders	-	13
Sulphur Point	23	General, containers	Concrete deck/concrete piles + steel fenders with wood faces	200	14.5
	24		Concrete deck/concrete piles + steel fenders with wood faces	200	14.5
	25		Concrete deck/concrete piles + steel fenders with wood faces	200	14.5

Table 2:. Comparison of survey methods used in this study with the CRIMP protocols (Hewitt and Martin 2001), indicating modifications made to the protocols following recommendations from a workshop of New Zealand scientists. Full details of the workshop recommendations can be found in Gust et al. (2001).

	CRIMP Protocol		NIWA Method		
Taxa sampled	Survey method	Sample procedure	Survey method	Sample procedure	Notes
Dinoflagellate cysts	Small hand core	Cores taken by divers from locations where sediment deposition occurs	TFO Gravity core ("javelin" core)	Cores taken from locations where sediment deposition occurs	Use of the javelin core eliminated the need to expose divers to unnecessary hazards (poor visibility, snags, boat movements, repetitive dives > 10 m). It is a method recommended by the WESTPAC/IOC Harmful Algal Bloom project for dinoflagellate cyst collection (Matsuoka and Fukuyo 2000)
Benthic infauna	Large core	3 cores close to (0 m) and 3 cores away (50 m) from each berth	Shipek benthic grab	3 cores within 10 m of each sampled berth and at sites in the port basin	Use of the benthic grab eliminated need to expose divers to unnecessary hazards (poor visibility, snags, boat movements, repetitive dives > 10 m).
Dinoflagellates	20um plankton net	Horizontal and vertical net tows	Not sampled	Not sampled	Plankton assemblages spatially and temporally variable, time-consuming and difficult to identify to species. Workshop recommended using resources to sample other taxa more comprehensively
Zooplankton and/ phytoplankton	100 um plankton net	Vertical net tow	Not sampled	Not sampled	Plankton assemblages spatially and temporally variable, time-consuming and difficult to identify to species. Workshop recommended using resources to sample other taxa more comprehensively
Crab/shrimp	Baited traps	3 traps of each kind left overnight at each site	Baited traps	4 traps (2 line x 2 traps) of each kind left overnight at each site	
Macrobiota	Qualitative visual survey	Visual searches of wharves & breakwaters for target species	Qualitative visual survey	Visual searches of wharves & breakwaters for target species	
Sedentary / encrusting biota	Quadrat scraping	0.10 m^2 quadrats sampled at -	Quadrat scraping	0.10 m^2 quadrats sampled at -	Workshop recommended extra quadrat in high diversity algal zone (-1.5 m) and to sample inner

	CRIMP Protocol		NIWA Method		
Taxa sampled	Survey method	Sample procedure	Survey method	Sample procedure	Notes
		0.5 m, -3.0 m and -7.0 m on 3 outer piles per berth		0.5 m, -1.5 m, -3.0 m and -7 m on 2 inner and 2 outer piles per berth	pilings for shade tolerant species
Sedentary / encrusting biota	Video / photo transect	Video transect of pile/rockwall facing. Still images taken of the three 0.10 m^2 quadrats	Video / photo transect	Video transect of pile/rockwall facing. Still images taken of the four 0.10 m^2 quadrats	
Mobile epifauna	Beam trawl or benthic sled	1 x 100 m or timed trawl at each site	Benthic sled	2 x 100 m (or 2 min.) tows at each site	
Fish	Poison station	Divers & snorkelers collect fish from poison stations	Opera house fish traps	4 traps (2 lines x 2 traps) left for min. 1 hr at each site	Poor capture rates anticipated from poison stations because of low visibility in NZ ports. Some poisons also an OS&H risk to personnel and may require resource consent.
Fish/mobile epifauna	Beach seine	25 m seine haul on sand or mud flat sites	Opera house fish traps / Whayman Holdsworth starfish traps	4 traps (2 lines x 2 traps) of left at each site (Whayman Holdworth starfish traps left overnight)	Few NZ ports have suitable intertidal areas to beach seine.

Table 3a: Summary of the Port of Tauranga sampling effort.

Sample method	Number of shipping berths sampled	Number of replicate samples taken
Benthic Sled Tows	6	18
Benthic Grab (Shipek)	6	28
Box traps	8[a]	32
Diver quadrat scraping	6	107
Opera house fish traps	6	25
Starfish traps	7[a]	28
Shrimp traps	7[a]	28
Javelin cores	N/A	8

[A] indicates shipping berths and additional locations within the Port area

Table 3b: Pile scraping sampling effort in the Port of Tauranga. Number of replicate quadrats scraped on Outer (unshaded) and Inner (shaded) pier piles at four depths. Pile materials scraped are indicated. Miscellaneous samples are opportunistic additional specimens collected from piles outside of the scraped quadrat areas.

Sample Depth (M)	Outer Piles	Inner Piles
0.5	4 metal, 8 wood	12 concrete
1.5	4 metal, 8 wood	12 concrete
3.5	4 metal, 8 wood	12 concrete
7	4 metal, 8 wood	7 concrete
Miscellaneous	1 metal, 7 wood	8 concrete

Table 3c: Summary of sampling effort in Ports and Marinas surveyed during the austral summers of 2001-2002 (shown in bold type), and 2002-2003 (shown in plain type). The number of shipping berths sampled is indicated, along with the total numbers of samples taken (in brackets).

Survey Location	Benthic sled tows	Benthic grabs	Box traps	Diver quadrat scraping	Opera house traps	Starfish traps	Shrimp traps	Javelin cores
Port of Lyttelton	5 (10)	5 (15)	6 (20)	5 (77)	5 (20)	6 (20)	6 (19)	(8)
Port of Nelson	4 (8)	1 (2) *	4 (16)	4 (55)	4 (16)	4 (16)	4 (16)	(8)
Port of Picton	3 (6)	*	3 (18)	3 (53)	3 (16)	3 (24)	3 (24)	(6)
Port of Taranaki	6 (12)	6 (21)	7 (25)	4 (66)	6 (24)	6 (24)	6 (24)	(14)
Port of Tauranga	6 (18)	6 (28)	8 (32)	6 (107)	6 (25)	7 (28)	7 (28)	(8)
Port of Timaru	6 (12)	4 (14)	5 (20)	4 (58)	5 (20)	5 (20)	5 (20)	(8)
Port of Wellington	7 (13)	6 (18)	7 (28)	6 (98)	7 (34)	7 (28)	7 (28)	(6)
Port of Auckland	6 (12)	6 (18)	6 (24)	6 (101)	6 (24)	6 (24)	5 (20)	(10)
Port of Bluff	6 (21)	7 (21)	7 (29)	5 (75)	6 (24)	7 (28)	7 (24)	(12)
Dunedin Harbour	5 (10)	5 (15)	5 (20)	5 (75)	5 (20)	5 (20)	5 (18)	(9)
Port of Gisborne	5 (10)	6 (18)	5 (20)	4 (50)	5 (20)	5 (20)	5 (20)	(8)
Gulf Harbour Marina	(17)	4 (12)	4 (16)	4 (66)	4 (16)	4 (16)	4 (16)	(8)
Port of Napier	5 (10)	5 (15)	5 (18)	4 (59)	5 (20)	5 (18)	5 (18)	(8)
Opua Marina	(10)	4 (12)	4 (12)	4 (46)	4 (8)	4 (8)	4 (8)	(8)
Whangarei Marina	3 (6)	2 (6)	2 (8)	4 (33)	2 (8)	2 (8)	2 (8)	(6)
Whangarei Harbour	4 (9)	4 (12)	4 (16)	4 (65)	4 (16)	4 (16)	4 (16)	(7)

* Shipek grab malfunctioned in the Ports of Nelson and Picton

Table 4: Preservatives used for the major taxonomic groups of organisms collected during the port survey. [1] indicates photographs were taken before preservation, and [2] indicates they were relaxed in magnesium chloride or menthol prior to preservation.

5 % Formalin solution	10 % Formalin solution	70 % Ethanol solution	Air dried
Phycophyta	Asteroidea	Alcyonacea [2]	Bryozoa
	Brachiopoda	Ascidiacea [1, 2]	
	Crustacea (large)	Crustacea (small)	
	Ctenophora [1]	Holothuria [1, 2]	
	Echinoidea	Mollusca (with shell)	
	Hydrozoa	Mollusca [1, 2] (without shell)	
	Nudibranchia [1]	Platyhelminthes [1]	
	Ophiuroidea	Porifera [1]	
	Polychaeta	Zoantharia [1, 2]	
	Scleractinia		
	Scyphozoa [1, 2]		
	Vertebrata [1] (pisces)		

Table 5a: Marine pest species listed on the New Zealand register of Unwanted Organisms under the Biosecurity Act 1993.

Phylum	Class/Order	Genus and Species
Annelida	Polychaeta	*Sabella spallanzanii*
Arthropoda	Decapoda	*Carcinus maenas*
Arthropoda	Decapoda	*Eriocheir sinensis*
Echinodermata	Asteroidea	*Asterias amurensis*
Mollusca	Bivalvia	*Potamocorbula amurensis*
Phycophyta	Chlorophyta	*Caulerpa taxifolia*
Phycophyta	Phaeophyceae	*Undaria pinnatifida*

Table 5b: Marine pest species listed on the Australian Ballast Water Management Advisory Council's (ABWMAC) schedule of non-indigenous pest species.

Phylum	Class/Order	Genus and Species
Annelida	Polychaeta	*Sabella spallanzanii*
Arthropoda	Decapoda	*Carcinus maenas*
Echinodermata	Asteroidea	*Asterias amurensis*
Mollusca	Bivalvia	*Corbula gibba*
Mollusca	Bivalvia	*Crassostrea gigas*
Mollusca	Bivalvia	*Musculista senhousia*
Phycophyta	Dinophyceae	*Alexandrium catenella*
Phycophyta	Dinophyceae	*Alexandrium minutum*
Phycophyta	Dinophyceae	*Alexandrium tamarense*
Phycophyta	Dinophyceae	*Gymnodinium catenatum*

Table 6: Native species recorded from the Port of Tauranga survey.

Phylum, Class	Order	Family	Genus and species
Annelida			
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris sphaerocephala*
Polychaeta	Phyllodocida	Nephtyidae	*Aglaophamus verrilli*
Polychaeta	Phyllodocida	Nereididae	*Neanthes kerguelensis*
Polychaeta	Phyllodocida	Nereididae	*Nereis falcaria*
Polychaeta	Phyllodocida	Nereididae	*Perinereis camiguinoides*
Polychaeta	Phyllodocida	Nereididae	*Perinereis pseudocamiguina*
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia capensis*
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla castanea*
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella comma*
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus jacksoni*
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus polychromus*
Polychaeta	Phyllodocida	Polynoidae	*Ophiodromus angustifrons*
Polychaeta	Phyllodocida	Sigalionidae	*Sigalion oviger*
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis gigantean*
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis zebra*
Polychaeta	Phyllodocida	Syllidae	*Typosyllis prolifera*
Polychaeta	Sabellida	Sabellidae	*Demonax aberrans*
Polychaeta	Sabellida	Sabellidae	*Megalomma suspicions*
Polychaeta	Sabellida	Serpulidae	*Galeolaria hystrix*
Polychaeta	Scolecida	Opheliidae	*Armandia maculate*
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex longiseta*
Polychaeta	Spionida	Spionidae	*Boccardia otakouica*
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris nuchalis*
Polychaeta	Terebellida	Cirratulidae	*Timarete anchylochaetus*
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera affinis*
Polychaeta	Terebellida	Flabelligeridae	*Pherusa parmata*
Polychaeta	Terebellida	Pectinariidae	*Pectinaria australis*
Polychaeta	Terebellida	Terebellidae	*Nicolea armilla*
Polychaeta	Terebellida	Terebellidae	*Pista pegma*
Polychaeta	Terebellida	Terebellidae	*Pseudopista rostrata*
Polychaeta	Terebellida	Terebellidae	*Streblosoma toddae*
Polychaeta	Terebellida	Terebellidae	*Terebella plagiostoma*
Bryozoa			
Gymnolaemata	Cheilostomata	Beaniidae	*Beania discodermiae*

Phylum, Class	Order	Family	Genus and species
Gymnolaemata	Cheilostomata	Beaniidae	*Beania n. sp. [whitten]*
Gymnolaemata	Cheilostomata	Beaniidae	*Beania plurispinosa*
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella ciliate*
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia granulosa*
Cnidaria			
Hydrozoa	Hydroida	Plumulariidae	*Plumularia setaceoides*
Hydrozoa	Hydroida	Sertulariidae	*Amphisbetia bispinosa*
Hydrozoa	Hydroida	Sertulariidae	*Sertularella robusta*
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca elongate*
Hydrozoa	Hydroida	Solanderiidae	*Solanderia ericopsis*
Hydrozoa	Hydroida	Syntheciidae	*Synthecium elegans*
Crustacea			
Cirripedia	Thoracica	Balanidae	*Austrominius modestus*
Cirripedia	Thoracica	Balanidae	*Notobalanus vestitus*
Cirripedia	Thoracica	Balanidae	*Notomegabalanus decorus*
Cirripedia	Thoracica	Chthamalidae	*Chaemosipho columna*
Cirripedia	Thoracica	Pachylasmidae	*Epopella plicata*
Malacostraca	Amphipoda	Aoridae	*Haplocheira barbimana*
Malacostraca	Amphipoda	Caprellidae	*Caprella equilibra*
Malacostraca	Amphipoda	Colomastigidae	*Colomastix magnirama*
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis thomsoni*
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe trailli*
Malacostraca	Amphipoda	Lysianassidae	*Orchomene aahu*
Malacostraca	Amphipoda	Melitidae	*Melita festiva*
Malacostraca	Amphipoda	Podoceridae	*Podocerus karu*
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe moe*
Malacostraca	Anomura	Diogenidae	*Paguristes setosus*
Malacostraca	Anomura	Paguidae	*Pagurus traverse*
Malacostraca	Anomura	Paguridae	*Diacanthurus spinulimanus*
Malacostraca	Anomura	Paguridae	*Lophopagurus (L.) lacertosus*
Malacostraca	Anomura	Paguridae	*Pagurus novizealandiae*
Malacostraca	Anomura	Porcellanidae	*Petrolisthes elongates*
Malacostraca	Anomura	Porcellanidae	*Petrolisthes novaezelandiae*
Malacostraca	Brachyura	Hymenosomatidae	*Halicarcinus cookie*
Malacostraca	Brachyura	Hymenosomatidae	*Halicarcinus innominatus*
Malacostraca	Brachyura	Hymenosomatidae	*Halicarcinus varius*

Phylum, Class	Order	Family	Genus and species
Malacostraca	Brachyura	Majidae	*Notomithrax minor*
Malacostraca	Brachyura	Majidae	*Notomithrax peronii*
Malacostraca	Brachyura	Majidae	*Notomithrax ursus*
Malacostraca	Brachyura	Majidae	*Thacanophrys filholi*
Malacostraca	Brachyura	Ocypodidae	*Macrophthalmus hirtipes*
Malacostraca	Brachyura	Portunidae	*Liocarcinus corrugatus*
Malacostraca	Brachyura	Xanthidae	*Pilumnus novaezelandiae*
Malacostraca	Caridea	Alpheidae	*Alpheus novaezelandiae*
Malacostraca	Caridea	Alpheidae	*Alpheus socialis*
Malacostraca	Caridea	Crangonidae	*Pontophilus chiltoni*
Malacostraca	Caridea	Palemonidae	*Palaemon affinis*
Malacostraca	Caridea	Palemonidae	*Periclimenes yaldwyni*
Malacostraca	Isopoda	Pseudojaniridae	*Schottea cf. taupoensis*
Malacostraca	Isopoda	Sphaeromatidae	*Exosphaeroma montis*
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma campbellense*
Echinodermata			
Asteroidea	Forcipulata	Asteriidae	*Allostichaster polyplax*
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias muricata*
Asteroidea	Valvatida	Asterinidae	*Patiriella regularis*
Echinoidea	Spatangoida	Loveniidae	*Echinocardium cordatum*
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus mollis*
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus novaezealandiae*
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis resiliens*
Mollusca			
Bivalvia	Myoida	Corbulidae	*Corbula zelandica*
Bivalvia	Myoida	Hiatellidae	*Hiatella arctica*
Bivalvia	Mytiloida	Mytilidae	*Modiolarca impacta*
Bivalvia	Mytiloida	Mytilidae	*Perna canaliculus*
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus pulex*
Bivalvia	Nuculoida	Nuculidae	*Nucula hartvigiana*
Bivalvia	Nuculoida	Nuculidae	*Nucula nitidula*
Bivalvia	Ostreoida	Anomiidae	*Pododesmus zelandicus*
Bivalvia	Ostreoida	Ostreidae	*Ostrea chilensis*
Bivalvia	Pterioida	Pectinidae	*Talochlamys zelandiae*
Bivalvia	Solemyoida	Solemyidae	*Solemya parkinsonii*
Bivalvia	Veneroida	Kelliidae	*Kellia cycladiformis*

Phylum, Class	Order	Family	Genus and species
Bivalvia	Veneroida	Lasaeidae	*Lasaea hinemoa*
Bivalvia	Veneroida	Mactridae	*Scalpomactra scalpellum*
Bivalvia	Veneroida	Psammobiidae	*Gari stangeri*
Bivalvia	Veneroida	Semelidae	*Leptomya retiaria*
Bivalvia	Veneroida	Veneridae	*Irus reflexus*
Bivalvia	Veneroida	Veneridae	*Tawera spissa*
Cephalopoda	Octopoda	Octopodidae	*Octopus maorum*
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria australis*
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta costata*
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta sodalist*
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella novaezelandiae*
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella tenuis*
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis varia*
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana spengleri*
Gastropoda	Littorinimorpha	Ranellidae	*Ranella Australasia*
Gastropoda	Littorinimorpha	Turritellidae	*Maoricolpus roseus*
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum linea*
Gastropoda	Neogastropoda	Buccinidae	*Cominella adspersa*
Gastropoda	Neogastropoda	Buccinidae	*Cominella maculosa*
Gastropoda	Neogastropoda	Buccinidae	*Cominella virgata*
Gastropoda	Neogastropoda	Muricidae	*Dicithais orbita*
Gastropoda	Neogastropoda	Muricidae	*Xymene huttoni*
Gastropoda	Neogastropoda	Muricidae	*Xymene pusillus*
Gastropoda	Neogastropoda	Muricidae	*Xymene traverse*
Gastropoda	Notaspidea	Pleurobranchidae	*Pleurobranchaea maculate*
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina willani*
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris aureomarginata*
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris citrina*
Gastropoda	Nudibranchia	Doridiidae	*Rostanga muscular*
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida corticata*
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus breviculus*
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali suteri*
Gastropoda	Vetigastropoda	Trochidae	*Micrelenchus rufozonus*
Gastropoda	Vetigastropoda	Trochidae	*Trochus tiaratus*
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona violacea*
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus porosus*

Phycophyta

Phylum, Class	Order	Family	Genus and species
Phaeophyceae	Dictyotales	Dictyotaceae	*Dictyota dichotoma var. intricate*
Phaeophyceae	Fucales	Hormosiraceae	*Hormosira banksii*
Rhodophyceae	Ceramiales	Delesseriaceae	*Hymenena variolosa*
Rhodophyceae	Ceramiales	Rhodomelaceae	*Cladhymenia lyallii*
Rhodophyceae	Gigartinales	Caulacanthaceae	*Catenella nipae*
Rhodophyceae	Gigartinales	Gigartinaceae	*Gigartina atropurpurea*
Rhodophyceae	Gigartinales	Phyllophoraceae	*Stenogramme interrupta*
Rhodophyceae	Gigartinales	Sarcodiaceae	*Trematocarpus aciculare*
Rhodophyceae	Gracilariales	Gracilariaceae	*Gracilaria truncate*
Rhodophyceae	Halymeniales	Halymeniaceae	*Cryptonemia latissima*
Rhodophyceae	Plocamiales	Plocamiaceae	*Plocamium angustum*
Ulvophyceae	Codiales	Codiaceae	*Codium fragile ssp. novae-zelandiae*
Porifera			
Demospongiae	Hadromerida	Tethyidae	*Tethya burtoni*
Demospongiae	Haplosclerida	Chalinidae	*Adocia cf. parietalioides*
Demospongiae	Haplosclerida	Chalinidae	*Adocia cf. venustina*
Demospongiae	Haplosclerida	Chalinidae	*Haliclona glabra*
Demospongiae	Haplosclerida	Chalinidae	*Haliclona cf. tenacior*
Demospongiae	Haplosclerida	Chalinidae	*Haliclona maxima*
Demospongiae	Haplosclerida	Chalinidae	*Haliclona stelliderma*
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella ambigua*
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas cf. anchorata*
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona) coccinea*
Demospongiae	Poecilosclerida	Microcionidae	*Clathria cf. lissosclera*
Demospongiae	Poecilosclerida	Microcionidae	*Clathria cf. terraenovae*
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia novizelanicum*
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania battershilli*
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania spinostylota*
Pyrrophycophyta			
Dinophyceae	Gymnodiniales	Polykrikaceae	*Polykrikos schwartzii*
Dinophyceae	Peridiniales	Peridiniaceae	*Lingulodinium polyedrum*
Dinophyceae	Peridiniales	Gonyaulacaceae	*Protoceratium reticulatum*
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium conicum*
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium conicum cf. conicoides*
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium sp.*
Dinophyceae	Peridiniales	Peridiniaceae	*Scrippsiella trochoidea*

Phylum, Class	Order	Family	Genus and species
Urochordata			
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium adamsi*
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula amokurae*
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula mortenseni*
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa reticulate*
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus australis*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura cancellata*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura carnea*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura pachydermatina*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura picta*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura pulla*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura rugata*
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura subuculata*
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa coerulea*
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa bicornuta*
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa nisiotus*
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa regalis*
Ascidiacea	Stolidobranchia	Styelidae	*Pyura trita*
Vertebrata			
Actinopterygii	Anguilliformes	Congridae	*Conger wilsoni*
Actinopterygii	Gadiformes	Moridae	*Pseudophycis breviuscula*
Actinopterygii	Gasterosteiformes	Syngnathidae	*Leptonotus elevatus*
Actinopterygii	Gasterosteiformes	Syngnathidae	*Lissocampus filum*
Actinopterygii	Perciformes	Blenniidae	*Parablennius laticlavius*
Actinopterygii	Perciformes	Carangidae	*Trachurus novaezelandiae*
Actinopterygii	Perciformes	Labridae	*Notolabrus celidotus*
Actinopterygii	Perciformes	Mullidae	*Upenichthys lineatus*
Actinopterygii	Perciformes	Scorpidinae	*Helicolenus percoides*
Actinopterygii	Perciformes	Scorpidinae	*Scorpis lineolatus*
Actinopterygii	Perciformes	Sparidae	*Pagrus auratus*
Actinopterygii	Perciformes	Trypterigiidae	*Grahamina capito*
Actinopterygii	Perciformes	Trypterigiidae	*Grahamina gymnota*

Table 7. Cryptogenic marine species recorded from the Port of Tauranga survey. Category 1 cryptogenic species (C1); Category 2 cryptogenic species (C2). Refer to section 2.9 for definitions.

Phylum, Class	Order	Family	Genus and species	
Annelida				
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus Chaetopterus-A*	C1
Bryozoa				
Gymnolaemata	Cheilostomata	Scruparidae	*Scruparia ambigua*	C1
Cnidaria				
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis australis*	C1
Hydrozoa	Hydroida	Campanulariidae	*Clytia hemisphaerica*	C1
Hydrozoa	Hydroida	Campanulariidae	*Obelia dichotoma*	C1
Hydrozoa	Hydroida	Haleciidae	*Halecium delicatulum*	C1
Hydrozoa	Hydroida	Plumulariidae	*Plumularia setacea*	C1
Crustacea				
Cirripedia	Thoracica	Balanidae	*Balanus trigonus*	C1
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos sp. aff. acherontis*	C2
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia sp. aff. akaroica*	C1
Malacostraca	Brachyura	Dromiidae	*Dromia wilsoni*	C1
Malacostraca	Brachyura	Grapsidae	*Plagusia chabrus*	C1
Porifera				
Demospongiae	Dictyoceratida	Dysideidae	*Dysidea n. sp. 1*	C2
Demospongiae	Dictyoceratida	Dysideidae	*Dysidea n. sp. 2*	C2
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia n. sp. 3*	C2
Demospongiae	Halichondrida	Halichondriidae	*Halichondria n. sp. 1*	C2
Demospongiae	Halichondrida	Halichondriidae	*Halichondria n. sp. 3*	C2
Demospongiae	Halichondrida	Halichondriidae	*Halichondria panicea*	C1
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia ramosa*	C1
Demospongiae	Haplosclerida	Chalinidae	*Adocia n. sp. 1*	C2

Phylum, Class	Order	Family	Genus and species	
Demospongiae	Haplosclerida	Chalinidae	*Adocia n. sp. 2*	C2
Demospongiae	Haplosclerida	Chalinidae	*Haliclona n. sp. 3*	C2
Demospongiae	Haplosclerida	Chalinidae	*Haliclona n. sp. 4*	C2
Demospongiae	Haplosclerida	Chalinidae	*Haliclona n. sp. 5*	C2
Demospongiae	Haplosclerida	Chalinidae	*Haliclona n. sp. 6*	C2
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx isodictyalis*	C1
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis n. sp. 1*	C2
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas n. sp. 1*	C2
Demospongiae	Poecilosclerida	Microcionidae	*Clathria n. sp. 1*	C2
Demospongiae	Poecilosclerida	Microcionidae	*Clathria n. sp. 2*	C2
Demospongiae	Poecilosclerida	Microcionidae	*Clathria n. sp. 3*	C2
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia n. sp. 1*	C2
Urochordata				
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum incanum*	C1
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum vexillum*	C1
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma listerianum*	C1
Ascidiacea	Aplousobrancia	Polyclinidae	*Aplidium phortax*	C1
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus squamiger*	C2
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella eumyota*	C1
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes leachii*	C1
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa cerea*	C1
Ascidiacea	Stolidobranchia	Styelidae	*Styela plicata*	C1

Table 8: Non-indigenous marine species recorded from the Port of Tauranga survey. Likely vectors of introduction are largely derived from Cranfield et al (1998), where H = Hull fouling and B = Ballast water transport. Novel NIS not listed in Cranfield et al (1998) or previously encountered by taxonomic experts in New Zealand waters are marked as New Records (NR). For these species and others for which information is scarce, we provide dates of first detection rather than probable dates of introduction.

Phylum, Class	Order	Family	Genus and species	Probable means of introduction	Date of introduction or detection (d)
Annelida					
Polychaeta	Spionida	Spionidae	*Dipolydora flava*	H or B	Unknown [1]
Polychaeta	Spionida	Spionidae	*Polydora hoplura*	H	Unknown [1]
Bryozoa					
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula flabellata*	H	Pre-1949
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula neritina*	H	1949
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora subtorquata*	H or B	Pre-1982
Cnidaria					
Hydrozoa	Hydroida	Campanulariidae	*Clytia ?linearis* **(NR)**	H	Mar. 2002 [d]
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium capillare* **(NR)**	H	Nov. 2001 [d]
Crustacea					
Malacostraca	Amphipoda	Corophiidae	*Apocorophium acutum*	H	Pre-1921
Malacostraca	Amphipoda	Corophiidae	*Monocorophium acherusicum*	H	Pre-1921
Phycophyta					
Ulvophyceae	Codiales	Codiaceae	*Codium fragile tomentosoides?*	H	Unknown [1]
Porifera					
Demospongiae	Hadromerida	Clionaidae	*Cliona celata*	H or B	Unknown [1]
Urochordata					
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa sp.* **(NR)**	H	Dec. 2001 [d]

[1] Date of introduction currently unknown but species had been encountered in New Zealand prior to the present survey.

Table 9: Species indeterminata recorded from the Port of Tauranga survey. This group includes: (1) organisms that were damaged or juvenile and lacked crucial morphological characteristics, and (2) taxa for which there is not sufficient taxonomic or systematic information available to allow positive identification to species level.

Phylum, Class	Order	Family	Genus and species
Annelida			
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea Dorvillea-A*
Polychaeta	Phyllodocida	Nereididae	*Platynereis Platynereis_australis_group*
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia Eulalia-NIWA-2*
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae Indet*
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia Pirakia-A*
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin Lepidonotin-A*
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae Indet*
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae indet*
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown Eusyllin-unknown-A*
Polychaeta	Phyllodocida	Syllidae	*Eusyllis Eusyllis-C*
Polychaeta	Phyllodocida	Syllidae	*Syllidae Indet*
Polychaeta	Phyllodocida	Syllidae	*Typosyllis Typosyllis-A*
Polychaeta	Sabellida	Sabellidae	*Sabellidae Indet*
Polychaeta	Sabellida	Serpulidae	*Serpulidae Indet*
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae Chaetopteridae-Record invalid (wrack tube) – Indet*
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae Chaetopteridae-Record invalid (wrack tube)*
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae Indet*
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus Phyllochaetopterus-A*
Polychaeta	Spionida	Spionidae	*Paraprionospio Paraprionospio-A [pinnata]*
Polychaeta	Terebellida	Ampharetidae	*Amphicteis Amphicteis-A*
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae Indet*
Polychaeta	Terebellida	Terebellidae	*Lanice Lanice-1 [conchilega / aoteoroae]*
Polychaeta	Terebellida	Terebellidae	*Pseudopista Pseudopista-1 [Glasby unpub as marangai]*
Polychaeta	Terebellida	Terebellidae	*Terebellidae Indet*
Cnidaria			
Anthozoa	Actiniaria		*Acontiaria sp.*
Anthozoa	Actiniaria		*Actiniaria sp.*
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis sp.*
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea sp.*
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia ?muscus*
Hydrozoa	Hydroida	Corynidae	*Sarsia sp.*
Hydrozoa	Hydroida	Haleciidae	*Halecium ?corrugatissimum*
Crustacea			
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos sp.*
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis sp. 2*

Phylum, Class	Order	Family	Genus and species
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis sp. 3*
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa sp.*
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa sp. 2*
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia sp.*
Malacostraca	Brachyura	Majidae	*Notomithrax sp.*
Malacostraca	Isopoda	Anthuridae	*Mesanthura sp*
Malacostraca	Isopoda	Janiridae	*Iathrippa sp*
Malacostraca	Isopoda	Pseudojaniridae	*Schottea sp*
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma sp*
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais sp.*
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides sp.*
Echinodermata			
Asteroidea	Valvatida	Asterinidae	*Patiriella ?oliveri*
Asteroidea	Valvatida	Asterinidae	*Patiriella sp.*
Asteroidea			*Asteroidea sp.*
Mollusca			
Bivalvia	Nuculoida	Nuculidae	*Linucula sp.*
Phycophyta			
Alismatidae	Najadales	Zosteraceae	*Zostera sp.*
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium sp.*
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia sp.*
Rhodophyceae	Ceramiales	Rhodomelaceae	*Polysiphonia sp.*
Rhodophyceae	Gigartinales	Hypnaceae	*Hypnea sp.*
Rhodophyceae	Rhodymeniales	Lomentariaceae	*Lomentaria sp.*
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia sp.*
Rhodophyceae			*Unidentifiable red*
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha sp.*
Ulvophyceae	Ulvales	Ulvaceae	*Ulva sp.*
Platyhelminthes			
Turbellaria	Polycladida	Stylochidae	*Enterogonia sp.*
Turbellaria	Polycladida		*Indet genus indet sp.*
Urochordata			
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum sp.*
Vertebrata			
Actinopterygii	Perciformes	Gobiesocidae	*Trachelochismus n. sp.*

Table 10: Non-indigenous marine organisms recorded from the Port of Tauranga survey and the techniques used to capture each species. Species distributions throughout the port and in other ports and marinas around New Zealand are indicated.

Genus and species	Capture technique in Port of Tauranga	Locations detected in Port of Tauranga	Detected in other locations surveyed in ZBS2000_04
Dipolydora flava	Benthic grab, Pile scrape	Mt Maunganui Wharves (See Fig 17)	Picton
Polydora hoplura	Pile scrape	Tug & Pilot Boat Berths (See Fig 18)	Dunedin, Nelson, Picton, Whangarei Harbour, Wellington
Bugula flabellata	Benthic sled, Pile scrape	Mt Maunganui Wharves; Sulphur Point Wharves; Tug & Pilot Boat Berths (See Fig 19)	Auckland, Bluff, Dunedin, Lyttleton, Napier, Nelson, Opua, Picton, Taranaki, Timaru, Whangarei Harbour, Wellington
Bugula neritina	Benthic sled, Pile scrape	Mt Maunganui Wharves; Sulphur Point Wharves (See Fig 20)	Auckland, Dunedin, Gisborne, Gulf Harbour Marina, Lyttleton, Napier, Opua, Taranaki, Timaru, Whangarei Harbour, Whangarei Marina
Watersipora subtorquata	Pile scrape	Mt Maunganui Wharves; Sulphur Point Wharves; Tug & Pilot Boat Berths (See Fig 21)	Bluff, Dunedin, Gisborne, Gulf Harbour Marina, Lyttleton, Napier, Nelson, Opua, Picton, Taranaki, Timaru, Whangarei Harbour, Wellington
Clytia ?linearis	Pile scrape	Sulphur Point Wharves (See Fig 22)	None
Eudendrium capillare	Pile scrape	Tug & Pilot Boat Berths (See Fig 23)	Taranaki, Wellington
Apocorophium acutum	Pile scrape	Mt Maunganui Wharves (See Fig 24)	Dunedin, Gulf Harbour Marina, Lyttleton, Opua, Timaru
Monocorophium acherusicum	Pile scrape	Mt Maunganui Wharves (See Fig 25)	Dunedin, Gisborne, Lyttleton, Timaru, Whangarei Marina
Codium fragile tomentosoides?	Visual search	Mt Maunganui Wharves (See Fig 26)	None
Cliona celata	Pile scrape	Tug & Pilot Boat Berths (See Fig 27)	Whangarei Harbour
Cnemidocarpa sp.	Pile scrape	Mt Maunganui Wharves (See Fig 28)	Auckland, Gisborne, Gulf Harbour Marina, Lyttleton, Nelson, Picton, Taranaki, Timaru, Wellington

Appendices

Appendix 1: Specialists engaged to identify specimens obtained from the New Zealand Port surveys.

Phylum	Class	Specialist	Institution
Annelida	Polychaeta	Geoff Read, Jeff Forman	NIWA Greta Point
Bryozoa	Gymnolaemata	Dennis Gordon	NIWA Greta Point
Chelicerata	Pycnogonida	David Staples	Melbourne Museum, Victoria, Australia
Cnidaria	Anthozoa	Adorian Ardelean	West University of Timisoara, Timisoara, 1900, Romania
Cnidaria	Hydrozoa	Jan Watson	Hydrozoan Research Laboratory, Clifton Springs, Victoria, Australia
Crustacea	Amphipoda	Graham Fenwick	NIWA Christchurch
Crustacea	Cirripedia	Graham Fenwick, Isla Fitridge John Buckeridge[1]	NIWA Christchurch and [1]Auckland University of Technology
Crustacea	Decapoda	Colin McLay[1] Graham Fenwick, Nick Gust	[1]University of Canterbury and NIWA Christchurch
Crustacea	Isopoda	Niel Bruce	NIWA Greta Point
Crustacea	Mysidacea	Fukuoka Kouki	National Science Museum, Tokyo
Echinodermata	Asteroidea	Don McKnight	NIWA Greta Point
Echinodermata	Echinoidea	Don McKnight	NIWA Greta Point
Echinodermata	Holothuroidea	Niki Davey	NIWA Nelson
Echinodermata	Ophiuroidea	Don McKnight, Helen Rotman	NIWA Greta Point
Echiura	Echiuroidea	Geoff Read	NIWA Greta Point
Mollusca	Bivalvia. Cephalopoda, Gastropoda, Polyplacophora	Bruce Marshall	Museum of NZ Te Papa Tongarewa
Nemertea	Anopla, Enopla	Geoff Read	NIWA Greta Point
Phycophyta	Phaeophyceae, Rhodophyceae, Ulvophyceae	Wendy Nelson, Kate Neill	NIWA Greta Point
Platyhelminthes	Turbellaria	Sean Handley	NIWA Nelson
Porifera	Demospongiae, Calcarea	Michelle Kelly-Shanks	NIWA Auckland
Priapula	Priapulidae	Geoff Read	NIWA Greta Point
Pyrrophycophyta	Dinophyceae	Hoe Chang, Rob Stewart	NIWA Greta Point
Urochordata	Ascidiacea	Mike Page, Anna Bradley Patricia Kott[1]	NIWA Nelson and [1]Queensland Museum
Vertebrata	Osteichthyes	Clive Roberts, Andrew Stewart	Museum of NZ Te Papa Tongarewa

Appendix 2: Generic descriptions of representative groups of the main marine phyla collected during sampling.

Phylum Annelida

Polychaetes: The polychaetes are the largest group of marine worms and are closely related to the earthworms and leeches found on land. Polychaetes are widely distributed in the marine environment and are commonly found under stones and rocks, buried in the sediment or attached to submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. All polychaete worms have visible legs or bristles. Many species live in tubes secreted by the body or assembled from debris and sediments, while others are free-living. Depending on species, polychaetes feed by filtering small food particles from the water or by preying upon smaller creatures.

Phylum Bryozoa

Bryozoans: This group of organisms is also referred to as 'moss animals' or 'lace corals'. Bryozoans are sessile and live attached to submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. They are all colonial, with individual colonies consisting of hundreds of individual 'zooids'. Bryozoans can have encrusting growth forms that are sheet-like and approximately 1 mm thick, or can form erect or branching structures several centimetres high. Bryozoans feed by filtering small food particles from the water column, and colonies grow by producing additional zooids.

Phylum Chelicerata

Pycnogonids: The pycnogonids, or sea spiders, are a group within the Arthropoda, and closely related to land spiders. They are commonly encountered living among sponges, hydroids and bryozoans on the seafloor. They range in size from a few mm to many cm and superficially resemble spiders found on land.

Phylum Cnidaria

Hydroids: Hydroids can easily be mistaken for erect and branching bryozoans. They are also sessile organisms that live attached to submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. All hydroids are colonial, with individual colonies consisting of hundreds of individual 'polyps'. Like bryozoans, they feed by filtering small food particles from the water column.

Phylum Crustacea

Crustaceans: The crustaceans represent one of the sea's most diverse groups of organisms, well known examples include shrimps, crabs and lobsters. Most crustaceans are motile (capable of movement) although there are also a variety of sessile species (e.g. barnacles). All crustaceans are protected by an external carapace, and most can be recognised by having two pairs of antennae.

Phylum Echinodermata

Echinoderms: This phylum contains a range of predominantly motile organisms – sea stars, brittle stars, sea urchins, sea cucumbers, sand dollars, feather stars and sea lilies. Echinoderms feed by filtering small food particles from the water column or by extracting food particles from sediment grains or rock surfaces.

Phylum Mollusca

Molluscs: The molluscs are a highly diverse group of marine animals characterised by the presence of an external or internal shell. This phyla includes the bivalves (organisms with

hinged shells e.g. mussels, oysters, etc), gastropods (marine snails, e.g. winkles, limpets, topshells), chitons, sea slugs and sea hares, as well as the cephalopods (squid, cuttlefish and octopus).

Phylum Phycophyta

Algae: These are the marine plants. Several types were encountered during our survey. Large *macroalgae* were sampled that live attached to submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. These include the green algae (Ulvophyceae), red algae (Rhodophyceae) and brown algae (Phaecophyceae). We also encountered microscopic algal species called *dinoflagellates* (phylum Pyrrophycophyta), single-celled algae that live in the water column or within the sediments.

Phylum Porifera

Sponges: Sponges are very simple colonial organisms that live attached to submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. They vary greatly in colour and shape, and include sheet-like encrusting forms, branching forms and tubular forms. Sponge surfaces have thousands of small pores to through which water is drawn into the colony, where small food particles are filtered out before the water is again expelled through one or several other holes.

Phylum Pyrrophycophyta

Dinoflagellates: Dinoflagellates are a large group of unicellular algae common in marine plankton. About half of all dinoflagellates are capable of photosynthesis and some are symbionts, living inside organisms such as jellyfish and corals. Some dinoflagellates are phosphorescent and can be responsible for the phosphorescence visible at night in the sea. The phenomenon known as red tide occurs when the rapid reproduction of certain dinoflagellate species results in large brownish red algal blooms. Some dinoflagellates are highly toxic and can kill fish and shellfish, or poison humans that eat these infected organisms.

Phylum Urochordata

Ascidians: This group of organisms is sometimes referred to as ‘sea squirts’. Adult ascidians are sessile (permanently attached to the substrate) organisms that live on submerged natural and artificial surfaces including rocks, pilings, ropes and the shells or carapaces of other species. Ascidians can occur as individuals (solitary ascidians) or merged together into colonies (colonial ascidians). They are soft-bodied and have a rubbery or jelly-like outer coating (test). They feed by pumping water into the body through an inhalant siphon. Inside the body, food particles are filtered out of the water, which is then expelled through an exhalant siphon. Ascidians reproduce via swimming larvae (ascidian tadpoles) that retain a notochord, which explains why these animals are included in the phylum Chordata along with vertebrates.

Phylum Vertebrata

Fishes: Fishes are an extremely diverse group verterbrates familiar to most people. Approximately 200 families of fish are represented in New Zealand waters ranging from tropical and subtropical groups in the north to subantarctic groups in the south. Fishes can be classified according to their depth preferences. Fish that live on or near the sea floor are considered demersal while those living in the upper water column are termed pelagics.

Appendix 3: Criteria for assigning non-indigenous status to species sampled from the Port of Tauranga.

Criteria that apply to each species are indicated by (+). Criteria (C1-C9) were developed by Chapman and Carlton (1994). Here we apply Cranfield et al's (1998) analysis to species previously known from New Zealand waters. For non-indigenous species first detected during the present study, criteria were assigned using advice from the taxonomists that identified them. Refer to footnote for a full description of C1–C9 criteria.

Phylum and species	C1	C2	C3	C4	C5	C6	C7	C8	C9
Annelida									
Dipolydora armata			+		+	+	+	+	
Polydora hoplura			+		+	+	+	+	+
Bryozoa									
Bugula flabellate	+	+	+		+	+	+	+	+
Bugula neritina	+				+	+	+	+	+
Watersipora subtorquata	+	+	+		+	+	+	+	+
Cnidaria									
Clytia ?linearis	+		+		+			+	
Eudendrium capillare	+		+		+			+	+
Crustacea									
Apocorophium acutum			+			+		+	+
Monocorophium acherusicum			+		+	+		+	+
Phycophyta									
Codium fragile tomentosoides?	+		+		+	+		+	
Porifera									
Cliona celata			+					+	+
Urochordata									
Cnemidocarpa sp.	+		+		+			+	

Criterion 1: Has the species suddenly appeared locally where it has not been found before?
Criterion 2: Has the species spread subsequently?
Criterion 3: Is the species' distribution associated with human mechanisms of dispersal?
Criterion 4: Is the species associated with, or dependent on, other introduced species?
Criterion 5: Is the species prevalent in, or restricted to, new or artificial environments?
Criterion 6: Is the species' distribution restricted compared to natives?
Criterion 7: Does the species have a disjunct worldwide distribution?
Criterion 8: Are dispersal mechanisms of the species inadequate to reach New Zealand, and is passive dispersal in ocean currents unlikely to bridge ocean gaps to reach New Zealand?
Criterion 9: Is the species isolated from the genetically and morphologically most similar species elsewhere in the world?

Appendix 4. Geographic locations of the sample sites in the port of Tauranga

Site	Eastings	Northings	NZ Latitude	NZ Longitude	Survey Method	No. of sample units
1	2790894	6390629	-37.64387	176.18070	BGRB	4
1	2790894	6390629	-37.64387	176.18070	BSLD	3
1	2790938	6390542	-37.64463	176.18124	CRBTP	4
1	2790938	6390542	-37.64463	176.18124	FSHTP	4
1	2790938	6390542	-37.64463	176.18124	PSC	17
1	2790938	6390542	-37.64463	176.18124	SHRTP	4
1	2790938	6390542	-37.64463	176.18124	STFTP	4
3	2790977	6390274	-37.64703	176.18179	BGRB	4
3	2790977	6390274	-37.64703	176.18179	BSLD	3
3	2790978	6390298	-37.64682	176.18179	CRBTP	4
3	2790978	6390298	-37.64682	176.18179	FSHTP	4
3	2790978	6390298	-37.64682	176.18179	PSC	18
3	2790978	6390298	-37.64682	176.18179	SHRTP	4
3	2790978	6390298	-37.64682	176.18179	STFTP	4
7	2791009	6389564	-37.65342	176.18244	BGRB	4
7	2791009	6389564	-37.65342	176.18244	BSLD	3
7	2791009	6389564	-37.65342	176.18244	CRBTP	4
7	2791009	6389564	-37.65342	176.18244	FSHTP	4
7	2791009	6389564	-37.65342	176.18244	PSC	17
7	2791009	6389564	-37.65342	176.18244	SHRTP	4
7	2791009	6389564	-37.65342	176.18244	STFTP	4
11	2790849	6388713	-37.66113	176.18097	BGRB	4
11	2790849	6388713	-37.66113	176.18097	BSLD	3
11	2790849	6388713	-37.66113	176.18097	PSC	20
11	2790851	6388713	-37.66113	176.18099	CRBTP	4
11	2790851	6388713	-37.66113	176.18099	FSHTP	4
11	2790851	6388713	-37.66113	176.18099	SHRTP	4
11	2790851	6388713	-37.66113	176.18099	STFTP	4
16	2790697	6388168	-37.66608	176.17947	BGRB	4
16	2790697	6388168	-37.66608	176.17947	BSLD	3
16	2791009	6389557	-37.65348	176.18244	CRBTP	4
16	2791009	6389557	-37.65348	176.18244	FSHTP	4
16	2791009	6389557	-37.65348	176.18244	PSC	19
16	2791009	6389557	-37.65348	176.18244	SHRTP	4
16	2791009	6389557	-37.65348	176.18244	STFTP	4
24	2790356	6388421	-37.66392	176.17550	BGRB	4
24	2790356	6388421	-37.66392	176.17550	BSLD	3
24	2790307	6388364	-37.66445	176.17497	CRBTP	4
24	2790307	6388364	-37.66445	176.17497	FSHTP	4
24	2790307	6388364	-37.66445	176.17497	PSC	16
24	2790307	6388364	-37.66445	176.17497	SHRTP	4
24	2790307	6388364	-37.66445	176.17497	STFTP	4
BWSTH 11	2790898	6390756	-37.64272	176.18070	CRBTP	4
BWSTH 11	2790898	6390756	-37.64272	176.18070	SHRTP	4
BWSTH 11	2790898	6390756	-37.64272	176.18070	STFTP	4
BWSTH 11	2790898	6390756	-37.64272	176.18070	VISS	1
CHANNEL	2790787	6389439	-37.65462	176.17997	BGRB	4
site a	2790680	6387642	-37.67083	176.17949	CYST	2

Site	Eastings	Northings	NZ Latitude	NZ Longitude	Survey Method	No. of sample units
site b	2790770	6388149	-37.66623	176.18030	CYST	2
site c	2790709	6389649	-37.65275	176.17900	CYST	2
site d	2790386	6390656	-37.64378	176.17494	CYST	2
SSWF	2790672	6387648	-37.67078	176.17939	CRBTP	4

*Survey methods: PSC = pile scrape, BSLD = benthic sled, BGRB = benthic grab, CYST = dinoflagellate cyst core, CRBTP = crab trap, FSHTP = fish trap, STFTP = starfish trap, SHRTP = shrimp trap, VISS = visual.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code	1																11				
					Pile replicate	1									1 & 2		2					1				
					Pile position	IN				OUT					IN				OUT					IN			
Class	Orders	Family	Genus	Species	*Status	1	2	3	MISC	1	2	3	4	MISC	1	2	3	1	2	3	4	MISC	1	2	3	4
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0	1	0	0	0	0	0	0	1	0	1	1	0	1	1	1	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0	0	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	1
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	0	1	1	1	0	1	1	1	1	0	1	1	0	0	1	1	1	0	0	1	1	1
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0	0	1	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0	0	1	0	0	0	0	1	1	0	1	1	0	0	1	0	0	0	1	1	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0	0	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0	1	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	1	1	0	1	0	1	0	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0	0	1	0	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code	1																11				
					Pile replicate	1									1 & 2		2					1				
					Pile position	IN				OUT					IN				OUT				IN				
Class	Orders	Family	Genus	Species	*Status	1	2	3	MISC	1	2	3	4	MISC	1	2	3	1	2	3	4	MISC	1	2	3	4
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0	0	1	0	0	1	1	1	0	0	0	0	0	1	1	1	0	0	1	0	1
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N	0	0	1	1	0	1	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N	0	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	0	1	0	0	0	1	1	0	0	0	0	1	1	0	1	1	0	0	1	0	0
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	1
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	0	1	1	0	0	1	0	0	0	0	0	1	1	1	1	0	0	0	1	1	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code	1																	11				
					Pile replicate	1									1 & 2		2						1				
					Pile position	IN				OUT					IN				OUT					IN				
Class	Orders	Family	Genus	Species	*Status	1	2	3	MISC	1	2	3	4	MISC	1	2	3	1	2	3	4	MISC	1	2	3	4
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N	0	0	0	0	0	0	0	0		0	0	0	1	0	0	0		0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N	0	1	0	0	0	0	0	0		0	0	0	0	0	1	0		0	0	1	0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N	0	0	1	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	1	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0	0	0	0	0	0	0	0		1	0	0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	0	1	0	0	0	1	0	1		0	0	1	1	0	1	1		0	0	1	0
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	0	0	0	1	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI	0	0	0	0	0	0	0	1		0	0	1	0	0	1	0		0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N	0	0	0	1	0	0	0	0		0	0	0	0	0	1	1		0	0	1	0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	0	1	1	0	0	0	0	0		0	0	1	0	0	1	0		0	0	0	1	0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N	0	1	0	0	0	0	0	0		0	0	0	0	0	1	1		0	0	0	1	0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N	0	0	0	0	0	0	0	0		0	0	0	0	1	0	0		0	0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI	0	0	0	0	0	0	0	0		1	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N	0	0	1	0	0	0	0	0		0	0	1	0	0	1	1		0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N	0	0	0	0	1	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0		0	0	0	0	0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0		0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code	1																	11				
					Pile replicate	1									1 & 2		2						1				
					Pile position	IN				OUT					IN				OUT					IN				
Class	Orders	Family	Genus	Species	*Status	1	2	3	MISC	1	2	3	4	MISC	1	2	3	1	2	3	4	MISC	1	2	3	4
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	0	0	0	0	1	1	1	1	1	1	1	0	1	1	0	0	0	1	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	0	1	0	0	1	0	1	0	0	0	0	0	1	1	1	0	0	0	1	0
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	1	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	1	1	0
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	0	0	1	0	0	1	0	1	0	0	0	1	0	0	1	1	0	0	0	1	1
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	0	0	1	1	0
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0	1	0	0	1	1	1	0	0	0	0	0	1	1	1	0	0	0	1	0
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code	1																		11				
					Pile replicate	1									1 & 2		2							1				
					Pile position	IN					OUT				IN					OUT					IN			
Class	Orders	Family	Genus	Species	*Status	1	2	3	MISC		1	2	3	4	MISC		1	2	3		1	2	3	4	MISC		1	2	3	4
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	1	0		0	0	1	0	0		0	0	0	0		0	1	0	1		0	0	0	0	1
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	1	1	0		0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	0	0	0		0	0	1	1	0		0	0	0	0		0	1	1	0		0	0	0	0	0
Rhodophyceae			*Unidentifiable*	*red*	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI	0	0	0		0	0	0	0	0		0	0	1	0		0	0	0	0		0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0		1	0	0	0	0		0	0	0	0		0	0	1	0		0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
			Too small to ID	-	SI	0	0	0		0	0	1	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0
			Land plants	-	SI	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																									
					Pile replicate								1 & 2				2												16			
					Pile position			OUT							IN						OUT						IN			
Class	Orders	Family	Genus	Species	*Status	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0		0	1	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0	0		0	0	0
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0		0	1	0	0	0		0	0	0	0	0		0	1	0	0	0		0	1	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0		0	0	0	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	0		0	1	1	1	1		0	1	1	1	0		0	1	0	1	1		0	1	1
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0		0	1	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	1
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	1		1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0		0	1	1	1	0		0	1	0	1	0		0	1	0	0	0		1	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0		0	0	0	0	1		0	1	1	0	0		0	1	0	0	0		0	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0		0	0	0	0	0		0	0	1	1	0		0	0	0	0	0		0	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0		0	0	0	0	0		0	0	1	0	0		0	0	0	0	0		0	0	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0		0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	0		0	0	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0		0	0	1	0	0		1	1	1	0	0		0	1	0	0	0		0	1	1
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0		0	1	0	0	1		0	0	1	1	0		0	0	1	0	0		0	1	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0		1	0	0	0	0		0	0	0	0	0		1	0	0	0	0		0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0	0		0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																								16		
					Pile replicate								1 & 2		2														1		
					Pile position			OUT							IN						OUT						IN			
Class	Orders	Family	Genus	Species	*Status	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N		0	0	1	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N		0	0	1	1	0		1	0	0	0	1		0	0	0	1	1		0	0	1	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		1	0	1	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1		0	0	1	0	1		0	0	0	0	0		0	0	1	0	1		0	1	1	0
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N		0	1	0	0	0		0	1	0	0	0		0	0	1	0	0		0	1	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N		0	0	0	0	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2		0	0	0	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2		0	0	1	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N		1	0	0	0	0		1	0	0	1	0		0	0	0	0	1		1	1	1	1
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N		0	0	0	0	0		0	0	0	1	0		0	0	0	1	1		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N		0	0	0	0	1		0	0	0	1	1		0	0	0	0	0		0	0	1	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	1
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	1
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2		0	0	0	0	1		0	0	0	0	0		0	0	0	1	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N		0	0	0	0	0		0	0	1	1	1		1	0	0	0	0		0	1	1	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0		0	0	1	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N		0	0	0	0	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0

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Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																									
					Pile replicate								1 & 2				2												16		
					Pile position			OUT							IN						OUT						IN			
Class	Orders	Family	Genus	Species	*Status	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		1	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A		0	0	0	0	1		0	0	0	0	0		0	0	0	0	1		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A		0	0	1	0	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI		0	0	0	0	0		0	0	0	0	0		0	1	0	1	0		0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1		0	0	0	1	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1		0	1	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N		0	0	0	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N		0	0	1	0	0		0	0	1	0	0		0	0	0	1	1		1	0	1	0
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	1	1		0	0	1	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																							16		
					Pile replicate								1 & 2		2													1		
					Pile position		OUT							IN					OUT						IN					
Class	Orders	Family	Genus	Species	*Status	MISC	1	2	3	4	MISC	1	2	3	4	MISC	1	2	3	4	MISC	1	2	3
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	0	1	1	1	1	0	1	1	0	0	0	1	1	0	0	1	0	1
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	0	0	1	1	1	1	0	0	1	0	0	0	1	1	0	0	0	1	1
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																							16		
					Pile replicate							1 & 2					2												1		
					Pile position			OUT								IN							OUT						IN		
Class	Orders	Family	Genus	Species	*Status	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Rhodophyceae			*Unidentifiable*	*red*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI		0	0	0	0	0		1	0	0	0	0		0	0	1	0	0		0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
			Too small to ID	-	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
			Land plants	-	SI		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
					Pile replicate																					
					Pile position				OUT							IN					OUT					IN			
Class	Orders	Family	Genus	Species	*Status	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	1	2	3	4
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0		0	1	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0		0	0	0	1	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0		0	0	1	0	0		0	0	0	1	0		0	0	1	1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	1		0	0	0	1	0		0	0	0	0	0		0	0	1	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	1		1	0	1	1	1		1	0	1	1	1		0	0	1	1	1	0	0	0	1
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0		0	0	0	1	0		0	0	1	1	0		0	0	1	1	0	0	1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0		0	0	0	0	1		1	0	0	0	0		0	0	0	0	0	0	0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0		1	0	0	0	0		0	0	0	0	1		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	1	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	1		1	0	1	1	1		1	0	0	0	1		0	1	1	0	1	0	0	1	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0		0	0	1	0	1		0	0	0	0	0		0	0	1	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	1		0	0	0	0	0		0	0	1	1	1		0	0	0	0	1	0	0	0	1
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0		0	0	0	1	0		0	0	1	0	0		0	1	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	1	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	1		0	0	0	0	0		1	0	0	0	0		0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	1	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0		0	0	1	1	1		0	0	0	0	0		0	0	1	1	0	0	1	1	0
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0		0	0	0	1	1		1	0	0	1	1		0	0	1	1	1	1	0	0	1
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																								
					Pile replicate																								
					Pile position				OUT							IN					OUT						IN			
Class	Orders	Family	Genus	Species	*Status	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4		1	2	3	4
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0		0	0	0	0	0		1	0	0	0	0		0	0	0	1	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0		0	0	1	1	1		1	0	0	0	1		0	0	0	1	1		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0		0	0	0	1	0		0	0	0	0	0		0	0	0	0	1		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N	0		0	1	1	1	1		0	0	1	1	0		0	0	1	0	1		0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N	0		0	0	0	0	1		0	0	0	0	1		0	0	0	1	0		0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	1		0	0	1	1	1		0	0	1	1	1		0	1	0	1	1		0	1	1	1
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N	0		0	1	0	0	0		0	1	1	0	0		0	1	0	0	0		1	0	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		1	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	1	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2	0		0	1	1	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	1		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0		0	1	1	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N	1		0	0	0	0	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0		0	0	0	1	1		1	0	0	0	0		0	0	1	0	1		0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	1		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2	0		0	0	1	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N	0		0	0	0	0	0		0	0	1	1	0		0	0	0	0	0		0	0	1	1
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2	0		0	0	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	1		0	0	1	1	1		0	0	1	1	1		0	0	1	1	1		0	1	1	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0		0	0	0	0	0		0	0	1	1	0		0	0	0	1	1		0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0

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Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																				
					Pile replicate									2									24 1		
					Pile position				OUT					IN					OUT					IN		
Class	Orders	Family	Genus	Species	*Status	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4	1	2	3	4
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N	0		0	0	0	0	0		0	0	1	0	0		0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0	0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0	0	0	1	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N	0		0	0	0	0	0		0	0	0	0	0		1	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0	0	1	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	1	0	0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	1	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	0		0	0	1	1	0		0	0	1	1	0		0	1	1	1	1	0	1	0	1
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N	0		0	0	0	0	1		0	0	0	1	0		0	0	0	1	1	0	0	0	1
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	0		0	0	0	1	0		0	0	0	1	0		0	0	0	1	1	0	0	0	0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0	0	0	0	0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N	0		0	0	0	1	0		0	0	0	1	0		0	0	0	1	0	0	0	0	0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N	0		0	0	0	1	0		0	0	0	1	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI	1		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0	0	0	0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																									
					Pile replicate																									
					Pile position				OUT							IN						OUT						IN			
Class	Orders	Family	Genus	Species	*Status	4	MISC		1	2	3	4	MISC		1	2	3	4	MISC		1	2	3	4		1	2	3	4	
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0		0	0	0	0	0		0	1	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	0		0	1	1	0	0		0	0	0	0	0		0	0	0	1		0	0	0	1	
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	0		0	1	1	1	0		0	0	0	0	0		0	1	0	1		0	0	1	0	
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	1		0	1	0	0	1		0	0	0	1	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	0		0	1	1	0	1		0	0	1	0	0		1	1	1	1		0	1	1	1	
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	0		0	0	1	0	1		0	0	0	0	0		0	0	1	1		0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0		0	0	1	0	0		0	1	0	0	0		0	1	0	0		0	1	0	0	
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0		0	0	0	0	0		0	0	0	0	0		1	0	0	0		0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	1	0		0	0	0	1	0		0	1	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0		0	0	1	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0		0	0	0	0	0		0	0	0	1	0		0	0	0	0		0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	1	1		0	0	0	1	0		0	0	0	0	0		0	0	0	1		0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0		0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0		0	0	0	0	
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0		0	0	1	1	0		0	1	1	1	0		0	0	1	1		0	0	0	1	
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1		0	0	0	0	
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	1	0		0	0	1	1	1		0	1	1	0	0		0	1	1	1		0	0	1	1	
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0		0	0	1	1	1		0	0	0	0	0		0	1	1	0		0	1	1	0	
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0		0	0	1	0	0		0	0	0	1	0		0	0	1	1		0	0	0	0	
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0		0	0	0	0	1		0	0	0	0	0		0	0	0	0		0	0	0	1	
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0		0	1	0	0	0		0	0	0	0	0		0	0	0	0		0	0	0	0	

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
					Pile replicate																					
					Pile position			OUT					IN					OUT					IN				
Class	Orders	Family	Genus	Species	*Status	4	MISC	1	2	3	4	MISC	1	2	3	4	MISC	1	2	3	4	1	2	3	4
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae			*Unidentifiable*	*red*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Too small to ID	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Land plants	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
					Pile replicate					2										1						
					Pile position	OUT				IN				OUT				IN				OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	MISC	1	2	3	4	MISC
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	1
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0	0	1	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	0	0	1	1	0	0	1	1	1	0	1	1	0	1	1	0	0	1	1	1	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	0	1	0	1	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0	1	1	1	0	1	0	1	0	0	1	1	0	1	1	0	0	0	1	1	0
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0	0	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
					Pile replicate					2									3	1						
					Pile position	OUT				IN				OUT				IN				OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	MISC	1	2	3	4	MISC
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	0	0	1	1	0	0	1	1	0	1	1	1	0	1	1	0	0	1	1	1	0
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	0	0	1	1	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																							
					Pile replicate					2										1								
					Pile position	OUT				IN				OUT				IN				OUT						
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	MISC		1	2	3	4	MISC	
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		0	0	1	0	0		0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	1		0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	0	0		0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0		0	0	1	0	0		0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0		0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	0	0	1	0	0	1	1	0	0	0	1	0	0	1	1	0		0	1	1	1	0		0
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0		0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0		0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	1	0		0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		0	0	0	1	0		0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0		0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0		0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	0	0		0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0		0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0		0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																									
					Pile replicate					2												3								
					Pile position	OUT				IN				OUT					IN				OUT							
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	MISC		1	2	3	4	MISC	
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		0	1	0	0	0	
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		0	0	0	0	0	
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0		0	0	1	0	0	
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	0	0	0	0	
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	1	1	0	0	1	0	0	0	0	1	0	0	1	1	0		0	0	1	1	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	1	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	0	0	
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0	0	0	1	0	1	0	0	0	1	0	0	1	1	0		0	0	0	1	0	
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0		0	0	0	0	0	
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0		0	0	1	1	0	
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	1	0	
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
					Pile replicate					2												3				
					Pile position	OUT				IN				OUT				IN				OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	MISC	1	2	3	4	MISC
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Rhodophyceae			*Unidentifiable*	*red*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Too small to ID	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Land plants	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																							
					Pile replicate	2																						
					Pile position	IN				OUT					IN				OUT					IN			
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	MISC	1	2	3	MISC	1	2	3	4	MISC	1	2	3
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0	1	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	0	0	1	0	0	0	1	1	1	0	0	1	0	0	0	1	1	0	0	1	1
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0	1	0	0	0	0	1	1	0	0	1	0	0	0	1	1	1	0	0	1	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	1	0	0	1	1
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	1
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	1
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																								
					Pile replicate	2																							
					Pile position	IN				OUT					IN					OUT					IN			
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	MISC	1	2	3	MISC	1	2	3	4	MISC	1	2	3
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0	0	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	0	0	1	0	0	0	1	1	0	0	0	1	1	0	1	1	1	1	0	1	1
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0	0	1	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	0	0	1	0	0	0	1	1	1	0	1	1	0	0	1	0	0	0	0	1	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																									
					Pile replicate	2													7	1								2			
					Pile position	IN				OUT						IN				OUT						IN				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	MISC	1	2	3	MISC	1	2	3	4	MISC	1	2	3
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	0	0	0	0	0	0	1	1	0	0	0	0	1	0	1	1	1	1	0	0	0
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																							
					Pile replicate	2												7	1								2		
					Pile position	IN				OUT					IN				OUT					IN			
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	MISC	1	2	3	MISC	1	2	3	4	MISC	1	2	3
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	1	1	0	0	0	1	1	0	0	0	0	1	0	1	1	0	0	0	0	1
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	1	1	0	0	1	1	1	0	0	1	1	0	0	0	1	0	0	0	1	1
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	1	1	0	0	0	0	1	0	0	0	1	1	0	1	1	0	1	0	0	1
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	1	1
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code																					
						7																				
					Pile replicate	2										1									2	
					Pile position	IN				OUT						IN				OUT					IN	
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	MISC	1	2	3	MISC	1	2	3	4	MISC	1	2	3
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae			*Unidentifiable*	*red*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Too small to ID	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0
			Land plants	-	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

Class	Orders	Family	Genus	Species	Berth code Pile replicate Pile position *Status	OUT 1	2	3	4	MISC
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	0	0	0	0	0
Actinopterygii	Perciformes	Blenniidae	*Parablennius*	*laticlavius*	N	0	0	0	0	0
Anthozoa	Actiniaria		*Acontiaria*	*sp.*	SI	0	0	0	0	0
Anthozoa	Actiniaria		*Actiniaria*	*sp.*	SI	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*australis*	C1	0	0	0	0	0
Anthozoa	Corallimorpharia	Corallimorphidae	*Corynactis*	*sp.*	SI	0	0	0	0	0
Anthozoa	Zoanthidea	Zoanthidae	*Zoanthidea*	*sp.*	SI	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*sp.*	SI	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Diplosoma*	*listerianum*	C1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*incanum*	C1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0	0	0	0	0
Ascidiacea	Phlebobranchia	Pyuridae	*Microcosmus*	*squamiger*	C2	0	0	0	0	0
Ascidiacea	Phlebobranchia	Rhodosomatidae	*Corella*	*eumyota*	C1	0	0	0	0	0
Ascidiacea	Stolidobranchia	Botryllinae	*Botrylliodes*	*leachii*	C1	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	0	0	0	1	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*amokurae*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Polyzoinae	*Polyzoa*	*reticulata*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*picta*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*cancellata*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pachydermatina*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*pulla*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	0	0	1	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*nisiotus*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*regalis*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*sp.*	A	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Styela*	*plicata*	C1	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*coerulea*	N	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Pyura*	*trita*	N	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Allostichaster*	*polyplax*	N	0	0	0	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*?oliveri*	SI	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*sp.*	SI	0	0	0	0	0
Bivalvia	Myoida	Hiatellidae	*Hiatella*	*arctica*	N	0	0	1	1	0
Bivalvia	Mytiloida	Mytilidae	*Perna*	*canaliculus*	N	0	0	0	0	0
Bivalvia	Mytiloida	Mytilidae	*Xenostrobus*	*pulex*	N	1	1	1	0	0
Bivalvia	Mytiloida	Mytilidae	*Modiolarca*	*impacta*	N	0	0	0	0	0
Bivalvia	Ostreoida	Anomiidae	*Pododesmus*	*zelandicus*	N	0	0	0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0	0	0	0	0
Bivalvia	Pterioida	Pectinidae	*Talochlamys*	*zelandiae*	N	0	0	0	0	0
Bivalvia	Veneroida	Kelliidae	*Kellia*	*cycladiformis*	N	0	0	0	0	0
Bivalvia	Veneroida	Lasaeidae	*Lasaea*	*hinemoa*	N	0	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Irus*	*reflexus*	N	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0	0	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0	0	0	1	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*elongatus*	N	0	0	0	0	0
Crustacea	Brachyura	Dromiidae	*Dromia*	*wilsoni*	C1	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code					
					Pile replicate					
					Pile position	OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	MISC
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*innominatus*	N	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*ursus*	N	0	0	0	0	0
Crustacea	Brachyura	Xanthidae	*Pilumnus*	*novaezelandiae*	N	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*socialis*	N	0	0	0	0	0
Crustacea	Caridea	Alpheidae	*Alpheus*	*novaezelandiae*	N	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	0	0	1	1	0
Crustacea	Thoracica	Balanidae	*Austrominius*	*modestus*	N	0	1	1	0	0
Crustacea	Thoracica	Balanidae	*Notobalanus*	*vestitus*	N	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Notomegabalanus*	*decorus*	N	0	0	0	0	0
Crustacea	Thoracica	Chthamalidae	*Chaemosipho*	*columna*	N	1	1	0	0	0
Crustacea	Thoracica	Pachylasmidae	*Epopella*	*plicata*	N	1	0	0	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Euryspongia*	*n. sp. 3 (fleshy brown fingery)*	C2	0	0	0	0	0
Demospongiae	Hadromerida	Clionaidae	*Cliona*	*celata*	A	0	0	0	0	0
Demospongiae	Hadromerida	Tethyidae	*Tethya*	*burtoni*	N	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*n. sp. 1 (knubby oxeas 290-380)*	C2	0	0	0	0	0
Demospongiae	Halichondrida	Halichondriidae	*Halichondria*	*panicea*	C1	0	0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*cf. tenacior*	N	0	0	0	0	1
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. venustina*	N	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*n. sp. 2 (smooth tough 180)*	C2	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*glabra*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Coelosphaeridae	*Lissodendoryx*	*isodictyalis*	C1	0	0	0	0	0
Demospongiae	Poecilosclerida	Desmacellidae	*Desmacella*	*ambigua*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0	0	0	1	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*cf. anchorata*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 1 (thick pocked pad)*	C2	0	0	0	1	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. terraenovae*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Ophlitospongia*	*n. sp. 1 (stumpy bush)*	C2	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*n. sp. 3 (red carrot)*	C2	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Plocamia*	*novizelanicum*	N	0	0	0	0	0
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*battershilli*	N	0	0	1	0	1
Demospongiae	Poecilosclerida	Tedaniidae	*Tedania*	*spinostylota*	N	0	0	0	0	0
Gastropoda	Basommatophora	Siphonariidae	*Siphonaria*	*australis*	N	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	0	0	1	0	0
Gastropoda	Littorinimorpha	Littorinidae	*Risellopsis*	*varia*	N	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0	0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Buccinulum*	*linea*	N	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*traversi*	N	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

Class	Orders	Family	Genus	Species	Berth code Pile replicate Pile position *Status	OUT 1	2	3	4	MISC
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*huttoni*	N	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Cadlina*	*willani*	N	0	0	0	0	0
Gastropoda	Nudibranchia	Chromodorididae	*Chromodoris*	*aureomarginata*	N	0	0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0	0	0	0	0
Gastropoda	Patellogastropoda	Lottiidae	*Patelloida*	*corticata*	N	0	0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Tugali*	*suteri*	N	0	0	0	0	0
Gastropoda	Vetigastropoda	Fissurellidae	*Scutus*	*breviculus*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*plurispinosa*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*discodermiae*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bicellariella*	*ciliata*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Chaperiidae	*Chaperia*	*granulosa*	N	0	0	0	0	0
Gymnolaemata	Cheilostomata	Scrupariidae	*Scruparia*	*ambigua*	C1	0	0	0	0	0
Gymnolaemata	Cheilostomata	Watersiporidae	*Watersipora*	*subtorquata*	A	0	0	0	0	0
Holothuroidea	Aspidochirotida	Stichopodidae	*Stichopus*	*mollis*	N	0	0	0	0	0
Hydrozoa	Hydroida	Bougainvilliidae	*Bougainvillia*	*?muscus*	SI	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*?linearis*	A	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Obelia*	*dichotoma*	C1	0	0	0	0	0
Hydrozoa	Hydroida	Corynidae	*Sarsia*	*sp.*	SI	0	0	0	0	0
Hydrozoa	Hydroida	Eudendriidae	*Eudendrium*	*capillare*	A	0	0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*delicatulum*	C1	0	0	0	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setacea*	C1	0	0	1	0	0
Hydrozoa	Hydroida	Plumulariidae	*Plumularia*	*setaceoides*	N	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Sertularella*	*robusta*	N	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0	0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0	0	0	0	0
Hydrozoa	Hydroida	Syntheciidae	*Synthecium*	*elegans*	N	0	0	1	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	0	0	0	1	0
Malacostraca	Amphipoda	Caprellidae	*Caprella*	*equilibra*	N	0	0	0	0	0
Malacostraca	Amphipoda	Colomastigidae	*Colomastix*	*magnirama*	N	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Apocorophium*	*acutum*	A	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Monocorophium*	*acherusicum*	A	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 2*	SI	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*Ventojassa*	*sp. 2*	SI	0	0	0	0	0
Malacostraca	Amphipoda	Ischyroceridae	*?Ventojassa*	*sp.*	SI	0	0	0	0	0
Malacostraca	Amphipoda	Leucothoidae	*Leucothoe*	*trailli*	N	0	0	0	0	0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	0	0	0	1	0
Malacostraca	Amphipoda	Lysianassidae	*Orchomene*	*aahu*	N	0	0	0	0	0
Malacostraca	Amphipoda	Melitidae	*Melita*	*festiva*	N	0	0	0	0	0
Malacostraca	Amphipoda	Podoceridae	*Podocerus*	*karu*	N	0	0	0	0	0
Malacostraca	Amphipoda	Stenothoidae	*Stenothoe*	*moe*	N	0	0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	0	0	0	0	0
Malacostraca	Isopoda	Janiridae	*Iathrippa*	*sp*	SI	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*cf. taupoensis*	N	0	0	0	0	0
Malacostraca	Isopoda	Pseudojaniridae	*Schottea*	*sp*	SI	0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*sp*	SI	1	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Pseudosphaeroma*	*campbellense*	N	0	0	0	0	0
Malacostraca	Tanaidacea	Nototanaidae	*Teleotanais*	*sp.*	SI	0	0	0	0	0
Malacostraca	Tanaidacea	Tanaidae	*Zeuxoides*	*sp.*	SI	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code					
					Pile replicate					
					Pile position	OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	MISC
Ophiuroidea	Ophiurida	Amphiuridae	*Ophiocentrus*	*novaezealandiae*	N	0	0	0	0	0
Ophiuroidea	Ophiurida	Ophiactidae	*Ophiactis*	*resiliens*	N	0	0	0	0	0
Polychaeta	Eunicida	Dorvilleidae	*Dorvillea*	*Dorvillea-A*	SI	0	0	0	0	0
Polychaeta	Eunicida	Lumbrineridae	*Lumbrineris*	*sphaerocephala*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Hesionidae	*Ophiodromus*	*angustifrons*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Neanthes*	*kerguelensis*	N	0	0	0	1	0
Polychaeta	Phyllodocida	Nereididae	*Nereis*	*falcaria*	N	0	0	1	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*camiguinoides*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Perinereis*	*pseudocamiguina*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*Eulalia-NIWA-2*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Eulalia*	*capensis*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Nereiphylla*	*castanea*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Pirakia*	*Pirakia-A*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*polychromus*	N	0	0	1	1	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidastheniella*	*comma*	N	0	1	0	1	0
Polychaeta	Phyllodocida	Polynoidae	*Polynoidae*	*indet*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotus*	*jacksoni*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotin*	*Lepidonotin-A*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Polynoidae	*Lepidonotinae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*zebra*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllin-unknown*	*Eusyllin-unknown-A*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Trypanosyllis*	*gigantea*	N	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*Typosyllis-A*	SI	0	0	1	0	0
Polychaeta	Phyllodocida	Syllidae	*Eusyllis*	*Eusyllis-C*	SI	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Typosyllis*	*prolifera*	N	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Megalomma*	*suspiciens*	N	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Demonax*	*aberrans*	N	0	0	0	0	0
Polychaeta	Sabellida	Sabellidae	*Sabellidae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Sabellida	Serpulidae	*Galeolaria*	*hystrix*	N	0	0	0	1	0
Polychaeta	Sabellida	Serpulidae	*Serpulidae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Scolecida	Opheliidae	*Armandia*	*maculata*	N	0	0	0	0	0
Polychaeta	Scolecida	Scalibregmatidae	*Hyboscolex*	*longiseta*	N	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube) - Indet*	SI	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Phyllochaetopterus*	*Phyllochaetopterus-A*	SI	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopteridae*	*Chaetopteridae-Record invalid (wrack tube)-*	SI	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Boccardia*	*otakouica*	N	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0
Polychaeta	Spionida	Spionidae	*Polydora*	*hoplura*	A	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Timarete*	*anchylochaetus*	N	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Protocirrineris*	*nuchalis*	N	0	0	0	0	0
Polychaeta	Terebellida	Cirratulidae	*Cirratulidae*	*Indet*	SI	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Flabelligera*	*affinis*	N	0	1	0	0	0
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*rostrata*	N	0	0	0	1	0
Polychaeta	Terebellida	Terebellidae	*Streblosoma*	*toddae*	N	0	0	0	1	0
Polychaeta	Terebellida	Terebellidae	*Nicolea*	*armilla*	N	0	0	0	1	0
Polychaeta	Terebellida	Terebellidae	*Pista*	*pegma*	N	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebellidae*	*Indet*	SI	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5a. Results from the diver collections and pile scrapings

					Berth code					
					Pile replicate					
					Pile position	OUT				
Class	Orders	Family	Genus	Species	*Status	1	2	3	4	MISC
Polychaeta	Terebellida	Terebellidae	*Pseudopista*	*Pseudopista-01 [Glasby unpub as marangai]*	SI	0	0	0	0	0
Polychaeta	Terebellida	Terebellidae	*Terebella*	*plagiostoma*	N	0	0	0	1	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Acanthochitona*	*violacea*	N	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Griffithsia*	*sp.*	SI	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	0	0	0	1	0
Rhodophyceae			*Unidentifiable*	*red*	SI	0	0	0	0	0
Turbellaria	Polycladida		*Indet genus*	*indet sp.*	SI	0	1	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0	0	0
			Too small to ID	-	SI	0	0	0	0	0
			Land plants	-	SI	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), C1 = cryptogenic category 1, C2 = cryptogenic category 2, N = native, SI = species indeterminata. See text for details.

Appendix 5b. Results from the benthic grab samples.

					Berth code	1				11				16				24				3				7				CHANNEL			
Class	Order	Family	Genus	Species	*Status	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*phortax*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*rugata*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Bivalvia	Myoida	Corbulidae	*Corbula*	*zelandica*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Bivalvia	Nuculoida	Nuculidae	*Nucula*	*hartvigiana*	N	0	0	0	0	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	0	0	0	0	0
Bivalvia	Nuculoida	Nuculidae	*Nucula*	*nitidula*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
Bivalvia	Nuculoida	Nuculidae	*Linucula*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Solemyoida	Solemyidae	*Solemya*	*parkinsonii*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Mactridae	*Scalpomactra*	*scalpellum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Psammobiidae	*Gari*	*stangeri*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Bivalvia	Veneroida	Semelidae	*Leptomya*	*retiaria*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Tawera*	*spissa*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Ocypodidae	*Macrophthalmus*	*hirtipes*	N	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Echinoidea	Spatangoida	Loveniidae	*Echinocardium*	*cordatum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Turritellidae	*Maoricolpus*	*roseus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*adspersa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*maculosa*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Muricidae	*Xymene*	*pusillus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Gastropoda	Vetigastropoda	Trochidae	*Micrelenchus*	*rufozonus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Sphaeromatidae	*Exosphaeroma*	*montis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Sigalionidae	*Sigalion*	*oviger*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Polychaeta	Spionida	Spionidae	*Dipolydora*	*flava*	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Ampharetidae	*Amphicteis*	*Amphicteis-A*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Pectinariidae	*Pectinaria*	*australis*	N	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Gigartinales	Phyllophoraceae	*Stenogramme*	*interrupta*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5c. Results from the benthic sled samples.

					Berth code	1			11			16			24			3			7		
Class	Order	Family	Genus	Species	*Status	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Actinopterygii	Gasterosteiformes	Syngnathidae	*Leptonotus*	*elevatus*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Gasterosteiformes	Syngnathidae	*Lissocampus*	*filum*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Gobiesocidae	*Trachelochismus*	*n. sp.*	SI	1	0	0	0	0	1	0	0	1	1	1	1	0	0	0	0	0	0
Actinopterygii	Perciformes	Scorpidinae	*Scorpis*	*lineolatus*	N	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Trypterigiidae	*Grahamina*	*capito*	N	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Trypterigiidae	*Grahamina*	*gymnota*	N	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Alismatidae	Najadales	Zosteraceae	*Zostera*	*sp.*	SI	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0
Ascidiacea	Aplousobranchia	Didemnidae	*Didemnum*	*vexillum*	C1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Ascidiacea	Aplousobranchia	Polyclinidae	*Aplidium*	*adamsi*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Molgulidae	*Molgula*	*mortenseni*	N	1	1	1	0	1	0	0	0	0	1	1	1	0	1	0	1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*carnea*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Microcosmus*	*australis*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Pyuridae	*Pyura*	*subuculata*	N	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Asterocarpa*	*cerea*	C1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
Ascidiacea	Stolidobranchia	Styelidae	*Cnemidocarpa*	*bicornuta*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	1	1	1	1	1	0	1	0	0	1	1	1	0	1	1	0	0	0
Bivalvia	Myoida	Corbulidae	*Corbula*	*zelandica*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Nuculoida	Nuculidae	*Nucula*	*hartvigiana*	N	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0
Bivalvia	Ostreoida	Ostreidae	*Ostrea*	*chilensis*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bivalvia	Veneroida	Veneridae	*Tawera*	*spissa*	N	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0
Crustacea	Anomura	Diogenidae	*Paguristes*	*setosus*	N	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0
Crustacea	Anomura	Paguidae	*Pagurus*	*traversi*	N	1	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0
Crustacea	Anomura	Paguridae	*Lophopagurus (L.)*	*lacertosus*	N	1	1	1	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1
Crustacea	Anomura	Paguridae	*Pagurus*	*novizealandiae*	N	1	1	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	1
Crustacea	Anomura	Paguridae	*Diacanthurus*	*spinulimanus*	N	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Crustacea	Anomura	Porcellanidae	*Petrolisthes*	*novaezelandiae*	N	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*cookii*	N	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	0	0
Crustacea	Brachyura	Hymenosomatidae	*Halicarcinus*	*varius*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*peronii*	N	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
Crustacea	Brachyura	Ocypodidae	*Macrophthalmus*	*hirtipes*	N	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Crustacea	Brachyura	Portunidae	*Liocarcinus*	*corrugatus*	N	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Crangonidae	*Pontophilus*	*chiltoni*	N	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Palaemon*	*affinis*	N	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0
Crustacea	Caridea	Palemonidae	*Periclimenes*	*yaldwyni*	N	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
Crustacea	Thoracica	Balanidae	*Balanus*	*trigonus*	C1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Demospongiae	Dictyoceratida	Dysideidae	*Dysidea*	*n. sp. 1 (erect cactus)*	C2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Callyspongiidae	*Callyspongia*	*ramosa*	C1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Adocia*	*cf. parietalioides*	N	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*maxima*	N	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Haplosclerida	Chalinidae	*Haliclona*	*stelliderma*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Esperiopsidae	*Esperiopsis*	*n. sp. 1 (smooth bubble sponge)*	C2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Hymedesmiidae	*Phorbas*	*n. sp. 1 (tough encrustor)*	C2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria*	*cf. lissosclera*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Demospongiae	Poecilosclerida	Microcionidae	*Clathria (Microciona)*	*coccinea*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*costata*	N	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*sodalis*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*novaezelandiae*	N	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Littorinimorpha	Calyptraeidae	*Sigapatella*	*tenuis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Gastropoda	Littorinimorpha	Turritellidae	*Maoricolpus*	*roseus*	N	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*adspersa*	N	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0
Gastropoda	Neogastropoda	Muricidae	*Dicithais*	*orbita*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gastropoda	Notaspidea	Pleurobranchidae	*Pleurobranchaea*	*maculata*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Gastropoda	Nudibranchia	Doridiidae	*Rostanga*	*muscula*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Gastropoda	Vetigastropoda	Trochidae	*Trochus*	*tiaratus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Gymnolaemata	Cheilostomata	Beaniidae	*Beania*	*n. sp. [whitten]*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), N = native, C! = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5c. Results from the benthic sled samples.

					Berth code	1			11			16			24			3			7		
Class	Order	Family	Genus	Species	*Status	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*flabellata*	A	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Bugulidae	*Bugula*	*neritina*	A	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Gymnolaemata	Cheilostomata	Scruparilidae	*Scruparia*	*ambigua*	C1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Campanulariidae	*Clytia*	*hemisphaerica*	C1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Haleciidae	*Halecium*	*?corrugatissimum*	SI	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Amphisbetia*	*bispinosa*	N	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Sertulariidae	*Stereotheca*	*elongata*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Hydrozoa	Hydroida	Solanderiidae	*Solanderia*	*ericopsis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Malacostraca	Amphipoda	Aoridae	*Haplocheira*	*barbimana*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Corophiidae	*Meridiolembos*	*sp.*	SI	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*sp. 3*	SI	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Isaeidae	*Gammaropsis*	*thomsoni*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Amphipoda	Liljeborgiidae	*Liljeborgia*	*sp.*	SI	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malacostraca	Isopoda	Anthuridae	*Mesanthura*	*sp*	SI	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phaeophyceae	Dictyotales	Dictyotaceae	*Dictyota*	*dichotoma var. intricata*	N	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
Phaeophyceae	Fucales	Hormosiraceae	*Hormosira*	*banksii*	N	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nephtyidae	*Aglaophamus*	*verrilli*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Nereididae	*Platynereis*	*Platynereis_australis_group*	SI	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Phyllodocidae	*Phyllodocidae*	*Indet*	SI	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychaeta	Phyllodocida	Syllidae	*Syllidae*	*Indet*	SI	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Polychaeta	Spionida	Chaetopteridae	*Chaetopterus*	*Chaetopterus-A*	C1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Polychaeta	Terebellida	Flabelligeridae	*Pherusa*	*parmata*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Polychaeta	Terebellida	Terebellidae	*Lanice*	*Lanice-01 [conchilega / aoteoroae]*	SI	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Polyplacophora	Acanthochitonina	Acanthochitonidae	*Cryptoconchus*	*porosus*	N	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Ceramiaceae	*Ceramium*	*sp.*	SI	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0
Rhodophyceae	Ceramiales	Deleseriaceae	*Hymenena*	*variolosa*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Rhodomelaceae	*Cladhymenia*	*lyallii*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Rhodophyceae	Ceramiales	Rhodomelaceae	*Polysiphonia*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Rhodophyceae	Gigartinales	Caulacanthaceae	*Catenella*	*nipae*	N	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Gigartinales	Gigartinaceae	*Gigartina*	*atropurpurea*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Rhodophyceae	Gigartinales	Hypnaceae	*Hypnea*	*sp.*	SI	1	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0
Rhodophyceae	Gigartinales	Phyllophoraceae	*Stenogramme*	*interrupta*	N	1	1	1	1	1	1	1	1	1	0	0	0	1	1	0	0	0	0
Rhodophyceae	Gigartinales	Sarcodiaceae	*Trematocarpus*	*aciculare*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Gracilariales	Gracilariaceae	*Gracilaria*	*truncata*	N	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Rhodophyceae	Plocamiales	Plocamiaceae	*Plocamium*	*angustum*	N	0	0	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Lomentariaceae	*Lomentaria*	*sp.*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Rhodophyceae	Rhodymeniales	Rhodomeniaceae	*Rhodymenia*	*sp.*	SI	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Turbellaria	Polycladida	Stylochidae	*Enterogonia*	*sp.*	SI	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Ulvophyceae	Codiales	Codiaceae	*Codium*	*fragile*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Ulva*	*sp.*	SI	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0
Ulvophyceae	Ulvales	Ulvaceae	*Enteromorpha*	*sp.*	SI	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0
			Too small to ID	-	SI	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), N = native, C! = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5d. Results from the dinoflagellate cyst core samples.

					Berth code	site a		site b		site c		site d	
Class	Order	Family	Genus	Species	*Status	1	2	1	2	1	2	1	2
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium*	*sp.*	N	1	1	1	1	0	1	1	0
Dinophyceae	Peridiniales	Peridiniaceae	*Lingulodinium*	*polyedrum*	N	1	0	1	0	0	0	0	0
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium*	*conicum*	N	0	1	0	1	0	0	0	0
Dinophyceae	Peridiniales	Peridiniaceae	*Protoperidinium conicum*	*cf. conicoides*	N	0	1	0	0	0	0	0	0
Dinophyceae	Peridiniales	Peridiniaceae	*Scrippsiella*	*trochoidea*	N	0	1	0	0	0	0	0	0

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5e. Results from the fish trap samples.

					Berth code	1				11				16				24				3				7			
					Line No.	1		2		1		2		1		2		1		2		1		2		1		2	
Class	Order	Family	Genus	Species	*Status	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Actinopterygii	Perciformes	Carangidae	*Trachurus*	*novaezelandiae*	N	1	0	0	1	1	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Anguilliformes	Congridae	*Conger*	*wilsoni*	N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
Actinopterygii	Perciformes	Labridae	*Notolabrus*	*celidotus*	N	1	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1
Actinopterygii	Perciformes	Scorpidinae	*Scorpis*	*lineolatus*	N	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Actinopterygii	Perciformes	Scorpidinae	*Helicolenus*	*percoides*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Actinopterygii	Perciformes	Sparidae	*Pagrus*	*auratus*	N	0	1	1	1	0	0	1	1	0	1	0	0	1	0	0	0	1	0	0	0	0	1	1	0
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	0	0	0	0	1	1	1	1	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0
Cephalopoda	Octopoda	Octopodidae	*Octopus*	*maorum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5f. Results from the crab trap samples.

					Berth code	1				11				16				24				3				7				BWSTH 11				SSWF				
					Line no.	1		2		1		2		1		2		1		2		1		2		1		2		1		2		1		2		
Class	Order	Family	Genus	Species	*Status	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	Total
Actinopterygii	Anguilliformes	Congridae	*Conger*	*wilsoni*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3
Actinopterygii	Gadiformes	Moridae	*Pseudophycis*	*breviuscula*	N	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Actinopterygii	Perciformes	Labridae	*Notolabrus*	*celidotus*	N	1	1	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	0	0	1	0	0	1	0	1	1	0	1	0	0	16
Actinopterygii	Perciformes	Mullidae	*Upenichthys*	*lineatus*	N	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	3
Actinopterygii	Perciformes	Scorpidinae	*Scorpis*	*lineolatus*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Actinopterygii	Perciformes	Sparidae	*Pagrus*	*auratus*	N	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Actinopterygii	Perciformes	Trypterigiidae	*Grahamina*	*gymnota*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	1	0	0	0	0	1	1	1	0	0	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	10
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	27
Cephalopoda	Octopoda	Octopodidae	*Octopus*	*maorum*	N	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	7
Crustacea	Anomura	Paguridae	*Pagurus*	*novizealandiae*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3
Crustacea	Brachyura	Grapsidae	*Plagusia*	*chabrus*	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
Crustacea	Brachyura	Majidae	*Notomithrax*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Crustacea	Brachyura	Majidae	*Thacanophrys*	*filholi*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Gastropoda	Littorinimorpha	Calyptraeidae	*Maoricrypta*	*sodalis*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*adspersa*	N	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0	1	1	1	1	0	0	1	1	12
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*virgata*	N	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*maculosa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Hydrozoa	Hydroida	Sertulariidae	*Amphisbetia*	*bispinosa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Rhodophyceae	Gigartinales	Hypnaceae	*Hypnea*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5g. Results from the starfish trap samples.

					Berth code	1				11				16				24				3				7				BWSTH 11			
					Line No.	1		2		1		2		1		2		1		2		1		2		1		2			1		2	
Class	Order	Family	Genus	Species	*Status	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2		1	2	1	2
Asteroidea	Forcipulata	Asteriidae	*Coscinasterias*	*muricata*	N	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0		0	1	0	1
Asteroidea	Valvatida	Asterinidae	*Patiriella*	*regularis*	N	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1		1	1	1	1
Crustacea	Brachyura	Majidae	*Notomithrax*	*minor*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0
Crustacea	Brachyura	Majidae	*Notomithrax*	*sp.*	SI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Ranella*	*australasia*	N	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0		0	0	0	0
Gastropoda	Littorinimorpha	Ranellidae	*Cabestana*	*spengleri*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0		0	0	0	0
Gastropoda	Neogastropoda	Buccinidae	*Cominella*	*adspersa*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0		0	0	0	0
Gastropoda	Notaspidea	Pleurobranchidae	*Pleurobranchaea*	*maculata*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0		0	0	0	0
Gastropoda	Nudibranchia	Dendrodorididae	*Dendrodoris*	*citrina*	N	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0
Rhodophyceae	Halymeniales	Halymeniaceae	*Cryptonemia*	*latissima*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0
Rhodophyceae	Plocamiales	Plocamiaceae	*Plocamium*	*angustum*	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Appendix 5h. Results from the shrimp trap samples.

					Berth code	1				11				16				24				3				7				BWSTH 11			
					Line No.	1		2		1		2		1		2		1		2		1		2		1		2		1		2	
Class	Order	Family	Genus	Species	*Status	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2

Nothing captured in shrimp traps

*Status: A = non-indigenous (highlighted by shading), N = native, C1 = cryptogenic category 1, C2 = cryptogenic category 2, SI = species indeterminata. See text for details.

Addendum

After completing these reports we were advised of changes in the identification of one species. The ascidian *Cnemidocarpa sp*. refered to in this report as a new introduction to New Zealand has been revised to *Cnemidocarpa nisiotus* (status: native).