A guide to common deepsea invertebrates in New Zealand waters

Third edition

New Zealand Aquatic Environment and Biodiversity Report No. 86
ISSN 1176-9440
2011
A guide to common deepsea invertebrates in New Zealand waters

Third edition

Compiled by
D. M. Tracey
O. F. Anderson
J. R. Naylor

NIWA
Private Bag 14901
Wellington

New Zealand Aquatic Environment and Biodiversity Report No. 86
2011
Preface 4
Purpose of the guide 5
Structure of the guide 5
Instructions for collection at sea 5
Acknowledgments 6
Phyla at a glance and group codes 7
Table 1: Full list of taxa in guide 19

Individual guide sheets

**Porifera**  Sponges  29

**Cnidaria**  Anemones, corals, jellyfish, hydroids  55

**Annelida**  Bristle worms, leeches  97

**Mollusca**  Chitons, bivalves, sea snails, sea slugs, octopus, squid, tusk shells  107

**Arthropoda**  Isopods, amphipods, mysids, prawns, lobsters, crabs, barnacles, sea spiders  159

**Bryozoa**  Bryozoans, moss animals, lace-corals, sea mats  223

**Echinodermata**  Sea-stars, brittle stars, sea urchins, sea cucumbers, feather stars, sea lilies  229

**Tunicata**  Sea squirts, salps  297

Index 1 (taxon list ordered alphabetically by common name) 303

Index 2 (taxon list ordered alphabetically by scientific name) 308

Index 3 (taxon list ordered alphabetically by MFish code) 313
Worldwide, fisheries managers are addressing concerns about the effects of fishing, not only on fish stocks, but also on other species caught incidentally during fishing, particularly those that live on the sea floor. Although these organisms are not part of New Zealand’s Quota Management System, catch records of all species are recorded whenever possible by Ministry of Fisheries observers and scientists during commercial fishing trips and research surveys. Since 2004, the Ministry of Fisheries has published pictorial field identification guides for deepsea invertebrates, offshore crabs, and bryozoans. In addition three guides to fishes have been produced for common species caught by surface fishing, common species caught by bottom and midwater fishing, and less common species caught by bottom and midwater fishing. The guides enable fishers, observers and researchers to recognise our marine species more readily, and to improve the quality of catch records of these species.

We are pleased to announce the publication of the third edition of the Guide to Common Deepsea Invertebrates, which updates and expands the 2007 guide (which in turn amalgamated and updated the original (2004) deepsea invertebrate and offshore crab guides). The Guide to Common Deepsea Invertebrates in New Zealand Waters (Third Edition) updates identification information for over 35 taxa (the term taxa includes both species and organisms identified to a higher taxonomic level) and incorporates a further 33 taxa. Identification sheets are provided for 236 invertebrate taxa, each with a colour image and a description of the key diagnostic features. Taxonomic experts have had direct input to each section to provide up-to-date knowledge. Most of the taxa in the guide are commonly encountered when trawling in water depths of more than 200 m.

The updated guide continues to build on the knowledge and expertise gained by marine scientists during the last 30 years of research in New Zealand waters. With more accurate identification, trends in the capture and distribution of incidental bycatch can be better monitored.

The recently completed ten year global research programme Census of Marine Life found that “The number of [ID] guides was significantly and positively correlated with the state of knowledge and species richness in a given country” (Costello et al 2010). Thus, the ongoing development of accessible identification guides is an important step towards the goal of maintaining a healthy aquatic environment.

Pamela Mace
Chief Scientist
Ministry of Fisheries, October 2011

PURPOSE OF THE GUIDE

In New Zealand, invertebrates caught on or close to the seabed (termed ‘benthic’ in this guide) are identified and weighed by observers or researchers on board commercial and research trawlers. Because identification can be difficult, recording of the invertebrate catch while at sea has been variable, and specimens of many species have had to be retained for later examination by experts ashore. This guide will enable observers and researchers to more readily identify the more common organisms while at sea, thereby streamlining the process of recording bycatch species. Over 180 benthic invertebrate taxa caught in New Zealand waters are included in the guide (Table 1). The guide provides images of each taxon, written descriptions of the main diagnostic features and details that will assist users to distinguish specimens from similar or closely related organisms. Although the descriptions provided have been checked by taxonomic experts, the guide does not replace formal taxonomic texts.

STRUCTURE OF THE GUIDE

The first section ‘Phyla at a glance and group codes’ provides a general anatomical description of each phylum and provides representative images of typical phylum species (pages 9–18). This will assist users to distinguish the phyla, as well as their classes and orders, and to place organisms in the correct higher taxon. The phyla description section is followed by a reference table (Table 1) which lists all taxa included in the guide. The group codes are used when identification to a low level is not possible.

Phyla in Table 1 and the identification sheets are arranged in conventional phylogenetic order, from structurally and anatomically less advanced groups (sponges), to the more advanced (echinoderms and tunicates). Each phylum is colour coded. The identification sheets assume some prior biological knowledge. General notes on some morphological components used for identifying species within a taxon are provided where necessary. Each sheet contains the following information:

- Standard taxonomic hierarchy of the organism
- Scientific and common name
- 3-letter Ministry of Fisheries code
- Illustration (line drawing or photograph)
- Distinguishing features
- Colour
- Size
- Distribution
- Depth
- Similar species
- References

INSTRUCTIONS FOR COLLECTION AT SEA

The intention of the guide is to assist in the identification of the common deepsea benthic fauna in the New Zealand region. If you are not confident that you can identify the organism to species, genus, or family level, (i.e. guide sheet level), then we encourage the use of the codes provided in the Phyla At A Glance section (pages 9–18), and retain the specimen for identification ashore.

Specimens should be retained under the following circumstances:

- identification beyond phylum level is uncertain
- the specimen has been caught outside the given depth range or distribution
- they have been specifically requested by the Ministry of Fisheries

If samples or subsamples are retained, they should be preserved according to the facilities and materials available, and the following instructions should be followed.

Handling instructions: observers

- Place the benthic sample or a representative sub-sample of the organism in a plastic bag, separating the groups/species (particularly the sponges).
- On a waterproof label write in pencil: Area, trip number, station number or tow/set, Observer Benthic Materials MFish Sample ID (to match the ID on the form), and MFish Species Code and put inside the bag. If a sub-sample is being collected please write subsample on the Benthic Materials Form and provide the estimated total weight of the organism(s)
- Freeze immediately. If the organism is fragile (e.g., a coral, crab or prawn), freeze animal in bag with enough seawater that the animal is covered. Dead shells are not to be recorded on catch forms, but specimens can be retained for taxonomists if requested.

Please follow the Transport Instructions in the MFish Observer Manual, and send by frozen freight to: Collections Manager, NIWA, 301 Evans Bay Pde, Greta Pt, Kilbirnie, Wellington.

Note: Check the Observer Manual for instructions regarding specific project requests for samples by DOC or MFish. In some projects, the destination of samples may be different from the address given above.
Handling instructions: researchers
Freeze benthic organisms (as above), or, if chemicals are available, carry out instructions for the relevant animal groups as described below. Use plastic containers large enough to avoid crowding the specimen, at least 5:1 volume of liquid. If large numbers of an organism are requested, freeze in bulk.

Different fixation and preservation methods are used depending on the purpose, e.g., samples for DNA analysis must be frozen or preserved in ethanol. For taxonomic work, initially use 5-10% buffered formalin as a fixative (10% formalin = 4% formaldehyde solution) or 95% ethanol (EtOH) as a direct preservative. Use a liquid volume at least 5-10 times that of the animal because water released from the body and tissues of the animal will dilute the fixative or preservative. For large specimens, use a syringe or knife to help fixative or preservative penetrate the tissue. Material for DNA studies should be frozen or preserved and stored in 95% ethanol. Specimens fixed in formalin are mostly unusable for DNA studies.

- **Cnidaria**
  Scleractinians, seafans, black corals, hydrocorals, sea pens, soft corals – fix and preserve in 75% ethanol. For large amounts, freeze all and/or a sub-sample, e.g., if there are 30 kg of stony branching corals (CBR) keep one carton. If organism appears dead still record code and weight on catch forms; dead specimens can be retained for taxonomists. Coral that appears rubble like but comprises both dead and alive pieces would ideally be recorded using the most appropriate code (by species if possible, otherwise using an MFish group code such as SIA, CBR or CUP). Anemones – place anemone in a bucket of seawater, add 2-3 menthol crystals. Keep in bucket for 24 hrs. Once anemone is relaxed, remove from seawater and fix in 10% formalin (it is essential to inject the body cavity) and store in 75% ethanol or 10% formalin. More than one specimen can go in a bucket, keeping each specimen in a separate bag with holes to enable fixing.

- **Annelida**
  Bristle worms, sea worms – fix in 10% formalin and store in 75% ethanol

- **Mollusca**
  Shelled forms, including chitons – freeze Sea slugs – fix in 10% formalin and store in 5% ethanol Octopus and squid – fix in 10% formalin (essential to inject body cavity!) and store in 75% ethanol

- **Arthropoda**
  Prawns, lobsters, barnacles, isopods, amphipods, sea spiders – fix and store in 75% ethanol (replace after a couple of days)

- **Echinodermata**
  Sea-stars, brittle stars, sea urchins, sea cucumbers, feather stars, sea lilies – preserve in 75% ethanol

- **Tunicata**
  Ascidians or sea squirts – Colonial: relax in seawater with a pinch of menthol crystals, then fix in 10% formalin, – Solitary: fix in 10% formalin

PROTECTED SPECIES: see page 58.

ACKNOWLEDGMENTS

This project was funded by the Ministry of Fisheries (ENV2005/20 and ZBD2010/39). Taxonomic information, general advice, images, and help in preparing the documents were provided by NIWA personnel: N. Bagley, D. Bowden, N. Bruce, M. Clark, M. Consalvey, N. Davey, D. Gordon, J. Grieve, M. Kelly, A.-N. Lörz, E. Mackay, P. McMillan, P. Marriott, S. Mills, K. Neill, M. Page, G. Read, A. Rowden, K. Schnabel, D. Stevens, R. Stewart, Contributions were also received from experts S. Ahyong (Australian Museum, Sydney), N. Bax (University of Tasmania), S.D. Cairns (Natural History Museum, Washington DC, USA), D.G. Fautin (University of Kansas, Lawrence, USA). B. Horvath (Westmont College Santa Barbara, USA), D. M. Opresko (Oak Ridge National Laboratory, Tennessee, USA), J.A. Sanchez (Universidad de los Andes, Sanate de Bogotá D.C., Colombia), M. Smith (University of Otago, New Zealand), F. Sinniger (University of the Ryukyus Okinawa, Japan), R. C. Willan (Northern Museum and Art Gallery, Northern Territory, Darwin, Australia), D.G. McKnight, J. Booth, M. Oliver, H. Sui (on behalf of NIWA), B. Marshall and W.R. Webber (Te Papa Tongarewa, Museum of New Zealand, Wellington), S. O’Shea and K. Bolstad (Auckland University of Technology), D. Fisher (NIWA) and S. Woolston, Data Management Group (Ministry of Fisheries) allocated the new Ministry of Fisheries species codes required. The “species” database used to produce the guide sheets was funded independently of this project by NIWA (NSOF project NNRC043 “Species ID tools”). We also thank the Ministry of Fisheries, particularly M. Livingston and R. Ford, for supporting the work on this expanded publication, Richard Ford and Marianne Vignaux for editorial comments. All images other than those named images, are NIWA copyright.
Phyla at a glance and group codes
PHYLUM  Porifera

COMMON NAME  Sponges (ONG)

CLASSES  Demospongiae (DSO), Hexactinellida (GLS), Calcareous

Sessile (attached) growth forms spongy or stony to the touch, some with obvious glass splinter-like spicules. Can be encrusting, tubular, trumpet- or fan-shaped, massive mounds, spherical, stalked, or branching, ranging in size from tiny (5–10 cm) to huge (several metres long). Many are like fibre-glass strands. The sponge body has no obvious animal features and is often mistaken for a plant. It is typically composed of a skeleton of siliceous (occasionally calcareous) spicules (glass-like fragments) that may be embedded in hard collagen (spongin) fibres.

PHYLUM  Cnidaria

COMMON NAME  Corals (COU), anemones (ANT)

CLASS  Anthozoa

Large solitary polyps, and almost always attached. Soft forms include anemones ANT (1). Corals are a very diverse group. Stony corals (2) (SIA) have a calcareous skeleton that has radii (vertical plates radiating from the center); there are solitary and colonial species. Octocorals have polyps with 8 pinnate (feathery) tentacles. Some species are encrusting (stoloniferous), soft (SOC) (3) and mounded (e.g., Alcyoniidae), others are quill-like and embedded in sand or mud as a feathery stem (sea pens PTU), or erect and branching and very hard (gorgonians GOC) (4).

COMMON NAME  Hydroids (HDF) & Hydrocorals (COR)

CLASS  Hydrozoa

Small to moderate-sized coral-like forms, mostly colonial and generally attached, consisting of runners (attached to shells and rocks) with erect single or branching stems bearing tiny polyps. Some calcified hydroids e.g. hydrocorals of the family Stylasteridae, with microscopic polyps (right hand photo) resemble stony corals.
<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Jellyfish (JFI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Scyphozoa</td>
</tr>
<tr>
<td></td>
<td>Large medusae, comprising a jelly-like disk (umbrella) with the mouth and tentacles underneath. Most are free-swimming.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Annelida</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Bristle worms, sea worms (POL)</td>
</tr>
<tr>
<td>CLASS</td>
<td>Polychaeta</td>
</tr>
<tr>
<td></td>
<td>The body is segmented and each segment bears a pair of paddle-like appendages with bristles, hence polychaeta (many bristles). At the head end there may be tiny eyes, sensory antennae, and tentacles that can be short and stubby or very long or fan-like. May live in burrows or tubes, or be free-living.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Mollusca</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Snails, sea slugs (GAS)</td>
</tr>
<tr>
<td>CLASS</td>
<td>Gastropoda</td>
</tr>
<tr>
<td></td>
<td>Soft-bodied creatures with a broad, flat creeping sole or foot, generally protected with a well developed shell of one piece (often coiled, top &amp; left image). The shell may be completely lacking or small and concealed within the body (sea slugs, right).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Chitons (CHT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Polyplacophora</td>
</tr>
<tr>
<td></td>
<td>Characteristically the shell is divided into 8 overlapping plates. Bilaterally symmetrical with an ovoid body with no eyes or tentacles on the tiny head.</td>
</tr>
</tbody>
</table>
### Mussels, clams, oysters (BIV)

**COMMON NAME** Mussels, clams, oysters (BIV)

**CLASS** Bivalvia

Laterally compressed with two shells, hinged dorsally, that completely enclose the body in most species. Burrowing bivalve species have a tongue-like foot and long muscular suction tubes or siphons.

### Tusk shells (SPH)

**COMMON NAME** Tusk shells (SPH)

**CLASS** Scaphopoda

Deepwater molluscs with a distinctive tapering shell that has a hole at each end. The shell is cylindrical and shaped like an elephant’s tusk. Some species grow up to 60 mm in length.

### Squid (SQX), octopus (OCP)

**COMMON NAME** Squid (SQX), octopus (OCP)

**CLASS** Cephalopoda

Squids (top) have an elongate, torpedo-like body with 8 arms and 2 tentacles. Arms have 2 or more rows of stalked suckers with rings and/or hooks running the entire length; tentacles have 2 or more rows of suckers and/or hooks at the distal end. Octopuses (bottom) have a short globular sac-like body and 8 arms (no tentacles) with unstalked suckers along their length.

### Sea spiders (PYC)

**COMMON NAME** Sea spiders (PYC)

**CLASS** Pycnogonida

Pycnogonids resemble spiders. The body is much reduced with 8–12 legs. The head has an obvious proboscis (feeding tube) with adjacent appendages, a pair of which is used by males to carry egg masses.
**COMMON NAME** Krill (EUP)  
**CLASS** Malacostraca  
**ORDER** Euphausiacea  

Shrimp-like plankton about 3 cm long. A shell-like carapace extends behind the head and forward as a rostrum, below which is a pair of stalked compound eyes. Unlike true shrimps, the sides of the carapace do not tightly enclose the gills.

**COMMON NAME** Sea slaters (ISO)  
**CLASS** Malacostraca  
**ORDER** Isopoda  

Flattened body with a shield-shaped head and no carapace. Most legs appear similar in shape and size. There are many parasitic forms (e.g., fish lice). Small to 2–5 cm long, although a few species are much larger.

**COMMON NAME** Sand hoppers (APH)  
**CLASS** Malacostraca  
**ORDER** Amphipoda  

Body laterally compressed (compared with isopods) and antennae often relatively long, giving a shrimp-like appearance. There is no carapace. Generally 1 cm long or less (a few species are larger).

**COMMON NAME** Shrimps, prawns (NAT)  
**CLASS** Malacostraca  
**ORDER** Decapoda  

Carapace well developed, often with a long rostrum. Five pairs of legs, of which any of the first 2 or 3 pairs may be large and chelate (clawed). Shrimps and prawns are often called natant decapods, (i.e. able to swim).
<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Deep-sea blind lobsters (PLY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Malacostraca</td>
</tr>
<tr>
<td>ORDER</td>
<td>Decapoda</td>
</tr>
</tbody>
</table>

All legs, or the first four pairs, have pincers; these are long and slender on the first pair and small and short on the rest. Elongate, flat-topped cephalothorax (fused head and thorax), bordered with sharp spines. Rostrum (projection, often spinelike, at front of head) small, often with two spines. Eyes represented by pigment-free points at the front of carapace.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Rock lobster (CRA), Packhorse rock lobster (PHC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Malacostraca</td>
</tr>
<tr>
<td>ORDER</td>
<td>Decapoda</td>
</tr>
</tbody>
</table>

Rostrum small. Frontal horns over eyes. Large spiny antennae (sensory organs at front of head) and spiny carapace (hard covering over head and thorax). Pincers on females only — small and on last pair of legs. Photo is of packhorse lobster.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Slipper (shovel-nosed) lobsters (SLL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Malacostraca</td>
</tr>
<tr>
<td>ORDER</td>
<td>Decapoda</td>
</tr>
</tbody>
</table>

Rostrum very reduced. Second antennae modified to a hinged series of five, flat plates. Pincers on females only — small and on last pair of legs. Carapace flattened and often with strong spines on margins. Eyes are small.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>Clawed lobsters, scampi (SCI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>Malacostraca</td>
</tr>
<tr>
<td>ORDER</td>
<td>Decapoda</td>
</tr>
</tbody>
</table>

Cylindrical carapace with well developed rostrum. First 3 pairs of legs clawed; first pair in the form of heavy chelipeds (legs with chelae or pincers).
**COMMON NAME** True crab (true crabs) (CRB)

**CLASS** Malacostraca

**ORDER** Decapoda

Abdomen (segment behind or under thorax) reduced and tightly flexed beneath thorax (middle part of body behind head). First legs in form of heavy chelipeds (having large claws); third legs never chelate. Eyes on the outside of second antennae.

**COMMON NAME** King crab (lithodid crabs) (KIC)

**CLASS** Malacostraca

**ORDER** Decapoda

Abdomen asymmetrical (in females only) and flexed under thorax. First legs in the form of heavy chelipeds (claws); third legs never chelate. Appear to have only four pairs of legs because the fifth legs are much reduced and turned under the body. Eyes between antennae.

**COMMON NAME** Hermit crab (hermit crabs) (PAG)

**CLASS** Malacostraca

**ORDER** Decapoda

Abdomen asymmetrical and housed within a gastropod shell or anemone or folded beneath the carapace. First pair of legs are chelipeds.

**COMMON NAME** Barnacles (BRN)

**CLASS** Maxillopoda

**ORDER** Thoracica

There are stalked (goose barnacles), left photo, and non-stalked (acorn barnacles), right photo. The mantle surface (soft outer wall) of any barnacle bears at least 5 major plates, which are pulled together for protection.
<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Sipuncula</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Peanut worms (SIP)</td>
</tr>
<tr>
<td></td>
<td>Unsegmented and rigid worm-like body divided into a narrow anterior section containing the mouth, surrounded by a fringe of tentacles, and a large posterior trunk. Gut is U-shaped, and the anus opens as a tiny pore in the anterior part of the body.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Echiura</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Spoon worms (EHI)</td>
</tr>
<tr>
<td></td>
<td>Unsegmented and soft, sausage-shaped body, with a scoop-like process (proboscis) at the head end; proboscis may be rather flattened and cannot be retracted into the trunk. The anus is at the posterior end of the body.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Priapulida</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Penis worms (PDL)</td>
</tr>
<tr>
<td></td>
<td>Elongate, with a retractable proboscis and extended trunk region. The proboscis is wider and ornamented with rib-like papillae (small protuberances) and minute thorn-like spines. The trunk is covered with small spines or tubercles and is externally (not internally) segmented. There are 1 or 2 branched tail-like processes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PHYLUM</th>
<th>Bryozoa</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMON NAME</td>
<td>Moss animals, sea mats, lace corals (COZ)</td>
</tr>
<tr>
<td></td>
<td>A very diverse group, forming colonies of tiny box- or tube-like individual zooids. Colonies may be a few centimetres in height or diameter, being erect and bushy, flat and encrusting, large and lacy, or coral-like. Individual zooids rarely exceed 1 mm in length.</td>
</tr>
</tbody>
</table>
**PHYLUM**  Brachiopoda

**COMMON NAME** Lamp shells (BPD)

Resemble bivalve molluscs, but the valves enclose the body dorsally and ventrally rather than laterally (from the side). Ventral valve typically larger than the dorsal, unlike most clams which have two equal valves. Each valve is bilaterally symmetrical and may be ornamented with concentric (with a common center) growth lines and a fluted or spiny surface. Attached species have a short stalk emerging from the hinge area of the valves.

---

**PHYLUM**  Echinodermata

**COMMON NAME** Sea stars (ASR)

**CLASS**  Asteroidea

Star-shaped, free-moving echinoderms with prominent rays or arms projecting from a central area and usually covered with calcareous plates and spines. Arm usually wider at the base, merges into the disc (in contrast to ophiuroids). At least 5, and often many more, arms and in some species these may be so short that the body appears pentagonal.

---

**COMMON NAME**  Brittle stars, basket stars (OPH)

**CLASS**  Euryalida

Extremely long, slender flexible arms, clearly differentiated from the central disc. The arms are much branched in basket stars.
Free-living or attached by a stalk with root-like processes to the substratum. Arms are pinnately branched (feather-like). In contrast to other echinoderms, the mouth faces upwards.

**COMMON NAME**  
**Feather stars and sea lilies**  
**CLASS**  
**Crinoidea**

Body called a test, covered with spines and without arms. Circular or oval and the test often spherical. Irregular echinoids, such as the sand dollars and heart urchins, are flattened and have much smaller and far more numerous spines.

**COMMON NAME**  
**Sea urchins**  
**CLASS**  
**Echinoidea**

Elongated cylindrical body with a circle of tentacles around the mouth. There is no obvious calcareous skeleton (unlike sea urchins). Instead, microscopic calcareous elements called spicules are embedded in the skin; a few species have spicules in dense numbers and can be very firm.

**COMMON NAME**  
**Sea cucumbers**  
**CLASS**  
**Holothuroidea**

Free-living or attached by a stalk with root-like processes to the substratum. Arms are pinnately branched (feather-like). In contrast to other echinoderms, the mouth faces upwards.
### Tunicates, sea squirts (ASC)

<table>
<thead>
<tr>
<th><strong>PHYLUM</strong></th>
<th>Tunicata</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMMON NAME</strong></td>
<td>Tunicates, sea squirts (ASC)</td>
</tr>
<tr>
<td><strong>CLASS</strong></td>
<td>Ascidiacea</td>
</tr>
</tbody>
</table>

Attached, colonial or solitary. One end is attached to the substratum and the other contains two openings that may be extended as separate siphons. Body feels gelatinous or leathery and has a basket shape. Colonial forms can resemble sponges (or even encrusting bryozoans); tunicate individuals can be recognised by their small siphonal openings.

### Salps (SAL)

<table>
<thead>
<tr>
<th><strong>COMMON NAME</strong></th>
<th>Salps (SAL)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASS</strong></td>
<td>Thaliacea</td>
</tr>
</tbody>
</table>

Salps may be solitary or colonial, are gelatinous, transparent, free-swimming and planktonic. Siphons are at opposite ends of body (cf. tunicates).
Table 1: Full list of taxa in guide
<table>
<thead>
<tr>
<th>Class or Order</th>
<th>Family</th>
<th>Common Name</th>
<th>Scientific name</th>
<th>Mfish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demospongiae (c)</td>
<td>Ancorinidae</td>
<td>Knobbly sandpaper sponge (s)</td>
<td>Ecionemia novaezelandiae</td>
<td>ANZ 32</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Ancorinidae</td>
<td>Golden brown crater sponge (s)</td>
<td>Penares sp.</td>
<td>PNR 33</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Ancorinidae</td>
<td>Pink ice egg sponge (s)</td>
<td>Rhabdospongia sp.</td>
<td>RHA 34</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Ancorinidae</td>
<td>Orange fat finger sponge (s)</td>
<td>Stelletta sp.</td>
<td>SLT 35</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Geodiidae</td>
<td>Curling stone sponge (s)</td>
<td>Geodia regina</td>
<td>GRE 36</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Geodiidae</td>
<td>Ostrich egg sponge (s)</td>
<td>Geodia vestigera</td>
<td>GVE 37</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Geodiidae</td>
<td>Rocky dumpling sponge (s)</td>
<td>Pachymatisma sp.</td>
<td>PAZ 38</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Pachastrellidae</td>
<td>Fibreglass cup sponge (s)</td>
<td>Poecillastra laminaris</td>
<td>PLN 39</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Pachastrellidae</td>
<td>Yoyo sponge (s)</td>
<td>Thenea novaezelandiae</td>
<td>THN 40</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Incidiidae</td>
<td>Rubber sponge (s)</td>
<td>Psammocinia sp.</td>
<td>PHW 41</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Suberitidae</td>
<td>Fleshy club sponge (s)</td>
<td>Suberites affinis</td>
<td>SUA 42</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Callyspongiida</td>
<td>Airy finger sponge (s)</td>
<td>Callyspongia sp.</td>
<td>CRM 43</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Corallistidae</td>
<td>Smooth white cup sponge (s)</td>
<td>Corallistes fulvodesmus</td>
<td>CFU 44</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Scleriodermidae</td>
<td>Pimpled ear sponge (s)</td>
<td>Acisclera pulchra</td>
<td>APU 45</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Coelasphaeida</td>
<td>Floppy chocolate plate sponge (s)</td>
<td>Lissodendoryx bifacial</td>
<td>LBI 46</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Cerdidae</td>
<td>Orange frond sponge (s)</td>
<td>Crelia incrustans</td>
<td>CIC 47</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Hymedesmiidae</td>
<td>Grey fibrous massive sponge (s)</td>
<td>Phorbas sp.</td>
<td>PHB 48</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Tetrillidae</td>
<td>Bristle ball sponge (s)</td>
<td>Tetilla austreale</td>
<td>TTL 49</td>
<td></td>
</tr>
<tr>
<td>Demospongiae (c)</td>
<td>Tetrillidae</td>
<td>Furry oval sponge (s)</td>
<td>Tetilla leptoderma</td>
<td>TLD 50</td>
<td></td>
</tr>
<tr>
<td>Hexactinellida (c)</td>
<td>Cerdidae</td>
<td>Glass sponges (c)</td>
<td>Hexactinellida</td>
<td>GLS 51</td>
<td></td>
</tr>
<tr>
<td>Hexactinellida (c)</td>
<td>Farrediida</td>
<td>Lacey honeycomb sponges (g)</td>
<td>Farrea spp.</td>
<td>FAR 52</td>
<td></td>
</tr>
<tr>
<td>Hexactinellida (c)</td>
<td>Euplectellida</td>
<td>Basket-weave horn sponge (s)</td>
<td>Euplectella regalis</td>
<td>ERE 53</td>
<td></td>
</tr>
<tr>
<td>Hexactinellida (c)</td>
<td>Rossellidae</td>
<td>Floppy tubular sponge (s)</td>
<td>Hyalascus sp.</td>
<td>HYA 54</td>
<td></td>
</tr>
<tr>
<td>Actiniaria (o)</td>
<td>Actiniidae</td>
<td>Deepsea anemones (g+)</td>
<td>Bolocera sp.</td>
<td>BOC 59</td>
<td></td>
</tr>
<tr>
<td>Actiniaria (o)</td>
<td>Actinostolidae</td>
<td>Smooth deepsea anemones (f)</td>
<td>Actinostolidae</td>
<td>ACS 60</td>
<td></td>
</tr>
<tr>
<td>Actiniaria (o)</td>
<td>Hormathiidae</td>
<td>Warty deepsea anemones (f)</td>
<td>Hormathiidae</td>
<td>HMT 61</td>
<td></td>
</tr>
<tr>
<td>Actiniaria (o)</td>
<td>Liponematidae</td>
<td>Deepsea anemones (g)</td>
<td>Liponema spp.</td>
<td>LIP 62</td>
<td></td>
</tr>
<tr>
<td>Alcyonacea (o)</td>
<td>Alcyoniidae</td>
<td>Gigantic coral (s)</td>
<td>Anthomastus (Bathyaxis) robustus</td>
<td>ARO 63</td>
<td></td>
</tr>
<tr>
<td>Alcyonacea (o)</td>
<td>Clavulariidae</td>
<td>Long polyp soft corals (g)</td>
<td>Telesto spp.</td>
<td>TLO 64</td>
<td></td>
</tr>
<tr>
<td>Antipatharia (o)</td>
<td>Black corals (o)</td>
<td></td>
<td>Antipatharia</td>
<td>COB 65</td>
<td></td>
</tr>
<tr>
<td>Antipatharia (o)</td>
<td>Leiopathidae</td>
<td>Black coral (g)</td>
<td>Leioptes secunda</td>
<td>LSE 66</td>
<td></td>
</tr>
<tr>
<td>Corallimorpharia (o)</td>
<td>Corallimorphidae</td>
<td>Coral-like anemones (f)</td>
<td>Corallimorphidae</td>
<td>CLM 67</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea (o)</td>
<td>Coralliidae</td>
<td>Precious corals (g+)</td>
<td>Corallium spp.</td>
<td>CLL 68</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea/Calcaxonia (o)</td>
<td>Chrysogorgiidae</td>
<td>Golden corals (g+)</td>
<td>Chrysogorgia sp.</td>
<td>CHR 69</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea/Calcaxonia (o)</td>
<td>Isididae</td>
<td>Bamboo corals (f)</td>
<td>Isididae</td>
<td>ISI 70</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea/Calcaxonia (o)</td>
<td>Isididae</td>
<td>Bushy bamboo coral (g)</td>
<td>Acanella sp.</td>
<td>ACN 71</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea/Calcaxonia (o)</td>
<td>Isididae</td>
<td>Branching bamboo coral (g)</td>
<td>Keratoisis sp.</td>
<td>BOO 72</td>
<td></td>
</tr>
<tr>
<td>Gorgonacea/Calcaxonia (o)</td>
<td>Isididae</td>
<td>Bamboo coral (g+)</td>
<td>Lepidisis sp.</td>
<td>LLE 73</td>
<td></td>
</tr>
<tr>
<td>Annelida</td>
<td>Mollusca</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gorgonacea/Calcaxonia (o)</strong></td>
<td><strong>Minuisis spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gorgonacea (o)</strong></td>
<td><strong>PAB 75</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gorgonacea (o)</strong></td>
<td><strong>PRI 77</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gorgonacea (o)</strong></td>
<td><strong>PMN 78</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gorgonacea (o)</strong></td>
<td><strong>THO 79</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydroida (o)</strong></td>
<td><strong>CRE 80</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hydroida (o)</strong></td>
<td><strong>ERR 81</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pennatulacea (o)</strong></td>
<td><strong>GYS 83</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pennatulacea (o)</strong></td>
<td><strong>PNN 84</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>CAY 85</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>DDI 86</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>GDU 87</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>SVA 88</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>STP 89</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>OVI 93</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zoantharia (o)</strong></td>
<td><strong>ZAH 94</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zoantharia (o)</strong></td>
<td><strong>ZAH 94</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scleractinia (o)</strong></td>
<td><strong>EPZ 95</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Amphinomida (o)</strong></td>
<td><strong>Chloeia inermis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eunicida (o)</strong></td>
<td><strong>Eunicidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eunicida (o)</strong></td>
<td><strong>Hyalinoecia tubicola</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Phyllodocida (o)</strong></td>
<td><strong>Aphroditidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Phyllodocida (o)</strong></td>
<td><strong>Euciroa galatheae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Acesta maui</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Acesta saginata</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Zygochlamys delicatula</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Delectopecten fosterianus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Veprichlamys kiwaensis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bivalvia (c)</strong></td>
<td><strong>Euciroa galatheae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Benthoctopus spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Enteroctopus zealandicus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Graneledone spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Graneledone spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Pinnoctopus cordiformis</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Opisthoteuthis spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Architeuthis spp.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Chiroteuthis veryiani</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Cranchiidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Histiotethiidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Lepidoteuthidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Lolginiidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong></td>
<td><strong>Lycoteuthidae</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MOLLUSCA</strong></td>
<td><strong>ARTHROPODA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Mastigoteuthidae Whip-lash squids (g)</td>
<td><strong>Arthropoda (o)</strong> Eurythenidae Amphipod (o) <strong>Eurythenes grylus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Octopoteuthidae Octopoteuthis squid (g)</td>
<td><strong>Decapoda (o)</strong> Atelecyclidae Pteropeltarian crab (s)</td>
<td><strong>Pteropeltarian novoaezelandiae</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Octopoteuthidae Dana octopus squid (s)</td>
<td><strong>Decapoda (o)</strong> Atelecyclidae Frilled crab (s)</td>
<td><strong>Trichopeltarian fantasticum</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Gould's arrow squid (s)</td>
<td><strong>Decapoda (o)</strong> Chirostylidae Squat lobsters (f+)</td>
<td><strong>Gastroptychus spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Sloan's arrow squid (s)</td>
<td><strong>Decapoda (o)</strong> Chirostylidae Squat lobsters (f+)</td>
<td><strong>Uroptychus spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Ommastrephid squid (g)</td>
<td><strong>Decapoda (o)</strong> Galatheidae Squat lobsters (g)</td>
<td><strong>Munida spp.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Ommastrephes spp.</td>
<td><strong>Decapoda (o)</strong> Geryonidae Red crab (s)</td>
<td><strong>Chaceon bicolor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Toddalos squid (g)</td>
<td><strong>Decapoda (o)</strong> Goneplacidae Two-spined crab (s)</td>
<td><strong>Pycnoptilus victoriensis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Ommastrephidae Todarothes squid (g)</td>
<td><strong>Decapoda (o)</strong> Goneplacidae Policeman crab (s)</td>
<td><strong>Neommatocarcinus huttoni</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Onychoteuthidae Warty squid (g)</td>
<td><strong>Decapoda (o)</strong> Homolidae Antlered crab (s)</td>
<td><strong>Dagnodus petterdi</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Onychoteuthidae Warty squid (g)</td>
<td><strong>Decapoda (o)</strong> Homolidae Carrier crab (s)</td>
<td><strong>Homola orientalis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Onychoteuthidae Octopoteuthis squid (g)</td>
<td><strong>Decapoda (o)</strong> Homolidae Yaldwyn's crab (s)</td>
<td><strong>Yaldwynopsis spinimanus</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Pholidoteuthidae Large red scaly squid (s)</td>
<td><strong>Decapoda (o)</strong> Inachidae Dell's spider crab (s)</td>
<td><strong>Platymaia maoria</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cephalopoda (c)</strong> Pholidoteuthidae Large red scaly squid (s)</td>
<td><strong>Decapoda (o)</strong> Inachidae Deep-sea spider crab (s)</td>
<td><strong>Vitjazmaia latidactyla</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gastropoda (c)</strong> Capulidae Cap limpet (s)</td>
<td><strong>Decapoda (o)</strong> Lithodidae New Zealand king crab (s)</td>
<td><strong>Lithodes aotearoa</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gastropoda (c)</strong> Ranellidae Tritons (f)</td>
<td><strong>Decapoda (o)</strong> Lithodidae Robertson's king crab (s)</td>
<td><strong>Lithodes robertsoni</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gastropoda (c)</strong> Buccinidae Whelk (f+)</td>
<td><strong>Decapoda (o)</strong> Lithodidae Brodie's king crab (s)</td>
<td><strong>Neolithodes brodiei</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gastropoda (c)</strong> Volutidae Volute (f)</td>
<td><strong>Decapoda (o)</strong> Lithodidae Warty king crab (s)</td>
<td><strong>Paralomis dawsoni</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gastropoda (c)</strong> Volutidae Volute (f)</td>
<td><strong>Decapoda (o)</strong> Lithodidae Prickly king crab (s)</td>
<td><strong>Paralomis zealandica</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Polyplacophora (c)</strong> Polyplacophora (c) Chiton (c)</td>
<td><strong>Decapoda (o)</strong> Lithodidae New Zealand king crab (s)</td>
<td><strong>Lithodes aotearoa</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **Cephalopoda (c):** Cephalopods (squid, octopus, cuttlefish, nautilus, chambered nautilus, cuttlefishes)
- **Arthropoda (o):** Arthropods (crabs, shrimps, lobsters, spiders, insects)
- **Gastropoda (c):** Gastropods (snails, slugs, limpets)
- **Polyplacophora (c):** Polyplacophorans (chitons)
- **Decapoda (o):** Decapods (crabs, shrimps, lobsters, barnacles, woodlice, spiders, scorpions, ticks, mites, centipedes, millipedes, spiders, scorpions, ticks, mites)
- **Ommastrephidae:** Squid family
- **Onychoteuthidae:** Squid family
- **Pholidoteuthidae:** Squid family
- **Ommastrephidae:** Squid family
- **Ommastrephes spp.:** Squid species
- **Todarodes filippovae:** Squid species
- **Octopoteuthis squid (g):** Giant squid
- **Stoloteuthis (sometimes Iridoteuthis) maoria:** Squid species
- **Cephalopoda (c):** Cephalopods (squid, octopus, cuttlefish, nautilus, chambered nautilus, cuttlefishes)
- **Polyplacophora:** Polyplacophorans (chitons)
- **Gastropoda (c):** Gastropods (snails, slugs, limpets)
- **Arthropoda (o):** Arthropods (crabs, shrimps, lobsters, spiders, insects)
- **Decapoda (o):** Decapods (crabs, shrimps, lobsters, barnacles, woodlice, spiders, scorpions, ticks, mites, centipedes, millipedes, spiders, scorpions, ticks, mites)
- **Ommastrephidae:** Squid family
- **Onychoteuthidae:** Squid family
- **Pholidoteuthidae:** Squid family
- **Ommastrephidae:** Squid family
- **Ommastrephes spp.:** Squid species
- **Todarodes filippovae:** Squid species
- **Octopoteuthis squid (g):** Giant squid
- **Stoloteuthis (sometimes Iridoteuthis) maoria:** Squid species
- **Cephalopoda (c):** Cephalopods (squid, octopus, cuttlefish, nautilus, chambered nautilus, cuttlefishes)
- **Polyplacophora:** Polyplacophorans (chitons)
- **Gastropoda (c):** Gastropods (snails, slugs, limpets)
- **Arthropoda (o):** Arthropods (crabs, shrimps, lobsters, spiders, insects)
- **Decapoda (o):** Decapods (crabs, shrimps, lobsters, barnacles, woodlice, spiders, scorpions, ticks, mites, centipedes, millipedes, spiders, scorpions, ticks, mites)
- **Ommastrephidae:** Squid family
- **Onychoteuthidae:** Squid family
- **Pholidoteuthidae:** Squid family
- **Ommastrephidae:** Squid family
- **Ommastrephes spp.:** Squid species
- **Todarodes filippovae:** Squid species
- **Octopoteuthis squid (g):** Giant squid
- **Stoloteuthis (sometimes Iridoteuthis) maoria:** Squid species
<table>
<thead>
<tr>
<th>Taxonomy</th>
<th>Family</th>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decapoda (o)</td>
<td>Majidae</td>
<td>Giant spider crab (s)</td>
<td>Jacquinotia edwardsii</td>
<td>GSC 184</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Majidae</td>
<td>Giant masking crab (s)</td>
<td>Leptomithrax australis</td>
<td>SSC 185</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Majidae</td>
<td>Garrick’s masking crab (s)</td>
<td>Leptomithrax garricki</td>
<td>GMC 186</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Majidae</td>
<td>Long-handed masking crab (s)</td>
<td>Leptomithrax longimanus</td>
<td>LHC 187</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Majidae</td>
<td>Long-legged masking crab (s)</td>
<td>Leptomithrax longipes</td>
<td>LLC 188</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Nephropidae</td>
<td>Scampi (f)</td>
<td>Metanephrops challenger</td>
<td>SCI 190</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Paguridae</td>
<td>Hermit crab (f+)</td>
<td>Dicatharus rubricatus</td>
<td>DIR 191</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Palinuridae</td>
<td>Deepwater rock lobster (s)</td>
<td>Projasus parkeri</td>
<td>PPA 192</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Parapaguridae</td>
<td>Hermit crab (f+)</td>
<td>Sympagurus dimorphus</td>
<td>SDM 193</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Polychelidae</td>
<td>Deepsea blind lobster (s)</td>
<td>Polycheles spp.</td>
<td>PLY 194</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Portunidae</td>
<td>Dwarf swimming crab (s)</td>
<td>Liocarcinus corrugatus</td>
<td>LCO 195</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Portunidae</td>
<td>Hairy red swimming crab (s)</td>
<td>Nectocarcinus antarcticus</td>
<td>NCA 196</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Portunidae</td>
<td>Smooth red swimming crab (s)</td>
<td>Nectocarcinus bennetti</td>
<td>NCB 197</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Portunidae</td>
<td>Paddle crab (s+)</td>
<td>Ovalipes catharus</td>
<td>PAD 198</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Portunidae</td>
<td>Swimming crab (f)</td>
<td>Ovalipes moller</td>
<td>OVM 199</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Scyllaridae</td>
<td>Prawn killer (s+)</td>
<td>Ibacus alticrenatus</td>
<td>PRK 200</td>
</tr>
<tr>
<td>Isopoda (o)</td>
<td>Aegidae</td>
<td>Fish biter (s)</td>
<td>Aega monophthalma</td>
<td>AMO 201</td>
</tr>
<tr>
<td>Isopoda (o)</td>
<td>Aegidae</td>
<td>Gill biter or tongue biter (f)</td>
<td>Elthusa neocytta</td>
<td>ENE 202</td>
</tr>
<tr>
<td>Isopoda (o)</td>
<td>Cymothoidae</td>
<td>Gill biter</td>
<td>Elthusa propinquta</td>
<td>ELP 203</td>
</tr>
<tr>
<td>Isopoda (o)</td>
<td>Serolidae</td>
<td>Spiny serolid isopod (s)</td>
<td>Brucerolis spp.</td>
<td>ACU 204</td>
</tr>
<tr>
<td>Lophogastrida (o)</td>
<td>Gnathophoaiusidae</td>
<td>Giant red mysid (s)</td>
<td>Neognathophausia ingens</td>
<td>NEI 205</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Aristeidae</td>
<td>Royal red prawn (s)</td>
<td>Aristaeomorpha folicia</td>
<td>AFO 206</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Aristeidae</td>
<td>Scarlet prawn (s)</td>
<td>Aristaeopsis edwardsiana</td>
<td>PED 207</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Aristeidae</td>
<td>Gamba prawns (f)</td>
<td>Austropeneus nitidus</td>
<td>ANI 208</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Campylonotidae</td>
<td>Sabre prawn (s)</td>
<td>Campylonotus rathbunae</td>
<td>CAM 209</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Glyphocrangonidae</td>
<td>Goblin prawn (g)</td>
<td>Glymphocrangon spp.</td>
<td>GLO 210</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Nemacocarcinidae</td>
<td>Omega prawn (s)</td>
<td>Lipkius holtvsi</td>
<td>LHO 211</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Nematocarcinidae</td>
<td>Spider prawn (f)</td>
<td>Nematocarcinus spp.</td>
<td>NEC 212</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Oplophoridae</td>
<td>Subantarctic ruby prawn (s)</td>
<td>Acanthephyra spp.</td>
<td>ACA 213</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Oplophoridae</td>
<td>Scarlet prawn (s)</td>
<td>Notostomus auriculatus</td>
<td>NAU 214</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Oplophoridae</td>
<td>Deepwater prawns (s+)</td>
<td>Oplophorus spp.</td>
<td>OPP 215</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Pandalidae</td>
<td>Golden prawn (s)</td>
<td>Plesionika martia</td>
<td>PLM 216</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Pasiphaeidae</td>
<td>Deepwater prawn (s+)</td>
<td>Pasiphaea aff. tarda</td>
<td>PTA 217</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Penaeidae</td>
<td>Funchalia prawn (g)</td>
<td>Funchalia spp.</td>
<td>FUN 218</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Sergestidae</td>
<td>Sergestid prawn (f)</td>
<td>Sergestes spp.</td>
<td>SER 219</td>
</tr>
<tr>
<td>Decapoda (o)</td>
<td>Solenoceridae</td>
<td>Jack-knife prawn (s)</td>
<td>Haliporidae sibogae</td>
<td>HSI 220</td>
</tr>
<tr>
<td>Pentapoda (o)</td>
<td>Colossendeidae</td>
<td>Giant sea spiders (g)</td>
<td>Colossendeis spp.</td>
<td>PYC 221</td>
</tr>
<tr>
<td>Thoracica (o)</td>
<td>Scalpellidae</td>
<td>Stalked barnacle (f+)</td>
<td>Scalpellidae</td>
<td>SBN 222</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cheilostomata (o)</th>
<th>Phidoloporidae</th>
<th>Erect cheilostome bryozoan (s)</th>
<th>Hippellozoa novaeezelandiae</th>
<th>HNO 227</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclostomata (o)</td>
<td>Evert cyclostome bryozoans (s+)</td>
<td>Cyclostomata</td>
<td>ECB 228</td>
<td></td>
</tr>
</tbody>
</table>

Echinodermata
<p>| Echinoidea (c) | Asteriidae | Cross-fish (c) | Sclerasterias mollis | SMO 237 |
| Echinoidea (c) | Zoroasteridae | Rat-tail stars (c) | Zoroaster spp. | ZOR 238 |
| Echinoidea (c) | Benthopetidae | Sea-star (c) | Benthopecten spp | BES 239 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Cheiraster monopedicularis | CMP 240 |
| Echinoidea (c) | Asteroidea (c) | Magnificent sea-star (c) | Diplosaster magnificus | DMG 242 |
| Echinoidea (c) | Asteroidea (c) | Abyssal star (c) | Plutaster knoxi | PKN 243 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Proserpinaster neozelanicus | PNE 244 |
| Echinoidea (c) | Asteroidea (c) | Geometric star (c) | Psilaster acuminatus | PSI 245 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Radiaster gracilis | RGR 246 |
| Echinoidea (c) | Asteroidea (c) | Pentagon star (c) | Henricia compacta | HEC 247 |
| Echinoidea (c) | Asteroidea (c) | Trojan star (c) | Ceramaster pacificus | CPA 248 |
| Echinoidea (c) | Asteroidea (c) | Rock star (c) | Lithosoma novaezelandiae | LNV 250 |
| Echinoidea (c) | Asteroidea (c) | Sladen's star (c) | Mediaster sladeni | MSL 251 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Pilburiaster aoteanus | PAO 252 |
| Echinoidea (c) | Asteroidea (c) | Pentagonal tooth-star (c) | Odontaster benhami | ODT 253 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Diplopteraster sp. | DPP 254 |
| Echinoidea (c) | Asteroidea (c) | Sea-star (c) | Crossaster multispinus | CJA 256 |
| Echinoidea (c) | Asteroidea (c) | Chubby sun-star (c) | Solaraster torulatus | SOT 257 |
| Echinoidea (c) | Asteroidea (c) | Cidaroid urchin (c) | Comatulida | CMT 258 |
| Echinoidea (c) | Asteroidea (c) | Cidaroid urchin (c) | Isocrinida | CRN 259 |
| Echinoidea (c) | Asteroidea (c) | Cidaroid urchin (c) | Millericrinida, Cyrtocrinida | CRN 260 |
| Echinoidea (c) | Cidaridae | Parachute urchin (c) | Goniocidaris parasol | GPA 261 |
| Echinoidea (c) | Cidaridae | Umbrella urchin (c) | Goniocidaris umbraculum | GOU 262 |
| Echinoidea (c) | Cidaridae | Cidaroid urchin (c) | Ogmocidaris benhami | OBE 263 |
| Echinoidea (c) | Cidaridae | Cidaroid urchin (c) | Stereocidaris spp. | STC 264 |
| Echinoidea (c) | Histocidaridae | Cidaroid urchin (c) | Histocidaris spp. | HIS 265 |
| Echinoidea (c) | Histocidaridae | Cidaroid urchin (c) | Pilicides taxus | PCD 266 |
| Echinoidea (c) | Laginidae | Sand dollar (c) | Peronella hinemoae | PHI 267 |
| Echinoidea (c) | Echinidae | Deepsea urchin (c) | Dermechinus horridus | DHO 268 |
| Echinoidea (c) | Echinidae | Deepsea urchin (c) | Gracilechinus multidentatus | GRM 269 |
| Echinoidea (c) | Echinotheriidae, Phorosomatidae | Tam O’Shanters (c) | Echinotherioida | TAM 270 |
| Echinoidea (c) | Echinotheriidae, Phorosomatidae | Tam O’Shanters (c) | Echinotheriidae | ECT 271 |
| Echinoidea (c) | Phorosomatidae | Tam O’Shanters (c) | Phorosoma spp. | PHM 272 |
| Echinoidea (c) | Pedinidae | Banded-spine urchin (c) | Caenopedina novaezelandiae | CNO 273 |
| Echinoidea (c) | Pedinidae | Sea urchin (c) | Caenopedina otagoensis | CAO 274 |
| Echinoidea (c) | Pedinidae | Giant purple pedinid (c) | Caenopedina porphyrogigas | CAL 275 |
| Echinoidea (c) | Pedinidae | Sea urchin (c) | Caenopedina pulchella | CPU 276 |
| Echinoidea (c) | Brissidae | Heart urchin (c) | Brissopsis oldhami | BRO 277 |
| Echinoidea (c) | Spatangidae | Microsoft mouse (c) | Paramarelia peloria | PMU 278 |
| Echinoidea (c) | Spatangidae | Matheson’s heart urchin (c) | Spatangus mathesoni | SMT 279 |
| Echinoidea (c) | Spatangidae | Purple-heart urchin (c) | Spatangus multispinus | SPT 280 |
| Echinoidea (c) | Temnopleuridae | Fleming’s urchin (c) | Pseudochinus flemingi | PFL 281 |
| Holothuroidea (c) | Holothuroidea | Sea cucumbers (c) | Holothuroidea | HTH 282 |</p>
<table>
<thead>
<tr>
<th>Kingdom</th>
<th>Phylum</th>
<th>Class</th>
<th>Order</th>
<th>Family</th>
<th>Genus</th>
<th>Species</th>
<th>Code</th>
<th>Code Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holothuroidea (c)</td>
<td>Synallactidae</td>
<td>Sea cucumbers (c)</td>
<td>Bathylatus spp.</td>
<td>BAM</td>
<td>283</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Synallactidae</td>
<td>Sea cucumbers (c)</td>
<td>Pseudostichopus mollis</td>
<td>PMO</td>
<td>284</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Laetmogonidae</td>
<td>Sea cucumbers (c)</td>
<td>Laetmogone spp.</td>
<td>LAG</td>
<td>285</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Laetmogonidae</td>
<td>Sea cucumbers (c)</td>
<td>Pannychia moseleyi</td>
<td>PAM</td>
<td>286</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Pelagotheridae</td>
<td>Sea cucumbers (c)</td>
<td>Enypniastes eximia</td>
<td>EEX</td>
<td>287</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Psychropodiidae</td>
<td>Sea cucumbers (c)</td>
<td>Benthodytes spp.</td>
<td>BTD</td>
<td>288</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holothuroidea (c)</td>
<td>Molpadiidae</td>
<td>Molpadi sea cucumber (g)</td>
<td>Molpadia musculus</td>
<td>MOM</td>
<td>289</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Astroschematidae</td>
<td>Brittle star (c)</td>
<td>Ophiocreas sibogae</td>
<td>OSI</td>
<td>290</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Gorgonocephalidae</td>
<td>Waite's snake-star (s)</td>
<td>Astrothorax waitei</td>
<td>AWA</td>
<td>291</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Gorgonocephalidae</td>
<td>Gorgon's head basket-stars (g)</td>
<td>Gorgonocephalus spp.</td>
<td>GOR</td>
<td>292</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Ophiuroidea (c)</td>
<td>Deepsea brittle star (s+)</td>
<td>Bathypectinura heros</td>
<td>BHE</td>
<td>293</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Ophiuroidea (c)</td>
<td>Brittle star (c)</td>
<td>Ophiomusium lymani</td>
<td>OLY</td>
<td>294</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ophiuroidea (c)</td>
<td>Ophiacanthidae</td>
<td>Deepsea brittle star (s+)</td>
<td>Ophiophthalmus relicus</td>
<td>ORE</td>
<td>295</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ascidacea (c)</td>
<td></td>
<td>Sea squirt or Ascidian (c)</td>
<td>Ascidacea</td>
<td>ASC</td>
<td>301</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thaliacea (c)</td>
<td>Pyrosomatidae</td>
<td>Salp (c)</td>
<td>Pyrosoma atlanticum</td>
<td>PYR</td>
<td>302</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There is a general perception that sponges are primitive animals because of their ‘simple’ body plan; they are multicellular, with specialised cells doing the job of tissues and organs in ‘higher’ animals. With the discovery of an immune system in sponges (the ability to recognise and differentiate ‘self’ from ‘non-self’) in the early 1900s, and the discovery of biologically active chemicals in sponges in the 1950s, a greater understanding of the cellular processes in higher organisms has emerged, and confirmation that sponges are ‘smart’ not simple! Sponges also frequently dominate shallow and deep sea environments (down to abyssal and hadal depths of several kilometres!), from the tropics to the poles, and they were dominant reef organisms in the past; their fossil record dates back to about 600 million years ago.

As the name Porifera implies, sponges are ‘pore-bearers.’ With the exception of glass sponges, most sponges are composed of three major cellular layers. The pinacoderm lines all external surfaces of the sponge body. The choanoderm, or feeding layer, is dominated by choanocytes (collared cells) that draw water, and hence nutrition, into the sponge via the aquiferous canal system. The pores (ostia) on the external surface of the sponge lead to the feeding chambers in the middle of the sponge, which then lead to one or two large exit pores (oscules) usually on the apex or sides of the sponge. The feeding cells have tail-like flagellae that whip in unison to draw a water current in through the aquiferous system. Any food particles that come in on the current are trapped by the feeding cells and then passed back to the mesohyl that lies between the pinacoderm and choanoderm and performs the various other functions of sponge life, including reproduction, nutrition, respiration, storage, and provision of skeletal support. Sponges reproduce by the sequential or synchronous production of eggs and sperm. The sperm arise from the feeding cells (which already have ‘tails’ for motility) and the eggs come from archaeocyte cells in the sponge mesohyl. Sponges can also bud and fragment to produce genetically identical ‘clones’.

There are three major types of sponges: the demosponges (Class Demospongiae), the glass sponges (Class Hexactinellida), and the calcareous sponges (Class Calcarea). These groups are differentiated firstly on the mineral composition of the inorganic skeletal components and cellular organisation of the sponge body. Despite recent advances in the use of biochemical and molecular data, sponge classification is still very much in a state of flux, and the taxonomic relationships of sponges remain somewhat controversial, especially at the higher levels of Class and Order.

**Class Demospongiae**

Sponges in the largest class, the Demospongiae, have a skeletal network of opaline (siliceous) spicules, frequently supplemented or entirely replaced by spongin protein fibres. These sponges are extremely diverse, ranging from tiny delicate hydroid-like feathers to large round solid ball-shaped masses, with textures that range from stony (lithistid sponges) to woody (hadromerid and astrophorid sponges) to fleshy (poecilosclerid and dictyoceratid sponges) to fibrous and airy (haplosclerid sponges). The dominant colours are variations of carotinoid pigments (brown, orange, yellow, mustard, red, and black), but may also be green, blue and purple.

**Class Hexactinellida**

The Hexactinellida (glass sponges) are uniquely constructed of six-rayed opaline (siliceous) spicules and a non-cellular (syncytial) organisation, with extensive regions of multinucleate cytoplasm. These unusual sponges are characterised by their siliceous rather than fleshy nature; they often look and feel like baskets of woven strands of glass, mushy sacking, or gorgonian corals, and are rarely coloured, being typically whitish grey with occasionally a faint pink or beige tinge. They are most common in the deep sea attached by their hard stony base to hard substrate on seamounts, or rooted in fine mud with a basal mass of very hair-like spicules.

**Class Calcarea**

Calcareous sponges have calcitic (calcareous) spicules and are usually quite small and fragile. They are most obvious in relatively shallow tropical waters, and shallow protected temperate environments. Several distinctive species occur on coastal rocky reefs and harbours in New Zealand waters. They will not be considered further within this guide.
**Ecionemia novaezelandiae** (Knobbly sandpaper sponge) (ANZ)

**Distinguishing features:** Roughly spherical sponge with a restricted base and slightly flattened, frequently depressed top where the oscules sit, covered in large irregular flat-topped nodules; the texture is solid, heavy, firm and barely compressible; the surface feels like sandpaper to the touch.

**Colour:** Beige to peachy tan.

**Size:** Diameter from 7 to 10 cm.

**Distribution:** Chatham Rise, Gisborne Canyon, Bay of Plenty, southern Hikurangi Margin, Three Kings Islands.

**Depth:** 55 to 850 m.

**Similar species:** Stelletta sp., which has long nodules resembling fat fingers.

**Penares sp. (Golden brown crater sponge) (PNR)**

**Distinguishing features:** Spherical to football-shaped sponge with a smooth, waxy surface indented all over with groups of oscules; texture compressible; often free-living.

**Colour:** Golden to mustard brown.

**Size:** Diameter up to 15 cm.

**Distribution:** Chatham Rise.

**Depth:** 245 to 356 m.

**Similar species:** Pachymatisma sp. (rocky dumpling sponge), but this species has a stony outer rind, and the oscule depressions are larger, knobbled, and on the apex of the sponge. *Ecionemia novaezelandiae* in which some specimens have a broad oscular depression on the top of the sponge.

**Phylum**  Porifera  
**Class**  Demospongiae (siliceous sponges)  
**Order**  Astrophorida (sandpaper sponges)  
**Family**  Ancorinidae  

*Rhabdastrella sp. (Pink ice egg sponge) (RHA)*

**Distinguishing features:** Large potato-like mass, tough, almost stony, crunchy texture; surface smooth and undulating.

**Colour:** Creamy pink.

**Size:** Diameter from 3 to 30 cm.

**Distribution:** Southern Plateau (Stewart-Snares).

**Depth:** 300 to 600 m.

**Similar species:** None.

**Phylum**  Porifera  
**Class**  Demospongiae (siliceous sponges)  
**Order**  Astrophorida (sandpaper sponges)  
**Family**  Ancorinidae

**Stelletta sp. (Orange fat finger sponge) (SLT)**

**Distinguishing features:** Fat-fingered bulbous sponge with oscules at the tip of each finger; surface smooth and slightly sandpapery to the touch.

**Colour:** Pale orange. As the sponge dies and pigments oxidise patches of blackish purple appear on the tips of branches. The sponge eventually becomes fully liquorice brown-black on exposure to air.

**Size:** Total height up to 15 cm.

**Distribution:** Chatham Rise, Kermadec Ridge, Challenger Plateau.

**Depth:** 316 to 526 m.

**Similar species:** None

**Geodia regina** (Curling stone sponge) (GRE)

**Distinguishing features:** Spherical to curling stone-shaped sponge, with a slightly dished apex and gradually narrowing base. Sponge has a tough outer ‘shell’ that when cracked reveals the softer, seemingly detached interior pulp. Surface smooth and featureless, slightly sandpapery to the touch.

**Colour:** Cream outer shell, orange tan interior.

**Size:** Diameter up to 20 cm.

**Distribution:** Stewart Is. region, outer Hauraki Gulf, Three Kings Islands, southern Hikurangi Margin, Pandora Bank, Bay of Plenty, Pukaki Rise, Chatham Rise, Macquarie Ridge.

**Depth:** 198 to 680 m.

**Similar species:** Geodia vestigifera, but this species is convoluted and tuberose. Pachymatisma sp. (rocky dumpling sponge), but this species has a distinctive knobbly depression on top of the sponge, and the sides are also quite knobbly.

**Phylum**  Porifera  
**Class**  Demospongiae (siliceous sponges)  
**Order**  Astrophorida (sandpaper sponges)  
**Family**  Geodiidae

**Geodia vestigifera** (Ostrich egg sponge) (GVE)

**Distinguishing features:** Convoluted mass with hard outer shell and softer inside; groups of exhalant oscules on surface; sometimes like a tuber, or stick-like.

**Colour:** Tan with mottled patches of pink or brown.

**Size:** Diameter from 1 to 20 cm. 1-5 cm (stick morphology), 20 cm (massive morphology).

**Distribution:** Northeastern New Zealand seamounts and coastal waters, Chatham Rise, Challenger Plateau, Kermadec Ridge, Bay of Plenty.

**Depth:** 10 to 1090 m.

**Similar species:** Geodia regina, but this species resembles a smooth, solid, flattened ball.

**Phylum**  Porifera  
**Class**  Demospongiae (siliceous sponges)  
**Order**  Astrophyta (sandpaper sponges)  
**Family**  Geodiidae

**Pachymatysma sp. (Rocky dumpling sponge) (PAZ)**

**Distinguishing features:** Bulbous dumpling or pudding-shaped sponge, with a tough outer rind and softer interior. Oscules gathered in a characteristic knobbly honeycomb-like sieve-pore area on the apex of the sponge, sections of the flanks of the sponge are also honeycombed; often free-living.

**Colour:** Pale gold to mustard.

**Size:** Diameter up to 15 cm.

**Distribution:** Chatham Rise, Auckland Island, Puysegur Trench.

**Depth:** 357 to 831 m.

**Similar species:** Penares sp. (golden brown crater sponge), but this species is softer and has a waxy surface. Geodia regina, but this species is completely smooth. Ecioemia novaeczelandiae, in which some specimens have a broad oscular depression on the top of the sponge.

**Poecillastra laminaris** (Fibreglass cup sponge) (PLN)

**Distinguishing features:** Shallow cup-like sponge, or large ragged fan with rippled edges, siliceous, non-elastic, but relatively flexible, very hairy.

**Colour:** Cream to white, tinged with brown.

**Size:** Diameter from 5 to 10 cm.

**Distribution:** Christable Seamount, Cavalli Seamounts, Chatham Rise, Pukaki Rise, Macquarie Ridge, Challenger Plateau, Three Kings Islands, Bay of Plenty.

**Depth:** 119 to 1123 m.

**Similar species:** None.

**Phylum**  Porifera  
**Class**  Demospongiae (siliceous sponges)  
**Order**  Astrophorida (sandpaper sponges)  
**Family**  Pachastrellidae

*Thenea novaezelandiae* (Yoyo sponge) (THN)

**Distinguishing features:** Semispherical sponge with a distinctive thick yoyo or mushroom shape, with a rounded summit and base separated by a transverse recess running around the mid section of the sponge body (the recess is a specialised aquiferous system); small root-like structures project from the ventral surface of the sponge; body compact, spongy, and siliceous.

**Colour:** Grey to off-white.

**Size:** Diameter from 3 to 5 cm.

**Distribution:** Northwest Chatham Rise, Stewart Island region, Bay of Plenty, southern Hikurangi Margin, Campbell Plateau.

**Depth:** 612 to 1000 m.

**Similar species:** None.

**Phylum** Porifera  
**Class** Demospongiae (siliceous sponges)  
**Order** Dictyoceratida (rubber sponges)  
**Family** Irciniidae

*Psammocinia sp. (Rubber sponge) (PHW)*

**Distinguishing features:** Club-shaped with expanded lobes, slightly flat on top; top (illuminated) surfaces tinged with maroon; compressible; fine conules on surface.

**Colour:** Dark tan with maroon tinges on upper surfaces.

**Size:** Typical diameter 30 cm.

**Distribution:** Southeastern Subantarctic region.

**Depth:** 300 to 600 m.

**Similar species:** Psammocinia hawere Cook & Bergquist, 1998; Psammocinia charadrodos Cook & Bergquist, 1998; *Ircinia akaroa* Cook & Bergquist, 1999.

**Phylum** Porifera  
**Class** Demospongiae (siliceous sponges)  
**Order** Hadromerida (woody sponges)  
**Family** Suberitidae

**Suberites affinis** *(Fleshy club sponge) (SUA)*

**Distinguishing features:** Very smooth club-shaped sponge with a large circular opening on the apex; soft, fleshy, slippery to the touch; often attached to the Golden Volutes Provocator mirabilis and Alcithoe larochei, or the base is anchored in sediment.

**Colour:** Cream to pale yellow, mottled with brown.

**Size:** Length up to 20 cm.

**Distribution:** Southern Plateau (Campbell Plateau, Pukaki Rise) and Chatham Rise; west coast of South Island.

**Depth:** 317 to 676 m.

**Similar species:** *Suberites australiensis* Bergquist, 1968.

**Distinguishing features:** Flattened fingers of thick, golden fibres; looks dead (not fleshy); elastic and flexible when wet; airy, compressible.

**Colour:** Golden yellow-brown.

**Size:** Typical diameter 30 cm.

**Distribution:** Southern New Zealand region.

**Depth:** 300 to 600 m.

**Similar species:** *Callyspongia ramosa* (Gray, 1843) sensu Bergquist & Warne (1980).

**Phylum** Porifera  
**Class** Demospongiae (siliceous sponges)  
**Order** ‘Lithistid’ Demospongiae (rock sponges)  
**Family** Corallistidae

*Corallistes fulvodesmus (Smooth white cup sponge) (CFU)*

**Distinguishing features:** Shallow smooth cup with a narrow short stalk for attachment, stony texture, inflexible, surface like sandpaper.

**Colour:** Creamy white to tan occasionally.

**Size:** Typical diameter 30 cm.

**Distribution:** New Caledonia, Norfolk Ridge Seamounts, northeastern New Zealand seamounts.

**Depth:** 400 to 1700 m.

**Similar species:** *Aciculites pulchra* Dendy, 1924 is similar but is ear-shaped when young and a convoluted cup as an adult. The surface of *A. pulchra* has tiny pimples and is usually maroon red.

**Aciculites pulchra** (Pimpled ear sponge) (APU)

**Distinguishing features:** Ear-shaped plate with a curved edge as a juvenile, forming a large convoluted bowl-like structure as an adult; concave surface covered in regularly spaced “pimples”; texture stony and rigid.

**Colour:** Cream to tan throughout, but may be deep maroon on the upper or illuminated surfaces.

**Size:** Typical diameter 40 cm.

**Distribution:** New Caledonia, Norfolk Ridge seamounts, northeastern New Zealand seamounts.

**Depth:** 100 to 1100 m.

**Similar species:** Neoschrammeniella fulvodesmus (Lévi and Lévi, 1983), Pleroma turbinatum Sollas, 1888.

**References:**
Phylum: Porifera
Class: Demospongiae (siliceous sponges)
Order: Poecilosclerida (Bright sponges)
Family: Coelosphaeridae

**Lissodendoryx bifacialis** (Floppy chocolate plate sponge) (LBI)

**Distinguishing features:** Medium-sized, thick, relatively soft, fibrous chocolate brown plate; one side with an undulating shiny surface, the other side perforated with holes about 1-3 mm diameter. Large, thick, floppy, fibrous plate or fan, one side with a shiny undulating surface (inhalent), the other perforated with oscules (exhalent) 1-3 mm in diameter and up to 10 mm deep. Frequently fragmented and easily tearable.

**Colour:** Deep chocolate brown to liquorice.

**Size:** Diameter up to 30 cm.

**Distribution:** Chatham Rise, Macquarie Ridge.

**Depth:** 317 to 827 m.

**Similar species:** None.


**Distinguishing features:** Mass of flattened fronds or finger-like branches; rubbery, fibrous, flexible; slightly translucent.

**Colour:** Bright orange.

**Size:** Typical diameter 30 cm.

**Distribution:** New Zealand region.

**Depth:** 300 to 600 m.

**Similar species:** None.

**Phylum** Porifera  
**Class** Demospongiae (siliceous sponges)  
**Order** Poecilosclerida (bright sponges)  
**Family** Hymedesmiidae

*Phorbas sp. (Grey fibrous massive sponge) (PHB)*

*Distinguishing features:* Bulky fibrous mass with flattened lateral planes; surface relatively smooth and featureless, but with characteristic opaque whitish sections into which sand has been incorporated; texture soft, cotton-like.

**Colour:** Grey to off-white with opaque whitish fibres.

**Size:** Diameter from 10 to 15 cm.

**Distribution:** Chatham Rise, Pukaki Rise, Campbell Plateau.

**Depth:** 400 to 522 m.

**Similar species:** None.

**Tetilla australis** (Bristle ball sponge) (TTL)

**Distinguishing features:** Spherical to slightly oval sponge with sharp hollow bristles on the surface; texture firm and cartilaginous.

**Colour:** Greyish cream to pale peach.

**Size:** Diameter from 2 to 5 cm.

**Distribution:** Campbell Plateau, Spirits Bay, Northland, Bay of Islands.

**Depth:** 25 to 676 m.

**Similar species:** *Tetilla leptoderma* which is egg-shaped, and more furry in texture.

### Tetilla leptoderma (Furry oval sponge) (TLD)

<table>
<thead>
<tr>
<th>Phylum</th>
<th>Porifera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>Demospongiae (siliceous sponges)</td>
</tr>
<tr>
<td>Order</td>
<td>Spirophorida (spiral sponges)</td>
</tr>
<tr>
<td>Family</td>
<td>Tetillidae</td>
</tr>
</tbody>
</table>

**Distinguishing features:** Elongated egg shaped sponge with no visible point of attachment, surface furrowed and furry, somewhat shaggy, soft to the touch; several openings are located at the top of the sponge between bristles and furry protrusions; texture firm but compressible.

**Colour:** Cream to pale tan.

**Size:** Length from 5 to 10 cm.

**Distribution:** Chatham Rise, Stewart Island region

**Depth:** 576 to 919 m.

**Similar species:** Tetilla australis Bergquist, 1968 which is spherical with a bristly, not shaggy surface.

Distinguishing features: Glass sponges are extremely diverse in shape and size, but all have a non-fleshy, fibreglass or fibrous, sacking-like texture. The most common specimens sampled are delicate lacy honeycombs, broken solid or hollow stems, mushy sacking, matts of glass hair and sediment. The surfaces are usually shaggy and fibrous (sack-like), or sometimes spiny with tough fibreglass-like strands poking through the surface. Glass sponges show a very diverse range, including:

- hollow glass tubes with feathery extensions
- ropey strands of glass topped with mushy fibrous sack-like body
- rigid lacy honeycombs
- long solid coral-like rigid stems topped with a delicate fibrous tulip-like body
- stringy horns and frilly tubes made of woven glass fibres
- rigid pitted coral-like plates
- long solid rods of tubes and honeycomb
- soft mushy sacking trumpets
- solid polystyrene-like balls with tufts of fine glass hair

Hexactinellid sponges are often fragmented on collection and are difficult to identify as a result. Spicule analysis is essential for species determination.

Colour: Typically icy white, creamy white, pale peach, pale blue. Also grey, beige.

Size: Standard length up to 60 cm.

Distribution: Widely distributed in the New Zealand deepsea region on hard and soft seafloor.

Depth: 60 to >1000 m.

Similar species: Some rock sponges such as Corallistes fulvodesmus and Aciculites pulchra


**Phylum**  Porifera  
**Class**  Hexactinellida (glass sponges)  
**Order**  Hexactinosida (lacey honeycomb sponges)  
**Family**  Farreidae

*Farrea sp. (Lacey honeycomb sponge) (FAR)*

**Distinguishing features:** Very brittle lace-like honeycombs of white tubes with elevated openings along the side of the tube; can be very delicate, some quite firm.

**Colour:** White to cream; dark brown if dead for a while.

**Size:** Diameter from 1 to 5 cm. Typical diameter 5 cm, but one species up to 50 cm.

**Distribution:** Northeastern New Zealand seamounts, Kermadec Ridge, Chatham Rise, Bollons Seamount, around New Zealand.

**Depth:** 770 to 1070 m.

**Similar species:**


Euplectella regalis (Basket-weave horn sponge) (ERE)

**Phylum**: Porifera  
**Class**: Hexactinellida (glass sponges)  
**Order**: Lyssacinosida (glass horn sponges)  
**Family**: Euplectellidae

**Distinguishing features**: Horn-like tubular body, circular in cross-section, broadest at the upper end, gradually narrowing towards a slightly bulbous basal tuft of fine hair-like spicules; wall resembles a basket-weave of hair-like spicules and is beset with frilled irregular ridges that run obliquely around the tubular body. The apex of the sponge is a lattice-like sieve-plate surrounded by an undulating cuff.

**Colour**: Creamy white.

**Size**: Length up to 50 cm.

**Distribution**: Northwest and northeast Chatham Rise.

**Depth**: 885 to 1116 m.

**Similar species**: Euplectella imperialis Ijima, 1894


**Phylum**  Porifera  
**Class**  Hexactinellida (glass sponges)  
**Order**  Lyssacinosida (tubular sponges)  
**Family**  Rossellidae

**Hyalascus sp. (Floppy tubular sponge) (HYA)**

**Distinguishing features:** Soft, floppy, collapsible sponge. Tubular to trumpet-shaped with a thin wrinkled irregular wall. Texture in life like that of thick soggy paper, close-up looks like fibreglass matt; tears easily.

**Colour:** Tan to cream.

**Size:** Length up to 1500 cm. Diameter up to 30 cm at broadest.

**Distribution:** Northeastern New Zealand seamounts, Chatham Rise, Campbell Plateau (North of Campbell Island).

**Depth:** 300 to 600 m.

**Similar species:** None.

Phylum
CNIDARIA
Anemones, corals, jellyfish, hydroids

Steve Cairns, Daphne Fautin, Dennis Gordon, Beth Horvath, Dennis Opresko, Juan Sanchez, Frederic Sinniger, Di Tracey
Phylum CNIDARIA

Anemones, corals, jellyfish, and hydroids

Class Anthozoa — Corals, anemones, and kin

Anthozoans are the largest group of Cnidaria, with about 6000 living species worldwide. All are marine, and there is no medusa phase. The mouth opens into a stomach cavity that is partitioned by mesenteries (membranes) that expand the inner absorptive surface. There are two subclasses: the Octocorallia (Alcyonaria), which have eight mesenteries and tentacles, and the Hexacorallia (Zoantharia) with tentacles and mesenteries in multiples of six.

Corals are distinguished from their soft-bodied relatives like sea anemones, jellyfish, and hydroids by being calcified, i.e., incorporating calcium carbonate (lime) into their bodies to create a skeleton. Several kinds of cnidarians do this, and they can superficially resemble each other if they have a similar shape. The main kinds of calcified cnidarians in New Zealand waters are hydrocorals, gorgonians (octocorals), and stony corals.

Subclass Octocorallia

This subclass used to be divided into a number of orders, all but one colonial, in which the polyps are united by cords or sheets of tissue (coenenchyme). Octocorals, so-called because polyps have an 8-fold symmetry (8 tentacles and internal body partitions), can be relatively soft (sea pens and soft corals like dead-men’s fingers) or, as in gorgonians, have an erect axis of calcareous spicules or of hardened protein impregnated with lime. In bamboo corals and some other gorgonians the axis may be jointed. Octocorals also lack the distinctive vertical radial partitions that characterise stony corals.

In the New Zealand EEZ, 243 octocoral species (187 undescribed) are known, divided among 103 genera in 28 families. These include 45 species of order Alcyonacea (spreading runnerlike corals and soft octocorals), 167 species of order Gorgonacea (now known as order Alcyonacea) (gorgonians including the bubblegum corals), and 31 species of sea pens, order Pennatulacea. The diversity of three families of deepwater calcified gorgonians (Isididae – bamboo corals, Primnoidae – bottlebrush corals, and Chrysogorgiidae – golden corals) is probably the highest in the world for a single country.

There are no sclerites in the axis. In bamboo corals (family Isididae) the axis is conspicuously jointed, with solid calcium carbonate between the joints. In isidids as well as in other highly calcified gorgonians such as Primnoiidae and Chrysogorgiidae, the axes may give evidence of distinct growth rings in cross section.

Subclass Hexacorallia

Hexacorals may be solitary or colonial, soft or hard, the latter having rigid calcified skeletons. Soft hexacorals make up the orders Ceriantharia (tube anemones), Actiniaria (sea anemones), Corallimorpharia (coral-like anemones), and Zoanthidea (zoanthid anemones). Hard hexacorals make up the orders Scleractinia (stony corals) and Antipatharia (black corals). In the stony (or true) corals, calcification extends into the mesenteries, creating rigid septa that remain in the dead coral skeletons.

Order Ceriantharia

Tube anemones are solitary tube-dwelling hexacorals living in muddy bottoms. They are not a diverse group and the sole New Zealand species has not been characterised taxonomically.

Order Actiniaria (sea anemones)

New Zealand has a high diversity of soft hexacorals, especially of sea anemones (actinians). The deep-sea anemone fauna is widely distributed but poorly described. Sea anemones have 6 tentacles or multiples of 6 with nettle cells that sting and capture small or large prey. Some species are anchored in soft sediment, attached to rocks by their base, or can move slowly over the seabed. Many habitually grow on other creatures, including sponges, corals, and shells. Many species are distinguished by attributes of the nematocysts and muscles, so if there is more than one species of a genus in an area, the genus name is often the only name available.

Order Zoantharia (Zoanthidea)

Order Zoantharia (Zoanthidea) Twelve species are listed for the New Zealand region. Zoanthids are anemone-like hexacorals with a colonial lifestyle. One of them is Epizoanthus, which settles on shells occupied by hermit crabs. As it grows it envelopes the shell. Zoanthids are often found associated with several species of sponges, hydroids, octocorals, and molluscs. A striking yellow species of Parazoanthus (Epizoanthus karensae) is frequently encountered on Fiordland black coral. Some zoanthids are able to generate their own skeleton.

Order Antipatharia (black corals)

About 58 black coral species are known in New Zealand waters. Black corals are distinguished by their erect, often bushy, habit of growth and hard proteinaceous skeleton that bears tiny polyps. Although the depth and geographic distribution of the Antipatharia have not been analysed in detail, it...
appears that most species live in the deep sea and on seamounts at between 200 and 1000 metres depth. All New Zealand black coral species are strictly protected, (see box).

Order Corallimorpharia

Some seven species and subspecies are known in the New Zealand EEZ. The commonest is the colourful jewel anemone, Corynactis australis, found in low-tidal rock pools and shallow depths. The species looks like a spreading colonial sea anemone. Each tentacle is tipped with a characteristic white knob that is densely and minutely studded with nettle cells. Other corallimorpharian species occur in deep water.

Order Scleractinia (stony corals)

New Zealand has a diverse fauna of 127 stony coral species, 110 of which are azooxanthellate, (i.e., lacking symbiotic algae) comprising over 16% of known azooxanthellate species. Azooxanthellates/ahermatypes are sometimes called ‘deepwater corals’ or ‘solitary corals’ and are usually small and slower growing, and do not form reefs like their zooxanthellate reef counterparts.

Stony corals are calcified hexacorals, i.e., having body parts in multiples of 6. Coral polyps may be thought of as skeleton-forming anemones. The internal membranes (mesenteries) that partition the bodies of sea anemones are calcified in corals so that, when all soft tissues are removed, the polyp skeleton is seen to have distinctive vertical radii (septa), often divided into cycles of major and minor ones.

An entire coral, called a corallum, may consist of a single individual or a colony of many individuals. The skeleton (corallite) of an individual polyp has a cup-shaped opening (calyce) that is typically round or oval as in New Zealand’s cold-water corals, but in tropical corals neighbouring corallites can be fused and conjoined, resulting in large compound calyces.

Class Scyphozoa — jellyfish

The Scyphozoa is a small group of cnidarians numbering only about 250 living species worldwide. Notwithstanding the low species diversity, this minor group has caused some major problems recently around the world and in New Zealand. Understanding of jellyfish bloom dynamics remains incomplete, but large financial losses resulting from jellyfish invasions continue to be reported.

Scyphozoans are entirely marine, with a reduced or absent polyp phase and generally a large and conspicuous medusa phase. Unlike those of hydrozoans and anthozoans, scyphozoan polyps are more or less unattached to one another and do not share nutrients with other colony members. Medusa formation is by a form of budding, called strobilation, with the polyp typically remaining to continue budding and even to strobilate again. Scyphozoans are present from the shallowest intertidal to at least benthopelagic depths. There are three orders — Coronatae, easily distinguished by the presence of a coronal groove on the outer umbrella surface; Semaeostomae, typically with long, flowing oral arms and marginal tentacles; and Rhizostomeae, which lack true marginal tentacles as well as a central mouth, instead having numerous tiny mouths on the edges of the oral arms. Stalked jellyfish (upside-down jellyfish) and box jellies are now regarded as separate classes (Staurozoa and Cubozoa).

Class Hydrozoa — hydroids and their medusae

Hydrocorals (stylasterids) all belong to the order Hydroida family Stylasteridae. Hydroids are generally small and non-calcified, so hydrocorals are unusual in this respect. Like other hydroids, hydrocorals have tiny polyps. Some of these function like stomachs (gastrozooids) while the non-feeding polyps are tentacle-like and used for food-capture (dactylozooids) or for reproducing (gonozooids). New Zealand hydrocorals are erect and branching, and may be white or red.

Their skeletons are distinguished from those of stony corals by being generally much smaller and less robust, and minutely porous and pitted with small holes for the various polyps. These holes (openings) lack the distinctive vertical radial partitions that characterise stony corals.

Hydrozoans are remarkably varied. They may be solitary or colonial, with polyp and medusa phases, or either phase may be lacking altogether.

Protected species

Previously the protected coral species listed in the Wildlife Act (1953) included all black corals (Order Antipatharia) and the red hydrocoral Erina spp. (which belongs to the Family Stylasteridae). During 2010, an amendment of Schedule 7A of the Wildlife Act widened the range of corals afforded protection to include “all deepwater hard corals (all species in the orders Antipatharia, Gorgonacea, Scleractinia, and Family Stylasteridae)”. Note: While order Gorgonacea is now known as order Alcyonacea and our guide sheets reflect this revision, the Wildlife Act 2010 amendment uses the former name Gorgonacea for gorgonian corals, (Author Di Tracey pers comm).
**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Actiniaria (anemones)  
**Family**  Actiniidae

**Bolocera spp. (Deepsea anemones) (BOC)**

![Image of Bolocera spp.](image)

**Distinguishing features:** A flat spherical body form with several tentacles visible around edge. Currently identified to genus level only.

**Colour:** Red, brown.

**Size:** Up to 20 cm.

**Distribution:** This genus is widely distributed around the world, but poorly described.

**Depth:** 200 to 1500 m.

**Similar species:** Liponema spp.

**References:**
**Phylum** Cnidaria  
**Class** Anthozoa  
**Order** Actiniaria (anemones)  
**Family** Actinostolidae (smooth deepsea anemones)

**(Smooth deepsea anemones) (ACS)**

**Distinguishing features:** A smooth, cylindrical body form, with thickened walls and often with a reddish brown base. Tentacles mostly or completely hidden. Currently identified to family level only.

**Colour:** White, creamy white, or brown.

**Size:** Up to 20 cm.

**Distribution:** The family has worldwide distribution, but is poorly described.

**Depth:** 200 to 1500 m.

**Similar species:** Members of the family Actinostolidae (smooth deepsea anemones).

**References:**  
Phylum: Cnidaria
Class: Anthozoa
Order: Actiniaria (anemones)
Family: Hormathiidae

(Warty deepsea anemone) (HMT)

**Distinguishing features:** An irregularly shaped body made up of longitudinal and circumferential furrows which give a warty appearance. Tentacles mostly or completely hidden. Currently identified to family level only.

**Colour:** White, creamy white, or brown.

**Size:** Up to 20 cm.

**Distribution:** The family has worldwide distribution, but is poorly described.

**Depth:** 200 to 1500 m.

**Similar species:** Members of the family Actinostolidae (smooth deepsea anemones).

**References:**

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Actiniaria (anemones)  
**Family**  Liponematidae

---

**Liponema spp. (Deepsea anemones) (LIP)**

**Distinguishing features:** A firm, squat spherical body form. Several short, white and rust coloured radially arranged tentacles visible. Currently identified to genus level only.

**Colour:** Cream and rust red.

**Size:** Up to 20 cm.

**Distribution:** This genus is widely distributed around the world, but poorly described.

**Depth:** 200 to 1500 m.

**Similar species:** Bolocera spp.


Phylum: Cnidaria  
Class: Anthozoa  
Order: Alcyonacea (soft corals)  
Family: Alcyoniidae

**Anthomastus (Bathyalcyon) robustus (Gigantic coral) (ARO)**

**Distinguishing features:** Comprises a single very large and fleshy polyp (autozooid) positioned on a conic semi hard-calyx with numerous apertures for the tiny reproductive polyps (siphonozooids). Elliptical encrusting base usually strongly attached to hard substrate or debris.

**Colour:** Bright red.

**Size:** Up to 15 cm.

**Distribution:** Uncommon, located on Bay of Plenty seamounts.

**Depth:** 200 m.

**Similar species:** Other Anthomastus species have smaller multiple feeding polyps and a mushroom-like shape.

**Phylum** Cnidaria  
**Class** Anthozoa  
**Order** Alcyonacea (soft corals)  
**Family** Clavulariidae

**Telesto spp. (Long polyp soft corals) (TLO)**

![Image of Telesto spp.](image)

**Distinguishing features:** Semi rigid, long axial polyps with shorter lateral polyps, occasional branching and budding giving rise to several axial polyps. Polyp wall exhibiting longitudinal branching rows.

**Colour:** Red, pink, or beige.

**Size:** Up to 20 cm.

**Distribution:** Widely distributed both in the New Zealand region and worldwide.

**Depth:** 5 to 1000 m.

**Similar species:** Coelogorgia spp. and Telestula spp. Microscopic examination of sclerites is required for a reliable identification.


**Phylum** Cnidaria
**Class** Anthozoa
**Order** Antipatharia (black corals)
**Family** Antipathidae, Myriopathidae, Aphanipathidae, Stylopathidae, Schizopathidae, Cladopathidae

(Black corals) (COB)

**Distinguishing features:** Erect, unbranched, bushy, fan-shaped, bottle brush, or pinnulate habit of growth, with a hardened proteinaceous and spiny skeleton that bears tiny polyps usually not more that 6 mm wide and having only six simple tentacles. The skeleton can be naturally lustrous, or rendered so after polishing.

**Colour:** In life, generally white owing to the external layer of “skin” and polyps although the living material in some species can be yellow or green, orange and red. The skeleton may be brown or black.

**Size:** Up to 5 m.

**Distribution:** Antipatharia are found in deep water throughout the EEZ. *Antipathella fiordensis*, previously known as *Antipathes fiordensis*, is endemic to New Zealand’s fiords.

**Depth:** 200 to 1000 m. In New Zealand fiords found in very shallow waters (<10 m).

**Similar species:** There are numerous genera among the 58 species. Some gorgonians are similar, but these tend to lack the fine spines of black corals.

**References:**
**Leiopathes secunda** (Leiopathes black coral) (LSE)

**Distinguishing features:** Large, mostly fan-shaped colony; main branches usually appearing somewhat crooked in shape; small branchlets curved and often arising on the outer convex side of the next lower order branchlet. End branchlets short and thin. Thickest branches appearing polished and smooth.

**Colour:** Orange when alive; whitish after preservation in alcohol. Underlining skeleton black, sometimes visible on living colonies in places where the soft tissue has been lost.

**Size:** Up to 2 m or more.

**Distribution:** In New Zealand waters known primarily from off the east and west coasts of the North Island.

**Depth:** Primarily from depths of 600 to 1000m.

**Similar species:** Two other species of *Leiopathes* are known from the area; *Leiopathes acanthophora*, and *Leiopathes bullosa*. In *L. acanthophora* the smallest branchlets are generally straighter, longer and not as regularly arranged as those in *L. secunda*. *Leiopathes bullosa* has a branching pattern somewhat intermediate between that of *L. secunda* and *L. acanthophora*; however, it differs from the other two species primarily in the shape of the skeletal spines, which are more spherical.

Phylum: Cnidaria  
Class: Anthozoa  
Order: Corallimorpharia (coral-like anemones)  
Family: Corallimorphidae

(Coral-like anemones) (CLM)

Distinguishing features: Corallimorpharians are solitary animals morphologically intermediate between members of hexacorallian orders Actiniaria (sea anemones) and Scleractinia (stony corals). The consistency of the animal can be stiff and cartilaginous (A) or soft with copious mucus (B). The mouth is central and slit-like, tentacles are simple, and may be arrayed radially and in cycles. In members of family Corallimorphidae, each tentacle typically terminates in a bulbous sphere in which nematocysts are dense. The oral and pedal discs are circular and roughly similar in diameter; the oral disc can be flat to strongly domed; the column more or less cylindrical. There are 3 species of Corallimorphus in the New Zealand region, including the new species C. niwa (A). C. profundus commonly occur in the Ross Sea region and are often in poor condition when sampled by longlines. (see Figure B, pedal view of a frozen then thawed Corallimorphus species).

Colour: Pink, cream, yellowish, some brownish and rust red in animals that retain pigmentation.

Size: Diameter 30 to 125 mm.

Distribution: New Zealand deepsea region and Ross Sea.

Depth: 947 to 1773 m in New Zealand waters. Globally 30 to 4429 m.

Similar species: Could be confused with sea anemones such as Liponema and Bolocera.

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Alcyonacea (formerly Gorgonacea (gorgonian corals))  
**Family**  Coralliidae  

**Corallium spp. (Precious corals) (CLL)**

**Distinguishing features:** Densely branched coral, usually flattened, with a solid calcareous supporting axis and slender, short, terminal branches. Tiny polyps fully retractile in conical apertures sometimes forming bulb-like clusters. The branching is very like hydrocorals but the precious corals are very hard, and have a thin layer of tissue, usually of a different color than the hard part of the colony and no pores on their skeleton.

**Colour:** Pale yellow, pink, or red.

**Size:** Up to 50 cm.

**Distribution:** Worldwide (deepwater).

**Depth:** 100 to 1000 m.

**Similar species:** Species of Paracorallium are indistinguishable from Corallium spp. Microscopic examination of sclerites is required for a reliable identification. Can be confused with hydrocorals but hydrocorals have pore-like apertures and no thin layer of tissue that can be scraped off the branch.


**Phylum** Cnidaria

**Class** Anthozoa

**Order** Alcyonacea (formerly Gorgonacea (gorgonian corals))

**Family** Chrysogorgiidae

---

**Chrysogorgia spp. (Golden corals) (CHR)**

**Distinguishing features:** Dark, highly calcified colonies with bottlebrush branching arising from a regular single and ascending spiral around the main branch. Polyps large, relative to branch width, soft, few in number and well spaced from each other.

**Colour:** Black axis with brilliant metallic lustre, branchlets from amber to golden colour.

**Size:** Up to 1 m.

**Distribution:** Found worldwide. Widely distributed in New Zealand deepsea region.

**Depth:** 80 to 2000 m.

**Similar species:** There are several Chrysogorgia species in New Zealand waters ranging in appearance from bottlebrush to sea fan colonies. Fan shape colonies could resemble the apical part of *Metallogorgia* spp.


Distinguishing features: Bamboo-like coral, with a conspicuously jointed skeleton comprising white calcareous internodes alternating with horny dark gorgonin (hardened protein) nodes.

Colour: White with dark nodes, living tissue pale yellow to brown.

Size: Up to 3 m.

Distribution: Widely distributed in the New Zealand deepsea region on hard seafloor e.g. deep-sea seamounts and ridges.

Depth: 200 to 2000 m.

Similar species: The bamboo coral species can be difficult to identify. The genera Keratoisis, Acanella, and Lepidisis are very similar.


Acanella spp. (Bushy bamboo coral) (ACN)

**Distinguishing features:** Bushy bamboo-like coral, white calcareous nodes with horny (hardened protein) internodes, branching from the horny internodes usually two or three branches. Colony base branches as a root.

**Colour:** White with dark nodes, living tissue white to pale yellow.

**Size:** Up to 1 m.

**Distribution:** Widely distributed in New Zealand deep-sea region, on hard seafloor.

**Depth:** 200 to 2000 m.

**Similar species:** Other branching genera of Isididae have similar branching set-points in the nodes but they differ in other microscopic characters.

**References:**
**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Alcyonacea (formerly Gorgonacea (gorgonian corals))  
**Family**  Isididae  

**Keratoisis spp. (Branching bamboo coral) (BOO)**

**Distinguishing features:** Bamboo-like coral, with a conspicuously jointed skeleton comprising white calcareous internodes alternating with horny dark gorgonin (hardened protein) nodes. Branching from the calcareous nodes only. Bioluminescent on contact.

**Colour:** White with dark nodes, living tissue pale yellow to brown.

**Size:** Up to 3 m.

**Distribution:** Widely distributed in the New Zealand deep-sea region, on hard seafloor e.g. deep-sea seamounts and ridges.

**Depth:** Over 200 m.

**Similar species:** The whip-like bamboo coral *Lepidisis* sp. is very similar in appearance but does not branch.

**References:**
**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Alcyonacea (formerly Gorgonacea (gorgonian corals))  
**Family**  Isididae

**Distinguishing features:** Whip-like, bamboo-like coral, spiral growth. Has a conspicuously jointed skeleton comprising white calcareous internodes alternating with horny dark gorgonin (hardened protein) nodes. Bioluminescent on contact. The genus is under revision.

**Colour:** White with dark nodes, living tissue pale yellow.

**Size:** Up to 4 m.

**Distribution:** Widely distributed in the New Zealand deep-sea region, on hard seafloor e.g. deep-sea seamounts and ridges.

**Depth:** Over 200 m.

**Similar species:** Single and long branches of the branching bamboo coral *Keratoisis* spp. are similar in appearance to *Lepidisis* spp.

**References:**
**Minuisis spp. (Worm-commensal bamboo coral) (MIN)**

**Distinguishing features:** Small bushy colonies of bamboo-like coral, with white nodes and tiny horny dark internodes, severely modified by commensal scale worms. Dense, long, dark, and granular polyps throughout the colonies.

**Colour:** White with dark polyps.

**Size:** Up to 15 m.

**Distribution:** New Zealand and the Norfolk ridge.

**Depth:** 200 to 2000 m.

**Similar species:** *Primnoisis* spp., *Sclerisis* spp., and *Echinisis* spp. form very similar colonies. Microscopic examination of sclerites is required for a reliable identification.

**References:**
**Phylum** Cnidaria  
**Class** Anthozoa  
**Order** Alcyonacea (formerly Gorgonacea (gorgonian corals))  
**Family** Paragorgiidae

**Paragorgia arborea (Bubblegum coral) (PAB)**

**Distinguishing features:** Robust tree-like colonies with bubble-like concentrations (bulbs) of polyps placed throughout the branches. Colonies up to several metres high (trunk ~ 20–30 cm in diameter). This could be the tallest sessile invertebrate ever found in deepwater. See page 58 for clarification of protected species status.

**Colour:** Reddish orange.

**Size:** Up to 5 m.

**Distribution:** Worldwide. Widely distributed in New Zealand deepsea region.

**Depth:** 200 to 800 m.

**Similar species:** There are six more species of Paragorgia in New Zealand (e.g., Paragorgia wahine) none of them attaining more than 50 cm height.


Distinguishing features: Plexauridae are a poorly described group. They often form fan-like and flattened, simple branching colonies, with a definite stem or main branch that has a tubular chambered core and is characterised by having cups or calyces but no external calcareous scales. They are flexible and bend easily. Calyces are distributed on all sides of the branches and are fully retractile in an elevated conical aperture. Some calyces are small and dot-like e.g., Scleracis, others have calyces which are pronounced and cylindrical with a distinct inflated appearance at the tips e.g., Swiftia. Other genera include Trachymuricea, Placogorgia, Plexaurella, Villogorgia, and Muriceides.

Colour: Red, purple, brown.

Size: Up to 1 m.

Distribution: Widely distributed in the New Zealand region.

Depth: 47 to 2120 m.

Similar species: Primnoids are similar but their main branch is usually solid all the way through and is composed of concentric layers of calcium carbonate and gorgonin.

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Alcyonacea (formerly Gorgonacea (gorgonian corals))  
**Family**  Primnoidae  

**Distinguishing features:** Primnoidae often form tree-like colonies, have a definite stem and solid axis, and the base is always attached. Branches are flexible and often heavily armoured with overlapping scales, e.g., Primnoa. Other branching modes include bottlebrush Thouarella, unbranched flagelliform Primnoella, and pinnate ( feather-like) and often uni-planar forms. Branches of the pinnate form often alternating. A variety of polyp and calyx (cup) shapes and arrangements occur including irregular and individual, clustering in whorls, and upward or downward (e.g., rasta coral Narella) facing, that can be perpendicular to the branch, or slightly inclined distally. Some calyces bend and almost touch the branch in an appressed state, or lie flat and can be strongly wedged to the branch (adnate state).

**Colour:** White, yellow, pink, orange, grey, brown.

**Size:** Up to 2 m.

**Distribution:** Widely distributed in the New Zealand region.

**Depth:** 37 to 2407 m.

**Similar species:** Chrysogorgids, but they lack the external protective armoured scales. Unbranched Primnoids could be confused with the uni-linear golden coral Radicipes but Radicipes whirls and twists, does not branch, and polyps are on one side. Isidids (bamboo corals) covered in live polyps e.g., Keratoisis, but their calcareous nodes and gorgonian inter-nodes are distinctive. Small branchlets of both black corals and gorgonian corals can be confused (e.g., see gorgonian branch in top right image).

**Distinguishing features:** Branching mode dichotomous (repeated bifurcation or a dividing in two of the branches), and usually bushy. Polyps closely spaced, densely packed and thorny and randomly arranged (not in pairs or whorls), but usually facing downward. Polyps lobe-like and fleshy, each covered with 6 longitudinal rows of scales. The adaxial side is largely naked, the side on the face away from the branch, has well developed scales on the polyps (abaxial). Often samples are collected where the branches are naked.

**Colour:** Vivid orange, axis golden.

**Size:** Up to 2 m.

**Distribution:** Widely distributed in the New Zealand region.

**Depth:** 86 to 1680 m.

**Similar species:** Could be confused with branches of Paragorgidae bubblegum corals (Paragorgiidae).

**References:**
Distinguishing features: An abundantly branched bottlebrush form that has pinnately or feathery-like branched colonies in which numerous, crowded short slender branchlets arise all around the main stem, sometimes in an irregular fashion, or as spirals. Polyps and branches covered with tiny scales. In some species there can be relatively few main branches, from which branchlets originate in an irregular pinnate fashion. Polyps isolated, occurring on all sides of branchlets with a random or isolated arrangements, can appear crowded on main stems and on all sides of branchlets or arranged in pairs, or whorls on branchlets pointing upward.

Colour: Colony pink, yellow, pale yellow to cream, or light orange. Axis pale yellow to brown-black.

Size: Up to 50 cm.


Depth: 100 to 1400 m.

Similar species: There are numerous species of Thouarella all with bottlebrush appearance, the size of the polyps is highly variable. Can be confused with Tokoprymno spp. but this genus has calyces arranged biserially, projecting perpendicularly from opposite edges of each branch.


**Phylum** | Cnidaria  
**Class** | Hydrozoa  
**Order** | Anthoathecata (hydroids)  
**Family** | Stylasteridae

### **Calyptopora reticulata** (White hydrocoral) (CRE)

**Distinguishing features:** Forms hard calcium carbonate skeletons with sinuous and robust main branches and many thin and intricate side branches. Branching occurs in one plane. Branches bear circular structures (termed ciclosystems) which are oriented towards only one side of the colony. Commensal polychaete worms are common on the hydrocoral surface, creating canals and branch deformities.

**Colour:** Bright white, pink or beige.

**Size:** Up to 60 mm.

**Distribution:** Widely distributed in the New Zealand region.

**Depth:** 600 to 1400 m.

**Similar species:** Most stylasterids other than some such as Errina spp., are very similar and difficult to tell apart with the naked eye. *C. reticulata* is very similar to Stylaster spp., the latter, however, have visible bump-like reproductive ampullae towards one side of the colony that are not present in Calyptopora spp. Some large white colonies of the precious coral Corallium spp. can be confused with stylasterids. However, Corallium spp. have a distinctive thin, almost loose, layer of tissue that can be easily removed by scraping the branches, and are harder than stylasterids. Corallium spp. do not have the small side branches of *C. reticulata*. Some branching bryozoans can have similar shapes but are somewhat crystalline, have thinner branches, and are without robust main branches.

**Errina spp. (Red hydrocorals) (ERR)**

**Distinguishing features:** Branching form, often large with polyps contained in visible pores usually adjacent to spine-like processes.

**Colour:** Pink to red, some species can be white.

**Size:** Up to 300 mm.

**Distribution:** The genus is found worldwide. There are many species endemic to New Zealand. Commonly found on the Subantarctic slope in the Campbell Plateau region, in Fiordland and in Antarctica (see bottom right image of *Errina antarctica*).

**Depth:** 10 to 1800 m.

**Similar species:** Most members of *Errina* appear similar to the naked eye. Microscopic examination is required for reliable identification. Note that some large white colonies of the precious coral *Corallium* spp. can be confused with stylasterids, including *Errina*. However, *Corallium* spp. have a distinctive thin, almost loose, layer of tissue that can be easily removed by scraping the branches, and are harder than stylasterids. Some branching bryozoans can have similar shapes but are somewhat crystalline, have thinner branches, and are without robust main branches.


**Phylum**  Cnidaria  
**Class**  Hydrozoa  
**Order**  Anthoathecata (hydroids)  
**Family**  Stylasteridae

**Lepidotheca** spp. (Spiny white hydrocorals) (LPT)

![Image of Lepidotheca spp.](image)

**Distinguishing features:** Robust branching hydrocorals comprising a skeleton of calcium carbonate with tiny feeding polyps and stinging polyps. Colony surface has a series of long spines.

**Colour:** White.

**Size:** Up to 60 mm.

**Distribution:** The genus is found worldwide. There are many species endemic to New Zealand.

**Depth:** 80 to 2010 m.

**Similar species:** Most members of the Family Stylasteridae appear similar to the naked eye (and can resemble some bryozoans and white colonies of *Corallium*). However, *Corallium* spp. have a distinctive thin, almost loose, layer of tissue that can be easily removed by scraping the branches, and are harder than stylasterids. Microscopic examination is required for reliable identification.


**Phylum** Cnidaria  
**Class** Anthozoa  
**Order** Pennatulacea (sea pens)  
**Family** Pteroeididae

**Gyrophylllum sibogae** (Siboga sea pen) (GYS)

**Distinguishing features:** This unusual sea pen is relatively short and robust with highly modified and very fleshy polyp leaves arranged on both sides of the colony axis.

**Colour:** Ochre to brown.

**Size:** Up to 15 cm.

**Distribution:** Widespread in New Zealand waters, where they are found erect on soft and muddy bottoms.

**Depth:** 500 to 1200 m.

**Similar species:** Other sea pens such as *Pennatula*, can also have short and robust colonies but they are never as fleshy and thick as *G. sibogae*.

**References:**
Phylum: Cnidaria
Class: Anthozoa
Order: Pennatulacea (sea pens)
Family: Pennatulidae

**Pennatula spp. (Purple sea pen) (PNN)**

**Distinguishing features:** Short sea pen with red to purple fan-like leaves of polyps. The polyps have needle-like ends. Sea pens are adapted to soft and muddy bottom, where they are found standing erect.

**Colour:** Beige to white stalk with red to purple polyp leaves.

**Size:** Up to 20 cm.

**Distribution:** Widespread in New Zealand waters, found erect on soft and muddy bottom.

**Depth:** 500 to 1200 m.

**Similar species:** Among the short sea pens, *Pennatula* is the only genus with complex and sharp leaves of polyps. Other sea pens are usually thick and fleshy (e.g., *Gyrophyllum*).

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Scleractinia (stony corals)  
**Family**  Caryophylliidae

**Caryophyllia spp. (Carnation cup coral) (CAY)**

**Distinguishing features:** Small solitary cup coral with two unique characteristics: a twisted conical base that ends with a cylinder-like flat top and septa arranged as concentric radial structures in the centre of the oral cavity. A spongy structure (the columella) forms a circle of twisted filaments.

**Colour:** White with slightly coloured (pink to orange) base.

**Size:** From 10 to 40 mm wide, up to 5 cm high.

**Distribution:** Cosmopolitan.

**Depth:** 700 to 900 m.

**Similar species:** The twisted conical base and the flat top with centered rings of radial septae make *Caryophyllia* spp. different to other cup corals such as *Desmophyllum*, *Flabellum* and *Stephanocyathus* that all have septa that extend from the coral edge to the center of the cup where a small oral cavity is present.


**Desmophyllum dianthus (Crested cup coral) (DDI)**

**Distinguishing features:** Solitary coral. Highly variable forms from cylindrical and serpentine to robust and massive. Radial structures (septa) are oriented from the centre of the cup to edge. Usually fixed to other corals or gorgonian bases and clumped with other individuals.

**Colour:** White, pale ochre tissue (if present).

**Size:** Up to 100 mm.

**Distribution:** Worldwide, except off continental Antarctica and the northern Pacific.

**Depth:** 35 to 2460 m.

**Similar species:** *Desmophyllum striatum* is the other valid species of the genus, but this species is only found in the western Atlantic.


**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Scleractinia (stony corals)  
**Family**  Caryophylliidae

---

**Goniocorella dumosa (Bushy hard coral) (GDU)**

**Distinguishing features:** Forms large bushy colonies with complex branching. Each branch bearing a terminal coral polyp. Most of the branches bud at right-angles with branching occurring from the stem in an intricate way. A key feature is that the branches are reinforced by slender and smooth tubular bridges intersecting the branches. The bridges are long, circular in cross section, and are hollow.

**Colour:** Brown to ochre (when alive) with orange polyps.

**Size:** Up to 400 mm.

**Distribution:** Widely distributed in the New Zealand deepsea region and Indo-Pacific.

**Depth:** 300 to 1500 m.

**Similar species:** Similar to other colonial corals particularly Solenosmilia variabilis, but bridges are rare in S. variabilis. Also similar to Enallopsamia rostrata which can also form bushy colonies, but branches in a particular uniplanar way and it lacks the tubular bridges distinctive in G. dumosa.


---

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Scleractinia (stony corals)  
**Family**  Caryophylliidae

---

**Goniocorella dumosa (Bushy hard coral) (GDU)**

**Distinguishing features:** Forms large bushy colonies with complex branching. Each branch bearing a terminal coral polyp. Most of the branches bud at right-angles with branching occurring from the stem in an intricate way. A key feature is that the branches are reinforced by slender and smooth tubular bridges intersecting the branches. The bridges are long, circular in cross section, and are hollow.

**Colour:** Brown to ochre (when alive) with orange polyps.

**Size:** Up to 400 mm.

**Distribution:** Widely distributed in the New Zealand deepsea region and Indo-Pacific.

**Depth:** 300 to 1500 m.

**Similar species:** Similar to other colonial corals particularly Solenosmilia variabilis, but bridges are rare in S. variabilis. Also similar to Enallopsamia rostrata which can also form bushy colonies, but branches in a particular uniplanar way and it lacks the tubular bridges distinctive in G. dumosa.


**Solenosmilia variabilis (Deepwater branching coral) (SVA)**

**Distinguishing features:** *S. variabilis* form large bushy colonies with equal, three-dimensional branching. A key identification feature is that dichotomous (divides in two or bifurcates) branching occurs from the calyces or polyps in multiple directions and in a "V" shape. May have coenenchymal adhesions or bridges prior to anastomosis (division), but the bridges are rare, solid, and usually elongate (not circular in cross-section).

**Colour:** Pink (when alive).

**Size:** Forms large reef-like structures. Colony fragments, fist size pieces, or large sections up to a metre or more taken in trawl.

**Distribution:** Cosmopolitan and widely distributed in the New Zealand deepsea region.

**Depth:** 265 to 1700 m.

**Similar species:** Similar to *Goniocorella* but *S. variabilis* is thicker with branches developing from the calyces and has no tubular bridges. Although also similar to *Madrepora oculata* the equal, intratentacular branching is very distinctive in *S. variabilis*.


**Stephanocyathus platypus** (Solitary bowl coral) (STP)

**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Scleractinia (stony corals)  
**Family**  Caryophylliidae

**Distinguishing features:** Circular to elliptical bowl-shaped solitary coral, star-like with 12 pointy and prominent septa. Very fleshy when specimen is alive. This genus is the largest circular solitary coral found in New Zealand waters.

**Colour:** Brown purplish when alive. Visible parts of the skeleton are bright white.

**Size:** Up to 9 cm in diameter.

**Distribution:** Widespread on Lord Howe Rise, eastern Chatham Rise, and Bounty Plateau.

**Depth:** 700 to 900 m.

**Similar species:** *Desmophyllum dianthus*, however, *S. platypus* is clearly star-like with pointy and prominent septa. The cup corals Caryophyllia spp. are smaller, more robust, and their oral cavity not concave as in *S. platypus*. There are other *Stephanocyathus* spp. in New Zealand waters but these not as large or as abundant as *S. platypus*.


**Enallopsammia rostrata** (Deepwater branching coral) (ERO)

**Distinguishing features:** Forms large uniplanar colonies with occasional branch anastomosis (i.e., branch fusion). Polyp calyces (opening of corallite in which polyp is situated) are visible, circular to elliptical, and confined to only one plane of the coral. Of the four branching corals described, *E. rostrata* has the largest polyps. The image to the right shows the crested cup coral *Desmophyllum* colonising *Enallopsammia*.

**Colour:** Red brown to ochre (when alive).

**Size:** Forms large reef-like structures. Colony fragments, fist size pieces, or large sections up to a metre or more taken in trawl.

**Distribution:** Found throughout the New Zealand region as well as worldwide.

**Depth:** 200 to 2150 m.

**Similar species:** Similar to other branching stony coral species particularly *Goniocorella dumosa*, but *E. rostrata* has uniplanar branching and no bridges among branches. *Solenosmilia variabilis* is similar but the branching pattern for this species is dichotomous (divides in two or bifurcates).


Phylum: Cnidaria
Class: Anthozoa
Order: Scleractinia (stony corals)
Family: Flabellidae

Flabellum spp. (Flabellum cup corals) (COF)

**Distinguishing features:** Solitary corals, fixed or free, with bell-like or compressed form. Growth ridges evident along the external wall. Coral edges can be either continuous or jagged.

**Colour:** White, tissue pale ochre.

**Size:** Up to 50 mm.

**Distribution:** Worldwide. New Zealand has several endemic species.

**Depth:** 250 to 1500 m.

**Similar species:** Rhizotrochus spp. Microscopic examination is required for reliable identification to species level.


**Distinguishing features:** Branching coral, has many forms, is usually bushy and is distinguished from other branching corals by having multiple small circular coral calyces (cups) or polyps. Branching occurs just below the calyx. There are 3 different morphs or shapes in New Zealand waters. One morph has calyces that alternate sympodially on each side of thick branches in a flute-like regular orientation. Diameter of polyps ranges from 1.9 to 2.2 mm. Often associated with commensal polychaetes.

**Colour:** White, with light brown living tissue.

**Size:** Forms large reef-like structures. Colony fragments, fist size pieces, or large sections up to a metre or more taken in trawl.

**Distribution:** Worldwide, except Antarctica. Widely distributed within New Zealand waters, commonly found on the Chatham Rise.

**Depth:** 90 to 2850 m.

**Similar species:** *Oculina virgosa* is a similar but more sparsely and irregularly branched species with larger cup diameter (2.5 to 4.5 mm), and found in northern parts of New Zealand only. Microscopic examination is required for reliable identification to species level.


**Phylum**  Cnidaria  
**Class**  Anthozoa  
**Order**  Scleractinia (stony corals)  
**Family**  Oculinidae

**Oculina virgosa** (Deepwater branching coral) (OVI)

**Distinguishing features:** Sparsely irregularly branched with terminal branches sympodially (in a regular fashion) arranged circular calyces. The branches are thin, calyx (cup) diameter large (2.5 to 4.5 mm).

**Colour:** Red when alive.

**Size:** Pinkish red with white skeleton when alive.

**Distribution:** Forms large reef-like structures. Colony fragments, fist size pieces, or large sections taken in trawl.

**Depth:** 30 to 800 m.

**Similar species:** *Madrepora oculata* is similar to *O. virgosa*, but *M. oculata* has thicker branches with alternate and well separated calyces. Microscopic examination is required for reliable identification to species level.


Distinguishing features: This anemone-like order is taxonomically problematic. Zoanthids can be found on rocks and rubble, or growing attached to living coral branches, hermit crab shells (see Epizoanthus spp. EPZ), and on glass sponge stalks (top right image). Zoanthids are mostly colonial, with polyps linked either by a continuous coenenchyme or by stolons. They are often small and erect, sausage or knob-like in shape, with a central aperture (often looking like a simple depression). With the exception of Savalia and the undescribed gold parazoanthid (referred to as gold coral), they do not secrete a skeleton. Gold coral is usually gorgonian associated, and as its name applies, secretes a very hard scleroprotein golden skeleton. Savalia secretes a dark brown to black skeleton.

Colour: Whitish beige to orange, gold and brown. Colour in the deeper species is often influenced by sediment incrustations.

Size: 1 to 6 mm for the small anemone-like animals and up to 2 m for gold coral colonies.

Distribution: Widely distributed in the New Zealand region. The gold coral found in the New Zealand region may be the same morphologically as the Hawaiian gold coral.

Depth: 0 to 2250 m.

Similar species: Colonial zoanthids can be confused with small sea squirts, branching soft corals, or with large brooding polyps of certain gorgonian corals, e.g., the sea fans Thuarella or Tokoprymno. Gold corals with little live tissue can be confused with dead branches of gorgonian or black corals.


Phylum: Cnidaria  
Class: Hexacorallia  
Order: Zoantharia (Zoanthidea) (zoanthid anemones)  
Family: Epizoanthidae

**Epizoanthus spp. (Zoanthid anemone) (EPZ)**

**Distinguishing features:** A relative of anemones and corals, this leathery anemone-like zoanthid hexacoral settles on shells occupied by hermit crabs. As it grows it envelopes the shell. The budding polyps radiate outwards, giving the colony a cog-like appearance. Tentacles and mesenteries are in multiples of six.

**Colour:** Purple to pink or brown

**Size:** 6 to 10 cm.

**Distribution:** Widely distributed in the New Zealand region.

**Depth:** 500 to 2000 m. Wide depth range.

**Similar species:** Twelve species of Zoanthids are described for the New Zealand region. The species shown in the image is most likely *Epizoanthus paguriphilus*.

Phylum
ANNELIDA
Bristle worms, leeches
Geoff Read
Phylum
**ANNELIDA**

*Bristle worms and leeches*

**Class Polychaeta**

Polychaetes are segmented marine worms that have evolved a wide variety of forms in adaptation to many different lifestyles. They can occur in great abundance and are usually a major component of the deep sea benthos. Polychaetes are particularly common crawling and burrowing on or in bottom sediments, but also live in tubes attached to rock surfaces or within growths of sponges, corals, and hydroids. However, polychaetes are relatively small animals that are good at hiding themselves, and thus, with some exceptions, epifaunal worms caught up in trawl bycatch are mostly not easily seen unless carefully looked for.

Class Polychaeta also includes hydrothermal vent and cold seep tube-dwelling worms nourished solely by symbiotic bacteria, apparently unsegmented, and until recently regarded as part of a separate phylum called Pogonophora. Some species of this group occur in New Zealand waters. At least 800 polychaete species in 68 families occur in the New Zealand area, with about 50% of the formally described species endemic. Altogether worldwide there are about 13000 polychaetes known in 83 families.

Typically each polychaete worm segment has many chaetae (bristles)—hence the class name. The chaetae erupt in upper and lower groups from variably developed fleshy lateral lobes or ‘feet’ called parapodia. It is important to study chaetae when identifying worms as each family has characteristic types, with many of the chaetae intricately and distinctively sculptured. The polychaete head region in wandering agile species often bears eyes, unique chemosensory structures called nuchal organs, and pairs of antennae, palps, and cirri. These may also be present in related tube-dwelling forms, but typically the permanent tube-dwellers have additional feeding and respiratory appendages, such as the tentacular crowns of Sabellidae, whereas sediment-eating burrowing forms generally have much reduced head appendages. Food in many polychaetes is ingested with the aid of an eversible mouth bulb called the proboscis, and this may be armed with pincer-like jaws, particularly in predatory forms.

Polychaetes filter-feed, graze on organic debris, bulk-ingest sediment, or prey on other small animals. They are short-lived, mostly having annual or shorter life spans; their reproductive strategies include free spawning by separate sexes, hermaphroditism, and various degrees of brood care, and polychaete larvae are common in the plankton. Polychaetes are an important part of the deepsea food chain and their soft bodies provide nutritious food for fish and many other predators.

**Class Clitellata**

Clitellata is the current class name for leeches and oligochaetes as a group, formerly treated separately within Annelida as Classes Hirudinea (comprising all leech families) and Oligochaeta (comprising aquatic oligochaete families plus earthworms). No marine oligochaetes are large enough to be noticed in trawl bycatch, but ectoparasitic fish leeches up to a few centimetres long may occasionally be seen, either detached from their hosts or still affixed. Marine fish leeches belong to the family Piscicolidae; chaetae and lack the cutting jaws of terrestrial leeches, have anterior and posterior suckers and a fixed number of segments, and all are hermaphroditic. There are six species currently reported for New Zealand, but little is known about their ecology or preferred hosts. Additional undescribed species are likely to occur.
**Phylum**  Annelida  
**Class**  Polychaeta (bristle worm)  
**Order**  Amphinomida  
**Family**  Amphinomidae

**Chloeia inermis** (Fire worm) (CIM)

**Distinguishing features:** Spindle-shaped with profuse, siliceous, spicule-like chaetae (body lateral view left inset). Head small, sunken, with a cockscomb-like pleated caruncle (right inset). Whip-like dorsal cirri from segment one. Dorsal stalked branched gill pairs from segment 5.

**Colour:** Believed to be pale. Dorsal cirri ends are a conspicuous purple in preserved specimens.

**Size:** Total length up to 90 mm.

**Distribution:** New Zealand wide, especially Chatham Rise and offshore northwest of the South Island.

**Depth:** 70 to 1050 m. Shelf and slope.

**Similar species:** Unique. Other bottom-dwelling amphinomids are much smaller and in different genera. Large amphinomids also may occur on floating objects colonised by goose barnacles.

**References:** Kudenov, J.D. (1993). Amphinomidae and Euphosinidae (Annelida: Polychaeta) principally from Antarctica, the southern ocean, and subantarctic regions. Antarctic Research Series 58: 93–150.
**Phylum**  
Annelida

**Class**  
Polychaeta (bristle worm)

**Order**  
Eunicida

**Family**  
Eunicidae

---

**Eunice (undescribed) (Eunice sea-worm) (EUN)**

**Distinguishing features:** Head with 2 cushion-like palps, 5 head antennae, followed by another pair of antennae. Mouth with white plate-like mandibles below a series of toothed jaw plates. Small comb-like pink gills above each lateral ‘foot’ from 8th segment to end of body.

**Colour:** Light chocolate brown with paler underside.

**Size:** Total length up to 220 mm.

**Distribution:** Chatham Rise and Bay of Plenty region.

**Depth:** 200 to 250 m.

**Similar species:** There are a number of described and undescribed Eunice in New Zealand waters of various sizes, all superficially rather similar, but varying in body colour, gill development, and morphology of jaw elements and chaetae (bristles erupting on each segment).

**Phylum**  
Annelida

**Class**  
Polychaeta (bristle worm)

**Order**  
Eunicida

**Family**  
Onuphidae

---

**Hyalinoecia tubicola** (Quill worm) (HTU)

**Distinguishing features:** Onuphid worms occupy a tapering quill-like horny tube with protective internal valves at either end (see mid left specimen inside tube). Tube is translucent and circular in cross-section. Worm is an active crawler, dragging tube “house” along.

**Colour:** Light brown tube and body.

**Size:** Total length up to 300 mm (tube length).

**Distribution:** Common on the surface of sediments of New Zealand continental slope.

**Depth:** 50 to 2800 m. 80% of records occur in the depth zone 100 to 600 m.

**Similar species:** *Hyalinoecia incubans*, a smaller species, is very similar. *Leptoecia oxyrhincha* is also smaller and occupies a similar, although flattened, “quill” tube. *H. tubicola* is “cosmopolitan,” with the New Zealand form a treated as subspecies, *H. tubicola longibranchiata*, although further evaluation of its status is needed.


**Aphrodita spp. (Sea mouse) (ADT)**

**Distinguishing features:** Body oval in outline, dorsally covered by a matted felt of fine hair, and with intermingled bronze chaetae, as well as 15 pairs of elytra (scales). Ventrally without felt, with finely papillated surface. Facial tubercle present between paired palps on head. Thin median antenna present or absent.

**Colour:** Grey or brown.

**Size:** Up to 120 mm. About twice as long as wide.

**Distribution:** Widely distributed on the continental shelf, including the Chatham Rise, with some deep water records to the east of Mahia Peninsula.

**Depth:** 20 to 2700 m.

**Similar species:** There may be four or more Aphrodita species in New Zealand waters. Also there are several similar genera differing mainly in details of chaetal morphology and arrangement.

**Phylum**  
Annelida

**Class**  
Polychaeta (bristle worm)

**Order**  
Phyllodocida

**Family**  
Polynoidae

---

**Thermiphione (undescribed) (Thermiphione scale-worm) (THE)**

---

**Distinguishing features:** Scale-worm with thirteen pairs of overlapping tough dorsal scales, each with a polygonal surface pattern (inset top right). Dorsal surface under scales (absent in left lower specimen and head-closeup, right image) with near-midline papillae. Head without eyes or antennae, with pair of palps.

**Colour:** Golden dorsal scales. Body reportedly green in life.

**Size:** Total length up to 30 mm. About twice as long as wide.

**Distribution:** Eastern New Zealand on actively volcanic seamounts.

**Depth:** 230 to 730 m.

**Similar species:** No other member of genus recorded in New Zealand. However, many Polynoidae look superficially the same if dorsal scales are intact. If unsure use Polynoidae code PYN.

**References:**  

Phylum
MOLLUSCA
Chitons, bivalves, sea snails, sea slugs, octopus, squid, tusk shell

Bruce Marshall, Steve O’Shea, Darren Stevens
with additional input for squid from Neil Bagley,
Peter McMillan, Reyn Naylor, Di Tracey, Kathrin Bolstad
Phylum

MOLLUSCA

Chitons, bivalves, sea snails, sea slugs, octopus, squid, tusk shells

The mollusca is the second most speciose animal phylum in the sea after Arthropoda. The phylum name is taken from the Latin (molluscus, soft), referring to the soft bodies of these creatures, but most species have some kind of protective shell and hence are called shellfish. Some, like sea slugs, have no shell at all. Most molluscs also have a strap-like ribbon of minute teeth — the radula — inside the mouth, but this characteristic Molluscan feature is lacking in clams (bivalves) and some deep-sea finned octopuses. A significant part of the body is muscular, like the adductor muscles and foot of clams and scallops, the head-foot of abalone, and the mantle and arms of squid and octopus, which makes molluscs an important food source.

New Zealand has 3666 marine molluscan species, of which more than a thousand await formal description. Most of these are minute “micromolluscs”, however.

The majority of species are endemic to New Zealand, being found nowhere else in the world. The uniqueness of the New Zealand Mollusca is also exemplified by certain kinds that are biologically or ecologically remarkable. The chiton Cryptoconchus porosus has its shell plates wholly internal, a character displayed by only one other species in the world, and Pseudotonicia cuneata lives permanently within soft sediments — rare for a chiton. New Zealand’s largest mesodesmatid clam, Paphies ventricosa (toheroa) is one of the largest in its family worldwide. The patellid limpet Patella kermadecensis, which can reach 150 millimetres or more in length and is endemic to the Kermadec Islands, is the only living representative of its family in the EEZ. New Zealand’s calliostomatid snails include several that are larger than any others in the world. More than 8.5% of the world’s estimated 750 chitons occur within the EEZ.

All seven classes of living Mollusca are found in New Zealand’s marine environment, including the deep sea. They are:

Aplacophora
In New Zealand, these are worm-like molluscs found in sandy mud. There is no shell. The tiny solenogasters have bristle-like spicules over almost the whole body, a groove on the underside of the body, and no gills. The more worm-like caudofoveates have a groove and fewer spicules but have gills. There are 10 species, 8 undescribed.

Bivalvia
Clams, mussels, oysters, scallops, etc. The shell is in two halves (valves) connected by a ligament and hinge and anterior and posterior adductor muscles. Gills are well-developed and there is no radula. There are 680 species, 231 undescribed.

Scaphopoda
Tusk shells. The body and head are reduced but there is a foot that is used for burrowing in soft sediments. The shell is open at both ends, with the narrow tip just above the sediment surface for respiration. There are 47 species, 36 undescribed.

Gastropoda
Sea snails and sea slugs. The shell is typically coiled but both coiling and a shell may be lacking in some species. The head-foot is well developed and muscular and the radula is mostly well developed but can be greatly modified in ways that are peculiar to particular genera and families. There are 2738 species, 1017 undescribed.

Cephalopoda
Squid and octopus. Unlike tropical nautilus, with its well-developed external shell, squid have an internal shell or support (pen) that is horny, whereas octopods generally lack any internal support. The only real difference between an octopus and a squid is that squid have cuticular rings or hooks arming their suckers, whereas an octopus has suckers that are simple suction discs. Squids have 8 arms and usually 2 tentacles; octopods have 8 arms. In addition to a radula, there are beak-like jaws. The key diagnostic feature for squids are the arms and tentacles but often these can be missing in trawl-caught specimens, particularly from squids with tentacular clubs (hooks). There are 123 species, 23 undescribed, or for which the systematic status has yet to be confirmed.
**Phylum**  Mollusca

**Class**  Bivalvia

**Order**  Limoida

**Family**  Limidae

**Acesta maui** (Giant file shell) (AMA)

**Distinguishing features:** Thin, rather fragile shell, externally with very fine longitudinal ridges near sides. Darker markings are due to the presence of a thin external skin, which is much softer than the shell and erodes away easily, especially in more dynamic environments. The external skin is typically best preserved in small to medium-sized specimens.

**Colour:** Shell white, typically with a patchy, dull brownish external skin.

**Size:** Total height up to 185 mm.

**Distribution:** Cook Strait, eastern South Island, Fiordland, Chatham Rise, and Auckland and Campbell Islands.

**Depth:** 270 to 1170 m.

**Similar species:** Acesta saginata Marshall, 2001 (next page).

**Phylum**  Mollusca  
**Class**  Bivalvia  
**Order**  Limoidea  
**Family**  Limidae  

**Acesta saginata (Lesser giant file shell) (ASG)**

**Distinguishing features:** Large, thin, rather fragile shell, externally covered with fine longitudinal grooves.

**Colour:** White.

**Size:** Total height up to 116 mm.

**Distribution:** Seamounts off northern North Island, off Chatham Islands, and Macquarie Ridge.

**Depth:** 1031 to 1650 m.

**Similar species:** Acesta maui.

**Phylum**  Mollusca  
**Class**  Bivalvia  
**Order**  Pectinoida  
**Family**  Pectinidae (scallops)

**Zygochlamys delicatula** (Queen scallop) (QSC)

**Distinguishing features:** Scallop or fan-shaped shell covered with longitudinal riblets, both valves (halves) inflated; ears on each valve of unequal size.

**Colour:** Yellow or red.

**Size:** Total height up to 97 mm.

**Distribution:** Eastern South Island, western Chatham Rise, Auckland, Bounty, and Campbell Islands, and Macquarie Island.

**Depth:** 60 to 549 m.

**Similar species:** Veprichlamys kiwaensis, Talochlamys dichroa, T. zelandiae, Mesopeplum convexum.


**Distinguishing features:** Shell subcircular, fan-shaped, very thin, fragile and transparent, both valves (halves) inflated, ears on each valve of unequal size. Externally covered with thin, widely spaced, scaly, concentric threads (additional, much finer, more crowded radial threads can be clearly seen only under magnification).

**Colour:** Colourless and transparent.

**Size:** Total height up to 24 mm.

**Distribution:** Throughout the New Zealand EEZ living attached by threads to rocks, corals and glass sponges or hard substrata.

**Depth:** 376 to 1568 m.

**Similar species:**

Distinguishing features: Scallop or fan-shaped shell covered with fine longitudinal riblets, both valves (halves) inflated; ears on each valve of unequal size. Longitudinal riblets smooth near eared-end of shell; roughened with small, sharp scales near opposite end when shell is more than about 15 mm high (additional, much finer, more crowded radial threads between main riblets can be seen only under magnification).

Colour: White or pinkish white, longitudinal riblets pink.

Size: Total height up to 31 mm.

Distribution: Through the New Zealand EEZ, living attached by threads to corals and glass sponges on hard ground.

Depth: 263 to 1130 m.

Similar species: Zygochlamys delicatula, Talochlamys dichroa, T. gemmulata, T. zelandiae.

**Distinguishing features:** Shell more or less oval, swollen, sculptured with very fine radial ribs. Fresh uneroded specimens covered with a rough surface caused by densely crowded, minute granules.

**Colour:** Shell white or pale pink.

**Size:** Total height up to 63 mm.

**Distribution:** Eastern North and South Islands, Chatham Rise, and Auckland Islands.

**Depth:** 400 to 620 m.

**Similar species:** Hitherto unrecorded species with heavier, more circular shell, occurs on Challenger Plateau and northern seamounts.

**Benthoctopus spp. (Deepwater octopus) (BNO)**

**Distinguishing features:** Stocky-bodied octopus, with a large head and mantle, short arms, smooth skin, and suckers in two rows.

**Colour:** Dark red on undersurface of mantle, head, arms, and web, and light red on other surfaces.

**Size:** To about 50 cm total length.

**Distribution:** Challenger Plateau, Bay of Plenty, Wairarapa coast, south to Chatham Rise and Campbell Plateau.

**Depth:** 500 to 1750 m.

**Similar species:** Three *Benthoctopus* species occur in New Zealand waters: *B. clyderoperi*, *B. tangaroa*, and *B. tegginmathae*.

**References:**
**Distinguishing features:** Large smooth-bodied octopus with broad, ovoid mantle, and arms subequal in length. All arm pairs have two series of suckers of similar, large size.

**Colour:** Yellow to orange.

**Size:** To about 140 cm total length.

**Distribution:** East coast South Island, Chatham Rise, Southern Plateau.

**Depth:** 50 to 600 m. Deep in northern; littoral in southern extent of range.

**Similar species:** The common octopus *Pinnoctopus cordiformis* is dark brown to red and has larger suckers on the dorsal arms progressively decreasing in diameter to ventral arms.

**References:**


**Distinguishing features:** Clusters of cartilage-like tubercles/warts on the head, mantle, and arms; single series of suckers down each arm. Ink sac absent.

**Colour:** Red, variable; maroon to dark red.

**Size:** To about 68 cm total length.

**Distribution:** Primarily east coast North Island, East Cape to Chatham Rise.

**Depth:** 450 to 1500 m.

**Similar species:** Two species (one with two subspecies) of Graneledone are known from the New Zealand EEZ:

– **Graneledone challengeri** (GCL): small cartilage-like tubercles on the dorsal surface (20 to 30 between eyes), found from the Kermadec Islands to the Chatham Rise.

– **Graneledone taniwha taniwha** (GTA): small to moderate-sized tubercles (12 to 15 between eyes) on the dorsal surface, found from off the Wairapa coast to the Auckland and Campbell Islands.

– **Graneledone taniwha kubodera** (GTA): small tubercles on the dorsal surface (11 to 14 between eyes), found on the Campbell Rise and Bounty Plateau.

**References:**


**Phylum**  Mollusca
**Class**  Cephalopoda
**Order**  Octopoda (Octopods)
**Family**  Octopodidae

**Octopus spp. (OCO)**

**Distinguishing features:** Small to moderate sized with a small mantle and head, arms of similar length, suckers in two rows and not modified in females.

**Colour:** Light to dark brown or red.

**Size:** To about 14 to 68 cm total length, depending on species.

**Distribution:** Widespread throughout New Zealand.

**Depth:** 0 to about 600 m, depending on species.

**Similar species:** There are about 7 true Octopus species in New Zealand waters. The common octopus *Pinnoctopus cordiformis* (formerly *O. maorum*) is large-bodied, with the largest suckers on the dorsal arms. The yellow octopus *Enteroctopus zealandicus* is also large, yellow to orange, but the suckers on all arms are a similar size.

**Distinguishing features:** Animal attains massive size; arms slender, tapering to delicate tips, each arm with two series of suckers. Suckers on dorsal arms largest, progressively decreasing in diameter from dorsal to ventral arms, with those of the ventral arm pair half the diameter of those on the dorsal arm pair.

**Colour:** Light to dark brown or red.

**Size:** To about 150 cm total length.

**Distribution:** North, South, Stewart, and Chatham Islands.

**Depth:** 5 to 400 m.

**Similar species:** *Pinnoctopus kermadecensis* is similar but usually only attains a total length of ~45 cm and it is restricted to intertidal areas of the Kermadec Islands. *Enteroctopus zealandicus* is yellow to orange and all arm pairs have similar sized suckers.


**Opisthoteuthis spp. (Umbrella octopus) (OPI)**

**Distinguishing features:** Moderate-sized octopus with very compressed bell-or disc-shaped body. Fins small and flap-like. Arms long and deeply embedded in gelatinous web of the mantle tissue, with single series of suckers and long threadlike cirri. Spots may be visible over mantle.

**Colour:** Purplish red to pink.

**Size:** To about 36 cm total length.

**Distribution:** North and South Island (both east and west coasts), Chatham Rise, Campbell Plateau.

**Depth:** 360 to 1700 m.

**Similar species:** Three species recognised in New Zealand waters: *Opisthoteuthis chathamensis*, *O. mero*, and *O. robsoni*.


Technical terms for squids (Teuthoidea)

Mollusca

Class Cephalopoda

Order Teuthoidea (Squids)

Family Architeuthidae

Architeuthis spp. (Giant squid) (GSQ)

Distinguishing features: Very large (to 13 m overall length); 8 arms with 2 rows of small suckers, and 2 very long tentacles, expanded at their ends into paddle-like clubs with enlarged suckers. Small terminal fins. No hooks on arms or tentacles.

Colour: Light pink to red.

Size: To about 2.25 m mantle length. Overall length to about 13 m.

Distribution: Around New Zealand and worldwide.

Depth: About 200 to 1000 m; most frequently captured at about 500 m.

Similar species: Taningia danae is also very large but the arms and head combined are shorter than the mantle, and it has large hooks on each arm. Mastigoteuthis cordiformis is very large but it has very large ovoid fins down most of mantle. Onykia (formerly Moroteuthis) sp. is large but has diamond-shaped fins on top half of warty mantle, and hooks on the clubs of short tentacles.


**Chiroteuthis veryani (CVE)**

**Distinguishing features:** Long slender body, gelatinous, fins circular, 4th arms much longer and thicker than other arms with a row of photophores along length. Tentacular club widened with suckers in 4 rows. Small photophores in rows on ventral side of eyeball and 2 photophores on the ink sac.

**Colour:** Red-purple to crimson.

**Size:** To about 20 cm mantle length.

**Distribution:** Circumglobal in Tropical to sub-Antarctic waters.

**Depth:** Mesopelagic to bathypelagic over deepwater.

**Similar species:** *Chiroteuthis mega* is also reported from New Zealand waters but lacks photophores on the ink sac. *M astigoteuthis* spp. (MSQ) are broader, deep red (often appear black when trawl caught), have a larger fin (50-90% mantle length), and the tentacular club is not widened and bears numerous rows of tiny suckers.

**References:**
**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthoidea (Squids)  
**Family**  Cranchiidae

**Cranchiidae (Glass squids) (CHQ)**

**Distinguishing features:** A diverse family distinguished by the mantle being fused to the head at three points (dorsally in the neck region, and to each side of the funnel). Mantle tissue usually thin, transparent in smaller species, sometimes studded with small tubercles. Tentacle clubs usually with four series of suckers, but occasionally two series of hooks.

**Colour:** Most species transparent (juveniles) to translucent or red (adults).

**Size:** Most species less than 40 cm mantle length. Colossal squid to 2.5 metres.

**Distribution:** Widely distributed in New Zealand waters. The largest species, the colossal squid *Mesonychoteuthis hamiltoni*, is circumpolar in Antarctic waters.

**Depth:** 200 to 1500 m.

**Similar species:** This is a diverse group of squid, and the systematics of most species occurring in New Zealand waters has not been adequately resolved.

**Phylum** Mollusca  
**Class** Cephalopoda  
**Order** Teuthoidea (Squids)  
**Family** Histioteuthidae

**Histioteuthis** spp. (Violet squids) (VSQ)

**Distinguishing features:** Mantle and arms with numerous photophores that are usually large and distinct. Mantle very small relative to head. Left eye much larger than right.

**Colour:** Mantle, head and arms coloured dark red to violet.

**Size:** To about 30 cm mantle length.

**Distribution:** Widely distributed in deepwater around New Zealand.

**Depth:** Adults recorded from 300 to 1400 m (juveniles in surface waters).

**Similar species:** 7 to 9 species of Histioteuthis in New Zealand waters. Distinguished from other families by presence of photophores on mantle and arms.

**Phylum**  Mollusca
**Class**  Cephalopoda
**Order**  Teuthoidea (Squids)
**Family**  Lepidoteuthidae

**Lepidoteuthis grimaldii** (Scaled squid) (LGR)

**Distinguishing features:** Muscular with large diamond-shaped, scale-like dermal cushions covering the mantle, and large oval fins not reaching the end of the mantle. Arm suckers typically have 7 to 9 fang-like teeth on the distal half of the inner ring. In mature males, the 8th sucker of arm 2 is very large and the sucker ring extends to form a prominent hook. Tentacles absent in adults.

**Colour:** Reddish-brown.

**Size:** To about 100 cm mantle length.

**Distribution:** Very rare. Tropical and subtropical regions of the Atlantic, Indian and Pacific Oceans.

**Depth:** Adults thought to be demersal in deepwater (to at least 1100 m).

**Similar species:** *Pholidoteuthis massyae* has small scale-like papillate tubercles and a diamond-shaped fin. *Onykia* (formerly *Moroteuthis* ingens) and *O. robsoni* have irregular fleshy warts on the mantle, hooks on the tentacle clubs, and sucker rings without teeth.


**Sepioteuthis australis** (Broad squid) (BSQ)

**Distinguishing features:** Eyes enclosed by protective membrane (nearly unique among NZ squid). Fins broad and very long exceeding 90% of mantle length; fin width less than 50% fin length, maximum fin width about midpoint, fin margin weakly angular so that the outline of fins and mantle together is approximately diamond-shaped.

**Colour:** Pink to reddish-brown.

**Size:** To about 39 cm mantle length.

**Distribution:** Coastal, North Island to northern South Island and Australia.

**Depth:** Coastal to about 100 metres.

**Similar species:** *Sepioteuthis lessoniana* has broader fins (width up to 75% of fin length, maximum fin width posterior to midpoint), and the fin margin is rounded, so that the outline of fins and mantle together is broadly oval.

**Distinguishing features:** Cylindrical body, tapering towards wide diamond-shaped fins. 2nd arms greatly elongated in males. Numerous photophores including 5 below the eye, 3 near the end of the abdomen (posterior abdominal - fused together in males), and 2 (more in males) on the tentacular stalk.

**Colour:** Reddish-brown.

**Size:** To about 19 cm mantle length (males are larger than females).

**Distribution:** Recorded southward from southern North Island, widespread throughout the Southern Ocean.

**Depth:** Mesopelagic to demersal over seamounts and the continental slope. Near surface at night to 600 m during daylight.

**Similar species:** Lampadioteuthis megaleia has 4 eye photophores and a stalked photophore at the base of each tentacle. Nematolampus regalis is known from only two males, taken from the Kermadec Islands, and has greatly elongated third arms (this may apply only to males), and 2nd arms with a single photophore.


Distinguishing features: Mantle weakly muscled; fins large to very large (50-90% mantle length), circular to oval in outline; 4th arms much longer and thicker than other arms. Tentacles long, whip-like, clubs not well differentiated; nearly entire tentacle covered in small suckers. No obvious photophores on the arms or tentacles.

Colour: Deep red (often appears black when trawl caught).

Size: To about 15-30 cm mantle length.

Distribution: Widespread in Tropical to Antarctic waters.

Depth: Mesopelagic to bathypelagic over deepwater.

Similar species: A taxonomically confused family. Three Mastigoteuthis species reported from New Zealand waters: *M. agassizii*, *M. cordiformis* (which can grow to > 100 cm mantle length, and is placed in *Idioleuthis* by some researchers), and *M. magna*. A fourth species, *M. psychrophila* is Antarctic and may reach north as far as NZ. *Chiroteuthis* species are more slender, red-purple to crimson, have a smaller fin (usually less than 50% mantle length), numerous photophores, and an expanded tentacular club with suckers in 4 rows.


**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthioidea (Squids)  
**Family**  Octopoteuthidae

**Octopoteuthis spp. (OPO)**

**Distinguishing features:** Mantle broad and weakly muscled, fins large, broad, and muscular, running most of the length of the mantle. No tentacles (except in small juveniles). Arms short and thick with 2 rows of hooks, a small dark tip photophore on the tips of all arms. 1 or 2 large tail photophores.

**Colour:** Deep red or crimson.

**Size:** To about 30 to 50 cm mantle length, but usually less than 20 cm.

**Distribution:** Widely distributed in deepwater around New Zealand, and temperate and tropical waters of all oceans.

**Depth:** From near the surface to at least 2000 m. Juveniles are found near the surface while adults are found in deepwater but they ascend at night to feed in the upper layers.

**Similar species:** Two species of *Octopoteuthis* are known from New Zealand waters: *Octopoteuthis megaptera* - pictured above (OCM), and a rare unnamed species that grows much larger (use code OPO). *Taningia danae* (TDQ) has a very large photophore on the tip of each 2nd arm and grows to 150 cm mantle length.

**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthoidea (Squids)  
**Family**  Octopoteuthidae  

*Taningia danae* (Dana octopus squid) (TDQ)

**Distinguishing features:** Mantle broad and weakly muscled, fins large, broad, and muscular running most of the length of the mantle. No tentacles (except in small juveniles). Arms short and thick with 2 rows of hooks, a large broad creamy white photophore at the tip of each 2nd arm (may be covered by eyelid-like muscular lids). Other arms with no tip photophore. No tail photophores.

**Colour:** Deep red or crimson.

**Size:** To about 170 cm mantle length.

**Distribution:** Widespread in deepwater around New Zealand, and temperate and tropical waters of all oceans.

**Depth:** From near the surface to at least 1246 m. Juveniles are found near the surface while adults are found in deepwater but they ascend at night to feed in the upper layers.

**Similar species:** *Octopoteuthis* spp. have photophores on the tips of all arms and 1 or 2 large tail photophores; most species do not exceed 20 cm in mantle length, although one rare undescribed species can reach 50 cm mantle length.

**Nototodarus gouldi** (Gould’s arrow squid) (NOG)

**Distinguishing features:** Cylindrical body, tapering towards arrow-head shaped fins. 51 or fewer pairs of suckers on arm 1 (middle left arm in dorsal view, looking towards tentacles). 14 to 16 regularly spaced teeth on largest tentacular sucker ring. Has central pocket but lacks side pocket in funnel groove. In males, both 4th (ventral) arms are hectocotylised. Hectocotylised arms with 4 to 6 enlarged proximal tubercles.

**Colour:** Reddish-brown.

**Size:** To about 40 cm mantle length.

**Distribution:** Temperate to subtropical Australian waters, around New Zealand, north of the subtropical convergence.

**Depth:** Recorded from about 50 to 700 m, most commonly around 300 m.

**Similar species:** *Nototodarus sloanii* is similar, but has 11 to 13 regularly spaced teeth on the largest tentacular sucker ring, 60 or more pairs of suckers on arm 1, and is usually found south of the subtropical convergence. Note both species can be found over Chatham Rise. Adult males can be distinguished by the structure of their hectocotylus (see figure above). Juvenile or female squid are difficult to separate to species. If uncertain use the code SQU.

**References:**

**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthoidea (Squids)  
**Family**  Ommastrephidae

**Nototodarus sloanii** (Sloan’s arrow squid) (NOS)

**Distinguishing features:** Cylindrical body, tapering towards arrow-head shaped fins. 60 or more pairs of suckers on arm 1 (middle left arm in dorsal view, looking towards tentacles). 11 to 13 regularly spaced teeth on largest tentacular sucker ring. Has central pocket but lacks side pocket in funnel groove. In males, both 4th (ventral) arms are hectocotylised. Hectocotylised arms with 9 to 11 enlarged proximal tubercles.

**Colour:** Reddish-brown.

**Size:** To about 40 cm mantle length.

**Distribution:** South of the subtropical convergence on the east coast of the South Island, and east to the Chatham Islands.

**Depth:** 30 to 800 m. Most commonly around 300 m.

**Similar species:** *Nototodarus gouldi* is similar, but has 14 to 16 regularly spaced teeth on the largest tentacular sucker ring, 51 or fewer pairs of suckers on arm 1, and is usually found north of the subtropical convergence. Note both species can be found over Chatham Rise. Adult males can be distinguished by the structure of their hectocotylus (see figure above). Juvenile or female squid are difficult to separate to species. If uncertain use the code SQU.


**Phylum**  Mollusca

**Class**  Cephalopoda

**Order**  Teuthoidea (Squids)

**Family**  Ommastrephidae

---

**Ommastrephes spp. (Ommastrephid squid) (OMM)**

**Distinguishing features:** Mantle robust and not drawn out into a pointed tail. Has a central pocket and several side pockets in the funnel groove. One or two small, round, light organs near ink sac in some species, but without pinkish luminous stripe on ventral midline. *Ommastrephes bartrami* (RSQ) has a long golden or silvery stripe along the ventral midline. Males with one 4th (ventral) arm hectocotylised, but not both; hectocotylus with 4 pairs of proximal tubercles (suckers), and distal tubercles are not pronounced.

**Colour:** Reddish-brown.

**Size:** To about 30 cm mantle length in males, 40 cm in females.

**Distribution:** Worldwide in subtropical and temperate oceanic waters except the south-east Pacific, uncommon off the east coast of New Zealand.

**Depth:** From the surface to about 1400 m.

**Similar species:** *Todarodes* and large *Nototodarus* spp. are similar to *Ommastrephes* spp. but lack photophores near the ink sac and a central pocket in the funnel groove.

**References:**

**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthoidea (Squids)  
**Family**  Ommastrephidae

**Todarodes filippovae (Todarodes squid) (TSQ)**

**Distinguishing features:** Long, narrow, muscular mantle. Tentacles very large and robust, with expanded clubs over most of their length. 12 to 14 transverse rows of four suckers on widest part of tentacle, each with 7 to 13 sharp teeth. Short arms with 10 sharp teeth on sucker rings. Photophores not present. In males, the 4th right arm is hectocotylised (modified).

**Colour:** Deep red or carmine.

**Size:** To about 50 cm mantle length, more commonly between 20 and 40 cm.

**Distribution:** Southern North Island south, circumpolar in the Southern Ocean.

**Depth:** About 300 to 1200 m.

**Similar species:** Todarodes angolensis is similar, but tentacles and clubs narrower; tentacle club with 14 to 18 transverse rows of four suckers, with the rings on suckers in the central portion of the club each having 13 to 16 sharp-pointed teeth.

Phylum: Mollusca
Class: Cephalopoda
Order: Teuthoidea (Squids)
Family: Onychoteuthidae

**Onyzia (formerly Moroteuthis) ingens (Warty squid) (MIQ)**

**Distinguishing features:** Mantle and dorsal head surface covered with irregular fleshy warts; strongly muscled. Fins diamond-shaped, broad, covering around 45% of the mantle length; tail not drawn out beyond fins. Two series of hooks on tentacle clubs; inner rings of arm suckers smooth (without teeth).

**Colour:** Light reddish-brown to pale orange.

**Size:** To about 55 cm mantle length.

**Distribution:** Widespread in New Zealand and sub-Antarctic waters.

**Depth:** Most commonly between 250 and 900 m.

**Similar species:** Can be confused with Onyzia (formerly Moroteuthis) robsoni but *O. robsoni* has arrowhead-shaped fins with a long tail, well-separated round warts on the mantle, smooth skin on the dorsal head surface, and grows to a larger size (to 90 cm ML). If unsure, use the generic code WSQ.

**Phylum**  Mollusca  
**Class**  Cephalopoda  
**Order**  Teuthoidea (Squids)  
**Family**  Onychoteuthidae

### Onykia (formerly Moroteuthis) robsoni (Warty squid) (MRQ)

**Distinguishing features:** Mantle surface covered with round, well-separated fleshy warts; surface of head smooth. Fins arrowhead-shaped, drawn out posteriorly into a long tail. Two series of hooks on tentacle clubs; inner rings of arm suckers smooth (without teeth).

**Colour:** Light reddish-brown to pale orange.

**Size:** To about 90 cm mantle length.

**Distribution:** Widespread in New Zealand and sub-Antarctic waters.

**Depth:** Most commonly between 700 and 1100 m.

**Similar species:** Can be confused with Onykia (formerly Moroteuthis) ingens but *O. ingens* has diamond-shaped fins (not drawn out into a tail), irregular warts on the mantle and dorsal head surface, and grows to about 55 cm mantle length. If unsure, use the generic code WSQ.

**Distinguishing features:** Mantle muscular, with small round or polygonal scale-like papillae/warts covering the mantle in adults (papillae are star-shaped in juveniles). Fin diamond-shaped, reaching the end of the mantle; outer skin often abraded away, leaving striking white musculature. Arm suckers have 10 to 15 sharp teeth on the distal half of the inner ring. Tentacle club with suckers only (no hooks).

**Colour:** Reddish-brown.

**Size:** To about 60 cm mantle length.

**Distribution:** Circumglobal in subtropical to cold temperate waters.

**Depth:** Recorded from about 50 to 450 m.

**Similar species:** *Lepidoteuthis grimaldii* has large diamond-shaped, scale-like dermal cushions, a large oval fin with a distinct tail, and lacks tentacles in sub-adults and adults. *Onykia* (formerly *Moroteuthis* *ingles* and *O. robsoni* have irregular fleshy warts on the mantle, arm sucker rings without teeth, and two rows of hooks on the tentacle clubs.


**Phylum** Mollusca  
**Class** Cephalopoda  
**Order** Sepiolida (Bobtail squids)  
**Family** Sepiadariidae  

**Sepioloida spp. (Bobtail squid) (SSQ)**

**Distinguishing features:** Mantle short, broad, rounded posteriorly, with large, well separated, ear-like fins extending most of mantle length. Mantle fused to head dorsally; no ventral shield or large photophore on ink sac.

**Colour:** Transparent, dorsal surface covered with numerous golden to red photophores.

**Size:** To about 7 cm mantle length.

**Distribution:** Widespread around New Zealand, and the South Pacific Ocean.

**Depth:** To about 500 m.

**Similar species:** There are 3 species of Sepiolidea in New Zealand waters. All are benthic and only *S. pacifica* (SQP), a small inshore species, is described. There are also 2 similar-looking pelagic bobtail squids, but both have a prominent ventral shield and a large photophore on the ink sac. In *Heteroteuthis dagamensis* (HES) the dorsal mantle is not fused to the head, while in *Stoloteuthis maoria* (IRM) the dorsal mantle is fused to the head. If uncertain about the identity of the pelagic species use the code SEQ (Sepiolid squid).

Distinguishing features: Mantle short, broad, rounded posteriorly, with large, well separated, ear-like fins extending most of mantle length. Mantle not fused to head dorsally; ventral shield spans about 50% of ventral mantle surface; large photophore on ink sac. Males with several enormously enlarged suckers on 3rd arms.

Colour: Dorsal mantle and head golden to red, transparent or silvery ventrally, photophore luminescent.

Size: To about 2 cm mantle length.

Distribution: Widespread over deepwater around New Zealand, and throughout the Southern Ocean.

Depth: Pelagic over deepwater.

Similar species: In Stoloteuthis maoria the dorsal mantle is fused to the head. If uncertain use the code SEQ (Sepiolid squid). Sepioloidea species (SSQ) are benthic and lack a ventral shield and large photophore on ink sac.

**Distinguishing features:** Mantle short, broad, rounded posteriorly, with large, well separated, ear-like fins extending most of mantle length. Mantle fused to head dorsally; ventral shield spans about 80% of ventral mantle surface, large photophore on ink sac. Males with several enlarged suckers on 2nd arms.

**Colour:** A silver band around lateral and posterior mantle and dorsally from eyes to tips of 2nd arms, prominent blue fringe on ventral shield, photophore luminescent.

**Size:** To about 2 cm mantle length.

**Distribution:** Widespread over deepwater around New Zealand, and the eastern Pacific.

**Depth:** Pelagic over deepwater.

**Similar species:** In *Heteroteuthis dagamensis* the dorsal mantle is not fused to the head. If uncertain use the code SEQ (Sepiolid squid). *Sepioleidea* species (SSQ) are benthic and lack a ventral shield or large photophore on ink sac.

**Malluvium calcareum (Cap limpet) (MCC)**

**Distinguishing features:** Cap-shaped, hooked apex, no pronounced ledge inside. Typically smaller individuals on or beside larger ones (smallest individuals are males: sex changes to female with increasing size).

**Colour:** White.

**Size:** Total height up to 20 mm.

**Distribution:** Common throughout the New Zealand EEZ living clustered around apertures on outsides of shells of gastropods occupied by hermit crabs. Occasionally found attached to shells of living gastropods.

**Depth:** 110 to 1019 m, though rarely taken shallower than 200 m.

**Similar species:** Capulus neozelanicus (larger and lives exclusively on Acesta species).

**Phylum** Mollusca  
**Class** Gastropoda  
**Order** Littorinimorpha  
**Family** Ranellidae (tritons)

**Fusitriton magellanicus (FMA)**

**Distinguishing features:** Shell sculptured with fine longitudinal and spiral ribs bearing small, rounded nodules. Base of aperture extending as a twisted canal of moderate length. Fresh specimens with a rather thick, yellowish brown, furry outer skin (periostracum).

**Colour:** Shell whitish, typically with yellowish brown, furry outer periostracum skin; aperture white or lavender within.

**Size:** Total height up to 120 mm.

**Distribution:** Throughout the New Zealand region.

**Depth:** 300 to 1000 m.

**Similar species:** This species is also known in the literature as *Fusitriton laudandum* or *F. retiolus*.


**Aeneator recens (AER)**

- **Distinguishing features:** Shell covered with well developed, rather widely spaced spiral cords, and with longitudinal ribs of variable development; no nodules where the ribs cross one another. Base of aperture extended as a rather straight but oblique canal of moderate length.

- **Colour:** Shell pinkish white.

- **Size:** Total height up to 72 mm.

- **Distribution:** Eastern North and South Islands, Stewart Island, and Chatham Rise.

- **Depth:** 300 to 700 m.

- **Similar species:** Aeneator otagoensis. Note Aeneator benthicola is the same species.

**Phylum** Mollusca  
**Class** Gastropoda  
**Order** Neogastropoda  
**Family** Buccinidae (whelks)

### Austrofusus glans (Knobbed whelk) (KWH)

**Distinguishing features:** Shell sculptured with fine spiral ribs and rounded longitudinal ribs, and 2 rows of rounded or conical nodules (1 on middle of each turn on spire, 2 or 3 on last turn). Base of aperture extending as a short, twisted canal. Fresh specimens with a thin, yellowish brown or blackish outer periostracum skin (see image on right).

**Colour:** Shell whitish or yellowish brown beneath (fresh specimens) thin, outer yellowish-brown or blackish periostracum skin.

**Size:** Total height up to 93 mm.

**Distribution:** North, South, Stewart, and Chatham Islands.

**Depth:** 0 to 420 m.

**Similar species:** None.

**Penion chathamensis (PCH)**

**Distinguishing features:** Shell higher than wide, spire about as high as aperture.Externally covered with numerous, fine, irregular spiral threads; early whorls additionally with strong, rounded longitudinal ribs. Canal of moderate length. Aperture smooth within.

**Colour:** Exterior dirty white or yellowish. Interior of aperture polished white, rim sometimes yellowish.

**Size:** Total height up to 240 mm.

**Distribution:** North-eastern South Island and Chatham Rise.

**Depth:** 112 to 420 m.

**Similar species:** *Penion benthicolus*, *P. cuvierianus*, *P. fairfieldae*, *P. jeakingsi*, *P. ormesi*, *P. sulcatus*.

**Phylum**  Mollusca
**Class**  Gastropoda
**Order**  Neogastropoda
**Family**  Turbinellidae

**Coluzea mariae** (Pagoda shell) (CMR)

**Distinguishing features:** Conical spire sculptured with longitudinal and spiral ribs, with small, sharp, conical nodules where the ribs cross. Base of aperture extended as a very long, straight canal.

**Colour:** Shell typically whitish or greyish white.

**Size:** Total height up to 98 mm.

**Distribution:** Eastern South Island, Chatham Rise, and Auckland Islands.

**Depth:** 180 to 700 m.

**Similar species:** Coluzea spiralis, C. wormaldi, C. altocanalis, Columbarium veridicum.

Phylum: Mollusca  
Class: Gastropoda  
Order: Neogastropoda  
Family: Turridae (turrids)

**Comitas onokeana vivens (COV)**

**Distinguishing features:** Shell high and narrow, spire higher than aperture. On spire, upper third of each whorl smooth and concave, lower third of each whorl with oblique, rounded ribs. Upper part of aperture deeply notched. Aperture smooth within. Canal short.

**Colour:** Chalky or greyish white.

**Size:** Total height up to 75 mm.

**Distribution:** Palliser slope, eastern South Island, Chatham Rise and Campbell Plateau.

**Depth:** 420 to 1000 m. On soft bottoms.

**Similar species:** None in Guide.

**Phylum**  Mollusca
**Class**  Gastropoda
**Order**  Neogastropoda
**Family**  Volutidae (volutes)

*Alcithoe larochei* (ALL)

**Distinguishing features:** Typically no nodules on the spire. Broad notch at base of aperture; 5 or 6 rounded plaits on wall of left (inner) side of the aperture.

**Colour:** Whitish shell, typically more or less covered with blackish skin.

**Size:** Total height up to 165 mm.

**Distribution:** Eastern North Island and northeastern South Island.

**Depth:** 200 to 650 m.

**Similar species:** *Alcithoe jaculoides*, *A. arabica*, *A. fissurata*, *A. benthicola*, *A. fusus*, *A. wilsonae*.

Distinguishing features: Shell narrowly elongate. Typically with elongate nodules on the spire, though some specimens are completely smooth. Narrow notch at base of the aperture; 5 or 6 rounded plaits on wall of left (inner) side of the aperture.

Colour: Shell uniform cream or chalky white; or yellowish with dark, irregular zigzag colour pattern.

Size: Total height up to 130 mm.

Distribution: Chatham Rise, eastern South Island, Snares Shelf and Campbell Plateau.

Depth: 124 to 585 m. On soft bottoms.


References: Bail, P.; Limpus, A. (2006). The recent volutes of New Zealand, with a revision of the genus Alcithoe
**Phylum**  
Mollusca

**Class**  
Gastropoda

**Order**  
Neogastropoda

**Family**  
Volutidae (Volutes)

---

**Provocator mirabilis** (Golden volute) (GVO)

**Distinguishing features:** Highly polished and smooth. No nodules on the spire. Small notch at base of aperture; no plaits on wall of left (inner) side of the aperture.

**Colour:** Typically orange, occasionally white.

**Size:** Total height up to 160 mm.

**Distribution:** Eastern North and South Islands, Chatham Rise, and Auckland Islands.

**Depth:** 250 to 790 m.

**Similar species:** Alcithoe spp.

**Phylum**  Mollusca  
**Class**  Gastropoda  
**Order**  Nudibranchia (nudibranchs)  
**Family**  Arminidae, Dendrodorididae, Dorididae, Facelinidae, etc  

**Distinguishing features:** The soft fleshy body can be round or elongate and lacks any protective shell. The deep sea species *Heterodoris antipodes* (see dorsal and ventral views of holotype, left image) has a broad heart-shaped mantle, the mantle skirt running from the outer base of each rhinophore (chemosensory tentacle) down each side of the body to join at a point in the posterior midline. There are scattered rounded tubercles over the mantle and a series of quite large tapering papillae. *Doriopsilla* sp. (middle image) and Dorididae have a dorsum covered with pustules, *Doris wellingtonensis* (top right image), is the largest dorid found in shallow waters of NZ. Feathery projections are gills. Some nudibranchs bear numerous smooth tapering projections called cerata (see *Jason mirabilis* right image). This species is not usually taken in trawls, but the image is included to highlight morphological differences.

**Colour:** Red, yellow, cream, pink, orange, green, blue, spotted, white, purple, some brilliantly so, but lose colour when preserved.

**Size:** Total length. Total extended crawling length from 3 mm to 300 mm.

**Distribution:** Coastal regions of New Zealand. *H. antipodes* recorded on the slope of the Tasman Basin, west coast South Island. *Doriopsilla* sp. found on the Chatham Rise.

**Depth:** Intertidal to deepwater. *H. antipodes* found in 1760 to 1800 m.

**Similar species:** Could be mistaken for sea cucumbers, but can be distinguished by their strong, muscular snail-like foot and feathery gills.


Phylum Mollusca
Class Gastropoda
Order Vetigastropoda
Family Calliostomatidae (top shells)

**Calliostoma selectum (Maurea) (CSS)**

**Distinguishing features:** Shell top-shaped, edge angulate, sculptured with narrow spiral threads covered with many small nodules.

**Colour:** Spire pinkish white or pale yellowish brown, with yellowish brown and white spots and streaks on spiral threads. Base (aperture side) whitish. Aperture pearly within.

**Size:** Diameter up to 70 mm.

**Distribution:** North, South, Stewart and Chatham Islands.

**Depth:** 27 to 274 m.

**Similar species:** Calliostoma waikanae, C. pellucidum, C. turnerarum

Phylum: Mollusca  
Class: Gastropoda  
Order: Vetigastropoda  
Family: Calliostomatidae (top shells)

**Calliostoma turnerarum** (CTN)

**Distinguishing features:** Shell top-shaped, edge angulate, sculptured with narrow spiral threads covered with many small nodules.

**Colour:** Spire yellowish brown or light orange brown with reddish brown and white spots and streaks. Base (aperture side) whitish with yellowish to reddish brown streaks. Aperture pearly within.

**Size:** Diameter up to 85 mm.

**Distribution:** Three Kings Islands, northeastern North Island as far south as Cape Runaway, and off Ninety Mile Beach.

**Depth:** 230 to 530 m.

**Similar species:** Calliostoma selectum, C. waikanae.

**Phylum**  Mollusca
**Class**  Polyplacophora (chitons)
**Order**  
**Family**  (Chiton) (CHT)

**Distinguishing features:** Symmetrical with an ovoid body and no eyes or tentacles. The shell is divided into 8 overlapping plates. Will be attached to some form of hard substrate.

**Colour:** Generally dull brown or greenish, but may be red or brighter colours.

**Size:** From 20 to 110 mm.

**Distribution:** Worldwide.

**Depth:** Intertidal to deepwater.

**Similar species:** A generic image of a chiton is shown. There are several genera found in the New Zealand region.

Phylum ARTHROPODA

Isopods, amphipods, mysids, prawns, lobsters, crabs, barnacles, sea spiders

Shane Ahyong, John Booth, Niel Bruce, Anne-Nina Loerz, Reyn Naylor, Kareen Schnabel, Rick Webber
Phylum

**ARTHROPODA**

Isopods, amphipods, mysids, prawns, lobsters, crabs, barnacles, sea spiders

The *Arthropoda* (Greek *arthron*, joint, *podos*, foot) is the largest phylum of life. About 80% of all described species of animal life are arthropods — jointed-limb animals. On land, they are best represented by insects, arachnids (spiders, mites, and their relatives), myriapods (centipedes and millipedes), and some crustacean groups (woodlice and soil hoppers). In the sea, the **subphylum Crustacea** dominates, both on the seafloor and in the plankton. Marine insects are found intertidally and in shallow coastal waters but not in the deep sea. Sea spiders (*Pycnogonida*) are an ancient group of marine creatures that are not closely related to true spiders. *Pycnogonids* range from the intertidal to the deep sea.

The basic body plan of head, thorax, and abdomen is obvious in creatures like prawns and mantis shrimps. Most body segments have jointed limbs. These are primitively forked in many crustaceans but some limbs are simple (like the walking legs of crabs). Marine crustaceans vary enormously in size from microscopic parasites a tenth of a millimeter in size to giant crabs, lobsters, and sea lice (isopods) up to half a metre in length or breadth and weighing up to 20 kilograms, and the body regions can be highly modified. Calculations of the number of named living species of Crustacea range from approximately 50,000 to 67,000. Estimates of the potential number of species start from as many as ten times to one hundred times that number.

**Subphylum Crustacea**

**Classes Maxillopoda and Malacostraca**

Five or six classes of the subphylum Crustacea are recognised worldwide. Only the cave-dwelling Remipedia have not been found in New Zealand waters. The New Zealand fauna currently stands at about 2,800 species, more than 500 of which have not yet been formally identified or described. The major classes likely to be represented in deep-sea bycatch include the Maxillopoda (e.g., barnacles) and Malacostraca. There are several major orders of Malacostraca found in and on the deep seafloor, including Isopoda ("same feet", e.g., sea lice), Amphipoda ("both feet", e.g., hoppers), and Decapoda ("ten feet", e.g., crabs, shrimps, prawns). Much rarer are large deep-sea species of mantis shrimps (Stomatopoda). Cumacea (comma shrimps) and Tanaidacea (tanaids), though sometimes common, are quite small and likely to be overlooked.

**Subphylum Chelicerata**

**Class Pycnogonida**

These slender creatures are all legs, with a short, thin body. Most have 8 legs; deep-sea species have 10 (one New Zealand species) or 12 legs. There are 83 species in the EEZ, associated with hydroids, sea anemones, or bryozoans, from which they suck body fluids using a tube-like proboscis.
Shrimp and prawn species

Natant decapods are similar in appearance to crustaceans in two other orders; the Euphausiacea (euphausids) and Mysidacea (mysids). The most obvious characters unique to natant decapods, to mysids, or to euphausids are labelled — bold labels indicate the most distinctive character of each.

Generalised crab diagram and terms used in this guide


Dorsal (top) view of carapace and legs

Ventral (bottom) view
**Phylum**  Arthropoda (subphylum Crustacea)

**Class**  Crustacea

**Order**  Amphipoda

**Family**  Eurytheneidae

---

**Eurythenes gryllus (Amphipod) (EUG)**

**Distinguishing features:** Compact body, large size. Mouthparts form a quadrate bundle. The first article of the second antenna is swollen. First side plate (coxa 1) is strongly shortened and partly covered by the second side plate (coxa 2). The first leg, gnathopod 1, is short and poorly subchelate. Telson is elongated and deeply cleft.

**Colour:** Adults red, juveniles often white.

**Size:** Total length up to 100 mm.

**Distribution:** Widespread in New Zealand region.

**Depth:** 180 to 6500 m.

**Similar species:** Other species of *Eurythenes*.

**References:**


Phylum Arthropoda (subphylum Crustacea)
Class Malacostraca
Order Decapoda
Family Atelecyclidae

Pteropeltarion novaezelandiae (Pteropeltarion crab) (PNO)

**Distinguishing features:** Two long, sharp lateral spines on each side of carapace. Carapace pentagonal; surface granular. Longish parallel-sided rostrum of 2 larger lateral spines and 1 smaller middle spine.

**Colour:** Legs white, carapace and chelae white to greyish blue.

**Size:** Carapace width to about 25 mm including lateral spines, about 11 mm, excluding spines.

**Distribution:** Around New Zealand and the Campbell Plateau.

**Depth:** About 500 to 900 m.

**Similar species:** The lack of a spiny margin to the carapace distinguish this genus from Trichopeltarion.


**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Atelecyclidæ

---

*Trichopeltarion fantasticum* (Frilled crab) (TFA)

**Distinguishing features:** Carapace broadly oval, with a long lateral spine (bearing smaller spines) on each lateral edge. Anterior edge of carapace frilled with compound spines of 3 to 4 smaller spines. Widely spaced, rounded tubercles on surface of carapace, and raised groups of tubercles near back. Eyes red, chelae very large in adult males.

**Colour:** Legs white, carapace and chelae white to greyish blue.

**Size:** Carapace width to 60 mm (excluding spines).

**Distribution:** Around New Zealand and on the Chatham Rise.

**Depth:** Usually 70 to 730 m, occasionally as shallow as 15 m south of Cook Strait.

**Similar species:** No similar species in New Zealand waters.


**Phylum**  
Arthropoda (subphylum Crustacea)

**Class**  
Malacostraca

**Order**  
Decapoda

**Family**  
Chirostylidae

**Gastroptychus spp. (Squat lobsters) (GAT)**

**Distinguishing features:** Greatly elongate and slender limbs, spiny carapace and limbs, very short, spiniform (not triangular) rostrum. Abdomen folded up against itself and telson (middle appendage of tail) with transverse groove (junction), see *Uroptychus* image, next page.

**Colour:** Of the two known species in New Zealand, *G. rogeri* (the ‘football crab’), right image, is bright red with transverse white stripes on the carapace, *G. novaezelandiae*, left image, is light pink with red bands on limbs.

**Size:** Carapace length from 15 to 50 mm. *G. rogeri* at the larger and *G. novaezelandiae* at the smaller end of this range.

**Distribution:** Southwest Pacific.

**Depth:** 264 to 1200 m.

**Similar species:** Galatheids and other chirostylids.

**References:**  

**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Chirostylidae

### **Uroptychus spp. (Squat lobsters) (URP)**

**Distinguishing features:** Crab-like, chelipeds greatly elongate and slender, abdomen folded up against itself. Telson (middle appendage of tail) with a transverse groove.

**Colour:** Light pink to red.

**Size:** Carapace length up to 20 mm. Size varies between species.

**Distribution:** Worldwide.

**Depth:** 100 to 5000 m.

**Similar species:** Galatheids and other chirostylids.

**References:**  

**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Galatheidae

---

**Munida spp. (Squat lobster) (MNI)**

**Distinguishing features:** Crab-like, chelipeds greatly elongate and slender, abdomen folded up against itself. Telson (middle appendage of tail) without transverse groove (squat lobsters have a transverse groove), without sutures i.e. un-notched, and is made of multiple scaly plates. Image above of the endemic *Munida gracilis* (MGA).

**Colour:** Red to brown. Also orange, pink, sometimes striped.

**Size:** Carapace length up to 50 mm depending on species.

**Distribution:** Worldwide. *Munida gracilis* around New Zealand, Challenger Plateau and Chatham Rise.

**Depth:** 0 to 2000 m. Similar species: Chirolsylids and other galatheid species.

**References:**
**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Geryonidae

**Chaceon bicolor** (Red crab) (CHC)

**Distinguishing features:** Large. Distinctive carapace shape with 3 to 5 spines on each lateral edge of carapace. Tips of walking legs laterally flattened. Two-tone red-purple and tan colouring in most specimens.

**Colour:** Apart from the branchial regions which are yellowy tan, carapace red-purple to yellowy tan. Legs coloured similarly to carapace.

**Size:** Carapace width in males up to 200 mm, 125 mm in females.

**Distribution:** Japan to Australia and New Zealand. Off northern North Island, south to Chatham Rise.

**Depth:** 800 to 1100 m.

**Similar species:** Chaceon yaldwyni is almost indistinguishable, but is a rarely caught species from the eastern Chatham Rise. If in doubt, call it Chaceon sp.; Carcinoplax species look similar, but much smaller (< 40 mm carapace width), tips of palms are black.


**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Goneplacidae

---

**Pycnoplax victoriensis** (Two-spined crab) (CVI)

---

**Distinguishing features:** Smooth polished carapace, wider than long. Front of carapace between eyes flattish. Long, thin legs. Short, sharp lateral spines on edge of carapace. Large inner and smaller outer spine on inflated carpus. Long, curved, crossed fingers, dark brown inside. This species was previously known as *Carcinoplax victoriensis*.

**Colour:** Carapace and chelipeds pale pinkish white with dark yellow edge on front of carapace, and lighter yellow on anterior surface and carpi. Walking legs pale pink with wide dark red bands near the middle.

**Size:** Carapace width to nearly 40 mm in males, nearly 30 mm in females.

**Distribution:** Around New Zealand and on the Chatham Rise.

**Depth:** 125 to 765 m.

**Similar species:** *Pycnoplax meridionalis* is similar but has two large spines behind the eye on the edge of carapace, shorter, thinner, and black fingers, no spines on edge of carpus, and shorter and thicker fingers.

**References:**
Phylum: Arthropoda (subphylum Crustacea)
Class: Malacostraca
Order: Decapoda
Family: Goneplacidae

*Neommatocarcinus huttoni* (Policeman crab) (NHU)

**Distinguishing features:** Very long eyestalks. Carapace wider at the front than back, and wider than long. A strong lateral spine on each side at the front of the carapace. Chelipeds long in mature specimens.

**Colour:** Carapace a yellowish reddish orange, gastric region darker. Chelipeds and legs mainly creamy white, but red, orange, yellow, and purple in places.

**Size:** Carapace width to about 40 mm.

**Distribution:** Around New Zealand and the Chatham Islands.

**Depth:** As shallow as about 20 m, more commonly between about 300 and 600 m.

**Similar species:** No other species of this genus known from New Zealand waters.

**References:**


**Dagnaudus petterdi (Antlered crab) (DAP)**

**Distinguishing features:** Antler-like horns to either side above eyes. Sharp, simple rostrum is a single spine. Fingers with black tips. Palms bulbous in adult males. Long, thin walking legs. Last pair of legs with hooks, normally held above carapace.

**Colour:** Carapace and legs pale yellowish white, mottled with red. Red around joints, and elsewhere on legs.

**Size:** Carapace width to 75 mm.

**Distribution:** East coast, Northland to Fiordland and Snares Islands. Locally common (e.g., off Banks Peninsula); also Australia and New Caledonia.

**Depth:** 180 to 540 m.

**Similar species:** Homola orientalis and Yaldwynopsis spinimana are similar in overall appearance, but lack antlers.

**References:**


Phylum Arthropoda (subphylum Crustacea)
Class Malacostraca
Order Decapoda
Family Homolidae

Homola orientalis (Carrier crab) (HOO)


Colour: Carapace and legs pale yellowish white, mottled with red.

Size: Carapace width to 30 mm.

Distribution: Indo-West Pacific. One specimen recorded from the Bay of Plenty.

Depth: About 40 to 550 m.

Similar species: Antlered crab (Dagnaudus petterdi) is similar, but has antler-like horns to either side above eyes. Yaldwynopsis spinimana is similar, but has rostrum of only 1 spine and sharp, coarse, conical spines at front and sides of carapace.


**Yaldwynopsis spinimana** (Yaldwyn’s crab) (YSP)

**Distinguishing features:** Carapace urn shaped; sharp, coarse, conical spines at front and sides.

**Colour:** Carapace and legs uniform bright orange, tips of chelipeds black. (Specimen in photo preserved and faded.)

**Size:** Carapace width to about 40 mm.

**Distribution:** Off Three Kings Islands. Only two specimens caught in New Zealand waters.

**Depth:** 90 to 100 m.

**Similar species:** Antlered crab (*Dagnaudus petterdi*) is similar, but has antler-like horns to either side above the eyes. *Homola orientalis* is similar, but has a two-spined rostrum lacks narrow sharp spines on chelipeds and front half of carapace.


**Platymaia maoria** (Dell’s spider crab) (PTM)

**Distinguishing features:** Carapace nearly round from above. Rostrum of 3 short, strong spines. A few stubby spines on carapace. Palms short and bulbous in adult males. Walking legs flattened with rows of sharp spines along front edges of front 3 pairs. Legs with red bands on peach-white.

**Colour:** Peach coloured, red bands on legs.

**Size:** Carapace width to 60 mm.

**Distribution:** North of Cape Brett to northeast of Poor Knights Islands; Challenger Plateau; also eastern Australia.

**Depth:** 270 to 950 m.

**Similar species:** *Vitjazmaia latidactyla* is similar, but carapace more oval in profile, 3 spines of rostrum and spine outside eye much longer, narrower, and sharper. Carapace and legs with many tiny, sharp spines red-orange spines and less colour on carapace and legs.

Phylum: Arthropoda (subphylum Crustacea)
Class: Malacostraca
Order: Decapoda
Family: Inachidae

**Vitjazmaia latidactyla** (Deep-sea spider crab) (VIT)

**Distinguishing features:** Carapace nearly round from above, oval in profile. Trident-like rostrum with strong, sharp middle spine (see below). A long, narrow, sharp spine outside each eye. Walking legs very long and flat, covered with tiny, sharp, curved spines. Long, sharp spines on second pair of legs. Numerous, small sharp spines on carapace. Palms heavier and tapered in male.

**Colour:** Juveniles almost unpigmented. Spines on rostrum and carapace bright red-orange. Abdomen and ends of palms light red-orange in males. Fresh specimens often blue-grey due to fine deposits of bottom sediment on small setae of carapace and legs.

**Size:** Carapace width to 80 mm in males, 75 mm in females.

**Distribution:** Western Indian Ocean to New Zealand. Wanganella Bank, east and west of North Island, Challenger Plateau, Chatham Rise, and Chatham Islands.

**Depth:** 500 to 1300 m.

**Similar species:** *Platymaia maoria* is similar, but with red and white bands on legs and eyes relatively larger. 3 spines of rostrum shorter and stouter and spine outside eye stubby. Palms short and bulbous in adult males and carapace less oval in profile without covering of tiny sharp spines on carapace and legs.

Lithodes aotearoa (New Zealand king crab) (LAO)

**Distinguishing features:** Large. Distinctive rostrum, with 2 strong lateral spines before the forked tip. Rostrum much more pronounced in juveniles. Short, stubby spines on carapace and legs in adults, very long, sharp spines on carapace and legs in juveniles and early adults. Marginal and central plates of second abdominal somite fused (see similar species section). Last pair of legs reduced and hidden. Adult *L. aotearoa* were previously referred to as *L. murrayi* (LMU). Juvenile and early adult *L. aotearoa* were previously referred to as *L. cf. longispinus* (LLT).

**Colour:** Juveniles uniformly deep red. Adults dark wine red to brick red with paler patches.

**Size:** Carapace width to 20 cm+ in males, less in females.

**Distribution:** Southern Ocean, around New Zealand, more commonly off Kaikoura Peninsula, East Cape, west coast of Stewart Island, Solander Island, Wellington, on the Chatham Rise, the Bounty Plateau, the Challenger Plateau, and in Foveaux Strait.

**Depth:** 250 to 1500 m.

**Similar species:** The king crab *L. robertsoni* is similar, but has 3 separate plates in abdominal somite 2 (the 2nd segment on the abdomen). In *L. aotearoa* the 2 marginal plates on abdominal somite 2 are fused with the central plate. See sheet for *L. robertsoni*. The second abdominal somite is the large plate visible below the back of the carapace (the first somite is tucked under the carapace). *L. robertsoni* also has 7 or 8 spines on the posterior branchial margin. *L. aotearoa* has 8 to 12 spines on the posterior branchial margin. The legs and rostrum are generally more slender in *L. robertsoni* than in *L. aotearoa*.

**Phylum**  
Arthropoda

**Class**  
Malacostraca

**Order**  
Decapoda

**Family**  
Lithodidae

---

**Lithodes robertsoni** (Robertson’s king crab) (LRO)

**Distinguishing features:** Large. Distinctive rostrum, with 2 strong lateral spines before the forked tip. Carapace in adults with slender spines, sharp spines on legs. Marginal and central plates of second abdominal somite separate (see similar species section). Last pair of legs reduced and hidden.

**Colour:** Uniformly deep red.

**Size:** Carapace width to about 12 cm.

**Distribution:** Around New Zealand, found on the Challenger Plateau, the Chatham Rise, the Bounty Trough, and near the Snares.

**Depth:** 900 to 1300 m.

**Similar species:** The king crab *L. aotearoa* is similar, but the 2 marginal plates on abdominal somite 2 (the 2nd segment on the abdomen) are fused with the central plate. *L. robertsoni* has 3 separate plates in abdominal somite 2. The second abdominal somite is the large plate visible below the back of the carapace (the first segment is tucked under the carapace). *L. aotearoa* also has 8 to 12 spines on the posterior branchial margin. *L. robertsoni* has 7 or 8 spines on the posterior branchial margin. The legs and rostrum are generally more slender in *L. robertsoni* than in *L. aotearoa*.

**Neolithodes brodiei** (Brodie’s king crab) (NEB)

**Distinguishing features:** Carapace pear-shaped. Front of carapace bearing 3 forward-pointed spines (above). Carapace and legs very spiny, spines much longer in juveniles. Last pair of legs reduced and hidden.

**Colour:** Typically uniform brick to bright red.

**Size:** Carapace width to 180 mm.

**Distribution:** Widely distributed from north of Three Kings Islands to Campbell Plateau.

**Depth:** 800 to 1100 m.

**Similar species:** The king crabs *Lithodes aotearoa* and *L. robertsoni* are similar, but have
- single rostrum with forked tip
- 2 lateral spines on rostrum before tip.

**References:**


**Paralomis dawsoni** (Warty king crab) (PDA)

**Phylum**  
Arthropoda (subphylum Crustacea)

**Class**  
Malacostraca

**Order**  
Decapoda

**Family**  
Lithodidae

**Paralomis dawsoni** (Warty king crab) (PDA)

- **Rostrum with 3 spines**
- **Warts on carapace**
- **Last pair of legs reduced and hidden**

**Distinguishing features:** Carapace broadly pear-shaped to hexagonal; surface warty. Short rostrum of 3 spines. Last pair of legs reduced and hidden.

**Colour:** Pinky red.

**Size:** Carapace width to 140 mm.

**Distribution:** North, east, and west of North Island, particularly Bay of Plenty; also New Caledonia.

**Depth:** About 1000 m.

**Similar species:** The king crab *Paralomis zealandica* is similar in shape, but has uniform covering of short, strong, sharp spines, not warts.

**References:**
**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Lithodidae

**Paralomis zealandica** (Prickly king crab) (PZE)

**Distinguishing features:** Carapace pear-shaped. Rostrum of 3 short, strong, sharp spines. Juveniles with longer curved spines; adult covered with short upright, strong spines (including abdomen). Last of legs reduced and hidden.

**Colour:** Red on creamy white.

**Size:** Carapace width to 130 mm.

**Distribution:** Eastern central and southern New Zealand and Campbell Plateau.

**Depth:** 550 to 650 m.

**Similar species:** The king crab *Paralomis dawsoni* is similar, but has warts, not spines on carapace.


A R T H R O P O D A

Phylum  
Arthropoda (subphylum Crustacea)

Class  
Malacostraca

Order  
Decapoda

Family  
Majidae

Jacquinotia edwardsii (Giant spider crab) (GSC)

Distinguishing features: Large. Rostrum blunt with a small, central ‘v’. Long, stout legs.

Colour: Carapace brick red to yellowish brown, often covered by white or mauve-pink, paint-like coralline algae. Palms yellowish white with bright red blotches. Colour lighter or darker depending on moult stage.

Size: Carapace width up to 200 mm in males, 140 mm in females.

Distribution: Offshore, southern coast of New Zealand as far north as Kaikoura, around Chatham and Stewart Islands, and on the Pukaki Rise. Shallower around Auckland, Campbell, Bounty, and Snares Islands.

Depth: Intertidal to 550 m.

Similar species: Long-legged masking crab (Leptomithrax longipes) is similar, but adults smaller and have maxillipeds with porcelain-like knobs and thinner legs.


**Leptomithrax australis** (Giant masking crab) (SSC)


**Colour:** Carapace and legs orange-red to deep red. Teeth on fixed finger of palm and tips of legs white. Shallow-water specimens often masked with seaweed, deepwater specimens frequently covered with sessile animals (e.g., anemones, sponges).

**Size:** Carapace width to 90 mm in males, 60 mm in females.

**Distribution:** Offshore from Cook Strait to Stewart Island, around the Chatham Islands, and on the Pukaki Rise. Shallower around the Snares, Auckland, Bounty, and Campbell Islands

**Depth:** Intertidal to about 100 m.

**Similar species:** Long-handed masking crab (*Leptomithrax longimanus*) very similar, but more pear-shaped, less oval; carapace groove deeper, more obvious. Palms longer and with tubercles. Legs thicker in adult males. Garrick’s masking crab (*L. garricki*) very similar, but longer, sharper rostral spines and found in deeper water (180 to 800 m). Long-legged masking crab (*L. longipes*) similar, but has shiny porcelain-like knobs on third maxillipeds.


**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Majidae

*Leptomithrax garricki* (Garrick’s masking crab) (GMC)

**Distinguishing features:** Carapace pear-shaped. Deep groove separating front and expanded branchial regions of carapace. Six equally spaced, short conical spines on margin of each side of carapace. Very long chelipeds in adult males. Tubercles, not spines, on arms of chelipeds. Long, thin walking legs.

**Colour:** Carapace and legs a dull yellowish brown. Chelipeds in adult males dark brown with yellowish markings on inside of palm. Females lighter colour. Often with encrusting polychaete worms and sponges on carapace and legs.

**Size:** Carapace width to 50 mm in males, 35 mm in females.

**Distribution:** Uncommon. From Three Kings Islands to Stewart Island.

**Depth:** Most often 20 to 220 m, rarely intertidal, and occasionally to 550 m.

**Similar species:** Giant masking crab (*Leptomithrax australis*) similar, but less pear-shaped, more oval; carapace groove less obvious less expanded branchial regions and shorter palms. Thinner legs in adult males. Garrick’s masking crab (*L. garricki*) similar, but longer rostral spines; less pear-shaped, more oval; carapace groove less obvious and less obvious branchial regions. Small spines, not tubercles, on cheliped arms. Long-legged masking crab (*L. longipes*) similar, but has shiny porcelain-like knob on third maxillipeds.


**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Majidae

---

**Leptomithrax longimanus** (Long-handed masking crab) (LHC)

**Distinguishing features:** Carapace pear-shaped. Deep groove separating front and expanded branchial regions of carapace. Six equally spaced, short conical spines on margin of each side of carapace. Very long chelipeds in adult males. Tubercles, not spines, on arms of chelipeds. Long, thin walking legs.

**Colour:** Carapace and legs a dull yellowish brown. Chelipeds in adult males dark brown with yellowish markings on inside of palm. Females lighter colour. Often with encrusting polychaete worms and sponges on carapace and legs.

**Size:** Carapace width to 50 mm in males, 35 mm in females.

**Distribution:** Uncommon. From Three Kings Islands to Stewart Island.

**Depth:** Most often 20 to 220 m, rarely intertidal, and occasionally to 550 m.

**Similar species:** Giant masking crab (**L. australis**) similar, but less pear-shaped, more oval; carapace groove less obvious; less expanded branchial regions and shorter palms, thinner legs in adult males. 
Garrick’s masking crab (**L. garricki**) similar, but longer rostral spines; less pear-shaped, more oval; carapace groove less obvious and less obvious branchial regions. Small spines, not tubercles, on cheliped arms. 
Long-legged masking crab (**L. longipes**) similar, but has shiny porcelain-like knob on third maxillipeds.

**References:**
**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Majidae

### Leptomithrax longipes (Long-legged masking crab) (LLC)

**Distinguishing features:** Shiny, porcelain-like knobs on third maxillipeds. Long, thin walking legs. Rostrum of 2 short flattened spines. Short, blunt spine at back of carapace.

**Colour:** Carapace pale yellowish white; red speckling and blotches on legs. Often covered with invertebrates such as sponges and anemones.

**Size:** Carapace width to 70 mm in males, 30 mm in females.

**Distribution:** Cook Strait to Foveaux Strait, Chatham Islands, and Macquarie Island.

**Depth:** 20 to 380 m.

**Similar species:** Giant spider crab (*Jacquinotia edwardsii*) similar, but lacks shiny, porcelain-like knob on third maxillipeds (N.B., small *Jaquinotia* will be very difficult to distinguish from *L. longipes* except for the porcelain knobs). Also has stouter walking legs.

Giant (*L. australis*) and long-handed (*L. longimanus*) masking crabs similar, but they lack shiny, porcelain-like knob on third maxillipeds.

**References:**

**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Majidae

**Teratomaia richardsoni** (Spiny masking crab) (SMK)

- **Distinguishing features:** Distinct spine in front of eye. Rostrum of 2 long divergent spines. Carapace pear-shaped. Single large, sharp spine at back of carapace. Chelipeds long, especially in adult males.
- **Colour:** Dull creamy white. Some red on carapace and legs.
- **Size:** Carapace width to 50 mm in males, 40 mm in females.
- **Distribution:** Kermadec Trench, Challenger Plateau, Chatham Rise, Campbell Plateau, and Bounty Plateau.
- **Depth:** 300 to 7000 m.
- **Similar species:** *Leptomithrax* species are similar, but have no distinct spine in front of eye and shorter, less divergent rostral spines.

**References:**

**Distinguishing features:** Lobster-like, with prominent, slightly uprising rostral horn, and a pair of elongate pincers. Large eyes. Distinctive and spectacular.

**Colour:** Upper surfaces fawn or reddish brown; lateral surfaces white; carpus of chelipeds conspicuously crimson, with transverse bands of crimson across posterior margin of carapace and posterior margins of tail segments.

**Size:** Total length up to 250 mm. More commonly to 180 mm.

**Distribution:** Widespread in New Zealand waters in mud substrates, but most abundant off the east coast of the North Island, the Chatham Rise, off the northwest of the South Island, on the Challenger Plateau, and east and south of Auckland Island.

**Depth:** 140 to 640 m. Most common 200 to 500 m.

**Similar species:** None in New Zealand waters, but resembles European scampi, *Nephrops norvegicus*.


Distinguishing features: Antennules white, eyestalks white with red longitudinal stripes, antennae reddish-brown, chelae and legs yellow-brown with bright red bands on distal ends.

Colour: Reddish-brown with pink and red markings.

Size: From 2 to 18 mm. Measurement is shield length (SL), measured from the tip of the rostrum to the midpoint of the posterior margin of the shell.

Distribution: Apparently endemic to New Zealand. Three Kings Islands to Stewart Island and east to the Chatham Islands.

Depth: 15 to 2200 m. Most collected between 180 and 300 m.

Similar species: Other pagurid species.

**Phylum** Arthropoda (subphylum Crustacea)

**Class** Malacostraca

**Order** Decapoda

**Family** Palinuridae

---

**Projasus parkeri** (Deepwater rock lobster) (PPA)

**Distinguishing features:** Prominent supraorbital horns with row of 2 spines behind each. A single median spine followed by 2 submedian rows of 8 spines. Low median carina on first 5 segments of abdomen; 6th segment with 2 pairs of submedian spines and others on posterior margin.

**Colour:** Light orange to straw brown.

**Size:** Carapace length up to 92 mm. Specimens available mainly 70 to 90 mm.

**Distribution:** South Africa, Southern Australia and New Zealand. Challenger Plateau, Bay of Plenty to Castlepoint, Chatham Rise, Louisville Ridge.

**Depth:** 480 to 970 m. Species has been taken as shallow as 330 m in other parts of the world.

**Similar species:** Rock lobsters with such carapace spination are unique in New Zealand waters.

**References:**
Sympagurus dimorphus (Hermit crab) (SDM)

**Distinguishing features:** Large-bodied, chelipeds markedly dissimilar and hairy. Right cheliped massive. Walking legs overreach extended right cheliped. Tail fan (telson and uropods) markedly asymmetrical.

**Colour:** Overall body colour is cream.

**Size:** Carapace length up to 30 mm, most commonly up to 20 mm.

**Distribution:** Southern Australia and New Zealand. The most abundant parapagurid in New Zealand waters, found on soft sediment and seamount environments. Widespread in southern hemisphere.

**Depth:** 90 to 2000 m. New Zealand records 200 to 1000 m.

**Similar species:** At least 5 other parapagurid species.

**Polycheles spp. (Deepsea blind lobster) (PLY)**

**Distinguishing features:** Lobster-like, but first 4 pairs of legs (all in females) with pincers – long and slender on the first pair and small and short on the rest. Elongate, flat-topped cephalothorax, bordered with sharp spines. Small rostrum of 1 or 2 spines. Dorsal orbital notches triangular. First four abdominal segments with forward pointing spines.

**Colour:** Generally pink with the carapace spines and abdominal terga a darker rose pink.

**Size:** Carapace length up to 75 mm.

**Distribution:** Australia and New Zealand. Widespread in New Zealand waters, at least from Bay of Plenty to Auckland Islands.

**Depth:** 290 to 2200 m.

**Similar species:** Several species in New Zealand waters. Image above is *P. enthrix* the more common species in New Zealand. Other polychelids known from New Zealand region that are also very similar are – *Polycheles nanus*, *P. surdus*, *P. scultpus*, *Pentacheles laevis*, *Pentacheles validus*, and *Willemoesia pacifica*.

**References:**


**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Decapoda
**Family**  Portunidae

*Liocarcinus corrugatus* (Dwarf swimming crab) (LCO)

**Distinguishing features:** Five spines of about the same size on edge of carapace. Fine corrugations over much of the carapace. Last pair of legs flattened into paddles.

**Colour:** Variable, white, grey to reddish brown.

**Size:** Carapace width up to 20 mm in males, 25 mm in females.

**Distribution:** Widely distributed around the world, in northern and central New Zealand.

**Depth:** Intertidal to 140 m.

**Similar species:** The paddle crab (*Ovalipes catharus*) and the swimming crab (*O. molleri*) are similar with five spines on lateral edges of carapace, but have no corrugations on carapace and are much larger. The smooth red swimming crab (*Nectocarcinus bennetti*) and the hairy red swimming crab (*N. antarcticus*) are similar, but have 4 spines on each lateral edge of carapace, no corrugations on carapace and are much larger.


**Phylum**  
Arthropoda (subphylum Crustacea)

**Class**  
Malacostraca

**Order**  
Decapoda

**Family**  
Portunidae

**Nectocaris antarcticus** (Hairy red swimming crab) (NCA)

**Distinguishing features:** Four spines on each lateral edge of carapace. Last pair of legs flattened into paddles. Surface of carapace and legs with matted woolly hairs.

**Colour:** Carapace and upper surface of legs speckled with dark red, and red over pinkish red. Small white marks on ridges and spines. No iridescence.

**Size:** Carapace width to 90 mm in males, smaller in females.

**Distribution:** New Zealand mainland, Chatham, Stewart, Bounty, and Auckland Islands, and possibly Campbell Island.

**Depth:** Intertidal to 550 m.

**Similar species:** The smooth red swimming crab (**Nectocaris bennetti**) is similar, but may have iridescence on carapace, has no matted woolly hairs on carapace or legs and has more prominent lateral spines at front of carapace.

The paddle crab (**Ovalipes catharus**) is similar, but has 5 spines on each lateral edge of carapace and dark-brown speckling on carapace.

The swimming crab (**Ovalipes molleri**) is similar, but has 5 spines on each lateral edge of carapace and iridescence on the carapace. Palms and legs are flattened, spiny-edged area on palm.

**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Portunidae  

**Nectocarcinus bennetti (Smooth red swimming crab) (NCB)**

**Distinguishing features:** Four spines on each lateral edge of carapace. Carapace and legs smooth, except for small granular areas. Areas of pinkish iridescence on carapace. Last pair of legs flattened into paddles.

**Colour:** Colour of carapace and top of chelipeds variable, from tan to purplish red, areas of iridescence, especially in adults; some paler, regularly patterned areas near back of carapace.

**Size:** Carapace width to 85 mm in males, 70 mm in females.

**Distribution:** Chatham Rise and Pukaki Rise, southern South Island, Stewart, Snares, Auckland, and Campbell Islands.

**Depth:** 20 to 480 m, most common between 60 and 180 m.

**Similar species:** The hairy red swimming crab (*Nectocarcinus antarcticus*) is similar, but has no pink iridescence on carapace, matted woolly hairs on carapace and legs and spines on lateral edges of carapace are less prominent. The paddle crab (*Ovalipes catharus*) is similar, but has 5 spines on each lateral edge of carapace and dark-brown speckling on carapace. The swimming crab (*Ovalipes molleri*) is similar, but has 5 spines on each lateral edge of carapace, reddish iridescence on the carapace and a more flattened, spiny edged area on palm.


**Ovalipes catharus (Paddle crab) (PAD)**

**Distinguishing features:** Last pair of legs flattened into paddles. Carapace smooth, speckled with red-brown spots. Five spines on each lateral edge of carapace.

**Colour:** Pale orange bluish, densely speckled with dark red-brown spots. Colour spots concentrated into 2 forward and 2 larger posterior spots.

**Size:** Carapace width up to 150 mm in males, 115 mm in females.

**Distribution:** Southern Australia and New Zealand. Widely distributed around New Zealand and at the Chatham Islands. On open sandy beaches, in harbours and estuaries.

**Depth:** Intertidal to 100 m. Most common in upper 10 m.

**Similar species:** The swimming crab (*Ovalipes molleri*) is similar, but has reddish iridescence on carapace and no dark brown speckling. Also flattened, spiny edged area on palms and legs.

The dwarf swimming crab (*Liocarcinus corrugatus*) is broadly similar, but has a series of corrugations over much of carapace and is much smaller.

The smooth red swimming crab (*Nectocarcinus bennetti*) is similar, but has only 4 spines on each lateral edge of carapace, no dark-brown speckling on carapace and may have pink iridescence on carapace.

The hairy red swimming crab (*Nectocarcinus antarcticus*) is similar, but has only 4 spines on each lateral edge of carapace, and the carapace is covered with fine hair, no dark-brown speckling.

**References:**
**Ovalipes molleri** (Swimming crab) (OVM)

**Distinguishing features:** All upper surfaces highly iridescent. Sharp spines on carapace between eyes. Five spines on each edge of carapace. Two semi-transparent areas of shell near back of carapace in mature specimens. Flattened, spiny-edged area on palm behind movable finger. Movable finger with dorsal spines. Last pair of legs flattened into paddles.

**Colour:** Carapace iridescent red (fades quickly after death).

**Size:** Carapace width up to 120 mm. Less in females.

**Distribution:** Eastern Australia and New Zealand, Northern North Island, south to the Chatham Rise.

**Depth:** 70 to 600 m.

**Similar species:** The paddle crab (*Ovalipes catharus*) is similar, but dark-brown speckling on carapace, no iridescence on carapace or legs; flattened, spiny-edged area on palm less pronounced and spines on movable finger.

The smooth red swimming crab (*Nectocarcinus bennetti*) is similar, but has 4 spines on each lateral edge of carapace, with spines on carapace between eyes short and blunt.

The hairy red swimming crab (*Nectocarcinus antarcticus*) is similar, but has 4 short, blunt spines on each lateral edge of carapace and no iridescence on carapace.

The dwarf swimming crab (*Liocarcinus corrugatus*) is broadly similar, but is much smaller and has a series of corrugations over much of carapace.

Phylum: Arthropoda (subphylum Crustacea)  
Class: Malacostraca  
Order: Decapoda  
Family: Scyllaridae

*Ibacus alticrenatus* (Prawn killer) (PRK)

**Distinguishing features:** Dorso-ventrally flattened. Second antenna modified to a closely hinged series of 5 flat plates. Carapace covered by velvety pubescence. Wide, deep notch in margin of carapace.

**Colour:** Dorsal surface of carapace and antennae red-orange to brown, with darker red spots in the middle of the carapace. Lateral carapace spines and pleural spines tipped with yellow brown. 6th abdominal segment and uropods and telson yellow-brown.

**Size:** Carapace length up to 63 mm. More commonly less than 50 mm.

**Distribution:** Australia and New Zealand. North Island, northern South Island as far south as Oamaru, and Chatham Islands. Possibly at Kermadec Islands and on Campbell Plateau and Chatham Rise.

**Depth:** 20 to 700 m. Possibly deeper too, but mostly on shelf and upper slope.

**Similar species:** *Ibacus brucei* more flattened, and appears to lack ‘hair’ on the carapace. Outer margin of distal antennal lamellae of *Arctides antipodarum* has numerous insignificant teeth.


**Phylum**  Arthropoda (subphylum Crustacea)
**Class**  Malacostraca
**Order**  Isopoda
**Family**  Aegidae

*Aega monophthalma* (Fish biter) (AMO)

**Distinguishing features:** Huge eyes that meet in the middle. Antennule flattened. Body heavily pitted on the posterior segments. Mouthparts form a conical bundle under the head.

**Colour:** Pale yellow to brown, orange laterally, white below; eyes dark brown to black.

**Size:** Total length from 40 to 63 mm. Size range is for adults; females are larger than males.

**Distribution:** Widespread in the Atlantic, southwestern Pacific and Southern Ocean; also eastern Australia.

**Depth:** 440 to 930 m.

**Similar species:** Several other similar species including *Aega semicarinata*. Other species have separate eyes or a smooth body surface.


**Elthusa neocytta** (Gill biter or Tongue biter) (ENE)

**Distinguishing features:** A large cream or white isopod with obvious eyes. Commonly found in mouths of oysters, left image. The body shape is more-or-less straight, and the fifth abdominal segment is overlapped by the fourth segment. The tips of all legs are clawed, and generally the body and appendages are without setae.

**Colour:** White to cream in life.

**Size:** Total length from 26 to 60 mm. (Size refers to adults.)

**Distribution:** Southwestern Pacific, Tasman Sea and New Zealand EEZ.

**Depth:** 50 to 1000 m.

**Similar species:** The genus *Elthusa* is large (more than 25 species) but with low diversity in cool and cold waters. *Elthusa raynaudii* (Milne Edwards, 1840) is also known from New Zealand, and can be immediately identified by its asymmetric body shape and convex body outline.

**Elthusa propinqua** (Gill biter) (ELP)

**Phylum** Arthropoda (subphylum Crustacea)  
**Class** Malacostraca  
**Order** Isopoda  
**Family** Cymothoidae

**Distinguishing features:** A medium-size isopod with a distinctly acute front margin to the head and with prominent eyes. The body is wide, and usually twisted to one side. All legs bear strongly recurved ‘claws’.

**Colour:** Cream coloured except for the eyes; entirely lacking chromatophores.

**Size:** Total length from 14 to 26 mm.

**Distribution:** Western Pacific from Japan and Philippines to eastern Australia and New Zealand; also northern Indian Ocean.

**Depth:** 340 to 835 m.

**Similar species:** The genus *Elthusa* is large (more than 25 species) but with low diversity in cool and cold waters. *Elthusa raynaudii* (Milne Edwards, 1840) is also known from New Zealand, but is far larger, has a bluntly rounded head and the uropods (tail appendages) are rounded rather than acute as in the present species.

Phylum: Arthropoda (subphylum Crustacea)
Class: Malacostraca
Order: Isopoda
Family: Serolidae

Acutiserolis spp. (Spiny serolid isopod) (ACU)

Distinguishing features: Body strongly flattened, lateral margins with conspicuous spines; eyes dorsal.

Colour: Varying from translucent, slate grey, or brown; eyes may be copper, brown, black, or bright pink.

Size: Total length from 10 to 40 mm.

Distribution: Acutiserolis species are found throughout the New Zealand EEZ, from the continental shelf to depths of about 3000 m.

Depth: 100 to 3000 m.

Similar species: The genus has 8 to 12 species in New Zealand waters, none of which appear to have been named. Other serolid genera are similarly flattened, but lack the lateral spines and some are without eyes.

Phylum: Arthropoda (subphylum Crustacea)
Class: Malacostraca
Order: Lophogastrida
Family: Gnathophausiidae

**Gnathophausia ingens** (Giant red mysid) (NEI)

**Distinguishing features:** These mysids are prawn-like, fragile and soft, deep to bright scarlet. Rostrum elongate (triangular in cross section). Antenna 2 scale, outer margin serrated and without setae. Uropod exopod with distal articulation.

**Colour:** Bright scarlet.

**Size:** Total length up to 300 mm. More commonly much smaller – 30 mm.

**Distribution:** Widespread in tropical and temperate seas.

**Depth:** 50 to 900 m. Migrate vertically in water column diurnally, so depths given are depth in water, not bottom depths.

**Similar species:** Mysids are distinguished from shrimps, prawns, and krill in that the carapace is not attached to the last few segments at the posterior end and so can be lifted.


**Phylum**  Arthropoda (subphylum Crustacea)

**Class**  Malacostraca

**Order**  Decapoda

**Family**  Aristeidae

---

**Aristaeomorpha foliacea (Royal red prawn) (AFO)**

---

**Distinguishing features:** Rostrum is long and slender in females, with more than 3 teeth on top and none on the bottom; males have a short rostrum. There is one small hepatic spine on the side of the carapace; abdominal segment 1 overlaps segment 2; legs 1 to 3 have small chelae (pincers).

**Colour:** A fairly uniform red over the whole body.

**Size:** Total length up to 230 mm (includes rostrum).

**Distribution:** A worldwide species. In New Zealand waters it has occasionally been caught on the Chatham Rise and Challenger Plateau, but typically occurs north of Cook Strait, with frequent records in the Bay of Plenty.

**Depth:** 250 to 1400 m. Most common between 400 and 1100 m.

**Similar species:** Aristaeopsis edwardsiana (and Aristeus spp.) have only 3 teeth on top of the rostrum, and do not have an hepatic spine. Nematocarcinus spp. appear similar, but abdominal segment 2 overlaps segment 1, there are usually a few small teeth spread along the bottom of the rostrum, only legs 1 and 2 have chelae, legs 3 to 5 very long.


**Aristaeopsis edwardsiana** (Scarlet prawn) (PED)

**Distinguishing features:** The base of the rostrum has 3 teeth on top, above the eye. The sides of the carapace have several ridges, including one which runs from the rostrum to the cervical groove.

**Colour:** Uniformly scarlet to bright red, to deep crimson.

**Size:** Total length up to 350 mm.

**Distribution:** Worldwide distribution. Occurs in deep water around much of New Zealand. Distribution is continuous around the North Island and extends out to the Chatham Rise and Challenger Plateau. Puységur Bank is the most southern record.

**Depth:** 200 to 1800 m. Most common between 900 and 1100 m.

**Similar species:** Aristeus spp. are very similar in shape and features. They are generally smaller bodied, and do not have the ridge on the carapace from the rostrum to the cervical groove (ridge either absent or very short and not reaching cervical groove).


**Phylum** Arthropoda  
**Class** Malacostraca  
**Order** Decapoda  
**Family** Aristeidae

**Austropenaeus nitidus (ANI)**

**Distinguishing features:** The rostrum is long, slender and slightly to moderately upturned. The base of the rostrum has 2 dorsal teeth on top, and 1 post-rostral tooth. The carapace is featureless with no obvious keels, hepatic spine absent.

**Colour:** Pale pink.

**Size:** Total length up to 380 mm.

**Distribution:** Occurs in deep water around much of New Zealand, commonly seen on the Chatham Rise. Also occurs off Australia, in the Indian Ocean, and South Atlantic.

**Depth:** 400 to 1300 m.

**Similar species:** Could be confused with the other Aristeidae *Aristaeopsis edwardsiana* and *Aristaeomorpha foliacea*, but these 2 prawns are bright red and have either more teeth on their rostra and or prominent keels.


A distinctive heavy-bodied and well armed species. It has a rigid carapace and blade-like rostrum. Two strong lateral spines on the carapace. The 3rd abdominal segment has a pronounced tooth.

**Colour:** Body pink to yellow-orange. Tip of rostrum is orange to red.

**Size:** Total length up to 140 mm (includes rostrum).

**Distribution:** Endemic to Australasia, occurring off New Zealand and eastern and southern Australia. Around New Zealand it has been recorded from Northland south (especially in the Bay of Plenty), Chatham Rise to Campbell Plateau. Not known from Challenger Plateau or Kermadec region.

**Depth:** 270 to 800 m. Most common at depths of 400 to 600 m.

**Similar species:** None. It is the only member of its family in New Zealand waters.

**References:**


**Phylum** Arthropoda (subphylum Crustacea)  
**Class** Malacostraca  
**Order** Decapoda  
**Family** Glyphocrangonidae

### Glyphocrangon spp. (Goblin prawn) (GLO)

**Distinguishing features:** Prominent rostral spine, about half carapace length, with 2 pairs of lateral spines. Large lateral carapace flange just posterior to eye, with smaller one half-way to posterior of carapace. Median carina on abdomen segments, spine-like on first segment.

**Colour:** Carapace yellowish, otherwise the prominent colour is the scarlet of the spine tips against a yellowish background.

**Size:** Carapace length up to 35 mm.

**Distribution:** Northern New Zealand continental slope and seamounts, and off eastern Australia.

**Depth:** 720 to 980 m.

**Similar species:** Several species in New Zealand waters, many undescribed/unidentified.


**Phylum**
Arthropoda (subphylum Crustacea)

**Class**
Malacostraca

**Order**
Decapoda

**Family**
Nematocarcinidae

**Lipkius holthuisi (Omega prawn) (LHO)**

**Distinguishing features:** Second abdominal side plate overlaps the first, long rostrum with teeth (>10) along the bottom spread out towards tip. Top of rostrum has no teeth for most of its length. Carapace has small pit on side, 5th abdominal segment has an extra spine, first and second legs have chelae (but these features hard to see without magnifying glass).

**Colour:** Anterior half of body is red, with abdomen partly red, partly colourless.

**Size:** Total length up to 200 mm (includes rostrum).

**Distribution:** Australia and New Zealand. Around New Zealand it is distributed south of 37° S. Found almost continuously along margin of continental slope from East Cape southwards, along the Chatham Rise, around the Campbell Plateau, out to Challenger Plateau.

**Depth:** 350 to 1700 m. Most common 800 to 1000 m.

**Similar species:** Nematocarcinus spp. in the same family, but have teeth on top of rostrum out to tip. Plesionika martia has many small teeth on the bottom of rostrum.

**References:**


**Distinguishing features:** Teeth on top of rostrum extend right out to the tip; bottom of rostrum with none or a few teeth; legs 3, 4, 5 are very long (often broken); legs 1 and 2 have chelae (pincers); abdominal segment 2 overlaps segment 1.

**Colour:** Body red, orange to yellow area under carapace, abdomen partly red, partly colourless.

**Size:** Total length up to 170 mm (includes rostrum).

**Distribution:** Worldwide. Around New Zealand they occur in small numbers around the margins of the continental shelf off the Chatham Rise, Challenger Plateau, and west coast of the South Island.

**Depth:** 800 to 1200 m. Mostly occurs 900 to 1100 m.

**Similar species:** There are five species in this genus known from the New Zealand region. Lipkius holti, Notopandalus magnoculus, and Plesionika martia have a similar shape, but the teeth on top of the rostrum do not extend out to the tip, and they have more than 10 teeth on the bottom of the rostrum.

**References:**


**Acanthephyra** spp. (Subantarctic ruby prawn) (ACA)

**Distinguishing features:** Few species are as uniformly bright red as *Acanthephyra*. Telson with 4 pairs of spines (*A. quadrispinosa* (AQU)) or 7 to 11 pairs (*A. pelagica* (APE)). Spacing of teeth on the rostrum is similar on both top and bottom.

**Colour:** Uniformly bright red to scarlet.

**Size:** Total length up to 140 mm.

**Distribution:** Both species have been reported in all but the southernmost parts of the New Zealand EEZ, with *Acanthephyra quadrispinosa* more commonly found in the north (north of Cook Strait) and *A. pelagica* in the south (Challenger Plateau and Chatham Rise down to 50° S on the Campbell Plateau).

**Depth:** 400 to 2000 m. Most commonly recorded around 1000 m.

**Similar species:** Three other species of *Acanthephyra* are found in New Zealand waters, but they are infrequently caught. *Systellaspis debilis* is similar in shape, but body colour is partly red, partly translucent, or colourless; and lower parts of the carapace have a line of photophores.

**References:** Webber, W.R. (2002). Prawns coming in from the cold (Pt 1). *Seafood New Zealand* 10(9): 75–78.

**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Oplophoridae

**Notostomus auriculatus** *(Scarlet prawn)* *(NAU)*

**Distinguishing features:** Large uniformly scarlet/crimson species. Long rostrum with teeth on top and bottom. Five lateral keels on each side of carapace. Strong, blade-like, finely serrated ridge along top of carapace. Two lateral keels at base of rostrum, upper keel longer, extending posteriorly beyond eye.

**Colour:** Uniformly scarlet.

**Size:** Up to 180 mm (including rostrum).

**Distribution:** South Atlantic, NSW, Tasmania, southern Indo-West Pacific, and around New Zealand.

**Depth:** From the surface to at least 1200 m.

**Similar species:** Other (uncommon) Notostomus species are similar, but have only the upper 3 of the 5 lateral keels on the carapace, and the upper keel on the rostrum does not extend back beyond the eye.

**References:**
Distinguishing features: Refers to two similar species found in New Zealand waters. Solid body, prominent and long spines on abdominal segments 3 to 5. *Oplophorus novaezeelandiae* (ONO) has a smooth outer edge to the antennal scale, but there are small spines on that of *O. spinosus* (OPS). Use code OPP when unsure of species.

Colour: Anterior half of body red, abdomen red-striped, rostrum and large spines transparent.

Size: Total length up to 100 mm (total length measurement includes rostrum).

Distribution: Widespread through the South Atlantic and southern Pacific Oceans, western Australia, and New Zealand. Around New Zealand, *O. novaezeelandiae* is recorded from the Kermadec Ridge to the southern margin of the Campbell Plateau. *O. spinosus* has a more northern distribution than *O. novaezeelandiae*, with the latter dominating south of East Cape.

Depth: 200 to 1100 m. Mainly taken from 800 to 950 m. Has also been recorded at or near surface.

Similar species: None. The abdominal spines are very distinctive.

**Phylum**  Arthropoda (subphylum Crustacea)  
**Class**  Malacostraca  
**Order**  Decapoda  
**Family**  Pandalidae  

*Plesionika martia (Golden prawn) (PLM)*

**Distinguishing features:** The bottom of the rostrum has many small and close-set teeth right out to the tip; teeth are absent from the top of the rostrum except above the eye; females with ming-blue eggs.

**Colour:** Most of body translucent to light pink, tip of rostrum red, small red areas on abdomen and telson.

**Size:** Total length up to 170 mm (including long rostrum).

**Distribution:** Widely distributed; around New Zealand found from the Kermadec Islands to Cook Strait, with records predominantly from the Bay of Plenty and Challenger Plateau.

**Depth:** 180 to 2100 m. Most commonly caught from 400 to 600 m.

**Similar species:** *Notopandalus magnocus*, teeth on bottom of rostrum are spaced out more towards the tip; teeth above the eye are slender and moveable. *Lipkius holthuisi*, teeth on bottom of rostrum also spaced out more towards the tip. *Nematocarcinus* spp. teeth occur on the top of the rostrum, out to the tip.


Distinguishing features: A large, noticeably flat-sided prawn with a very small rostrum (largest of the genus *Pasiphaea* in New Zealand). Long fine chelae (pincers) on legs 1 & 2, cutting edges of pincers with comb-like rows of fine teeth. Abdominal segment 2 overlaps segment 1.

Colour: Red.

Size: Total length up to 160 mm including rostrum.

Distribution: *Pasiphaea aff. tarda* is commonly caught in trawls on the Chatham Rise, Challenger Plateau, and around the South Island. Also recorded off East Cape and in Bay of Plenty, but generally has a more southern distribution.

Depth: 750 to 1500 m. Most commonly reported from 800 to 1200 m.

Similar species: Small specimens of *Pasiphaea aff. tarda* very hard to distinguish by eye from other species of the genus. Any large animal (longer than 100 mm) is almost certainly *P. aff tarda*. *Sergia potens* has abdominal segment 1 overlapping segment 2, and chelae on legs 2 and 3 which are are very small.


**Phylum**  Arthropoda (subphylum Crustacea)

**Class**  Maxillipoda

**Order**  Decapoda

**Family**  Penaeidae

---

**Funchalia spp. (Funchalia prawn) (FUN)**

_Distinguishing features:_ Short rostrum (but longer than eye) with teeth on top only. No teeth on side of carapace behind front edge. Small flat hairs on surface of body. First three legs with chelae. First abdominal segment overlaps second.

**Colour:** Transparent with areas of pink-orange-yellow.

**Size:** Up to 160 mm long.

**Distribution:** Atlantic, Indian Ocean, West Pacific, Antarctic, Australia, and New Zealand.

**Depth:** From near surface (at night) to more than 500 m.

**Similar species:** Haliporoides sibogae and Solenocera comata are similar, but have no body hair, and have 2 and 3 spines respectively on side of carapace, behind front edge. Chlorotocus novaezealandiae is similar, but the second abdominal segment overlaps the first, and a chela is present on the second leg only.

**References:**


**Sergestes spp.** (Sergestid prawn) (SER)

**Distinguishing features:** Small to medium size, soft, fragile, and transparent, usually with red spots. Short rostrum (much shorter than eyestalks). Chelae (legs 2 and 3) microscopically small. Last two pairs of legs reduced or absent. First abdominal segment overlaps second. Eyestalks often pointing outwards.

**Colour:** Transparent with red spots (chromatophores). Stomach and light producing organs visible through carapace.

**Size:** Up to 70 mm.

**Distribution:** Worldwide including New Zealand.

**Depth:** 0 to 2000 m.

**Similar species:** *Sergia* species are similar but are usually scarlet to deep crimson. *Pasiphaea* species are also similar, but have larger, visible, long slender chelae with comb-like cutting edges, and the second abdominal segment overlaps the first.

**References:**


**Phylum**  Arthropoda (subphylum Crustacea)

**Class**  Malacostraca

**Order**  Decapoda

**Family**  Solenoceridae

---

**Haliporoides sibogae (Jack-knife prawn) (HSI)**

**Distinguishing features:** A single small tooth below the rostrum tip; rostrum arched dorsally; rostrum longer than eye; 3 small spines on side of carapace; antennular flagella round (not flat); first abdominal segment overlaps second; legs 1 to 3 have small chelae (pincers).

**Colour:** Red-pink, with colourless to yellow-orange areas on abdomen.

**Size:** Total length up to 150 mm.

**Distribution:** Widely distributed. Around New Zealand, distributed primarily between North Cape and the Chatham Rise, with a few occurrences on the Campbell Plateau.

**Depth:** 100 to 1500 m. A wide range of depths, most frequently recorded from 350 to 600 m.

**Similar species:** Solenocera comata has no tooth below the rostral tip, rostrum is shorter than eye, 2 (not 3) spines on side of carapace, flattened antennular flagella. *Funchalia* spp. are ‘hairy’ on the body, no tooth below rostrum tip. *Chlorotocus novaezelandiae*: abdominal segment 2 overlaps segment 1, and only leg 2 has chelae.

**References:**


Phylum: Arthropoda (subphylum Chelicerata)
Class: Pycnogonida
Order: Pantopoda
Family: Colossendeidae

**Colossendeis spp. (Giant sea spiders) (PYC)**

**Distinguishing features:** Eight legs or more, spider-like, large bodied, eyes usually completely lacking.

**Colour:** Most dull white or brown, but some bright reddish orange.

**Size:** From 10 to 60 mm body length.

**Distribution:** Cosmopolitan deepsea genus often found in quite shallow Antarctic waters.

**Depth:** 5 to 1000 m.

**Similar species:** Other members of Family Colossendeidae.

**References:**
**Phylum**  
Arthropoda (subphylum Maxillipoda)

**Class**  
Maxillipoda

**Order**  
Thoracica

**Family**  
Scalpellidae

**(Stalked barnacles) (SBN)**

**Distinguishing features:** Large barnacle with 13 white calcereous plates which make up the capitulum and are separated by brown chitinous material. Stalked barnacles also known as goose barnacles.

**Colour:** Chocolate to dark straw-coloured stalk with fine white spines.

**Size:** Total length to 130 mm.

**Distribution:** Worldwide. Occurs on the flat slope, and on seamounts.

**Depth:** 120 to 1100 m.

**Similar species:** Other scalpellid barnacles.

**References:**  

Phylum
BRYOZOA

Bryozoans, moss animals, lace-corals, sea mats

Dennis Gordon
Phylum **BRYOZOA**

*Bryozoans, moss animals, lace-corals, sea mats*

The **Bryozoa** (Greek *bryon* moss, *zoon* animal) is a group of animals that can look like hydroids, turfing seaweeds, or small corals, which means that they are frequently mistaken for other organisms and scarcely ever recognised for what they are. They are colonies of minute individuals (zooids), mostly less than 1 mm long, whose feeding tentacles strain the water for food particles. Colonies can be encrusting (sea mats), bushy (moss animals), or coral-like. Some of them form hard mesh-like fronds and look like solid lace (lace corals). On the continental shelf, bryozoans can dominate some parts of the seafloor, as in Tasman Bay, Foveaux Strait, or off Otago Peninsula, where they form habitat for Bluff oysters or juveniles of commercial fish. Their fossil remains are common in limestones at Waitomo, Punakaiki, and Oamaru. There are about 950 species of marine bryozoans in New Zealand waters (out of nearly 6000 worldwide).

Two classes of Bryozoa, representing three orders, are found in the sea.

**Class Stenolaemata**

**Order Cyclostomata**

This is an ancient group of bryozoans that survives to the present day. Colonies are mostly small, but endemic *Cinctipora elegans* in Foveaux strait and on the Otago shelf forms twiggy coral-like colonies up to 30 cm high. The zooids in cyclostome colonies are somewhat tubular in shape and the anterior end where the tentacles emerge is not closed (between feeding sessions) by a lid-like operculum. When reproducing, eggs and larvae are incubated in one or a few brood chambers that serve the whole colony. There are 120 species in New Zealand waters (c. 740 worldwide). Fairly uncommon in the deep sea.

**Class Gymnolaemata**

**Order Ctenostomata**

Another ancient order of bryozoans. Unlike other marine bryozoans, all ctenostomes are uncalcified, hence their colonies are soft. A few native species are encrusting; most are bushy. Some shallow-water species form large “fluffy” colonies of abundant delicate branches. Their zooids are like tiny transparent sausages disposed along hollow stems that resemble thin noodles. As in cyclostomes, individuals have no operculum. There are 48 species in New Zealand waters (c. 310 worldwide). Rare and tiny in the deep sea.

**Order Cheilostomata**

This is the geologically youngest bryozoan order, dating from the latest Jurassic. All marine species are calcified and colonies range from nearly microscopic to well over 30 cm high and across, depending on the species. The zooids in cheilostome colonies are somewhat box-like, with a lid-like closing apparatus (operculum) at one end. There are 782 species in New Zealand waters (c. 4950 worldwide). Common in the deep sea.
**Phylum**  Bryozoa  
**Class**  Gymnolaemata  
**Order**  Cheilostomata (lace corals)  
**Family**  Phidoloporidae

**Hippellozoon novaezelandiae** (Erect cheilostome bryozoan) (HNO)

**Distinguishing features:** Hard coral-like structures with tiny pores around or along the branches. (The pores are the openings for microscopic feeding tentacles to emerge.) Distinguishing features tend to be microscopic; in lengthways sections of branches, the zooids appear as relatively short and variably box-like.

**Colour:** Varies according to species.

**Size:** From 5 to 30 cm high depending on the species.

**Distribution:** Widespread in New Zealand waters.

**Depth:** 0 to 5000 m.

**Similar species:** None.

**References:**

Phylum: Bryozoa
Class: Stenolaemata
Order: Cyclostomata
Family: (Erect cyclostome bryozoans) (ECB)

Distinguishing features: Hard coral-like structures with tiny pores around or along the branches. (The pores are the openings for microscopic feeding tentacles to emerge.) Distinguishing features tend to be microscopic; in lengthways sections of branches, the zooids appear as long narrow tubes. Left image Tetrocycloecia neozelanica, right image Cinctipora elegans.

Colour: Varies according to species.

Size: From 5 to 30 cm. This is a height measurement, and size depends on the species.

Distribution: Widespread in New Zealand region.

Depth: 12 to 1156 m for relatively large colonies. Records over 700 m may represent dead colonies transported from shallower depths.

Similar species: Cheilostome bryozoans with a similar colony form.

Phylum ECHINODERMATA

Sea-stars, brittle stars, sea urchins, sea cucumbers, feather stars, sea lilies

Owen Anderson, Niki Davey, Don McKnight, Sadie Mills, Kate Neill
The **Echinodermata** is a group of animals with spiny skins and tube-feet, showing a great variety of shapes and sizes; members of the commoner classes are generally recognisable as starfish or sea-stars, brittle stars, or sea urchins. Less well known are the feather stars, sea lilies, and sea cucumbers. All common extant forms have a basic pentaradial symmetry with tube-feet present, and an endoskeleton of calcitic plates or ossicles, these ranging from microscopic to conspicuous. Echinoderms have an extensive fossil history, but only five classes are likely to be collected in commercial trawling operations.

**Asteroids** (sea stars or starfish) are among the most familiar echinoderms. The central disc merges with the arms, and on the underside the tube-feet are placed in a groove. Extensions of the gut extend into the arms, and in a few species the gonads may similarly extend or are limited to the arms. Sea stars show a great variety of shapes, from pentagonal to those with elongate arms and a small disc. There are usually five arms but several species have more. The more unusual types occur in the Order Brisingida, where the disc is small and the deciduous arms appear distinct from the disc.

**Ophiuroids** (brittle stars) differ from sea stars in lacking the distinct groove on the underside of the arms, with the tube-feet piercing the ventral arm plates. The arms are distinctly separated from the disc. Most species have only five arms, though a few have six or more. Brittle-stars are generally small and fragile, and the arms are often broken when captured. Most brittle-stars (Order Ophiurida) have arms usually coiling horizontally (though in some they coil vertically) and the arm spines are placed on the sides of the arms, either erect or pressed against the side. Brittle-stars of the Order Euryalinida, known as basket-stars or snake-stars, differ from the typical forms in having arms coiling vertically, with the arm spines pointing downward; the larger basket-stars have the arms branching, usually from close to the edge of the disc, while the snake-stars have simple arms.

**Echinoids** (sea urchins or sea eggs) lack arms, and have a variety of forms. The commoner type is spherical or globose, but discoidal or heart-shaped forms also occur. The body or test is composed of distinct plates, in 20 columns, 10 of which are pierced by the tube-feet. Conspicuous spines, sometimes modified, are present, and in

The spherical and discoidal species a complex jaw apparatus (Aristotle’s lantern) is present on the underside; this is absent in the heart-shaped species.

**Holothurians** (sea cucumbers) generally have a soft, usually cylindrical, body with microscopic plates or ossicles embedded in the body wall, though a few species are more or less rigid, with small overlapping plates present. Five rows of tube-feet are usually present, though they are absent in one order. Although most species are small to medium in size, some tropical and deepsea species can be quite large. Identification of species usually requires laboratory examination of the ossicles embedded in the skin.

**Crinoids** are stalked (sea lilies) or unstalked (feather stars) with a small cup-like body, or calyx, composed of plates in cycles of five. This body is roofed by a membrane that may have immersed plates; moveable arms, usually branched, extend from the margin of the calyx, and are made up of small subcircular plates united by muscles. The arms contain extensions of the viscera, gonads, nerves, and water vascular systems. The tube-feet are inconspicuous, and extend to the arm tips. Sea lilies have a stem made up of discoidal plates, and attach to the seafloor by terminal roots, or a flattened basal piece; others have thin-jointed cirri along the stem, each with a terminal hook, to enable temporary attachment. Feather stars have the stem reduced to a plate at the base of the calyx, to which the cirri are attached. Crinoids are generally fragile, and often only fragments are found in samples. Entire specimens will often fragment when exposed on deck.
Distinguishing features: All species in this order have at least 6 arms, usually over 10, with a small, rounded disc. The arms, constructed from tiny plates immersed in skin, are long, often higher than wide, and are quite deciduous and often all that is taken. Arms have transverse rows of plates the largest of which, at the ventro-lateral margin, bearing one or more long spines. All spines have a thick coating of skin. Tube feet in 2 rows, with sucking-discs.

Colour: Various.

Size: Total width up to 260 mm.

Distribution: Throughout New Zealand.

Depth: 150 to 6000 m.

Similar species: There are at least 14 local species in this order, all with a small disc and at least 6 fragile arms. A detailed examination is necessary to accurately identify them. Pictured is Brisinga chathamica.

**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Forcipulatida  
**Family**  Asteriidae  

*Allostichaster spp. (Three-and-three stars) (ALH)*

**Distinguishing features:** Small starfish with 5-8 arms, often of unequal sizes. Upper surface is covered with short, blunt spines, the tips of which are knob-like.

**Colour:** Cream.

**Size:** Total width up to 76 mm.

**Distribution:** Occasional North Island records, most common from southern areas and often associated with small hills or seamounts.

**Depth:** 0 to 1162 m.

**Similar species:** Three species of *Allostichaster* have been reported from New Zealand and detailed examination is required to separate them. They are similar in appearance to another sea-star from the same family, *Smilasterias*, however *Smilasterias* only has 5 arms that are similar in length.

**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Forcipulatida  
**Family**  Asteriidae

---

**Cosmasterias dyscrita (Cat’s-foot star) (CDY)**

![Image of Cosmasterias dyscrita](image)

**Distinguishing features:** Disc small with 5 long rounded arms. Marginal plates inconspicuous. Plates of upper surface in fairly regular longitudinal rows, generally wider than long, each covered with short, blunt spines. Pedicellariae scattered over surface of body. Tube-feet with sucking-discs, in 4 rows. Arms often break from the disc.

**Colour:** Pale orange.

**Size:** Total width up to 260 mm.

**Distribution:** Widespread throughout the New Zealand region, also present in Australia.

**Depth:** 50 to 1200 m.

**Similar species:** Pseudoechinaster rubens, which has a mainly transverse arrangement of the plates on the upper surface.

Distinguishing features: Disc small, with 5 gently tapering arms, rounded above. Plates on upper surface of arms form transverse arcs, and also longitudinal series. Arms are often broken. Plates of upper and lower surfaces with 1-2 short spines. Mouth sunken and inconspicuous.

Colour: Reddish.

Size: Total width up to 340 mm.

Distribution: East coast of New Zealand, more common on the Chatham Rise.

Depth: 75 to 400 m.

Similar species: Cosmasterias dyscrita is similar in appearance but lacks the transverse arcs of plates on the upper surface.

Phylum   Echinodermata
Class     Asteroidea (sea-stars)
Order     Forcipulatida
Family    Asteriidae

**Sclerasterias mollis** (Cross-fish) (SMO)

**Distinguishing features:** Disc small, with 5 rounded or 5-sided arms (rarely 6); plates of upper surface in longitudinal rows, most with one spine, with a wreath of tiny pedicellariae (jaw-like appendages) around the base which may appear as a gelatinous sheath. Marginal plates inconspicuous. Tube feet in 4 rows, each with a distinct sucking-disc.

**Colour:** Orange to brick-red, arms with spines in 5 rows of whitish, cream, or yellow.

**Size:** Total width up to 400 mm.

**Distribution:** Widespread throughout the New Zealand region, from the Kermadec Islands to the Auckland Islands, including the Chatham Islands; common south of Cook Strait.

**Depth:** 0 to 660 m.

**Similar species:** The wreaths around the spines of the upper surface differentiate this species from *Cosmasterias* and *Pseudoechinaster*. Two rarer species in genera *Perissasterias* and *Taranuiaster* lack the orange mottling. One other species, apparently new to New Zealand, is known only from active submarine volcanoes north of the Bay of Plenty. It differs in being uniformly very dark red to almost black.

**Zoroaster spp. (Rat-tail stars) (ZOR)**

**Distinguishing features:** Five long, rounded, rigid, and slowly tapering arms and a small disc; plates regularly arranged, marginal plates not conspicuous. Upper surface with small spines, becoming larger down sides of rounded arms. Tube-feet in 4 rows, sometimes 2 rows near arm tip.

**Colour:** Brownish, red / orange, or pale, usually a little lighter below.

**Size:** Total width up to 350 mm. Disc radius to a maximum of 30 mm.

**Distribution:** Throughout the New Zealand region.

**Depth:** 300 to 2500 m.

**Similar species:** Seven species of Zoroaster are known from New Zealand waters, all similar in shape, and readily identified to genus; however a detailed examination is necessary to accurately identify the species. Several species of Zoroaster are illustrated here.

**Phylum**  
Echinodermata

**Class**  
Asteroidea (sea-stars)

**Order**  
Notomyotida

**Family**  
Benthopectinidae

---

**Benthopecten spp. (BES)**

![Large spine between arms]

**Distinguishing features:** Disc small the 5 flat arms tapering, often coiled at the tips; lower and upper surfaces flat. Upper surface with numerous small spines and some larger; lower surface with larger spines. Plates at margins wider than long, with conspicuous erect spines, and between arm bases is one enlarged plate with 1 to 2 very large spines.

**Colour:** Upper surface often scarlet or reddish becoming pink distally; underside pale pink then whitish towards tip; larger spines red or white.

**Size:** Total width up to 220 mm.

**Distribution:** Throughout New Zealand, as far south as the Campbell Plateau.

**Depth:** 200 to 620 m.

**Similar species:** Three species of Benthopecten have been reported from New Zealand, and are difficult to separate without a detailed examination.

**Phylum** Echinodermata  
**Class** Asteroidea (sea-stars)  
**Order** Notomyotida  
**Family** Benthpectinidae

**Cheiraster monopedicellaris (CMP)**

**Distinguishing features:** Disc and arms flat, upper and lower surfaces with numerous short spines, plates at margin conspicuous and swollen, each with 1 to 3 larger stubby spines. On lower surface behind mouth are two opposing combs of short curved spines which interlock, with one structure between each pair of arms.

**Colour:** Pink or gray on upper surface, cream below.

**Size:** Total width up to 80 mm.

**Distribution:** East coast of northern and central New Zealand.

**Depth:** 600 to 900 m.

**Similar species:** There are six other species of Cheiraster recorded locally, and a detailed examination is needed to separate them; however this is the only species with the single comb-like structure behind the mouth.

Phylum: Echinodermata  
Class: Asteroidea (sea-stars)  
Order: Paxillosida  
Family: Astropectinidae

**Astromesites primigenius (APM)**

**Distinguishing features:** Marginal plates large and conspicuous, forming a regular broad, horizontal row around the margin of both surfaces. The underside, including the lower marginal plates, is covered in enlarged spines giving a bristly/shaggy appearance.

**Colour:** Orange to red.

**Size:** Total width up to 140 mm, average width about 70 mm.

**Distribution:** Occasional North Island records, most common from off Banks Peninsula area and south to the Snares and Auckland Islands and east to the Chatham Rise and Bounty Islands.

**Depth:** 55 to 690 m.

**Similar species:** Can be confused with both *Psilaster acuminatus* and *Proserpinaster neozelanicus*. However it lacks enlarged spines on the upper marginal plates (see *Proserpinaster*), and its marginal plates are very broad, regular and horizontal, even between the arms, unlike *Psilaster* whose marginal plates become more vertical between the arms.

**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Paxillosida  
**Family**  Astropectinidae  

**Dipsacaster magnificus** (Magnificent sea-star) (DMG)

**Distinguishing features:** Large, with large, 5-armed flat disc. Arms broad at the base, tapering rapidly and evenly to a sharp tip. Plates of upper surface with clusters of short spinelets. Madreporite large, obscured by spinelets in a slightly depressed area near the marginal plates. Lower marginal plates project beyond upper plates to form a very distinct edge to disc and arms; both series of marginal plates bearing spinelets. Tube-feet pointed, in 2 rows, the sucking disc scarcely apparent.

**Colour:** Usually orange, but also recorded as light dirty grey with patches of yellow and salmon pink above, cream below.

**Size:** Total width up to 360 mm.

**Distribution:** Widespread around New Zealand, from Lord Howe Rise in the north to Campbell Plateau in the south, including the Chatham Rise and Louisville Ridge. Also widespread in Australian waters.

**Depth:** 100 to 1100 m.

**Similar species:** The only member of this genus found in New Zealand, *D. magnificus* is broadly similar to species of *Plutonaster*, *Proserpinaster*, and *Psilaster* but is larger, with broader arms and more regular rows of plates on both upper and lower surfaces, and lacks enlarged spines on the marginal plates.

Phylum: Echinodermata  
Class: Asteroidea (sea-stars)  
Order: Paxillosida  
Family: Astropectinidae

**Plutonaster knoxi (Abyssal star) (PKN)**

*Phylum* Echinodermata  
*Class* Asteroidea (sea-stars)  
*Order* Paxillosida  
*Family* Astropectinidae

**Distinguishing features:** Disc large and flat, or slightly raised centrally and along midline of the 5, long, slender, arms. Plates of upper surface with short spines. Marginal plates separated by grooves lined with small spinelets, plates covered with granules, and usually each with an erect spine. Madreporite very large, intricately patterned, and covered by bushy clumps of spines. Tube-feet pointed, in 2 rows.

**Colour:** Generally orange, orange/red, with pale yellow. Often a paler orange/yellow stripe along midline of arms.

**Size:** Total width up to 260 mm.

**Distribution:** Widespread around the New Zealand region, especially common on the Chatham Rise.

**Depth:** 500 to 2000 m.

**Similar species:** Seven species of Plutonaster are recorded from the New Zealand region, but *P. knoxi* is the most common; it also could be confused with Dipsacaster, Psilaster, and Proserpinaster.

**Proserpinaster neozelanicus (PNE)**

**Distinguishing features:** Disc large and flat, with 5 tapering arms. Plates of upper surface regularly arranged, covered with short spines; underside similar, but plates less regular in arrangement and often also with a larger spine. The upper plates of the marginal rows are broad, particularly on the arms, and both rows bear 1 to several larger spines.

**Colour:** Reddish or salmon-pink above, cream below.

**Size:** Total width up to 260 mm.

**Distribution:** New Zealand, from near the Three Kings Islands to the southern shelf; common on the Chatham Rise.

**Depth:** 90 to 1700 m.

**Similar species:** *Psilaster acuminatus* and *Astromesites primigenius* are similar however *P. acuminatus* lacks rows of enlarged spines on the upper marginal plates. *A. primigenius* lacks enlarged spines on the upper series of marginal plats and the marginal plates are broad and horizontal on and between the arms.

**Psilaster acuminatus (Geometric star) (PSI)**

**Distinguishing features:** Outline strongly star-shaped; disc and 5 arms flat although slightly raised near arm bases and slightly depressed centrally. Conspicuous madreporite located between arms and nearer to marginal plates than disc centre. Plates of upper surface with short spines. Marginal plates conspicuous, those of the upper series slightly raised and separated from each other by deep grooves, forming a distinct edge to the disc and arms. Lower marginal plates with some enlarged spines. Tube-feet pointed, in 2 rows.

**Colour:** Usually uniformly orange above, with much paler marginal plates. Upper surface also described as dark-pink, orange-pink, and bright-salmon. Creamy yellow below with delicate pink tube-feet.

**Size:** Total width up to 240 mm.

**Distribution:** Very common in the New Zealand region, from Lord Howe Island in the north to Campbell Island in the south, including the Chatham Islands, but no records from Foveaux Strait or Stewart Island. Also known from Australia and South Africa.

**Depth:** 30 to 2500 m. Most common from 200 to 600 m.

**Similar species:** Could be confused with species of Astromesites, Dipsacaster, and Proserpinaster, but can be distinguished by its distinctive marginal plates, enlarged spines on the lower marginal plates and lack of enlarged spines on the upper marginal plates.

**Radiaster gracilis (RGR)**

**Phylum**  
Echinodermata

**Class**  
Asteroidea (sea-stars)

**Order**  
Paxillosida

**Family**  
Radiasteridae

**Distinguishing features:** Disc flat with 5 tapering arms. Upper surface covered with short spines; lower surface plates with a slight ridge covered with small spines separated by narrow bare areas; plates at margin inconspicuous.

**Colour:** Bright orange.

**Size:** Total width up to 240 mm.

**Distribution:** Widespread throughout New Zealand, also south-eastern Australia and Tasmania.

**Depth:** 30 to 2400 m.

**Similar species:** *Psilaster acuminatus* though similar has more prominent plates at the margin.

**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Spinulosida  
**Family**  Echinasteridae

**Henricia compacta (HEC)**

**Distinguishing features:** Disc small with 5 tapering, rounded, rigid arms. Entire surface densely covered with small erect spines, the underlying plates rounded and irregularly arranged, with small skin-covered areas between; short finger-like papillae project through the skin.

**Colour:** Usually cream or very light brown.

**Size:** Total width up to 140 mm. Generally small.

**Distribution:** Widespread throughout the New Zealand region, the Tasman Sea and south-eastern Australia. In New Zealand common on seamounts.

**Depth:** 100 to 1500 m.

**Similar species:** There are several species of *Henricia* known locally as well as a few in the related genera *OdontoHenricia* and *Echinaster*. While none of these are as densely spined as *H. compacta*, separation of species in this family usually requires examination under a microscope.

**Distinguishing features:** Strongly and distinctively pentagonal and flat. Arms very short, tips gently upturned. Upper surface with regularly arranged, 4 to 6 sided plates, covered in granules. Madreporite small, naked, 5-sided, slightly raised, and near disc centre. Upper marginal plates form a definite, bevelled edge to the disc and arms, and number 26 from arm tip to arm tip. Tube-feet with sucking discs, in two rows.

**Colour:** Bright red or reddish-orange above, cream below.

**Size:** Total width up to 200 mm.

**Distribution:** Widespread in the Pacific, South Atlantic, and southern Indian Ocean. Found throughout much of southern New Zealand, but more common south of the Chatham Rise, including the Bounty Islands and Macquarie Island. Not recorded north of the Bay of Plenty.

**Depth:** 200 to 1200 m.

**Similar species:** There are two subspecies. Ceramaster. *p. australis* (known only from the Macquarie Ridge) lacks the pedicellariae (jaw-like appendages) present on the upper marginal plates of Ceramaster. *p. patagonicus*. Small specimens from seamounts may represent different species. Species of *Pillsburiaster* differ in having rounded plates on the upper surface, and those of *Sphaeriodiscus* have scattered granules over the marginal plates.

**Phylum** Echinodermata  
**Class** Asteroidea (sea-stars)  
**Order** Valvatida  
**Family** Goniasteridae

_Hippasteria phrygiana_ (Trojan star) (HTR)

_Distinguishing features:_ Five short arms, disc large, near pentagonal, and usually inflated. Sturdy, blunt, conical spines form 2 rows on marginal plates (1 to 3 spines per plate). Large and small plates of the upper surface rounded, both with granules, the larger often with an erect spine. Tube-feet with sucking discs, in 2 rows.

**Colour:** Pale orange above, paler cream below.

**Size:** Total width up to 320 mm.

**Distribution:** Widely distributed in the northern hemisphere and in Australia (New South Wales and Victoria). In New Zealand it occurs from the Bay of Plenty south. Common on the Chatham Rise.

**Depth:** 20 to 1300 m. Most records from deeper than 500 m.

**Similar species:** The strong spines on the margins help to distinguish this species from similar shaped goniasterids such as _Mediaster_ spp. and _Gilbertaster anacanthus_, which lack these spines, as does a rare species of _Hippasteria_ from south of Tasmania.

**Echinodermata**

**Class** Asteroidea (sea-stars)

**Order** Valvatida

**Family** Goniasteridae

---

**Lithosoma novaezelandiae** (Rock star) (LNV)

![Image of Lithosoma novaezelandiae](image)

**Distinguishing features:** Disc pentagonal, bordered by conspicuous upper marginal plates which completely encase the arms from base to tip. Plates of the upper surface naked, ringed with small granules, close-fitting, mostly hexagonal, and very regularly arranged into rows. Madreporite small, naked, between arms, and nearer centre than edge of disc. Marginal plates relatively much larger in juveniles. Tube-feet with terminal sucking discs, in 2 rows.

**Colour:** Pale brown-cream above, light fawn below.

**Size:** Total width up to 320 mm.

**Distribution:** Widespread around New Zealand from north of the North Island to the Campbell Rise, but not known from the east coast between East Cape and Christchurch or from the west coast between North Cape and Cape Farewell.

**Depth:** 120 to 1200 m. Most common at 600 to 800 m.

**Similar species:** *Glyphodiscus mcknighti*, from near Norfolk Island, is very similar. Two species of Rosaster also have the upper surface of the arms composed only of marginal plates, but plates of the upper surface are covered with granules.

**References:**


**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Valvatida  
**Family**  Goniasteridae

**Mediaster sladeni** (Sladen’s star) (MSL)

**Distinguishing features:** Disc large, irregularly inflated centrally and at arm bases. The 5 arms slender, evenly tapering to oval terminal plates. Plates on upper surface are regular in shape (having an oval, enlarged, flattened head) and form a close cover. Some plates bear in their centre relatively conspicuous pedicellariae (jawlike appendages) with 2 to 3 jaws. Madreporite hexagonal, between arms, and nearer to disc than to marginal plates.

**Colour:** Orange.

**Size:** Total width up to 230 mm. Average width about 120 mm.

**Distribution:** From Three Kings Islands in the north to south of The Snares. Many records from the Chatham Rise.

**Depth:** 40 to 1000 m.

**Similar species:** Mediaster gartrelli, known from similar depths, but only from off Taranaki and the Kermadec Islands, has shorter arms; *M. arcuatus*, widespread at 600 to 1300 m, has shorter arms.


Phylum: Echinodermata  
Class: Asteroidea (sea-stars)  
Order: Valvatida  
Family: Goniasteridae

**Pillsburiaster aoteanus (PAO)**

**Distinguishing features:** Outline almost pentagonal, the sides slightly concave. Upper surface covered with small granules, the plates round or ovoid in outline, and not in regular rows. Lower surface covered with similar small granules, plates at the margins often with a bare patch, which may become larger towards the arm tip.

**Colour:** Yellow to light brown.

**Size:** Total width up to 250 mm.

**Distribution:** Widespread throughout New Zealand and moderately common on seamounts.

**Depth:** 120 to 1600 m.

**Similar species:** It is similar to species of Ceramaster, but these can be distinguished by their bright red colour and the plates of their upper surface which are rectangular to hexagonal and arranged in regular rows.

Phylum: Echinodermata  
Class: Asteroidea (sea-stars)  
Order: Valvatida  
Family: Odontasteridae

**Odontaster benhami** (Pentagonal tooth-star) (ODT)

**Distinguishing features:** Outline roughly pentagonal, with a variable degree of arc between arm tips. Marginal plates separated by shallow grooves and slightly larger nearer the disc. On the underside, each of the oral plates (at the side of the mouth) has a larger, usually visible, backward-curving, glassy spine; tube-feet with sucking discs, in 2 rows.

**Colour:** Dull coloured, mostly light brown, reddish or orange, almost cream below.

**Size:** Total width up to 80 mm.

**Distribution:** The species has a generally southern distribution in the New Zealand region, from Cook Strait to near The Snares.

**Depth:** 0 to 550 m.

**Similar species:** Two other species occur in the New Zealand region, both superficially similar to *Odontaster benhami*. A lab examination may be necessary to separate them; *O. aucklandensis* is mainly subantarctic, 55 to 350 m, and *O. rosagemmae* occurs off the east coast of North Island and east of the Chatham Islands, 450 to 1200 m. Species of *Diplodontias* (in the same family) are also quite similar.

Diplopteraster sp. (DPP)

**Distinguishing features:** Disc large, fleshy and inflated, with a cover of skin supported by groups of spines. Plates at margin barely distinguishable. Tubefeet in four rows, small spines form transverse rows from tube feet, are united by a web of skin and alternate in number.

**Colour:** Grayish or cream.

**Size:** Total width up to 200 mm.

**Distribution:** East coast of New Zealand.

**Depth:** 800 to 1700 m.

**Similar species:** One other species of Diplopteraster is present and a detailed examination is needed to separate them. Other species in this family appear similar but differ in having the tube feet in 2 rows.

**Phylum**  Echinodermata  
**Class**  Asteroidea (sea-stars)  
**Order**  Velatida  
**Family**  Pterasteridae

**Hymenaster carnosus (HYC)**

**Distinguishing features:** Disc large, almost pentagonal. Upper surface inflated and covered in skin with the underlying spinelets forming distinct figures on the surface. Lower surface flat. Tubefeet in 2 rows, spines along furrow not linked by skin, 2 spines to each pair of tube feet.

**Colour:** Light cream, sometimes with a slight purplish tinge.

**Size:** Total width up to 260 mm.

**Distribution:** Throughout New Zealand and also reported from off South America.

**Depth:** 1000 to 2000 m.

**Similar species:** There are at least 6 other species of Hymenaster known from local waters, though all are smaller with total diameter up to about 100 mm.

**Crossaster multispinus (Sun-star) (CJA)**

**Distinguishing features:** Wide, flattened disc, with 11 to 12 arms; plates of upper surface spaced apart, each with a bundle of spinelets up to 5 to 10 mm long. Only lower marginal plates apparent, with short spines and granules; tube-feet with sucking discs, in 2 rows.

**Colour:** Orange-pink, whitish-pink, or mauve above.

**Size:** Total width up to 140 mm.

**Distribution:** Present throughout the New Zealand region, from the Kermadec Islands to the Campbell Plateau.

**Depth:** 90 to 1200 m.

**Similar species:** One other species, with 10 arms, is known from central and southern New Zealand, 200 to 400 m.

**Distinguishing features:** With 7 to 9 arms, usually 8. Disc near flat, arms rounded, plump at the base. Upper marginal plates smaller than lower, which bear spinelets in a transverse row. Groups of 1 to 5 spines present on each plate of the upper surface. Tube-feet with sucking discs, in 2 rows.

**Colour:** Uniform orange (ranging to light brown) above, orange to light brown with paler tube-feet below.

**Size:** Total width up to 300 mm.

**Distribution:** Widespread over the Chatham Rise and sub-Antarctic. Also known from the Kermadec Islands and the east coast of the North Island, Australia, and Japan.

**Depth:** 219 to 1550 m.

**Similar species:** Other sun-stars (family Solasteridae), such as Crossaster japonicus, which is common. It differs from S. torulatus in having finer, longer, and more numerous spines on the more closely spaced plates of the upper surface.

**References:**
Phylum: Echinodermata
Class: Crinoidea (sea lilies and feather stars)
Order: Comatulida (feather stars)
Family: (Feather stars) (CMT)

**Distinguishing features:** Stalks are vestigial in this modern branch of the crinoids although their cirri remain, encircling the base of the 5–40 arms. The cirri are used for grasping the substrate when the animal is at rest, and are long and slender in soft bottom forms and short and stout in forms that rest on rocks, corals, etc. Each arm bears a row of pinnules producing a feather like appearance. They are fragile, and often only fragments are present in a sample.

**Colour:** Various, often strikingly coloured, but deepwater species more likely to be yellow or brown.

**Size:** From 100 to 350 mm (arm length).

**Distribution:** Widespread, but rare in the New Zealand region. They occur on soft or hard substrates.

**Depth:** 50 to 2500 m. Range may be greater.

**Similar species:** At least 40 species of feather stars are present in the New Zealand region, and a microscopic examination is needed for species determination. Can be distinguished from sea lilies by the absence of a stalk. The photo is of *Oxycomanthus* sp.

**Phylum**  Echinodermata  
**Class**  Crinoidea (sea lilies and feather stars)  
**Order**  Isocrinida (sea lilies)  
**Family**  

(Sea lilies with cirri) (CRN)

**Distinguishing features:** Sea lilies attach to the substrate with a stalk, up to 1 m long, topped with feathery arms arising from a small body (calyx). In this order small, segmented, cirri are present on the stalks. There are 5 arms at the base but they usually branch several times. A large specimen may have 40 or more arms. Each arm bears a row of small branches (pinnules) which bear the small tube-feet and produce a feather-like appearance. Sea lilies are fragile, and often only fragments are salvaged.

**Colour:** Various. Reported as emerald green, purplish, or grey.

**Size:** Total length up to 1000 mm.

**Distribution:** Sea lilies are mostly found in deep water, especially on seamounts and, although rare in collections, are probably widespread in the New Zealand region.

**Depth:** 100 to 2000 m.

**Similar species:** Can be distinguished from feather stars (order Comatulida) by the presence of a stalk, and from the other two orders of sea-lilies (Millecrinida and Cyrtocrinida) by the presence of cirri on the stalk. The photo is of *Metacrinus* sp.


**Echinodermata**

**Class** Crinoidea (sea lilies and feather stars)

**Order** Millericrinida, Cyrtocrinida (sea lilies)

**Family**

(Sea lilies without cirri) (CRN)

**Distinguishing features:** Sea lilies attach to the substrate with a stalk, up to 1 m long, topped with feathery arms arising from a small body (calyx). No cirri are present on the stalks in this order. Each arm bears a row of small branches (pinnules) which bear the small tube-feet and produce a feather-like appearance. Sea lilies are fragile, and often only fragments are salvaged.

**Colour:** Various.

**Size:** Total length up to 1000 mm.

**Distribution:** Recorded from seamounts and areas of steep rocky relief throughout the New Zealand region.

**Depth:** 400 to 1500 m.

**Similar species:** The only species likely to be present in trawl samples is *Phrynocrinus nudus* (pictured, note: arms missing). It is similar in size to the isocrinid sea-lilies but, like all other members of these two orders, it lacks cirri on the stalk, and the arms branch irregularly.


**Goniocidaris parasol (Parasol urchin) (GPA)**

**Distinguishing features:** Larger spines long and thick, often encrusted with sponges, polyzoa, and hydroids. Spines on the upper surface terminating in a large, umbrella-like disc and bearing a complete or partial disc or flange at their base. Variable in form with some (possibly younger) individuals having longer spines with smaller terminal disks.

**Colour:** Test and secondary spines pale brown/cream, primary spines cream.

**Size:** Diameter up to 30 mm (spines up to 50 mm).

**Distribution:** Common from the Chatham Rise to the Campbell Plateau, including the Bounty Plateau.

**Depth:** 200 to 1000 m.

**Similar species:** May be confused with *G. umbraculum*, which also have (small) umbrella-like discs on their large spines, but the spines themselves are shorter and instead of a disc or flange bear spurs or thorns at the base. *G. umbraculum* is also more common in shallower waters, 20 to 200 m.

**References:**
**Distinguishing features:** Primary spines short (generally less than the test diameter), thick, pale coloured, and often encrusted with sponges, polyzoa, and hydroids. Spines on upper surface bear small, umbrella-like discs at the outer end and spurs or thorns at the inner end.

**Colour:** Test often distinctly greenish on the upper surface. Larger spines brown, those at the circumference may be tinged with green near the base.

**Size:** Diameter up to 30 mm.

**Distribution:** Well known from Foveaux Strait where they were commonly caught in oyster dredges. Also found off the east coast of South Island up to Cook Strait and occasionally on the Chatham Rise.

**Depth:** 60 to 400 m.

**Similar species:** The larger spines of *G. parasol* are longer than those of *G. umbraculum* and have larger terminal umbrellas and a complete or partial disc or flange close to their base. *G. parasol* is more common over the Chatham Rise and elsewhere south of Cook Strait, in deeper waters. Other species of *Goniocidaris* and *Ogmocidaris benhami*, all found in northern waters, may also have umbrella-like spines.


**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Cidaroida  
**Family**  Cidaridae  

**Ogmocidaris benhami (OBE)**

**Distinguishing features:** Test flattened. Peristome (bottom section) smaller than apical system (round, upper section). Apical system about 50% of test diameter. Larger spines with very short collar and neck (differentiated basal sections); spine shafts ornamented with fine granules and dense hairs. Spines around mouth flattened with serrated edges. Larger specimens may have small umbrella-like disks on short spines on the upper surface (as in Goniocidaris spp.), and longer spines may have a trumpet shaped tip.

**Colour:** Pale brown.

**Size:** Diameter up to 25 mm.

**Distribution:** Relatively common in northern New Zealand waters, also recorded from the Chatham Rise.

**Depth:** 200 to 800 m.

**Similar species:** Similar to other species in the same sub-family (Goniocidarinae), especially the 2 common Goniocidaris species, but the lack of basal flanges on the primary spines readily distinguishes Ogmocidaris from these. Could be confused with other small cidarid species, e.g., Austrocidaris pawsoni (apical system < 50% of test diameter), Aporocidaris milleri (apical system 56-75% of test diameter), Prionocidaris spp. (test hardly flattened), and Rhopalocidaris spp. (smaller).


**Phylum** Echinodermata  
**Class** Echinodea (sea urchins)  
**Order** Cidaroida  
**Family** Cidaridae

**Stereocidaris spp. (STC)**

**Distinguishing features:** These are typically large, robust urchins with sturdy spines. All plates are densely covered in spines. The top one or two test plates in each double series bears only a rudimentary tubercle, with no spine. The primary spines are highly variable, often cylindrical, cigar, club, or even oar shaped and often have thorny narrow ribs.

**Colour:** Test and spines generally pale yellowish to dull, light brown. Neck (innermost section) of primary spines a bright shining pink in one species at least.

**Size:** Diameter up to 80 mm. Spines up to 100 mm.

**Distribution:** Records come mainly from Hawke Bay, the Bay of Plenty, the southern Kermadec Ridge and Three Kings Ridge.

**Depth:** 400 to 1000 m.

**Similar species:** Includes *S. sceptriferoides, S. microtuberculata*, and possibly one other species. The only other large deepwater cidarid sea urchins in New Zealand waters that Stereocidaris could be confused with are *Histocidaris* spp., which have large naked areas on the genital plates and fully formed uppermost primary spines.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Cidaroida  
**Family**  Histocidaridae

**Histocidaris spp. (HIS)**

**Distinguishing features:** The apical plates (central group of plates on upper side) bear few spines, leaving large naked areas. Primary spines long and cylindrical, and can be either smooth or thorny depending on species. Tubercles (spine attachment points on the test) are crenulated (toothed) rather than smooth as in most other cidarid species, but this feature is difficult to see without first removing the spine and bleaching away the muscle tissue. The spines around the mouth are short, curved and strongly serrated.

**Colour:** Spines mostly white or pale coloured, test brownish.

**Size:** Diameter up to 70 mm. Spines can be longer than 120 mm.

**Distribution:** Recorded from the Macquarie Ridge and Campbell Plateau in the south, and widespread in areas of seamounts from Hawkes Bay north. Not recorded from the Chatham Rise.

**Depth:** 150 to 2300 m.

**Similar species:** Five species are present in New Zealand. *H. australiae* (pictured), *H. elegans, H. variabilis, H. acutispinus*, and *H. recurvata*. Large specimens could be confused with *Stereocidaris* or *Poriocidaris* but the genital plates on these species are densely spined. Without close inspection, smaller specimens could also be confused with these, and other, genera.


Phylum: Echinodermata
Class: Echinoidea (sea urchins)
Order: Cidaroida
Family: Histocidaridae

Poriocidaris purpurata (PCD)

Distinguishing features: A large, robust, sea urchin with sturdy spines up to 2.5 times the diameter of the test. The primary spines are either uniformly pale and tapered with a long brown collar extending up from the base or, in some individuals, the collar is a rich purple colour and swollen making the spine fusiform (cigar) shaped. The pedicellariae (tiny pincers scattered over the surface of the test) are unique among sea urchins in that they are large and of a flattened, two-valved form.

Colour: Test and secondary spines, light brown; collar of primary spines brown or purplish, shaft pale or white, or purplish near collar.

Size: Diameter from 10 to 65 mm excluding spines. Spines up to 100 mm.

Distribution: Known from the Bay of Plenty, Kermadec Ridge, Hawke Bay, and north Chatham Rise. Mainly associated with seamounts.

Depth: 600 to 1800 m.

Similar species: The closest relatives to this (monospecific) genus are in the genus Histocidaris, of which up to 5 species may be represented in the New Zealand region. Histocidaris species differ in that they tend to have long, slender, sometimes thorny, spines, and bear very large (up to 5 mm) three-valved pedicellariae.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Clypeasteroida (sand dollars)  
**Family**  Laganidae

**Peronella hinemoae** (Sand dollar) (PHI)

**Distinguishing features:** Test flat, disc-like, more or less circular, with a rounded edge. Anus on lower side, somewhat in from the test edge. Pores of the madreporite (sieve plate) are scattered over the genital plates and are individually visible. Spines of upper side short and dense. Spines of lower side longer and more scattered.

**Colour:** Test and spines red, but turn green and fade on preservation. Dead test white to straw coloured.

**Size:** Diameter up to 45 mm.

**Distribution:** Known from around North Island from Cape Egmont to the Bay of Plenty and from seamounts further north, and also from Fiordland and the Stewart-Snares shelf.

**Depth:** 17 to 775 m.

**Similar species:** There are six other species in this order known from New Zealand. The three species of Clypeaster are oval to pentagonal in outline and have the anus adjacent to the edge of the test. *Fellaster zelandiae* is also round in outline, but has a sharp edge and the anus adjacent to it. *Echinocyamus polyprorus* is similar but very small (less than 10 mm), less flattened, and paler than Peronella.

**Dermechinus horridus (Deepsea urchin) (DHO)**

**Distinguishing features:** Test height the largest of any sea urchin (to over 130 mm) and (in large specimens) usually greater than the test diameter. Apical system and peristome very small and of similar size. Larger spines long and slender, forming vertical series. Secondary spines very numerous, fine, bearing thorns, and terminating in a hook.

**Colour:** Test dull to bright red/orange, primary spines orange, smaller spines sometimes whitish.

**Size:** Diameter up to 110 mm. Test height 30 to 130 mm.

**Distribution:** Circumpolar (South Africa, South America, South Australia). Widespread in New Zealand (Northland, Challenger Plateau, Bay of Plenty, west coast South Island, Kaikoura, and the Chatham Rise).

**Depth:** 200 to 1200 m.

**Similar species:** The only other New Zealand species in this family, *Gracilechinus multidentatus*, is unlikely to be confused with *D. horridus* due to its much paler colour and more numerous and robust primary spines. Smaller specimens, which have not yet become very tall, could be confused with *Pseudechinus flemingi*, but the peristome and apical system of this species are relatively large.

**Class**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Echinoida  
**Family**  Echinidae

**Gracilechinus multidentatus** (Deepsea kina) (GRM)

**Distinguishing features:** Large test, variable in ratio of test diameter to height. Larger spines 30 to 35 mm long and tapered. Probably the most common species of sea urchin in trawl bycatch in the New Zealand region; often caught in large numbers, especially on the south Chatham Rise. The roe are edible when ripe (late August-early September on the Chatham Rise).

**Colour:** Test colour variable but always very pale, either pink, cream, or light brown. Spines are pink/white and darker at the tips.

**Size:** Diameter up to 100 mm. Spines about equal in length to test diameter.

**Distribution:** Widespread around the New Zealand region, from the Lord Howe Rise, Kermadec Ridge, and Bay of Plenty in the north, to the Auckland Islands in the south. Particularly common on the south Chatham Rise.

**Depth:** 250 to 1400 m.

**Similar species:** The only other member of the family in New Zealand, Dermechinus horridus, is bright orange.

Distinguishing features: Test flexible, usually compressed into a disc or frisbee-like shape when captured. Larger spines usually more numerous on lower surface than upper; larger spines terminate in a whitish hoof-like piece or a glandular bag. In many species these large spines readily brush off with capture, making identification difficult. Handle with care as some species deliver a painful sting.

Colour: Purple, sometimes streaked with white, bright-reddish, or brown.

Size: Diameter up to 250 mm.

Distribution: Widespread throughout the New Zealand region.

Depth: 200 to 3000 m. Possibly deeper.

Similar species: At least 9 species are known from New Zealand waters, and more may be expected, as this group of echinoderms is not well studied.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Echinothurioida (Tam O’Shtanters)  
**Family**  Echinothuriidae  

*(Tam O’Shtanters) (ECT)*

**Distinguishing features:** Test flexible, discus-shaped, usually compressed flat in the trawl. Larger (primary) spines usually less numerous on upper surface than lower, where they terminate in a whitish hoof which, along with the spines, readily brush off on capture. Handle with care as some species deliver a painful sting.

**Colour:** Several species are dark purple, two are more or less bright red, and one or two are browning. Hoofs are always a shade of white.

**Size:** Diameter from 30 to 200 mm.

**Distribution:** Widespread locally, throughout the New Zealand region.

**Depth:** 200 to 3000 m. Possibly deeper.

**Similar species:** At least 7 species (in 5 genera) are known from New Zealand waters, although the exact identity of three or more species is still uncertain. *Phormosoma* spp. are similar, but can usually be distinguished by their light brown colour, sharply pointed teeth, large sunken tubercles, and lack of terminal glassy hoofs on the large spines of the lower surface.


**Phylum** Echinodermata  
**Class** Echinoidea (sea urchins)  
**Order** Echinothurioida (Tam O’Shanters)  
**Family** Phormosomatidae

**Phormosoma spp. (PHM)**

- **Distinguishing features:** Test flexible, discus-shaped, usually compressed flat in the trawl. Larger (primary) spines usually less numerous on upper surface than lower, where they terminate in a glandular sac. Spines readily brush off with capture. Handle with care as some Tam O’Shanters deliver a painful sting.

- **Colour:** Brownish or orange-yellow.

- **Size:** Diameter from 40 to 120 mm.

- **Distribution:** *P. bursarium* is widely distributed throughout the Indo-Pacific, *P. rigidum* is known only from New Zealand, off the Bay of Plenty.

- **Depth:** 170 to 2340 m. *P. rigidum* known only from 1260 m.

- **Similar species:** Two species are recognised from New Zealand, with microscopic differences. The tube feet on the upper side are arranged in distinct arcs of three in *P. bursarium* whereas in *P. rigidum* the tube feet are less well developed and formed into single columns. *Phormosomas* differ from other Tam O’Shanters in that areoles of their tubercles (spine bases) are large and deeply sunk into the test, the teeth are strongly pointed, and (although often lost on capture) the primary spines of the lower surface terminate in a gelatinous sac rather than a glassy hoof.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Pedinoida  
**Family**  Pedinidae  

**Caenopedina novaezelandiae** (Banded-spine urchin) (CNO)

**Distinguishing features:** Test height about half of the test diameter. Primary spines up to 3 times test diameter with broad colour bands (up to about 5 mm wide). Secondary spines long and generally white, sometimes with green-tinged tips. All spines bear numerous spinelets.

**Colour:** Larger spine bands green (especially near base), white, and reddish brown. Shorter spines generally white, sometimes with green-tinged tips. Test white/brownish-green; apical system (centre of upper surface) green.

**Size:** Diameter up to 30 mm.

**Distribution:** Bay of Plenty north.

**Depth:** 300 to 500 m.

**Similar species:** Two other species of Caenopedina are known from the New Zealand region, both are more or less uniform reddish-brown in colour. One is known from near Norfolk Island, the other from off Dunedin.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Pedinoida  
**Family**  Pedinidae  

---

**Caenopedina otagoensis (CAO)**

---

**Distinguishing features:** The primary spines are long (up to twice the diameter of the test), slender, and tapering, with longitudinal striations and very fine teeth. Internally, the supports for the jaw muscles which ring the opening on the lower surface consist of 5 pairs of peglike “auricles” and are not joined at the outer end as in most other species of sea urchins.

**Colour:** Test and spines reddish brown, apical system dark purplish, nearly black. Spines may be lighter in colour towards the tip.

**Size:** Diameter from 15 to 40 mm.

**Distribution:** Known only from off the southeast coast of South Island, but likely to be more widespread.

**Depth:** 1200 to 1300 m. Range likely to widen with more records.

**Similar species:** None of the three or four other Caenopedina species have the reddish brown test and spines, along with the dark apical system (round set of plates at centre top). Skeletal differences (mostly internal) separate this order from other sea urchins.

**Phylum**
Echinodermata

**Class**
Echinoidea (sea urchins)

**Order**
Pedinoida

**Family**
Pedinidae

**Caenopedina porphyrogigas** (Giant purple pedinid) (CAL)

**Distinguishing features:** Large and uniformly dark brown. The order Pedinoida is differentiated from more modern sea urchins mostly by internal skeletal structures, especially the primitive nature of the jaw parts (which are not joined at the top), jaw muscle supports (pairs of unjoined peg-like structures), and teeth (grooved rather than t-shaped). Spines long, in smaller specimens may be twice the diameter of the test. The secondary (thinner) spines are hollow.

**Colour:** Spines and test rich, dark brown.

**Size:** Diameter from 20 to 100 mm.

**Distribution:** Found from the northern Macquarie Ridge in the south to the West Norfolk Ridge in the North, and from the South Tasman Rise in the west to the Louisville Ridge in the east.

**Depth:** 370 to 530 m. Range possibly wider.

**Similar species:** There are three other described species of Caenopedina known from the New Zealand region, and one more awaiting description.

**Distinguishing features:** This species is readily distinguished from all other New Zealand species of *Caenopedina* by its short and stout primary spines.

**Colour:** The spines are green basally and reddish distally, occasionally with white tips. Other smaller spines are whitish.

**Size:** These are small urchins, mostly less than 30 mm test diameter. The primary spines are usually shorter than the test diameter.

**Distribution:** Known only from northern New Zealand in the Bay of Plenty, the Three Kings Ridge, and the Colville Ridge. Also known from off Hawaii and Johnston Atoll in the northern Pacific.

**Depth:** 370 to 530 m.

**Similar species:** There are three other described species of *Caenopedina* known from the New Zealand region, and one more awaiting description. *C. porphyrogigas* is generally much larger and brown coloured. *C. novaezelandiae* has similar coloured spines but they are more or less distinctly banded, and comparatively slender. The spines of *C. otagoensis* are light reddish brown and unbanded. The undescribed species has reddish brown spines with white, often slightly flattened, tips.

Phylum: Echinodermata
Class: Echinoidea (sea urchins)
Order: Spatangoida
Family: Brissidae

**Brisopsis oldhami** (BRO)

**Distinguishing features:** Oval-shaped and very fragile (usually broken) with short spines, many of which are spatulate to aid digging into the sediment, forming a canopy over the test. The fasciole (dark ring of short spines) surrounding the central ‘petal’ on the upper surface has distinctive lateral bulges. If unsure use the code BSO for Brissopsis spp.

**Colour:** Yellowish-brown-pink, the fascioles wine or purplish-coloured.

**Size:** Up to about 80 mm long.

**Distribution:** Found in soft sediments mainly on the Chatham Rise and off the east coast of New Zealand from Kaikoura to East Cape. There are also several records from the southern Challenger Plateau. This species also occurs throughout the Indo-west-Pacific and is therefore likely to be found north of New Zealand.

**Depth:** Wide depth range, 75 to 2300 m.

**Similar species:** A second (undescribed) species of Brissopsis was discovered in New Zealand recently, differing in the patterning of the subanal fasciole which, unlike in *B. oldhami*, has extensions to the upper surface. The distribution of another species of heart urchin, *Hemiaster expergitus*, overlaps with that of *B. oldhami* and they are often collected together. It is similar in general appearance and colour to *B. oldhami* but tends to be smaller and more spherical, with a greenish and more oval peripetalous (upper) fasciole.

**References:**
**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Spatangoida (heart urchins)  
**Family**  Spatangidae

### Paramaretia peloria (Microsoft mouse) (PMU)

**Distinguishing features:** Test ovate and low, lower surface very flat to concave and upper surface evenly rounded. Frontal notch absent. Edge of upper surface sharp. Upper surface densely covered in tubercles, strongly sunken into the test. Spines slightly curved but usually broken.

**Colour:** Test dull grey, spines reddish-brown above, paler on sides.

**Size:** Total length up to 90 mm.

**Distribution:** S.E. Australia (NSW, Victoria, Tasmania), widespread in New Zealand from Stewart Island to Three Kings Islands, including the Chatham Rise.

**Depth:** 50 to 700 m.

**Similar species:** Paramaretia tuberculata, although less common, has a similar distribution in New Zealand. It can be distinguished from *P. peloria* by the much fewer number of large tubercles on the upper surface and the more rounded test edge.

**Phylum**  Echinodermata  
**Class**  Echinoidea (sea urchins)  
**Order**  Spatangoida (heart urchins)  
**Family**  Spatangidae  

**Spatangus mathesoni** (Matheson’s heart urchin) (SMT)

**Distinguishing features:** Test large, heart-shaped in outline and tent-shaped in profile with a deep frontal notch and shallow lateral notches. The upper surface is not inflated (i.e., flat rather than convex). On upper surface large, sunken, spine bearing tubercles are limited to the area between the petaloid ambulacra. Upper surface also covered by a dense coat of small spines. On the lower surface the spines are longer but less dense.

**Colour:** Deep reddish-brown, purple in preserved specimens.

**Size:** Diameter up to 110 mm.

**Distribution:** Challenger Plateau, east and west coasts of the North Island, Chatham Rise.

**Depth:** 650 to 1050 m.

**Similar species:** *Spatangus multispinus* has numerous larger spines all over the inflated upper surface; *S. lutkeni* has fewer spines but is also quite strongly inflated on the upper surface.


**Phylum** Echinodermata  
**Class** Echinoidea (sea urchins)  
**Order** Spatangoida (heart urchins)  
**Family** Spatangidae

**Spatangus multispinus (Purple-heart urchin) (SPT)**

*Distinguishing features:* Broadly oval-heart-shaped large test with a deep frontal notch. The distinct, petaloid (petal-shaped) ambulacra lie close to flush with the surface of the test. Primary spines long, erect, and fairly dense on upper surface.

*Colour:* Test and spines a deep, rich violet fading to mauve after preservation.

*Size:* Diameter up to 100 mm.

*Distribution:* Found throughout New Zealand, especially off the east coasts of the North and South Islands, the Chatham Rise, and Stewart Island.

*Depth:* 30 to 1000 m.

*Similar species:* *Spatangus mathesoni* tends to be larger and have a sharper latero-ventral margin. Also *S. lutkeni* (very similar, but less common) and *S. capensis* (rare). These species generally have fewer larger tubercles, limited on the upper surface to the areas between the petaloid ambulacra.


**Phylum** Echinodermata  
**Class** Echinoidea (sea urchins)  
**Order** Temnopleuroidea  
**Family** Temnopleuridae

**Pseudechinus flemingi** (Fleming’s urchin) (PFL)

**Distinguishing features:** Long, fine, densely matted larger spines of length up to equal the test diameter. Test slightly flattened, especially on lower surface. Peristome (membranous area at centre of lower surface) is wider than the apical system (area at centre of upper surface).

**Colour:** Spines a rich orange-red or deep salmon colour, test a rich rose red with paler rose tubercles (spine supports).

**Size:** Diameter up to 50 mm.

**Distribution:** Found on the Chatham Rise, especially the south flanks and around the Mernoo Bank, and off Otago.

**Depth:** 90 to 600 m.

**Similar species:** The 4 other species of Pseudechinus found in the New Zealand region are of a similar size and shape, but are duller in colour, and generally found in shallower water. *Dermechinus horridus* is a similar colour but has shorter spines, a taller test (in large specimens), and smaller, even sized, apical systems and peristomes.

**References:**  
Phylum: Echinodermata
Class: Holothuroidea (sea cucumbers)
Order: (Sea cucumbers) (HTH)

Distinguishing features: Usually soft-bodied and cylindrical. Mouth and anus at opposite ends, mouth surrounded by feeding tentacles, usually retracted on capture. 5 rows of tube feet along body, absent in the order Apodida. The calcite skeleton common to echinoderms reduced to microscopic plates in most species, and embedded in body wall. As the plates are commonly used to differentiate between species, identification usually requires laboratory examination.

Colour: A range of colours from browns, reds, purples, grey, white.

Size: Up to 300 mm.

Distribution: Throughout the New Zealand region, from the intertidal to abyssal depths, where they may make up to 90% of the benthic biomass.

Depth: 0 to 5000 m.

Similar species: More than 100 species known in New Zealand, with representatives of all 6 orders of holothurians having been recorded from New Zealand region. Commonly known commercially as beche-de-mer.

Distinguishing features: Body wall fungiform (with low white wart-like discs on the end of thin stalks) and with brown spots. Fragile (often collapses on collection). Body wall may peel off and separate into 1-2 strips. Tentacles (18-20) often damaged. This species has previously been called *Bathyplotes moseleyi* Theel, 1886 but recent work (N. Davey pers comm.) has distinguished the Antarctic species as the true *B. moseleyi*. The Antarctic species differs from the New Zealand species description.

Colour: White with brown spotting. Tentacles orange with white stalks.

Size: Length up to 250 mm.

Distribution: New Zealand.

Depth: About 220 to 480 m around New Zealand, elsewhere to about 800 m.

Similar species: Fungiform warts and brown spots distinguish this species from others of the genus.

References:

**Phylum**  Echinodermata  
**Class**  Holothuroidea (sea cucumbers)  
**Order**  Aspidochirotida  
**Family**  Synallactidae

**Pseudostichopus mollis (PMO)**

**Distinguishing features:** Distinctly cylindrical often holding its shape after collection and preservation. Thick leathery body wall. Tube feet small and often inconspicuous. Pygal furrow (5 lobes around anus) visible on some specimens.

**Colour:** Pale brown to creamy white body wall often covered with grit.

**Size:** Length up to 225 mm.

**Distribution:** North and South Pacific Ocean, southern Indian Ocean, eastern Australian continental slope, Antarctic ocean, Western Antarctica, Weddell Sea.

**Depth:** Usually 200–500 m, 91–1587 m in Antarctic Ocean.

**Similar species:**

**Phylum**  Echinodermata  
**Class**  Holothuroidea (sea cucumbers)  
**Order**  Elasipodida  
**Family**  Laetmogonidae  

**Laetmogone spp. (LAG)**

**Distinguishing features:** Short thick body with a gelatinous texture. Shape holds well before and after preservation. Triangular bulky tube feet with a small sucking end disc on ventro-lateral edge. No tube feet mid-ventrally and a distinct tentacle crown at the anterior end with 15 tentacles. Dorso-lateral papillae in 1 or 2 rows.

**Colour:** Transparent, off white, shades of lavender. Dark red/violet dorsal papillae.

**Size:** Length up to 110 mm.

**Distribution:** Pacific, Atlantic, Antarctica (very cosmopolitan).

**Depth:** 250 to 1800 m.

**Similar species:** Only identified to genus, 9 species in genus, all similar in external appearance. Species identification requires microscopic examination.


**Phylum**  
Echinodermata  

**Class**  
Holothuroidea (sea cucumbers)  

**Order**  
Elasipodida  

**Family**  
Laetmogonidae  

**Pannychia moseleyi (PAM)**  

**Distinguishing features:** Body gelatinous and slimy. Can be quite long and flimsy. Often in poor condition after collection. Ventral tentacle crown with 20 tentacles. Ventro-lateral tube feet more prominent and larger than the mid ventral tube feet.  

**Colour:** Greyish lavender with off-white tube feet.  

**Size:** Length up to 250 to 300 mm.  

**Distribution:** Pacific Ocean coasts and Tasman Sea. From Australia and New Zealand to Peru, and off the Hawaiian and Galapagos Islands.  

**Depth:** About 210 to 2600 m.  

**Similar species:** Laetmogone sp. may be similar but lack mid-ventral tube feet. Body of *Pannychia moseleyi* also longer and thinner, skin slimy and flimsy, and tube feet less bulky.  


**Enypniastes eximia (EEX)**

*Distinguishing features:* Transparent body with sediment filled intestine, other internal organs readily visible. Jellyfish-like body form, fragile and usually destroyed on removal from water. Anterior tentacles clearly visible in a circle around the mouth. Transparent cape-like structure around the anterior. Cape often destroyed or partially damaged in dead specimens.

*Colour:* Live specimens pale pink to brownish red, off white to pale pink in alcohol preserved specimens.

*Size:* Length up to 250 mm.

*Distribution:* World wide in bathyal to abyssal depths.

*Depth:* About 500 to 5700 m. Usually near the bottom where they burrow and eat in the sand/mud. Have been found several hundred feet off bottom.

*Similar species:* The only species in the family Pelagothuriidae known from New Zealand waters.

**Phylum**  
Echinodermata

**Class**  
Holothuroidea (sea cucumbers)

**Order**  
Elasipoda

**Family**  
Psychropotidae

### Benthodytes sp. (BTD)

**Distinguishing features:** Species within these genera are large. Body wall can be firm or thin and predominantly appears flat on collection. Lateral tube feet fused into a brim that surrounds the body. Also visible is a row of tube feet midventrally. Anus dorsal, a ring of papillae around the tentacles. Tentacles (15), retractable and often not visible.

**Colour:** Frequently distinctive, from deep violet through to various shades of lavender/grey. Tentacle crown and tube feet are often a deeper violet than rest of body.

**Size:** New Zealand specimens up to 300 mm length.

**Distribution:** Throughout New Zealand waters. Also Antarctic, Pacific, Indian, and Atlantic waters.

**Depth:** Found deeper than 1000 m.

**Similar species:** The circum-oral papillae and dorsal anus are distinctive for the genus. Identification to species level requires microscopic examination.

**Phylum**  
Echinodermata

**Class**  
Holothuroidea (sea cucumbers)

**Order**  
Molpadiida

**Family**  
Molpadiidae

---

*Molpadia musculus* (Molpadia sea cucumber) (MOM)

**Distinguishing features:** Mid body is sausage shaped with a distinctive tapering tail. The body wall is leathery. Specimens are often full of mud as these species are benthic and they burrow and feed on sediment. Tentacles are small and almost always retracted on capture, however 15 small spots around the mouth show where tentacles are present. There are no tube feet and the body wall is smooth to touch.

**Colour:** Deep red through to grey with pink spots.

**Size:** Up to 200 mm.

**Distribution:** Cosmopolitan, but not above Arctic circle. Common in New Zealand waters.

**Depth:** 30 to 5205 m.

**Similar species:** *Heteromolpadia marenzelleri* and *H. pikei*. Both these species are found in New Zealand waters and have grey to red colouring. Found shallower than 500 m and tend to be more speckled in colouration compared to *Molpadia musculus* Risso, 1826.

**Phylum**  Echinodermata  
**Class**   Ophiuroidea (brittle stars)  
**Order**  Euryalinida (basket stars)  
**Family**  Asteroschematidae  

**Ophiocreas sibogae (OSI)**

**Distinguishing features:** Disc moderately large, with 5 very long arms; rounded above, flat or concave below and often coiled; disc and arms covered by skin, with minute granules sometimes present. Conspicuous radial ribs extend from either side of arm base to centre of disc. On the lower surface large genital clefts are clearly visible. Two armspines over most of the arm, placed at lower edges and pointing downwards; thickened towards tip.

**Colour:** Light brown, occasionally darker in patches, with the radial ribs usually much lighter. Rarely part or all of a specimen is reddish.

**Size:** Diameter up to 15 mm. Arms up to 300 mm.

**Distribution:** Widespread in the New Zealand region, from the Three Kings Rise to the Campbell Plateau, and often found coiled in branches of larger Gorgonacean corals. It is also known from southern Australia and Indonesia.

**Depth:** 200 to 2000 m.

**Similar species:** There are 4 other species of Ophiocreas recorded locally, as well as 2 in the somewhat similar genus Astrobrachion. They are all difficult to determine at sea, and require microscopic examination.

**Astrothorax waitei (Waite’s snake-star) (AWA)**

**Distinguishing features:** Five unbranched arms. Disc inflated above, flat on underside; upper surface completely covered with larger and smaller tubercles, those on the underside with finer, uniform granulation. Arms with transverse bands of granules, interspersed with narrow, smooth, depressed bands; 5 to 10 short, thorny, arm spines at outer margins of underside of arms. Mouth with distinct spines along margins; genital slits present at edge of disc, between the arms.

**Colour:** Creamy white to pinkish-orange.

**Size:** Up to 20 mm (disc diameter). Arms up to 100 mm.

**Distribution:** Widespread throughout the New Zealand region, near Norfolk Island to the Chatham Rise. Also known from Australia and South Africa.

**Depth:** 120 to 1200 m.

**Similar species:** At least 6 other snake-star species are recorded in this family.

**Phylum**  
Echinodermata

**Class**  
Ophiuroidea (brittle stars)

**Order**  
Euryalinida (basket stars, snake stars)

**Family**  
Gorgonocephalidae

---

**Gorgonocephalus spp. (Gorgon’s head basket-stars) (GOR)**

**Distinguishing features:** Five long arms, branching extensively (up to 10 or more times) from near the disc or within the disc margin. The arms are deciduous and a large tangled mass of arms may be the only sample taken. Upper side of disc with 5 pairs of conspicuous radial ribs. Six species with branching arms are recorded from the New Zealand region, and 4 of these (in 2 genera) may be present in trawl catches. Laboratory examination is required to determine the species.

**Colour:** Creamy white to dull or pale brown. Radial ribs on disc usually paler.

**Size:** Up to 70 mm (disc diameter).

**Distribution:** Gorgonocephalus chilensis, mainly Chatham Rise;  
G. dolichodactylus mainly Bay of Plenty; G. pustulatum and G. sundanus rare but widespread.

**Depth:** 70 to 1400 m.

**Similar species:** None.

**Bathypectinura heros** (Deepsea brittle star) (BHE)

**Distinguishing features:** Arms long sharply set off from disc, often intact or only broken near tip. Upper side of disc covered with small granules, rarely with a few plates exposed; lower side of disc also covered except around the mouth, where plates are naked. Arms more or less smooth, with small armspines closely pressed against the sides.

**Colour:** Reddish or brown.

**Size:** Up to 50 mm (disc diameter). Arms may be over 200 mm.

**Distribution:** Present in almost all oceans, and widespread around New Zealand.

**Depth:** 200 to 2500 m.

**Similar species:** None in the deeper waters. *Ophiopsammus maculata* is similar but is more or less confined to the continental shelf.

**Phylum**  Echinodermata  
**Class**  Ophiuroidea (brittle stars)  
**Order**  Ophiurida  
**Family**  Ophiuridae

### Ophiomusium lymani (Deepsea brittle star) (OLY)

**Distinguishing features:** Disc and arms rigid, arms almost always broken. Dorsal side of disc with distinct plates and large radial shields sometimes with a tubercular appearance to their surface. Ventral side of disc covered with a few large distinct plates, sides of jaw with fused squarish papillae, two pairs of tentacle pores covered by oval scales on armplates closest to disc centre. Lateral arm plates bear numerous very small adpressed armspines.

**Colour:** Whitish, cream, or light brown.

**Size:** Up to 30 mm (disc diameter).

**Distribution:** Widespread throughout the New Zealand region, also known from temperate regions of the Pacific, Indian and Atlantic Oceans.

**Depth:** 130 to 4000 m. This species is often very abundant on fine sediments in depths of 900–1500 m.

**Similar species:** There are several similar species in this genus and in other closely related genera present in New Zealand waters.


**Ophiophthalmus relictus** (Deepsea brittle star) (ORE)

**Distinguishing features:** Five robust spiny arms, which are usually curling (but not coiling) under the disc. Lateral plate bearing 6 denticulate armspines which do not meet on dorsal midline of arm. Separated oval or rounded radial shields are visible on the disc. Disc surface covered with small imbricating scales, usually obscured by numerous spiny granules. Granules also present in single fringing row on distal edge of basal dorsal armplates. Seven oral papillae line each jaw (3 along each side and one apical papilla). This species is commonly found associated with bamboo corals, hard corals such as *Solenosmilia variabilis* and in dead gastropod shells.

**Colour:** Reddish-pink disc, sometimes with a grey tinge, pink granules, creamy white arms, sometimes orange-tinged arm spines.

**Size:** Up to 13 mm (disc diameter).

**Distribution:** Widely distributed in the New Zealand region, and also widespread in the Indo-West Pacific region.

**Depth:** 420 to 2194 m.

**Similar species:** This species could be confused with other spiny-armed species of the family Ophiacanthidae, which have less-curling arms, or with the ophiactid *Ophiactis abyssicola*, which is also often found with its arms curled in and around hard corals and also has a spiny disc. Ophiactids have numerous, clearly visible disc plates and a different arrangement of oral papillae.

Phylum
TUNICATA
Sea squirts, salps

Mike Page
Phylum

TUNICATA

Sea squirts and salps

The Tunicata is very unusual phylum of animals. Indeed, most tunicates scarcely resemble animals. The best-known are solitary sea squirts. Stand on a sea squirt at low tide, and a thin jet of water will spurt from its sac-like body. In open water, divers frequently see large numbers of small, transparent, barrel-shaped creatures called salps, which don’t look at all like sea squirts but are related to them. Sea squirts and salps are strange creatures indeed and most people would be surprised to learn that, traditionally, they have been included in the same animal phylum as ourselves, the Chordata. Like chordates, tunicates (also called urochordates, Greek, oura, tail; Latin, chorda, cord) have a dorsal, hollow nerve cord and rod-like notochord (at least for part of their lives), and pharyngeal gill slits. The most unusual feature of tunicates is their manufacture of a type of cellulose, called tunicin, for their distinctive outer coverings, or tunics.

Tunicates, so-called because of the tunic, are classified in three classes — Ascidiacea (sea squirts), Thaliacea (salps), and Appendicularia (sometimes called Larvacea), which have no common name. The latter two groups are entirely planktonic and so are not further considered here.

Ascidiacea

Sea squirts are solitary or colonial. The name Ascidiacea comes from the Greek askidion, a leather wine flask, named for the tough outer tunicin coat, which in the solitary forms a leathery consistency. In colonial forms the tunicin coating (test) is gelatinous or thin and membranous. Colonial ascidians are vegetatively produced replicates (zooids) that are either covered in and joined by a layer of test, or partially or entirely embedded in thin sheets, cushions, slabs, cylinders, spheres, cones, or massive blocks of test. They have a tailed, tadpole-like larva and it is the larva that has a nerve cord and notochord. When the larva settles, and attaches itself to the substratum, the tail is absorbed (together with the nerve cord and notochord) and it changes (metamorphoses) into the adult form, encased in its external coat of tunicin. Cut open a large sea squirt and you will see a sac like body inside the tunicate, often with the digestive tract and gonads visible because of their colour. At the anterior end and one side of the body are two tube-like siphons, one for drawing water into the large gill-like pharynx, the other for expelling it. The pharynx strains incoming seawater, removing minute planktonic organisms and organic particles.

New Zealand has 166 species of ascidians in its EEZ, of which a high proportion (73%) is endemic.
**Distinguishing features:** Have inhalent and exhalant apertures and if squeezed should squirt out water from either or both siphons. Have tough leathery test or “tunic” and are often attached basally to cobbles or rocks. May be heavily encrusted with epibionts such as hydrozoans and bryozoans.

**Colour:** Highly variable – cream to reddish brown.

**Size:** Total height from 5 to 100 mm.

**Distribution:** Widely distributed throughout New Zealand.

**Depth:** 5 to 300 m. Intertidal, continental shelf slope, and abyssal depths.

**Similar species:** Several tunicate species are found in New Zealand waters.


Distinguishing features: Pyrosoma is a colonial thaliacean, with affinities to ascidians. Pyrosoma are gelatinous, transparent/opaque, free-swimming, and planktonic. They have oral siphons on the outside of the colony and an anal siphon on the inside. A light organ is present on each side of the brachial sac of each zooid and this gives the organism its name.

Colour: Pale translucent pink.

Size: Up to 20 m. Can grow to massive size.

Distribution: Very widespread – from tropical to temperate waters.

Depth: Throughout the water column.

Similar species: Several species of salps are found in the New Zealand region.

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific name</th>
<th>MFish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abyssal star</td>
<td>Plutonaster knoxi</td>
<td>PKN</td>
<td>243</td>
</tr>
<tr>
<td>Aceta</td>
<td>Aceta saginata</td>
<td>ASG</td>
<td>112</td>
</tr>
<tr>
<td>Airy finger sponge</td>
<td>Callyspongia sp.</td>
<td>CRM</td>
<td>43</td>
</tr>
<tr>
<td>Amphipod</td>
<td>Eurythenes gryllus</td>
<td>EUG</td>
<td>165</td>
</tr>
<tr>
<td>Antlered crab</td>
<td>Dagnaudus petterdi</td>
<td>DAP</td>
<td>174</td>
</tr>
<tr>
<td>Armless stars</td>
<td>Brisingidae, Hymenodiscidae, Novodiniidae, Freyellidae</td>
<td>BRG</td>
<td>233</td>
</tr>
<tr>
<td>Bamboo coral</td>
<td>Lepidisis spp.</td>
<td>LLE</td>
<td>73</td>
</tr>
<tr>
<td>Bamboo corals</td>
<td>Isididae</td>
<td>ISI</td>
<td>70</td>
</tr>
<tr>
<td>Banded-spine urchin</td>
<td>Caenopedina novaezelandiae</td>
<td>CNO</td>
<td>273</td>
</tr>
<tr>
<td>Basket-weave horn sponge</td>
<td>Euplectella regalis</td>
<td>ERE</td>
<td>53</td>
</tr>
<tr>
<td>Black coral</td>
<td>Leiopathes secunda</td>
<td>LSE</td>
<td>66</td>
</tr>
<tr>
<td>Black corals</td>
<td>Antipatharia</td>
<td>COB</td>
<td>65</td>
</tr>
<tr>
<td>Bobtail squids</td>
<td>Sepioloidae spp.</td>
<td>SSQ</td>
<td>141</td>
</tr>
<tr>
<td>Bobtail squids</td>
<td>Heteroteuthis dagomensis</td>
<td>HES</td>
<td>142</td>
</tr>
<tr>
<td>Bobtail squids</td>
<td>Stoloteuthis (sometimes Iridoteuthis) maoria</td>
<td>IRM</td>
<td>143</td>
</tr>
<tr>
<td>Bottlebrush coral</td>
<td>Thouarella spp.</td>
<td>THO</td>
<td>79</td>
</tr>
<tr>
<td>Branching bamboo coral</td>
<td>Keratoisis spp.</td>
<td>BOO</td>
<td>72</td>
</tr>
<tr>
<td>Bristle ball sponge</td>
<td>Tetilla australis</td>
<td>TTL</td>
<td>49</td>
</tr>
<tr>
<td>Brittle star</td>
<td>Ophiocreas sibogae</td>
<td>OSI</td>
<td>290</td>
</tr>
<tr>
<td>Brittle star</td>
<td>Ophiomusium lymani</td>
<td>OLY</td>
<td>294</td>
</tr>
<tr>
<td>Broad squid</td>
<td>Sepioteuthis australis</td>
<td>BSQ</td>
<td>129</td>
</tr>
<tr>
<td>Brodie’s king crab</td>
<td>Neolithodes brodiei</td>
<td>NEB</td>
<td>181</td>
</tr>
<tr>
<td>Bubblegum coral</td>
<td>Paragorgia arborea</td>
<td>PAB</td>
<td>75</td>
</tr>
<tr>
<td>Bushy bamboo coral</td>
<td>Acanella spp.</td>
<td>ACN</td>
<td>71</td>
</tr>
<tr>
<td>Bushy hard coral</td>
<td>Gonioorella dumosa</td>
<td>GDU</td>
<td>87</td>
</tr>
<tr>
<td>Cap limpet</td>
<td>Malluvium calcareum</td>
<td>MCC</td>
<td>144</td>
</tr>
<tr>
<td>Carnation cup coral</td>
<td>Caryophyllia spp.</td>
<td>CAY</td>
<td>85</td>
</tr>
<tr>
<td>Carrier crab</td>
<td>Homola orientalis</td>
<td>HOO</td>
<td>175</td>
</tr>
<tr>
<td>Cat’s-foot star</td>
<td>Cosmasterias dyscrita</td>
<td>CDY</td>
<td>235</td>
</tr>
<tr>
<td>Chiroteuthid squid</td>
<td>Chiroteuthis veryani</td>
<td>CVE</td>
<td>125</td>
</tr>
<tr>
<td>Chiton</td>
<td>Amphineura</td>
<td>CHT</td>
<td>157</td>
</tr>
<tr>
<td>Chubby sun-star</td>
<td>Solaster torulatus</td>
<td>SOT</td>
<td>257</td>
</tr>
<tr>
<td>Cidaroid urchin</td>
<td>Ogmocidaris benhami</td>
<td>OBE</td>
<td>263</td>
</tr>
<tr>
<td>Cidaroid urchin</td>
<td>Stereocidaris spp.</td>
<td>STC</td>
<td>264</td>
</tr>
<tr>
<td>Cidaroid urchin</td>
<td>Histocidaris spp.</td>
<td>HIS</td>
<td>265</td>
</tr>
<tr>
<td>Cidaroid urchin</td>
<td>Poriocidaris purpurata</td>
<td>PCD</td>
<td>266</td>
</tr>
<tr>
<td>Common octopus</td>
<td>Pinnocotopus cordiformis</td>
<td>OCT</td>
<td>121</td>
</tr>
<tr>
<td>Coral-like anemones</td>
<td>Corallimorphidae</td>
<td>CLM</td>
<td>67</td>
</tr>
<tr>
<td>Crested cup coral</td>
<td>Desmophyllum dianthus</td>
<td>DDI</td>
<td>86</td>
</tr>
<tr>
<td>Cross-fish</td>
<td>Sclerasterias mollis</td>
<td>SMO</td>
<td>237</td>
</tr>
<tr>
<td>Crowned firefly squid</td>
<td>Lycateuthis lorigera</td>
<td>LSQ</td>
<td>130</td>
</tr>
<tr>
<td>Curling stone sponge</td>
<td>Geodila regina</td>
<td>GRE</td>
<td>36</td>
</tr>
<tr>
<td>Dana octopus squid</td>
<td>Tainingia danae</td>
<td>TDQ</td>
<td>133</td>
</tr>
<tr>
<td>Deepsea anemones</td>
<td>Liponema spp.</td>
<td>LIP</td>
<td>62</td>
</tr>
<tr>
<td>Deepsea anemones</td>
<td>Bolocera spp.</td>
<td>BOC</td>
<td>59</td>
</tr>
<tr>
<td>Deepsea blind lobster</td>
<td>Polycheles spp.</td>
<td>PLy</td>
<td>194</td>
</tr>
<tr>
<td>Deepsea brittle star</td>
<td>Bathypectinura heros</td>
<td>BHE</td>
<td>293</td>
</tr>
<tr>
<td>Deepsea brittle star</td>
<td>Ophiophthalmus relictus</td>
<td>ORE</td>
<td>295</td>
</tr>
<tr>
<td>Deepsea kina</td>
<td>Graclechinus multidentatus</td>
<td>GRM</td>
<td>269</td>
</tr>
<tr>
<td>Deep-sea spider crab</td>
<td>Vitjazmaia latidactyla</td>
<td>VIT</td>
<td>178</td>
</tr>
<tr>
<td>Deepsea urchin</td>
<td>Dermechinus horridus</td>
<td>DHO</td>
<td>268</td>
</tr>
</tbody>
</table>
## Index 1: Common Names

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific name</th>
<th>MFish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deepwater branching coral</td>
<td>Solenosmilia variabilis</td>
<td>SVA</td>
<td>88</td>
</tr>
<tr>
<td>Deepwater branching coral</td>
<td>Enallopsammia rostrata</td>
<td>ERO</td>
<td>90</td>
</tr>
<tr>
<td>Deepwater branching coral</td>
<td>Oculina virgosa</td>
<td>OVI</td>
<td>93</td>
</tr>
<tr>
<td>Deepwater octopii</td>
<td>Benthoctopus spp.</td>
<td>BNO</td>
<td>117</td>
</tr>
<tr>
<td>Deepwater octopus</td>
<td>Graneledone spp.</td>
<td>DWO</td>
<td>119</td>
</tr>
<tr>
<td>Deepwater prawn</td>
<td>Pasiphaea aff. tarda</td>
<td>PTA</td>
<td>217</td>
</tr>
<tr>
<td>Deepwater prawns</td>
<td>Oplophorus spp.</td>
<td>OPP</td>
<td>215</td>
</tr>
<tr>
<td>Deepwater rock lobster</td>
<td>Prajasus parkeri</td>
<td>PPA</td>
<td>192</td>
</tr>
<tr>
<td>Dell’s spider crab</td>
<td>Platymaia maoria</td>
<td>PTM</td>
<td>177</td>
</tr>
<tr>
<td>Dwarf swimming crab</td>
<td>Liocarcinus corrugatus</td>
<td>LCO</td>
<td>195</td>
</tr>
<tr>
<td>Erect cheilostome bryozoan</td>
<td>Hippellozoon novaezelandiae</td>
<td>HNO</td>
<td>227</td>
</tr>
<tr>
<td>Erect cyclostome bryozoans</td>
<td>Stenolaemata Cyclostomata</td>
<td>ECB</td>
<td>228</td>
</tr>
<tr>
<td>Eucrioa</td>
<td>Eucrioa galatheae</td>
<td>EGA</td>
<td>116</td>
</tr>
<tr>
<td>Eunice sea-worm</td>
<td>Eunice (undescribed)</td>
<td>EUN</td>
<td>102</td>
</tr>
<tr>
<td>Feather stars</td>
<td>Comatulida</td>
<td>CMT</td>
<td>258</td>
</tr>
<tr>
<td>Fibreglass cup sponge</td>
<td>Pecillastra laminaris</td>
<td>PLN</td>
<td>39</td>
</tr>
<tr>
<td>Fire worm</td>
<td>Chlooea inermis</td>
<td>CIM</td>
<td>101</td>
</tr>
<tr>
<td>Fish biter</td>
<td>Aega monophthalma</td>
<td>AMO</td>
<td>201</td>
</tr>
<tr>
<td>Flabellum cup corals</td>
<td>Flabellum spp.</td>
<td>COF</td>
<td>91</td>
</tr>
<tr>
<td>Fleming’s urchin</td>
<td>Pseudechinus flemingi</td>
<td>PFL</td>
<td>281</td>
</tr>
<tr>
<td>Fleshy club sponge</td>
<td>Suberites affinis</td>
<td>SUA</td>
<td>42</td>
</tr>
<tr>
<td>Floppy chocolate plate sponge</td>
<td>Lissodendoryx bifacialis</td>
<td>LBI</td>
<td>46</td>
</tr>
<tr>
<td>Floppy tubular sponge</td>
<td>Hyalascus sp.</td>
<td>HYA</td>
<td>54</td>
</tr>
<tr>
<td>Frilled crab</td>
<td>Trichopeltarian fantasticum</td>
<td>TFA</td>
<td>167</td>
</tr>
<tr>
<td>Funchalia prawn</td>
<td>Funchalia spp.</td>
<td>FUN</td>
<td>218</td>
</tr>
<tr>
<td>Furry oval sponge</td>
<td>Tetilla leptoderma</td>
<td>TLD</td>
<td>50</td>
</tr>
<tr>
<td>Gamba prawns</td>
<td>Austropeanaeus nitidus</td>
<td>ANI</td>
<td>208</td>
</tr>
<tr>
<td>Garrick’s masking crab</td>
<td>Leptomithrax garricki</td>
<td>GMC</td>
<td>186</td>
</tr>
<tr>
<td>Geometric star</td>
<td>Psilaster acuminatus</td>
<td>PSI</td>
<td>245</td>
</tr>
<tr>
<td>Giant file shell</td>
<td>Acesta maui</td>
<td>AMA</td>
<td>111</td>
</tr>
<tr>
<td>Giant masking crab</td>
<td>Leptomithrax australis</td>
<td>SSC</td>
<td>185</td>
</tr>
<tr>
<td>Giant purple pedinid</td>
<td>Caenopedina porphyrogigas</td>
<td>CAL</td>
<td>275</td>
</tr>
<tr>
<td>Giant red mysid</td>
<td>Neognathophausia ingens</td>
<td>NEI</td>
<td>205</td>
</tr>
<tr>
<td>Giant sea spiders</td>
<td>Colossendeis spp.</td>
<td>PYC</td>
<td>221</td>
</tr>
<tr>
<td>Giant spider crab</td>
<td>Jacquinotia edwardsii</td>
<td>GSC</td>
<td>184</td>
</tr>
<tr>
<td>Giant squid</td>
<td>Architeuthis spp.</td>
<td>GSQ</td>
<td>124</td>
</tr>
<tr>
<td>Gigantic coral</td>
<td>Anthomastus (Bathyalcyon) robustus</td>
<td>ARO</td>
<td>63</td>
</tr>
<tr>
<td>Gill biter</td>
<td>Elthusa propinqua</td>
<td>ELP</td>
<td>203</td>
</tr>
<tr>
<td>Gill biter or tongue biter</td>
<td>Elthusa neocytta</td>
<td>ENE</td>
<td>202</td>
</tr>
<tr>
<td>Glass sponges</td>
<td>Hexactinellida</td>
<td>GLS</td>
<td>51</td>
</tr>
<tr>
<td>Glass squid</td>
<td>Cranchiidae</td>
<td>CHQ</td>
<td>126</td>
</tr>
<tr>
<td>Goblin prawn</td>
<td>Glyphocrangon spp.</td>
<td>GLO</td>
<td>210</td>
</tr>
<tr>
<td>Golden brown crater sponge</td>
<td>Penares sp.</td>
<td>PNR</td>
<td>33</td>
</tr>
<tr>
<td>Golden corals</td>
<td>Chrysogorgia spp.</td>
<td>CHR</td>
<td>69</td>
</tr>
<tr>
<td>Golden prawn</td>
<td>Plesionika maria</td>
<td>PLM</td>
<td>216</td>
</tr>
<tr>
<td>Golden volute</td>
<td>Provocator mirabilis</td>
<td>GVO</td>
<td>153</td>
</tr>
<tr>
<td>Gorgon’s head basket-stars</td>
<td>Gorgonocephalus spp.</td>
<td>GOR</td>
<td>292</td>
</tr>
<tr>
<td>Gould’s arrow squid</td>
<td>Nototodarus gouldi</td>
<td>NOG</td>
<td>134</td>
</tr>
<tr>
<td>Grey fibrous massive sponge</td>
<td>Phorbas sp.</td>
<td>PHB</td>
<td>48</td>
</tr>
<tr>
<td>Hairy red swimming crab</td>
<td>Nectocarcinus antarcticus</td>
<td>NCA</td>
<td>196</td>
</tr>
<tr>
<td>Heart urchin</td>
<td>Brissopsis oldhami</td>
<td>BRO</td>
<td>277</td>
</tr>
<tr>
<td>Hermit crab</td>
<td>Diancathurus rubricatus</td>
<td>DIR</td>
<td>191</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific name</td>
<td>MFish code</td>
<td>Page</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>Hermit crab</td>
<td>Sympagurus dimorphus</td>
<td>SDM</td>
<td>193</td>
</tr>
<tr>
<td>Jack-knife prawn</td>
<td>Haliporoides sibogae</td>
<td>HSI</td>
<td>220</td>
</tr>
<tr>
<td>Knobbed whelk</td>
<td>Austrofusus glans</td>
<td>KWH</td>
<td>147</td>
</tr>
<tr>
<td>Knobbly sandpaper sponge</td>
<td>Eciodinia novaeezelandiae</td>
<td>ANZ</td>
<td>32</td>
</tr>
<tr>
<td>Lace honeycomb sponges</td>
<td>Farrea spp.</td>
<td>FAR</td>
<td>52</td>
</tr>
<tr>
<td>Large red scaly squid</td>
<td>Pholidoteuthis massyae</td>
<td>PSQ</td>
<td>140</td>
</tr>
<tr>
<td>Long polypt soft corals</td>
<td>Telesoto spp.</td>
<td>TLO</td>
<td>64</td>
</tr>
<tr>
<td>Long-handed masking crab</td>
<td>Leptomithrax longimanus</td>
<td>LHC</td>
<td>187</td>
</tr>
<tr>
<td>Long-legged masking crab</td>
<td>Leptomithrax longipes</td>
<td>LLC</td>
<td>188</td>
</tr>
<tr>
<td>Madrepora coral</td>
<td>Madrepora oculata</td>
<td>MOC</td>
<td>92</td>
</tr>
<tr>
<td>Magnificent sea-star</td>
<td>Dipsacaster magnificus</td>
<td>DMG</td>
<td>242</td>
</tr>
<tr>
<td>Matheson's heart urchin</td>
<td>Spatangus mathesoni</td>
<td>SMU</td>
<td>279</td>
</tr>
<tr>
<td>Maurea</td>
<td>Callioxstoma selectum</td>
<td>CSS</td>
<td>155</td>
</tr>
<tr>
<td>Microsoft mouse</td>
<td>Paramareta peloria</td>
<td>PMU</td>
<td>278</td>
</tr>
<tr>
<td>Molpallia sea cucumber</td>
<td>Molpallia musculus</td>
<td>MOM</td>
<td>289</td>
</tr>
<tr>
<td>New Zealand king crab</td>
<td>Lithodes aotearoa</td>
<td>LAO</td>
<td>179</td>
</tr>
<tr>
<td>Octopus</td>
<td>Octopus spp.</td>
<td>OCO</td>
<td>120</td>
</tr>
<tr>
<td>Omega prawn</td>
<td>Lipkias holtbusi</td>
<td>LHO</td>
<td>211</td>
</tr>
<tr>
<td>Ommastephid squid</td>
<td>Ommastepheus spp.</td>
<td>OMM</td>
<td>136</td>
</tr>
<tr>
<td>Orange frond sponge</td>
<td>Crella incrustans</td>
<td>CIC</td>
<td>47</td>
</tr>
<tr>
<td>Paddle crab</td>
<td>Ovalipes catharus</td>
<td>PAD</td>
<td>198</td>
</tr>
<tr>
<td>Pagoda shell</td>
<td>Coluzea mariae</td>
<td>CMR</td>
<td>149</td>
</tr>
<tr>
<td>Parsosol urchin</td>
<td>Goniosciardis parasol</td>
<td>GPA</td>
<td>261</td>
</tr>
<tr>
<td>Pentagon star</td>
<td>Ceramaster patagonicus</td>
<td>CPA</td>
<td>248</td>
</tr>
<tr>
<td>Pentagonal tooth-star</td>
<td>Odontaster benhami</td>
<td>ODT</td>
<td>253</td>
</tr>
<tr>
<td>Pimpled ear sponge</td>
<td>Aciculosites pulchra</td>
<td>APU</td>
<td>45</td>
</tr>
<tr>
<td>Pink ice egg sponge</td>
<td>Rhabdastrella spp.</td>
<td>RHA</td>
<td>34</td>
</tr>
<tr>
<td>Plexaurid sea fans</td>
<td>Plexauridae</td>
<td>PLE</td>
<td>76</td>
</tr>
<tr>
<td>Policeman crab</td>
<td>Neommatocarcinus huttoni</td>
<td>NHU</td>
<td>173</td>
</tr>
<tr>
<td>Prawn killer</td>
<td>Ibacus alticrenatus</td>
<td>PRK</td>
<td>200</td>
</tr>
<tr>
<td>Precious corals</td>
<td>Corallium spp.</td>
<td>CLL</td>
<td>68</td>
</tr>
<tr>
<td>Prickly king crab</td>
<td>Paraloma zealandica</td>
<td>PZE</td>
<td>183</td>
</tr>
<tr>
<td>Primnoa sea fans</td>
<td>Primnoa spp.</td>
<td>PMN</td>
<td>78</td>
</tr>
<tr>
<td>Primnoa sea fans</td>
<td>Primnoaidae</td>
<td>PRI</td>
<td>77</td>
</tr>
<tr>
<td>Pteropeltrarian crab</td>
<td>Pteropeltrarian novaeezelandiae</td>
<td>PNO</td>
<td>166</td>
</tr>
<tr>
<td>Purple sea pen</td>
<td>Pennatula spp.</td>
<td>PNN</td>
<td>84</td>
</tr>
<tr>
<td>Purple-heart urchin</td>
<td>Spatangus multispinus</td>
<td>SPT</td>
<td>280</td>
</tr>
<tr>
<td>Queen scallop</td>
<td>Zygoclamys delicatula</td>
<td>QSC</td>
<td>113</td>
</tr>
<tr>
<td>Quill worm</td>
<td>Hyalinoecia tubicola</td>
<td>HTU</td>
<td>103</td>
</tr>
<tr>
<td>Rat-tail stars</td>
<td>Zoroaster spp.</td>
<td>ZOR</td>
<td>238</td>
</tr>
<tr>
<td>Red crab</td>
<td>Chaceon bicolor</td>
<td>CHC</td>
<td>171</td>
</tr>
<tr>
<td>Red hydrocorals</td>
<td>Errina spp.</td>
<td>ERR</td>
<td>81</td>
</tr>
<tr>
<td>Robertson's king crab</td>
<td>Lithodes robertsoni</td>
<td>LRO</td>
<td>180</td>
</tr>
<tr>
<td>Rock star</td>
<td>Lithosoma novaeezelandiae</td>
<td>LNV</td>
<td>250</td>
</tr>
<tr>
<td>Rocky dumpling sponge</td>
<td>Pachymatisma sp.</td>
<td>PAZ</td>
<td>38</td>
</tr>
<tr>
<td>Royal red prawn</td>
<td>Aristaeomorpha foliacea</td>
<td>AFO</td>
<td>206</td>
</tr>
<tr>
<td>Rubber sponge</td>
<td>Psammocenia sp.</td>
<td>PHW</td>
<td>41</td>
</tr>
<tr>
<td>Sabre prawn</td>
<td>Campylonatus rathbunae</td>
<td>CAM</td>
<td>209</td>
</tr>
<tr>
<td>Salp</td>
<td>Pyrosoma atlanticum</td>
<td>PYR</td>
<td>302</td>
</tr>
<tr>
<td>Common Name</td>
<td>Scientific name</td>
<td>MFish code</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>Sand dollar</td>
<td>Peronella hinemoae</td>
<td>PHI</td>
<td>267</td>
</tr>
<tr>
<td>Scaled squid</td>
<td>Lepidoteuthis grimaldii</td>
<td>LGR</td>
<td>128</td>
</tr>
<tr>
<td>Scallop</td>
<td>Delectopesten fosterianus</td>
<td>DFO</td>
<td>114</td>
</tr>
<tr>
<td>Scallop</td>
<td>Veprichlamys kiwaensis</td>
<td>VKI</td>
<td>115</td>
</tr>
<tr>
<td>Scampi</td>
<td>Metaneoprops challenger</td>
<td>SCI</td>
<td>190</td>
</tr>
<tr>
<td>Scarlet prawn</td>
<td>Aristaeopsis edwardsiana</td>
<td>PED</td>
<td>207</td>
</tr>
<tr>
<td>Scarlet prawn</td>
<td>Notostomus auriculatus</td>
<td>NAU</td>
<td>214</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Holothuroidea</td>
<td>HTH</td>
<td>282</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Bathyploetes sp.</td>
<td>BAM</td>
<td>283</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Pseudostichopus mollis</td>
<td>PMO</td>
<td>284</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Laetmogone spp.</td>
<td>LAG</td>
<td>285</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Pannychia moseleyi</td>
<td>PAM</td>
<td>286</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Enypniastes eximia</td>
<td>EEX</td>
<td>287</td>
</tr>
<tr>
<td>Sea cucumbers</td>
<td>Benthodytes spp.</td>
<td>BTD</td>
<td>288</td>
</tr>
<tr>
<td>Sea lilies with cirri</td>
<td>Isocrinida</td>
<td>CRN</td>
<td>259</td>
</tr>
<tr>
<td>Sea lilies without cirri (o+)</td>
<td>Millericrinida, Cyrtocrinida</td>
<td>CRN</td>
<td>260</td>
</tr>
<tr>
<td>Sea mice</td>
<td>Aphrodita spp.</td>
<td>ADT</td>
<td>104</td>
</tr>
<tr>
<td>Sea slug, Nudibranch</td>
<td>Nudibranchia</td>
<td>NUD</td>
<td>154</td>
</tr>
<tr>
<td>Sea squirt or Ascidian</td>
<td>Ascidacea</td>
<td>ASC</td>
<td>301</td>
</tr>
<tr>
<td>Sea urchin</td>
<td>Caenopedina otagoensis</td>
<td>CAO</td>
<td>274</td>
</tr>
<tr>
<td>Sea urchin</td>
<td>Caenopedina pulchella</td>
<td>CPU</td>
<td>276</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Pseudocheinaster rubens</td>
<td>PRU</td>
<td>236</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Benthopecten spp.</td>
<td>BES</td>
<td>239</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Cheiraster monopedicellaris</td>
<td>CMP</td>
<td>240</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Astromesites primigenius</td>
<td>APM</td>
<td>241</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Proserpinaster neozelanicus</td>
<td>PNE</td>
<td>244</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Radiaster gracilis</td>
<td>RGR</td>
<td>246</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Henricia compacta</td>
<td>HEC</td>
<td>247</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Pillsburaster aoteanus</td>
<td>PAO</td>
<td>252</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Diploptaster sp.</td>
<td>DPP</td>
<td>254</td>
</tr>
<tr>
<td>Sea-star</td>
<td>Hymenaster carnosus</td>
<td>HYC</td>
<td>255</td>
</tr>
<tr>
<td>Sergestid prawn</td>
<td>Sergestes spp.</td>
<td>SER</td>
<td>219</td>
</tr>
<tr>
<td>Siboga sea pen</td>
<td>Gyrophyllum sibogae</td>
<td>GYS</td>
<td>83</td>
</tr>
<tr>
<td>Sladen's star</td>
<td>Mediaster sladeni</td>
<td>MSL</td>
<td>251</td>
</tr>
<tr>
<td>Sloan's arrow squid</td>
<td>Nototodarus sloanii</td>
<td>NOS</td>
<td>135</td>
</tr>
<tr>
<td>Smooth deepsea anemones</td>
<td>Actinostolidae</td>
<td>ACS</td>
<td>60</td>
</tr>
<tr>
<td>Smooth red swimming crab</td>
<td>Nectocarcinus bennetti</td>
<td>NCB</td>
<td>197</td>
</tr>
<tr>
<td>Smooth white cup sponge</td>
<td>Corallistes fulvodesmus</td>
<td>CFU</td>
<td>44</td>
</tr>
<tr>
<td>Solitary bowl coral</td>
<td>Stephanocystis platypus</td>
<td>STP</td>
<td>89</td>
</tr>
<tr>
<td>Spider prawn</td>
<td>Nematoctacarus spp.</td>
<td>NEC</td>
<td>212</td>
</tr>
<tr>
<td>Spiny masking crab</td>
<td>Teratomaia richardsoni</td>
<td>SMK</td>
<td>189</td>
</tr>
<tr>
<td>Spiny serolid isopod</td>
<td>Brucerolis spp.</td>
<td>ACU</td>
<td>204</td>
</tr>
<tr>
<td>Spiny white hydrocorals</td>
<td>Lepidotheca spp.</td>
<td>LPT</td>
<td>82</td>
</tr>
<tr>
<td>Squat lobsters</td>
<td>Gastrophycthus spp.</td>
<td>GAT</td>
<td>168</td>
</tr>
<tr>
<td>Squat lobsters</td>
<td>Urophycthus spp.</td>
<td>URP</td>
<td>169</td>
</tr>
<tr>
<td>Squat lobsters</td>
<td>Munida spp.</td>
<td>MNI</td>
<td>170</td>
</tr>
<tr>
<td>Stalked barnacle</td>
<td>Scalpellidae</td>
<td>SBN</td>
<td>222</td>
</tr>
<tr>
<td>Subantarctic ruby prawn</td>
<td>Acanthephyra spp.</td>
<td>ACA</td>
<td>213</td>
</tr>
<tr>
<td>Sun-star</td>
<td>Crossaster multispinus</td>
<td>CJA</td>
<td>256</td>
</tr>
<tr>
<td>Swimming crab</td>
<td>Ovalipes molleri</td>
<td>OVM</td>
<td>199</td>
</tr>
<tr>
<td>Tam O’Shanters</td>
<td>Echinophurioidea</td>
<td>TAM</td>
<td>270</td>
</tr>
<tr>
<td>Tam O’Shanters</td>
<td>Echinoturriidae</td>
<td>ECT</td>
<td>271</td>
</tr>
</tbody>
</table>
### Index 1: Common Names

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific name</th>
<th>MFish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tam O'Shanter</td>
<td>Phormosoma spp.</td>
<td>PHM</td>
<td>272</td>
</tr>
<tr>
<td>Thermophione scale-worm</td>
<td>Thermophione (undescribed)</td>
<td>THE</td>
<td>105</td>
</tr>
<tr>
<td>Three-and-three stars</td>
<td>Allostichaster spp.</td>
<td>ALH</td>
<td>234</td>
</tr>
<tr>
<td>Todarodes squid</td>
<td>Todarodes filippovae</td>
<td>TSQ</td>
<td>137</td>
</tr>
<tr>
<td>Top shell</td>
<td>Calliostoma turnerarum</td>
<td>CTN</td>
<td>156</td>
</tr>
<tr>
<td>Trojan star</td>
<td>Hippasteria phrygiana</td>
<td>HTR</td>
<td>249</td>
</tr>
<tr>
<td>Turrid</td>
<td>Comitas onokeana vivens</td>
<td>COV</td>
<td>150</td>
</tr>
<tr>
<td>Two-spined crab</td>
<td>Pycnooplax victoriensis</td>
<td>CVI</td>
<td>172</td>
</tr>
<tr>
<td>Umbrella octopus</td>
<td>Opisthoteuthis spp.</td>
<td>OPI</td>
<td>122</td>
</tr>
<tr>
<td>Umbrella urchin</td>
<td>Goniocidaris umbraculum</td>
<td>GOU</td>
<td>262</td>
</tr>
<tr>
<td>Violet squid</td>
<td>Histiotethis spp.</td>
<td>VSQ</td>
<td>127</td>
</tr>
<tr>
<td>Valute</td>
<td>Alcithoe larochei</td>
<td>ALL</td>
<td>151</td>
</tr>
<tr>
<td>Valute</td>
<td>Alcithoe wilsonae</td>
<td>AWI</td>
<td>152</td>
</tr>
<tr>
<td>Waite's snake-star</td>
<td>Astrothorax waitei</td>
<td>AWA</td>
<td>291</td>
</tr>
<tr>
<td>Warty deepsea anenomes</td>
<td>Hormathiiidae</td>
<td>HMT</td>
<td>61</td>
</tr>
<tr>
<td>Warty king crab</td>
<td>Paralomis dawsoni</td>
<td>PDA</td>
<td>182</td>
</tr>
<tr>
<td>Warty squid</td>
<td>Onykia (formerly Moroteuthis) ingens</td>
<td>MIQ</td>
<td>138</td>
</tr>
<tr>
<td>Warty squid</td>
<td>Onykia (formerly Moroteuthis) robsoni</td>
<td>MRQ</td>
<td>139</td>
</tr>
<tr>
<td>Whelk</td>
<td>Aeneator recens</td>
<td>AER</td>
<td>146</td>
</tr>
<tr>
<td>Whelk</td>
<td>Penion chathamensis</td>
<td>PCH</td>
<td>148</td>
</tr>
<tr>
<td>Whip-lash squids</td>
<td>Mastigoteuthis spp.</td>
<td>MSQ</td>
<td>131</td>
</tr>
<tr>
<td>White hydrocoral</td>
<td>Calyptopora reticulata</td>
<td>CRE</td>
<td>80</td>
</tr>
<tr>
<td>Worm-commensal bamboo coral</td>
<td>Minuisis spp.</td>
<td>MIN</td>
<td>74</td>
</tr>
<tr>
<td>Yaldwyn's crab</td>
<td>Yaldwynopsis spinimana</td>
<td>YSP</td>
<td>176</td>
</tr>
<tr>
<td>Yellow octopus</td>
<td>Enteroctopus zealandicus</td>
<td>EZE</td>
<td>118</td>
</tr>
<tr>
<td>Yoyo sponge</td>
<td>Thenea novaezelandiae</td>
<td>THN</td>
<td>40</td>
</tr>
<tr>
<td>Zoanthid anemone</td>
<td>Epizoanthus spp.</td>
<td>EPZ</td>
<td>95</td>
</tr>
<tr>
<td>Zoanthids</td>
<td>Zoantharia</td>
<td>ZAH</td>
<td>94</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common Name</td>
<td>MFish code</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>Acanella spp.</td>
<td>Bushy bamboo coral</td>
<td>ACN</td>
<td>71</td>
</tr>
<tr>
<td>Acanthephyra spp.</td>
<td>Subantarctic ruby prawn</td>
<td>ACA</td>
<td>213</td>
</tr>
<tr>
<td>Acesta moui</td>
<td>Giant file shell</td>
<td>AMA</td>
<td>111</td>
</tr>
<tr>
<td>Acesta saginata</td>
<td>Acesta</td>
<td>ASG</td>
<td>112</td>
</tr>
<tr>
<td>Aciculites pulchra</td>
<td>Pimpled ear sponge</td>
<td>APU</td>
<td>45</td>
</tr>
<tr>
<td>Actinostolidae</td>
<td>Smooth deepsea anemones</td>
<td>ACS</td>
<td>60</td>
</tr>
<tr>
<td>Aega monophthalma</td>
<td>Fish biter</td>
<td>AMO</td>
<td>201</td>
</tr>
<tr>
<td>Aeneator recens</td>
<td>Whelk</td>
<td>AER</td>
<td>146</td>
</tr>
<tr>
<td>Alcithoe larochaesi</td>
<td>Volute</td>
<td>ALL</td>
<td>151</td>
</tr>
<tr>
<td>Alcithoe wilsonae</td>
<td>Volute</td>
<td>AWI</td>
<td>152</td>
</tr>
<tr>
<td>Allocystichaster spp.</td>
<td>Three-and-three stars</td>
<td>ALH</td>
<td>234</td>
</tr>
<tr>
<td>Amphineura</td>
<td>Chiton</td>
<td>CHT</td>
<td>157</td>
</tr>
<tr>
<td>Anthomastus (Bathyacylon) robustus</td>
<td>Gigantic coral</td>
<td>ARO</td>
<td>63</td>
</tr>
<tr>
<td>Antipatharia</td>
<td>Black corals</td>
<td>COB</td>
<td>65</td>
</tr>
<tr>
<td>Aphroditia spp.</td>
<td>Sea mice</td>
<td>ADT</td>
<td>104</td>
</tr>
<tr>
<td>Architeuthis spp.</td>
<td>Giant squid</td>
<td>GSQ</td>
<td>124</td>
</tr>
<tr>
<td>Aristaeomorpha foliacea</td>
<td>Royal red prawn</td>
<td>AFO</td>
<td>206</td>
</tr>
<tr>
<td>Aristaeopsis edwardsiana</td>
<td>Scarlet prawn</td>
<td>PED</td>
<td>207</td>
</tr>
<tr>
<td>Ascidacea</td>
<td>Sea squirt or Ascidian</td>
<td>ASC</td>
<td>301</td>
</tr>
<tr>
<td>Astromesites primigenius</td>
<td>Sea-star</td>
<td>APM</td>
<td>241</td>
</tr>
<tr>
<td>Astrothorax waitei</td>
<td>Waite’s snake-star</td>
<td>AWA</td>
<td>291</td>
</tr>
<tr>
<td>Austrofusus glans</td>
<td>Knobbed whelk</td>
<td>KWH</td>
<td>147</td>
</tr>
<tr>
<td>Austropeneaus nitidus</td>
<td>Gamba prawns</td>
<td>ANI</td>
<td>208</td>
</tr>
<tr>
<td>Bathypectinura heras</td>
<td>Deepsea brittle star</td>
<td>BHE</td>
<td>293</td>
</tr>
<tr>
<td>Bathyploides sp.</td>
<td>Sea cucumbers</td>
<td>BAM</td>
<td>283</td>
</tr>
<tr>
<td>Benthoctopus spp.</td>
<td>Deepwater octopii</td>
<td>BNO</td>
<td>117</td>
</tr>
<tr>
<td>Benthoodytes spp.</td>
<td>Sea cucumbers</td>
<td>BTD</td>
<td>288</td>
</tr>
<tr>
<td>Benthopecten spp.</td>
<td>Sea-star</td>
<td>BES</td>
<td>239</td>
</tr>
<tr>
<td>Bolocera spp.</td>
<td>Deepsea anemones</td>
<td>BOC</td>
<td>59</td>
</tr>
<tr>
<td>Brisingidae, Hymenodiscidae, Novodiniidae, Freyellidae</td>
<td>Armless stars</td>
<td>BRG</td>
<td>233</td>
</tr>
<tr>
<td>Brissopsis oldhami</td>
<td>Heart urchin</td>
<td>BRO</td>
<td>277</td>
</tr>
<tr>
<td>Brucerolis spp.</td>
<td>Spiny serolid isopod</td>
<td>ACU</td>
<td>204</td>
</tr>
<tr>
<td>Caenopedina novaezelandiae</td>
<td>Banded-spine urchin</td>
<td>CNO</td>
<td>273</td>
</tr>
<tr>
<td>Caenopedina otagoensis</td>
<td>Sea urchin</td>
<td>CAO</td>
<td>274</td>
</tr>
<tr>
<td>Caenopedina porphyrogigas</td>
<td>Giant purple pedinid</td>
<td>CAL</td>
<td>275</td>
</tr>
<tr>
<td>Caenopedina pulchella</td>
<td>Sea urchin</td>
<td>CPU</td>
<td>276</td>
</tr>
<tr>
<td>Calliostoma selectum</td>
<td>Maurea</td>
<td>CSS</td>
<td>155</td>
</tr>
<tr>
<td>Calliostoma turnerarum</td>
<td>Top shell</td>
<td>CTN</td>
<td>156</td>
</tr>
<tr>
<td>Callyspongia sp.</td>
<td>Airy finger sponge</td>
<td>CRM</td>
<td>43</td>
</tr>
<tr>
<td>Calyptopora reticulata</td>
<td>White hydrocoral</td>
<td>CRE</td>
<td>80</td>
</tr>
<tr>
<td>Campylonotus rathbuae</td>
<td>Sabre prawn</td>
<td>CAM</td>
<td>209</td>
</tr>
<tr>
<td>Caryophyllia spp.</td>
<td>Carnation cup coral</td>
<td>CAY</td>
<td>85</td>
</tr>
<tr>
<td>Ceramaster patagonicus</td>
<td>Pentagon star</td>
<td>CPA</td>
<td>248</td>
</tr>
<tr>
<td>Chaceon bicolor</td>
<td>Red crab</td>
<td>CHC</td>
<td>171</td>
</tr>
<tr>
<td>Cheiraster monopedicellaris</td>
<td>Sea-star</td>
<td>CMP</td>
<td>240</td>
</tr>
<tr>
<td>Chiroteuthis veryani</td>
<td>Chiroteuthid squid</td>
<td>CVE</td>
<td>125</td>
</tr>
<tr>
<td>Chloeia inermis</td>
<td>Fire worm</td>
<td>CIM</td>
<td>101</td>
</tr>
<tr>
<td>Chrysogorgia spp.</td>
<td>Golden corals</td>
<td>CHR</td>
<td>69</td>
</tr>
<tr>
<td>Colossendeis spp.</td>
<td>Giant sea spiders</td>
<td>PYC</td>
<td>221</td>
</tr>
<tr>
<td>Coluzea mariae</td>
<td>Pagoda shell</td>
<td>CMR</td>
<td>149</td>
</tr>
<tr>
<td>Comatulida</td>
<td>Feather stars</td>
<td>CMT</td>
<td>258</td>
</tr>
</tbody>
</table>
### Index 2: Scientific Names

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common Name</th>
<th>MFish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comitas anokeana vivens</td>
<td>Turrid</td>
<td>COV</td>
<td>150</td>
</tr>
<tr>
<td>Corallimorphidae</td>
<td>Coral-like anemones</td>
<td>CLM</td>
<td>67</td>
</tr>
<tr>
<td>Corallistes fulvodesmus</td>
<td>Smooth white cup sponge</td>
<td>CFU</td>
<td>44</td>
</tr>
<tr>
<td>Corallium spp.</td>
<td>Precious corals</td>
<td>CLL</td>
<td>68</td>
</tr>
<tr>
<td>Cosmasterias dyscrita</td>
<td>Cat's-foot star</td>
<td>CDY</td>
<td>235</td>
</tr>
<tr>
<td>Cranchiidae</td>
<td>Glass squid</td>
<td>CHQ</td>
<td>126</td>
</tr>
<tr>
<td>Crella incrustans</td>
<td>Orange frond sponge</td>
<td>CIC</td>
<td>47</td>
</tr>
<tr>
<td>Crossaster multispinus</td>
<td>Sun-star</td>
<td>CJA</td>
<td>256</td>
</tr>
<tr>
<td>Dagnaudus petterdi</td>
<td>Antlered crab</td>
<td>DAP</td>
<td>174</td>
</tr>
<tr>
<td>Delectopecten fosterianus</td>
<td>Scallop</td>
<td>DFO</td>
<td>114</td>
</tr>
<tr>
<td>Dermechinus horridus</td>
<td>Deepsea urchin</td>
<td>DHO</td>
<td>268</td>
</tr>
<tr>
<td>Desmophyllum dianthus</td>
<td>Crested cup coral</td>
<td>DDI</td>
<td>86</td>
</tr>
<tr>
<td>Diadancanthus rubricatus</td>
<td>Hermit crab</td>
<td>DIR</td>
<td>191</td>
</tr>
<tr>
<td>Diplopteraster sp.</td>
<td>Sea-star</td>
<td>DPP</td>
<td>254</td>
</tr>
<tr>
<td>Dipsacaster magnificus</td>
<td>Magnificent sea-star</td>
<td>DMG</td>
<td>242</td>
</tr>
<tr>
<td>Echinodermatae</td>
<td>Tam O'Shanter</td>
<td>ECT</td>
<td>271</td>
</tr>
<tr>
<td>Echinodermatae</td>
<td>Tam O'Shanter</td>
<td>TAM</td>
<td>270</td>
</tr>
<tr>
<td>Ecionemia novaezelandiae</td>
<td>Knobbly sandpaper sponge</td>
<td>ANZ</td>
<td>32</td>
</tr>
<tr>
<td>Elithusa neocyta</td>
<td>Gill biter or tongue biter</td>
<td>ENE</td>
<td>202</td>
</tr>
<tr>
<td>Elithusa propinqua</td>
<td>Gill biter</td>
<td>ELP</td>
<td>203</td>
</tr>
<tr>
<td>Enallopsammia rostrata</td>
<td>Deepwater branching coral</td>
<td>ERO</td>
<td>90</td>
</tr>
<tr>
<td>Enterococcus zealandicus</td>
<td>Yellow octopus</td>
<td>EZE</td>
<td>118</td>
</tr>
<tr>
<td>Enypniastes eximia</td>
<td>Sea cucumbers</td>
<td>EEX</td>
<td>287</td>
</tr>
<tr>
<td>Epizoanthus spp.</td>
<td>Zoanthid anemone</td>
<td>EPZ</td>
<td>95</td>
</tr>
<tr>
<td>Errina spp.</td>
<td>Red hydrocorals</td>
<td>ERR</td>
<td>81</td>
</tr>
<tr>
<td>Eucrocia galathea</td>
<td>Eucrocia</td>
<td>EGA</td>
<td>116</td>
</tr>
<tr>
<td>Eunicia (undescribed)</td>
<td>Eunicia sea-worm</td>
<td>EUN</td>
<td>102</td>
</tr>
<tr>
<td>Euplectella regalis</td>
<td>Basket-weave horn sponge</td>
<td>ERE</td>
<td>53</td>
</tr>
<tr>
<td>Eurythenes grylly</td>
<td>Amphipod</td>
<td>EUG</td>
<td>165</td>
</tr>
<tr>
<td>Farrea spp.</td>
<td>Lacey honeycomb sponges</td>
<td>FAR</td>
<td>52</td>
</tr>
<tr>
<td>Flabellum spp.</td>
<td>Flabellum cup corals</td>
<td>COF</td>
<td>91</td>
</tr>
<tr>
<td>Funchalia spp.</td>
<td>Funchalia prawn</td>
<td>FUN</td>
<td>218</td>
</tr>
<tr>
<td>Fusitriton magellanicus</td>
<td>Tritons</td>
<td>FMA</td>
<td>145</td>
</tr>
<tr>
<td>Gastropychus spp.</td>
<td>Squat lobsters</td>
<td>GAT</td>
<td>168</td>
</tr>
<tr>
<td>Geodia regina</td>
<td>Curling stone sponge</td>
<td>GRE</td>
<td>36</td>
</tr>
<tr>
<td>Geodia vestigera</td>
<td>Ostrich egg sponge</td>
<td>GVE</td>
<td>37</td>
</tr>
<tr>
<td>Glyphocrangon spp.</td>
<td>Goblin prawn</td>
<td>GLO</td>
<td>210</td>
</tr>
<tr>
<td>Goniocidaris parasol</td>
<td>Parasol urchin</td>
<td>GPA</td>
<td>261</td>
</tr>
<tr>
<td>Goniocidaris umbraculum</td>
<td>Umbrella urchin</td>
<td>GOU</td>
<td>262</td>
</tr>
<tr>
<td>Goniocorella dumosa</td>
<td>Bushy hard coral</td>
<td>GDU</td>
<td>87</td>
</tr>
<tr>
<td>Gorgonocephalus spp.</td>
<td>Gorgon's head basket-stars</td>
<td>GOR</td>
<td>292</td>
</tr>
<tr>
<td>Gracilechinus multidentatus</td>
<td>Deepsea kina</td>
<td>GRM</td>
<td>269</td>
</tr>
<tr>
<td>Graneledone spp.</td>
<td>Deepwater octopus</td>
<td>DWO</td>
<td>119</td>
</tr>
<tr>
<td>Gyrophyllium sibogae</td>
<td>Siboga sea pen</td>
<td>GYS</td>
<td>83</td>
</tr>
<tr>
<td>Haliporoides sibogae</td>
<td>Jack-knife prawn</td>
<td>HSI</td>
<td>220</td>
</tr>
<tr>
<td>Henricia compacta</td>
<td>Sea-star</td>
<td>HEC</td>
<td>247</td>
</tr>
<tr>
<td>Heteroteuthis dagamensis</td>
<td>Bobtail squids</td>
<td>HES</td>
<td>142</td>
</tr>
<tr>
<td>Hexactinellida</td>
<td>Glass sponges</td>
<td>GLS</td>
<td>51</td>
</tr>
<tr>
<td>Hippasteria phrygiana</td>
<td>Trojan star</td>
<td>HTR</td>
<td>249</td>
</tr>
<tr>
<td>Hippellozoa novaezelandiae</td>
<td>Erect cheilostome bryozoan</td>
<td>HNO</td>
<td>227</td>
</tr>
<tr>
<td>Histateuthis spp.</td>
<td>Violet squid</td>
<td>VSQ</td>
<td>127</td>
</tr>
<tr>
<td>Histocidaris spp.</td>
<td>Cidaroid urchin</td>
<td>HIS</td>
<td>265</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common Name</td>
<td>MFish code</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------</td>
<td>------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>Holothuroidea</td>
<td>Sea cucumbers</td>
<td>HTH</td>
<td>282</td>
</tr>
<tr>
<td>Homola orientalis</td>
<td>Carrier crab</td>
<td>HOO</td>
<td>175</td>
</tr>
<tr>
<td>Hormathiidae</td>
<td>Warty deepsea anemones</td>
<td>HMT</td>
<td>61</td>
</tr>
<tr>
<td>Hyalascus sp.</td>
<td>Flappy tubular sponge</td>
<td>HYA</td>
<td>54</td>
</tr>
<tr>
<td>Hyalinoeca tubicola</td>
<td>Quill worm</td>
<td>HTU</td>
<td>103</td>
</tr>
<tr>
<td>Hymenaster carnosus</td>
<td>Sea-star</td>
<td>HYC</td>
<td>255</td>
</tr>
<tr>
<td>Ibacus alticrenatus</td>
<td>Prawn killer</td>
<td>PRK</td>
<td>200</td>
</tr>
<tr>
<td>Isididae</td>
<td>Bamboo corals</td>
<td>ISI</td>
<td>70</td>
</tr>
<tr>
<td>Isocrinida</td>
<td>Sea lilies with cirri</td>
<td>CRN</td>
<td>259</td>
</tr>
<tr>
<td>Jacquinotia edwardsii</td>
<td>Giant spider crab</td>
<td>GSC</td>
<td>184</td>
</tr>
<tr>
<td>Keratois spp.</td>
<td>Branching bamboo coral</td>
<td>BOO</td>
<td>72</td>
</tr>
<tr>
<td>Laetmogone spp.</td>
<td>Sea cucumbers</td>
<td>LAG</td>
<td>285</td>
</tr>
<tr>
<td>Leiopathes secunda</td>
<td>Black coral</td>
<td>LSE</td>
<td>66</td>
</tr>
<tr>
<td>Lepidisis spp.</td>
<td>Bamboo coral</td>
<td>LLE</td>
<td>73</td>
</tr>
<tr>
<td>Lepidoteuthis grimaldi</td>
<td>Scaled squid</td>
<td>LGR</td>
<td>128</td>
</tr>
<tr>
<td>Lepidoteutha spp.</td>
<td>Spiny white hydrocorals</td>
<td>LPT</td>
<td>82</td>
</tr>
<tr>
<td>Leptomithrax australis</td>
<td>Giant masking crab</td>
<td>SSC</td>
<td>185</td>
</tr>
<tr>
<td>Leptomithrax garricki</td>
<td>Garrick’s masking crab</td>
<td>GMC</td>
<td>186</td>
</tr>
<tr>
<td>Leptomithrax longimanus</td>
<td>Long-handed masking crab</td>
<td>LHC</td>
<td>187</td>
</tr>
<tr>
<td>Leptomithrax longipes</td>
<td>Long-legged masking crab</td>
<td>LLC</td>
<td>188</td>
</tr>
<tr>
<td>Licarcinus corrugatus</td>
<td>Dwarf swimming crab</td>
<td>LCO</td>
<td>195</td>
</tr>
<tr>
<td>Lipkius holthuisi</td>
<td>Omega prawn</td>
<td>LHO</td>
<td>211</td>
</tr>
<tr>
<td>Liponema spp.</td>
<td>Deepsea anemones</td>
<td>LIP</td>
<td>62</td>
</tr>
<tr>
<td>Lissodendoryx bifacialis</td>
<td>Floppy chocolate plate sponge</td>
<td>LBI</td>
<td>46</td>
</tr>
<tr>
<td>Lithodes aotearoa</td>
<td>New Zealand king crab</td>
<td>LAO</td>
<td>179</td>
</tr>
<tr>
<td>Lithodes robertsoni</td>
<td>Robertson’s king crab</td>
<td>LRO</td>
<td>180</td>
</tr>
<tr>
<td>Lithosoma novaezelandiae</td>
<td>Rock star</td>
<td>LNV</td>
<td>250</td>
</tr>
<tr>
<td>Lycoteuthis lorigera</td>
<td>Crowned firefly squid</td>
<td>LSQ</td>
<td>130</td>
</tr>
<tr>
<td>Madrepora oculata</td>
<td>Madrepora coral</td>
<td>MOC</td>
<td>92</td>
</tr>
<tr>
<td>Malluvium calcareum</td>
<td>Cap limpet</td>
<td>MCC</td>
<td>144</td>
</tr>
<tr>
<td>Mastigoteuthis spp.</td>
<td>Whip-lash squids</td>
<td>MSQ</td>
<td>131</td>
</tr>
<tr>
<td>Medaster sladeni</td>
<td>Sladen’s star</td>
<td>MSL</td>
<td>251</td>
</tr>
<tr>
<td>Metanephrops challengerii</td>
<td>Scampi</td>
<td>SCI</td>
<td>190</td>
</tr>
<tr>
<td>Millericrinida, Cyrtocrinida</td>
<td>Sea lilies without cirri (o+)</td>
<td>CRN</td>
<td>260</td>
</tr>
<tr>
<td>Minuisis spp.</td>
<td>Worm-commensal bamboo coral</td>
<td>MIN</td>
<td>74</td>
</tr>
<tr>
<td>Molpadia musculus</td>
<td>Molpadia sea cucumber</td>
<td>MOM</td>
<td>289</td>
</tr>
<tr>
<td>Munida spp.</td>
<td>Squat lobsters</td>
<td>MNI</td>
<td>170</td>
</tr>
<tr>
<td>Nectocarcinus antarcticus</td>
<td>Hairy red swimming crab</td>
<td>NCA</td>
<td>196</td>
</tr>
<tr>
<td>Nectocarcinus bennetti</td>
<td>Smooth red swimming crab</td>
<td>NCB</td>
<td>197</td>
</tr>
<tr>
<td>Nematocarcinus spp.</td>
<td>Spider prawn</td>
<td>NEC</td>
<td>212</td>
</tr>
<tr>
<td>Neognathopus ingressus</td>
<td>Giant red mysid</td>
<td>NEI</td>
<td>205</td>
</tr>
<tr>
<td>Neolithodes brodiei</td>
<td>Brodie’s king crab</td>
<td>NEB</td>
<td>181</td>
</tr>
<tr>
<td>Neommatocarcinus huttonii</td>
<td>Policeman crab</td>
<td>NHU</td>
<td>173</td>
</tr>
<tr>
<td>Notostomus auriculatus</td>
<td>Scarlet prawn</td>
<td>NAU</td>
<td>214</td>
</tr>
<tr>
<td>Nototodarus gouldi</td>
<td>Gould’s arrow squid</td>
<td>NOG</td>
<td>134</td>
</tr>
<tr>
<td>Nototodarus sloanii</td>
<td>Sloan’s arrow squid</td>
<td>NOS</td>
<td>135</td>
</tr>
<tr>
<td>Nudibranchia</td>
<td>Sea slug, Nudibranch</td>
<td>NUD</td>
<td>154</td>
</tr>
<tr>
<td>Octopoteuthis spp.</td>
<td>Octopoteuthis squid</td>
<td>OPO</td>
<td>132</td>
</tr>
<tr>
<td>Octopus spp.</td>
<td>Octopus</td>
<td>OCO</td>
<td>120</td>
</tr>
<tr>
<td>Oculina virgosa</td>
<td>Deepwater branching coral</td>
<td>OVI</td>
<td>93</td>
</tr>
<tr>
<td>Odontaster benhami</td>
<td>Pentagonal tooth-star</td>
<td>ODT</td>
<td>253</td>
</tr>
<tr>
<td>Ogmocidaris benhami</td>
<td>Cidaroid urchin</td>
<td>OBE</td>
<td>263</td>
</tr>
</tbody>
</table>
**Index 2: Scientific Names**

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common Name</th>
<th>MFish code</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ommastrephes spp.</td>
<td>Ommastrephid squid</td>
<td>OMM</td>
<td>136</td>
</tr>
<tr>
<td>Onykia (formerly Moroteuthis) ingens</td>
<td>Warty squid</td>
<td>MIQ</td>
<td>138</td>
</tr>
<tr>
<td>Onykia (formerly Moroteuthis) robsoni</td>
<td>Warty squid</td>
<td>MRQ</td>
<td>139</td>
</tr>
<tr>
<td>Ophioctes sibogae</td>
<td>Brittle star</td>
<td>OSI</td>
<td>290</td>
</tr>
<tr>
<td>Ophioctes lymani</td>
<td>Brittle star</td>
<td>OLY</td>
<td>294</td>
</tr>
<tr>
<td>Ophiophtalmus relicus</td>
<td>Deepsea brittle star</td>
<td>ORE</td>
<td>295</td>
</tr>
<tr>
<td>Opisthoteuthis spp.</td>
<td>Umbrella octopus</td>
<td>OPI</td>
<td>122</td>
</tr>
<tr>
<td>Oplophorus spp.</td>
<td>Deepwater prawns</td>
<td>OPP</td>
<td>215</td>
</tr>
<tr>
<td>Ovalipes catharus</td>
<td>Paddle crab</td>
<td>PAD</td>
<td>198</td>
</tr>
<tr>
<td>Ovalipes molleri</td>
<td>Swimming crab</td>
<td>OVM</td>
<td>199</td>
</tr>
<tr>
<td>Pachymatisma sp.</td>
<td>Rocky dumpling sponge</td>
<td>PAZ</td>
<td>38</td>
</tr>
<tr>
<td>Pannychia moseleyi</td>
<td>Sea cucumbers</td>
<td>PAM</td>
<td>286</td>
</tr>
<tr>
<td>Paragorgia arborea</td>
<td>Bubblegum coral</td>
<td>PAB</td>
<td>75</td>
</tr>
<tr>
<td>Paralomis dawsoni</td>
<td>Warty king crab</td>
<td>PDA</td>
<td>182</td>
</tr>
<tr>
<td>Paralomis zealantica</td>
<td>Prickly king crab</td>
<td>PZE</td>
<td>183</td>
</tr>
<tr>
<td>Parameretia peloria</td>
<td>Microsoft mouse</td>
<td>PMU</td>
<td>278</td>
</tr>
<tr>
<td>Pasiphaea aff. tarda</td>
<td>Deepwater prawn</td>
<td>PTA</td>
<td>217</td>
</tr>
<tr>
<td>Pennares sp.</td>
<td>Golden brown crater sponge</td>
<td>PNR</td>
<td>33</td>
</tr>
<tr>
<td>Penian chathamensis</td>
<td>Whelk</td>
<td>PCH</td>
<td>148</td>
</tr>
<tr>
<td>Pennatula spp.</td>
<td>Purple sea pen</td>
<td>PNN</td>
<td>84</td>
</tr>
<tr>
<td>Peronella hinemoeae</td>
<td>Sand dollar</td>
<td>PHI</td>
<td>267</td>
</tr>
<tr>
<td>Pholidoteuthis massyae</td>
<td>Large red scaly squid</td>
<td>PSQ</td>
<td>140</td>
</tr>
<tr>
<td>Phorbas sp.</td>
<td>Grey fibrous massive sponge</td>
<td>PHB</td>
<td>48</td>
</tr>
<tr>
<td>Phormosoma spp.</td>
<td>Tam O’Shanters</td>
<td>PHM</td>
<td>272</td>
</tr>
<tr>
<td>Pillsburya aoteanu</td>
<td>Sea-star</td>
<td>PAO</td>
<td>252</td>
</tr>
<tr>
<td>Pinnocopus cordiformis</td>
<td>Common octopus</td>
<td>OCT</td>
<td>121</td>
</tr>
<tr>
<td>Platymaia maoria</td>
<td>Dell’s spider crab</td>
<td>PTM</td>
<td>177</td>
</tr>
<tr>
<td>Plesionika martia</td>
<td>Golden prawn</td>
<td>PLM</td>
<td>216</td>
</tr>
<tr>
<td>Plexauridae</td>
<td>Plexaurid sea fans</td>
<td>PLE</td>
<td>76</td>
</tr>
<tr>
<td>Plutonaster knoxi</td>
<td>Abyssal star</td>
<td>PKN</td>
<td>243</td>
</tr>
<tr>
<td>Poecillastra laminaris</td>
<td>Fibreglass cup sponge</td>
<td>PLN</td>
<td>39</td>
</tr>
<tr>
<td>Polycheles spp.</td>
<td>Deepsea blind lobster</td>
<td>PLY</td>
<td>194</td>
</tr>
<tr>
<td>Poriocidaris purpurata</td>
<td>Cidaroid urchin</td>
<td>PCD</td>
<td>266</td>
</tr>
<tr>
<td>Primnoa spp.</td>
<td>Primnoa sea fans</td>
<td>PMN</td>
<td>78</td>
</tr>
<tr>
<td>Primnoidea</td>
<td>Primnoide sea fans</td>
<td>PRI</td>
<td>77</td>
</tr>
<tr>
<td>Projasus parkeri</td>
<td>Deepwater rock lobster</td>
<td>PPA</td>
<td>192</td>
</tr>
<tr>
<td>Proserpinaster neozelanicus</td>
<td>Sea-star</td>
<td>PNE</td>
<td>244</td>
</tr>
<tr>
<td>Provocator mirabilis</td>
<td>Golden volute</td>
<td>GVO</td>
<td>153</td>
</tr>
<tr>
<td>Psammocinia sp.</td>
<td>Rubber sponge</td>
<td>PHW</td>
<td>41</td>
</tr>
<tr>
<td>Pseudochinaster rubens</td>
<td>Sea-star</td>
<td>PRU</td>
<td>236</td>
</tr>
<tr>
<td>Pseudechinus flemingi</td>
<td>Fleming’s urchin</td>
<td>PFL</td>
<td>281</td>
</tr>
<tr>
<td>Pseudostichopus mollis</td>
<td>Sea cucumbers</td>
<td>PMO</td>
<td>284</td>
</tr>
<tr>
<td>Psilaster acuminatus</td>
<td>Geometric star</td>
<td>PSI</td>
<td>245</td>
</tr>
<tr>
<td>Pterocalcarion novaezelandiae</td>
<td>Pterocalcarion crab</td>
<td>PNO</td>
<td>166</td>
</tr>
<tr>
<td>Pycnozoon victoriensis</td>
<td>Two-spined crab</td>
<td>CVI</td>
<td>172</td>
</tr>
<tr>
<td>Pyrosoma atlanticum</td>
<td>Salp</td>
<td>PYR</td>
<td>302</td>
</tr>
<tr>
<td>Radiaster gracilis</td>
<td>Sea-star</td>
<td>RGR</td>
<td>246</td>
</tr>
<tr>
<td>Rhadobasella sp.</td>
<td>Pink ice egg sponge</td>
<td>RHA</td>
<td>34</td>
</tr>
<tr>
<td>Scalpellidae</td>
<td>Stalked barnacle</td>
<td>SBN</td>
<td>222</td>
</tr>
<tr>
<td>Sclerasterias mollis</td>
<td>Cross-fish</td>
<td>SMO</td>
<td>237</td>
</tr>
<tr>
<td>Scientific name</td>
<td>Common Name</td>
<td>MFish code</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>---------------------------------</td>
<td>------------</td>
<td>------</td>
</tr>
<tr>
<td>Sepioloidea spp.</td>
<td>Bobtail squids</td>
<td>SSQ</td>
<td>141</td>
</tr>
<tr>
<td>Sepioteuthis australis</td>
<td>Broad squid</td>
<td>BSQ</td>
<td>129</td>
</tr>
<tr>
<td>Sergestes spp.</td>
<td>Sergestid prawn</td>
<td>SER</td>
<td>219</td>
</tr>
<tr>
<td>Solaster torulatus</td>
<td>Chubby sun-star</td>
<td>SOT</td>
<td>257</td>
</tr>
<tr>
<td>Solenosmilia variabilis</td>
<td>Deepwater branching coral</td>
<td>SVA</td>
<td>88</td>
</tr>
<tr>
<td>Spatangus mathesoni</td>
<td>Matheson's heart urchin</td>
<td>SMT</td>
<td>279</td>
</tr>
<tr>
<td>Spatangus multispinus</td>
<td>Purple-heart urchin</td>
<td>SPT</td>
<td>280</td>
</tr>
<tr>
<td>Sterletta sp.</td>
<td>Orange fat finger sponge</td>
<td>SLT</td>
<td>35</td>
</tr>
<tr>
<td>Stolatauthis (sometimes Iridateuthis) maoria</td>
<td>Bobtail squids</td>
<td>IRM</td>
<td>143</td>
</tr>
<tr>
<td>Suberites affinis</td>
<td>Fleshy club sponge</td>
<td>SUA</td>
<td>42</td>
</tr>
<tr>
<td>Sympagurus dimorphus</td>
<td>Hermit crab</td>
<td>SDM</td>
<td>193</td>
</tr>
<tr>
<td>Taningia danae</td>
<td>Dana octopus squid</td>
<td>TDQ</td>
<td>133</td>
</tr>
<tr>
<td>Telesto spp.</td>
<td>Long polyp soft corals</td>
<td>TLO</td>
<td>64</td>
</tr>
<tr>
<td>Teratomaia richardsoni</td>
<td>Spiny masking crab</td>
<td>SMK</td>
<td>189</td>
</tr>
<tr>
<td>Tetilla australis</td>
<td>Bristle ball sponge</td>
<td>TTL</td>
<td>49</td>
</tr>
<tr>
<td>Tetilla leptoderma</td>
<td>Furry oval sponge</td>
<td>TLD</td>
<td>50</td>
</tr>
<tr>
<td>Thenae novaezelandiae</td>
<td>Yoyo sponge</td>
<td>THN</td>
<td>40</td>
</tr>
<tr>
<td>Thermiphione (undescribed)</td>
<td>Thermiphione scale-worm</td>
<td>THE</td>
<td>105</td>
</tr>
<tr>
<td>Thouarella spp.</td>
<td>Bottlebrush coral</td>
<td>THO</td>
<td>79</td>
</tr>
<tr>
<td>Todarodes filippovae</td>
<td>Todarodes squid</td>
<td>TSQ</td>
<td>137</td>
</tr>
<tr>
<td>Trichopeltarion fantasticum</td>
<td>Frilled crab</td>
<td>TFA</td>
<td>167</td>
</tr>
<tr>
<td>Uropycthus spp.</td>
<td>Squat lobsters</td>
<td>URP</td>
<td>169</td>
</tr>
<tr>
<td>Veprichlamys kiwaensis</td>
<td>Scallop</td>
<td>VKI</td>
<td>115</td>
</tr>
<tr>
<td>Vitjazmaia latidactyla</td>
<td>Deep-sea spider crab</td>
<td>VIT</td>
<td>178</td>
</tr>
<tr>
<td>Yaldwynopsis spinimana</td>
<td>Yaldwyn’s crab</td>
<td>YSP</td>
<td>176</td>
</tr>
<tr>
<td>Zoantharia</td>
<td>Zoanthids</td>
<td>ZAH</td>
<td>94</td>
</tr>
<tr>
<td>Zoroaster spp.</td>
<td>Rat-tail stars</td>
<td>ZOR</td>
<td>238</td>
</tr>
<tr>
<td>Zygochlamys delicatula</td>
<td>Queen scallop</td>
<td>QSC</td>
<td>113</td>
</tr>
<tr>
<td>MFish code</td>
<td>Common Name</td>
<td>Scientific name</td>
<td>Page</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------</td>
<td>-------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>ACA</td>
<td>Subantarctic ruby prawn</td>
<td>Acanthephyra spp.</td>
<td>213</td>
</tr>
<tr>
<td>ACN</td>
<td>Bushy bamboo coral</td>
<td>Acanella spp.</td>
<td>71</td>
</tr>
<tr>
<td>ACS</td>
<td>Smooth deepsea anemones</td>
<td>Actinostolidae</td>
<td>60</td>
</tr>
<tr>
<td>ACU</td>
<td>Spiny serialis isopod</td>
<td>Bruceralis spp.</td>
<td>204</td>
</tr>
<tr>
<td>ADT</td>
<td>Sea mice</td>
<td>Aphrodita spp.</td>
<td>104</td>
</tr>
<tr>
<td>AER</td>
<td>Whelk</td>
<td>Aeneator recens</td>
<td>146</td>
</tr>
<tr>
<td>AFO</td>
<td>Royal red prawn</td>
<td>Aristaeomorpha foliacea</td>
<td>206</td>
</tr>
<tr>
<td>ALH</td>
<td>Three-and-three stars</td>
<td>Allostichaster spp.</td>
<td>234</td>
</tr>
<tr>
<td>ALL</td>
<td>Volute</td>
<td>Alcithoe larochei</td>
<td>151</td>
</tr>
<tr>
<td>AMA</td>
<td>Giant file shell</td>
<td>Acesta maui</td>
<td>111</td>
</tr>
<tr>
<td>AMO</td>
<td>Fish biter</td>
<td>Aega monophthalma</td>
<td>201</td>
</tr>
<tr>
<td>ANI</td>
<td>Gamba prawns</td>
<td>Austropenaeus nitidus</td>
<td>208</td>
</tr>
<tr>
<td>ANZ</td>
<td>Knobblly sandpaper sponge</td>
<td>Ecioemia novaezelandiae</td>
<td>32</td>
</tr>
<tr>
<td>APM</td>
<td>Sea-star</td>
<td>Astromesites primigenius</td>
<td>241</td>
</tr>
<tr>
<td>APU</td>
<td>Pimpled ear sponge</td>
<td>Aciculites pulchra</td>
<td>45</td>
</tr>
<tr>
<td>ARO</td>
<td>Gigantic coral</td>
<td>Anthomastus (Bathyalcyon) robustus</td>
<td>63</td>
</tr>
<tr>
<td>ASC</td>
<td>Sea squirt or Asidian</td>
<td>Ascidacea</td>
<td>301</td>
</tr>
<tr>
<td>ASG</td>
<td>Acesta</td>
<td>Acesta saginata</td>
<td>112</td>
</tr>
<tr>
<td>AWA</td>
<td>Waite's snake-star</td>
<td>Astrothorax waiti</td>
<td>291</td>
</tr>
<tr>
<td>AWI</td>
<td>Volute</td>
<td>Alcithoe wilsonae</td>
<td>152</td>
</tr>
<tr>
<td>BAM</td>
<td>Sea cucumbers</td>
<td>Bathyplotes sp.</td>
<td>283</td>
</tr>
<tr>
<td>BES</td>
<td>Sea-star</td>
<td>Benthoplecten spp.</td>
<td>239</td>
</tr>
<tr>
<td>BHE</td>
<td>Deepsea brittle star</td>
<td>Bathypectinura heros</td>
<td>293</td>
</tr>
<tr>
<td>BNO</td>
<td>Deepwater octopii</td>
<td>Benthoctopus spp.</td>
<td>117</td>
</tr>
<tr>
<td>BOC</td>
<td>Deepsea anemones</td>
<td>Bolocera spp.</td>
<td>59</td>
</tr>
<tr>
<td>BOO</td>
<td>Branching bamboo coral</td>
<td>Keratoisis spp.</td>
<td>72</td>
</tr>
<tr>
<td>BRG</td>
<td>Armless stars</td>
<td>Brisingidae, Hymenodiscidae, Novodiniidae, Freyellidae</td>
<td>233</td>
</tr>
<tr>
<td>BRO</td>
<td>Heart urchin</td>
<td>Brisopsis oldhami</td>
<td>277</td>
</tr>
<tr>
<td>BSQ</td>
<td>Brood squid</td>
<td>Sepioteuthis australis</td>
<td>129</td>
</tr>
<tr>
<td>BTD</td>
<td>Sea cucumbers</td>
<td>Benthodytes spp.</td>
<td>288</td>
</tr>
<tr>
<td>CAL</td>
<td>Giant purple pedinid</td>
<td>Caenopedina porphyrogigas</td>
<td>275</td>
</tr>
<tr>
<td>CAM</td>
<td>Sabre prawn</td>
<td>Campylonotus rathbunae</td>
<td>209</td>
</tr>
<tr>
<td>CAO</td>
<td>Sea urchin</td>
<td>Caenopedina otagoensis</td>
<td>274</td>
</tr>
<tr>
<td>CAY</td>
<td>Carnation cup coral</td>
<td>Caryophyllia spp.</td>
<td>85</td>
</tr>
<tr>
<td>CDY</td>
<td>Cat's-foot star</td>
<td>Cosmasterias dyscrica</td>
<td>235</td>
</tr>
<tr>
<td>CFU</td>
<td>Smooth white cup sponge</td>
<td>Corallistes fulvodesmus</td>
<td>44</td>
</tr>
<tr>
<td>CHC</td>
<td>Red crab</td>
<td>Chaceon bicolor</td>
<td>171</td>
</tr>
<tr>
<td>CHQ</td>
<td>Glass squid</td>
<td>Cranchiidae</td>
<td>126</td>
</tr>
<tr>
<td>CHR</td>
<td>Golden corals</td>
<td>Chrysochoria spp.</td>
<td>69</td>
</tr>
<tr>
<td>CHT</td>
<td>Chiton</td>
<td>Amphineura</td>
<td>157</td>
</tr>
<tr>
<td>CIC</td>
<td>Orange frond sponge</td>
<td>Crella incrustans</td>
<td>47</td>
</tr>
<tr>
<td>CIM</td>
<td>Fire worm</td>
<td>Chloeia inermis</td>
<td>101</td>
</tr>
<tr>
<td>CJA</td>
<td>Sun-star</td>
<td>Crossaster multispinus</td>
<td>256</td>
</tr>
<tr>
<td>CLL</td>
<td>Precious corals</td>
<td>Corallium spp.</td>
<td>68</td>
</tr>
<tr>
<td>CLM</td>
<td>Coral-like anemones</td>
<td>Corallimorphidae</td>
<td>67</td>
</tr>
<tr>
<td>CMP</td>
<td>Sea-star</td>
<td>Cheiraster monopedicellaris</td>
<td>240</td>
</tr>
<tr>
<td>CMR</td>
<td>Pagoda shell</td>
<td>Coluzea mariae</td>
<td>149</td>
</tr>
<tr>
<td>CMT</td>
<td>Feather stars</td>
<td>Comatulida</td>
<td>258</td>
</tr>
<tr>
<td>CNO</td>
<td>Banded-spine urchin</td>
<td>Caenopedina novaezelandiae</td>
<td>273</td>
</tr>
<tr>
<td>COB</td>
<td>Black corals</td>
<td>Antipatharia</td>
<td>65</td>
</tr>
<tr>
<td>COF</td>
<td>Flabellum cup corals</td>
<td>Flabellum spp.</td>
<td>91</td>
</tr>
<tr>
<td>MFish code</td>
<td>Common Name</td>
<td>Scientific name</td>
<td>Page</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------</td>
<td>--------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>COV</td>
<td>Turrid</td>
<td>Comitas onokeana vivens</td>
<td>150</td>
</tr>
<tr>
<td>CPA</td>
<td>Pentagon star</td>
<td>Ceramaster patagonicus</td>
<td>248</td>
</tr>
<tr>
<td>CPU</td>
<td>Sea urchin</td>
<td>Caenopedina pulchella</td>
<td>276</td>
</tr>
<tr>
<td>CRE</td>
<td>White hydrocoral</td>
<td>Calyptopora reticulata</td>
<td>80</td>
</tr>
<tr>
<td>CRM</td>
<td>Airy finger sponge</td>
<td>Callyspongia sp.</td>
<td>43</td>
</tr>
<tr>
<td>CRN</td>
<td>Sea lilies with cirri</td>
<td>Isocrinida</td>
<td>259</td>
</tr>
<tr>
<td>CRN</td>
<td>Sea lilies without cirri</td>
<td>Millericrinida, Cyrtocrinida</td>
<td>260</td>
</tr>
<tr>
<td>CSS</td>
<td>Maurea</td>
<td>Calliostoma selectum</td>
<td>155</td>
</tr>
<tr>
<td>CTN</td>
<td>Top shell</td>
<td>Calliostoma turnerarum</td>
<td>156</td>
</tr>
<tr>
<td>CVE</td>
<td>Chirroteuthid squid</td>
<td>Chirroteuthis veryani</td>
<td>125</td>
</tr>
<tr>
<td>CVI</td>
<td>Two-spined crab</td>
<td>Pycnooelax victoriensis</td>
<td>172</td>
</tr>
<tr>
<td>DAP</td>
<td>Antlered crab</td>
<td>Dagnaudus peterdi</td>
<td>174</td>
</tr>
<tr>
<td>DDI</td>
<td>Crested cup coral</td>
<td>Desmophyllum dianthus</td>
<td>86</td>
</tr>
<tr>
<td>DFO</td>
<td>Scallop</td>
<td>Delectopecten fosterianus</td>
<td>114</td>
</tr>
<tr>
<td>DHO</td>
<td>Deepsea urchin</td>
<td>Dermechinus horridus</td>
<td>268</td>
</tr>
<tr>
<td>DIR</td>
<td>Hermit crab</td>
<td>Diacanthurus rubricatus</td>
<td>191</td>
</tr>
<tr>
<td>DMG</td>
<td>Magnificent sea-star</td>
<td>Dipsacaster magnificus</td>
<td>242</td>
</tr>
<tr>
<td>DPP</td>
<td>Sea-star</td>
<td>Diplopteraster sp.</td>
<td>254</td>
</tr>
<tr>
<td>DWO</td>
<td>Deepwater octopus</td>
<td>Graneledone spp.</td>
<td>119</td>
</tr>
<tr>
<td>ECB</td>
<td>Erect cyclostome bryozoans</td>
<td>Stenolaemata</td>
<td>228</td>
</tr>
<tr>
<td>ECT</td>
<td>Tam O’Shanters</td>
<td>Echinotheriidae</td>
<td>271</td>
</tr>
<tr>
<td>EEX</td>
<td>Sea cucumbers</td>
<td>Enypniastes eximia</td>
<td>287</td>
</tr>
<tr>
<td>EGA</td>
<td>Euciroa</td>
<td>Euciroa galathea</td>
<td>116</td>
</tr>
<tr>
<td>ELP</td>
<td>Gill biter</td>
<td>Elthusa propinqua</td>
<td>203</td>
</tr>
<tr>
<td>ENE</td>
<td>Gill biter or tongue biter</td>
<td>Elthusa neocytta</td>
<td>202</td>
</tr>
<tr>
<td>EPZ</td>
<td>Zoanthid anemone</td>
<td>Epizoanthus spp.</td>
<td>95</td>
</tr>
<tr>
<td>ERE</td>
<td>Basket-weave horn sponge</td>
<td>Euplectella regalis</td>
<td>53</td>
</tr>
<tr>
<td>ERO</td>
<td>Deepwater branching coral</td>
<td>Enallopsammia rostrata</td>
<td>90</td>
</tr>
<tr>
<td>ERR</td>
<td>Red hydrocorals</td>
<td>Errina spp.</td>
<td>81</td>
</tr>
<tr>
<td>EUG</td>
<td>Amphipod</td>
<td>Eurythenes gryllus</td>
<td>165</td>
</tr>
<tr>
<td>EUN</td>
<td>Eunice sea-worm</td>
<td>Eunice (undescribed)</td>
<td>102</td>
</tr>
<tr>
<td>EZE</td>
<td>Yellow octopus</td>
<td>Enterocotopus zealandicus</td>
<td>118</td>
</tr>
<tr>
<td>FAR</td>
<td>Lacey honeycomb sponges</td>
<td>Farrea spp.</td>
<td>52</td>
</tr>
<tr>
<td>FMA</td>
<td>Tritons</td>
<td>Fusitriton magellanicus</td>
<td>145</td>
</tr>
<tr>
<td>FUN</td>
<td>Funchalia prawn</td>
<td>Funchalia spp.</td>
<td>218</td>
</tr>
<tr>
<td>Gat</td>
<td>Squat lobsters</td>
<td>Gastroptychus spp.</td>
<td>168</td>
</tr>
<tr>
<td>GDU</td>
<td>Bushy hard coral</td>
<td>Gonioicorella dumosa</td>
<td>87</td>
</tr>
<tr>
<td>GLO</td>
<td>Goblin prawn</td>
<td>Glyphocrangon spp.</td>
<td>210</td>
</tr>
<tr>
<td>GLS</td>
<td>Glass sponges</td>
<td>Hexactinellida</td>
<td>51</td>
</tr>
<tr>
<td>GMC</td>
<td>Garrick’s masking crab</td>
<td>Leptomithrax garricki</td>
<td>186</td>
</tr>
<tr>
<td>GOR</td>
<td>Gorgon’s head basket-stars</td>
<td>Gorgonocephalus spp.</td>
<td>292</td>
</tr>
<tr>
<td>GOU</td>
<td>Umbrella urchin</td>
<td>Gonioicidaris umbraculum</td>
<td>262</td>
</tr>
<tr>
<td>GPA</td>
<td>Parasol urchin</td>
<td>Gonioicidaris parasol</td>
<td>261</td>
</tr>
<tr>
<td>GRE</td>
<td>Curling stone sponge</td>
<td>Geodia regina</td>
<td>36</td>
</tr>
<tr>
<td>GRM</td>
<td>Deepsea kina</td>
<td>Gracilechinus multidentatus</td>
<td>269</td>
</tr>
<tr>
<td>GSC</td>
<td>Giant spider crab</td>
<td>Jacquinotia edwardsii</td>
<td>184</td>
</tr>
<tr>
<td>GSQ</td>
<td>Giant squid</td>
<td>Architeuthis spp.</td>
<td>124</td>
</tr>
<tr>
<td>GVE</td>
<td>Ostrich egg sponge</td>
<td>Geodia vestigifera</td>
<td>37</td>
</tr>
<tr>
<td>GVO</td>
<td>Golden volute</td>
<td>Provocator mirabilis</td>
<td>153</td>
</tr>
<tr>
<td>GYS</td>
<td>Siboga sea pen</td>
<td>Gyrophyllum sibogae</td>
<td>83</td>
</tr>
<tr>
<td>HEC</td>
<td>Sea-star</td>
<td>Henricia compacta</td>
<td>247</td>
</tr>
<tr>
<td>HES</td>
<td>Bobtail squids</td>
<td>Heteroteuthis dagamensis</td>
<td>142</td>
</tr>
<tr>
<td>MFish code</td>
<td>Common Name</td>
<td>Scientific name</td>
<td>Page</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------</td>
<td>---------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>HIS</td>
<td>Cidaroid urchin</td>
<td>Histocidaris spp.</td>
<td>265</td>
</tr>
<tr>
<td>HMT</td>
<td>Warty deepsea anemones</td>
<td>Hormathidae</td>
<td>61</td>
</tr>
<tr>
<td>HNO</td>
<td>Erect cheilostome bryozoan</td>
<td>Hippellozoan novaezelandiae</td>
<td>227</td>
</tr>
<tr>
<td>HOO</td>
<td>Carrier crab</td>
<td>Homola orientalis</td>
<td>175</td>
</tr>
<tr>
<td>HSI</td>
<td>Jack-knife prawn</td>
<td>Haliporoides sibogae</td>
<td>220</td>
</tr>
<tr>
<td>HTH</td>
<td>Sea cucumbers</td>
<td>Holothuroidea</td>
<td>282</td>
</tr>
<tr>
<td>HTR</td>
<td>Trojan star</td>
<td>Hippasteria phrygiana</td>
<td>249</td>
</tr>
<tr>
<td>HTU</td>
<td>Quill worm</td>
<td>Hyalinoecia tubicola</td>
<td>103</td>
</tr>
<tr>
<td>HYA</td>
<td>Floppy tubular sponge</td>
<td>Hylasculus sp.</td>
<td>54</td>
</tr>
<tr>
<td>HYC</td>
<td>Sea-star</td>
<td>Hymenaster carnosus</td>
<td>255</td>
</tr>
<tr>
<td>IRM</td>
<td>Bobtail squids</td>
<td>Stoloteuthis (sometimes Tridoteuthis) maoria</td>
<td>143</td>
</tr>
<tr>
<td>ISI</td>
<td>Bamboo corals</td>
<td>Isididae</td>
<td>70</td>
</tr>
<tr>
<td>KWH</td>
<td>Knobbed whelk</td>
<td>Austrofusus glans</td>
<td>147</td>
</tr>
<tr>
<td>LAG</td>
<td>Sea cucumbers</td>
<td>Laetmogone spp.</td>
<td>285</td>
</tr>
<tr>
<td>LAO</td>
<td>New Zealand king crab</td>
<td>Lithodes aotearoa</td>
<td>179</td>
</tr>
<tr>
<td>LBI</td>
<td>Floppy chocolate plate sponge</td>
<td>Lissodendoryx bifacialis</td>
<td>46</td>
</tr>
<tr>
<td>LCO</td>
<td>Dwarf swimming crab</td>
<td>Liocarcinus corrugatus</td>
<td>195</td>
</tr>
<tr>
<td>LGR</td>
<td>Scaled squid</td>
<td>Lepidoteuthis grimaldi</td>
<td>128</td>
</tr>
<tr>
<td>LHC</td>
<td>Long-handed masking crab</td>
<td>Leptomithrax longimanus</td>
<td>187</td>
</tr>
<tr>
<td>LHO</td>
<td>Omega prawn</td>
<td>Lipkius holthuisi</td>
<td>211</td>
</tr>
<tr>
<td>LIP</td>
<td>Deepsea anemones</td>
<td>Liponema spp.</td>
<td>62</td>
</tr>
<tr>
<td>LLC</td>
<td>Long-legged masking crab</td>
<td>Leptomithrax longipes</td>
<td>188</td>
</tr>
<tr>
<td>LLE</td>
<td>Bamboo coral</td>
<td>Lepidisis spp.</td>
<td>73</td>
</tr>
<tr>
<td>LNV</td>
<td>Rock star</td>
<td>Lithosoma novaezelandiae</td>
<td>250</td>
</tr>
<tr>
<td>LPT</td>
<td>Spiny white hydrocorals</td>
<td>Lepidotoheca spp.</td>
<td>82</td>
</tr>
<tr>
<td>LRO</td>
<td>Robertson's king crab</td>
<td>Lithodes robertsoni</td>
<td>180</td>
</tr>
<tr>
<td>LSE</td>
<td>Black coral</td>
<td>Leioapthtes secunda</td>
<td>66</td>
</tr>
<tr>
<td>LSQ</td>
<td>Crowned firefly squid</td>
<td>Lycoteuthis longera</td>
<td>130</td>
</tr>
<tr>
<td>MCC</td>
<td>Cap limpet</td>
<td>Malluvium calcareum</td>
<td>144</td>
</tr>
<tr>
<td>MIN</td>
<td>Worm-commensal bamboo coral</td>
<td>Minuisis spp.</td>
<td>74</td>
</tr>
<tr>
<td>MIQ</td>
<td>Warty squid</td>
<td>Onyka (formerly Moroteuthis) ingens</td>
<td>138</td>
</tr>
<tr>
<td>MNI</td>
<td>Squat lobsters</td>
<td>Munida spp.</td>
<td>170</td>
</tr>
<tr>
<td>MOC</td>
<td>Madrepora coral</td>
<td>Madrepora oculata</td>
<td>92</td>
</tr>
<tr>
<td>MOM</td>
<td>Molpadia sea cucumber</td>
<td>Molpadia musculus</td>
<td>289</td>
</tr>
<tr>
<td>MRQ</td>
<td>Warty squid</td>
<td>Onyka (formerly Moroteuthis) robsoni</td>
<td>139</td>
</tr>
<tr>
<td>MSL</td>
<td>Sladen's star</td>
<td>Mediaster sladeni</td>
<td>251</td>
</tr>
<tr>
<td>MSQ</td>
<td>Whip-lash squids</td>
<td>Mastigoteuthis spp.</td>
<td>131</td>
</tr>
<tr>
<td>NAU</td>
<td>Scarlet prawn</td>
<td>Notostomus auriculatus</td>
<td>214</td>
</tr>
<tr>
<td>NCA</td>
<td>Hairy red swimming crab</td>
<td>Nectocarcinus antarcticus</td>
<td>196</td>
</tr>
<tr>
<td>NCB</td>
<td>Smooth red swimming crab</td>
<td>Nectocarcinus bennetti</td>
<td>197</td>
</tr>
<tr>
<td>NEB</td>
<td>Brodie's king crab</td>
<td>Neolithodes brodiei</td>
<td>181</td>
</tr>
<tr>
<td>NEC</td>
<td>Spider prawn</td>
<td>Nematoarcinus spp.</td>
<td>212</td>
</tr>
<tr>
<td>NEI</td>
<td>Giant red mysid</td>
<td>Neogonathaphusia ingens</td>
<td>205</td>
</tr>
<tr>
<td>NHU</td>
<td>Policeman crab</td>
<td>Neommatocarcinus huttoni</td>
<td>173</td>
</tr>
<tr>
<td>NOG</td>
<td>Gould's arrow squid</td>
<td>Nototodarus gouldi</td>
<td>134</td>
</tr>
<tr>
<td>NOS</td>
<td>Sloan's arrow squid</td>
<td>Nototodarus sloani</td>
<td>135</td>
</tr>
<tr>
<td>NUD</td>
<td>Sea slug, Nudibranch</td>
<td>Nudibranchia</td>
<td>154</td>
</tr>
<tr>
<td>OBE</td>
<td>Cidaroid urchin</td>
<td>Ogmocidaris benhami</td>
<td>263</td>
</tr>
<tr>
<td>OCO</td>
<td>Octopus</td>
<td>Octopus spp.</td>
<td>120</td>
</tr>
<tr>
<td>OCT</td>
<td>Common octopus</td>
<td>Pinnucopus cordiformis</td>
<td>121</td>
</tr>
<tr>
<td>ODT</td>
<td>Pentagonal tooth-star</td>
<td>Odontaster benhami</td>
<td>253</td>
</tr>
<tr>
<td>MFish code</td>
<td>Common Name</td>
<td>Scientific name</td>
<td>Page</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------</td>
<td>----------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>OLY</td>
<td>Brittle star</td>
<td>Ophiomusium lymani</td>
<td>294</td>
</tr>
<tr>
<td>OMM</td>
<td>Ommastrephid squid</td>
<td>Ommastrephes spp.</td>
<td>136</td>
</tr>
<tr>
<td>OPI</td>
<td>Umbrella octopus</td>
<td>Opisthoteuthis spp.</td>
<td>122</td>
</tr>
<tr>
<td>OPO</td>
<td>Octopoteuthis squid</td>
<td>Octopoteuthis spp.</td>
<td>132</td>
</tr>
<tr>
<td>OPP</td>
<td>Deepwater prawns</td>
<td>Oplophorus spp.</td>
<td>215</td>
</tr>
<tr>
<td>ORE</td>
<td>Deepsea brittle star</td>
<td>Ophiopthalmus relictus</td>
<td>295</td>
</tr>
<tr>
<td>OSI</td>
<td>Brittle star</td>
<td>Ophiocreas sibogae</td>
<td>290</td>
</tr>
<tr>
<td>OVI</td>
<td>Deepwater branching coral</td>
<td>Oculina virgosa</td>
<td>93</td>
</tr>
<tr>
<td>OVM</td>
<td>Swimming crab</td>
<td>Ovalipes molleri</td>
<td>199</td>
</tr>
<tr>
<td>PAB</td>
<td>Bubblegum coral</td>
<td>Paragorgia arborea</td>
<td>75</td>
</tr>
<tr>
<td>PAD</td>
<td>Paddle crab</td>
<td>Ovalipes catharus</td>
<td>198</td>
</tr>
<tr>
<td>PAM</td>
<td>Sea cucumbers</td>
<td>Pannychia moseleyi</td>
<td>286</td>
</tr>
<tr>
<td>PAO</td>
<td>Sea-star</td>
<td>Pillsburiaaster aoteanus</td>
<td>252</td>
</tr>
<tr>
<td>PAZ</td>
<td>Rocky dumpling sponge</td>
<td>Pachymatisma sp.</td>
<td>38</td>
</tr>
<tr>
<td>PCD</td>
<td>Cidaroid urchin</td>
<td>Poriocidaris purpurata</td>
<td>266</td>
</tr>
<tr>
<td>PCH</td>
<td>Whelk</td>
<td>Penion chathamensis</td>
<td>148</td>
</tr>
<tr>
<td>PDA</td>
<td>Warty king crab</td>
<td>Paralomis dawsoni</td>
<td>182</td>
</tr>
<tr>
<td>PED</td>
<td>Scarlet prawn</td>
<td>Aristeopsis edwardsiana</td>
<td>207</td>
</tr>
<tr>
<td>PFL</td>
<td>Fleming’s urchin</td>
<td>Pseudechinus flemingi</td>
<td>281</td>
</tr>
<tr>
<td>PHB</td>
<td>Grey fibrous massive sponge</td>
<td>Phorbas sp.</td>
<td>48</td>
</tr>
<tr>
<td>PHI</td>
<td>Sand dollar</td>
<td>Peronella hinemoae</td>
<td>267</td>
</tr>
<tr>
<td>PHM</td>
<td>Tam O’Shanters</td>
<td>Phormosoma spp.</td>
<td>272</td>
</tr>
<tr>
<td>PHW</td>
<td>Rubber sponge</td>
<td>Psammocinia sp.</td>
<td>41</td>
</tr>
<tr>
<td>PKN</td>
<td>Abyssal star</td>
<td>Plutonaster knoxi</td>
<td>243</td>
</tr>
<tr>
<td>PLE</td>
<td>Plexaurid sea fans</td>
<td>Plexauridae</td>
<td>76</td>
</tr>
<tr>
<td>PLM</td>
<td>Golden prawn</td>
<td>Plesionika martia</td>
<td>216</td>
</tr>
<tr>
<td>PLN</td>
<td>Fibreglass cup sponge</td>
<td>Poecillastra laminaris</td>
<td>39</td>
</tr>
<tr>
<td>PLY</td>
<td>Deepsea blind lobster</td>
<td>Polycheles spp.</td>
<td>194</td>
</tr>
<tr>
<td>PMN</td>
<td>Primnoa sea fans</td>
<td>Primnoa spp.</td>
<td>78</td>
</tr>
<tr>
<td>PMO</td>
<td>Sea cucumbers</td>
<td>Pseudostichopus mollis</td>
<td>284</td>
</tr>
<tr>
<td>PMU</td>
<td>Microsoft mouse</td>
<td>Paramaretia peloria</td>
<td>278</td>
</tr>
<tr>
<td>PNE</td>
<td>Sea-star</td>
<td>Proserpinaster neozelanicus</td>
<td>244</td>
</tr>
<tr>
<td>PNN</td>
<td>Purple sea pen</td>
<td>Pennatula spp.</td>
<td>84</td>
</tr>
<tr>
<td>PNO</td>
<td>Pteropeltarion crab</td>
<td>Pteropeltarion novaezelandiae</td>
<td>166</td>
</tr>
<tr>
<td>PNR</td>
<td>Golden brown crater sponge</td>
<td>Penares sp.</td>
<td>33</td>
</tr>
<tr>
<td>PPA</td>
<td>Deepwater rock lobster</td>
<td>Projasus parkeri</td>
<td>192</td>
</tr>
<tr>
<td>PRI</td>
<td>Primnoid sea fans</td>
<td>Primnoidae</td>
<td>77</td>
</tr>
<tr>
<td>PRK</td>
<td>Prawn killer</td>
<td>Ibacus alticrenatus</td>
<td>200</td>
</tr>
<tr>
<td>PRU</td>
<td>Sea-star</td>
<td>Pseudechinaster rubens</td>
<td>236</td>
</tr>
<tr>
<td>PSI</td>
<td>Geometric star</td>
<td>Pslaster acuminatus</td>
<td>245</td>
</tr>
<tr>
<td>PSQ</td>
<td>Large red scaly squid</td>
<td>Pholidoteuthis massyae</td>
<td>140</td>
</tr>
<tr>
<td>PTA</td>
<td>Deepwater prawn</td>
<td>Pasiphaea aff. tarda</td>
<td>217</td>
</tr>
<tr>
<td>PTM</td>
<td>Dell’s spider crab</td>
<td>Platymaia maoria</td>
<td>177</td>
</tr>
<tr>
<td>PYC</td>
<td>Giant sea spiders</td>
<td>Colossendeis spp.</td>
<td>221</td>
</tr>
<tr>
<td>PYR</td>
<td>Salp</td>
<td>Pyrosoma atlanticum</td>
<td>302</td>
</tr>
<tr>
<td>PZE</td>
<td>Prickly king crab</td>
<td>Paralomis zealandica</td>
<td>183</td>
</tr>
<tr>
<td>QSC</td>
<td>Queen scallop</td>
<td>Zygoclamys delicatula</td>
<td>113</td>
</tr>
<tr>
<td>RGR</td>
<td>Sea-star</td>
<td>Radiaster gracilis</td>
<td>246</td>
</tr>
<tr>
<td>RHA</td>
<td>Pink ice egg sponge</td>
<td>Rhabdastrella sp.</td>
<td>34</td>
</tr>
<tr>
<td>SBN</td>
<td>Stalked barnacle</td>
<td>Scalpellidae</td>
<td>222</td>
</tr>
<tr>
<td>SCI</td>
<td>Scampi</td>
<td>Metanephrops challenger</td>
<td>190</td>
</tr>
<tr>
<td>SDM</td>
<td>Hermit crab</td>
<td>Sympagurus dimorphus</td>
<td>193</td>
</tr>
<tr>
<td>MFish code</td>
<td>Common Name</td>
<td>Scientific name</td>
<td>Page</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------</td>
<td>----------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>SER</td>
<td>Sergestid prawn</td>
<td>Sergestes spp.</td>
<td>219</td>
</tr>
<tr>
<td>SLT</td>
<td>Orange fat finger sponge</td>
<td>Stelleta sp.</td>
<td>35</td>
</tr>
<tr>
<td>SMK</td>
<td>Spiny masking crab</td>
<td>Teratomaia richardsoni</td>
<td>189</td>
</tr>
<tr>
<td>SMO</td>
<td>Cross-fish</td>
<td>Sclerasterias mollis</td>
<td>237</td>
</tr>
<tr>
<td>SMT</td>
<td>Matheson’s heart urchin</td>
<td>Spatangus mathesonii</td>
<td>279</td>
</tr>
<tr>
<td>SOT</td>
<td>Chubby sun-star</td>
<td>Solaster torulatus</td>
<td>257</td>
</tr>
<tr>
<td>SPT</td>
<td>Purple-heart urchin</td>
<td>Spatangus multispinus</td>
<td>280</td>
</tr>
<tr>
<td>SSS</td>
<td>Giant masking crab</td>
<td>Leptomithrax australis</td>
<td>185</td>
</tr>
<tr>
<td>SSQ</td>
<td>Bobtail squids</td>
<td>Sepioloidea spp.</td>
<td>141</td>
</tr>
<tr>
<td>STC</td>
<td>Cidaroid urchin</td>
<td>Stereocidaris spp.</td>
<td>264</td>
</tr>
<tr>
<td>STP</td>
<td>Solitary bowl coral</td>
<td>Stephanocyathus platypus</td>
<td>89</td>
</tr>
<tr>
<td>SUA</td>
<td>Fleshy club sponge</td>
<td>Suberites affinis</td>
<td>42</td>
</tr>
<tr>
<td>SVA</td>
<td>Deepwater branching coral</td>
<td>Solenosmilia variabilis</td>
<td>88</td>
</tr>
<tr>
<td>TAM</td>
<td>Tam O’Shanters</td>
<td>Echinothurioida</td>
<td>270</td>
</tr>
<tr>
<td>TDQ</td>
<td>Dana octopus squid</td>
<td>Taningia danae</td>
<td>133</td>
</tr>
<tr>
<td>TFA</td>
<td>Frilled crab</td>
<td>Trichopeltarion fantasticum</td>
<td>167</td>
</tr>
<tr>
<td>THE</td>
<td>Thermiphione scale-worm</td>
<td>Thermiphione (undescribed)</td>
<td>105</td>
</tr>
<tr>
<td>THN</td>
<td>Yoyo sponge</td>
<td>Thenia novaezelandiae</td>
<td>40</td>
</tr>
<tr>
<td>THO</td>
<td>Bottlebrush coral</td>
<td>Thouarella spp.</td>
<td>79</td>
</tr>
<tr>
<td>TLD</td>
<td>Furry oval sponge</td>
<td>Tetilla leptoderma</td>
<td>50</td>
</tr>
<tr>
<td>TLO</td>
<td>Long polyp soft corals</td>
<td>Telesto spp.</td>
<td>64</td>
</tr>
<tr>
<td>TSQ</td>
<td>Todarodes squid</td>
<td>Todarodes filippovae</td>
<td>137</td>
</tr>
<tr>
<td>TTL</td>
<td>Bristle ball sponge</td>
<td>Tetilla australie</td>
<td>49</td>
</tr>
<tr>
<td>URP</td>
<td>Squat lobsters</td>
<td>Uroptychus spp.</td>
<td>169</td>
</tr>
<tr>
<td>VIT</td>
<td>Deep-sea spider crab</td>
<td>Vitjazmaia latidactyla</td>
<td>178</td>
</tr>
<tr>
<td>VIKI</td>
<td>Scallop</td>
<td>Veprichlamys kiwaensis</td>
<td>115</td>
</tr>
<tr>
<td>VSSQ</td>
<td>Violet squid</td>
<td>Histiotethis spp.</td>
<td>127</td>
</tr>
<tr>
<td>YSP</td>
<td>Yaldwyn’s crab</td>
<td>Yaldwynopsis spinimana</td>
<td>176</td>
</tr>
<tr>
<td>ZAH</td>
<td>Zoanthids</td>
<td>Zoantharia</td>
<td>94</td>
</tr>
<tr>
<td>ZOR</td>
<td>Rat-tail stars</td>
<td>Zoroaster spp.</td>
<td>238</td>
</tr>
</tbody>
</table>