splendid sponges

a guide to the sponges of New Zealand

Version 2, 2017

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with Blayne Herr

NIWA
Taihoro Nukurangi

about this guide

Sponges are the most common marine invertebrates that inhabit the New Zealand coastline and harbours, from the intertidal zone down to the continental shelf, deep ocean trenches, and abyssal plains. They are a magnificent and very diverse group of sea creatures. We hope that you will enjoy reading about them here and use this guide to help identify these splendid creatures in the wild.

SPLENDID SPONGES is a fully illustrated working guide to the most commonly encountered sponges of New Zealand. It is designed for New Zealanders like you who live near the sea, dive and snorkel, explore our coasts, make a living from it, and for those who educate and are charged with kaitiakitanga, conservation and management of our marine realm. This guide is part of a series of guides on New Zealand's marine life that NIWA's Coasts and Oceans group is presently developing.

The guide starts with a simple introduction to living sponges and how to identify them, followed by a colour index, a morphology (shape) index, and a species index, followed by detailed individual species pages and additional supporting information. The taxonomic names in this guide are the result of specimen-based identifications by Dr Michelle Kelly of numerous specimens collected over a 60 year period by NIWA. As new species are discovered and described, new species pages will be added and an updated version of this guide will be made available. This guide fully incorporates and updates Pritchard et al. (1984) Marine Sponges: Forty-six sponges of northern New Zealand. Leigh Laboratory Bulletin, 14: 49 p.

Each sponge species page illustrates and describes features that enable you to differentiate the species from one other. Species are illustrated with high quality images of the animals in life. As far as possible, we have used characters that can be seen by eye or magnifying glass, and language that is non-technical. Outlying island groups, banks, platforms and plateaus are shown on the maps as a two-letter code: Ak = Auckland Islands; An = Antipodes Islands; Bo = Bounty Islands and platform; Ca = Campbell Islands and platform; Ch = Chatham Islands and Chatham Rise; Cp = Challenger Plateau; Ke = Kermadec Islands and the Southern Kermadec Ridge; Pb = Puysegur Bank; Sn = Snares Islands and platform. Information is provided in descriptive text and quick reference icons that convey information without words. Icons are fully explained at the end of this document and a glossary explains unfamiliar terms.

Dr Michelle Kelly is a professional sponge taxonomist working in the areas of taxonomy, systematics, marine biodiversity, and seamount ecology.

For any ID advice on sponges you find, please email your photos to Dr Kelly at michelle.kelly@niwa.co.nz

http://www.niwa.co.nz/coasts-and-oceans/marine-identification-guides-and-fact-sheets

Remember to check the websites for updated versions!

a typical species page layout

taxonomic name of species

taxonomic authority
person(s) who first described this species

common name of species

species classification
see species index for arrangement

species images
inset images show variations and/or closeup detail

body plan icon
highlighting the basic shape, or a special characteristic, that defines a group of these organisms

life history icon
highlighting geographic distribution

scale bar
indicating relative size of organism in the main image

quick id icons
highlighting shape, surface detail, habitat, and environment

scale of abundance

depth range
common depth range around New Zealand

information
details on external and internal characters and habitat

distribution
section of coastline where species is most commonly found

make notes of where you encountered this species and let us know if you find it at a new location

key taxonomic references

it could also be ...
some species are difficult to tell apart without more detailed information, so check the other species in the guide listed here to make sure that you have the correct species

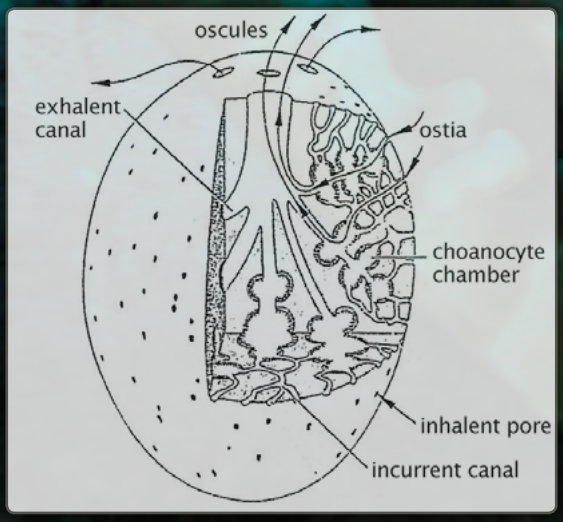
about sponges

Sponges are the most common marine invertebrates around the New Zealand coastline. They are found everywhere, from intertidal rock pools to subtidal rocky reefs, from silty harbours to continental shelf seamounts, from volcanic ridges and hydrothermal vents, to the deep abyssal plains, rises, and plateaus of the south. Most species encrust hard rocky substrate, but many are embedded in sandy muddy sediments with a root-like structure. Several species are also known to encrust other sponges or crabs!

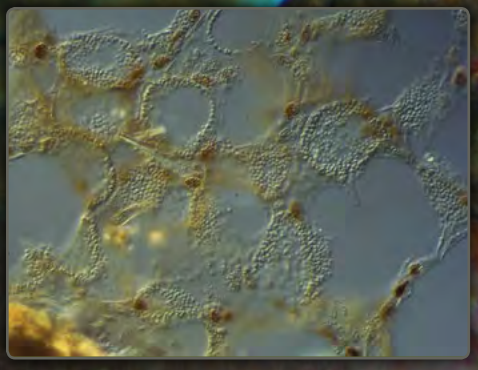
seamount sponges

giant masking crab and sponge friend

Sponges feed by filtering water using specialised cells called choanocytes. Choanocytes use their tail-like flagella to collectively propel a one-directional water current through the sponge body; water enters through small inhalant pores on the surface (ostia) and exits through several large exhalent holes (oscules). Food is captured in a fringe surrounding the base of the choanocyte flagella, and is passed back through the cell body to other cells that distribute it around the sponge. Excretory products exit in the water current as it leaves the body. Sponges do not have specific tissues, instead they have a large range of cells that have the role of feeding, digestion, secretion, excretion, reproduction and defence. Most sponges produce a skeleton of fibre made from a special collagen called spongin, which may or may not contain sand grains or spicules. Spicules are siliceous elements made by the sponge that come in an amazing array of forms and are usually used to identify the species. Some sponges have only spicules and no spongin, and some have no skeleton at all.



general sponge body plan

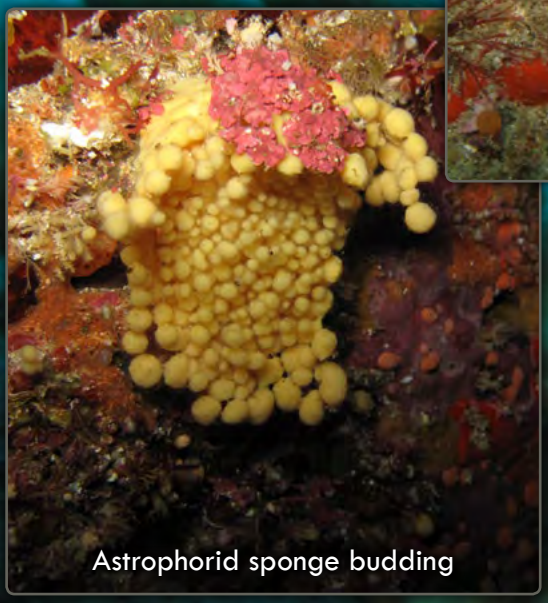


choanocyte feeding cells in chambers

Sponges reproduce by the production of eggs from archeocyte cells. These are special universal cells that can transform into all other cell types in the sponge body. Sperm is made from the choanocytes which have ready-made tails. Some sponges exude their eggs in a mucus sheet on the outside of their body (ovipary), which are fertilised by male sponges that release sperm 'smoke' in the water. Other sponges take the sperm in, fertilise the eggs internally and incubate either larvae or tiny sponges inside their bodies (vivipary). Some sponges also reproduce asexually by budding new sponges from their body.

Tethya burtoni budding

Tethya bergquistae budding



Astrophorid sponge budding

immature sponges in *Tethya fastigata*

Although sponges are often regarded as simple or primitive, they are actually very talented; the first evidence for an immune system in animals became evident from early experiments with sponges. Because sponges do not move around they can also produce chemicals to defend themselves from other organisms that want to eat or settle on them – it's warfare out in the ocean! The great news for humans is that many of these chemicals have potent anticancer, anti-inflammatory, antibacterial, antidepressant, antifouling and pesticide activity.

Perhaps the most amazing discovery in sponges this century is that some are carnivorous, not filter-feeders like the rest of the group. Carnivorous sponges feed on tiny shrimp down in the deep sea where normal sponge food is scarce. Many live as deep as several kilometres under the ocean, and New Zealand waters appear to be a centre of diversity for these odd sponges.

sponge classification

There are three major groups of sponges, some of which have **calcium carbonate** spicules (Class Calcarea), and some of which have **silica** spicules (Class Hexactinellida and Class Demospongiae).

Calcareous sponges are fairly uncommon in New Zealand, with only one or two common species known. They are often small fragile sponges and have pale pretty colours. They do not possess a spongin skeleton.

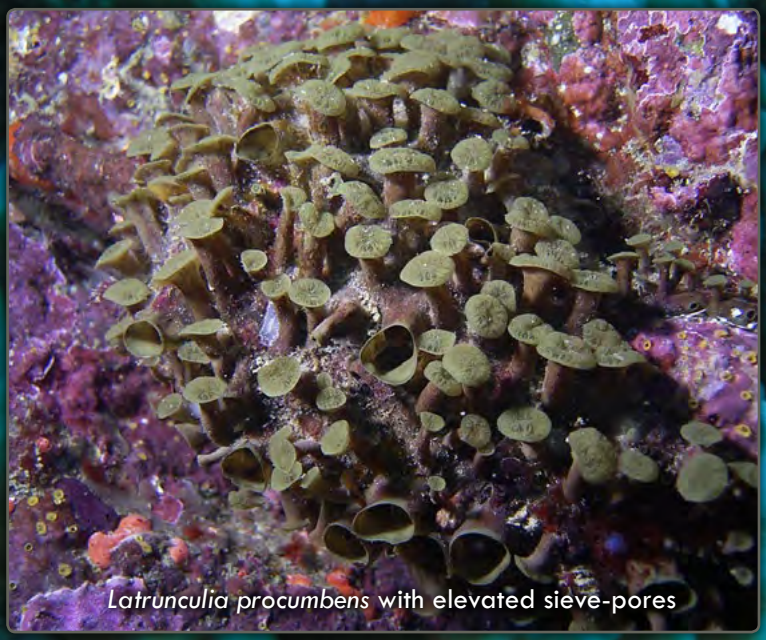
Glass sponges are usually found in very deep water and are unique amongst sponges in that they do not have cells with membranes as in the other two groups and their spicules are based on a hexagonal (six-rayed) design.

Demosponges are by far the most common and diverse sponges and the ones that you are most likely to meet while snorkelling or diving.

how to identify a sponge

Several general characters provide the first clues to the identity of a sponge: **overall shape** (determined by the form of the skeleton), **surface features** (whether smooth, spiky, bumpy, hairy, with sieve-pores, etc), **texture** (whether fragile, crumbly, elastic, fleshy, stony, woody, etc), **colour** (highly variable and often differentiated between surface and interior) and **where the sponge is found** (whether intertidal, subtidal, on seamounts, on the abyssal plain, under sea-ice, etc).

However, it is the **arrangement or architecture of the internal sponge skeleton** (the nature and pattern of the skeleton) that provides definitive clues to the classification (order, family, genus and species) of the sponge. The sponge skeleton is very diverse and may consist of **organic** and **inorganic** components. The organic skeleton consists of a special sponge collagen (spongin) that can form **fibres** (clear, pithed, or cored with spicules or sand), or bands of elastic fibrils, or filaments. The nature and appearance of the fibres are diagnostic at the taxonomic level of order, family, and genus. The **inorganic** skeleton may consist of large **spicules** called **megascleres** that, with or without fibre support, form the structural framework of the sponge. Small, highly ornamental spicules called **microscleres** complement the megascleres, often lining the sponge surface or internal canals. It is important to remember that several large groups of sponges do not have spicules, and that some sponges use sand and broken spicules from the sediment to create an inorganic mineral skeleton.

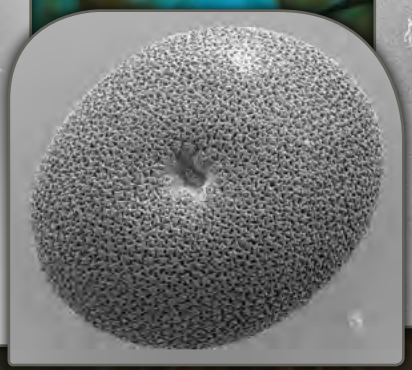


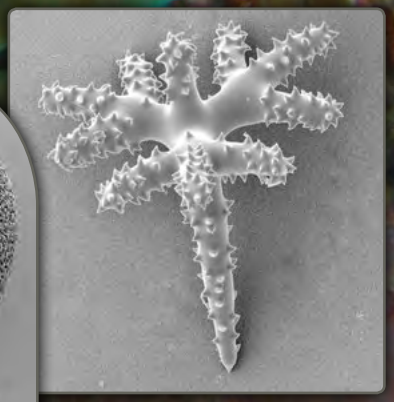
Latrunculia procumbens with elevated sieve-pores

Pararhaphoxya sinclairi
with a tree-like skeleton

The **spicule complement** (the type of spicules are found in the sponge), **spicule dimensions** (typically, the length of the spicules) and the **skeleton arrangement** (the arrangement of the spicules in the sponge, whether embedded in fibre, or free in the sponge body and whether restricted to the surface or interior, etc) gives us the most important clues to classification and identification of sponges. Megascleres may be up to several mm long, while microscleres range in size from about 20 to 120 microns and are not visible to the unaided eye.

microscleres



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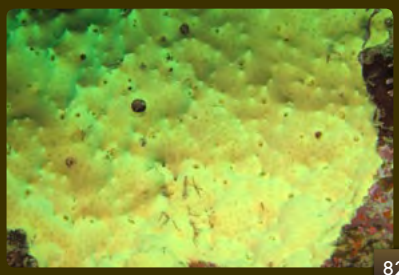
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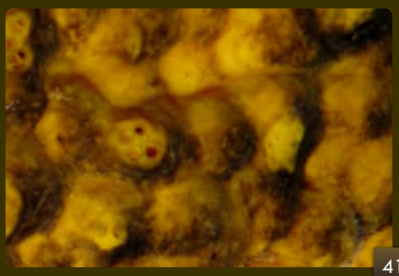
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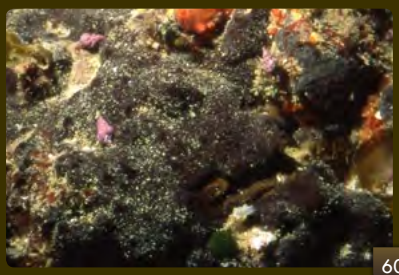
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species index

PHYLUM Porifera

CLASS Demospongiae

species index

PHYLUM Porifera

CLASS Demospongiae

Symplectella rowi Dendy, 1924

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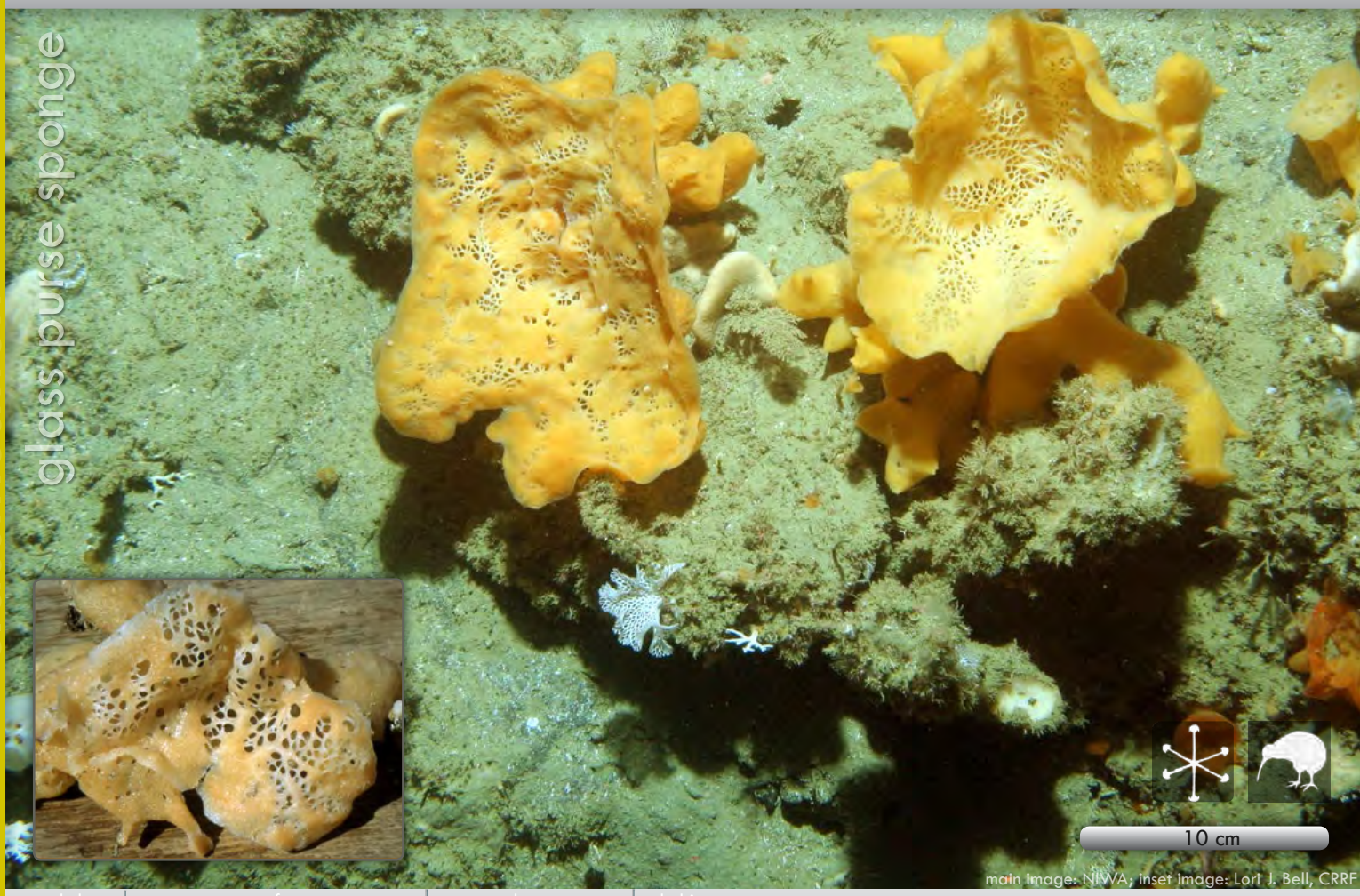
Class Hexactinellida Order Lyssacinosida Family Rossellidae

glass purse sponge



main image: NIWA; inset image: Lori J. Bell, CRRF

morphology | surface | substrate | habitat

Sack-shaped sponge resembling a squat covered bowl with a perforated lid on the upper surface, and projecting props or extensions on the underside. The concave 'lid' is a sieve-plate, perforated and lacy with groups of openings. The underside 'prop-legs' are attached to rock at multiple points. Sponge up to 17 cm diameter, 13 cm high. Surface smooth, slightly granular. Texture fragile, papery, felty, easily torn. Living colour peach, white or pale yellow.

This species is unusually shallow for a glass sponge. Most glass sponges are typically abyssal in depth distribution. It is relatively common around 100 m off Northland islands and on the continental shelf, and North Taranaki Bight. Recorded from Ranfurly Banks off East Cape, and reported from Fiordland.

Battershill, C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. *Zoology* 6: 269–392.

Rossella ijimai Dendy, 1924

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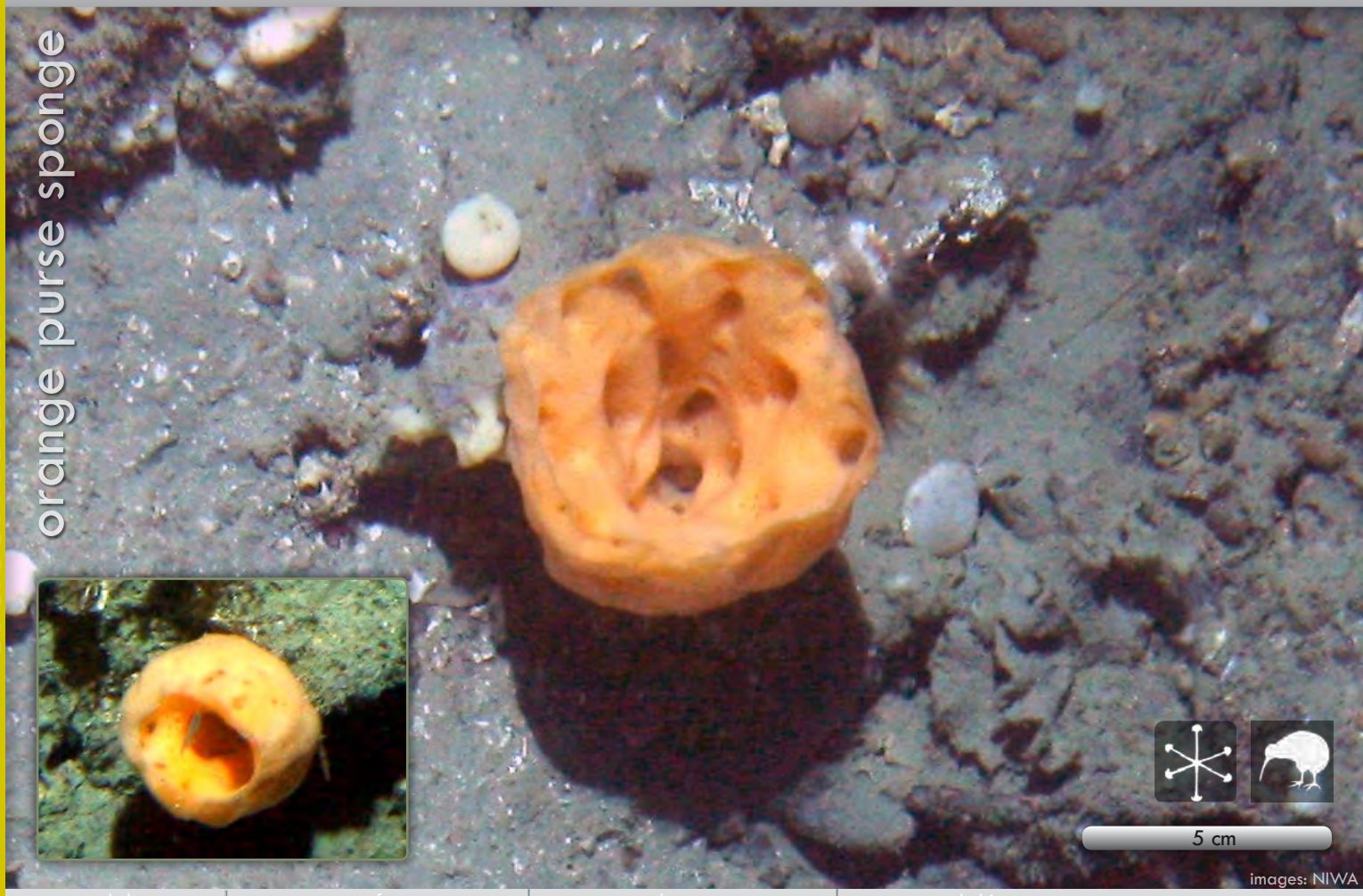
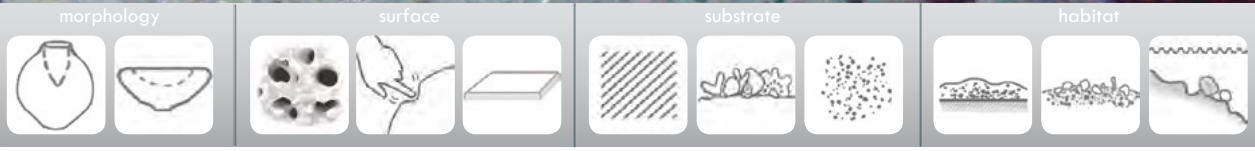
orange purse sponge





Goblet-shaped sponge with an atrial opening at the top that varies in width and depth, forming a shallow cup or a deep vase, up to 10 cm high and about 6 cm wide. Opening of the cup has a thin vertical margin. Wall of cup is very thick, soft, papery, resilient, compressible, and highly cavernous, being perforated in all directions with large branching canals which exit on the outer wall of the sponge. Surface smooth to slightly uneven, texture soft and papery to the touch. Colour in life bright 'fanta' orange to dull peach.

Rossella ijimai is the second species of two that are known from comparatively shallow waters around New Zealand; glass sponges are typically found in the abyss, well over 1000 m depth. *Rossella ijimai* grows on rock, sand-covered rock, or on rubble from about 130 to over 500 m depth. The species was first described from North Cape in 1924 and was not re-discovered until 2015 where it was found to be relatively common in the North Taranaki Bight between about 200–400 m. *Rossella ijimai* has also been recorded from the West Norfolk Ridge, the east coast of Northland, and the Chatham Rise.

It could also be

Symplectella rowi

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. Zoology 6, 269–392.

Kelly, M., Edwards, A.R., Wilkinson, M.R., Alvarez, B., Cook, S.de C., Bergquist, P.R., Buckeridge, J.S., Campbell, H.J., Reiswig, H.M., Valentine, C., Vacelet, J. (2009) Phylum Porifera sponges. In Gordon, D.P. (Ed), New Zealand Inventory of Biodiversity Volume 1 Kingdom Animalia: Radiata, Lophotrochozoa, and Deuterostomia. Canterbury University Press, 23–46 pp.

Leucettusa lancifera Dendy, 1924

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Class Calcarea Order Clathrinida Family Leucaltidae

classification

white flask sponge

5 cm

main image: Patrick L. Colin, CRRF; inset image: Crispin Middleton, NIWA

morphology

surface

substrate

habitat

Bulbous flask-shaped sponges, typically single but may be clustered in a group up to 20 cm wide. Single sponges are 2–3 cm maximum diameter, and up to 8 cm high. Surface smooth with tiny inhalant pores clearly visible, small oscules line the inner surface of each bulb, expelling water into an atrium which exits at the top of each flask through a flared opening, 3–5 mm diameter. Texture brittle, hard, easily crushed, no elasticity, interior fleshy, granular to the touch. Colour in life typically white to cream with a tinge of peach, surface glistens.

Individuals attach to rock by a short stalk, forming groups by spreading from the base. Common down to 40 m on deep rocky reefs, usually in shaded environments such as under macroalgae, but may be in the open on deep reefs. Found off the east coast of the North Island, west coast of the South Island including Fiordland, and Cook Strait, down to 50 m.

It could also be

Leucettusa tubulosa

Battershill, C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Leucettusa lancifer*, p. 128 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Leucettusa tubulosa Dendy, 1924

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Class Calcarea Order Clathrinida Family Leucaltidae

classification

main image: Patrick L. Colin, CRRF; inset image: Crispin Middleton, NIWA

morphology | surface | substrate | habitat

to 240 m

Fused tubular sponge with single or branched individuals, spreading from a common base. Thin-walled (2–4 mm thick), slightly bulbous sponges, each about 8 mm diameter, up to 4 cm high, overall width about 10 cm wide, groups loose or compressed, tight-knit as a rounded mass. Single raised oscule at the top of each flask, 2–4 mm diameter. Texture brittle, hard, easily crushed, no elasticity, granular to the touch. Colour in life typically white to cream with a tinge of very pale pink, surface glistens.

Individuals form groups by spreading from the base, relatively common down to 85 m on rocky reefs, walls, slopes and boulders, usually in shaded environments. Recorded from Three Kings, North Cape, Chatham Rise and Fiordland.

It could also be

Leucettusa lancifera

Battershill, C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p.

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. *Zoology* 6: 269–392.

Clathrina sp.

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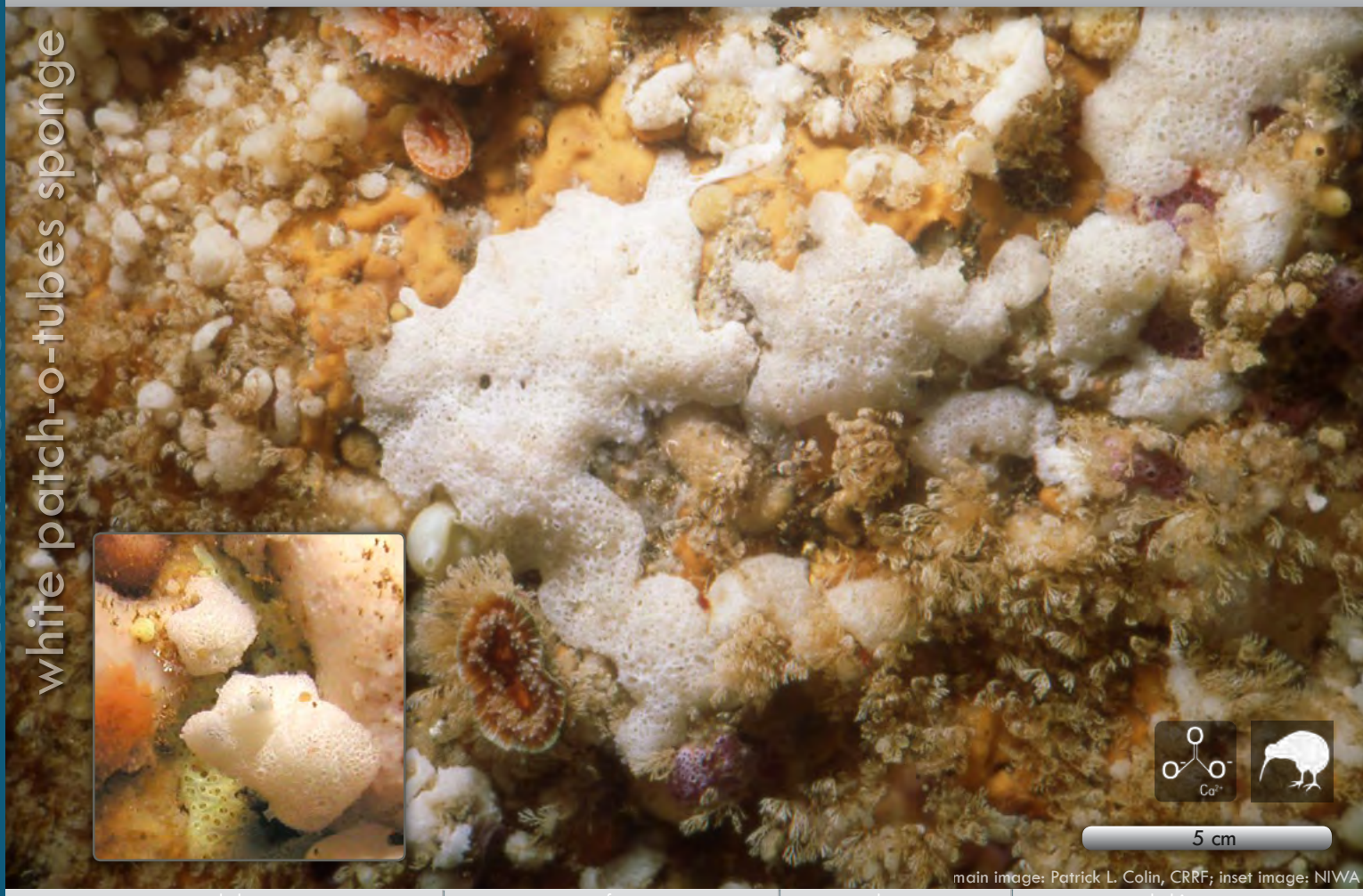
Class Calcarea Order Clathrinida Family Clathrinidae

white patch-o-tubes sponge



main image: Patrick L. Colin, CRRF; inset image: NIWA

morphology | surface | substrate | habitat

Variable shape, often thinly encrusting about 1 cm thick and 3–10 cm wide, or forming small lumps and bobbles 3–5 mm diameter. Formed of a compact cormus, a mass of tiny interconnected tubes. Surface appears punctate or lacy from the spaces between the tubes, occasional oscules are raised from the surface with a thin surrounding membrane. Texture fragile, easily torn, brittle, crushes easily with no resistance, felty and coarse to the touch. Colour in life off-white to cream.

Attached to bare rock with other sponges, ascidians and algae in shaded vertical walls, indentations and caves in areas of good current activity. Locally abundant around the Three Kings Islands from 2–8 m depth, and common along the east coast of the North Island down to Wellington below about 10 m. This species is new to science but remains undescribed.

Battershill, C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Clathrina* sp., p. 130 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Plakina cf. *monolopha* Shulze, 1880

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image: Nicola Rush, NIWA

morphology | surface | substrate | habitat

Very thinly encrusting sponge, 1–2 mm thick, spreading up to 12 cm square in large patches over rocky substrate. Sponge is only loosely attached to rock with elastic, rolled, raised margins. The entire structure is slightly billowy. Texture is crumbly, soft, fragile, fleshy to slightly granular to the touch. Surface is very characteristically punctured or lacy with oscule pits, up to about 0.5 mm wide and deep. Colour in life ochre yellow to tan.

Found in the sheltered intertidal clinging to the underside of rocks and ledges, often in the splash zone, and in the mid to low tidal region. It has been reported from the Hauraki Gulf (Rangitoto Island, Ladies Bay, Narow Neck), and Akaroa Habour in the South Island. Species of *Plakina* are often difficult to differentiate as they have few spicule types. They are rare in New Zealand waters.

Plakina cf. *monolopha* was first described from the Gulf of Naples in the Western Mediterranean and is today restricted to the North Atlantic Ocean and Mediterranean Sea. Originally this species was considered to be an introduction to New Zealand waters, but today we consider it highly unlikely that the specimens are conspecific with the North Atlantic *P. monolopha*. Until a careful taxonomic comparison can be made, the sponge will continue to be cross referenced to the European species species, as *Plakina* cf. *monolopha*.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 1. Tetractinomorpha & Lithistida. New Zealand Oceanographic Institute Memoir 37: 1–105.

Reidispongia coerulea Lévi & Lévi, 1988

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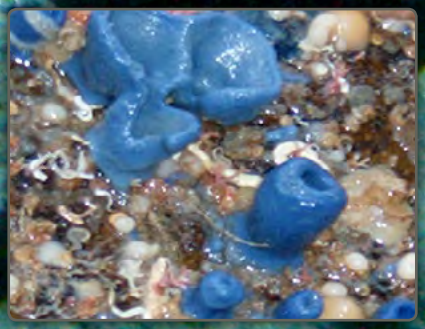
Class Demospongiae Order Tetractinellida Family Phymatellidae

blue frilly chalice sponge



20 cm

images: NIWA

morphology

surface

substrate

habitat

Sponges form tubes, shallow cups or chalices when growing, emerging to form folded, frilly vases when mature, up to 10 cm diameter and 8 cm high. Very old specimens may form large foliose bushes. Surface smooth and glistening. Texture tough, stony to the touch. Colour in life vivid sapphire blue or occasionally, cream to putty-coloured.

Reidispongia coerulea was first described from the New Caledonian slope of the Norfolk Ridge, but has since been reported from around the North Island; off the eastern edge of the Challenger Plateau and North Taranaki Bight to the west, Bay of Plenty (west of White Island and Rungapapa Knoll) and the South Kermadec Ridge to the east. The sponges typically grow on large flat boulder and rock surfaces where they can be locally abundant around 140 m, but has been recorded from over 1000 m.

It could also be

Aciculites pulchra

Kelly, M. (2007) The Marine Fauna of New Zealand: Porifera: 'Lithistid' Demospongiae (Rock sponges). NIWA Biodiversity Memoir, 121, 1–100.

Kelly, M., Edwards, A.R., Wilkinson, M.R., Alvarez, B., Cook, S.de C., Bergquist, P.R., Buckeridge, J.S., Campbell, H.J., Reiswig, H.M., Valentine, C., Vacelet, J. (2009) Phylum Porifera sponges. In Gordon, D.P. (Ed), New Zealand Inventory of Biodiversity Volume 1 Kingdom Animalia: Radiata, Lophotrochozoa, and Deuterostomia. Canterbury University Press, 23–46 pp.

Ecionemia alata (Dendy, 1924)

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Previouly known incorrectly as *Ancorina alata*

Class Demospongiae | Order Tetractinellida | Family Ancorinidae

30 cm

main image and top inset: Crispin Middleton, NIWA lower inset image: Patrick L. Colin, CRRF

morphology

surface

substrate

habitat

Ecionemia alata is a very common massive sponge up to 1 m diameter with two distinct forms. The most common '*alata*' form occurs as deep cups (main image) and elongate bowls with distinct inhalant (inner) and exhalent (outer) surfaces, and is the most common form in deeper, rocky reef environments. The less common '*osculifera*' form occurs as smooth loaf-shaped mounds with oscules grouped on ridges and is more more common in shallow subtidal environments and harbours. The '*osculifera*' form was originally thought to be a separate species (*Ancorina osculifera* Dendy, 1924), but no spicule or skeleton differences have been found to support this (Bergquist, 1968; Kelly & Sim-Smith, 2012). Bowl-shaped to meandering sponge with a thin, undulating, hairy margin that separates two very distinct surfaces; an upper concave exhalent surface that is smooth and perforated by numerous tiny oscules, 2–3 mm diameter, and a lower convex inhalant surface that is bumpy and often shaggy with projecting spicules. In harbour environments the sponge may be loaf-shaped with bands of small oscules restricted to the apex of lobes or spreading along the tops of broad ridges in shallow troughs, the surface is smooth to undulating, never strongly nodular, smooth and granular to the touch. Texture moderately compressible, slightly flexible, granular to the touch, interior slightly fleshy but harsh. Colour in life typically shark grey to charcoal, internal colour is tan.

Very common on coastal rocky reefs and shallow harbours around northern New Zealand down to about 200 m. Recorded occasionally, possibly incorrectly, in the intertidal zone.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Ecionemia alata*, p. 108 in Marine sponges: Forty-six sponges of northern New Zealand, 149 p.

Kelly, M. Sim-Smith, C. (2012) A review of *Ancorina*, *Stryphnus*, and *Ecionemia* (Demospongiae: Astrophorida: Ancorinidae), with descriptions of new species from New Zealand waters. *Zootaxa* 3480: 1–47.

Stelletta conulosa Bergquist, 1968

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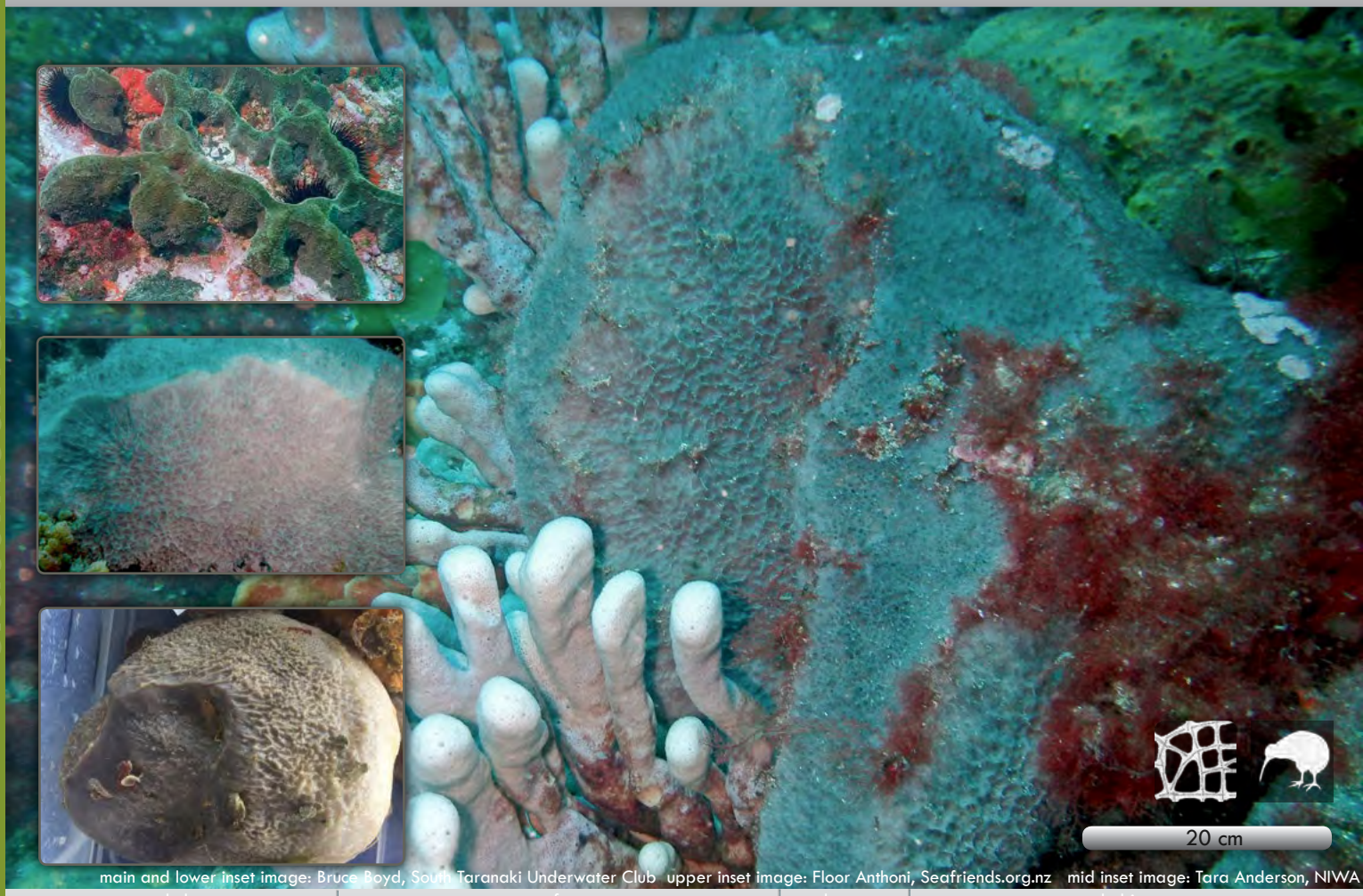
Class Demospongiae Order Tetractinellida Family Ancorinidae



main and lower inset image: Bruce Boyd, South Taranaki Underwater Club upper inset image: Floor Anthoni, Seafriends.org.nz mid inset image: Tara Anderson, NIWA

Massive sponge up to 200 cm long, about 25 cm wide, and 18 cm high, solitary, mountainous, or meandering along substrate, may form spherical to oval masses (lower inset). In profile, the sponge is vaguely triangular or ridge-shaped, narrower at the top than at the base. Upper surface may be smooth or rough and undulating, small oscules sit in a shallow elongate depression along the top of the ridges, projecting spicules collect sediment giving the surface a whiskery appearance. Lateral surfaces are distinctly conulose. Texture firm, just compressible, extremely rough, prickly, granular to the touch. External colour in life slate gray, internal colour cream to light grey.

This species grows along the sides of, and over rock and boulder surfaces on exposed rocky reefs and below *Ecklonia* forests, from 10–50 m. It is found around the North Island from the Three Kings Islands south to Wellington, around the Taranaki coastline and has been reported from Stewart Island.

It could also be

Ecionemia alata
Stelletta sandalinum

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir 37*: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Stelletta conulosa*, p. 110 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Stelletta crater Dendy, 1924

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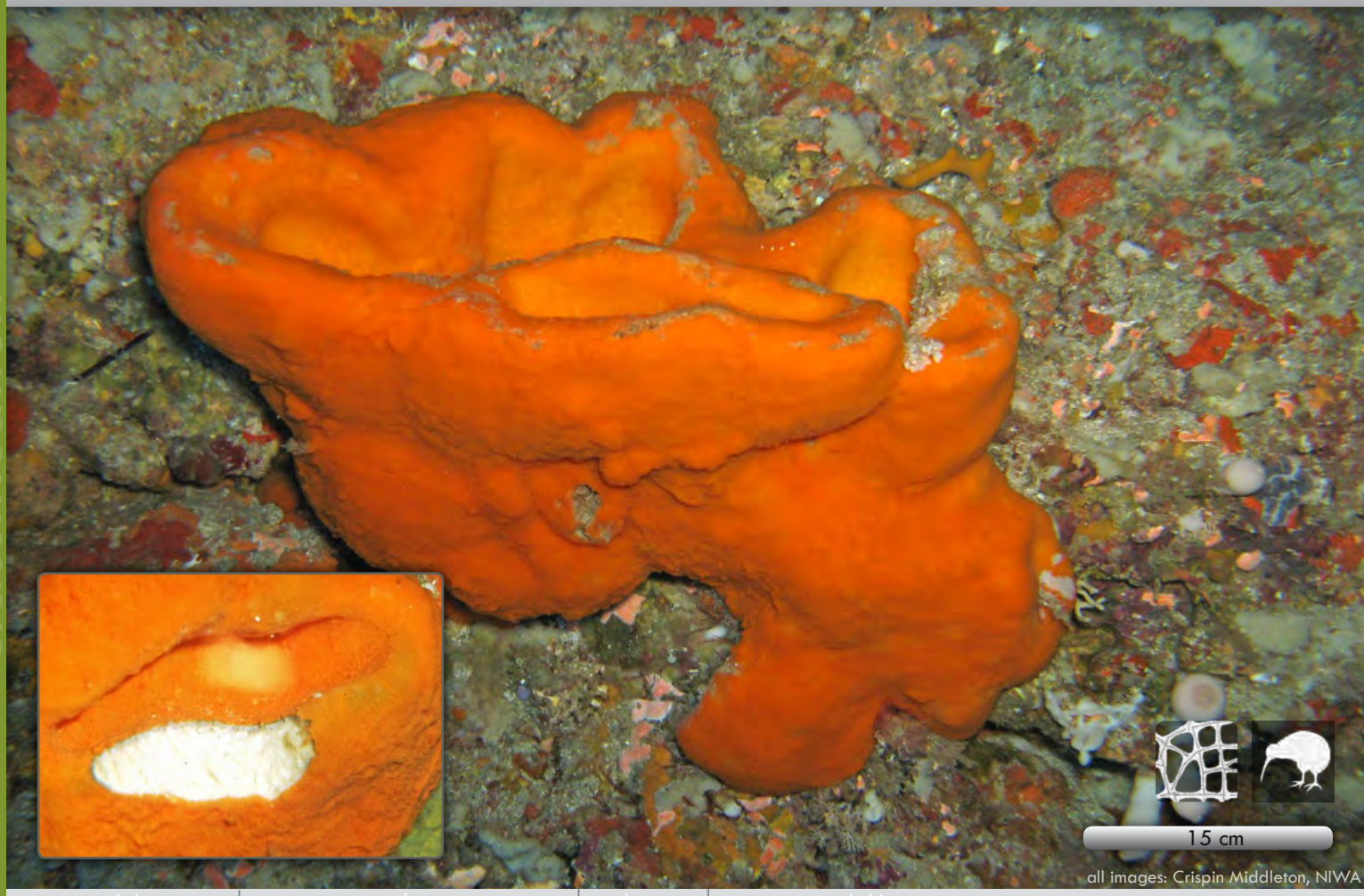

all images: Crispin Middleton, NIWA

morphology | surface | substrate | habitat

Distinctive massive shallow bowls or tall thick cups with a broad rounded margin, occurring individually or as a connected mass up to 30 cm diameter, 20 cm high. Surface very rough and entirely invested with the encrusting commensal sponge *Desmacella dendyi* de Laubenfels, 1936. Projecting spicules give the sponge a whiskery appearance and prickly feel. Oscules are clustered at the base of the cup. Texture incompressible and granular to the touch. *Stelletta crater* is bright orange externally due to encrusting *Desmacella dendyi*, and is white internally (see inset).

Relatively common, distinctive, typically found on shaded deep rocky reef slopes free of sediment and in caves along the northeastern coastline of the North Island, from North Cape and Spirits Bay to Cook Strait.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir 37*: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Stelletta crater*, p. 112 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Stelletta maori Dendy, 1924

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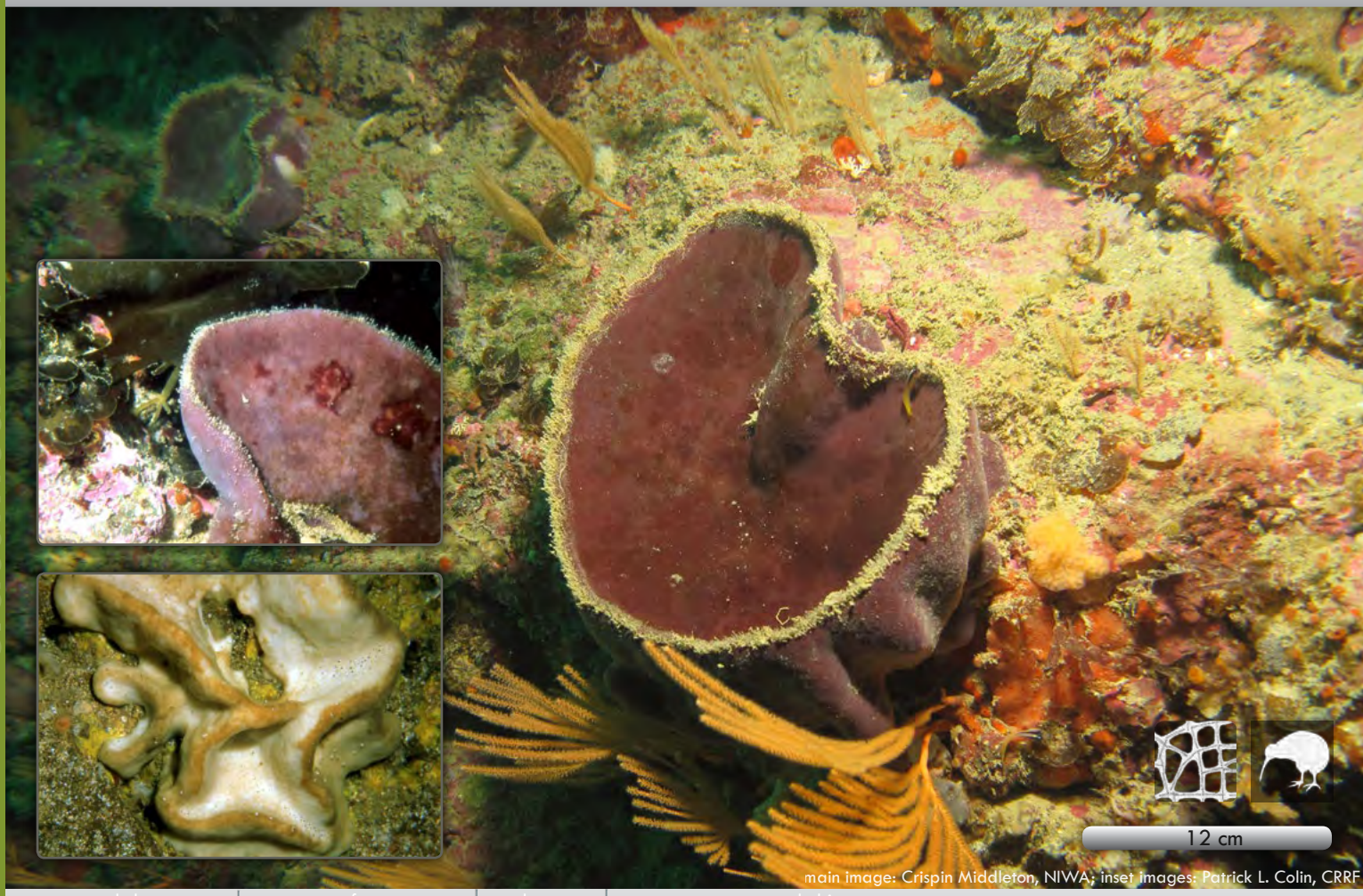

main image: Crispin Middleton, NIWA; inset images: Patrick L. Colin, CRRF

morphology | surface | substrate | habitat

Distinctive massive shallow bowl or cup up to 40 cm diameter and 40 cm high, 3 cm thick, with a narrow hairy margin, 1 cm thick, or plate-shaped to lamellate and convoluted, 2–3 cm thick, 8 cm high. Surface smooth to slightly undulating, oscules are small and clustered at the base of the convex side. Projecting spicules on the margin give the sponge a whiskery appearance as sediment collects in the spicules. Texture firm and flexible, tearable, granular to the touch. External colour in life brown to tan to cream in cave environments but deep maroon when exposed to full illumination.

Relatively common down to about 65 m, typically found on shaded deep rocky reef slopes free of sediment and in caves along the northeastern coastline of the North Island, from Three Kings to the Rodney Coast including Great Barrier Island, Bay of Plenty and Ranfurly Banks off East Cape. Reported from Stewart Island.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir 37*: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Stelletta maori*, p. 114 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Stelletta sandalinum Brøndsted, 1924

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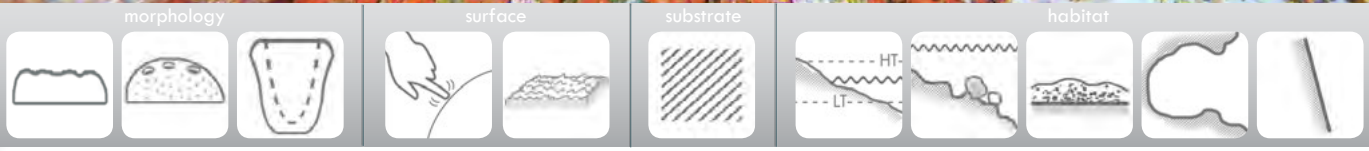
main image: Floor Anthony, Seafriends.org.nz ; inset image: Mike Page, NIWA



Shallow subtidal to intertidal specmens flattened, hispid cushion-shaped, about 15–20 cm long and up to 5 cm high. Deep subtidal specimens large, irregular vase-shaped to lamellate, with a distinctive punctate surface about 20 cm high and wide. Surface is rough and often encrusted with filamentous algae and other invertebrates. Oscules not visible. Texture is tough, incompressible, rough to the touch and very hispid in places. External colour in life white to light grey, and dark grey tinges when exposed to full illumination.

Uncommon, found in the intertidal and shallow subtidal regions of offshore islands along the east coast of the North Island, growing under ledges, in caves, and on the sides of canyon walls. Reported from Doubtful Sound, Fiordland.

It could also be

Stelletta conulosa

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir 37*: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Stelletta sandalinum*, p. 116 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Geodia regina Dendy, 1924

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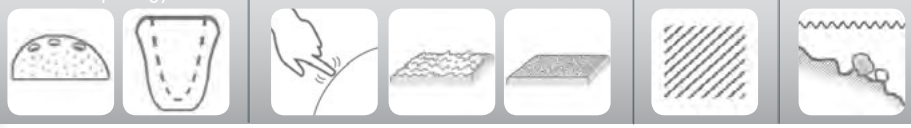
image: Tony Ayling, Sea Research

morphology | surface | substrate | habitat



Massive cup-shaped sponge with a very shallow apical cavity and thick rounded margin, up to 60 cm high and wide, walls 4 cm thick, or kidney-shaped to loaf-shaped, up to 15 cm long, 7 cm wide and 7 cm thick. Surface undulating, oscules not visible. Texture stony, rough, granular, like sandpaper to the touch. External colour in life dark grey or tan, internal colour dark brown.

Uncommon, found on deep reef flats and in *Ecklonia* forests in high current areas, and on coastal rocky reefs along the northeastern coastline of the North Island from north of the Three Kings south to the Bay of Plenty, and Mahia Peninsula down to 560 m.

It could also be

Ecionemia alata

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir 37*: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Geodia regina*, p. 118 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin 14:* 149 p.

Aciculites pulchra Dendy, 1924

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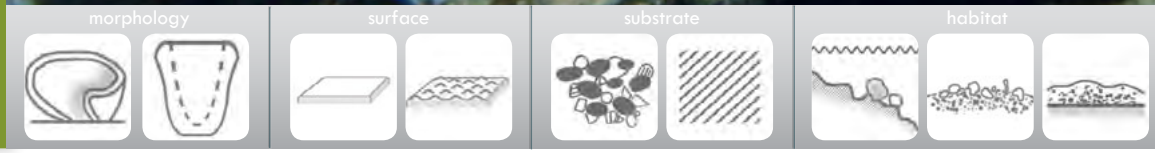
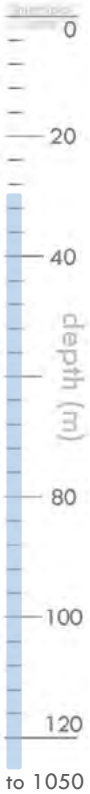
main image: NIWA; inset image: Lori J. Bell, CRRF





Shallow cup-shaped to plate-shaped sponge, often with wavy walls, up to 20 cm wide, 15 mm thick, attached to substrate by a stout, slightly stalked base. Upper (exhalent) surface covered with regularly spaced, distinctive 'pimples' harbouring the oscules, the lower (inhalant) surface is smooth, tiny inhalant pores visible. Texture stony, like sandstone to the touch. External colour in life typically cream to tan in deep water, may be reddish-brown in shallower specimens, tan under shade. Internal colour tan.

Common on Northland silty deep offshore rocky reefs at 30 m, and continental shelf down to 1050 m, extending to offshore Islands and seamounts. Also common in the North Taranaki Bight.

Kelly, M. (2007) The Marine Fauna of New Zealand: Porifera: 'Lithistid' Demospongiae (Rock sponges). *NIWA Biodiversity Memoir* 121: 1–100.

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. *Zoology* 6: 269–392.

Cinachyrella sp.

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golden hemisphere sponge

main image: Tony Ayling, Sea Research; inset image: Patrick L. Colin, CRRF

morphology | surface | substrate | habitat

Hemispherical sponge buried in sand, up to 20 cm diameter, 15 cm high. Surface extremely hispid with long projecting spicules that trap sand and sediment. Oscules are visible on the upper surface with a fleshy rim and multiple openings leading into the orifice, about 5 mm diameter. Specialised inhalant structures (porocalyces) are situated on the sides of the sponge, slanted downwards with a projecting fringe of long spicules, 5–10 mm diameter. Texture barely compressible, extremely shaggy, hispid, fuzzy to the touch. Colour in life not evident, but tan to dull yellow around the porocalyce rims. In dredged specimens colour deep gold.

Found on flat deep reef areas in relatively deep sediments of medium grain size around Spirits Bay and the Leigh coast where it is locally abundant. Elsewhere the distribution is patchy. Reported from Great Barrier Island at 18 m. This species is new to science but remains undescribed.

Battershill. C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Cinachyra* sp., p. 104 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Petromica sp.

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Class Demospongiae Order Bubarida Family Desmanthidae

witchy finger sponge

4 cm

main image: Floor Anthoni, Seafriends.org.nz; inset image: Tony Ayling, Sea Research

Thick base up to 3 cm thick and 20 cm diameter giving rise to tapering corrugated turrets up to 5 cm high; can spread up to 90 cm square. Surface turrets are longitudinally grooved and translucent; the internal plumose skeleton is visible through the skin-like dermis. Texture of base is firm, slightly compressible, turrets are brittle and rough to the touch. Colour in life translucent white to slightly off-white.

Typically attached to rock substrate on deep rocky reefs and covered with sand; the turrets are often the only part of the sponge visible. Uncommon, and only known from the Rodney Coast and the Poor Knights Islands, from 20–50 m. This species is new to science but remains undescribed.

It could also be

Ciocalypta cf. *pencillus*

Battershill, C.N., Bergquist, P.R., Cook, S.dC. (2010) Phylum Porifera, Pp. 58–135 in Cook, S. de C. (Ed.) *New Zealand Coastal Marine Invertebrates 1*. Canterbury University Press, Christchurch, 640 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) unidentified lithistid, p. 122 in Marine sponges: Forty-six sponges of northern New Zealand, 149 p.

Stylissa haurakii (Brøndsted, 1924)

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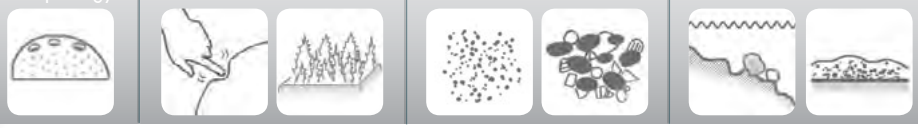
image: Tony Ayling, Sea Research

morphology | surface | substrate | habitat



Loaf-shaped to spherical sponge up to 15 cm diameter and 10 cm high. Upper surface shaggy with fine tufts, 2–3 cm high, no oscules visible. Lower sides smooth to irregularly lumpy. Texture of body and surface processes soft and fleshy, slightly felty to the touch. External colour bright orange, internally dull orange to gold. Produces great quantities of mucus when cut.

Moderately common on the northeastern coast of the North Island, from the Three Kings to the Hauraki Gulf, including Bay of Islands and Great Barrier Island, in areas of coarse sand and shell between deep reef flats, from 5–30 m.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Hymeniacidon hauraki*, p. 54 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Polymastia aurantium Kelly-Borges & Bergquist, 1997

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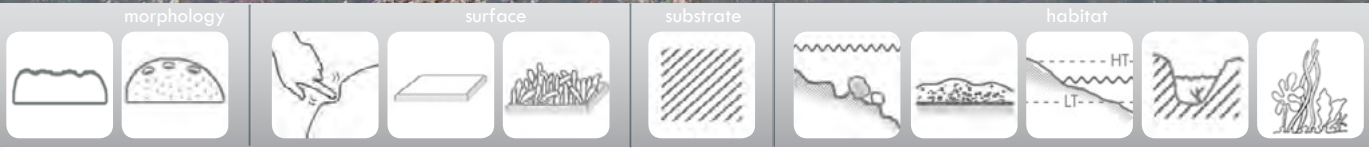
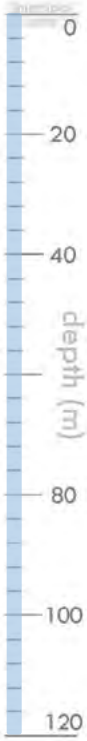
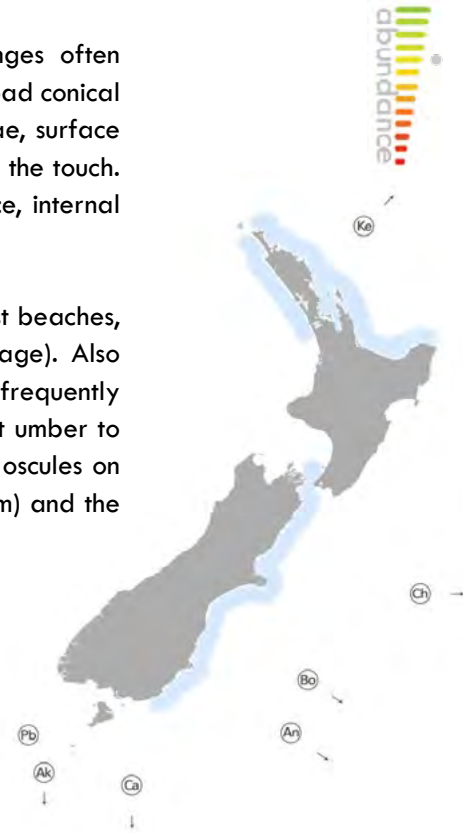
main image: Bruce Hayward, GNS, Te Papa; inset image: Malcolm Francis, NIWA





Thick encrusting to hemispherical sponge, circular to elongate, several sponges often conjoined, up to 30 cm long and up to 20 mm thick. Surface covered with low broad conical papillae up to 10 mm high, single oscules situated on ends of exhalent papillae, surface may be quite smooth in exposed locations. Texture soft, compressible, velvety to the touch. External colour in life deep bright orange, extending 5 mm into sponge surface, internal colour mustard.

Commonly encrusting the sides of exposed surge channels on exposed west coast beaches, and silty papa rock platforms (mudstone) in the Manukau Harbour (main image). Also common in shallow inshore rocky reefs on Northland coasts where they are frequently confused with *Polymastia pepo*, a much larger sponge that has a distinctly burnt umber to dark reddish orange colouration, a very thick surface band of colour, multiple oscules on single papillae, and a restricted distribution. Also reported from Kaikoura (20 m) and the east coast of the South Island down to 120 m.



It could also be

Polymastia pepo

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia crocea Kelly-Borges & Bergquist, 1997

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Previously known incorrectly as *Polymastia granulosa*

main image: Crispin Middleton, NIWA inset image: Roberta D'Archino, NIWA

morphology | surface | substrate | habitat

Cushion or loaf-shaped sponge, typically 10–20 cm diameter and 10 cm thick. Surface covered with low broad conical papillae up to 10 mm high, oscules situated on ends of taller, broader exhalent papillae. Texture soft, compressible, elastic, velvety to the touch. Colour in life bright lemon yellow or turmeric yellow, internal colour creamy yellow.

Commonly found on sediment covered rocky reefs and platforms around Northland and offshore Islands down to 50 m. Uncommon further south but known from Titahi Bay Wellington.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Polymastia granulosa*, p. 94 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia echinus Kelly-Borges & Bergquist, 1997

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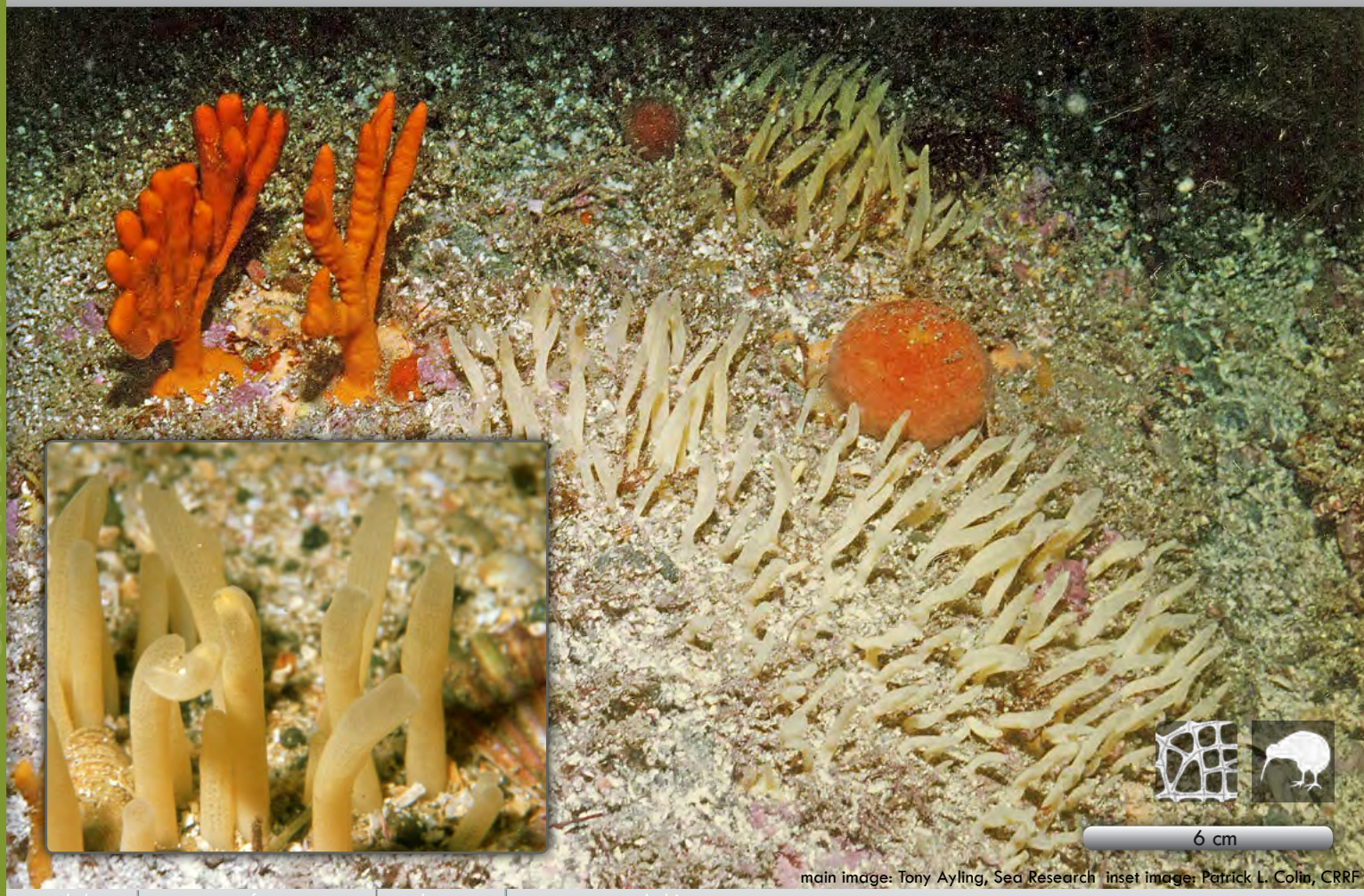

main image: Tony Ayling, Sea Research inset image: Patrick L. Colin, CRRF

morphology | surface | substrate | habitat

Thinly encrusting mat-like sponge, covered in sand, with only thin finger-like papillae visible; sand actively agglutinated into surface of sponge between papillae. Forms patches up to 20 cm diameter, up to 1.5 cm thick. Surface is covered in distinctive uniform tapering fistules, 40 mm high, 3–4 mm wide at the base. Oscules, 2 mm in diameter are located at the terminal end of the exhalent papillae. Sand, shell, and calcareous debris are embedded in the sponge surface between the fistules. Texture of papillae stiff, very firm, barely compressible, smooth to the touch. External colour pale yellow to pale peach with a deeper peach-coloured interior.

Relatively common on deep reef flats with a thin cover of medium to coarse-grained sands. Known from the Leigh coast where it is locally abundant, Takatu, and Great Barrier Island (21 m).

It could also be

Ciocalypta cf. *penicillus*

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Polymastia* sp. (A), p. 98 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia fusca Bergquist, 1961

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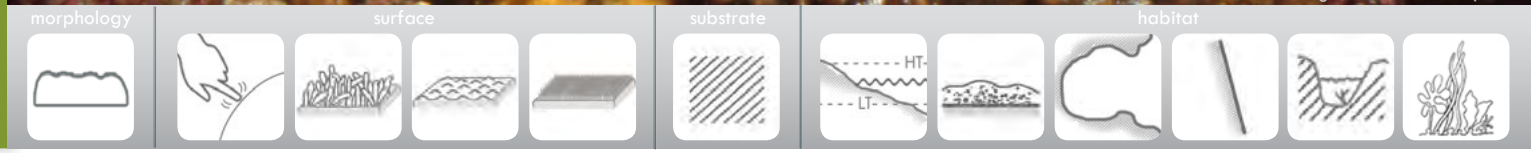
image: Patrick L. Colin, CRRF



Thick encrusting sponge, circular to oval in profile, up to 20 cm long, typically 5–20 mm thick. Surface covered with densely packed conical papillae up to 15 mm high, oscules situated on ends of exhalent papillae. Texture extremely firm, rubbery, slightly hispid between papillae, which are granular, cork-like to the touch. External colour in life deep chocolate brown, internal colour mustard.

The species is found typically on shaded surfaces in the lowest intertidal, on walls and under overhangs in rock pools, and in the shallow subtidal in algal beds down to about 20 m where it is uncommon and frequently confused with *Polymastia massalis*. It is found on the west and eastern coastlines of Northland from Cape Reinga (6 m), including Muriwai, Manukau Harbour, Hauraki Gulf and Mercury Bay.

It could also be

Polymastia cf. *massalis*

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). *New Zealand Oceanographic Institute Memoir* 37: 1–106.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia hirsuta Bergquist, 1968

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main image: Tony Ayling, Sea Research upper inset image: Floor Anthoni, Seafriends.org.nz lower inset image: Crispin Middleton, NIWA

morphology surface substrate habitat

Cushion-shaped spherical sponge up to 20 cm diameter and 8 cm high. Surface covered in smooth, short, squat well-spaced inhalant and exhalant papillae, 3–12 mm wide and 1–10 mm high. Surface between the papillae is very hispid and often covered in sediment and sand trapped by projecting spicules. Texture soft, compressible, surface between papillae velvety to the touch. External colour in life yellow orange with maroon to pinkish papillae, internal colour yellow orange. When sediment is trapped in projecting spicules between the papillae, the surface is often grey.

Uncommon, but known from the Poor Knights Islands, Rodney Coast and offshore islands including Little Barrier and Great Barrier Islands. Reported from Doubtful Sound down to 30 m.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Polymastia hirsuta*, p. 96 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia cf. *massalis* Carter, 1886

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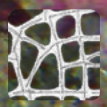
Class Demospongiae Order Polymastiida Family Polymastiidae

turtle sponge



10 cm

main image: Crispin Middleton, NIWA inset image: Mike Page, NIWA

morphology

surface

substrate

habitat

Massive cushion-shaped sponge, circular to oval in profile, up to 50 cm diameter and 10 cm thick. Surface covered with densely packed, short wart-like inhalant papillae <4 mm high, giving the sponge a brain-like appearance. Oscules are prominently elevated on turrets in groups of 5–100. Texture rubbery, waxy, cartilaginous, like cork to the touch, compresssible in life, difficult to tear. The sponge is packed with collagen visible in broad swathes in the cut sponge and just under the surface, resembles gristle or cartilage. External colour in life olive brown, chocolate to purple-brown, internal colour dull golden orange.

The species is usually solitary or in groups of two at the most. It is relatively common in open harbours and along rocky coastlines around the west and eastern coastlines of Northland from Three Kings south to Rodney Coast, Hauraki Gulf, Mercury Bay, and White Island in the Bay of Plenty, typically between 6–30 m. Recorded on the Ranfurly Banks at 60 m. The type locality of *Polymastia massalis* is Port Phillip Heads, South Australia. Until further evidence indicates that the New Zealand specimens are a unique, the sponge will continue to be cross referenced to the Australian species *massalis*, as *Polymastia* cf. *massalis*.

It could also be

Polymastia fusca

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Polymastis fusca*, p. 92 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Polymastia pepo Kelly-Borges & Bergquist, 1997

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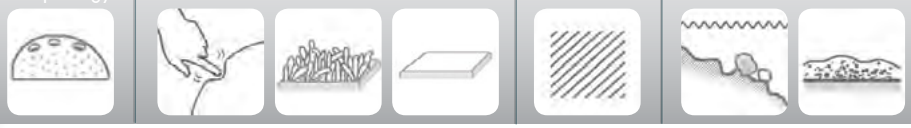
main image: Crispin Middleton, NIWA upper inset image: Patrick L. Colin, CRRF lower inset image: Tony Ayling, Sea Research

morphology | surface | substrate | habitat



Massive hemispherical sponge up to 40 cm diameter and 30 cm high. Surface covered with distinctive, long exhalent papillae within which are 5–10 oscules, and shorter cone-shaped blind inhalant papillae. Texture inflated and soft in life, rubbery, leathery when contracted, smooth to the touch. Colour in life brilliant burnt umber, colour extending into the sponge up to 50 mm, internal colouration is brownish orange. The sponge is named after the Halloween pumpkin *Cucurbita pepo* which it resembles.

This species is relatively common on rocky reefs around Northland coasts, from Spirits Bay south, including the offshore islands, between 10–60 m. It is frequently confused with *Polymastia aurantium*, a much smaller thickly encrusting sponge that has a softer orange colouration, a thin surface band of colour, single oscules on single papillae, and a much broader distribution.

It could also be

Polymastia aurantium

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Polymastia* sp. (B)., p. 100 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Kelly-Borges, M., Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. *New Zealand Journal of Marine and Freshwater Research* 31: 367–402.

Aaptos globosum Kelly-Borges & Bergquist, 1994

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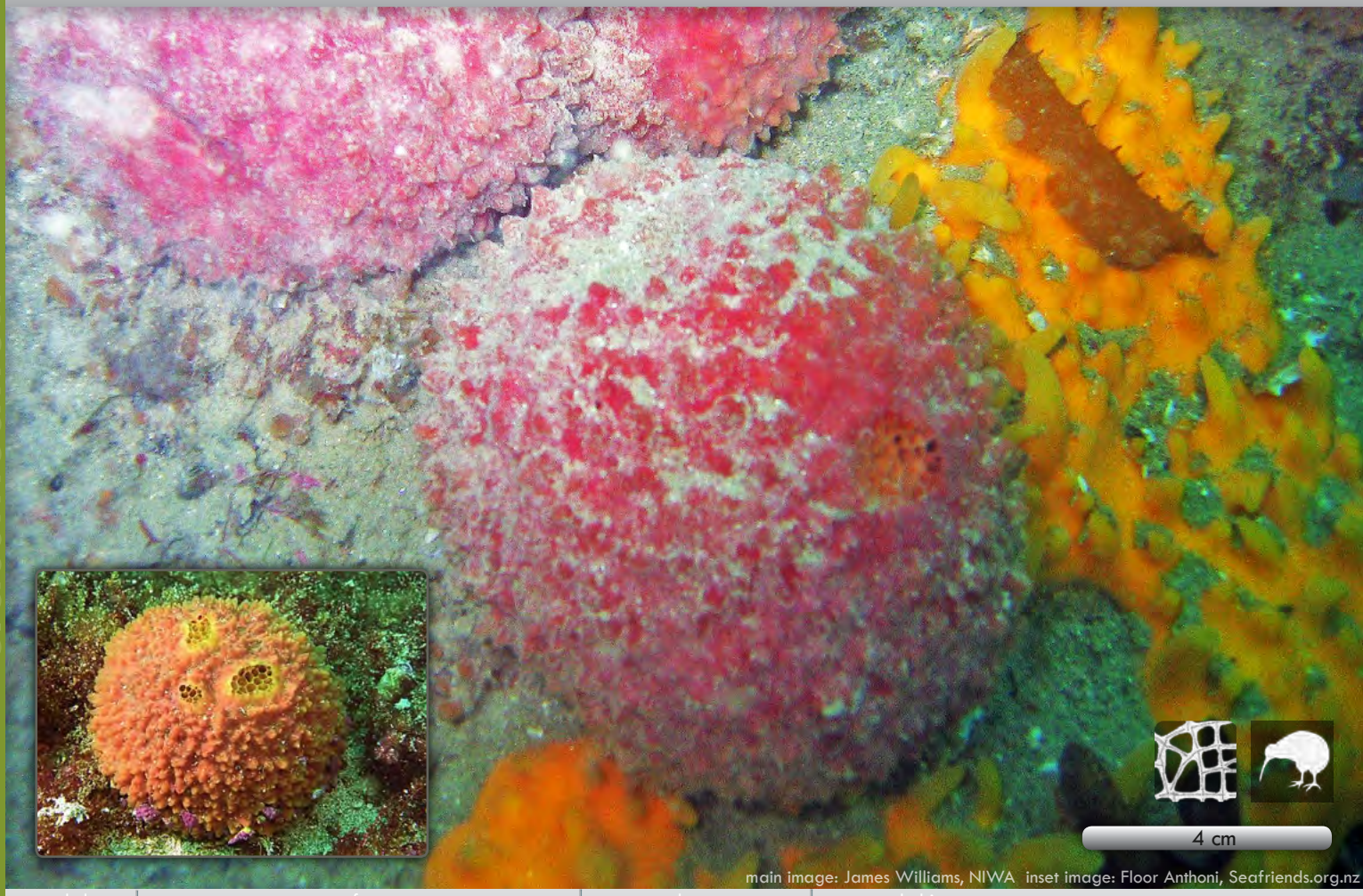
Class Demospongiae Order Suberitida Family Suberitidae



main image: James Williams, NIWA inset image: Floor Anthoni, Seafriends.org.nz

morphology surface substrate habitat

Globular sponge up to 10 cm diameter, attached to hard rock or mudstone by a broad basal skirt. Surface inflated slightly and covered with blunt conules 2–4 mm high, oscules gathered in one or more apical depressions, some may be surrounded by an elevated rim. Texture slightly compressible when alive, slightly rubbery, corky to the touch. External colour in life deep brownish red, internal colour mustard yellow. Mostly solitary but may occur in groups due to budding along basal stolons.

Common subtidally in shallow silty rocky reef and harbour environments as well as on deeper rocky reefs down to about 70 m on the east of Northland from Three Kings south to Rodney. Also known from the Hauraki Gulf, Mercury Bay, Manukau Harbour and the Nelson region. Commonly mistaken for *Suberites perfectus*.

It could also be

Suberites cf. *perfectus*
Tethya bergquistae

Kelly-Borges, M., Bergquist, P.R. (1994) A redescription of *Aaptos aaptos* with descriptions of new species *Aaptos* (Hadromerida: Suberitidae) from northern New Zealand. *Journal of Zoology, London* 234: 301–323.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Aaptos aaptos*, p. 80 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Aaptos tenta Kelly-Borges & Bergquist, 1994

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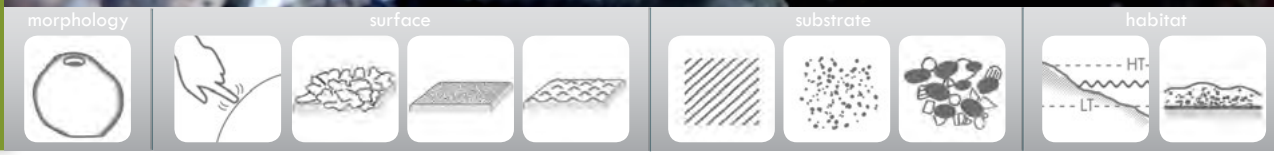
Previously known incorrectly as *Aaptos aaptos*

3 cm

images: Nicola Rush, NIWA



Solitary or basally confluent groups of irregularly globular to subspherical sponges, typically up to 8 cm diameter and 6 cm high, attached to hard substrate by short thick flanges. Surface, smooth with rounded bumps or tubercules when submerged, spiky when exposed. Compound oscules are located apically in depressions over surface, but are also scattered individually. Texture firm but slightly elastic when wiggled side-to-side, surface fleshy, and slightly granular to the touch. External colour dull pinkish brown to hazel, internally mustard. Large buds are produced asexually and remain attached to the parent sponge, expanding into adults.

Typically occurs as solitary or basally confluent groups of sponges, forming broad mats exposed at low tide, often extremely locally abundant on rock platforms on sheltered coasts and harbours on the west (Manukau) and east (Waitemata) coasts of Northland. Also found subtidally but less common north of Taranaki. Known from Rangitoto Channel down to 4 m and on offshore Islands down to about 20 m.

It could also be

Suberites cf. *perfectus*
Aaptos globosum

Kelly-Borges, M., Bergquist, P.R. (1994) A redescription of Aaptos aaptos with descriptions of new species of Aaptos (Hadromerida: Suberitidae) from northern New Zealand. Journal of Zoology, London, 234, 301–323.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). New Zealand Oceanographic Institute Memoir, 37, 1–106.

Aaptos conferta Kelly-Borges & Bergquist, 1994

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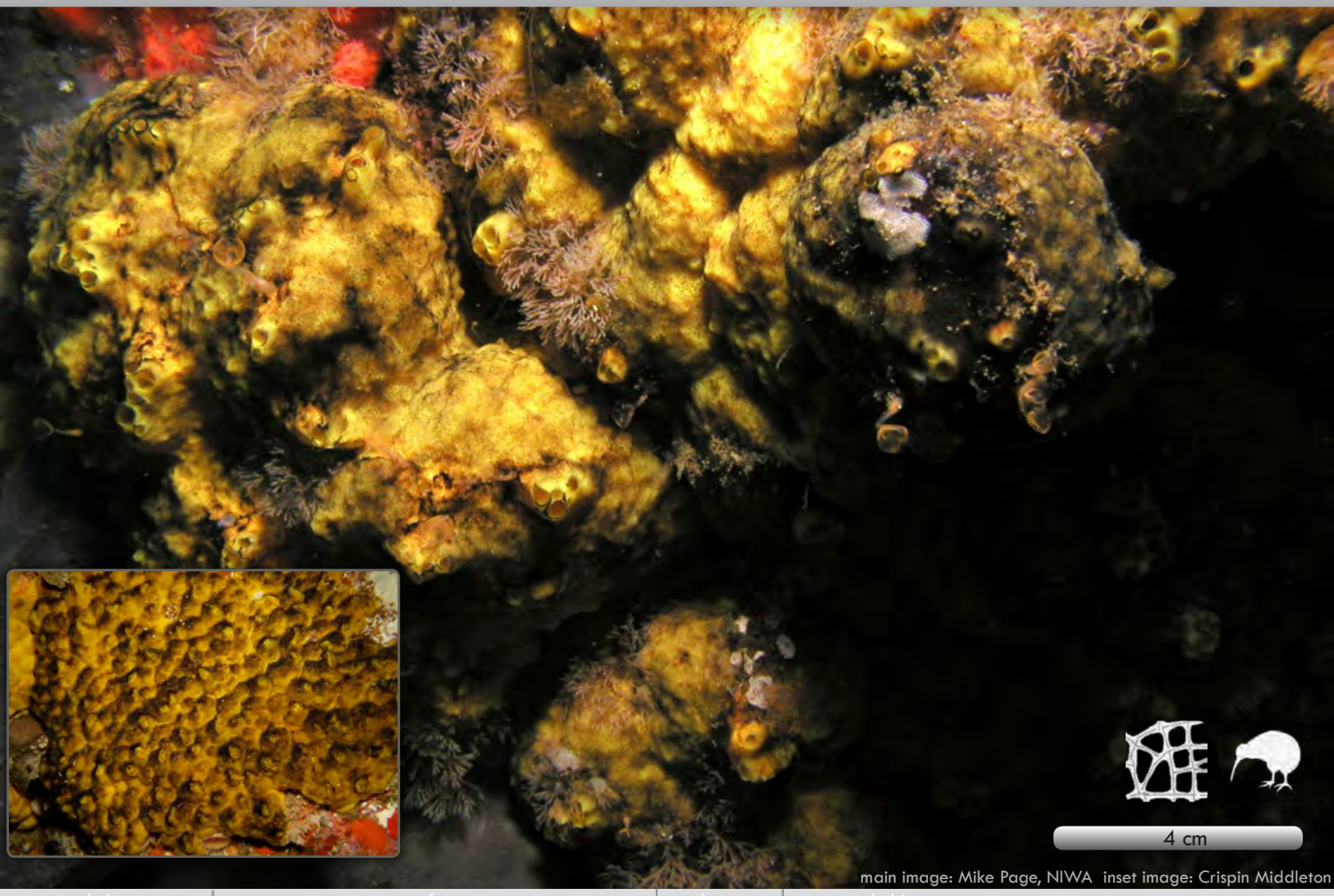

main image: Mike Page, NIWA inset image: Crispin Middleton

Thick encrusting mass of conjoined lobes, 1–4 cm wide, 2–4 cm thick, 50 cm greatest extent, each lobe represents an individual sponge confluent with its neighbour, extending the mass along the substrate. Oscules are compound and raised on the apex of each lobe, often in groups aligned across the top of the lobe, sometimes with ragged edges, 3–5 mm diameter. Surface is granular and fuzzy in patches, texture barely compressible. Colour in life mustard yellow, externally mottled with black or almost entirely black under full illumination. Interior mustard yellow.

Attached loosely to rocky substrate, found occasionally on vertical rocky walls and in caves down to 20 m on exposed Three Kings Islands and Cape Brett, Northland. Also recorded from Kawau Island, Hauraki Gulf and Goat Island Bay, Cape Rodney.

Kelly-Borges, M., Bergquist, P.R. (1994) A redescription of Aaptos aaptos with descriptions of new species of Aaptos (Hadromerida: Suberitidae) from northern New Zealand. Journal of Zoology, London, 234, 301–323.

Battershill, C.N., Bergquist, P.R., Cook, S.deC. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p. Correction: The image on page 114 ("Aaptos confertus" in this publication is incorrect, being Polymastia cf massalis. The correct image is on page 126, as "Penares tylotaster".

Aaptos rosacea Kelly-Borges & Bergquist, 1994

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image: Patrick L. Colin, CRRF

morphology | surface | substrate | habitat

Small, solitary, almost perfectly spherical sponge, typically 2–4 cm diameter, attached to rocky substrate by a narrow skirt. Surface smooth to hispid in patches with projecting spicules. Surface often covered with a thin layer of sediment. A few small oscules are scattered over the apex of the sponge, rarely visible. Texture incompressible, granular to the touch. External colour oxide red, internal colour golden yellow to deep orange brown.

Found on bare rock surfaces on exposed pinnacles in Mercury Bay, or vertical walls on rocky reefs on offshore islands. Uncommon.

It could also be

Suberites cf. *perfectus*
Tethya bergquistae
Aaptos globosa

Kelly-Borges, M., Bergquist, P.R. (1994) A redescription of Aaptos aaptos with descriptions of new species of Aaptos (Hadromerida: Suberitidae) from northern New Zealand. Journal of Zoology, London, 234, 301–323.

Homaxinella erecta (Brøndsted, 1924)

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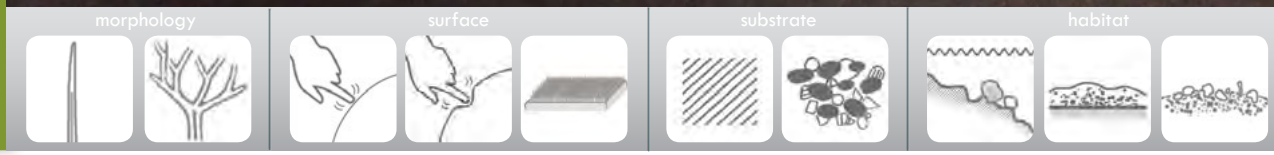
images: NIWA



Simple erect, flexible, cylindrical sponge or delicate bush with thin whip-like branches arising from a small attachment base, up to 20 cm high. Individual branches 4 mm diameter. Attached to shell substrate by a narrow stalk, 1.5–2.5 mm diameter. Surface is smooth, oscules are not visible. Texture of stalk extremely hard, axis of branches woody, stringy. Material around branches and ends of branches soft, mushy. Overall flexible, velvety to the touch. Colour in life dull yellow.

This species is often attached to coarse shell in sponge gardens, horse-mussel beds, and in the channels in harbours. It is known from the Hauraki Gulf, Rodney Coast, Manukau Harbour, and is reported from East Cape, from 11 to 56 m depth.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Homaxinella erecta*, p. 66 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Suberites cf. *perfectus* Ridley & Dendy, 1886

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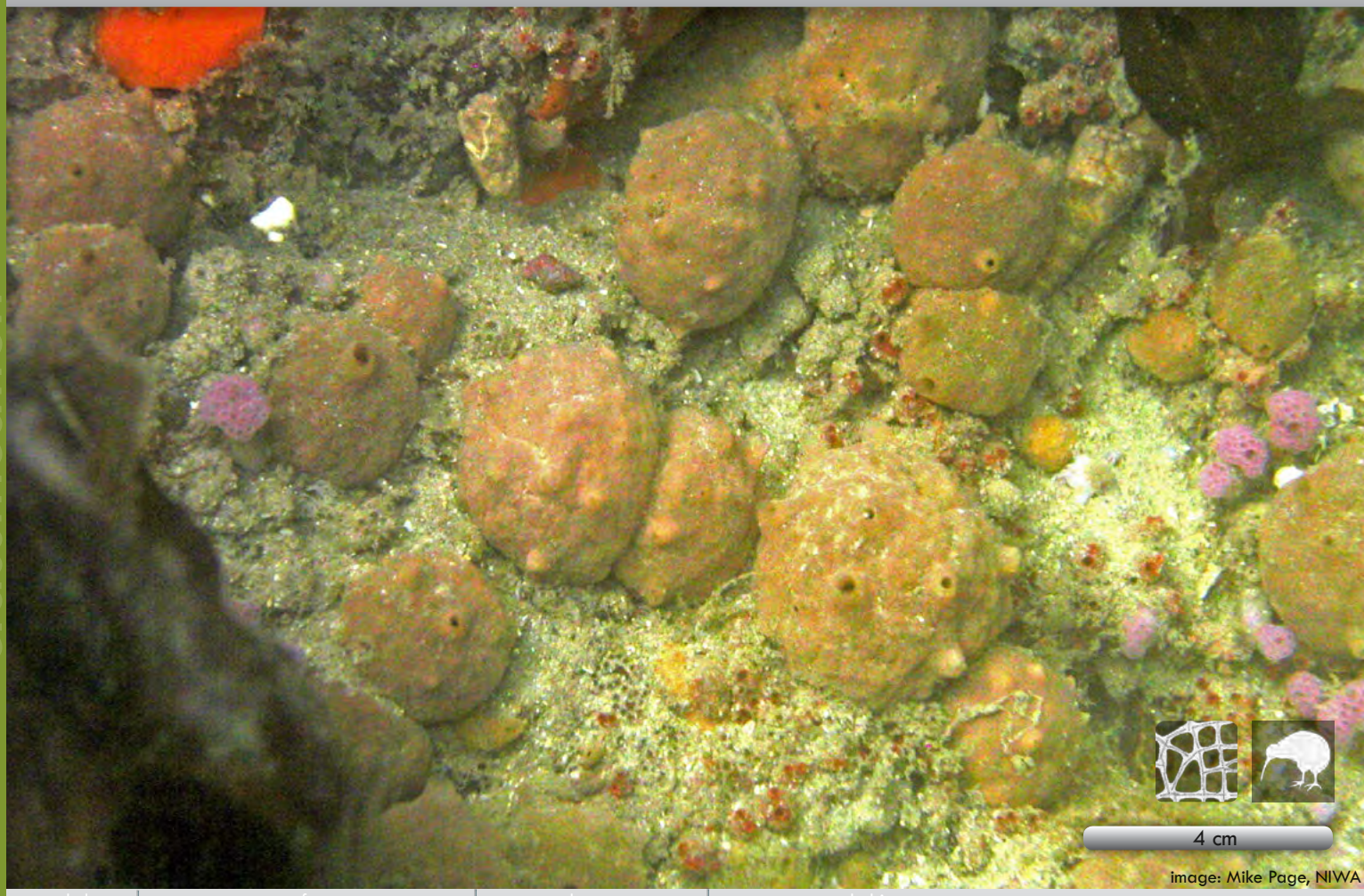
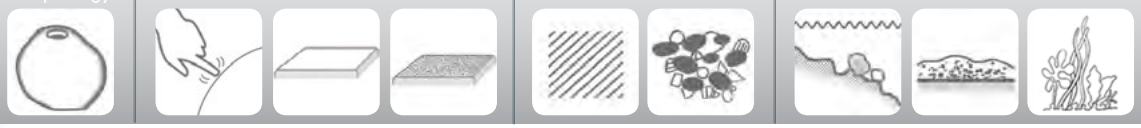


image: Mike Page, NIWA

morphology | surface | substrate | habitat



Globular sponge up to 4 cm diameter, some have a tendency to form a short stem at the base. Surface smooth to undulating with well separated, raised oscules 1–3 mm high. Texture barely compressible, corky to the touch. Colour in life pinkish brown, sometimes with a yellowish tinge. Sponges are often in groups of two or more as a result of budding.

This species occurs in the shallow subtidal in sandy patches between rocky reefs, and on deeper reef flats in groups of 12–15. Relatively common in the shallow subtidal around Hohoura, Tutukaka, and Rodney from 3–15 m. Outlying records from Mayor Island and Three Kings at around 120 m.

The type locality of *Suberites perfectus* is South Australia. The sponge is described as elongate, almost finger-like, and is very unlike our New Zealand species. Bergquist (1968) also noted several differences in the shape and size of the spicules. Their relatively restricted distribution indicates that the New Zealand specimens are most likely to be endemic. Until this New Zealand species is formally re-described and re-named, it should be referred to as *Suberites* cf. *perfectus*, rather than *Suberites perfectus*.

It could also be

Aaptos globosum

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). New Zealand Oceanographic Institute Memoir 37: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Suberites perfectus*, p. 86 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Suberites sp.

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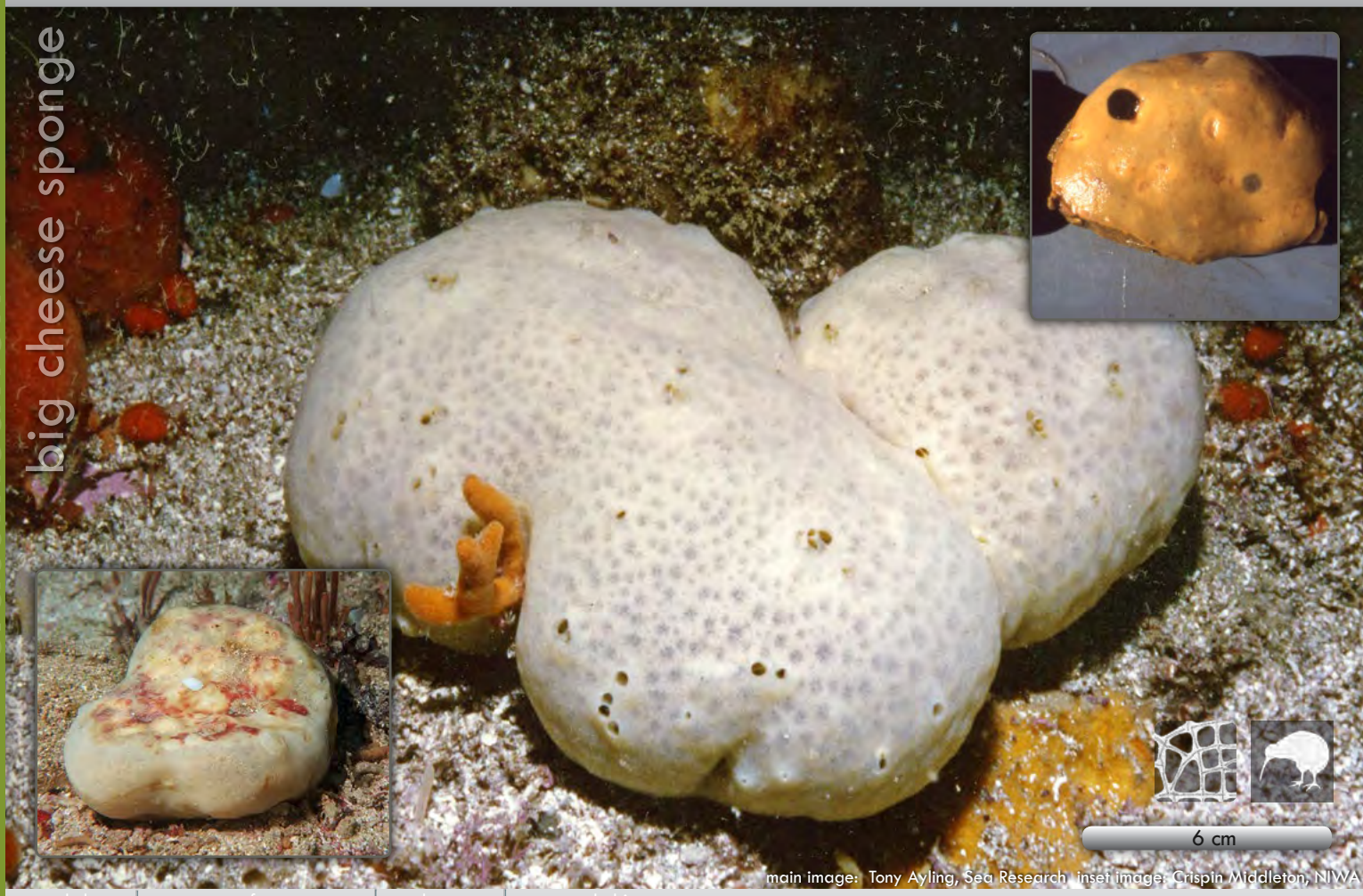
Class Demospongiae Order Suberitida Family Suberitidae

big cheese sponge



main image: Tony Ayling, Sea Research inset image: Crispin Middleton, NIWA

morphology | surface | substrate | habitat

Low-lying, flattened, lobed hemispherical sponge, circular to elongate, with rounded margins, inflated in appearance, up to 20 cm diameter and 6 cm high, attached to rock. Surface very smooth with small groups of slightly raised oscules. In life the surface is very thin and semi-translucent showing subsurface cavities. Texture dense, very soft and smooth, slightly velvety to the touch. Colour in life cream to dark gold. The sponge has a very strong aromatic scent.

Uncommon, found primarily on the northeastern coast of the North Island, including Cape Reinga, where it has been collected around 50 m, Poor Knights Islands and the Rodney Coast. This species is new to science but remains undescribed.

Ayling, L. (1979) Subtidal sponges in the Cape Rodney to Okakari Point Marine Reserve. *Unpublished Leigh Laboratory Bulletin*, 83 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Suberites* sp., p. 88 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Ciocalypta cf. *penicillus* Bowerbank, 1864

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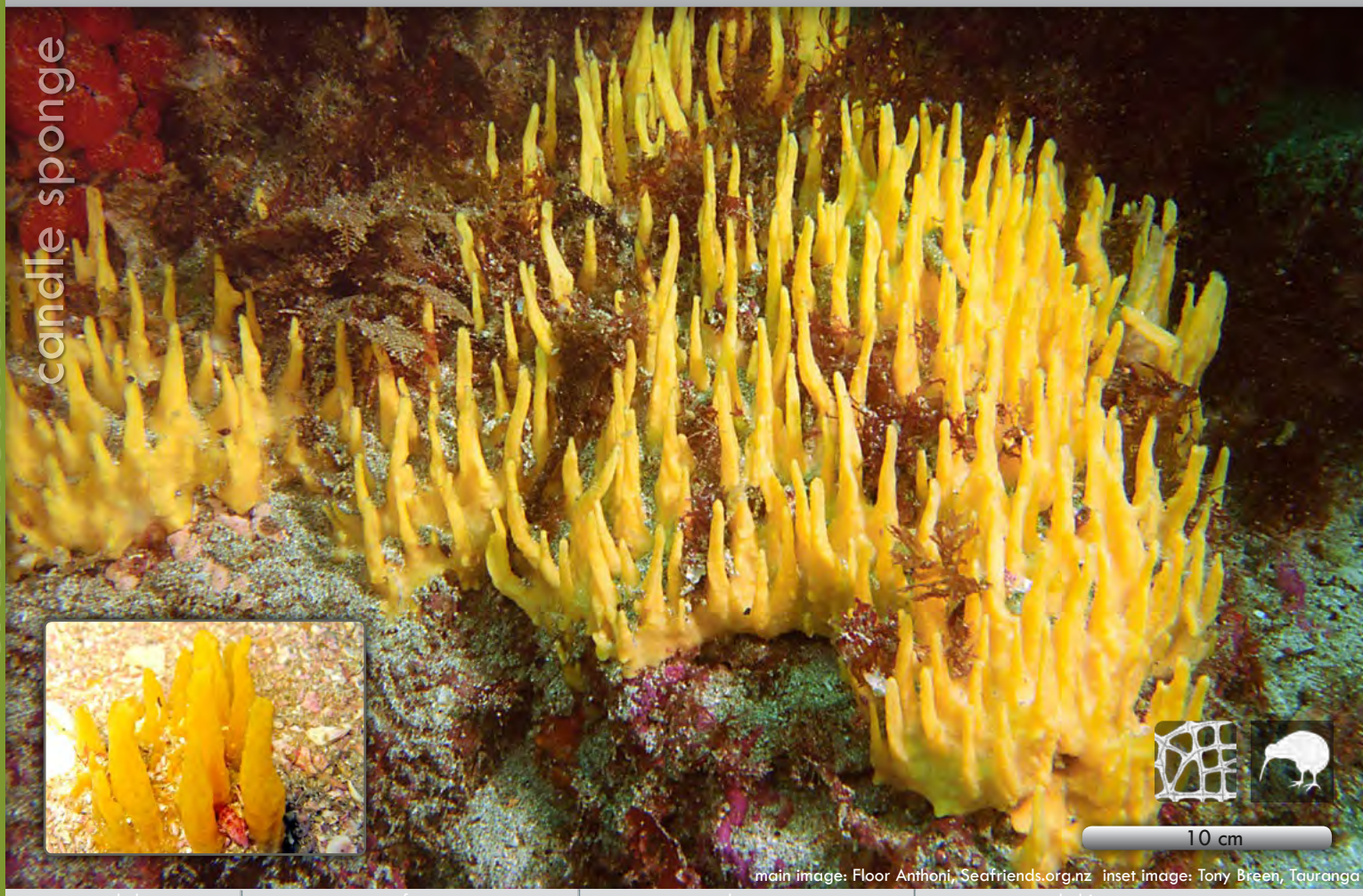
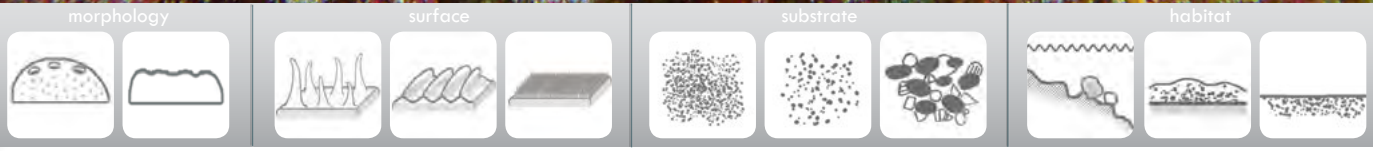
Class Demospongiae Order Subertitida Family Halichondriidae

candle sponge



main image: Floor Anthoni, Seafriends.org.nz inset image: Tony Breen, Tauranga



Massive lumpy base up to 20 cm diameter, giving rise to abundant tapering blind and oscular fistules up to 6 cm high. Surface fistules are longitudinally grooved and may be straight or slightly twisted. Texture of base is firm, slightly compressible, fistules are stiff and can be easily broken, velvety to the touch. Colour in life dull yellow, fistules slightly translucent.

Typically found with the base buried in coarse sandy sediment in channels and around the base of rocky reefs, in crevices filled with muddy sand and shell deposits, and in channels. Fistules are often the only part of the sponge visible. The base incorporates much sand and coarse sediment. Relatively common on the east coast of the North Island south to the Bay of Plenty, from 10–50 m.

Ciocalypta penicillus was originally described from the south coast of England. Because species of *Ciocalypta* have few characters that can be used to differentiate between species, it is considered unlikely that our New Zealand specimens are the same as the English species. Until a careful taxonomic comparison can be made, the sponge will continue to be cross referenced to the English species *penicillus*, as *Ciocalypta* cf. *penicillus*.

It could also be

Petromica sp.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Ciocalypta penicillus*, p. 56 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Ciocalypta polymastia (Lendenfeld, 1888)

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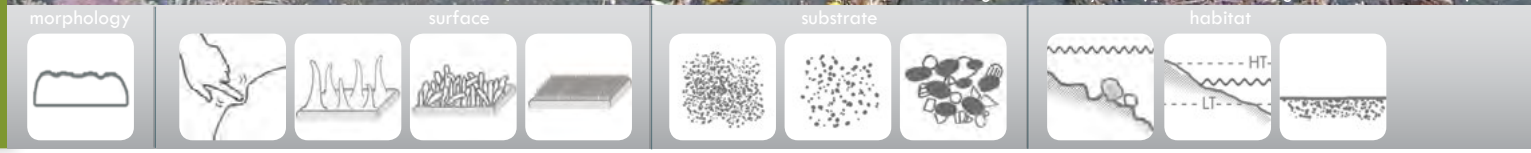
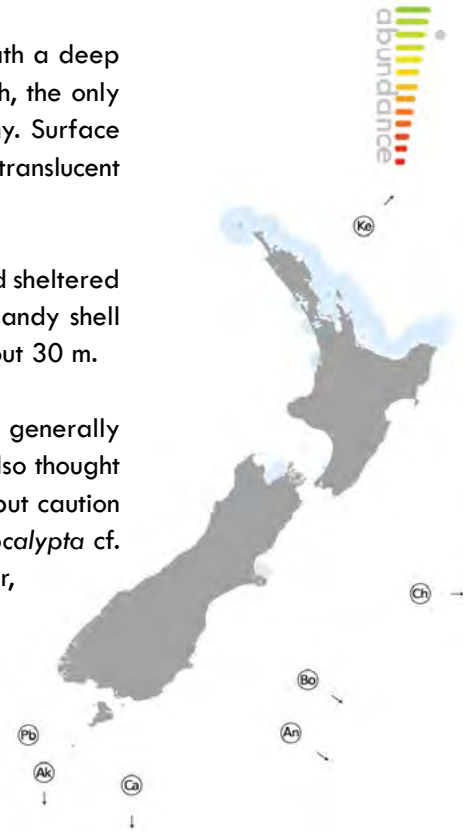
main image: Bruce Hayward, GNS inset image: Irene van der Ven, NIWA



Massive base forming a large thick encrustation, 10–15 cm wide, hidden beneath a deep layer of muddy sand, giving rise to rounded finger-like projections, 1–3 cm high, the only part visible above the substrate. Texture is firm and compressible, slightly fleshy. Surface smooth, felty, grooved and either straight or slightly twisted. Colour in life is pale translucent creamy yellow.

Typically common in the intertidal zone in muddy sandy areas such as harbours and sheltered bays on the west and east coasts of the North Island, but also reported from sandy shell hash around the base of rocky reefs and in channels in the subtidal down to about 30 m.

Ciocalypta polymastia was first described from the east coast of Australia; it is generally accepted that the Australian and New Zealand specimens are conspecific. It is also thought that the New Zealand intertidal and subtidal specimens are the same species, but caution is advised as C. *polymastia* is very similar to the exclusively subtidal species *Ciocalypta* cf. *penicillus*. This species is differentiated from C. *polymastia* on possession of longer, thinner, tapering fistules, and a darker, dull yellow colouration.



It could also be

Ciocalypta cf. *penicillus*
Petromica sp.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). New Zealand Oceanographic Institute Memoir 51: 1–85.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Halichondria moorei Bergquist, 1961

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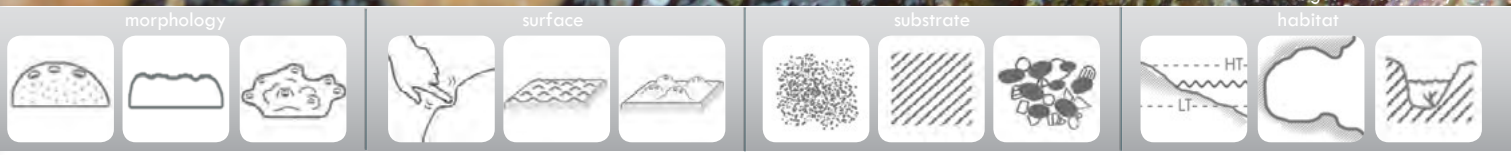
Class Demospongiae Order Subertitida Family Halichondriidae



A massive, thickly encrusting sponge, up to 35 cm long and 15 cm wide, with a wrinkled, bumpy, pimpled surface. Oscules conspicuous, up to 3 cm diameter, membranous, flush with the surface. Texture firm but fleshy, easily torn and is easily removed from substrate. Colour in life is salmon-pink to a dull orange. The interior is dull golden orange.

Halichondria moorei is very common in the intertidal beneath boulders, between cracks or around the edges of pools covered with water and sand. Specimens have been found all over the Auckland isthmus, but mostly on the east coast and in the inner Hauraki Gulf. Also known from Whangarei to Cape Rodney and the Bay of Plenty near Mt Maunganui. Reported to occur down to 10 m.

It could also be

Hymeniacidon cf. *perlevis*

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). New Zealand Oceanographic Institute Memoir 51: 1–85.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Hymeniacidon cf. *perlevis* (Montagu, 1814)

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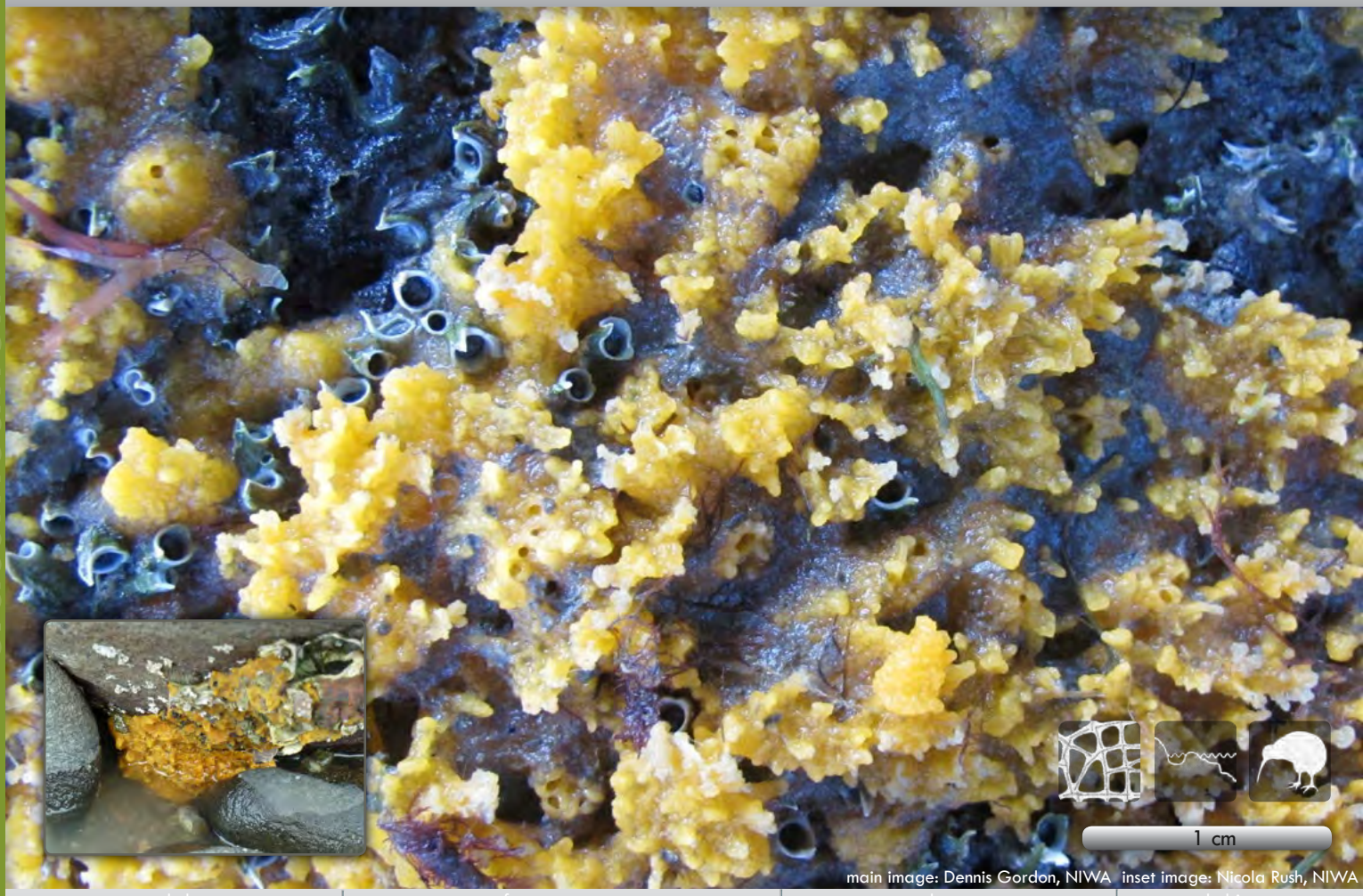
Class Demospongiae Order Subertitida Family Halichondriidae



main image: Dennis Gordon, NIWA inset image: Nicola Rush, NIWA

A thin or thickly encrusting intertidal sponge with variable habit, depending on habitat and environment. In exposed intertidal locations the sponge may be spreading and smooth, in more sheltered locations the sponge thickens and the surface is rough with pimple-like projections, separated by translucent aquiferous canals. In very sheltered environments erect, stringy processes arise from a basal mat. Up to about 12 cm long and 10 cm wide, the thickness varies from 2–20 mm. Texture is compressible, soft and fleshy. Surface is uneven and rough in places, or regularly pimpled. Oscules are located on low broad cones, usually opening off to one side and rolled inwards. Colour in life pale yellow to mustard to deep golden yellow both in the interior and exterior. *Hymeniacidon* cf. *perlevis* is very common in the intertidal zone in harbours, encrusting under rock ledges, between cracks in rock faces and around rock pools intermingled with tubeworms. It is most common on the northeastern coastline of the North Island, from North Cape to the Hauraki Gulf, including some west coast locations around Auckland. It has been recorded in the ports of Whangarei, Nelson, and Porirua harbour. Like species of *Haliclona*, species of *Hymeniacidon* are also difficult to differentiate as they have only one spicule type, and are quite plastic in their overall shape, depending on habitat. However, spicule length, habitat and location are good indicators of species. *Hymeniacidon perlevis* was first described from European waters and is today found around the United Kingdon and the North Sea. We consider it highly unlikely that the New Zealand specimens are conspecific with the North Atlantic species *H. perlevis*, but until a taxonomic comparison can be made the sponge will continue to be cross referenced to *H.* cf. *perlevis*.

It could also be

Stylissa hauraki

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). New Zealand Oceanographic Institute Memoir 51: 1–85.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Tethya bergquistae Hooper, 1994

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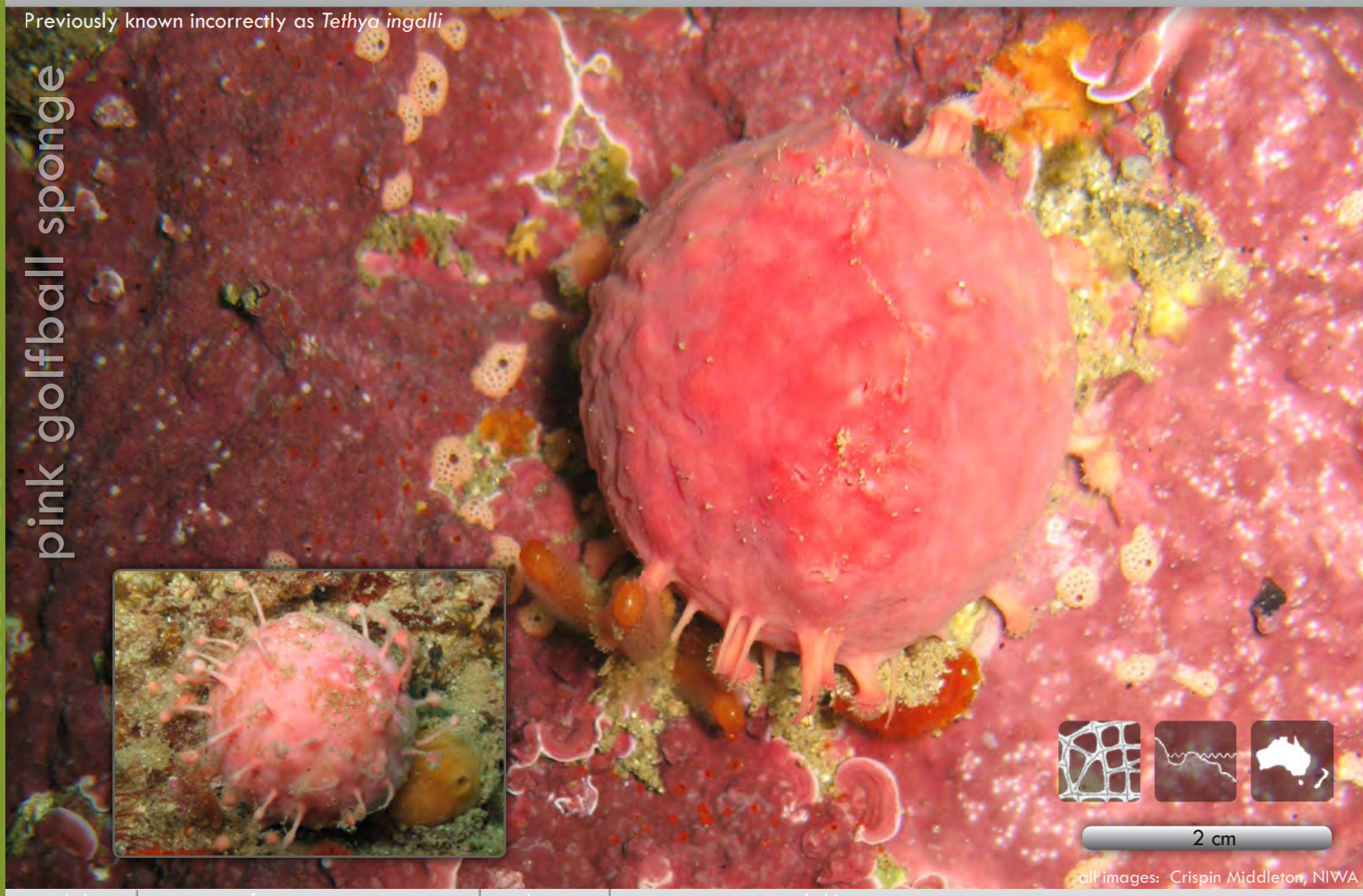
Previously known incorrectly as *Tethya ingalli*

Class Demospongiae Order Tethyida Family Tethyidae

pink golfball sponge



morphology | surface | substrate | habitat

Small, solitary, spherical sponge up to 6 cm diameter, attached to rock by short thick filaments. Surface irregularly bumpy and tasselled with buds extended on thin filaments in spring and summer. Several oscules 2–3 mm diameter are grouped on the apex. Texture barely compressible, granular and waxy to the touch. External colour in life distinctive deep rose pink, internal colour dull yellow.

Found singly or in small clusters of up to five sponges on low tide indents and walls subjected to strong currents or wave action, between macroalgae holdfasts on subtidal reef flats, and on vertical faces and under overhangs down to 30 m. Common on exposed northern coastlines and offshore islands. Also known from the Kermadec Volcanic Arc and Sunday Cove, Fiordland. Also reported from South Australia.

It could also be

Aaptos globosum

Bergquist, P. R., Kelly-Borges, M. (1991) *Tethya australis*, p. 48 in An evaluation of the genus *Tethya* (Porifera: Demospongiae: Hadromerida) with descriptions of new species from the Southwest Pacific. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* 8 (1): 37–72.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Tethya ingalli*, p. 84 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Tethya burtoni Sarà & Sarà, 2004

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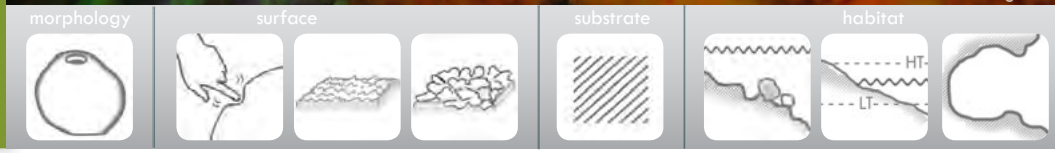
Previously known incorrectly as *Tethya aurantium*

Class Demospongiae Order Tethyida Family Tethyidae

orange golfball sponge

main image: Crispin Middleton, NIWA inset image: Nicola Rush, NIWA



Spherical sponge up to 6 cm diameter, attached to substrate by flat basal stolons. Surface irregularly bumpy with polygon-shaped warts separated by deep furrows which contain the inhalant pores. One or more clusters of oscules are found on the apex of the sponge. Texture inflated and soft in life, with surface warts visible, barely compressible when contracted, corky, rough to the touch. External colour bright orange, internal colour brown orange.

Extremely common on many coastline and harbour environments around New Zealand, from the intertidal to the shallow subtidal around 20 m. Occurs as a solitary sponge but also in large groups connected by flat stolons. Prefers shaded overhangs in the intertidal and is exposed at low tide. Recorded from Three Kings Islands south on both coasts down to Taranaki on the west coast and Bay of Plenty on the east coast, Wellington and the northern tip of the South Island.

Bergquist, P. R., Kelly-Borges, M. (1991) *Tethya aurantium*, p. 43 in An evaluation of the genus *Tethya* (Porifera: Demospongiae: Hadromerida) with descriptions of new species from the Southwest Pacific. *The Beagle, Records of the Northern Territory Museum of Arts and Sciences* 8 (1): 37–72.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Tethya aurantium*, p. 82 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Tethya fastigata Bergquist & Kelly-Borges, 1991

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Class Demospongiae Order Tethyida Family Tethyidae

main image: Crispin Middleton, NIWA upper inset: Debbie Freeman, DoC lower inset: Lori J. Bell

morphology surface substrate habitat

Solitary, spherical sponge up to 7 cm diameter, surface with sharp conules between which stretches spider webs of collagen, forming a distinctive polygonal or geodesic surface pattern. Oscules are apical with numerous exhalent canals opening into a raised turret composed of sharp conules connected by translucent membranes. Texture in life compressible, rubbery to the touch. External colour in life bright orange, deep yellow, or salmon, internal colour burnt orange. Immature sponges, 2–3 mm diameter, are incubated within the sponge body and often visible in the interior, appearing as chicken egg yolks (see middle inset).

Solitary, or locally abundant, often occurring in groups of 30 or more, in three different colours, common in caves and boulders, on walls, and on slopes on exposed northern coasts down to 90 m from Three Kings south to Cape Brett, and on offshore islands south to the Coromandel Peninsula.

It could also be

Tethya burtoni
Tethya amplexa
Aaptos globosum

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Bergquist, P.R., Kelly-Borges, M. (1991) An evaluation of the genus Tethya (Porifera: Demospongiae: Hadromerida) with descriptions of new species from the Southwest Pacific. The Beagle, Records of the Northern Territory Museum of Arts and Sciences, 8(1), 37–72.

Timea aurantiaca Bergquist, 1968

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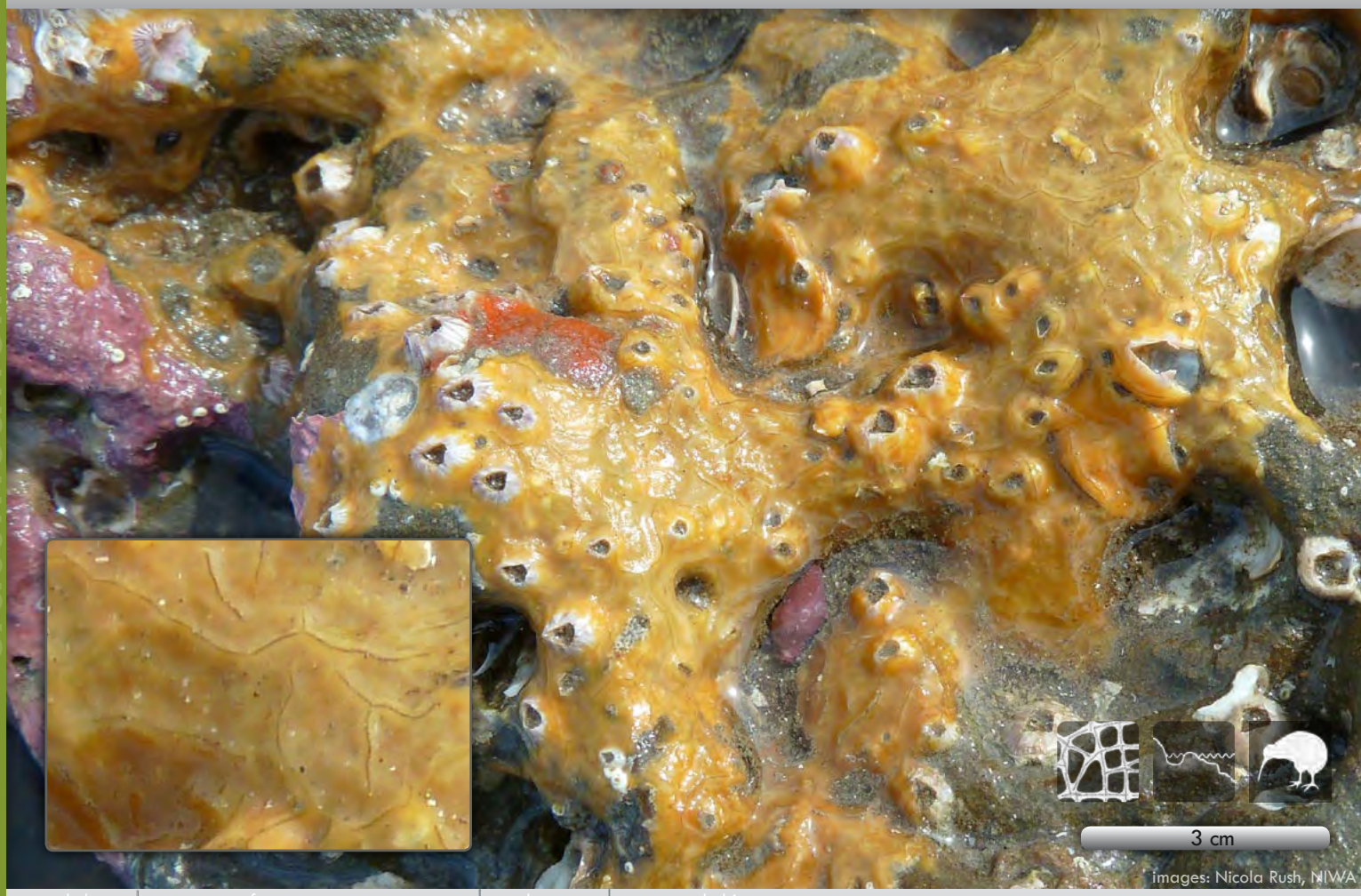

A thinly encrusting sponge that may form extensive mats up to 30 cm wide but the sponge is always less than 1 mm thick. Surface riddled with conspicuous, deep, subdermal canals that form solitary short, straight or meandering curved, slightly raised slits. Texture granular due to surface crust of roughened spherical spicules, slightly elastic. Colour in life mustard to yellowish orange. May be red. The diagnostic field character for *Timea aurantiaca* is the clearly visible subdermal slits which meander all over the surface of the sponge.

Timea aurantiaca is relatively common in shaded, mid to low tidal positions, encrusting the undersides of boulders and overhangs on the Rodney Coast at Goat Island Bay, in the Hauraki Gulf (Great Barrier Island, Narrow Neck, Milford) and at Whangapoua on the Coromandel coast.

It could also be

Cliona cf. *celata*

Plakina cf. *monolopha*

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). New Zealand Oceanographic Institute Memoir 37: 1–106.

Cliona cf. *celata* Grant, 1826

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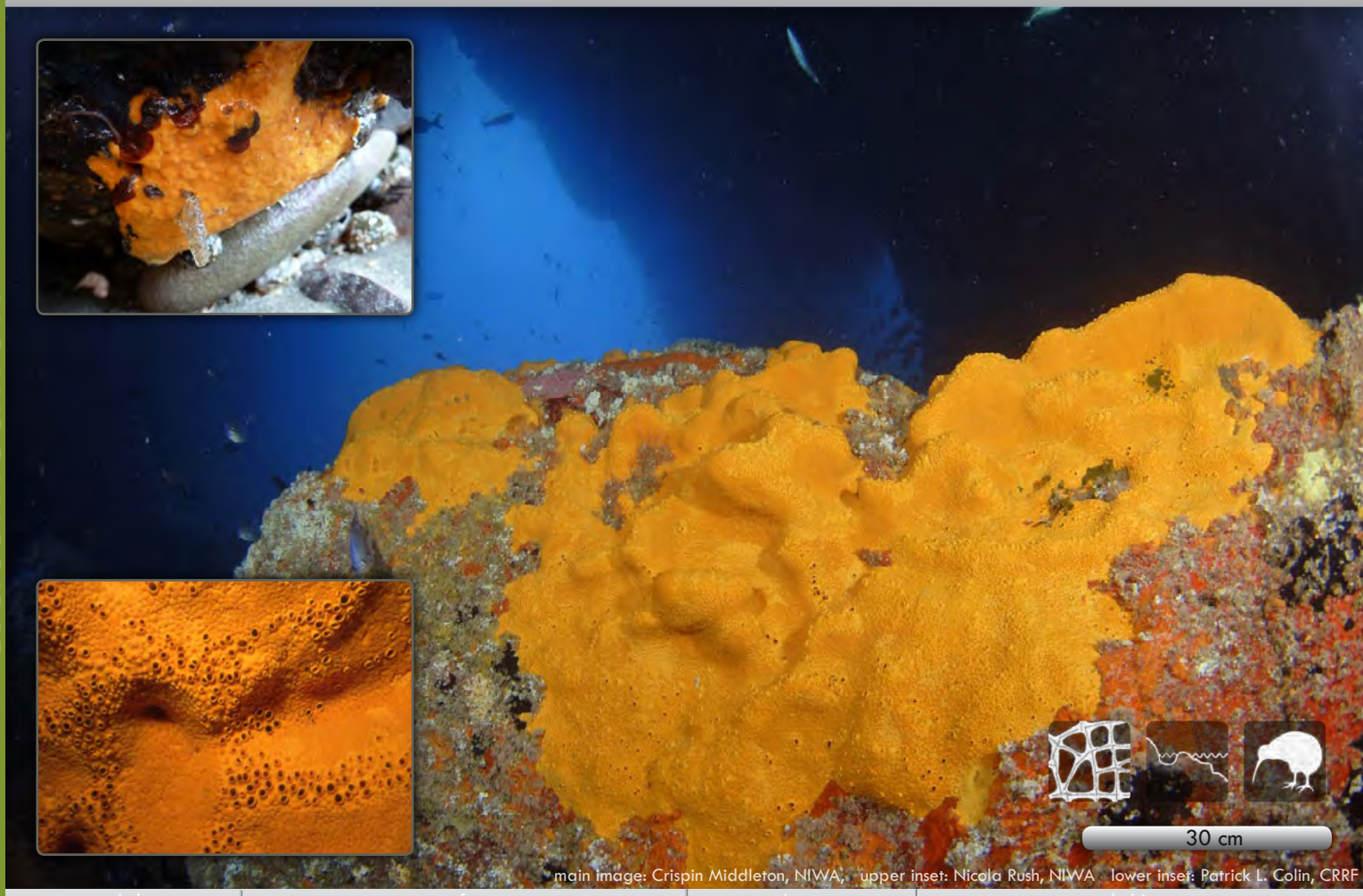
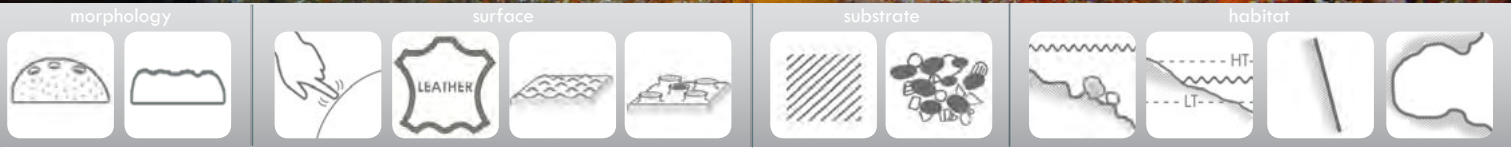


main image: Crispin Middleton, NIWA; upper inset: Nicola Rush, NIWA; lower inset: Patrick L. Colin, CRRF



Thick encrusting to massive sponge with two distinct life stages: the alpha stage, in which only the inhalant and exhalent papillae are visible above the surface of the substrate and the gamma stage, where the sponge forms an encrusting mat or mound above and within the substrate. The mature gamma stage sponges can grow spectacularly large, up to 1 m^2. Surface covered in low botton-like areolate pores and swathes of oscules in rows along the tops of ridges or mounds. Texture firm, leathery to the touch. This species has two distinctive external colours: deep bright orange being the most common, and light clear yellow. Bores into calcareous substrate such as oyster shells and coralline algal crusts.

Commonly found on the roofs of caves in the intertidal, under overhangs and within indents. Found commonly enveloping boulders and flat rock surfaces in quiet harbour and other coastal environments. Very common along the northeastern coast of the North Island, from North Cape to the Hauraki Gulf, Wellington Harbour, Chatham Island, Banks Peninsula and Foveaux Strait down to about 30 m.

Cliona celata is a very common northern hemisphere species; the New Zealand specimens are remarkably similar in appearance but differ in spicule details and being predominantly orange rather than yellow. There is some doubt as to whether the alpha and gamma stages actually represent the same species, and indeed, whether the New Zealand specimens are conspecific with the northern hemisphere species.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). New Zealand Oceanographic Institute Memoir 37: 1–106.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) Marine sponges: Forty-six sponges of northern New Zealand. Leigh Laboratory Bulletin 14: 149 p.

Axinella australiensis Bergquist, 1970

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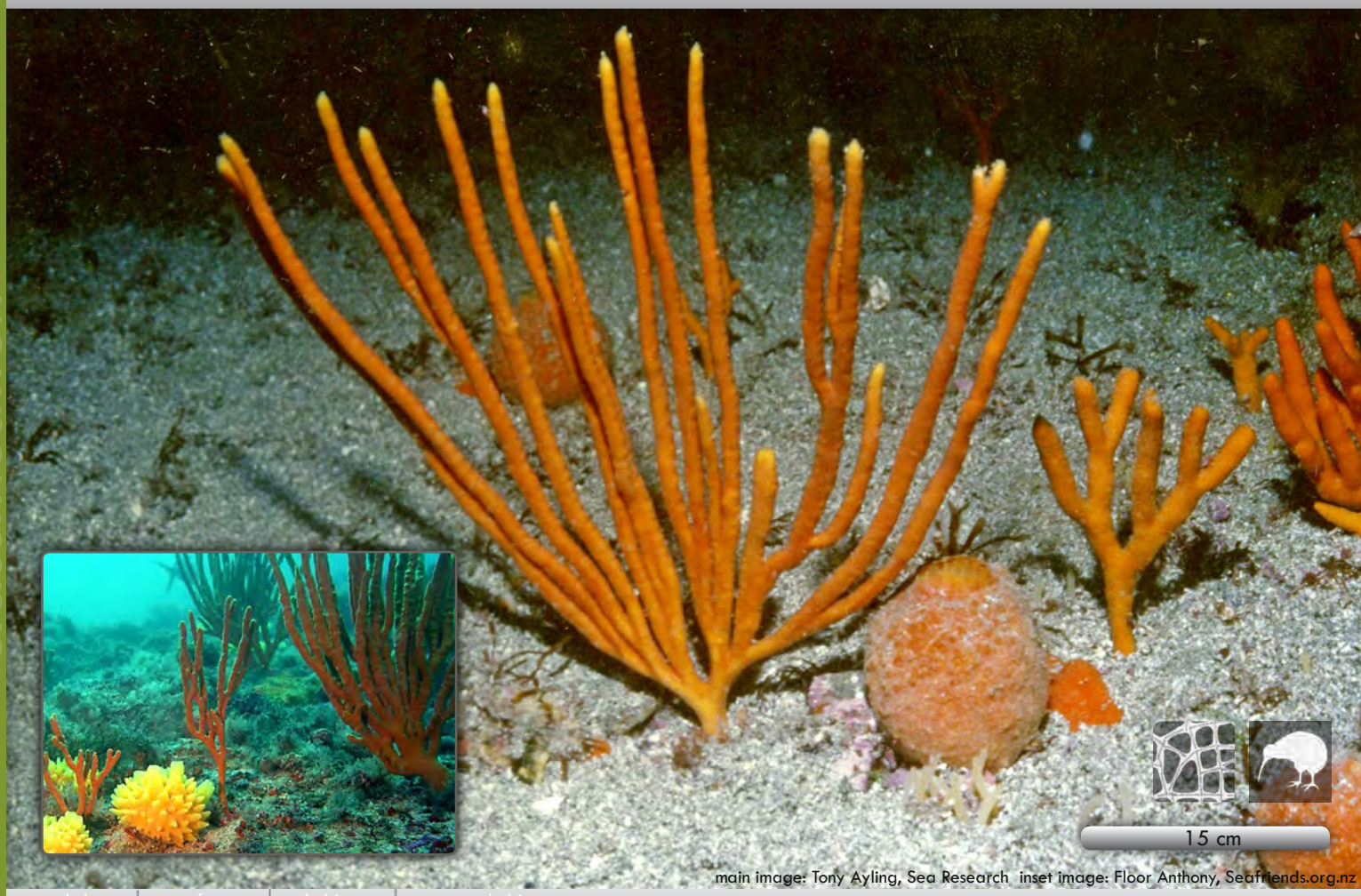
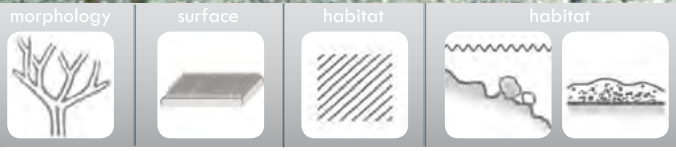


main image: Tony Ayling, Sea Research inset image: Floor Anthony, Seafriends.org.nz



Tree-like sponge with dichotomously branching cylindrical to flattened, flexible fingers, arising in one plane as a fan from a short thick tough stipe. Sponge up to 35 cm high and branches 1 cm diameter. Surface has characteristic star-shaped creases along the sides of branches, indentations that contain the oscules. Texture compressible, but branches have a stiff internal axis. Velvety to the touch from projecting spicules. Colour in life burnt orange to reddish orange.

Occasionally found in deep open reef habitats such as sponge gardens, attached to rock basement under coarse sediment and sands, on the Rodney and Northland coastline from the Three Kings to Coromandel, including Great Barrier Island, Poor Knights and Alderman Islands, down to 100 m. Reported from North Taranaki.

It could also be

Raspailia topsenti
Pararhaphoxya sinclairi
Iophon minor

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Axinella* sp. (A), p. 62 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Axinella sp.

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Class Demospongiae Order Axinellida Family Axinellidae

clubby bush sponge

6 cm

main image: Tony Ayling, Sea Research. inset image: Patrick L. Colin, CRRF

morphology

surface

substrate

habitat

Short stubby tree-like sponge with stumpy, rounded, knobbly fingers, branching from a short thick stipe 2–3 cm high; sponge about 8–13 cm high, crown of branches up to 8 cm diameter, branches 1–3 cm thick. Branches are somewhat expanded and bulbous at the tips. Surface relatively smooth, pimpled, dimpled and concave in places, very small oscules inset into star-shaped dimples. Texture elastic and compressible, spongy core, surface thin and fleshy to the touch. Colour in life milky yellowish orange.

Occasionally found in deep open reef flats, attached to rock basement under coarse sand, known only from Spirits Bay and the Rodney Coast down to 57 m. This species is new to science but remains undescribed.

It could also be

Pararhaphoxya sinclairi
Raspailia topsenti

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Axinella* sp. (B), p. 64 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Pararhaphoxya sinclairi (Gray, 1843)

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Class Demospongiae Order Axinellida Family Axinellidae

main image: Crispin Middleton, NIWA inset image: Patrick Colin, CRRF

morphology surface substrate habitat

Shrubby tree-like sponge with multiple cylindrical branches arising from a short stipe, sponge up to 20 cm high, branches 1 cm diameter, ends of branches tapering and frequently forked. Surface has characteristic star-shaped creases along the sides of branches, indentations that contain the oscules. Texture flexible, internal axis tough, surrounding material softer, velvety to the touch. Bright orange in life.

Abundant in sponge gardens on low relief rocky reefs on the northeast coast of the North Island, including Three Kings and Poor Knights Islands, North Cape, Great Barrier Island, and Ranfurly Banks off East Cape.

It could also be

Raspailia topsenti
Axinella australiensis
Iophon minor

Gray, J.E. (1843) Additional radiated animals and annelids. Pp. 292–295 *In* Dieffenbach, E., *Travels in New Zealand; with Contributions to the Geography, Geology, Botany, and Natural History of the Country*. John Murray, London. Vol. 2, 396 p.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Pararhaphoxya* n. sp., p. 68 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Acanthella dendyi (Bergquist, 1970)

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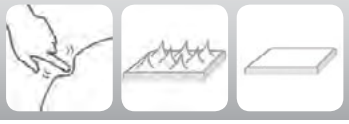
Class Demospongiae Order Axinellida Family Axinellidae

9 cm

main image: Floor Anthoni, Seafriends.org.nz upper inset image: Lori Colin, CRRF lower inset image: Tony Ayling, Sea Research

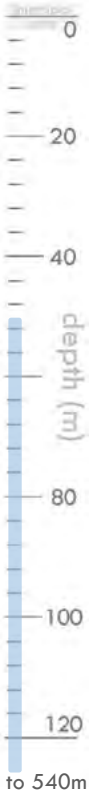
morphology

surface



substrate

habitat



Lamellate or erect branching sponge, up to 30 cm high, 4 cm thick, with an extremely conulose surface, attached to rock substrate by a short hispid stipe. Branching sponges resembling curly kale as they have a thick sinuous trunk with short branches covered with large soft frilled conules. Oscules along the upper margin of lamellate specimens, not visible in branching specimens. Texture of trunk tough and incompressible, fuzzy, velvety, texture of branches soft, flexible, fleshy, smooth and slippery, skin-like. Colour in life bright reddish orange, or milky peach.

The species is widespread but relatively uncommon. It has been found at the Three Kings Islands, Cape Karikari, the Alderman Islands, East Cape, Cook Strait, and Challenger Plateau. Reported from Port Philip Bay, Australia.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Phakellia dendyi*, p. 70 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Cymbastela tricalyciformis (Bergquist, 1970)

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Class Demospongiae Order Axinellida Family Axinellidae

leather sponge

main image: Mike Page, NIWA inset image: NIWA

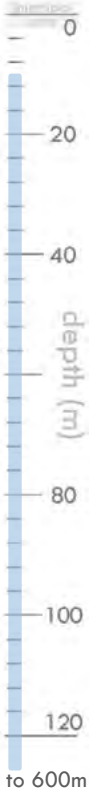

Plate-shaped or shallow funnel-shaped sponge, up to 20 cm diameter and 15 cm high, attached to rocky substrate by a short tough stalk. Older sponges may have secondary 'petals' or funnels in the centre of the sponge. Lamella thin, leathery, pliable, flexible, smooth, slightly felty to the touch, incompressible. Oscules are difficult to see but are situated on the concave, inner surface. Colour in life kahki brown to dark forest green. An unidentified species of zooanthid *Epizoanthus* sp. is often found embedded in the sponge surface.

Cymbastela tricalcyformis is a common southern New Zealand and subantarctic species found typically on the rocky walls and canyons of Fiordland deep reefs, between about 10–30 m depth. They are also reasonably common at great depths around the Subantarctic Islands where they are found down to 600 m. Occasionally dredged from the Taranaki to Wanganui coastline around 80 m depth; attached to boulders. Southland coastal specimens found around 40–90 m depth.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). New Zealand Oceanographic Institute Memoir, 51, 1–85.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Raspailia arbuscula (Lendenfeld, 1888)

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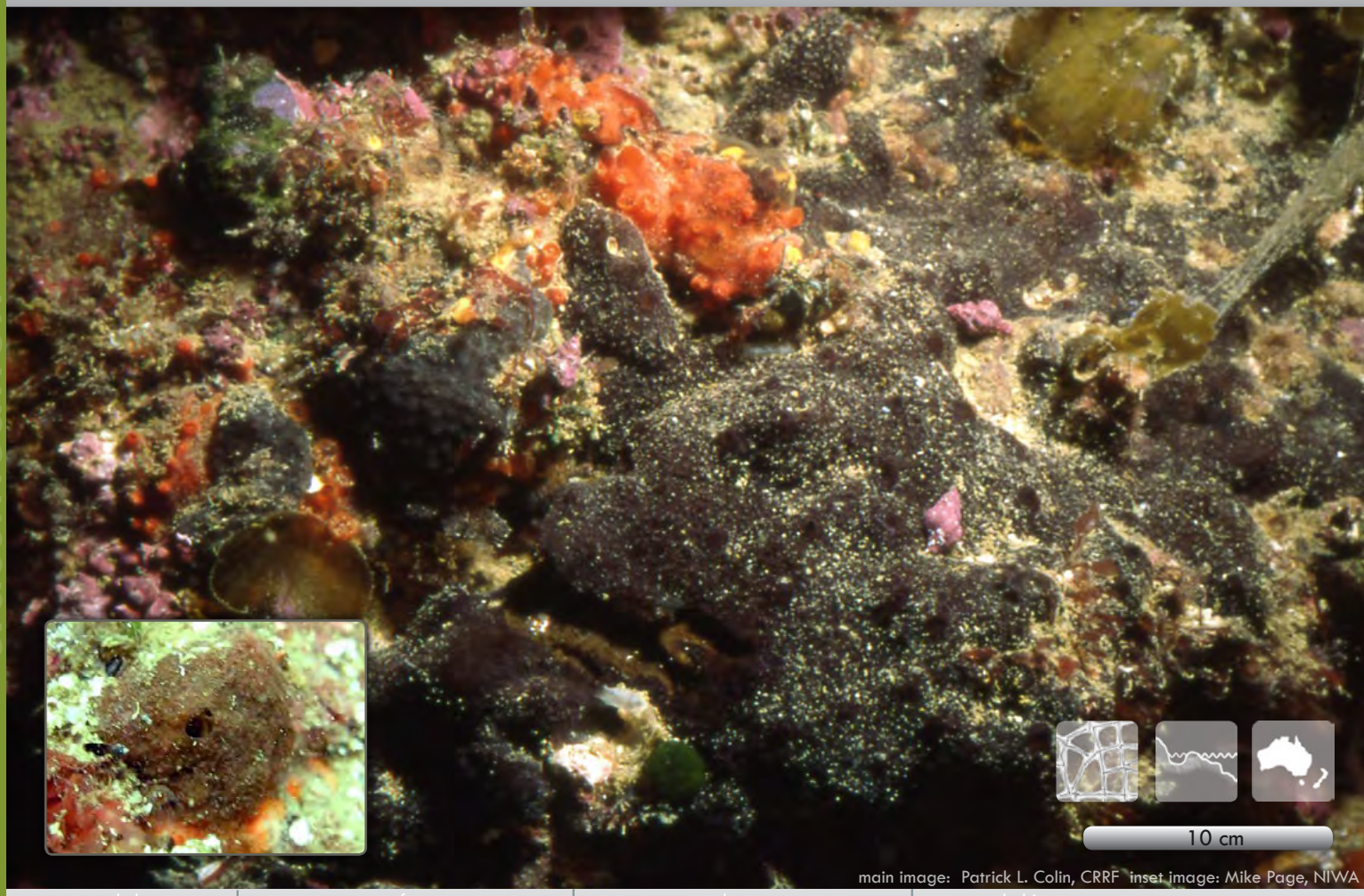

main image: Patrick L. Colin, CRRF inset image: Mike Page, NIWA

morphology | surface | substrate | habitat

Thickly encrusting to massive sponge, forming patches about 30 cm wide, 2–3 cm thick, up to 6 cm. Surface is smooth and undulating, massive specimens have surface cone-like projections. Oscules, up to 2.5 mm diameter, are located on top of surface mounds. Texture firm, compressible, velvety to the touch. Surface colour in life brownish black with a silvery sheen from projecting spicules, internal colour dark olive.

Relatively common, encrusting in shaded positions such as under rock ledges in the intertidal, common on wharf piles, tolerant of muddy conditions. Also found on shaded canyon walls and on the sides of boulders on open rocky reefs, from 1–40 m. Known along the Rodney Coast south to the Waitemata Harbour and North Channel. Reported from Doubtful Sound and Chatham Rise.

First described from Port Jackson, Australia.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Raspailia agminata*, p. 72 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Raspailia topsenti Dendy, 1924

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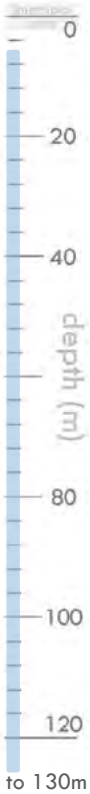
Class Demospongiae Order Axinellida Family Raspailiidae

main image: Crispin Middleton, NIWA inset image: Mike Page, NIWA

morphology | surface | substrate | habitat



Large bushy tree-like sponge up to 60 cm high, or candelabra-like with erect branchlets arising from several lateral branches, more-or-less in a single plane, or squat shrubby bush up to 20 cm high. Branches with rounded tips, occasionally forked, up to 2 cm diameter, attached to rock by a short stem. Surface smooth to undulating and covered with a fine transparent dermal membrane. Small oscules less than 1 mm in diameter are sparsely scattered over the surface, with star-shaped canals draining into them, may be aligned in rows along branches in some specimens. Texture firm, compressible, flexible, velvety to the touch, with a hard woody axis. Colour in life deep dull to bright orange.

Common in sponge gardens and deep reef flats with sediment cover, particularly along the Rodney Coast and Hauraki Gulf. Found elsewhere around New Zealand from North Cape, Three Kings and Poor Knights Islands, along the east coast to Ranfurly Banks off East Cape, Kaikoura, Marlborough Sounds, Mernoo Bank, and Doubtful Sound, Fiordland.

It could also be

Axinella australiensis
Pararhaphoxya sinclairi
Iophon minor

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). *New Zealand Oceanographic Institute Memoir* 51: 1–85.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Raspailia topsenti*, p. 74 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Biemna rufescens Bergquist & Fromont, 1988

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stinging sponge

main image: Tony Ayling, Sea Research inset image: Mike Page, NIWA

morphology surface substrate habitat

Thickly encrusting to massive sponge, up to 20 cm wide and 4 cm thick, attached to rock under sand cover. Surface is covered in thin, shaggy oscular turrets 4–10 mm high with a terminal oscule 2–5 mm wide. Texture soft, compressible, easily torn, velvety to the touch. Irritates the skin on handling due to the presence of chemical metabolites in the sponge that sting. Exterior colour in life purple-maroon, internal colour dull gold, which is evident on the edges of larger loaf-shaped specimens.

This species is commonly found in sandy areas near turf-forming algae and at the base of rocky reefs or reef flats. In sandy areas this species is often only visible as a group of purple tubes projecting from the sand. Occasionally encrusts bivalve shells. Relatively common in shallow inshore waters around the eastern coast of New Zealand. Reported from Kapiti Island and Cook Strait.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Biemna* sp., p. 40 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Chondropsis kirkii (Bowerbank, 1841)

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Class Demospongiae Order Poecilosclerida Family Chondropsiidae

main image: Crispin Middleton, NIWA inset image: Patrick L. Colin, CRRF

morphology surface substrate habitat

Thickly encrusting with short fat fingers or palmate with fat rounded tubular single or multiple fingers arising from a spreading base. Often the base is detached in places, sponge meanders along substrate. Base up to 3 cm thick, fingers up to 8 cm high and 2–3 cm thick. Whole sponge can become a large mat up to 20 cm wide. Surface is smooth to granular and covered by a thin dermal membrane beneath which the skeleton of sand grains is visible. Oscules line the internal surface of each finger and the exhalent current emerges from the large opening at the top of each tube. Encrusting forms have large, well separated, raised oscules that are often aligned along ridges, and often surrounded by a ring of lighter colouration. Texture firm, fleshy, resilient but easily torn due to sandy fibres. Smooth to the touch and slimy on removal from water. Colour in life apricot grey to ochre red, pinkish brown, internally yellowish-grey from abundant sand grains that pack the interior.

Commonly found attached to sand-covered rock surfaces on deep rocky reefs and flats. Often found in silty inshore environments including harbours attached to horse-mussel shells.

The species was first described from Sydney Harbour and has been recorded from Port Phillip Bay, South Australia and the Bass Strait. In New Zealand, the species is common in Northland waters south to the Hauraki Gulf and Coromandel Peninsula, and has been reported from the west coast of the South Island.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Chrondropsis kirkii*, p. 44 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Iophon minor (Brøndsted, 1924)

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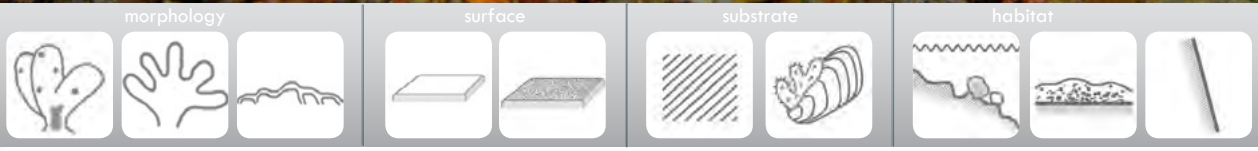
main image: Crispin Middleton, NIWA inset image: Patrick L. Colin, CRRF



Branching sponge with long strappy, flattened branches up to 60 cm high, or mass of irregular flattened branches with palmate expansions that may fuse to form a sheet up to 50 cm square, or short palmate fans up to 20 cm high. Strappy branches and lamellae 1–2 cm thick. Surface is smooth, felty, oscules are up to 5 mm diameter and obvious on the surface and margins of palmate specimens and aligned along the sides of branches. Texture compressible, flexible, slightly rough to the touch. Colour in life bright orange yellow to dull yellow, turning deep purple brown to maroon on exposure to air or preservative.

Common on deep reefs attached to rock by a thick fibrous stem. This species is common in both offshore environments where it is often in the strappy form, but is also found in silty inshore environments such as harbours or bays attached to horse-mussel shells as part of biogenic habitats. In these quieter, more silty environments the colour is often dull and the sponge forms a sheet-like structure. Commonly found along the east coast of Northland and around the offshore islands, Nelson, Kaikoura and Stewart, Chatham and Auckland Islands, from about 10–80 m.

It could also be

Raspailia topsenti
Pararhaphoxya sinclairi
Axinella australiensis

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Iophon minor*, p. 42 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Clathria macrotoxa (Bergquist & Fromont, 1988)

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Class Demospongiae Order Poecilosclerida Family Microcionidae

main image: James Williams, NIWA inset image: Tony Ayling, Sea Research

morphology surface substrate habitat

Thickly encrusting cushion-shaped sponge with surface undulations and rounded edges, occuring in small patches that may join to form a spreading mass up to 40 cm wide and 3 cm thick. Middlesex Bank specimens are club-shaped. Surface is smooth with prominent oscules on the apex of mounds. Texture very firm, fibrous, slimy to the touch. External colour bright red, to bright orange red.

Encrusting open rock and boulders on coastal reefs in relatively clear waters with good currents. Found around the Three Kings Islands and Middlesex Bank down to 170 m, Spirits Bay, Bay of Islands, Whangarei Harbour, and further south where it appears to be less common. Typically subtidal from 10 m down to about 70 m.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Axociella* sp., p. 46 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Crella incrustans (Carter, 1885)

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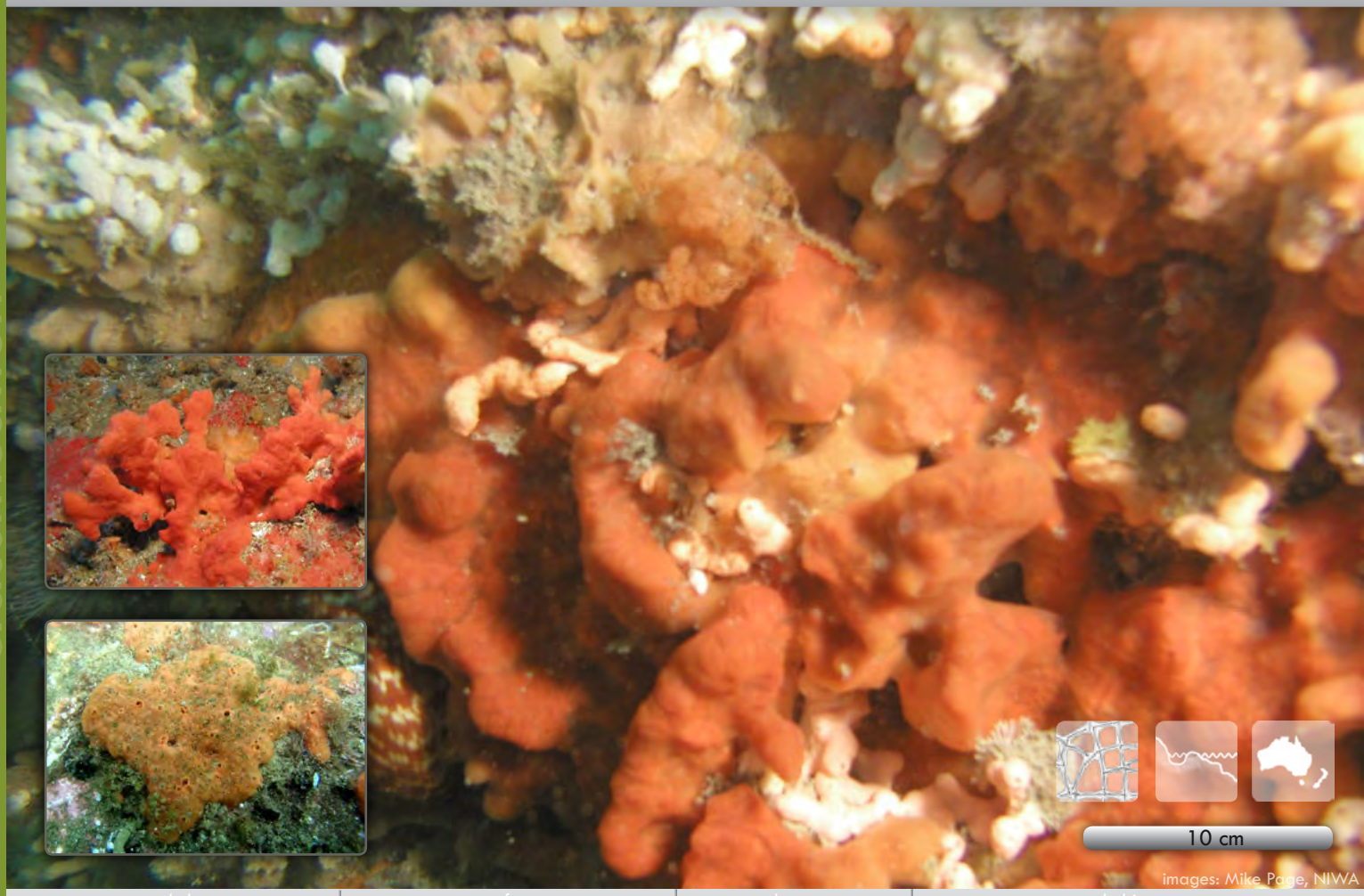

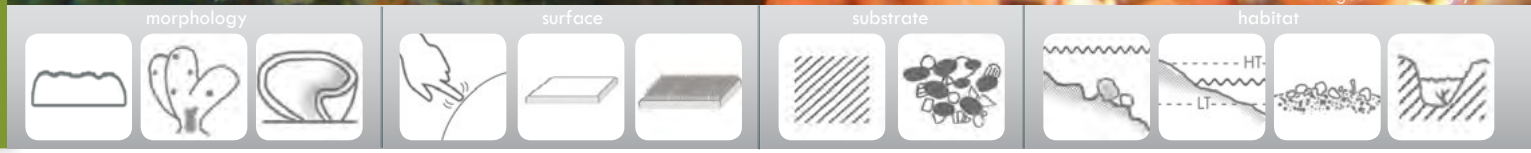

Extremely variable shape, from thinly to thickly encrusting, to branching with erect palmate fans or club-shaped expansions, to lamellate with an undulating margin, up to 30 cm wide and 20 cm high, 1–2 cm thick. Attached to rock substrate along the whole length of the sponge or by a narrow base. Surface irregular, folded, wrinkled, inflated in life. Oscules 3–7 mm in diameter are moderately densely scattered over the surface. Texture fibrous, elastic, flexible, tough, smooth to felty to the touch where the dermal membrane is intact, otherwise rough. External colour bright rich burnt red in relatively shallow North Island specimens, orange to yellow in deeper and South Island specimens.

First described from Port Philip Heads, South Australia, this species is extremely common all around New Zealand in a wide range of sheltered and exposed habitats including under rock ledges in the intertidal, shallow coastal rocky reefs, and deeper continental shelf seamounts and banks.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Crella incrustans*, p. 50 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Tetrapocillon novaezealandiae Brøndsted, 1924

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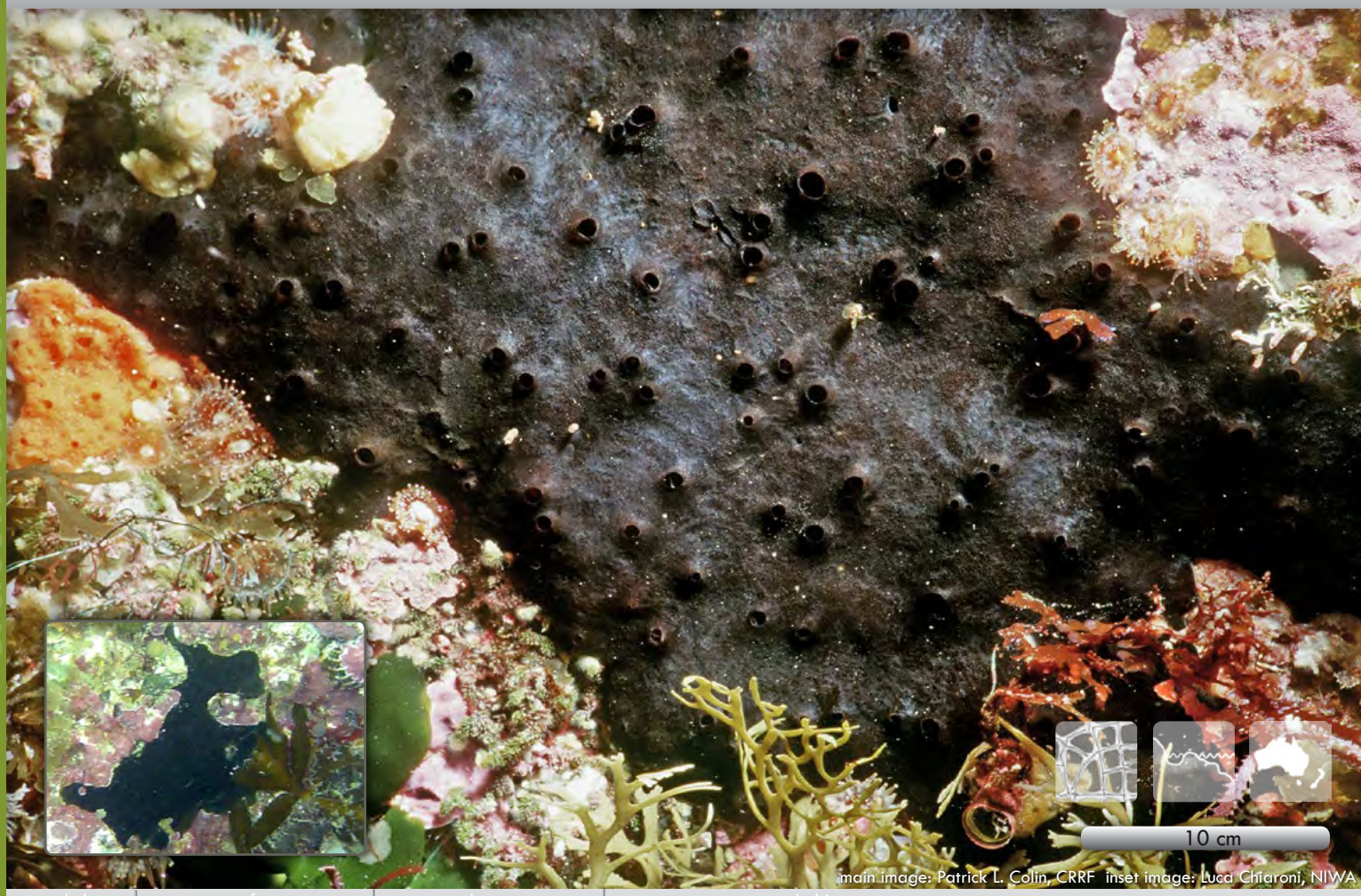
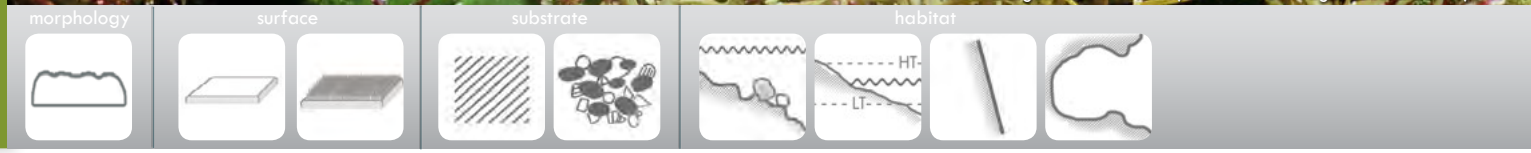


main image: Patrick L. Colin, CRRF inset image: Luca Chiaroni, NIWA



A relatively thickly encrusting to low mounded sponge that forms a spreading, slightly inflated mat underwater. Patches up to 70 cm wide, 5–15 mm thick, Tasmania specimens up to 40 mm thick. Surface follows the underlying substrate, oscules are very small, 4–6 mm diameter in life, moderately densely scattered over the surface and either lie flush with the surface or are slightly elevated. Texture quite firm and pliable on the surface, crumbly inside, surface noticeably velvety to the touch. External colour jet black to very dark green, internal colour dirty gold to orange-yellow. Thick dark-olive fluid emitted from sponge when handled.

Commonly found encrusting on shaded rock surfaces and boulders in intertidal and shallow subtidal waters down to about 20 m, on moderately exposed coastlines along the northeastern section of the North Island including the Hauraki Gulf, Coromandel Peninsula and offshore islands, and the Three Kings Islands.

The species was recorded from South Africa's Agulhas Bank in 1963 and more recently from Knysna Estuary, South Africa, and Tasmania in 2010.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. *New Zealand Oceanographic Institute Memoir* 96: 1–197.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Tetrapocillon novaezealandiae*, p. 48 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Latrunculia fiordensis Alvarez, Bergquist & Battershill, 2002

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morphology surface substrate habitat

Spherical to hemispherial loaf-like sponge, up to about 20 cm diameter and typically 6–8 cm thick. Upper surface has small, densly packed, circular or elaborately shaped sieve-pores with raised margins. Oscules of various sizes up to 2 cm diameter on the apex of the sponge. Texture soft, compressible. Colour in life green to kahki green. Typically turns dark brownish black upon preservation.

Sponges are locally abundant in Milford and Doubtful Sounds, and other fiord locations, on steep walls from about 9–40 m, in low light conditions.

The chalice-shaped sponge to the upper right of *L. fiordensis* is *Cymbastela tricalcyformis*.

It could also be

Latrunculia kaakaariki (but restricted to Three Kings and Spirits Bay)

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Alvarez, B., Bergquist, P.R., Battershill, C.N. (2002) Taxonomic revision of the genus Latrunculia Du Bocage (Porifera: Demospongiae: Latrunculiidae) in New Zealand. New Zealand Journal of Marine and Freshwater Research 36: 151–184.

Latrunculia kaakaariki Alvarez, Bergquist & Battershill, 2002

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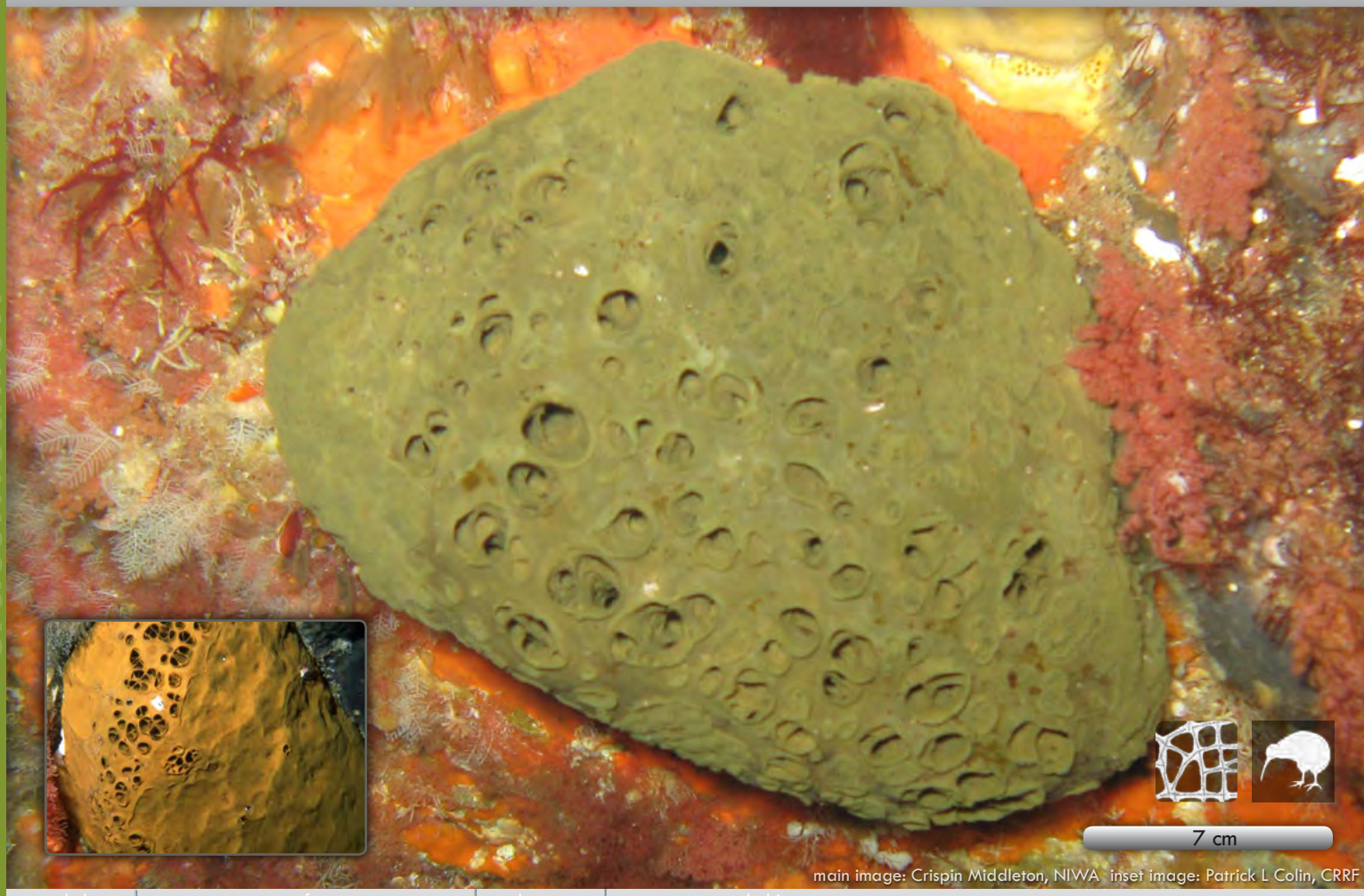
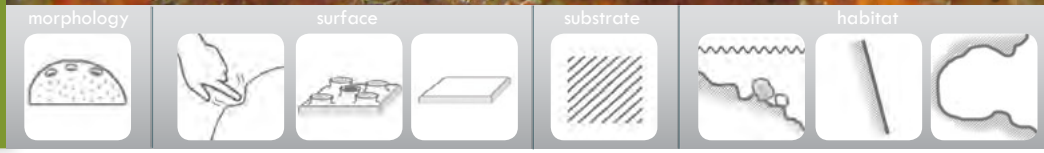


main image: Crispin Middleton, NIWA inset image: Patrick L Colin, CRRF



Elongate hemispherial, loaf-like sponge, up to about 15 cm diameter and typically 6–9 cm thick, meandering along rock substrate. Upper surface divided into swathes and rows of small, 3–5 mm oscules with raised membranous rims, surrounded by very broad, sculpted, concave swathes of sieve-pore areas with raised margins. Texture soft, compressible. Colour in life olive green.

Sponges are locally abundant around Thre Kings Islands and Spirits Bay, on shaded vertical to steeply sloping rocky walls, from about 2–40 m, and commonly in areas of extreme surge.

It could also be

Latrunculia fiordensis (but from Fiordland)

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Alvarez, B., Bergquist, P.R., Battershill, C.N. (2002) Taxonomic revision of the genus Latrunculia Du Bocage (Porifera: Demospongiae: Latrunculiidae) in New Zealand. New Zealand Journal of Marine and Freshwater Research 36: 151–184.

Latrunculia procumbens Alvarez, Bergquist & Battershill, 2002

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images: Dan Sharp, Bay of Plenty Polytechnic Tauranga

morphology | surface | substrate | habitat

Moderately thick encrusting sponge, 1–3 cm thick, up to about 12 cm diameter, covered in tall, thin, trumpet-shaped papillae up to 2 cm high, topped with a mushroom-shaped sieve-pore. Oscules, 5 mm wide, are raised on tall, broad fistules, scattered over surface of sponge between sieve-pores. Texture soft, compressible. Colour in life kahki green, occasionally brown.

Sponges are relatively uncommon, but known from vertical to sloping rock walls in surge zones around the Three Kings Islands, Tutukaka, Poor Knights Islands, and Mercury Islands off the Coromandel coast, 2–10 m deep.

It could also be

Latrunculia kaakaariki

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Alvarez, B., Bergquist, P.R., Battershill, C.N. (2002) Taxonomic revision of the genus Latrunculia Du Bocage (Porifera: Demospongiae: Latrunculiidae) in New Zealand. New Zealand Journal of Marine and Freshwater Research 36: 151–184.

Haliclona brøndstedi Bergquist & Warne 1980

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Thinly encrusting intertidal sponge capable of spreading up to about a square metre, but typically 20–30 cm square and 2–5 mm thick. Surface studded with a large number of oscules either flush at the surface or raised on low conical turrets which are around 1.5 mm high. Oscules are conspicuous, each with a smooth membranous lip. Surface generally smooth, even, undulating, membranous, slightly translucent, punctate from inhalant ostia, slightly fuzzy from projecting spicules. Texture very soft, crumbly. Colour in life fawn internally and externally.

Typically found under boulders, ledges and in indents in rock walls on the west coast of the North Island (Anawhata, Piha) and in the Manukau Harbour (Cornwallis, Mill Bay). Also reported from Whangarei Port, Mt Maunganui and around the Coromandel Peninsula.

Haliclona species are quite difficult to differentiate in the lab because they are generally thinly encrusting and have similar spicules. However, their morphology, surface details, texture and colouration in life provide enough details for the careful observer to distinguish species from species.

It could also be

Haliclona venustina

Bergquist, P.R., Warne, K.P. (1980) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 3 (Haplosclerida and Nepheliospongida). New Zealand Oceanographic Institute Memoir 87: 1–77.

Haliclona venustina (Bergquist, 1961)

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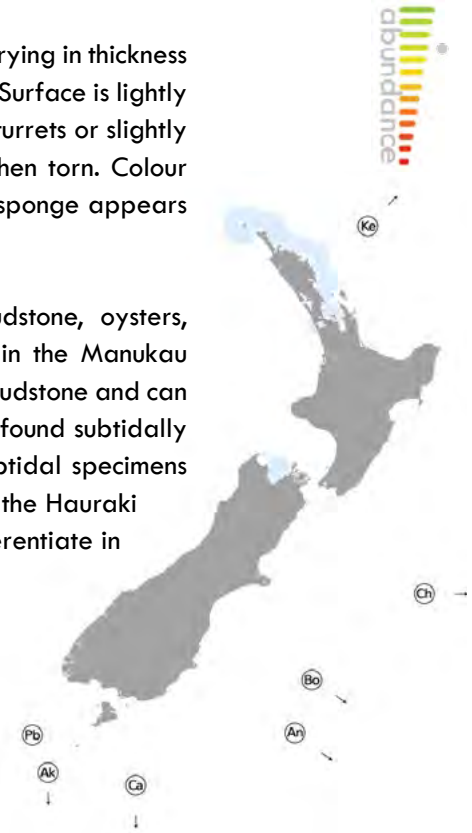
Encrusting sponge up to about 15 cm wide; intertidal specimens relatively thin, varying in thickness from 2–15 mm, subtidal specimens thick encrusting to massive, up to 30 cm thick. Surface is lightly punctured, slightly velvety, undulating. Oscules may be elevated on short, squat turrets or slightly raised from the surface. Texture is slightly elastic, but crumbly, slightly crisp when torn. Colour in life pinkish to grey mauve to dull yellow. When removed from the water this sponge appears shiny due to the reflection of the surface membrane and skeleton.

Haliclona venustina is a relatively common intertidal sponge encrusting mudstone, oysters, bryozoans and tubeworms around the Auckland isthmus, including Cornwallis in the Manukau Harbour and North Piha on the west coast of the North Island. It grows on Papa mudstone and can be found in rock pools and on oysters in the intertidal. This species has also be found subtidally down to about 20 m where it is usually massive with tall oscular chimneys. Subtidal specimens been recorded as far north as the Three Kings, Whangarei, the outer islands of the Hauraki Gulf and Tasman Bay, Marlborough. *Haliclona* species are quite difficult to differentiate in the lab because they are generally thinly encrusting and have similar spicules. However, their morphology, surface details, texture and colouration provide enough details for the careful observer to distinguish species from species.



It could also be

Haliclona brøndstedi

Bergquist, P.R., Warne, K.P. (1980) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 3 (Haplosclerida and Nepheliospongida). New Zealand Oceanographic Institute Memoir 87: 1–77.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Callyspongia cf. *annulata* (Ridley & Dendy, 1886)

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Previously known incorrectly as *Callyspongia latituba*

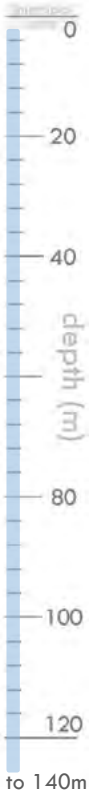
organ-pipe sponge

Class Demospongiae | Order Haplosclerida | Family Callyspongiidae

20 cm

main image: James Williams, NIWA inset image: Crispin Middleton, NIWA

morphology | surface | substrate | habitat



Branching sponge up to 60 cm high with hollow, irregular, softly ribbed tubes with a spherical to oval opening at the apex. Some tubes are finger-like, cylindrical, and narrow along their length, 2–4 cm wide, while others are flattened and flared to about 10 cm wide. Tubes may be fused. Wall thickness about 2.5–5 mm thick. Total fan width up to 40 cm. Attached to rock by a solid flaring stem. Surface is fuzzy to the touch but looks smooth, internal surface of each tube has abundant small oscules from which the aquiferous stream emerges at the top of the tube. Texture soft and compressible, flexible and elastic, easily torn. Colour in life mauve throughout, tops of the tubes are tan.

Very common along the northeastern coastline of the North Island and offshore islands on shallow rock flats, boulder slopes, sandy areas around the bases of reefs, and in macroalgal forests, down to about 20 m. First recorded from North Cape at 140 m, and known from East Cape, Marlborough Sounds and Fiordland, down to 30 m.

Callyspongia annulata was first described from Bass Strait, Tasmania and strongly resembles our New Zealand species which has been commonly referred to as C. *latituba* Dendy, 1924. Until a careful taxonomic comparison can be made, the sponge will now be cross referenced to the Australian species *annulata*, as *Callyspongia* cf. *annulata*.

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. *Zoology* 6: 269–392.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Callyspongia latituba*, p. 32 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Callyspongia ramosa (Gray, 1843)

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Class Demospongiae Order Haplosclerida Family Callyspongiidae

classification

finger sponge

main image: Crispin Middleton, NIWA inset image: Debbie Freeman, DoC

morphology | surface | substrate | habitat

Tree-like bushy branching sponge up to 1 m high, typically up to about 40 cm high, with thin cylindrical or slightly flattened fingers, usually less than 1 cm thick. Attached to rock substrate by a tough stalk, occasionally found in an encrusting form. Surface is smooth but raised into low bumps. Oscules are 1–2 mm wide, flush with the surface, and are sparse and randomly scattered along the length of the fingers. Texture firm, compressible, slightly elastic, slightly rough and fibrous to the touch. Colour in life typically mauve or pinkish tan to dull gold with paler tips.

This is one of the most common sponges in coastal shallow waters around the North Island and is frequently washed up on the beach. Found on walls, large boulders, rocky reefs and reef flats that experience wave surge down to 50 m. Known from the Marlborough Sounds.

Callyspongia ramosa was first described from New Zealand in 1843 but has also been recorded in parts of Australia.

Bergquist, P.R., Warne, K.P. (1980) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 3 (Haplosclerida and Nepheliospongida). *New Zealand Oceanographic Institute Memoir* 87: 1–77.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Callyspongia ramosa*, p. 34 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Dactylia varia (Gray, 1843)

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Previously known incorrectly as *Dactylia palmata*

Class Demospongiae | Order Haplosclerida | Family Callyspongiidae

slimy hand sponge

12 cm

main image: Bruce Boyd, Hawera inset image: Lori Bell, CRRF

morphology

surface

substrate

habitat

Of variable form, typically hand or fan-shaped, up to 40 cm high, with cylindrical to flattened strappy branches, attached to sand/shell substrate by a short, tough stalk. Surface shaggy, rough to the touch, with a visible network of fibres cored with sand, Deep oscules, about 3 mm diameter, are moderately densely scattered over the entire surface or aligned along the edges of flattened fingers, flush with surface. Texture soft, floppy, elastic, difficult to tear, slightly rough to the touch and exudes abundant sticky mucus. Colour in life pale, translucent mauve to tan, internal colour tan to mustard, oscule rims and tips of branches and lamellae are lighter in colour. The sponge is extremely porous and contains abundant sand within the fibres and on the surface. Field characters of this species are the presence of visible lacy internal fibre network, deepish flush oscules, the floppy form and the production of slime.

Dactylia varia is very common around the coastline of New Zealand and often found on beaches and dredged up from sea beds of sand-shell hash, attached to shells and rubble. Occurs from about 5 m down to about 100 m. Many years after Gray first described *Dactylia varia* from Port Chalmers, Dunedin, it was named as a second species, *Dactylia palmata* (Carter, 1888) from Port Philip Heads in South Australia. The two species are now considered to be conspecific, although I have not personally examined and compared the two type specimens.

It could also be

Callyspongia ramosa

Gray, J.E. (1843) Additional radiated animals and annelids. Pp. 292–295 In: Dieffenbach, E., Travels in New Zealand; with Contributions to the Geography, Geology, Botany, and Natural History of the Country. John Murray, London. Vol. 2, v + 396 p.

Bergquist, P.R., Warne, K.P. (1980) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 3 (Haplosclerida and Nepheliospongida). New Zealand Oceanographic Institute Memoir, 87, 1–77.

Ircinia novaezealandiae Bergquist, 1961

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image: Tony Ayling, Sea Research

morphology | surface | substrate | habitat

Thickly encrusting sponge about 10 cm wide and 2.5 cm high, forming a spreading mat attached to rock. Surface is irregular with a conulose honeycomb pattern. Oscules are small with a thin membranous rim and are sparsely scattered over the surface of the sponge. Texture firm but compressible, elastic, tough, surface smooth and rubbery. Colour in life dark grey to chocolate black, to creamy-grey interior.

This species is often difficult to see as the surface is usually encrusted with seaweeds, bryozoans and other sponges. Deeper specimens often incorporate the branches of dead corals and rubble. Known from the intertidal down to about 30 m on coastal reef slopes, canyon walls and algae-covered rock flats on the Rodney Coast (Leigh) and Hauraki Gulf (Noises, Kawau). Also known from Cavalli Seamount and several knolls in the Bay of Plenty, where it occurrs between 290 and 600 m. Also reported from Wellington.

It could also be

Psammocinia perforodorsa

Cook, S.dC., Bergquist, P.R. (1999) New species of dictyoceratid sponges from New Zealand: Genus *Ircinia* (Porifera: Demospongiae: Dictyoceratida). *New Zealand Journal of Marine and Freshwater Research* 33: 545–563.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Ircinia novaezealandiae*, p. 22 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Psammocinia hawere Cook & Bergquist, 1996

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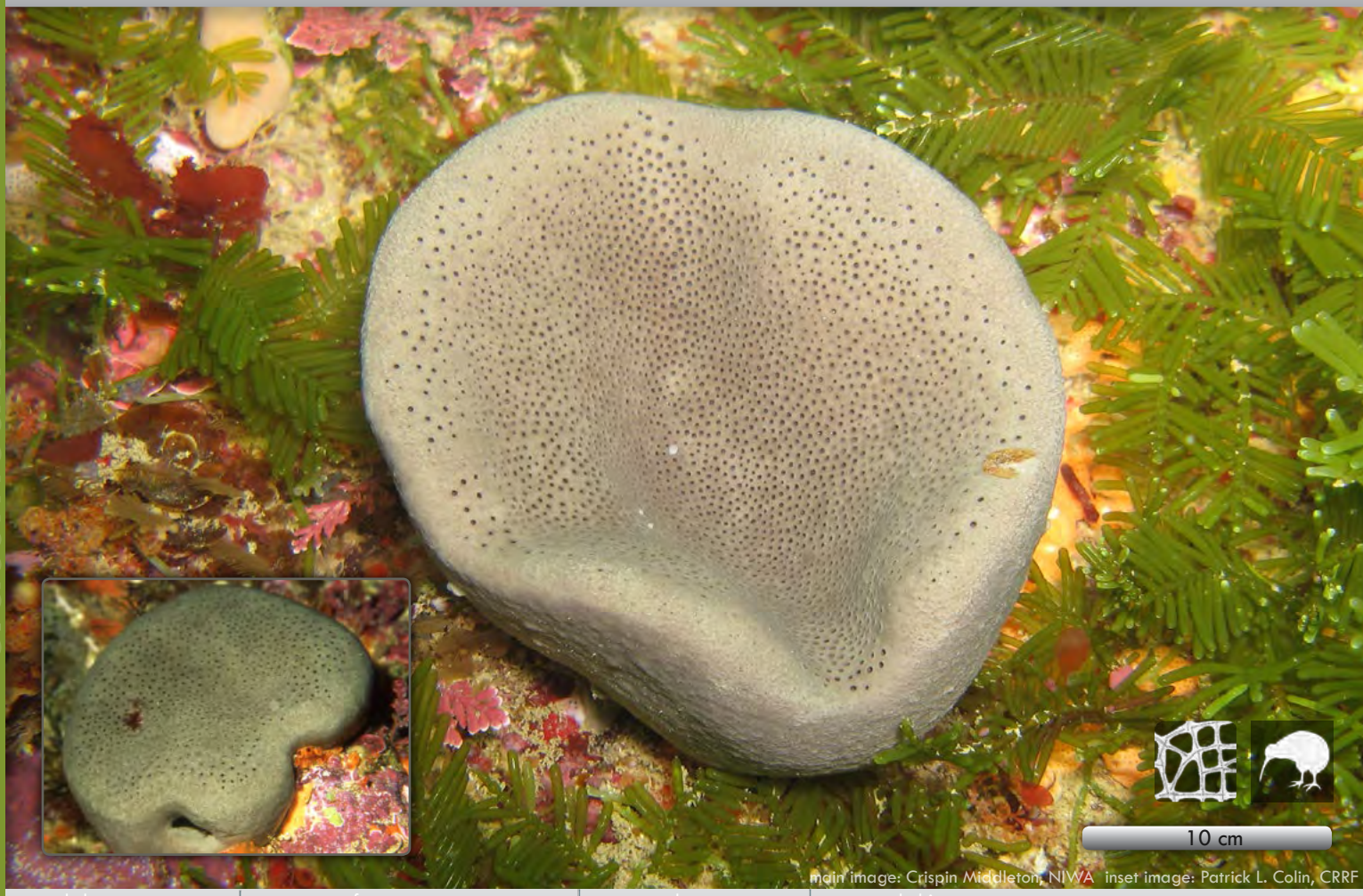
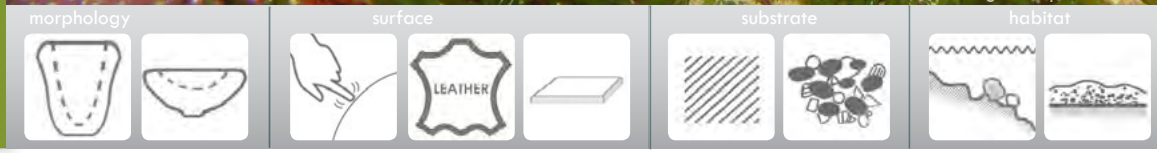


main image: Crispin Middleton, NIWA inset image: Patrick L. Colin, CRRF



Massive thick-walled shallow bowl-shaped sponges up to 45 cm diameter and 30 cm high, attached to substrate by a narrowed base; smaller sponges form a flattened mound or low expanded club with a concave upper face. The inner concave face of the bowl or apex of the mound is pitted with numerous tiny raised oscules and the surface between is raised with fine minute conules. The outer surface is quite smooth. Texture hard, very heavy and dense, difficult to cut or tear, leathery and slightly granular to the touch due to a thick coat of sand in the surface. Colour in life is light grey externally with a cream to tan interior.

Relatively common on deep open rocky reefs on the northeastern and Northland coast between 15 and 30 m, south to East Cape. Common In the North Taranaki Bight on deep offshore sandy patch reefs and canyons between 170–240 m.

It could also be

Ecionemia alata

Cook, S.dC., Bergquist, P.R. (1998) Revision of the genus *Psammocinia* (Porifera: Demospongiae: Dictyoceratida), with six new species from New Zealand. *New Zealand Journal of Marine and Freshwater Research* 32: 399–426.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Ircinia* sp., p. 24 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Psammocinia perforodorsa Cook & Bergquist, 1998

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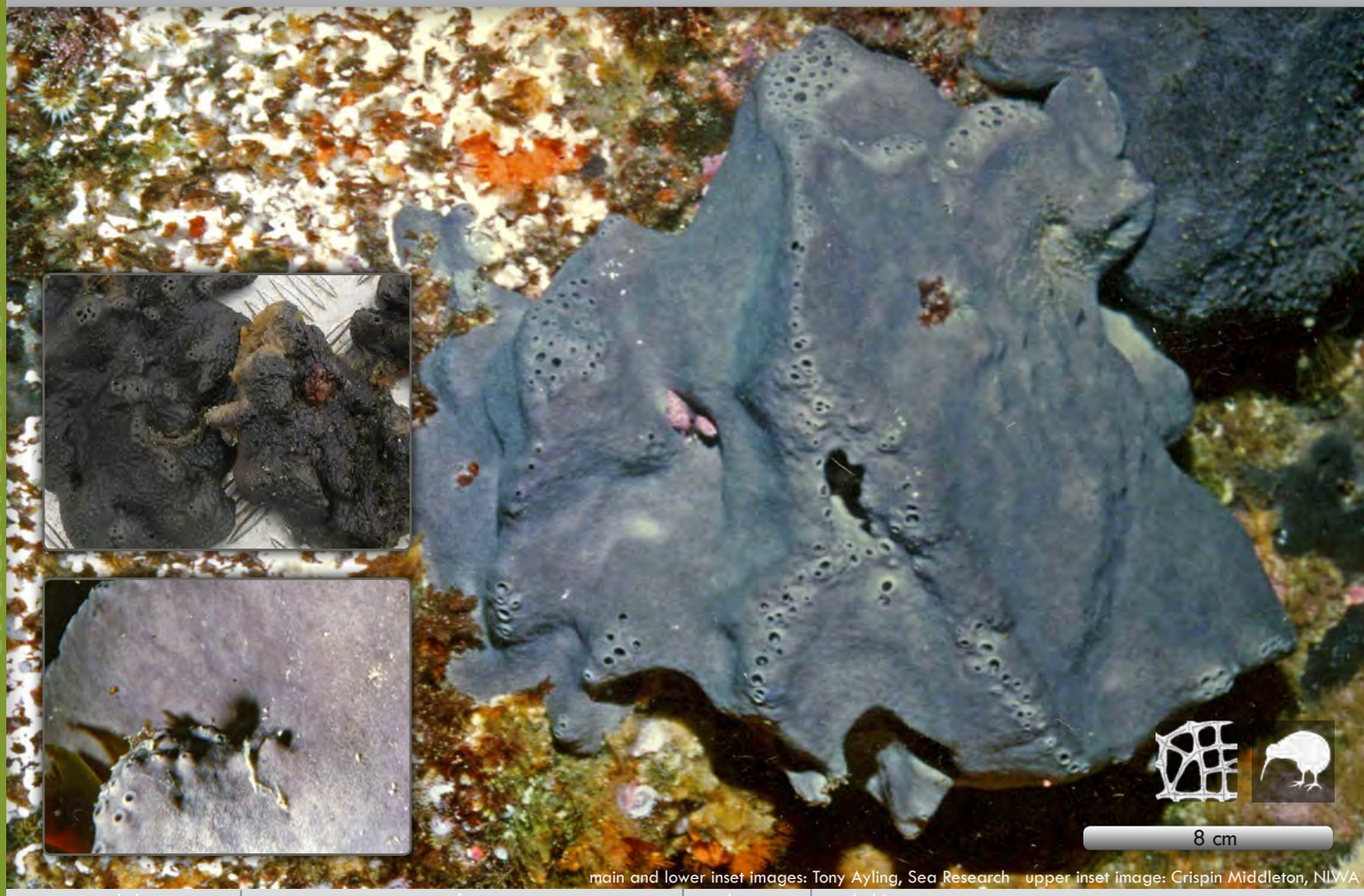

main and lower inset images: Tony Ayling, Sea Research upper inset image: Crispin Middleton, NIWA

morphology surface substrate habitat

Mound sponge that is raised into ridges up to 10 cm thick, 30 cm wide by 15 cm long, attached loosely to substrate. Surface is puckered and folded with low rounded bumps. Oscules are small, 1 mm diameter, and clustered along ridges and peaks. Texture is leathery and granular to the touch due to a thick coat of sand in the surface. Tough, difficult to cut or tear. External colour in life dark grey to brownish black, tan to rusty-coloured interior.

Uncommon, found on subtital rocky reefs and deeper areas that experience moderate current activity on Northland and Rodney coasts, down to about 30 m. Reported from the Taranaki area.

It could also be

Ircinia novaezelandiae

Cook, S.dC., Bergquist, P.R. (1998) Revision of the genus *Psammocinia* (Porifera: Demospongiae: Dictyoceratida), with six new species from New Zealand. *New Zealand Journal of Marine and Freshwater Research* 32: 399–426.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Psammocinia* sp., p. 26 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Psammocinia beresfordae Cook & Bergquist, 1996

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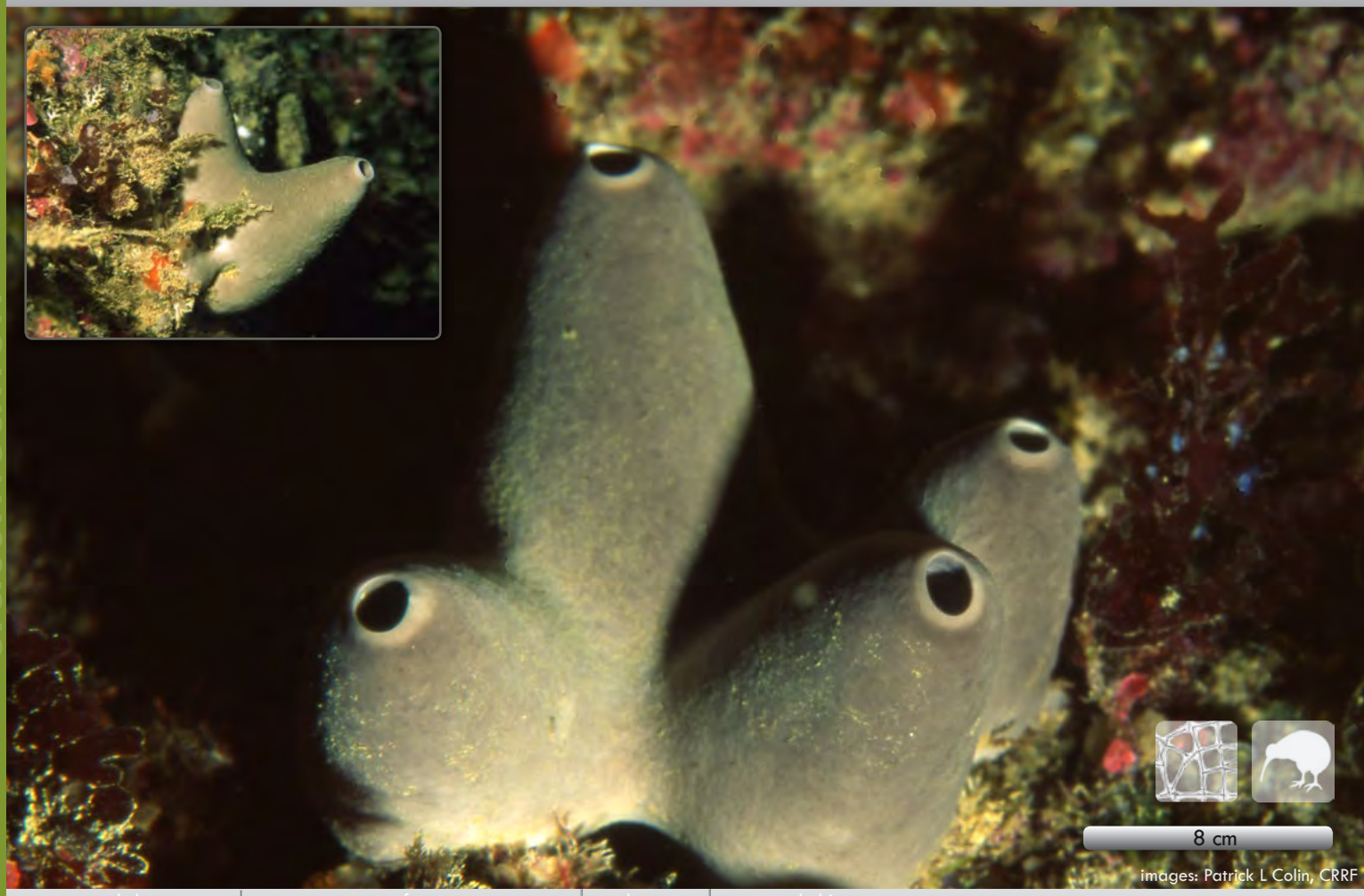
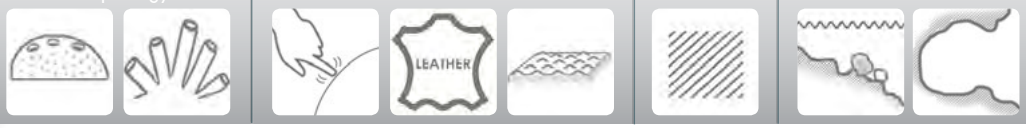


morphology | surface | substrate | habitat



Distinctive sponge composed of clusters of soft, rounded cones arising from a low compact base, up to 20 cm wide and 7 cm high, turrets up to 15 cm high. Adjacent cones may fuse together in an array. Surface has fine conules and tiny dimples less than 1 mm diameter and deep, oscules, 3–7 mm diameter, are situated on the ends of cones and have thick, almost membranous, slightly lightly coloured margins. Texture firm, compressible, heavy, dense, difficult to cut or tear, leathery and slightly granular to the touch due to a thick coat of sand in the surface. External colour in life is light grey with a brownish tinge, the interior is cream to tan.

Psammocinia beresfordae was described as locally common at Sail Rock in the Hen and Chicken Islands group, Bream Bay, where it was first collected, but has since been reported from the Three Kings, Alderman Islands, and Ranfurly Bank down to about 80 m.

Battershill, C.N., Bergquist, P.R., Cook, S.de C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Cook, S.dC., Bergquist, P.R. (1998) Revision of the genus Psammocinia (Porifera: Demospongiae: Dictyoceratida), with six new species from New Zealand. New Zealand Journal of marine and Freshwater Research 32: 399–426.

Chelonaplysilla violacea (Lendenfeld, 1883)

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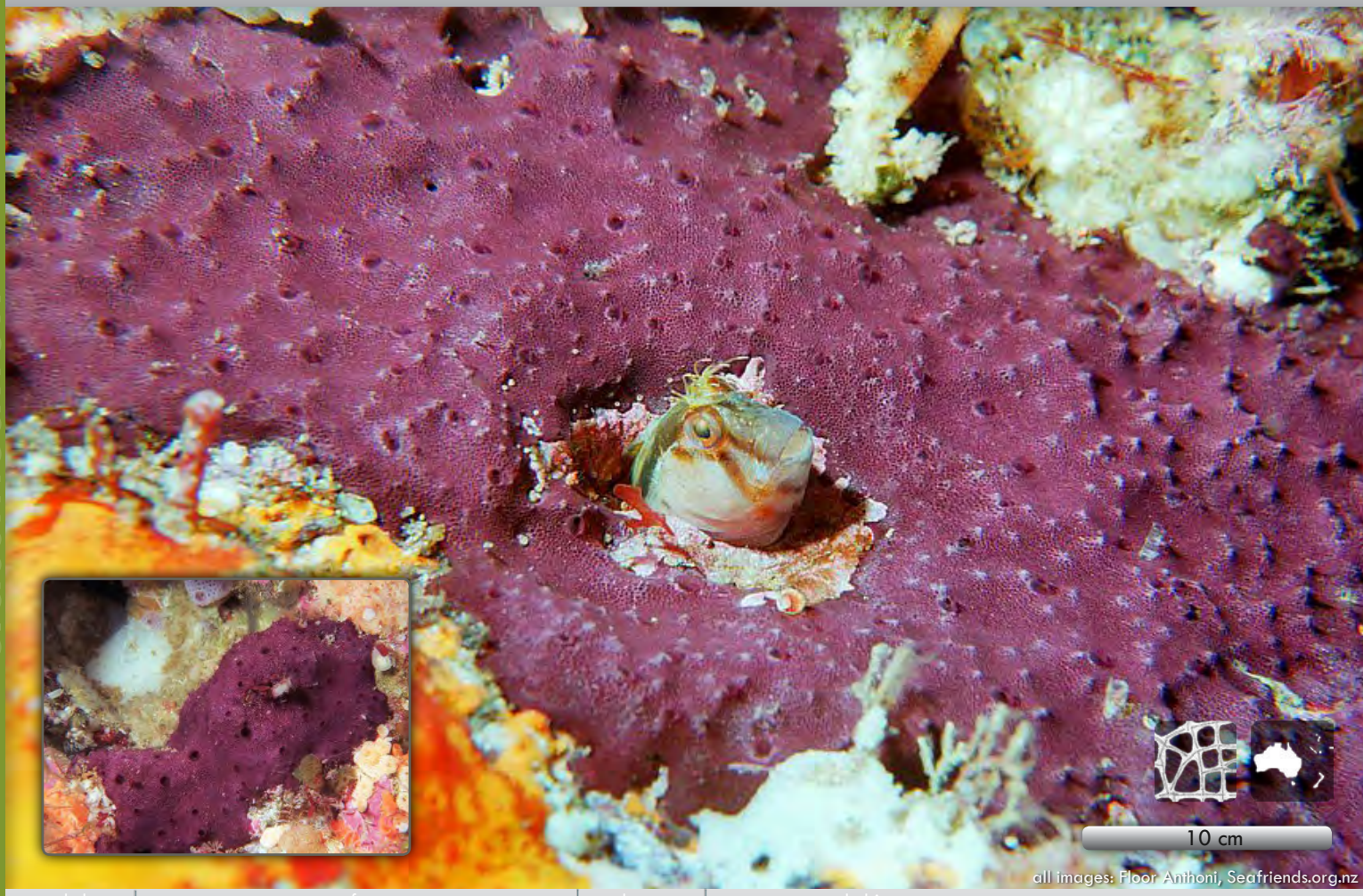
Class Demospongiae Order Dendroceratida Family Darwinellidae



morphology | surface | substrate | habitat

Thin encrusting sponge forming mats up to half a metre square, up to 0.5 cm thick, occasionally with lobes. Surface with blunt conules and a fine reticulated organised tracery of sand-grains conferring a lacy appearance, slightly wrinkled. Simple deep purple hair-like fibres arise from a basal layer of spongin. Oscules are on low mounds, up to 1 mm wide, with whitish margins. Texture firmish, slightly crisp, cavernous, easily torn. Colour in life dark purple with a whitish sheen due to sand grains in surface.

Encrusting boulders in the shallow subtidal and deeper rocky reefs down to about 30 m, more typically around 10–15 m deep. More abundant in shaded habitats. Relatively common around New Zealand. First described from Australian waters and subsequently recorded from Samoa, Solomons, Palau and Papuan marine lakes. Tropical specimens may be larger with distinctive mounds, fingers and fronds.

Bergquist, P.R. (1996) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 5. Dendroceratida and Halisarcida. *New Zealand Oceanographic Institute Memoir* 107: 1–53.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Chelonaplysilla violacea*, p. 14 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Darwinella cf. *gardineri* Topsent, 1905

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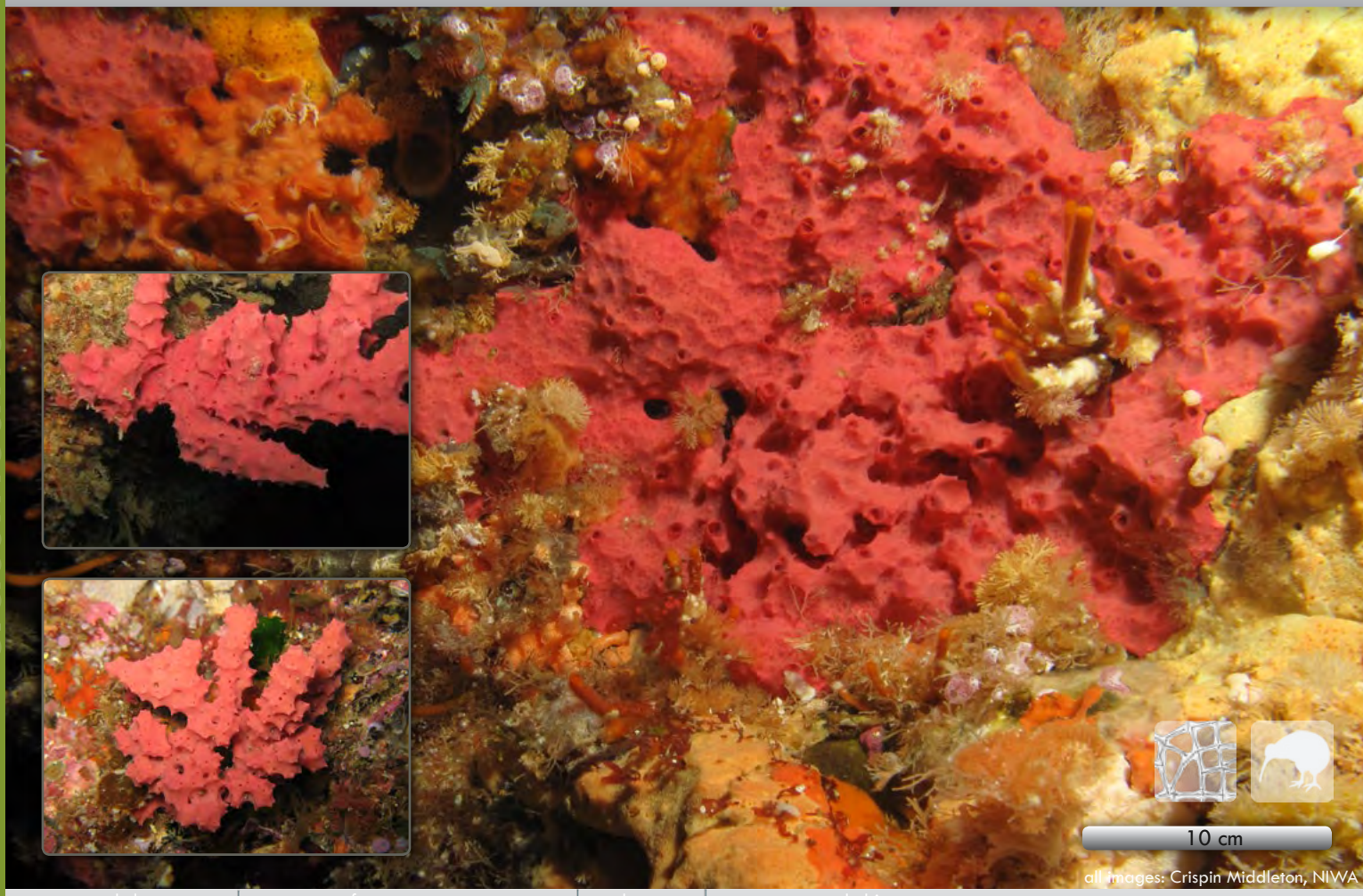
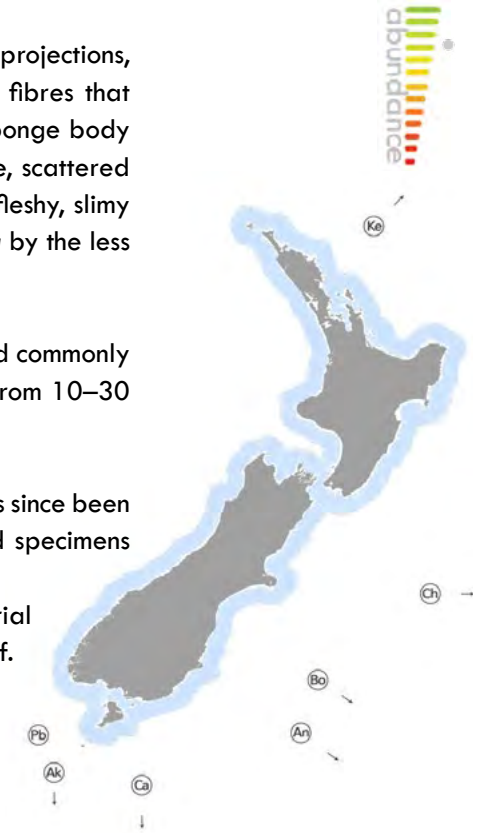


all images: Crispin Middleton, NIWA

Thickly encrusting sponge forming thin mats up to 1 m^2, sometimes with digitate projections, up to about 1 cm thick. Surface is sparsely conulose with pale gold hair-like fibres that project from a basal layer of spongin, sometimes branching to form fingers. Sponge body is soft, cavernous, draping between fibres. Surface has a fine lacy appearance, scattered with 1–2 mm wide oscules with transparent raised margins. Texture delicately fleshy, slimy to the touch. Colour in life bright pinkish red. Differentiated from *Dendrilla rosea* by the less spiky appearance.

Occurs in shaded regions in the shallow subtidal down to deep reef slopes, found commonly on the sides of canyons and in the shade of crevices and overhangs. Common from 10–30 m depth around New Zealand, south to Campbell Plateau (160 m).

The type locality of this species is Maldives in the western Indian Ocean, and it has since been described from European waters and the southern Red Sea. The New Zealand specimens are highly likely to be endemic, but the genus has few characters on which to differentiate species as they lack mineral spicules. Until the New Zealand material is formally re-described and re-named, it should be referred to as *Darwinella* cf. *gardineri*, rather than *Darwinella gardineri*.



It could also be

Dendrilla cf. *rosea*

Bergquist, P.R. (1996) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 5. Dendroceratida and Halisarcida. *New Zealand Oceanographic Institute Memoir* 107: 1–53.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Aplysilla rosea*, p. 12 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Darwinella oxeata Bergquist, 1961

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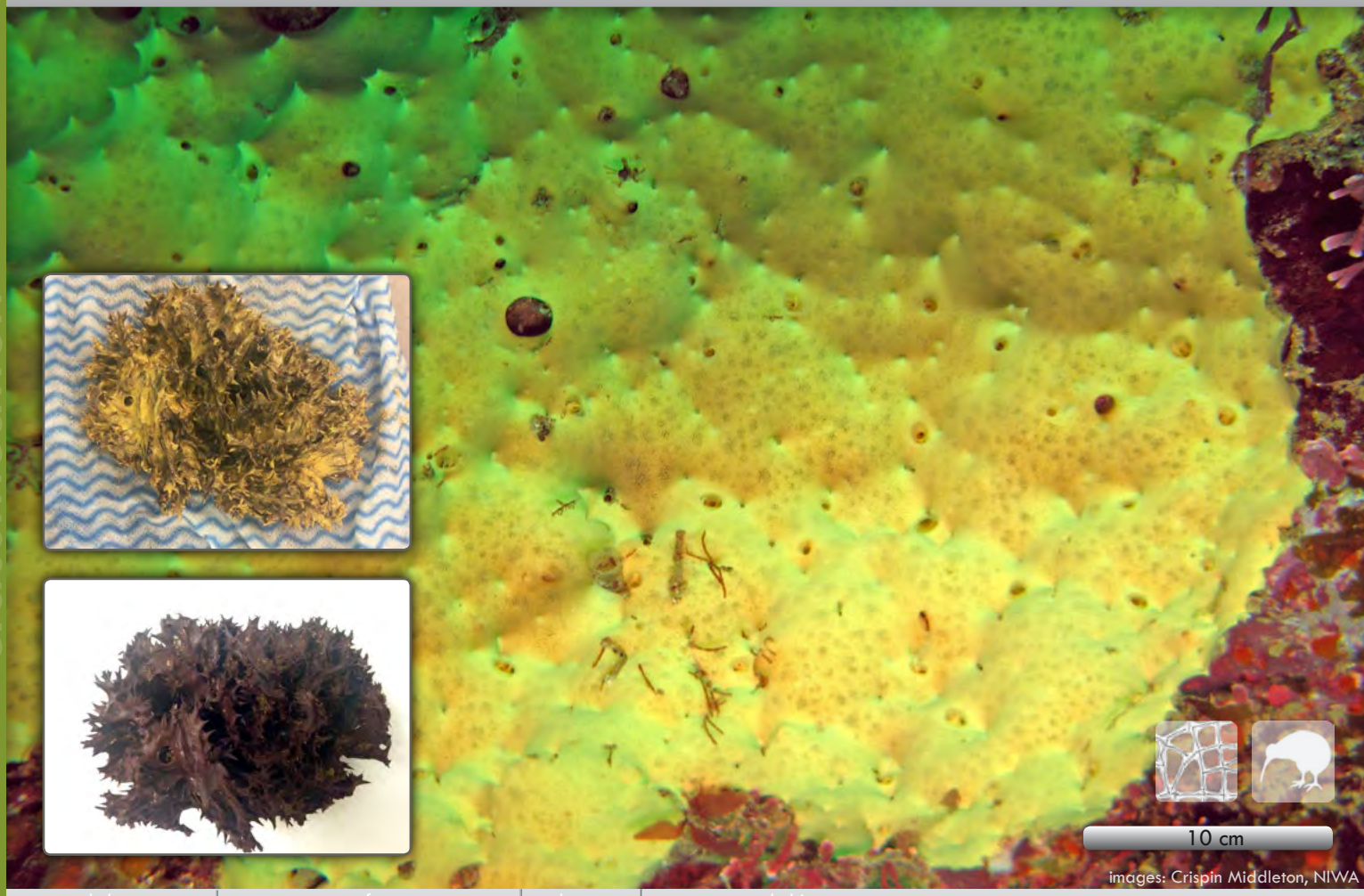

morphology | surface | substrate | habitat

Thickly encrusting sponge forming mats up to 25 cm wide, but can be up to half a metre square. Up to 2 cm thick, sometimes with prominent fingers especially in deep water (see upper inset). Surface is conulose with pale gold hair-like fibres that project from a basal layer of spongin. Sponge body is soft, cavernous, draping between fibres. Surface has a fine lacy appearance, scattered with up to 1 mm wide oscules with transparent raised margins. Texture delicately soft, slimy to the touch. Colour in life translucent sulphur yellow turning royal blue-purple on damage, collection or on preservation (see lower inset).

Occurs in shaded regions in the shallow subtidal down to deep reef slopes, found commonly on the sides of canyons and in the shade of crevices and overhangs. Abundant down to about 40 m depth around New Zealand including Otago and North Taranaki Bight. Commonly found growing over oysters in Foveaux Strait (inset sponges). Reported from Stewart and Chatham Islands, and Auckland Islands in the New Zealand Subantarctic Islands region.

Bergquist, P.R. (1996) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 5. Dendroceratida and Halisarcida. *New Zealand Oceanographic Institute Memoir* 107: 1–53.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Aplysilla sulfurea*, p. 12 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

Dendrilla cf. *rosea* Lendenfeld, 1883

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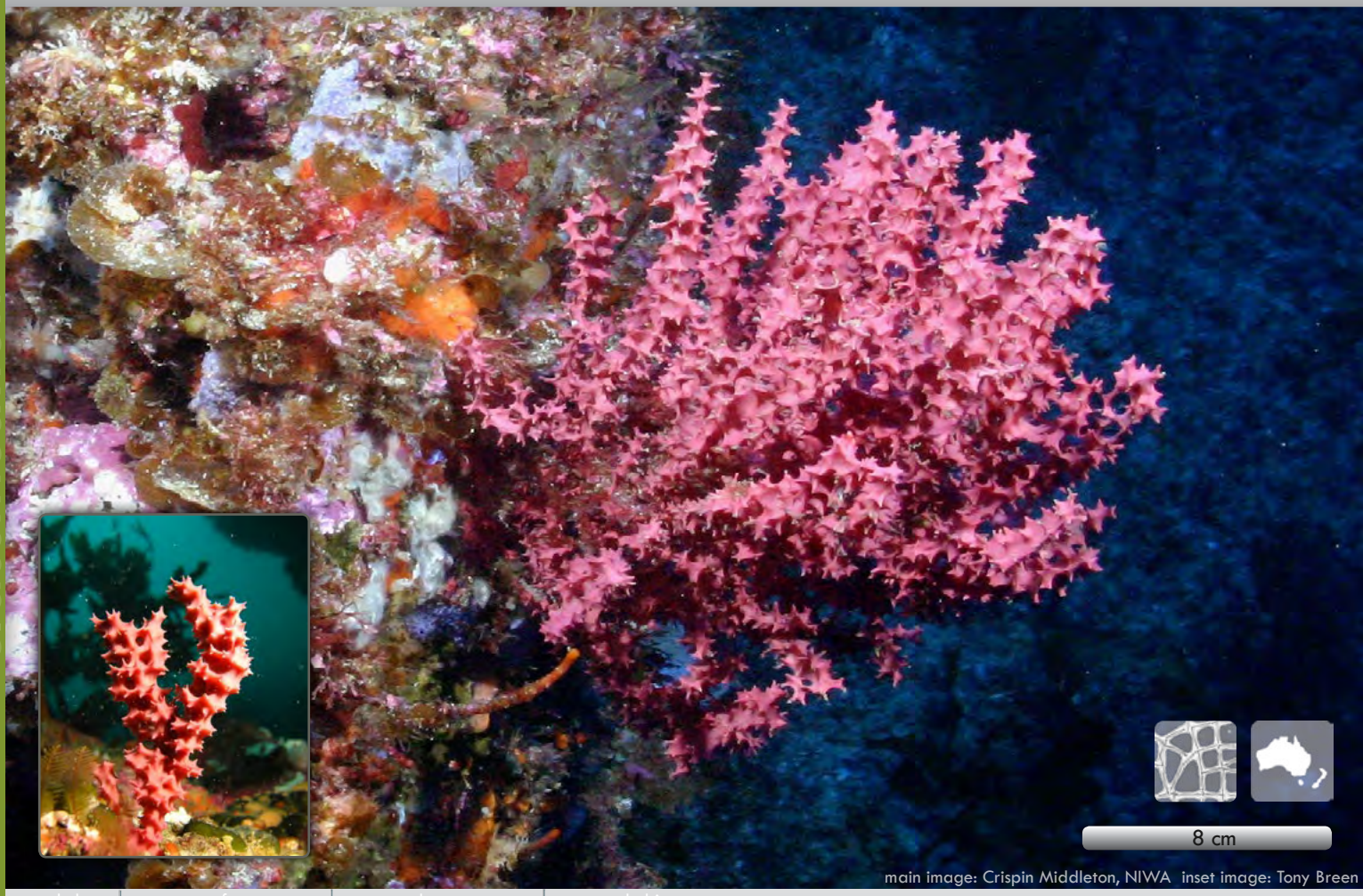
Class Demospongiae Order Dendroceratida Family Darwinellidae

classification



main image: Crispin Middleton, NIWA inset image: Tony Breen

morphology surface substrate habitat

Sponge erect, dendritic, ramose, tree-like, up to 30 cm tall, attached to rock by a tough stem and small spreading base, giving rise to sparse spindly branches up to 10 mm thick. Surface highly conulose, scalloped in appearance. Oscules 1–4 mm diameter scattered over surface, not always visible. Texture soft, fleshy, slimy and fragile over a tough flexible translucent pale gold twiggy skeleton. Colour in life bright pinkish red. Exudes copious mucus.

Frequently mistaken for digitate specimens of *Darwinella* cf. *gardineri* which is more inflated in life. Occurs in the open on boulders and open rock flats, steep reef slopes and canyon walls usually below 10 m, extending down to about 30 m. Common around the North Island and recorded from the Marlborough Sounds.

First described from New South Wales and Victoria, Australia. Bergquist (1996) stated that, based on chemical and morphological differences, it was highly likely that there are two species of *Dendrilla* in Australian temperate waters, one with a lobose, fleshy form (the type specimen of *D. rosea*) found only in Australia, and the other more spiky and ramose form found in New South Wales, Victoria, and New Zealand waters. Should further study confirm this, the spindly ramose form would be renamed. In the meantime New Zealand specimens should be referred to as *Dendrilla* cf. *rosea* to reflect this.

It could also be

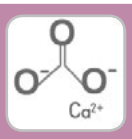
Darwinella cf. *gardineri*

Bergquist, P.R. (1996) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 5. Dendroceratida and Halisarcida. *New Zealand Oceanographic Institute Memoir* 107: 1–53.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) *Dendrilla rosea*, p. 16 and *Dendrilla* sp., p. 18 in Marine sponges: Forty-six sponges of northern New Zealand. *Leigh Laboratory Bulletin* 14: 149 p.

icons

body plan

	calcareous sponge	sponge with spicules made of calcium carbonate ($CaCO_3$) in the form of calcite, often three-rayed, Class Calcarea
	glass sponge	sponge with silicon dioxide (SiO_2) spicules occurring as long fine hairs, free or woven into a fused scaffold, free spicules often six-rayed, Class Hexactinellida
	common sponge	sponge with silicon dioxide (SiO_2) spicules, and/or sand, and/or fibrillar collagen, and/or fibrous (spongin) collagen, Class Demospongiae

life history

	native	naturally occuring around New Zealand, endemic
	intertidal species	always found in the intertidal zone and may extend in the subtidal
	antipodean	naturally occuring around New Zealand and Australia only
	southwest pacific	naturally occuring around New Zealand, Australia and other Pacific locations
	introduced	invasive species first described from outside of New Zealand waters and is found in New Zealand and other locations

morphology

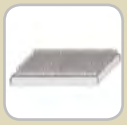
	amorphous	without definable shape, often with lobed surface, potato or tuber-shaped, massive
	ball	spherical, globular
	bowl	shallow cavity with a restricted base, turbinate
	bulb	single or conjoined, with a central exhalent cavity (atrium) into which oscules empty, bulbous
	cormus	body composed of several joined tubes (Class Calcarea)
	cup/vase	bowl-shaped with a restricted or broad base
	fan	thin, flattened in one plane with or without stem, flabellate, foliaceous
	fingers	finger-like, often arising from an encrusting or restricted base, digitate
	hand	thick fan flattened in one plane with indented margins, palmate
	loaf	rounded elongate, hemispherical

icons

morphology

	meandering	wandering along and above substratum attached at intervals, repent
	plate	thick fan flattened in one plane, margin often folded, ear-shaped
	sack	hollow body with thin papery walls and perforations
	shrubby	bushy with irregular branches and short stem, arborescent
	strappy	tree-like, giving rise to flattened pliable branches much wider than they are thin, usually without a condensed axis
	thick encrusting	spreading over substratum, more than about 20 mm thick
	thin encrusting	spreading over substratum, less than about 5 mm thick
	tree	tree-like with a stem giving rise to branches that divide, often with a condensed axis, arborescent
	tube	hollow erect cylinder
	tube cluster	cluster of hollow erect cylinders with a common base
	whip	erect and tapering, usually with a condensed axis, flagelliform

surface

	bumpy	bearing small, rounded bumps
	cavernous	filled with cavities or hollow spaces, porous
	corrugated	bearing irregularly parallel ribs and grooves
	fuzzy	fine pile formed from short projecting spicules (usually about 1–2 mm long), velvety, downy, hispid
	granular	surface feels like fine sandpaper
	hairy	coarse stubble or prickly bristles formed by long projecting spicules (typically 5–20 mm long), hirsute
	honeycomb	surface with ridges in a honeycomb pattern
	leathery	thick skin, tough, flexible, slightly elastic
	lobed	bearing large rounded projections, lobate
	papillae	bearing short finger-shaped projections, some blind (inhalant) or open (exhalent) or both

icons

surface

	porocalyces	spherical inhalent pits in surface (Order Spirophorida)
	rough	Irregularly pitted and ridged surface, often tough
	smooth	even, hairless, silky, can be slightly undulating
	soft	soft to the touch, easily compressible, elastic
	hard	hard to the touch, not compressible, rigid
	shaggy	bearing ragged conulose brushes of underlying spicules or fibres

	sieve-pores	bearing button- or mushroom-shaped clusters of inhalant pores in a sieve-like structure, areolate porefields
	sieve-plate	colander-like plate with visible groups of perforations, specific to glass sponge *Symplectella rowi*
	slits	subdermal canals visible on surface as deep slits
	spiky	surface bearing peaks raised by underlying fibre or spicule skeleton
	turrets	bearing hollow cones, turrets or fistules, which can be blind (inhalant) or open (exhalent)
	warty	bearing small flattened bumps or tubercles

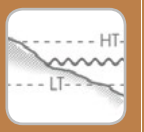
substrate

	rock	hard substrate such as mudstone, sandstone, basalt, compressed carbonates
	rubble	shell, stone, and pebble rubble
	sand	small coarse grains of worn silica, rock, and shell

	mud	very fine muddy and silty sediments derived from terrigenous rocks, soils and clays
	living organism	living or growing on the external surface of an animal (epizoic) or seaweed, (epiphytic)
	artificial substratum	anything man-made such as mooring blocks, mussel lines, wharf piles

icons

habitat

	intertidal	exposed shoreline zone between high and low tides, including rock flats, pools, overhangs, crevices, organisms exposed to wave action, temperature extremes, full illumination, and desiccation
	subtidal	zone below the low tide, including rock flats, slopes, walls, crevices, overhangs, boulder fields, organisms exposed to wave surge and currents, and subdued illumination
	indents	underwater caves, shelves and overhangs, organisms may experience wave surge, subdued illumination, or near darkness
	rockpool	indentation in rock filled with water, intertidal
	wall	underwater cliffs and slopes, organisms exposed to wave surge and currents, and subdued illumination

	algal beds	coralline algae, seagrass or algal beds
	bank	seabed raised into a bank of compacted rubbles and other carbonate materials including shell, kina and sealace hash, organisms exposed to wave surge and currents, and subdued illumination
	covered rock	sand and rubble spread over underlying hard substrate, organisms attached to basement rock susceptible to inundation and scouring from wave surge and currents, and subdued illumination
	seabed	composed of a variety of sedimentary substrates including coarse gravels, shell hash and sands to finer sand, mud, and silts, organisms susceptible to inundation and scouring from wave surge and currents, and subdued illumination

glossary

agglutinate	incorporates sand grains into the sponge body sticking them together as a mass
algal beds	areas of seafloor with coralline algae, sea-grass or multiple seaweed species
amorphous	without definable shape, often with lobed surface, potato or tuber-shaped, massive
anastomose	a cross connection between two tubes or branches
antipodean	naturally occurring around New Zealand and Australia only
apex	top of a structure (tube, mound), apical
apical	top of a structure (tube, mound), apex
arborescent	see 'shrubby', and 'tree'
areolate porefield	see 'sieve-pores'
artificial substratum	anything man-made such as mooring blocks, mussel lines, wharf piles
ball	spherical, globular
bank	seabed raised into a bank of compacted rubble and other carbonate materials including shell, kina and sea lace hash, organisms exposed to wave surge and currents, and subdued illumination
bark and pith fibre	fibre with compact laminated bark-like spongin surrounding a softer granular collagen pith in verongid sponges
benthic	pertaining to living on or in the seabed as opposed to floating or swimming in the ocean above
benthos	organisms that live on or in the seabed at the bottom of the sea
bladder	hollow with thin papery or cellophane-like walls, vesicular
blunt	not sharp, rounded ends
bowl	shallow bowl with a restricted base, turbinate
brain-shaped	hemispherical with brain-like corrugations
brittle	fragile but rigid, breaks apart easily
bulb	single or conjoined, with a central exhalent cavity (atrium) into which oscules empty, bulbous
bumpy	bearing small rounded bumps
calcareous sponge	sponge with spicules made of calcium carbonate ($CaCO_3$) in the form of calcite, often three-rayed, Class Calcarea
caliculate	see 'cup'
calyx	see 'cup'
candelabra	a large branched 'candlestick' with 'holders' arising from lateral branches
cup	bowl-shaped with a restricted or broad base, calyx, caliculate
cartilaginous	having the texture of cartilage, firm and tough yet flexible
cement	cementing together sedimentary substrate (sand and shell) to provide support, agglutinating
choanocyte	sponge cell type used for feeding and propulsion of water current through sponge body
choanoderm	part of the interior of a sponge that contains choanocyte cells
clavate	see 'club-shaped'
club-shaped	solid erect cylinder, column-shaped, taller than wide, wider at top, clavate
commensal	an association between two organisms in which one benefits and the other derives neither benefit nor harm
common sponge	sponge with silicon dioxide (SiO_2) spicules, and/or sand, and/or fibrillar collagen, and/or fibrous (spongin) collagen, Class Demospongiae
compressible	easily squeezed
concave	having a surface that curves inwards like the interior of a circle or sphere
concentric	circles arranged with one inside the other
conules	sharply pointed structures rising from the surface, conulose
conulose	surface bearing peaks raised by underlying fibre or spicule skeleton
corky	tough, feels almost waxy to the touch
cormus	globular calcareous clathrinid sponges with a large central atrium, with a solid external cortex and a choanosome formed by extensive folding of the choanoderm in-between
corrugated	bearing irregularly parallel ribs and grooves
covered rock	sand and rubble spread over underlying hard substrate, organisms attached to basement rock susceptible to inundation and scouring from wave surge and currents, and subdued illumination
cryptic	difficult to see (habitat) or difficult to detect differentiate from other species
cryptogenic	species recorded from New Zealand whose original place of origin is uncertain, whether native, or introduced
decorative	features that enhance and add embellishments to an otherwise plain structure, ornamented
deep sea (benthic)	seabed in the deeper parts of the ocean not exposed to surface wave action, and where little or no light penetrates
deep sea (pelagic)	water above the seabed in the deeper parts of the ocean not generally exposed to surface wave action, and where light may or may not penetrate, open-ocean zone
dendritic	branching, tree-like
dendritic fibre	fibrous skeleton resembling a branching tree in which the branch do not re-join (anastomose)

diameter	the distance across the widest point of a circle
dichotomous	branching, where the axis is divided into two branches
digitate	finger-like
doughy	soft, easily depressed but does not return to shape, remains compressed
egg	body centrally thickened, usually with root-like tufts or rhizomes buried in sediment, ovate
elastic	returns to shape after compression or deformation, springy, flexible, resilient
endemic	naturally occurring in New Zealand, but not elsewhere
environment	physical, chemical, ecological, behavioural and other conditions experienced by an organism
epiphytic	living or growing on the external surface of a seaweed
epizoic	living or growing on the external surface of an animal
exhalent	excurrent stream or water current from inside of sponge to outside through the oscules
fan	thin, flattened in one plane with or without stem, flabellate, foliaceous
feathery	feather-like, supported on a thin stem
fibrous	flexible strands of spongin protein forming the supporting skeletal network that may be cored with silica spicules or sand
fingers	finger-like, often arising from an encrusting or restricted base, digitate
firm	requires some pressure to compress
fistulose	see 'turrets'
flabellate	see 'fan'
flagella	a slender thread-like or whip-like appendage on many protozoa, bacteria, spermatozoa, that enables them to swim. In the case of sponge choanocytes the flagella enables the cell to propel a water current
flagelliform	like a flagella; see 'whip' and 'flagella'
fleshy	feels like skin or cheese, dense, slightly stretchy, collagenous
foliaceous	see 'fan'
fragile	easily torn, squashed, broken
friable	easily crumbled
fuzzy	fine pile formed from short projecting spicules (usually about 1–2 mm long), velvety, downy, hispid
gelatinous	jelly-like, slippery, jiggly, wobbly
glass sponge	sponge with silicon dioxide (SiO_2) spicules occurring as long fine hairs, free or woven into a fused scaffold, free spicules often six-rayed, Class Hexactinellida
globular	ball-shaped, rounded
granular	surface covered in small to medium sized rounded or square granules, giving a sandpapery texture due to calcareous or siliceous minerals in the surface of the sponge
habit	the way an organism grows on the substrate
habitat	the environment and local situation in which an organism lives
hairy	coarse stubble or prickly bristles formed by long projecting spicules (typically 5–20 mm long)
hand	thick fan flattened in one plane with indented margins, palmate
hard	solid to the touch, not compressible, rigid
hirsute	see 'hairy'
hispid	see 'hairy'
homogeneous fibre	fibre without a central pith and without conspicuous layers in cross-section
honeycomb	surface with ridges in a honeycomb pattern
indents	underwater caves, shelves and overhangs, organisms that live there may experience wave surge, subdued illumination or near darkness
inhalant	incurrent stream or water current from external ostia to inside of sponge
interstices	the gaps and spaces between things e.g., rocks, sand-grains or seaweed holdfasts
intertidal	exposed shoreline zone between high and low tides, including rock flats, pools, overhangs, crevices, organisms exposed to wave action, temperature extremes, full illumination and desiccation
introduced	invasive species first described from outside of New Zealand waters and is found in New Zealand and other locations
jiggly	wobbles almost like jelly when touched, resilient, gelatinous
lacy	tiny sand grains or spider-web like fibres form a network in or just below the skin (ectosome) of the sponge giving the surface a lace-like appearance
lamellate	see 'plate'
laminated fibre	fibre with conspicuous laminated (stratified) concentric layers in cross-section, without a central pith
leathery	texture like thick, hard skin, tough, flexible, slightly elastic
limp	feels soft and yields to pressure, remains compressed when squeezed, flaccid
loaf	rounded elongate, hemispherical
lobe	raised surface mound
lobed	bearing large rounded projections, lobate
lollipop	spherical or flattened disc-shaped body supported on long thin stem, pedunculate, stipitate
lyssacine	glass sponge skeleton formed by the interlocking and weaving (not fusion) of giant diactines and other irregularly arranged silica spicules
mammilate	see 'papillae'

margins	edge of a surface
meandering	wandering along and above substratum attached at intervals, repent, ramify
megasclere	large spicules that form the structural framework of the sponge
membranous	thin, translucent, flimsy, like a membrane
microsclere	small spicules of intricate shape and ornamentation that line the sponge surface of aquiferous canals
morphology	form and structure, shape
mud	very fine and silty sediments derived from terrigenous rocks, soils and clays
native	naturally occurring around New Zealand, endemic
net	internal fibre skeleton forms a cavernous 2 or 3 dimensional network, reticulate
opaque	impenetrable by light
ornamented	an otherwise plain structure that is altered or adorned by embellishment, decorative
oscules	large pores in the sponge wall where the inhaled water current exits
ostia	tiny pores in the sponge wall where the water is inhaled
ovate	see 'egg'
palmate	shaped like an open hand
papillae	bearing short finger-shaped projections, some blind (inhalant) or open (exhalent) or both
pedunculate	see 'lollipop'
plate	thick fan flattened in one plane (plate-like), margin often folded (foliose), may be ear-shaped, lamellate
plumose	having many fine filaments or branches which give a feathery appearance
porocalyce	specialised inhalant structure unique to Family Tetillidae (Order Spirophorida)
punctate	surface perforated with tiny holes, punctured
radiate	silica spicules radiate towards the surface from deep within the choanosome, perpendicular to the surface
ramify	forming branches or offshoots along or above substrate, meandering
ramose	having branches, branched
range extension	since first described in New Zealand, this species has been recorded elsewhere
repent	see 'meandering'
reticulate fibre	three-dimensional network of fibres
rock	hard substrate such as mudstone, sandstone, basalt, compressed carbonates
rockpool	indentation in rock, filled with water, intertidal zone
rough	irregularly pitted and ridged surface, often tough
rubbery	feels dense, springy, elastic, and resilient to the touch, collagenous
rubble	shell, stone, and pebble rubble
rugose	see 'rough', and 'bumpy"
sack	hollow body with thin papery walls and perforations
sand	small coarse grains of worn silica, rock, and shell
sandpapery	feels scratchy or slightly abrasive like sandpaper to the touch, granular
seabed	composed of a variety of sedimentary substrates including coarse gravels, shell hash and sands to finer sand, mud, and silts, organisms susceptible to inundation and scouring from wave surge and currents, and subdued illumination
shaggy	bearing ragged conulose brushes of underlying spicules or fibres
shrubby	bushy with irregular branches and short stem, arborescent
sieve-plate	colander-like plate with visible groups of perforations, specific to glass sponge *Symplectella rowi*
sieve-pores	bearing button- or mushroom-shaped clusters of inhalant pores in a sieve-like structure, areolate porefields
siliceous	made of silica
slippery	feels slimy and slippery from mucus exudate
smooth	even, hairless, silky, can be slightly undulating
soft	soft to the touch, easily compressible
southwest Pacific	naturally occurring around New Zealand, Australia and other Pacific locations
spicule	component of the mineral skeleton, typically composed of silica or calcium carbonate
spiky	bearing regular, sharp, stiff or soft peaks, raised by underlying fibre or spicule skeleton, conulose
spined	surface covered with spines or prickly bundles of very long spicules projecting from surface of the sponge, spiny
spiral	radiate silica spicules diverge strictly radially, and sometimes spiral radially from the centre of the sponge towards the surface
spongin	a form of collagen, fibrillar or fibrous, unique to sponges
spongy	cavernous and springy
stipe	a stalk or stem, especially the stem of a seaweed or sponge
sticky	feels tacky
stipitate	see 'lollipop'
stolon	tissue that extends from body, for attachment, or to produce a terminal bud
stony	incompressible like a stone, rigid
strappy	tree-like, giving rise to flattened pliable branches much wider than they are thin, usually without a condensed axis

substrate	an underlying substance or layer, rock, sand
subtidal	zone below the low tide, including rock flats, slopes, walls, crevices, overhangs, boulder fields, organisms exposed to wave surge and currents, and subdued illumination
surface	patterning or ornamentation on the exterior of the sponge, often related to skeleton beneath
symbiotic	found in close physical association with other organisms such as sponges, molluscs, crabs, typically to the advantage of both
tasselled	buds on the end of filaments in the genus *Tethya*
thick encrusting	spreading over substratum, more than about 20 mm thick
thin encrusting	spreading over substratum, less than about 5 mm thick
tough	requires considerable pressure to compress sponge, difficult to tear, tough as old boots
tracts	groups of silica spicules emerge from the base of the sponge, sometimes diverging at the surface to form brushes
translucent	lets light through body wall or surface of organism, but not enough to perceive distinct details through it.
tree	stem giving rise to branches that divide, often with a condensed axis, arborescent
tube	hollow erect cylinder
tube cluster	cluster of hollow erect cylinders with a common base
tubercles	see 'warty'
turbinate	see 'bowl'
turrets	bearing hollow cones which can be blind (inhalant) or open (exhalent), fistules
twiggy	main skeleton tendril-like with short branches that do not re-join, dendritic
wall	underwater cliffs and slopes, organisms exposed to wave surge and currents, and subdued illumination
warty	bearing small flattened bumps or tubercles
whip	erect and tapering, usually with a condensed axis, flagelliform
widespread	species recorded globally

acknowledgements

This guide is dedicated to the late Dame Professor Patricia Rose Bergquist of Auckland, who developed and applied modern sponge taxonomy techniques to the New Zealand fauna and who trained so many young sponge taxonomists. Many of the specimens examined to produce this guide came from the National Institute of Water and Atmospheric Research (NIWA) Invertebrate Collection (NIC) and were collected as part of the following research programmes: Seamounts: their importance to fisheries and marine ecosystems, undertaken by NIWA and funded by the New Zealand Foundation for Research, Science, and Technology (Contract C1X0028) with additional funding from the Ministry of Fisheries (Project ZBD2004/04); Ocean Survey 20/20 Bay of Islands coastal biodiversity, sediment and seabed habitat project (voyages KAH0907 & TAN0906), funded by Land Information New Zealand (LINZ); Biogenic habitats on the continental shelf project (voyages TAN1105 & TAN1108), funded by New Zealand Ministry for Primary Industries (MPI (Fisheries) (Biogenic habitats Project ZBD200801), New Zealand Foundation for Research, Science and Technology (CCM contract CO1X0907), NIWA Capability Fund (Project CF111358) and Oceans Survey 20/20 R/V Tangaroa days funded by LINZ; Additional collections were made by the Coral Reef Research Foundation (CRRF) of Koror, Palau, under contract to the United States National Cancer Institute Contract no. N02–CM–77249. We are particularly grateful to Lori Bell and Dr Patrick Colin, Coral Reef Research Foundation, Palau, for collections and provision of specimens and images for study. Intertidal sponges were collected and photographed by Nicola Rush and her two children Spike and Lewis Murray of Mangere Bridge, Auckland. The preparation of this guide was funded by NIWA under Coasts and Oceans Research Programme 2 Marine Biological Resources: Discovery and definition of the marine biota of New Zealand 2016/2017 SCI.

Talented photographers Crispin Middleton, NIWA, Patrick L. Colin, Coral Reef Research Foundation, Palau, and Tony Ayling, Sea Research, Queensland, provided the majority of the images for this guide. Images in the Introduction are used with permission: seamount sponges (from epibenthic sled, NIWA); giant masking crab and sponge friend (Debbie Freeman); general sponge body plan (redrawn from Bergquist, 1978, fig. 1.2d); *Tethya burtoni* budding (Crispin Middleton); astrophorid sponge budding (Crispin Middleton); young sponges in *Tethya fastigata* (Lori J. Bell, CRRF); *Tethya bergquistae* budding (Crispin Middleton); example of a calcareous sponge (Class Calcarea) from Port Pegasus, Stewart Island (Debbie Freeman); example of a glass sponge (Class Hexactinellida) from the continental shelf off the Bay of Islands (DTIS, NIWA); example of a demosponge (Class Demospongiae) from a rocky reef off Northland (Crispin Middleton); *Latrunculia procumbens* with elevated sieve-pores (Tony Breen, Tauranga); *Raspailia topsenti* with a tree-like skeleton (Patrick L. Colin). Permission to use images from the following photographers is gratefully acknowledged: Bruce Hayward, Geomarine Research, Auckland; Debbie Freeman, Department of Conservation, Wellington; James Williams, NIWA; Lori J. Bell, Coral Reef Research Foundation, Palau, Micronesia; Malcolm Francis, NIWA Wellington; Mike Page, NIWA Nelson; Roberta D'Archino, NIWA Wellington; Tony Breen, Tauranga; Floor Anthoni, (Seafriends.org.nz); Irene van der Ven, NIWA; Dennis Gordon, NIWA Emeritus; Luca Chiaroni, NIWA; Tony Ayling, Searesearch, Queensland.

further reading

Ayling, L. (1979) Subtidal sponges in the Cape Rodney to Okakari Point Marine Reserve. Leigh Laboratory Bulletin (unpublished), 83 p.

Batson, P. (2003) Chapter 6 Sponges, Pp. 86–88. In: Deep New Zealand. Blue Water, Black Abyss. Canterbury University Press, 240 p.

Battershill. C.N., Bergquist, P.R., Cook, S.d C. (2010) Phylum Porifera, Pp. 58–135. In: Cook, S. de C. (Ed.) New Zealand Coastal Marine Invertebrates 1. Canterbury University Press, Christchurch, 640 p.

Bergquist, P.R. (1968) The Marine Fauna of New Zealand: Porifera, Demospongiae, Part 1 (Tetractinomorpha and Lithistida). New Zealand Oceanographic Institute Memoir, 37, 106 p.

Bergquist, P.R. (1970) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 2 (Axinellida and Halichondrida). New Zealand Oceanographic Institute Memoir, 51, 85 p.

Bergquist, P.R. (1978) Sponges. Hutchinson & Co Ltd, London, 268 p.

Bergquist, P.R. (1996) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 5. Dendroceratida and Halisarcida. New Zealand Oceanographic Institute Memoir, 107, 53 p.

Bergquist, P.R., Fromont, P.J. (1988) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 4. Poecilosclerida. New Zealand Oceanographic Institute Memoir, 96, 197 p.

Bergquist, P.R., Kelly-Borges, M. (1991) An evaluation of the genus *Tethya* (Porifera: Demospongiae: Hadromerida) with descriptions of new species from the Southwest Pacific. The Beagle, Records of the Northern Territory Museum of Arts and Sciences, 8(1), 37–72.

Bergquist, P.R., Warne, K.P. (1980) The Marine Fauna of New Zealand: Porifera: Demospongiae. Part 3 (Haplosclerida and Nepheliospongida). New Zealand Oceanographic Institute Memoir, 87, 77 p.

Cook, S.d C., Bergquist, P.R. (1998) Revision of the genus *Psammocinia* (Porifera: Demospongiae: Dictyoceratida), with six new species from New Zealand. New Zealand Journal of Marine and Freshwater Research, 32, 399–426.

Cook, S.d C., Bergquist, P.R. (1999) New species of dictyoceratid sponges from New Zealand: Genus *Ircinia* (Porifera: Demospongiae: Dictyoceratida). New Zealand Journal of Marine and Freshwater Research, 33, 545–563.

Dendy, A.O. (1924) Porifera. Part I. Non-Antarctic Sponges. Natural History Report. British Antarctic ("Terra Nova") Expedition, 1910. Zoology 6, 269–392.

Fromont, J., Alvarez, B., Gomez, O., Roberts, E. (2010) *Tetrapocillon* (Demospongiae: Poecilosclerida: Guitarridae) in Australia, with descriptions of a new species. Records of the Western Australian Museum, 26, 70–86.

Gray, J.E. (1843) Additional radiated animals and annelids. Pp. 292–295 In: Dieffenbach, E. (ed), Travels in New Zealand; with Contributions to the Geography, Geology, Botany, and Natural History of the Country. John Murray, London. Vol. 2, v + 396 p.

Hooper, J.N.A., Wiedenmayer, F. (1994) Porifera. Pp. 1–620. In: Wells, A. (Ed.), Zoological Catalogue of Australia. Volume 12. (CSIRO: Melbourne).

Kelly, M. (2007) The Marine Fauna of New Zealand: Porifera: 'Lithistid' Demospongiae (Rock sponges). NIWA Biodiversity Memoir, 121, 100 p.

Kelly, M. Sim-Smith, C. (2012) A review of *Ancorina*, *Stryphnus*, and *Ecionemia* (Demospongiae: Astrophorida: Ancorinidae), with descriptions of new species from New Zealand waters. Zootaxa, 3480, 1–47.

Kelly, M., Edwards, A.R., Wilkinson, M.R., Alvarez, B., Cook, S.d C., Bergquist, P.R., Buckeridge, J.S., Campbell, H.J., Reiswig, H.M., Valentine, C., Vacelet, J. (2009) Phylum Porifera sponges. In: Gordon, D.P. (Ed), New Zealand Inventory of Biodiversity Volume 1 Kingdom Animalia: Radiata, Lophotrochozoa, and Deuterostomia. Canterbury University Press, pp. 23–46.

Kelly-Borges, M. Bergquist, P.R. (1997) Revision of south-west Pacific Polymastiidae (Porifera, Demospongia, Hadromerida) with descriptions of new species of *Polymastia* Bowerbank, *Tylexocladus* Topsent, and *Acanthopolymastia* nov. gen. from New Zealand and the Norfolk Ridge, New Caledonia. New Zealand Journal of Marine and Freshwater Research, 31, 367–402.

Kelly-Borges, M., Bergquist, P.R. (1994) A redescription of *Aaptos aaptos* with descriptions of new species Aaptos (Hadromerida: Suberitidae) from northern New Zealand. Journal of Zoology, London, 234, 301–323.

Pritchard, K., Ward, V., Battershill, C., Bergquist, P.R. (1984) Marine sponges: Forty-six sponges of northern New Zealand. Leigh Laboratory Bulletin, 14, 149 p.

Sarà, M., Sarà, A. (2004) A revision of Australian and New Zealand WW (Porifera: Demospongiae) with preliminary analysis of species groupings. Invertebrate Systematics, 18, 117–156.

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