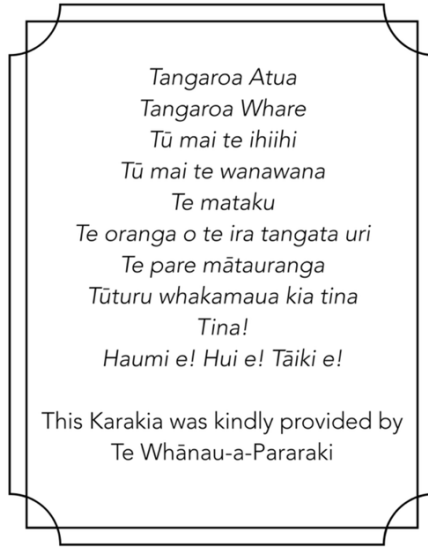


The cover features a decorative border with rounded corners. Inside the border, there are several illustrations of seaweed. At the top right, there is a light-colored, detailed illustration of a seaweed branch with small, round, dark fruits. On the left side, there is a dark red, branching seaweed specimen. In the bottom right corner, there is a dark brown, branching seaweed specimen. The background is a light green color with a faint, darker green silhouette of the Waihou Bay coastline.

RIMURIMU OF WAIHAU BAY

A GUIDE TO COMMON SEaweEDS OF THE REGION

EDITED BY W. LINDSEY WHITE



Published in 2025 by
Auckland University of Technology
55 Wellesley St East, Auckland 1010

Publishing of this edition was supported by funding from the
Faculty of Health and Environmental Sciences, Auckland
University of Technology

Photographs: W. Lindsey White
Cover art: Felicity Simmons

ISBN 978-1-99-101160-2 print
ISBN 978-1-99-101160-9 online
Printed in Auckland by Pink Lime Ltd.

Citation: White, W. L. (Ed.). (2025). *Rimurimu of Waihou Bay: A guide to common seaweeds of the region* (52 pp.).
Auckland University of Technology.

Discovering the Seaweeds of Waihou Bay

Seaweeds are some of the most ancient and important organisms on Earth. They are not all strictly considered plants, but are a diverse group of algae that thrive in the oceans, along coastlines, and sometimes even in rivers. In places like Waihou Bay, they create underwater forests, carpet rocky shores, and wash up on beaches, offering a glimpse into a hidden world. Whether you are walking along the beach or exploring underwater, this booklet will help you get to know 20 or so of the most common seaweeds found here — their names, features, and stories.

Seaweeds come in an amazing variety of shapes, sizes, and colours. Some are delicate and lace-like, others are tough and leathery, and some grow so large they can form underwater canopies like forests on land. Yet despite this diversity, most seaweeds belong to one of three major groups: the green seaweeds (Chlorophyta), the brown seaweeds (Phaeophyceae), and the red seaweeds (Rhodophyta).

Each group is distinct, not just in colour but in how they live, grow, and interact with their environment. Greens are often found in shallower waters, browns dominate rocky coastlines and kelp forests, and reds are masters of deeper, dimmer waters. Their differences stretch far back in time — hundreds of millions of years.

A Deep History

The story of seaweeds begins well over a billion years ago, deep in Earth's history. Scientists have shown that the red seaweeds are the oldest, with the oldest fossil records dating to around 1.6 billion years ago. Green seaweeds appeared around 1.1 billion years ago. Brown seaweeds appeared later, roughly 400 million years ago, evolving from a different lineage altogether.

These long and separate histories mean that red, green, and brown seaweeds are as different from one another as trees are from fungi — or even more so! When you pick up a piece of bright green seaweed (eg. *Codium fragile* pg50) and compare it to the rich burgundy fronds of a red seaweed like parengo (*Pyropia* spp. pg18), you are holding two branches of life that parted ways over a billion years ago.

Seaweeds have been quietly shaping the world ever since, producing oxygen, forming habitats for countless marine creatures, and even influencing human societies through food, medicine, and industry. Understanding seaweeds is like stepping into a living connection with the deep past.

Seaweeds and the Global Economy

Today, seaweeds are far more than just fascinating parts of the natural world — they are also an essential global resource. Every year, over 35 million tonnes of seaweed are harvested worldwide, with over 95% of that actually farmed. Seaweeds are farmed and gathered for a wide range of products: food (such as nori, kelp, and agar), animal feed, fertilisers, cosmetics, pharmaceuticals, and even biodegradable plastics. In many coastal communities such as Waihou Bay, seaweeds provide vital livelihoods and are part of cultural traditions stretching back generations.

Their commercial importance is also growing as the world looks for sustainable solutions. Seaweeds absorb carbon dioxide, can be grown without freshwater or fertiliser, and contribute to healthy marine ecosystems. From small artisanal harvests to large offshore farms, seaweeds are becoming increasingly central to discussions about food security, climate resilience, and new green industries.

Learning to recognise the seaweeds of Waihou Bay is not only a way to enjoy the beauty of the coast — it connects you to a global story of innovation, sustainability, and deep relationship with the sea.

Seaweed Harvesting on the East Coast

The East Coast of New Zealand, including the shores near Waihou Bay, has its own rich history of seaweed use and collection. During the 20th century, large quantities of red seaweeds, especially species like *Pterocladia* and *Gelidium*, were gathered along the coastline for their prized agar content. Agar, a jelly-like substance extracted from certain red seaweeds, became an essential product used around the world in medicine, pharmaceuticals, and scientific research.

Local communities across New Zealand played a key role in this harvest, collecting seaweed by hand from the beaches and rocky shores. It was labour-intensive work, often done by whānau groups and small operators who gathered the beachcast seaweeds after storms or pulled them from the shallow reefs.

The East Coast's seaweed story is one of connection: between people and place, tradition and innovation, and the living seaweeds that continue to nourish both ecosystems and communities.

What's in a Name? The Importance of Taxonomy

You might wonder: why bother with Latin names? Isn't it enough to know a seaweed by its look or its common name? Common names are important and familiar — they tell us how people have experienced seaweeds in daily life. But common names can vary from place to place and person to person. That's where scientific names, or taxonomy, come in.

Taxonomy gives each organism a unique name that scientists and seaweed enthusiasts around the world can recognise. By listing the Class, Order and Family it belongs to, it also tells you who its relatives are: what other seaweeds it is closely related to, and how it fits into the great branching tree of life.

So when you learn a seaweed's name, you are learning about its whakapapa — its genealogy. In Te ao Māori, whakapapa links all living things, connecting people, plants, animals, and even mountains and rivers through shared ancestry.

Seaweeds too have their whakapapa, tracing lines back through countless generations to their ancient beginnings.

By including the Latin names in this booklet alongside common English and te reo names, we honour the heritage of these remarkable organisms. Just as learning the whakapapa of a person brings deeper understanding and respect, learning the genealogy of a seaweed enriches our relationship with the natural world.

How to Use This Booklet

This guide is designed to be simple and practical. Each page features a photograph of the seaweed, a description of how to identify it, notes on where you might find it, and some interesting facts about its uses or chemistry. For the seaweeds that have a name in te reo, it will follow the latin name in brackets. Whether you are identifying something you found on the beach, or something growing underwater, we hope this booklet will open up a new way of seeing the coast around Waihou Bay — a place where ancient life still thrives just beneath the surface.

Authorship and Acknowledgments

This project was an outcome of a Post Graduate course at Auckland University of Technology (AUT) entitled “Marine Resources Sustainability”. This was taught by Drs. W. Lindsey White, Armagan Sabetian and Daniel Breen. The student participants in the course collected, curated and wrote the descriptions of the seaweeds. Their authorship is acknowledged after each species description. The original herbarium samples have been lodged with East Coast Seaweeds NZ. in Waihou Bay. The work was supported by Paul Houston and Simone Rankin of East Coast Seaweeds NZ in consultation with Te Whānau a Pararaki.

This booklet and its taxonomic accuracy were significantly improved by feedback from New Zealand’s pre-eminent seaweed taxonomist Dr. Wendy Nelson. Any remaining errors are entirely the responsibility of the editor.

Contents

Reds (Rhodophytes)

<i>Jania rosea</i>	8
<i>Jania sagittata</i>	10
<i>Melanthalia abscissa</i>	12
<i>Placentophora colensoi</i>	14
<i>Pterocladia</i> spp.	16
<i>Pyropia</i> spp.	18
<i>Vidalia colensoi</i>	20

Browns (Phaeophytes)

<i>Carpophyllum maschalocarpum</i>	22
<i>Carpophyllum plumosum</i>	24
<i>Cystophora retroflexa</i>	26
<i>Cystophora torulosa</i>	28
<i>Durvillaea antarctica</i>	30
<i>Ecklonia radiata</i>	32
<i>Halopteris funicularis</i>	34
<i>Hormosira banksia</i>	36
<i>Lessonia</i> spp.	38
<i>Notheia anomala</i>	40
<i>Perithalia capillaris</i>	42
<i>Splachnidium rugosum</i>	44
<i>Xyphophora chondrophylla</i>	46
<i>Zonaria turneriana</i>	48

Greens (Chlorophytes)

<i>Codium fragile</i>	50
-----------------------	----

NB. Scale bars in each plate are 5cm, except for *Durvillaea antarctica* in which it is 10cm

Jania rosea

Phylum: Rhodophyta
Class: Florideophyceae
Order: Corallinales
Family: Corallinaceae

Jania rosea (Lamarck) Decaisne was described in 1842, this coralline seaweed is found in intertidal to upper subtidal zones, growing on rocks or occasionally as an epiphyte in a wide range of habitats. It is widespread globally and found throughout New Zealand. The scientific name of this seaweed is still not certain. More work is needed to really understand what "true" *J. rosea* is.

Notwithstanding the above, this seaweed is an example of an articulated coralline algae. As an upright coralline—not a crustose form that lies flat upon the substrate—it withstands wave action by possessing uncalcified articulations (genicula) between its calcified segments (intergenicula). These genicula allow the alga to bend without breaking in turbulent conditions.

Coralline algae are often referred to as "foundation species" and "ecosystem engineers" because of their ability to modify their environment and support biodiversity. Articulated coralline algae like this one provide attachment surfaces for filter-feeding organisms, and create microhabitats that protect small marine invertebrates from desiccation, wave exposure, and predation.

Stevie Wilton



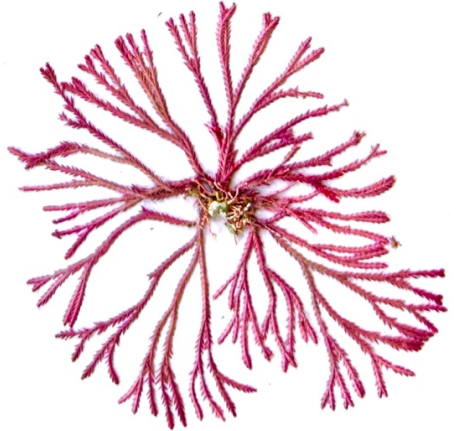
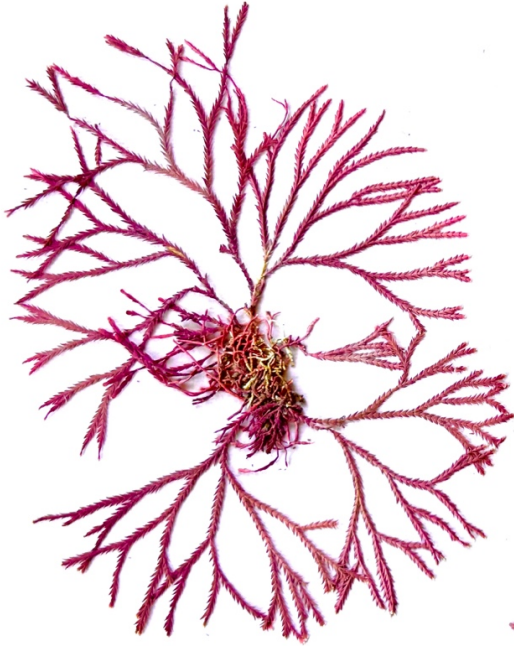
Jania sagittata

Phylum: Rhodophyta
Class: Florideophyceae
Order: Corallinales
Family: Corallinaceae

First described as a distinct species (placed in *Corallina*) and then transferred to *Jania* in 1834 by Blainville, *Jania sagittata* has been recorded from Northland to Horoera on the east coast of New Zealand. It occurs from the low intertidal down to depths of about 20 metres.

This species is characterised by its fan-like, dichotomously branched thallus with distinctive arrow-shaped calcified segments. Like other geniculate corallines, *J. sagittata* has flexible genicula between rigid calcified sections, enabling it to sway with wave motion without damage.

Thomas Smith



Melanthalia abscissa

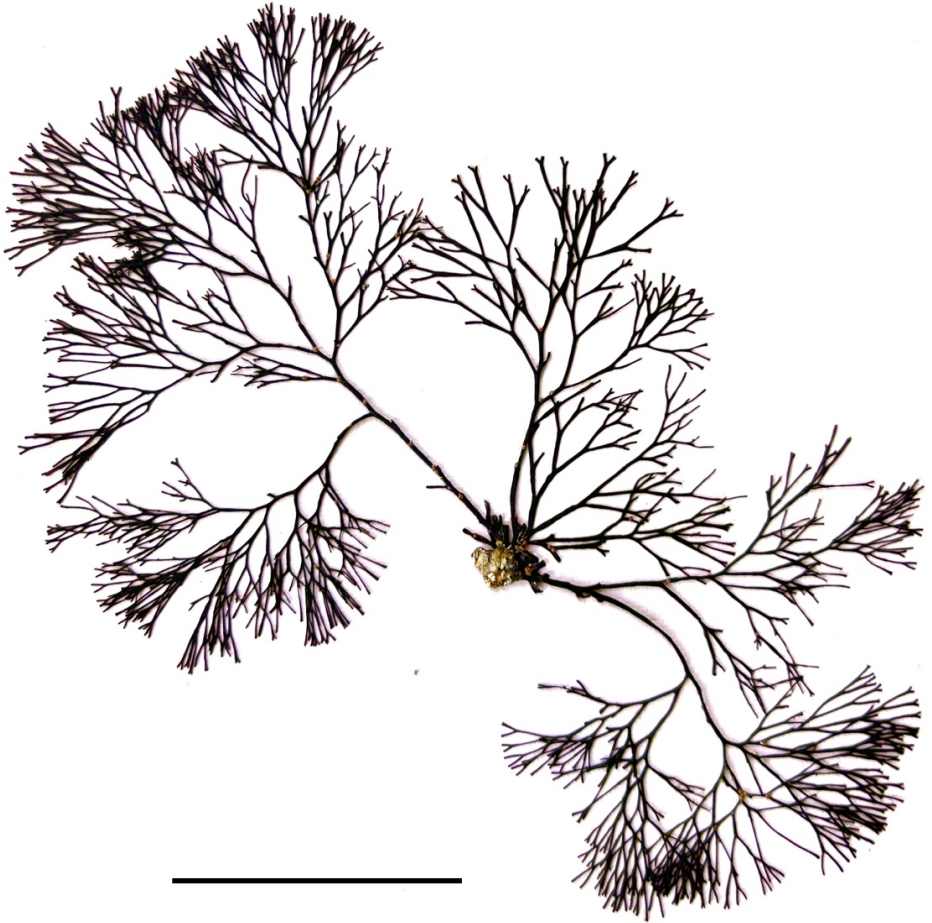
Phylum: Rhodophyta
Class: Florideophyceae
Order: Gracilariales
Family: Gracilariaceae

First described by Turner as *Fucus abscissus* and renamed by Hooker and Harvey in 1845, *Melanthalia abscissa* is found throughout New Zealand, from the Three Kings Islands to the northern South Island, and the genus also occurs in New Caledonia and Australia.

It typically inhabits low to mid intertidal rock pools and exposed rocky coastlines. This wiry and tough dark red to orange seaweed can grow up to 40 cm high. Its wiry branches are rounder at the base and become increasingly flattened toward the tips, forming a distinctive fan-like structure.

Its fine texture and fan-shaped growth make it both visually distinctive and ecologically valuable in wave-exposed habitats.

Pippa Sommerville



Placentophora colensoi

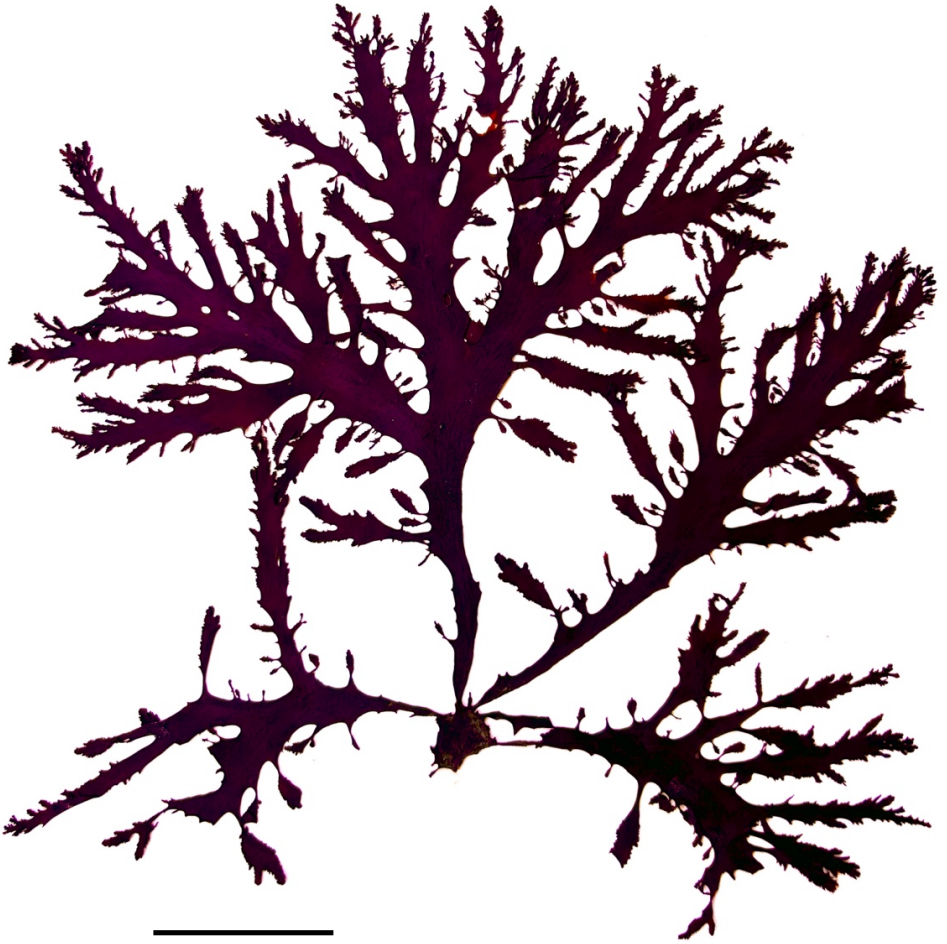
Phylum: Rhodophyta
Class: Florideophyceae
Order: Gigartinales
Family: Placentophoraceae

First described by Hooker and Harvey in 1845 and later revised by Kraft, *Placentophora colensoi* is a red seaweed endemic to New Zealand. It is commonly found from the low intertidal to subtidal depths on rocky reefs, where water movement is moderate to strong.

This species is best identified by its broad, leathery, foliose red blades, which grow in irregular, overlapping patterns. The blades are thick and rubbery to the touch, often showing deep undulations and a somewhat glossy surface. Edges may be irregular or slightly ruffled, and the thallus has a deep red to purplish hue.

Placentophora colensoi is well-adapted to dynamic intertidal environments. Its robust thallus structure increases surface area for photosynthesis while also providing protection against desiccation and wave stress. These broad blades contribute significantly to the algal biomass in their habitats, forming important shelter for invertebrates and young fish. Its role in rocky reef communities is both structural and ecological, creating a substrate for epiphytes and contributing to the complexity and productivity of the local ecosystem.

Caitlyn Ryan-Watson



***Pterocladia* sp.**

Phylum: Rhodophyta

Class: Florideophyceae

Order: Gelidiales

Family: Pterocladaceae

Commonly known as agar weed, *Pterocladia* spp. was first described by A. Gepp & E.S. Gepp in 1906. This native red seaweed is found in low intertidal pools and channels along open coasts, often growing epiphytically on other seaweeds.

In NZ we have four undescribed species, with two found around Waihou Bay. Unfortunately, scientists have not yet described the differences between them.

But the genus can be recognised by their sturdy, cartilaginous texture and distinctive branching pattern. The thallus has a strong central axis from which pairs of opposite or sub-opposite branches emerge, giving the seaweed a feathered or pinnate appearance. The branches are dark red to maroon in colour, typically blunt-tipped, and may have a slightly iridescent or shiny surface.

Pterocladia spp. along with *Pterocradiella capillacea*, *Gigartina* and *Sarcothalia* species, have historically played a significant role in New Zealand's seaweed industry. Since the 1940s, *Pterocladia* has been harvested for agar production, contributing up to 31% of seaweed-based utilisation.

Natasha Gee-Miller



Pyropia sp. (Parengo/Karengo)

Phylum: Rhodophyta
Class: Bangiophyceae
Order: Bangiales
Family: Bangiaceae

The genus *Pyropia* was identified and named by Agardh in 1899 and includes over 80 species worldwide. At least 18 species of *Pyropia* are present in New Zealand along with 14 species of the closely related genus *Porphyra* and two species of *Clymene*, including endemic, native, and introduced forms, some of which remain undescribed.

Pyropia species are typically found in the intertidal zone, where it attaches to rocks using a small holdfast. It is most easily recognised by its thin, sheet-like blades, which may appear folded or ruffled. These blades are usually dark red to purplish black and can grow in large clusters, sometimes covering wide areas of rock.

Known in te reo as karengo or parengo (depending on your iwi), and internationally as nori, *Pyropia* is an important food source. It can be eaten dry as a snack, rehydrated for soups and stews, or roasted and ground as a garnish. Karengo holds cultural significance in Māori cuisine and is recognised for its antioxidant, anti-inflammatory, and blood-pressure-lowering properties.

Natasha Gee-Miller



Vidalia colensoi

Phylum: Rhodophyta

Class: Florideophyceae

Order: Ceramiales

Family: Rhodomelaceae

This red algae was first described as a distinct and endemic species in 1845 - and then transferred to *Vidalia* in 1863 J. Agardh. It is common in subtidal rocky habitats along central and northern New Zealand coastlines, including the Three Kings Islands and as far south as southern Hawke's Bay.

It forms bushy or tangled clumps up to 30 cm high, with dark red, narrow branches bearing jagged, zigzagging margins. Its firm texture and irregular branching make it easily recognisable, and reproductive cystocarps may be visible in central parts of mature fronds.

Vidalia colensoi is currently being studied for its potential role in reducing methane emissions in livestock. This is due to the presence of bromoform, a compound that disrupts methanogenic processes in the digestive system.

Natasha Gee-Miller



Carpophyllum maschalocarpum

Phylum: Ochrophyta

Class: Phaeophyceae

Order: Fucales

Family: Sargassaceae

Originally described in 1819 by Turner as a species of *Fucus* - it was transferred to *Carpophyllum* in 1830 by Greville.

Carpophyllum maschalocarpum is endemic to New Zealand and occurs along coastlines throughout the country. It is especially dominant on nearshore rocky reefs, where it forms dense bands in the low intertidal and upper subtidal zones of both sheltered and exposed coasts, making it one of the most visible and ecologically significant brown seaweeds in Aotearoa.

Commonly known as flapjack, "poor man's firecrackers," due to the air-filled bladders that pop when the dried seaweed is thrown into a fire. It is typically brown to mid-golden brown. It has a broad, flattened stipe and features lateral blades (laminae) that alternate along one plane. Reproductive structures develop at the base of these laminae during spring and summer, making them a key feature for identification.

Carpophyllum maschalocarpum is distinguishable by its thick, leathery texture and wide, strap-like blades with smooth edges. In the water, it appears flexible and wave-tolerant; when stranded on shore, its tough fronds often retain a supple, leathery feel.

Thomas Smith



Carpophyllum plumosum

Phylum: Ochrophyta

Class: Phaeophyceae

Order: Fucales

Family: Sargassaceae

Described by Richard in 1832 – and transferred by Agardh later in 1878, *Carpophyllum plumosum* is a feathery brown seaweed commonly found on moderately exposed subtidal rocky reefs. It is found along the east coast of New Zealand's North Island and on offshore islands such as the Three Kings and Chatham Islands.

This species has a flattened central axis with feather-like lateral fronds arranged symmetrically on either side, giving it a delicate and ornate appearance. The fronds are typically adorned with small, round vesicles that aid buoyancy. Its physical appearance is highly variable and may range from fine, hair-like to broader, oak-leaf shapes, with colour ranging from light golden brown to darker hues depending on wave exposure and other environmental factors.

Carpophyllum plumosum differs from the closely related *C. maschalocarpum* as it features a more finely divided and branched frond structure, giving it a softer, more feathery form. It also lacks the distinct axillary reproductive structures typical of *C. maschalocarpum*, and its fronds tend to be more delicate and flexible.

Natasha Gee-Miller



Cystophora retroflexa

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Fucales
Family: Sargassaceae

First described by Labillardiere in 1807 - in the genus *Fucus* – it was transferred later to *Cystophora* by Agardh in 1848. *Cystophora retroflexa* is a large brown macroalga that inhabits shallow to mid-depth subtidal rocky reefs (up to 10 m). It is found across New Zealand, including the North Island, South Island, Chatham Islands, and Rakiura/Stewart Island, and also occurs in Australia.

Cystophora is the second largest genus of furoid seaweeds globally and is particularly diverse in Australasia, where several species are endemic. In New Zealand, *C. retroflexa* is one of four species within this genus.

This species can grow up to 1.5 m long and features alternate branches along a central stipe, with the end branchlets curving downward and appearing thinner compared to the club-like lamina of *C. torulosa*. Its growth is typically maximal during winter and spring, when UV radiation is lower.

This species forms important habitat in temperate reef ecosystems.

Stevie Wilton



Cystophora torulosa

Phylum: Ochrophyta

Class: Phaeophyceae

Order: Fucales

Family: Sargassaceae

Described by Turner (1809-1811) – it was later transferred to *Cystophora* by Agardh in 1848. *Cystophora torulosa* is found throughout New Zealand and southern Australia. It inhabits low intertidal to shallow subtidal zones along rocky coasts.

It grows up to 1 m long and is known as the “zig-zag seaweed” due to its backward-and-forward branching pattern. It has club-shaped secondary laminae arranged in clusters and a simple disc-shaped holdfast. The seaweed is golden brown and has a tough, rubbery texture.

Its unique structure helps it survive in wave-exposed environments.

Thomas Smith



Durvillaea antarctica (Rimurapa)

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Fucales
Family: Durvillaeaceae

Durvillaea antarctica, also known as rimurapa, cochayuyo, or bull kelp, is a large species of brown macroalgae native to Aotearoa (New Zealand) and Chile. The species was first described by Choris in 1822.

Adult *D. antarctica* plants can reach up to 10m in length, with 3-5 branches extending from the stipe with a dome shaped holdfast. Blades have a long leathery whip-like appearance, with colours ranging from dark green-olive in winter months, to more golden in the summer. It is mainly found on exposed rocky reefs in the intertidal-subtidal regions of the South Island, however, *D. antarctica* is one of the buoyant *Durvillaea* species, with blades having an internal honeycomb structure which has permitted its spread around New Zealand, and to subantarctic islands and Chile.

It was widely used by Māori for pōhā (woven bags), made from the hollowed, inflated blades, which were enclosed in strips of tōtara bark and placed in flax kete (baskets). These were generally used for storage of tītī (muttonbirds), but were also used to transport water and propagate live shellfish.

Jessica Roach



10cm

31

Ecklonia radiata (Rimu kōuraura)

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Laminariales
Family: Lessoniaceae

First described in 1817 by C.A. Agardh it was transferred to *Ecklonia* by J.G. Agardh 1848. *Ecklonia radiata* is a widespread kelp found from the low intertidal to subtidal zones across mainland New Zealand (excluding the Chatham Islands), as well as in Australia, Japan, Korea, Oman, and parts of Africa. Paul and Simone from East Coast seaweeds NZ have been working with this seaweed for over 20 years and call it Rimu kōuraura in te reo. The name relates to its golden brown colour.

Ecklonia radiata is the dominant kelp species in many temperate rocky reefs of New Zealand and forms extensive underwater forests, often referred to as kelp beds. These forests provide habitat and food for a wide range of marine species, playing a vital role in the coastal ecosystem.

It can be identified by its cylindrical stipe smooth, unbranched stipe and a flattened blade with a smooth central area and lateral lobes. The texture of the blades can vary a lot - sometimes quite corrugated.

While long eaten in parts of Asia, its health potential is now being explored in New Zealand.

Stevie Wilton



Halopteris funicularis

Phylum: Ochrophyta

Class: Phaeophyceae

Order: Fucales

Family: Sargassaceae

First described as a distinct species by Montagne in 1842 – it was later moved to *Halopteris* by Sauvageau in 1904.

Halopteris funicularis is found throughout New Zealand, including the Three Kings, Chatham, Campbell, Auckland, Snares, and Antipodes Islands. It is also present in southern hemisphere locations such as Australia, Chile, Argentina, South Africa, and Namibia.

This species grows on rocks in the low intertidal to subtidal zone, often on exposed coasts. It is densely branched and bushy in form, reaching up to 20 cm in height. Its firm, wiry texture and dark to olive brown colouration are characteristic.

Halopteris funicularis is most easily recognised by its finely divided branching structure, which gives it a compact, tufted appearance. The branches are short and arranged in dense clusters, often resembling a small broom or bottlebrush. Sporangia (reproductive structures) occur in small, dark clusters on the outermost branchlets.

Its compact, low-lying form and firm structure make it well adapted to high-energy environments, and it contributes to the structural complexity of rocky shore ecosystems.

Thomas Smith



Hormosira banksii

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Fucales
Family: Hormosiraceae

First discovered in Australia and described by Turner in 1807-1808 as *Fucus banksii*, it was changed in 1842 by Decaisne to its current name. It is commonly known as Neptune's or Tangaroa's Necklace. It is found along all New Zealand coastlines.

It is an intertidal seaweed, commonly found in rock pools and rock platforms in the low tide zone on rock, sand or in muddy areas from open coastlines to sheltered inlets. The beads of Neptune's necklace contain air which helps them to float and a slimy layer which conserves moisture.

This seaweed is characterised by strings of brown or olive-green hollow beads that can grow up to 50cm long. The beads can be soft to tough and leathery and are slimy and spongy to the touch. Plants found in mangroves can have larger beads and softer texture than those found in more open coastal areas.

Pippa Sommerville



***Lessonia* spp.**

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Laminariales
Family: Lessoniaceae

Described by Agardh in 1878, and known as brown strap kelp, this genus of seaweed is found along all New Zealand coastlines, with four bioregional species - Northern, Wellington, Kaikoura and Southern. The species found growing in Waihou Bay is either *Lessonia septentrionalis* or *Lessonia variegata*, as the boundary between these two species is right around Cape Runaway.

It is found from upper subtidal to deep water zones (up to 20m deep), along rocky coastlines where it often forms large clumps. It is a large strap-like seaweed with long blades growing from strong branches (stipes). Straps can grow up to 1m long and are tough and supple. Blades and stipes are light to golden brown.

Lessonia species contain a significant amount of alginates along with other chemical compounds including beta-carotene, fibre, chlorophyll, protein, enzymes, amino acids. *Lessonia* also contains minerals such as iron, calcium, magnesium, and phosphorus.

Pippa Sommerville



Notheia anomala

Phylum: Ochrophyta

Class: Phaeophyceae

Order: Fucales

Family: Notheiaceae

Named by Harvey and Bailey in 1851, this species lives only on plants of *Hormosira banksii* (Neptune's Necklace). Like its host, it is intertidal, often found in rock pools across New Zealand and in temperate regions of Australia.

As *Notheia anomala* exists as an obligate epiphyte on *Hormosira banksii*, its distribution is intricately linked to its host. Even though it is host-dependent, it has been found that *N. anomala* and *H. banksia* have contrasting distributions on a smaller, local scale. *Notheia anomala* is dominant in often submerged rock pools, where *H. banksii* is least abundant, but *N. anomala* is believed to be more susceptible to desiccation but more tolerant of high wave activity and low UV levels.

Recent studies have found that presence of *N. anomala* has a positive effect on biodiversity of small mobile invertebrates in the marine environment. *N. anomala* is a rare example of an obligate-epiphyte that modifies biodiversity within and across intertidal zones.

Stevie Wilton



Perithalia capillaris

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Sporochneales
Family: Sporochneaceae

Described in 1890, *Perithalia capillaris* is an endemic brown seaweed of New Zealand. It is found from the Three Kings Islands through the northern North Island to East Cape.

It inhabits subtidal rocky areas on open coastlines and is known colloquially as "horsehair seaweed" due to its wiry, tomentose texture. The plant grows up to 80 cm long, with bare basal stems and fuzzy brown hairs along the length. Branches divide into shaggy, hair-like clusters.

This species produces polysaccharides and other nutrients common in brown algae. It also contains bioactive compounds like bis-prenylated quinones, which have anti-inflammatory and anticancer potential.

Pippa Sommerville



Splachnidium rugosum

Phylum: Ochrophyta
Class: Phaeophyceae
Order: Scytothamnales
Family: Splachnidiaceae

First described by Linnaeus in 1771 from specimens from South Africa - transferred by Greville in 1830, *Splachnidium rugosum* is a distinctive brown seaweed known as Gummy Weed or Dead Man's Fingers. It is found around New Zealand, including Stewart and the Chatham Islands, on moderately exposed to open rocky coastlines.

It appears as a yellowish-brown, irregular mass with deeply textured, finger-like fronds. The fronds are stubby and lack the blade structure typical of many other seaweeds. The surface often shows wrinkles and bubble-like protrusions that become more pronounced with age. The interior is filled with a thick, jelly-like substance.

Splachnidium rugosum contributes to reef diversity by offering habitat structure and moisture retention in tidepools.

Felicity Simmons



Xyphophora chondrophylla

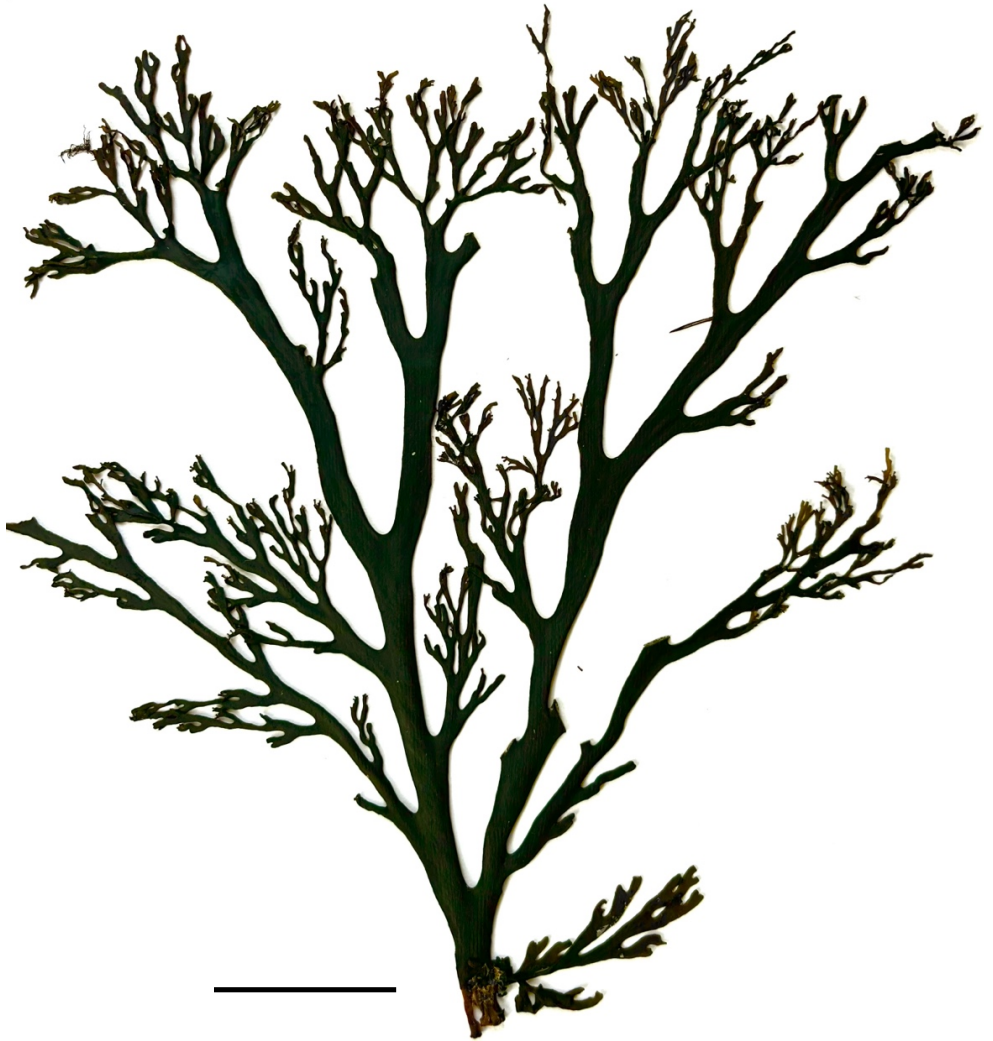
Phylum: Ochrophyta
Class: Phaeophyceae
Order: Fucales
Family: Xiphophoraceae

Described by Turner 1819 (1811-1819) then transferred by Harvey in 1855, *Xyphophora chondrophylla* is a leathery, fan-shaped brown seaweed found on low intertidal and shallow subtidal rocky reefs in northern New Zealand, including the Three Kings Islands.

Its olive to golden brown fronds resemble antlers or fans. The blades are typically broad, flattened, and slightly lobed, often splitting into rounded finger-like projections. Fronds arise from a short, sturdy stipe connected to a small disc-shaped holdfast that anchors it to hard substrates. While firm and flexible when submerged, the seaweed may appear dark, shrivelled, and brittle when washed ashore.

Though little research has been done on this species specifically, its composition likely includes commercially valuable compounds like fucoidans, alginates, and laminarin.

Felicity Simmons



Zonaria turneriana

Phylum: Heterokontophyta

Class: Phaeophyceae

Order: Dictyotales

Family: Dictyotaceae

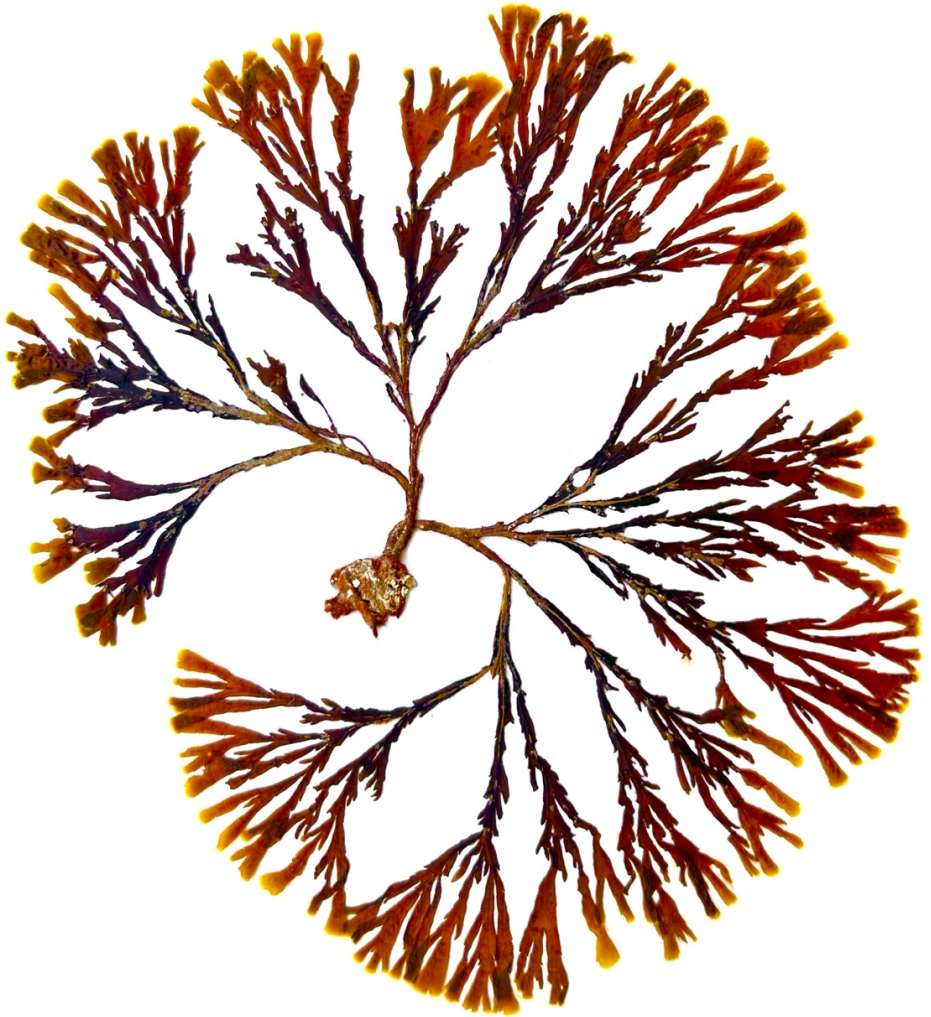
First described by Agardh in 1870, *Zonaria turneriana* is found throughout New Zealand's subtidal and deeper waters, including the North and South Islands, Stewart Island, and the Three Kings Islands. It also occurs in southern Australia.

This brown seaweed is distinguished by its semi-circular, fan-like fronds that grow in layered tiers, forming rosettes or overlapping clusters. Each blade is broad and flat with concentric zones of colour, usually olive or brownish-green, with lighter margins that become more distinct toward the edges. These zones give *Z. turneriana* a banded or scalloped appearance, particularly when viewed from above.

The blades are attached to the substrate by a small, hairy, disc-like holdfast. Underwater, the fronds are soft and flowing, moving easily with wave action. When washed ashore, they retain their fan shape but may dry into more papery or brittle forms.

Its layered growth form and concentric colouration make *Z. turneriana* one of the more visually distinctive brown seaweeds in New Zealand's subtidal environments.

Felicity Simmons



Codium fragile

Phylum: Chlorophyta

Class: Ulvophyceae

Order: Bryopsidales

Family: Codiaceae

First described by Suringar in 1867, *Codium fragile* subsp. *novae-zelandiae* is a common green seaweed found throughout New Zealand in the low intertidal to subtidal zones, often attached to hard surfaces or in rock pools.

It is easily identified by its bright green, finger-like fronds, which have a velvety or moss-like appearance. These fronds arise from a spongy central axis and are usually unbranched or sparsely branched, with blunt tips. Underwater, they appear darker green and sway gently in the current. When stranded on shore, they appear lighter and firmer, with a soft, squishy texture. The fronds often end in fine, hair-like filaments, visible on close inspection.

Though native in New Zealand, other subspecies of *C. fragile* are considered invasive in parts of Europe and North America due to their rapid spread and competition with native species. In New Zealand, however, it is a common and natural part of the coastal ecosystem.

Felicity Simmons



Glossary of Terms

Axillary – Positioned where a branch or blade meets the main stem or stipe.

Blades – The flat, leaf-like parts of seaweeds where most photosynthesis occurs.

Calcified – Hardened by deposits of calcium carbonate, making the structure tough and often chalky.

Cartilaginous – Firm and flexible in texture, like cartilage; not brittle or soft.

Coralline – Refers to seaweeds that are pink, red, or purple and contain calcium carbonate in their tissues, giving them a hard or chalky feel.

Crustose – A growth form where the seaweed lies flat and forms a crust over rocks or other surfaces.

Cystocarps – Small rounded structures on red seaweeds that contain reproductive cells (carpospores).

Dichotomously – Branching in pairs that repeatedly split into two equal parts, like the shape of a “Y.”

Endemic – Found only in a particular place or region and nowhere else naturally.

Epiphyte – An organism (in this case, another seaweed) that grows attached to another plant or seaweed, but not parasitically.

Foliose – Having broad, flat, leaf-like blades.

Laminae (singular: lamina) – The thin, flattened parts of the seaweed; another word for blades.

Obligate – Dependent on a specific host or condition to survive (e.g., an obligate epiphyte only grows on another species).

Pinnate – Having branches arranged on either side of a central axis, like the shape of a feather.

Polysaccharides – Complex sugars found in seaweeds that

are important for structure and storage.

– *Examples include:*

- **Agar** – A gelling substance from red seaweeds used in foods and laboratories.
- **Carrageenan** – A thickener from red seaweeds used in foods and cosmetics.
- **Fucoidans** – Brown seaweed compounds with health-promoting properties.
- **Alginates** – Jelly-like compounds from brown seaweeds used in gels and stabilisers.
- **Laminarin** – A storage carbohydrate found in brown seaweeds.

Stipe – The stalk-like structure connecting the holdfast (anchor) to the blades.

Thallus – The whole body of a seaweed, including holdfast, stipe, and blades.

Tomentose – Covered with fine, short hairs; giving a fuzzy or felted appearance.

Vesicles (bladders) – Small air-filled sacs that help some seaweeds float upright in the water.

The page is framed by a decorative border with rounded corners. In the background, there is a light green map of Aotearoa's East Coast. Overlaid on the map are several illustrations of seaweeds: a large, dark brown seaweed with many small, reddish-brown, leaf-like structures in the bottom left; a large, dark brown seaweed with many small, round, brown, bead-like structures in the bottom right; and a large, light brown seaweed with many small, round, brown, bead-like structures in the top right. The text is centered on the page.

Explore the Seaweeds of Waihou Bay

Along the tide-washed shores and beneath the waves of Waihou Bay, an ancient world thrives — one of colour, texture, and deep connection to land and sea. This illustrated guide introduces the most common rimurimu (seaweeds) found in the area, with tips on how to identify them, their uses, and their whakapapa — the genealogies that link them to the deep past and to us.

Whether you're beachcombing, snorkelling, or simply curious, this booklet will help you discover the remarkable seaweeds of Aotearoa's East Coast.