

U3A Port Fairy

*Science...naturally!***Seaweeds Part 2 Brown Seaweeds**

Sue Knudsen August 18, 2020

This is the 22nd in a series of guides for U3A members around Port Fairy and district to help us get out and about safely during COVID-19 restrictions. The aim of the guides is to provide enjoyable outdoor activities that can be undertaken either by yourself or others (in accordance with Government directives).



This guide will take you through some of the amazing examples of the Brown seaweeds we often notice washed up in great numbers along the sand at South Beach and sometimes along East Beach. These observations have occurred over a period of years. The examples that have washed up appear to be governed by weather conditions, some of them in particularly rough weather, big tidal movements including huge waves, and the seasons. Some are always apparent like the *Durvillaea potatorum* or **Bull Kelp** and the *Phyllospora comosa*, commonly known as **Crayweed**, but others appear according to local and seasonal conditions.

Brown seaweeds are algae belonging to the Phylum *Phaeophyta* (from the Greek **phaeo** meaning dusky or dark and **phyton** meaning plant). Brown seaweeds vary in colour from an olive green to dark brown and almost black. They, like the green seaweeds have chlorophyll but a yellow-brown pigment dominates this. Brown seaweeds are often dominant on temperate and polar rocky coasts providing food and shelter for much marine life and include the longest and heaviest seaweeds. Approximately 1,500 species have been recorded worldwide with about 240 known from southern Australian waters.



We will begin with the big ones!

Durvillaea potatorum, commonly known as **Bull Kelp**. It has large, bulky fronds which are extremely heavy. It is found as the dominant plant at or just below the low-tide level around exposed Victorian and Tasmanian coasts. You may have noticed it being washed by the tide along rock faces. There is a good example of this at The Craggs when you look down from the lookout platform into the small bay below and over towards the horseshoe shaped bay out near the small stacks as the tide washes it in and out over the rocky platform of the edge.

South Beach is an ideal location to see large specimens of bull kelp, much of which is washed ashore by heavy seas. Autumn, Winter and Spring are the seasons to observe this.



The photo on the left shows the typical structure of the kelp with the smooth bulbous holdfast that attaches the plant firmly to the rock. From this grows the strong flexible stipes or stems that stand partly erect while the blades or fronds are waved about by the current. The massive fan-shaped fronds can grow to about 8 metres in length and are generally divided into narrower segments.

Did you know?

In Tasmania, drifts of **Bull Kelp** are collected and processed for their alginates. A compound known as *sodium alginate* is extracted. This chemical causes liquids to gel. It is used in products including ice creams and toothpaste.



Macrocystis angustifolia commonly known as **Giant or String kelp**. The above huge bundle is an example of one of many that have been washed up along South Beach over the past months. I have not previously witnessed the huge number of bundles washed up to such a degree. The name string kelp is highly apt and try as I might to pull it so that it would break, this proved to be an impossible task!



The photographs above show the spaghetti like structure of one of the holdfasts that anchors the plant to the sea floor. There were lots entangled in the bundle. From this, numerous stipes (stems) develop. These long slender stipes are buoyed to the surface by air bladders or floats at the bases of the leafy fronds attached to the stipes. Often you may see just the air bladders attached to the leafy fronds washed up along the shore.



Ecklonia radiata, otherwise known as **Common kelp**. This kelp is found from Kalbarri, W.A, extending to Caloundra, Qld, and around Tasmania.

It is the only true kelp found in the warmer waters of Western Australia and southern Queensland.

Common Kelp forms large beds in the waters on moderate to rough-water coasts. It appears that the outer reef at South Beach may be a perfect location.

The blades (fronds), which grow laterally from the long stem, are often spiny, and have a characteristic corrugated surface.

Along the southern Australian coastline, it is a common and quite a dominant species. Smaller specimens sometimes grow in tidal rockpools.





Phyllospora comosa sometimes referred to as **Crayweed**. It is among the most common large brown algae in shallow cold waters around wave-swept sections of the south-eastern Australian coast. The photograph above shows this species in its natural habitat located at The Craggs. It is attached to the rocky sides of a beautiful deep rock pool.

It is characterised by a flattened axis (main stem) that has many closely set lateral branches and sawtooth-edged fronds extending out to the sides. Little floats (air bladders) are attached in amongst these by their own small stalks.





Cystophora platylobium is distinctive due to its flat lobes and spherical floats. It is generally found in deeper waters from Eucla, SA, to Sydney and around Tasmania. I have also found fragments of this species washed up along South Beach that almost look black. It is easy to identify due to the flattened fronds and the side branches growing from the edge of the main axis (stem). The rounded gas-filled floats are known as vesicles. This species occurs mostly in deep water along wave-swept coasts together with kelps and **Crayweed**.



Another member of the ***Cystophora*** group to be found on South Beach is ***Cystophora moniliformis***. It is one of the most common *Cystophora* species found in southern Australia. Lateral branches are zigzag-shaped (a characteristic of *Cystophora* species), bushy at the end, and extend from the edges of a flat main axis (stem). Air bladders (floats) are never present in this species.



These photographs are examples of the brown seaweed *Hormosira banksii* sometimes referred to as **Neptune's necklace**. Due to the pearl necklace shape it is one of the most distinctive of Australian algae.

Neptune's Necklace occurs in several different forms which relate to the turbulence of the water in which it is growing.

The body of the plant is formed from chains of rounded, hollow segments which makes it quite distinctive. The above picture shows the plant in its perfect habitat growing predominantly over rocks at the eastern end of South Beach. This can be easily observed on a low tide.



Padina fraseri (**Mermaid's Fan**) is characterised by fan shaped fronds with concentric markings and rolled edges. Species of *Padina* are found world-wide, commonly in tropical and subtropical waters.

Mermaids Fan is our southern Australian species and is often commonly found in intertidal pools along the Victorian coast.

Wandering along South Beach towards the eastern end you can often find pieces of this washed up among other seaweeds on the shore.

Now for some interesting Brown algae finds!



Introducing *Hydroclathrus clathratus* with a net-like structure and as light as a feather to hold. Often found washed up by the tide with the flotsam along South Beach. A distinctive feature of this algae is the number and size of the holes. It is found throughout Australia but not in Tasmania.



Colpomenia (**Ballweeds**) is a common genus in most regions of Australia. These can be found all year round in southern Australia with *Colpomenia sinuosa* (**Sinuuous Ballweed**) more commonly found in Summer and *Colpomenia peregrina* (**Wandering Ballweed**) more abundant in Winter. The photograph above is of Wandering Ballweed which is a temperate species, so ideally suited to our waters. It is characterised by an irregularly lobe-shaped outer membrane encasing a hollow interior.

Here is something interesting! Did you know?

- As a result of the species **Neptune's necklace** having a high iodine content, Tasmanian schoolchildren were once urged to eat a bead a day to keep goitre away!
- Seaweeds play an important role in many coastal environments. Seaweeds transform solar energy into chemical energy in the form of organic matter and make it available to a long list of hungry creatures, including humans. Seaweeds produce oxygen for life on land and in the ocean.
- Bull kelp is often used as a natural material in many forms of artwork due to its flexibility allowing for moulding into shapes and its rigidity when it dries out and then holds its shape.

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Is there something else? Yes... **Red Seaweeds**

As always, there are lots of other good stuff to discover as you wander around. If you find something you want to know more about, email a photo and a short description to John Miller: jmiller3350@gmail.com and he will endeavour to work it out for you

Please feel free to share this with anyone else who might enjoy the walk.

