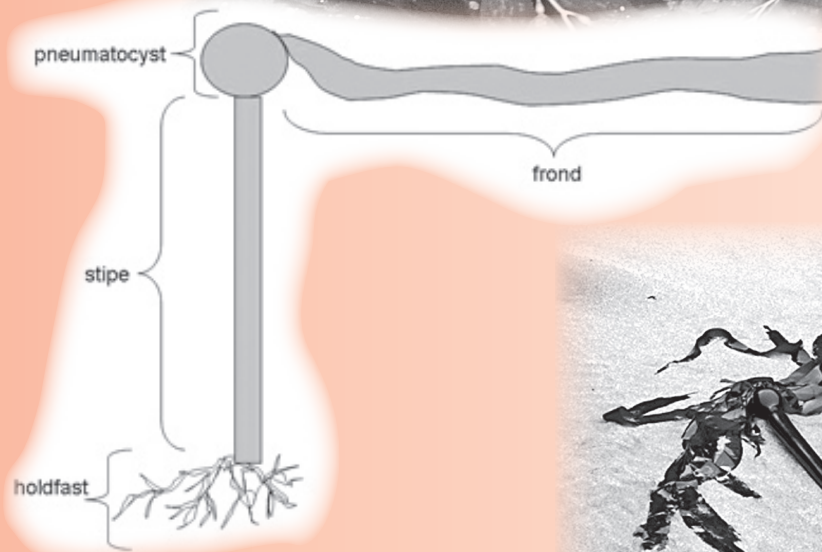


# A Forest Without Trees:

## The **KELP** **FOREST**

by Annie Prud'homme  
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The forest that grows in the shallow waters off our shores is different to the forest that we know on land. Not only are there no trees; there are also no plants! Giant seaweed (which is not classified as a plant by scientists – it is an alga) grows several metres high from the ocean floor. This alters the ocean currents and attracts many organisms to form rich ecosystems. Because the seaweed needs light to photosynthesize, kelp forests are usually found in very shallow waters (which sunlight can shine through), 15-40 metres in depth.



Floating California Giant Kelp. Source: US National Oceanic and Atmospheric Administration.



A piece of Bull Kelp.

It's difficult to believe that kelp, which looks so similar to a plant, is not one. Its anatomy or structure (see the diagram above) is different. Instead of having roots that absorb nutrients, kelp has a **holdfast** whose only purpose is to keep the kelp attached to the sea floor and prevent it drifting away in the currents.

Most kelp have a **stipe**, which looks like the stem of a plant, and helps keep the kelp straight as it reaches for the surface light. Some kelp have a **pneumatocyst**, a gas-filled bladder that pulls the kelp upright towards the surface and suspends the kelp in the water.

Finally, kelp have a **frond**, which looks like a leaf and is where photosynthesis takes place (sunlight is turned into sugars and other sources of food).

Many species of kelp are found in our kelp forests. Among the most notable is Bull Kelp (*Nereocystis luetkeana*). Its prominent **pneumatocyst** is filled with enough carbon monoxide gas to kill a small chicken



6 A diver in a kelp forest. Photo by Ed Bierman.



A Purple Sea Urchin. Source: US National Oceanic and Atmospheric Administration.

(note: carbon monoxide is one of the gases released by car exhaust). Its **frond** is also delicious to taste. It is an annual kelp, so it must reach its full height (up to 74 metres!) in one summer.

The California Giant Kelp (*Macrocystis pyrifera*) is perhaps the fastest growing organism on our planet, growing up to 30 cm (the length of your ruler) every single day!

Sea Otters are important in keeping kelp forests healthy. How? Sea Otters love to feast on prickly sea urchins. Sea urchins love to graze on the kelp. In areas where Sea Otters were hunted to extinction for their fur, the sea urchin population boomed and they ate all the kelp, creating an underwater desert called an “urchin barren”. With the re-introduction of Sea Otters along the BC coast, we are seeing healthy kelp forests growing again.

You can see a kelp forest through the following live web cam:

[www.mbayaq.org/efc/efc\\_kelp/kelp\\_cam.asp](http://www.mbayaq.org/efc/efc_kelp/kelp_cam.asp)

You can also discover more about the inhabitants of the kelp forests through this interactive software:

[www.nationalgeographic.com/monterey/ax/primary\\_fs.html](http://www.nationalgeographic.com/monterey/ax/primary_fs.html)



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A large piece of kelp. Photo by Stef Maruch ([www.flickr.com/photos/79257269@N00/1228333269](http://www.flickr.com/photos/79257269@N00/1228333269))