

Kelp Holdfast Lab

Background

- *Macrocystis pyrifera* (giant kelp) is a very important organism found in the coastal California waters
- It is one of the largest and fastest growing algal species in the world.
- Kelp is attached to the bottom by a structure called a **holdfast**. While the holdfast keeps the kelp stationary, it is not a root such as found in land plants, as roots absorb and transport water.
- The holdfast of *Macrocystis* is composed of many intertwined finger-like branches called **haptera**. One holdfast can shelter more than a hundred species of marine invertebrates and fishes.
- Fierce winter storms cause swells that break off kelp fronds and tear holdfasts from where they are anchored, setting the kelp adrift either as kelp paddies or to wash up upon the shore. Once torn loose, kelp can uproot other kelp plants in its path.
- . The entire kelp forest ecosystem is threatened by the climate change effects of warmer coastal waters and by increases in intensity of ENSO events that rip kelp from its attachment.

Laboratory Exercise

Materials:

Holdfast or portion of holdfast for each group.

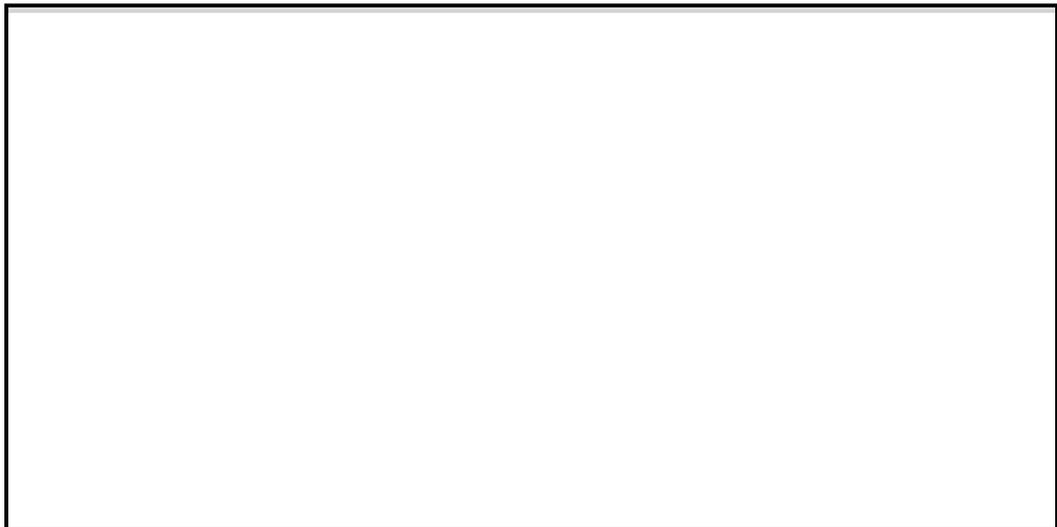
Tray to keep holdfast in and catch anything that falls from it.

Small clear containers or bowls with sea water for sorting specimens

Dissecting microscope

Today each group will receive a portion of a *Macrocystis* holdfast.

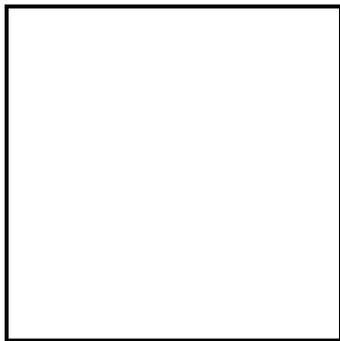
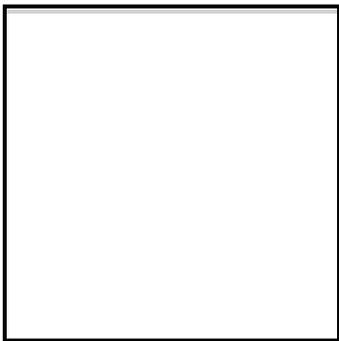
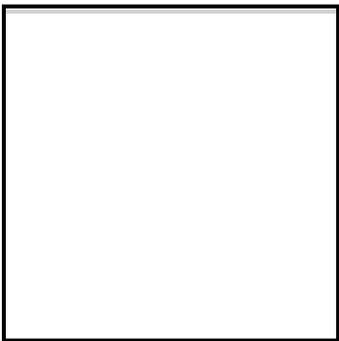
1. Holdfast observation – Describe/sketch in good detail what you see in the sample you were given prior to looking more closely.



2. Carefully pull apart the haptera of the holdfast portion in your tray.
Put the organisms in fresh seawater in the fingerbowls, sorting as you go (arthropods, echinoderms, etc.)

After sorting, try to identify your organisms and keep count of the how many you find.

3. Select and draw/sketch three different types of organisms you have found. Use a hand lens or microscope to get a more detailed view. Please give the general name of what type of organism it is and provide its phylum name.

		
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_____	_____	_____

4. List the different phyla you found represented in your holdfast and an example of what you found in that phyla.

5. Describe your impressions of the kelp holdfast and how this lab was helpful to better understand the importance of the holdfast.