

Sea Otter Importance

Name:

Period:

SEA OTTER_d
KELP_b
ABALONE_c

SEA URCHIN_d
TEST_{d'}
CORALLINE ALGAE_e

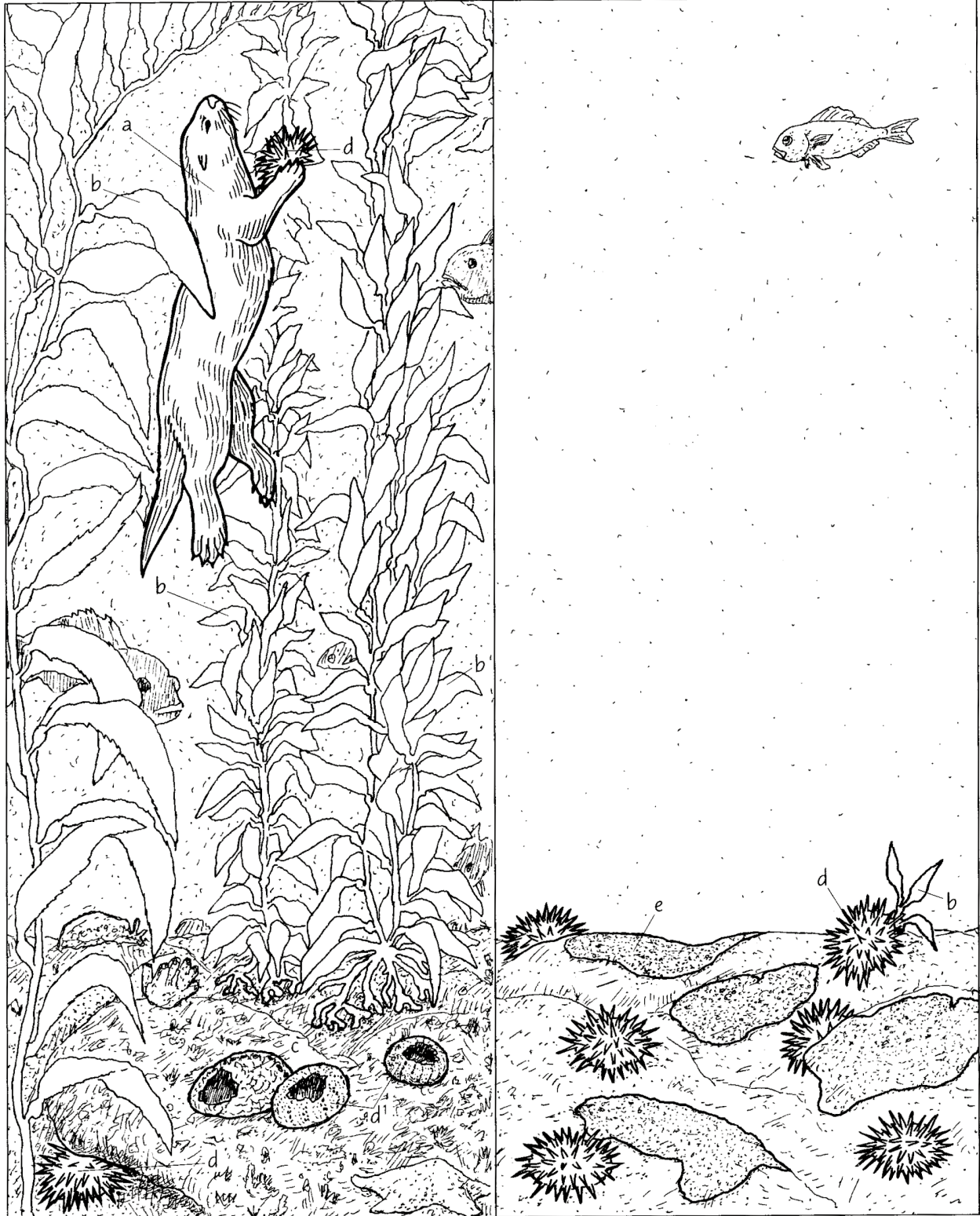


diagram from The Marine Biology Coloring Book (2000) by Thomas M. Niesen

Work: 12 points

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Follow the directions below to color-code the diagram and to answer the questions. Use colored pencils, and check off each box ☐ as you finish that part of the instructions.

For this exercise, you will be analyzing how changing the types of organisms found in a particular environment can cause changes in that environment.

Take a look at the diagram. The left side shows a kelp bed along the central coast of California. It exists in cold ocean water, in places where there is a rocky bottom. The right side shows the changes that result from removing just one organism from that area.

Attached firmly to the rocks on the ocean floor are different types of algae. Color any giant kelp you see (b) and its label brown ☐ . The sea otter's fur (a) should be colored red-brown ☐ , along with its label ☐ . Find the shell of the abalone (c) and color it grey. Next, color any spiky sea urchin (d) purple ☐ . You will also see some sea urchin shells without spikes or any living material in them. These are called "tests" (d1) and should be colored light purple ☐ . Finally, coralline algae (e) should be colored pink ☐ .

Now, watch this video: <http://www.bbc.com/future/story/20140121-sea-otters-our-ocean-protectors> and use information from it and your color-coded diagram to answer the questions below.

Which major predator, seen on the left side but not the right, eats abalone and sea urchins?

Sea urchins like to eat algae and kelp. What happens to the kelp if nothing is eating the sea urchins?

Abalone prefer to live in kelp forests. What happens to the abalone if the kelp forests disappear?

Remember that kelp does photosynthesis. What do you predict would happen to carbon dioxide in the oceans and atmosphere if kelp is no longer along the coast?

Similarly, what do you predict would happen to levels of oxygen in the oceans and atmosphere if kelp is no longer along the coast?

Finally, what do you predict would happen to animals in the ocean along the coast if kelp is no longer along the coast?

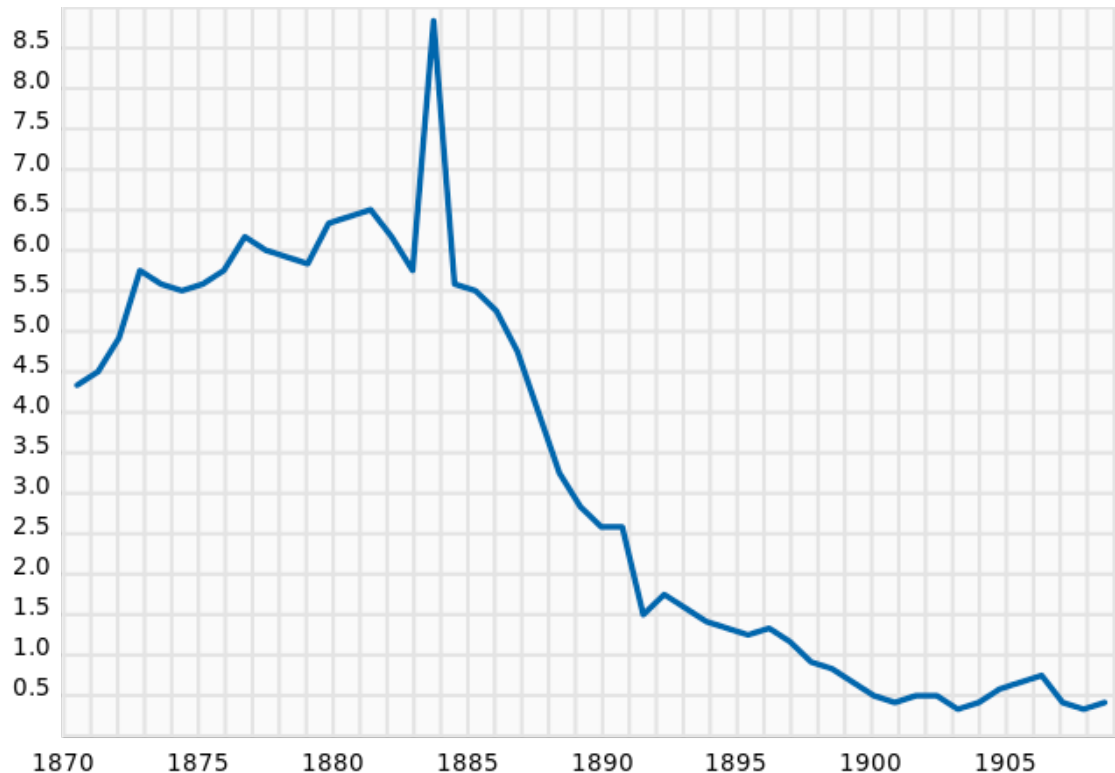
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In the 18th and 19th centuries, people decided that they wanted clothing and hats made out of sea otter fur. Trappers captured and killed sea otters all along the west coast of North America, almost to the point of extinction. Only a few were left, near Big Sur. Once rediscovered in the 1930's, the Big Sur colony was protected, and otters slowly spread north and south along the coast.

Look at the graph below. Across the top, put the title, "London Sea Otter Pelt Sales". Along the left side, add the label "thousands of pelts". Along the bottom, add the label "year".



Now to interpret the graph.

When were sea otter pelts in highest demand for use in clothing and hats? Circle that point on the graph, and write the year below.

What could explain the sharp drop in sea otter pelt use after 1885? Presume that people still want sea otter pelts for clothing and hats.