

SEA CHANGE

Grade Level:

K-3, adjust for appropriateness

Location:

Classroom, possible field trip

Vocabulary:

Oceans, endangered, extinct

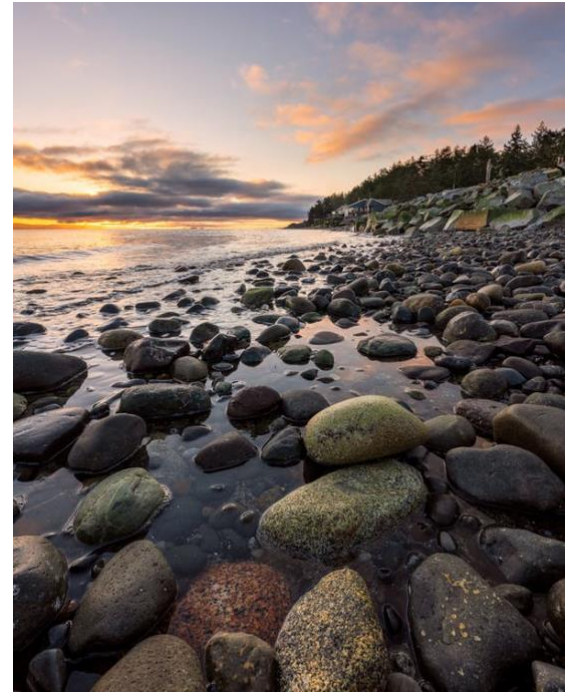
Materials:

Various — see activities below

Learning Outcomes:

Students will be expected to:

- discuss some of the problems that ocean life faces from humans, and
- name some endangered species living in Canadian oceans, particularly in B.C.



Method

Students will engage in various cross-curricular activities described below.

Background

British Columbia is home to many endangered plant and animal species. The Pacific coastal topography makes British Columbia different and unique from the rest of Canada. See the website <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html> for information and photos about B.C.'s endangered species.

Suggested Activities and Procedures

Ocean Diorama - Create your own ocean scene in a box. Print out sharks and whales, draw some seaweed, corals, and your favourite fish. Paste, colour, cut, hang them in a decorated box and enjoy the ocean. Try to include some endangered species in the marine environment of B.C.

Supplies needed:

- paper and a printer, or magazine pictures of ocean animals (stiff paper works best; coloured paper is also great for this project)
- a shoe box or slightly larger box
- crayons and/or markers
- tape, thread scissors
- optional: pipe cleaners (great for seaweed and coral), glitter (for great bubbles), thin cardboard to glue to the back of the animals if your paper is very flimsy (old cereal boxes work well)

Find a box at least as big as a shoe box - a slightly bigger box works even better. This will be the stage containing your ocean scene. Decorate the inside of the box to look like it's underwater. Draw the water, the ocean floor, rocks, coral, seaweed, fish, an octopus, bubbles, scuba divers, a submarine, etc. Glitter makes a wonderful addition. Sprinkle some on a little glue.



Print out the animals you want to be in the scene. For some ideas, here is a [list of whales](#) and a [list of sharks](#). Again, try to incorporate some of the [endangered or at-risk species in your region here](#) (Government of Canada).

If your paper is very flimsy and you think your printed animals may bend too much, paste the template onto thin cardboard (like an old cereal box). Let the paste dry.

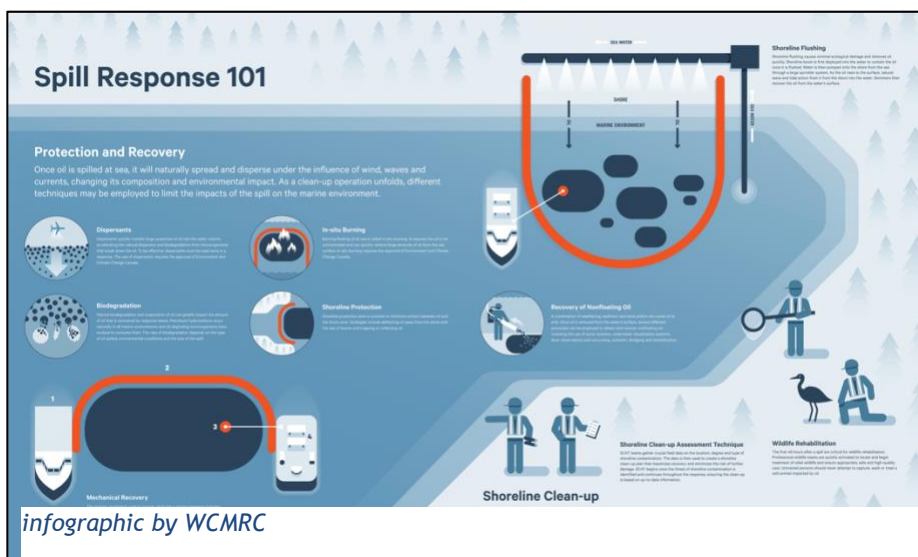
Using crayons or markers, decorate the animals and plants. Also, draw and decorate your own seaweed, corals, and favourite fish. Green construction paper cut in squiggly strips makes nice seaweed. Cut out the animals and plants.

Hang the fish and whales in the box using tape and thread. Tape your seaweed and coral to the bottom of the box. Green and brown pipe cleaners also make nice plants. Enjoy your ocean diorama!

Discussion

Imagine that there's been an oil spill in the ocean and therefore in their diorama. Teachers can also ask students to make one extra class diorama that they don't mind using as an example for an oil spill. For this extra realism, teachers can bring a cup of motor oil and pour it on the one diorama designated for this activity. Ask students to think about the consequences of this event. Will plants and animals die? How can this be prevented? Encourage students to explore the consequences of their answers. I.e. Is it feasible to just stop using oil entirely tomorrow? What equipment might be used to help ships avoid hitting big rocks or land that can rip open their hull and cause oil to leak out? (Check [this out](#) for facts and this [video!](#)) How have industry, government, Indigenous and environmental organizations worked together to prevent oil spills and mitigate any disasters? (*Resources and info below to help with this.*)

What happens if the endangered species don't recover from the oil spill? What can volunteers do to try and save species? (Teachers might hand out paper towels and have students make attempts to "wipe" up the mess.



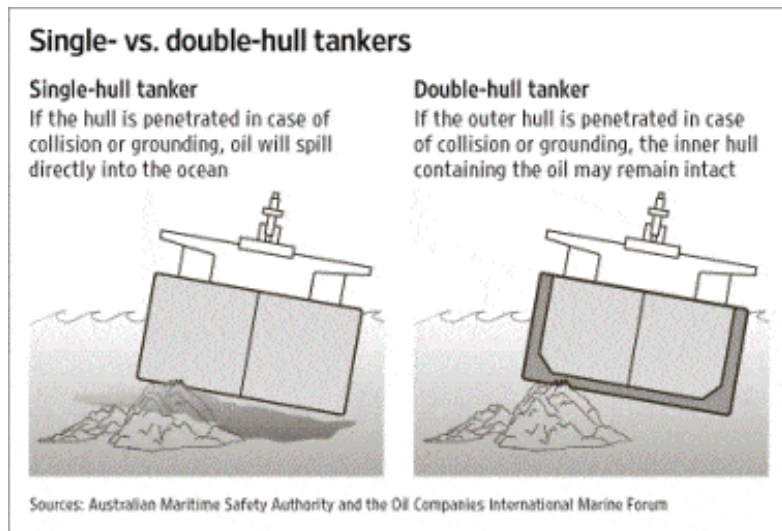
Note how sticky the oil is and have students think about how difficult it is to clean in the real ocean environment. Encourage students to study the Exxon Valdez disaster and discuss the results, the cleanup effort etc. from newspaper articles and Internet sites. Primary students will need some supervision when accessing these sites. Students can work in small groups if they wish.

What improvements have been made since the Exxon Valdez? (We've provided some information from the industry and government below to help, such as [double-hulled tankers](#). Here's the [Transport Canada](#) explanation on that. Teacher will need to help students understand the more technical elements. (Spill response details are [here](#).) Additional prevention measures provided [by ClearSeas](#) non-profit group:

- [Double hulls](#)
- Escort tugs
- Inspections
- Highly trained [local marine pilots](#) to guide vessels in transit as well as traffic control systems and navigational aids

Transport Canada's (Canadian Government) Video [Who Pays for Oil Spill](#) confirms that the **number of oil spills has decreased by 95% since the 1970s**.

(screenshot below). This is a remarkable milestone that will help ensure ocean environments remain pristine. Please try to reassure students it's not all "doom and gloom", as advised in this teaching resource called [Teach the Earth](#) (from the Science Education and Resource center at Carlton College.



<https://www.history.com/topics/1980s/exxon-valdez-oil-spill>

<http://www.evostc.state.ak.us/facts/ganda.html>,

<http://www.lessonplanspage.com/ScienceImmiscibleSolutionsInWater56.htm> (for teachers of gifted students who wish to try an “oil slick” experiment usually recommended for grades 5 and 6. Another video demonstration of how to [simulate and oil spill cleanup here](#), suitable for grade 2 and up. Ask students to review the Dawn detergent claim their dish soap is used to clean animals/birds impacted by oil spill. Fun fact: it’s true! See [CBS article](#).

Evaluation

- Discuss each group's findings with the rest of the class. What populations are most affected by this oil spill? Least affected? How do they know? Would you expect any organisms to become extinct as a result of this oil spill? Which ones? Why do you think they might? Humans interfere with organisms and populations of plants and animals in order to improve their own lives. What guidelines would you recommend when it comes to humans using the environment, whether it’s to ship oil or fish the waters or dam the rivers? Were students able to show some positive changes made to shipping regulations that will help prevent oil spills? We’ve provided some resources on this below and throughout the activity.

RESOURCE LINKS:

- [Transport Canada](#) Regulations: “All tankers built after July 6, 1993 must be [double hulled](#) to operate in Canadian waters, according to regulations on pollution and dangerous chemicals under the *Canada Shipping Act, 2001*. A double hull has two complete layers of watertight hull surface on the bottom and sides.” Transport Canada Tanker Ship Inspection [Video here](#).
- [Clear Seas Double Hull](#)
- Oil Spill [Prevention Video](#) (Industry)
- [Western Canada Marine Response Corporation](#). Invite them to speak to your class!
Contact: 604-294-6001
info@wcmrc.com

WCMRC is the Transport Canada-certified marine spill response organization for Canada’s West Coast. Our mandate under the Canada Shipping Act is to be prepared to respond to marine oil spills along all 27,000 km of British Columbia’s coastline, and to mitigate the impact when a spill occurs. This includes the protection of wildlife, economic and environmental sensitivities, and the safety of both the responders and the public.

This activity was developed by
[FORED BC](#). Some photos from
[Pexels.com](#)