



**OCEAN
WISE**

Ocean Plastics Education Kit

STUDENT WORKBOOK

Elementary School (Grades 3-6)

LESSON 1
The History of Plastics

LESSON 2
How Plastics Travel
to the Ocean

LESSON 3
Big or Small, Plastics Have
a Huge Impact

LESSON 4
Plastics at the Wheel, Driving
Through Ocean Currents

LESSON 5
Plastics and Climate Change,
a Never Ending Cycle

LESSON 6
Cleanup Your Shoreline for
a Cleaner Ocean

LESSON 1
**THE HISTORY OF
PLASTICS**

LESSON 2
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TO THE OCEAN**

LESSON 3
**BIG OR SMALL,
PLASTICS HAVE A
HUGE IMPACT**

LESSON 4
**PLASTICS AT THE
WHEEL, DRIVING
THROUGH OCEAN
CURRENTS**

LESSON 5
**PLASTICS AND
CLIMATE CHANGE, A
NEVER ENDING CYCLE**

LESSON 6
**CLEANUP YOUR
SHORELINE FOR A
CLEANER OCEAN**





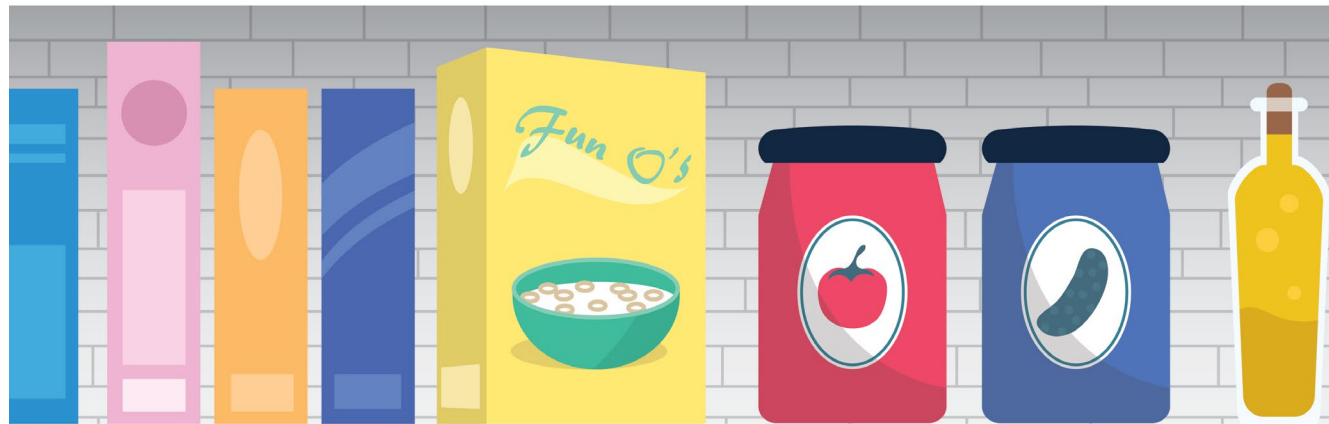
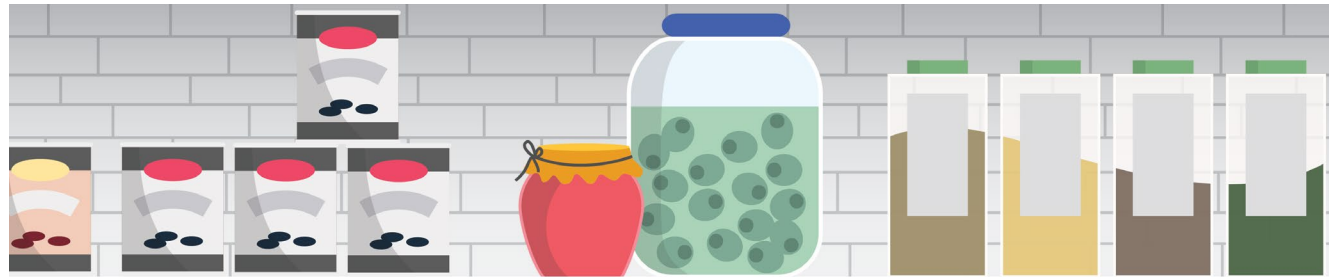
LAND ACKNOWLEDGEMENT

We acknowledge and are grateful that Ocean Wise employees live, work, and play on the traditional, ancestral and unceded territories of the x^wməθk^wəy̓əm (Musqueam), Sk̓w̓x̓w̓ú7mesh (Squamish), and sə́ilwətaʔɬ (Tseil-Waututh) peoples.

Lesson 1

The History Of Plastics





ACTIVITIES

- 1 You are working at a plastic production facility! Draw the molds that you would need to make the following products. If completing this activity online, use a separate sheet of paper for this activity.

Plastic Hand Glove

A large, empty rectangular box with a thin grey border, intended for drawing a mold for a plastic hand glove.

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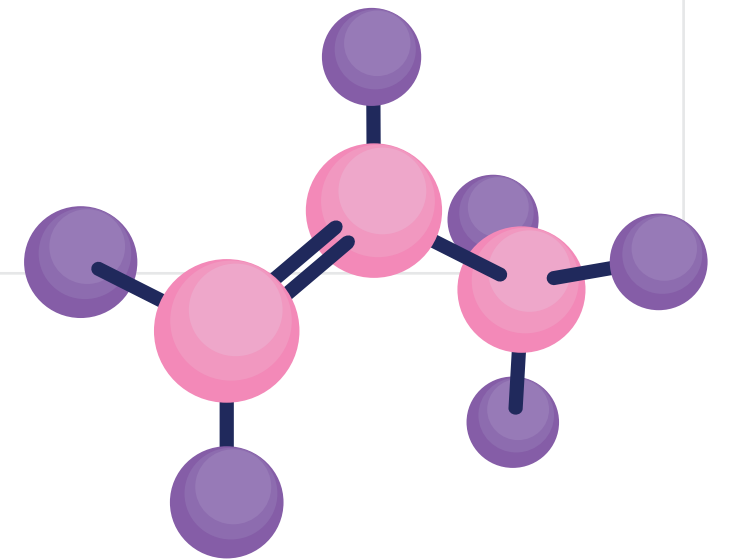
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Plastic Water Bottle

Plastic Bin



2 a) Draw a picture of the plastic waste item you found. If completing this activity online, use a separate sheet of paper for this activity.

b) Describe how this plastic looks and feels.

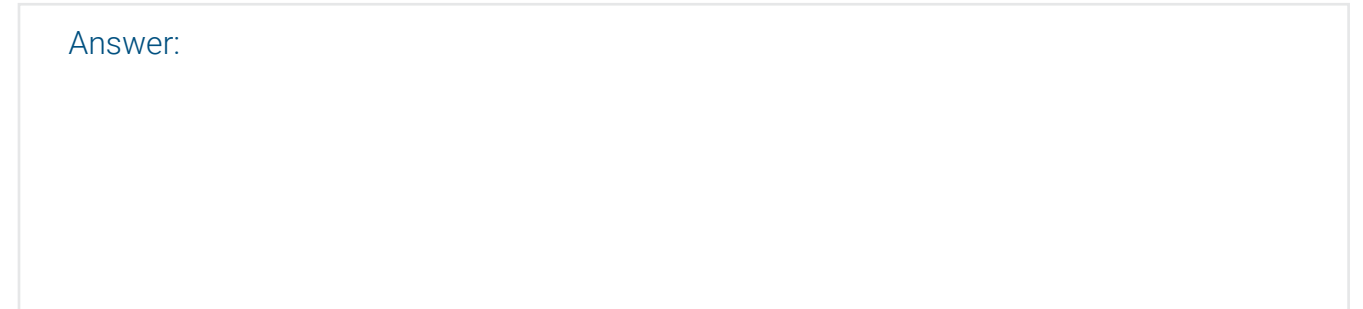


3 a) Draw some of the fur trade goods mentioned during the class discussion. If completing this activity online, use a separate sheet of paper for this activity.



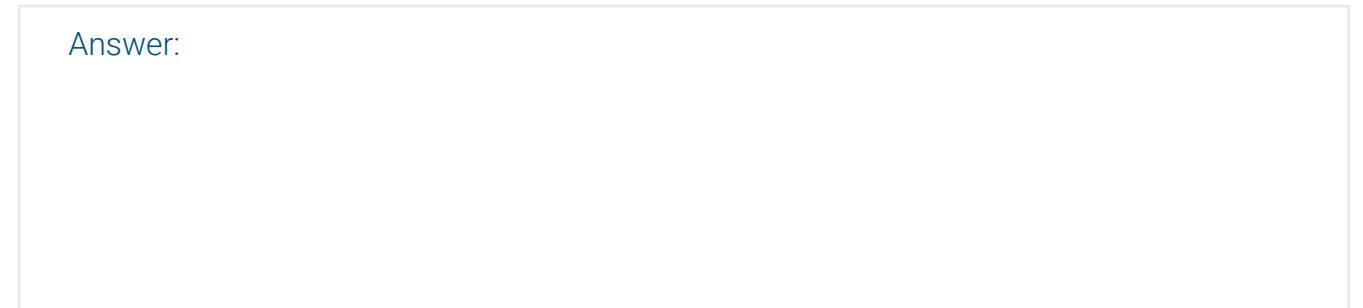
b) Why were these useful objects during the fur trade? Are they still useful today?

Answer:



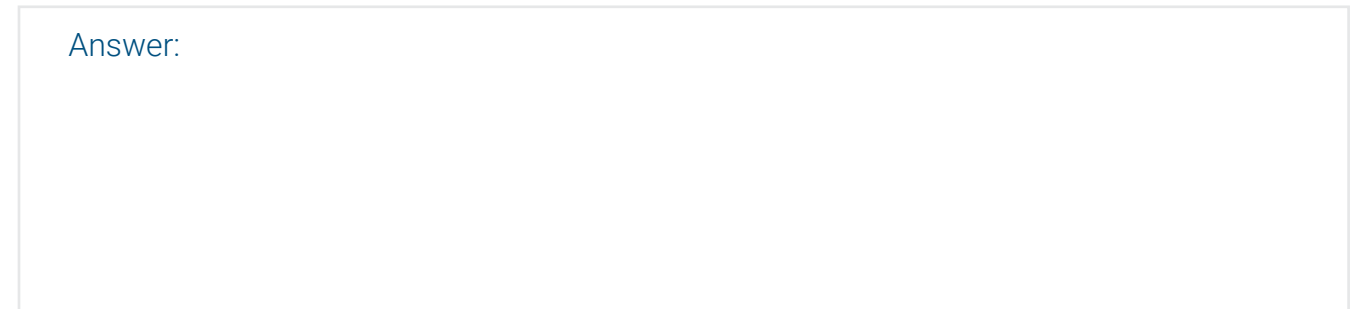
c) With which material, do you think, these objects were made of during the time of the fur trade?

Answer:



d) With which material, do you think, these same objects are made with today?

Answer:



THOUGHTBOOK

In this lesson, you have been introduced to plastic as a consumer good and how it has impacted society and the environment. Take a minute to reflect on what you learned, especially regarding the presence of plastics in our modern world.

REFLECT

1. How can plastic take any shape we want it to?



2. Look around you, why are you surrounded by so much plastic?



3. What makes plastic dangerous for the environment and society?



TAKE ACTION



Get the details and specifics about recycling collections in your area!

THE WHY?

Even though most plastics can only be recycled once, recycling can significantly reduce the number of raw materials extracted, energy consumed, and greenhouse gasses released during the production of synthetic polymers, just like the one you researched. By recycling plastic waste, you are allowing plastics to be used to their full potential and limiting the unnecessary production of plastic polymers by giving the existing ones a second life!



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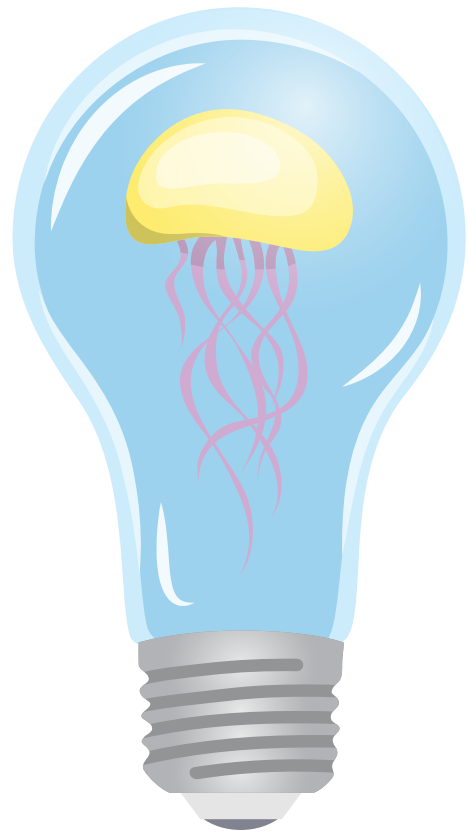
Lesson 2

How Plastics Travel to the Ocean



ACTIVITIES

- 1 Draw a comic strip illustrating the story of a piece of plastic garbage traveling from land to the ocean. If completing this activity online, use a separate sheet of paper for this activity.

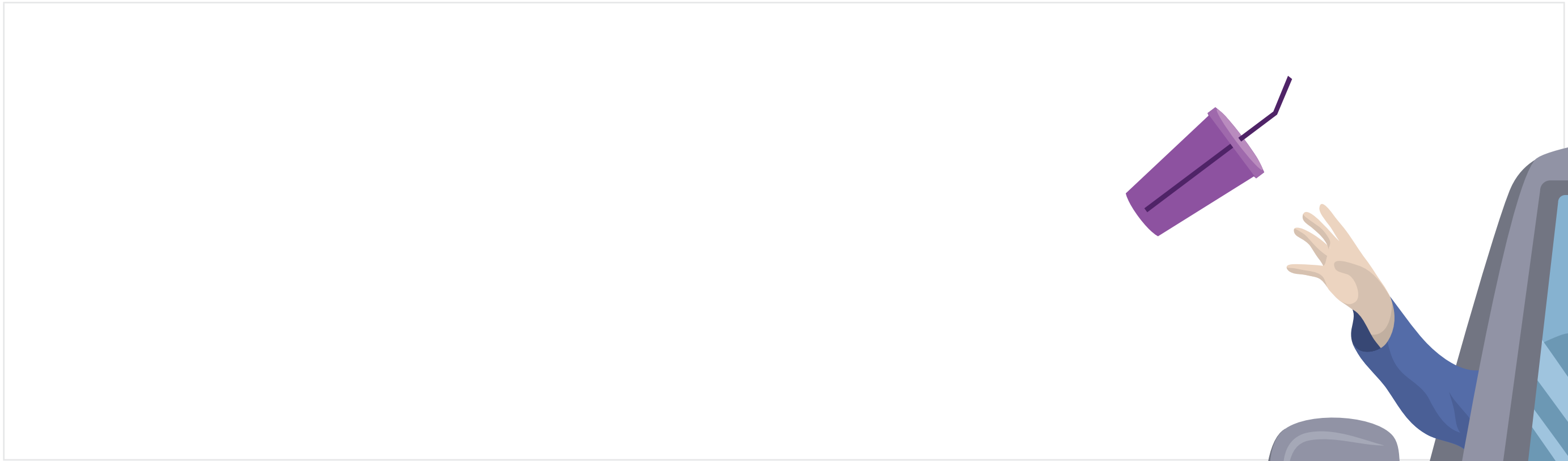
A large, empty rectangular box with a thin grey border, intended for drawing a comic strip illustrating the story of a piece of plastic garbage traveling from land to the ocean.

THOUGHTBOOK

From these activities and discussions, you discovered how plastics go from being a consumer good to an ocean pollutant by traveling to the sea. Take a moment to reflect on the ways that the plastic waste you produce can harm marine environments and coastal Indigenous communities.

REFLECT

1. How can we better show love, care, and respect for the ocean and all it provides to us?



2. How can a plastic bag, straw, or cup, make its way from your school to the ocean?



3. How could we stop plastic from entering the ocean?



TAKE ACTION



Watch [Take The Pledge by Ocean Wise](#) and visit [Be Plastic Wise by Ocean Wise](#) and take the pledge, whether it be individually or as a class. Go over the different steps on how to stay accountable in this challenge by [Reducing Your Plastic Footprint by Ocean Wise](#).

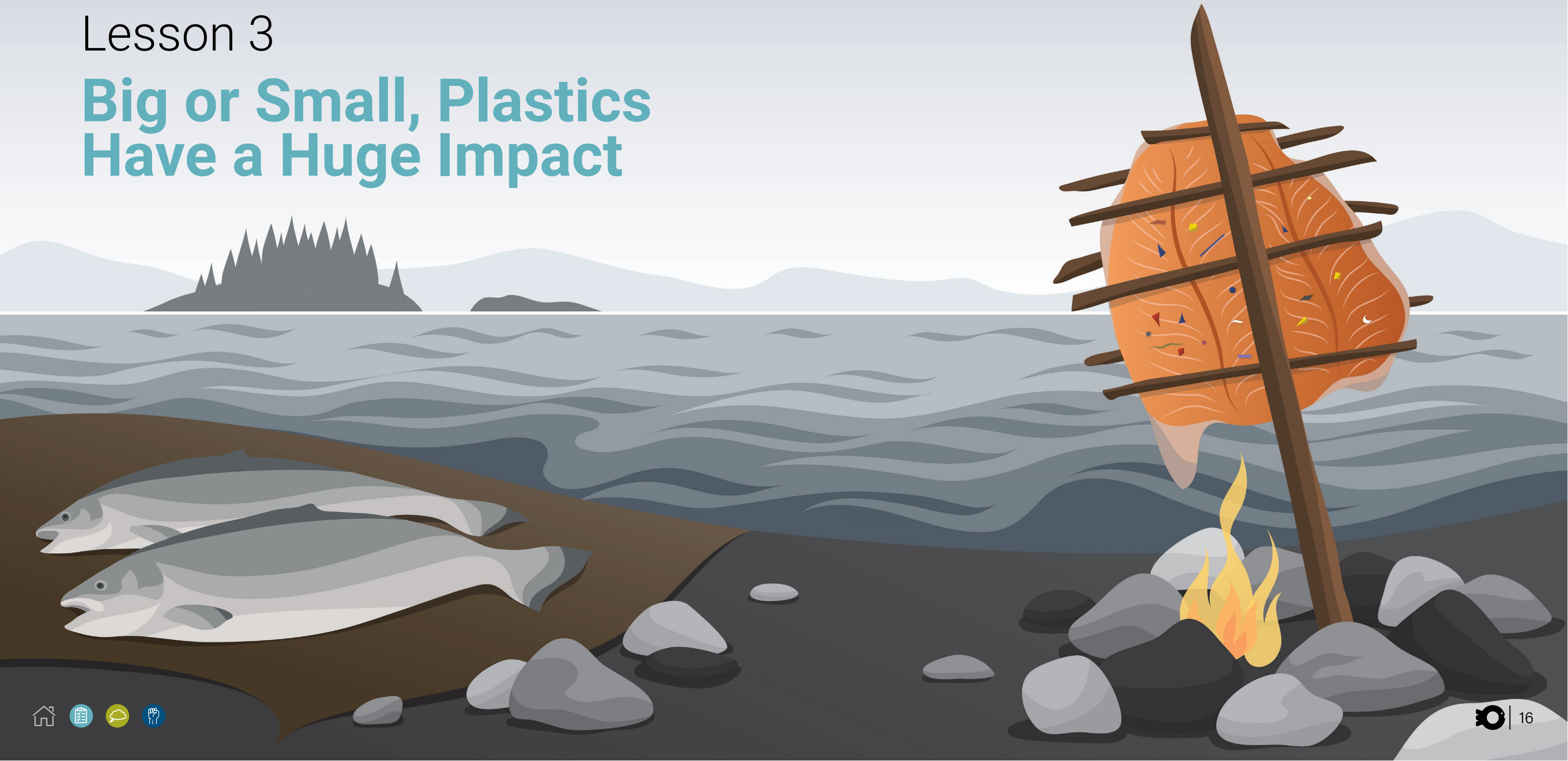
THE WHY?

According to experts from the [Ocean Wise's Plastic Lab](#), reducing your plastic footprint is the best way to help protect the ocean from plastic pollution. Removing plastic from the ocean and waterways is important, but if we keep consuming plastics, it will continuously enter the ocean and contribute to the never-ending cycle of ocean plastic pollution! Help to solve this issue by reducing the plastic you use, buy, and discard. Talk to someone you know about the pledge and see if you can inspire action in others around you.



Lesson 3

Big or Small, Plastics Have a Huge Impact



ACTIVITIES

1 Describe how each type of plastic litter below can harm an ocean animal. Make sure to name a specific ocean animal.



Ocean animal name:

How this harms the animal:



Ocean animal name:

How this harms the animal:



Ocean animal name:

How this harms the animal:

2 a) Select a marine animal affected by plastics and fill out the information in the Plastics and Marine Animals Investigation sheet below.

Your Name:
Your Partner's Name:
Name of Animal:
Latin name of animal:
Type of animal (circle correct type): Reptile Mammal Bird Invertebrate Fish
Size:
Habitat needs:
Food/prey types:
Method of obtaining food:
Predators:
Methods of evading predators:

Impacts of plastic:

Type of plastic	How it impacts the animal (food mistaken identity or entanglement, entrapment...)	What survival need is affected? And how?

- b) From the information in your Plastics and Marine Animals Investigation Sheet, create a poster by drawing the animal you chose. Include information about its prey, predators, and how it's affected by plastic pollution. If completing this activity online, use a separate sheet of paper for this activity.



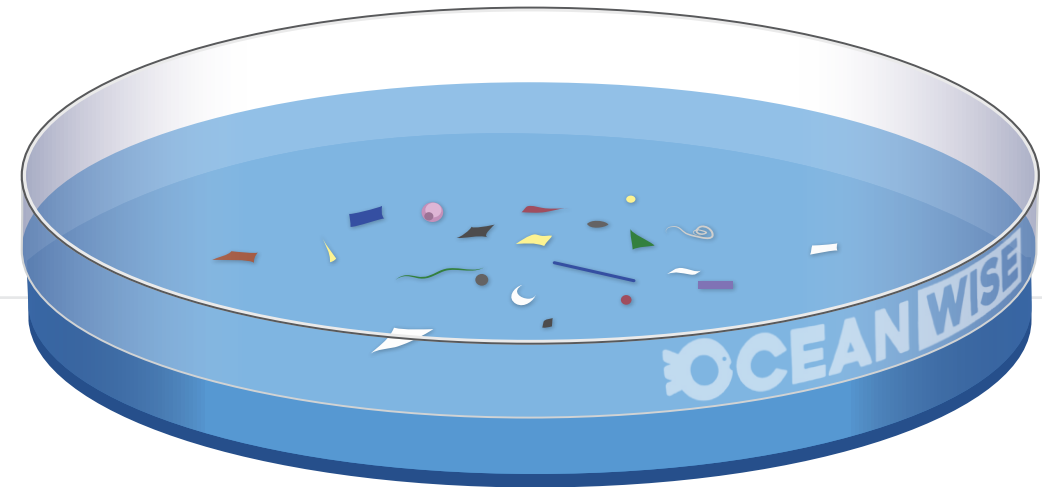
3 Write a thank you letter to the lands or waters near you, expressing your gratitude for them:

THOUGHTBOOK

As you now know, plastics come in all shapes and sizes which affect how they harm ocean health and marine species. While microplastics are tiny, they ironically have a huge impact! Think of this when reflecting on the following questions.

REFLECT

1. What are the different ways that plastic impacts ocean animals and habitats?



2. Why are small plastics (microplastics) so harmful to ocean animals?



3. What are some steps you can take to help reduce plastic pollution/litter in your school?





TAKE ACTION



Minimize the microfibers you release into waterways by:

- buying fewer synthetic clothes
- washing synthetic items less often (try spot cleaning!)
- washing clothes in cold water on gentle cycles

THE WHY?

Researchers have found polyester fibers in the ocean as far away as the Arctic, believed to be from common polyester clothing. When buying new clothes, be sure to check their labels. Generally, clothes composed of more synthetic “ingredients” have a greater risk of releasing microfibers such as polyester, nylon, acrylic, and lyocell. Instead, look for clothing made from hemp, linen, and bamboo. Spot cleaning and washing your clothes less often reduces the number of microfibers released into the ocean. Ocean Wise research found that washing clothes in cold water on a gentle cycle reduces microfiber shedding by up to 70%.



Lesson 4

Plastics at the Wheel, Driving Through Ocean Currents



ACTIVITIES

1 On the world map below, circle the different areas where the friendly floaties may have traveled to and explain why.



2 Answer the questions below after watching, [Hokulea Sailed Around The World, But Couldn't Escape Plastic – Ocean Stories by Ocean Wise](#) and [How Our Trash Reaches Remote Beaches by Earth Fix Media](#).

a) How are these remote islands and beaches accumulating so much plastic and garbage?

b) What are the key messages you found from watching the Hokulea voyage? How can we apply these to our daily lives?

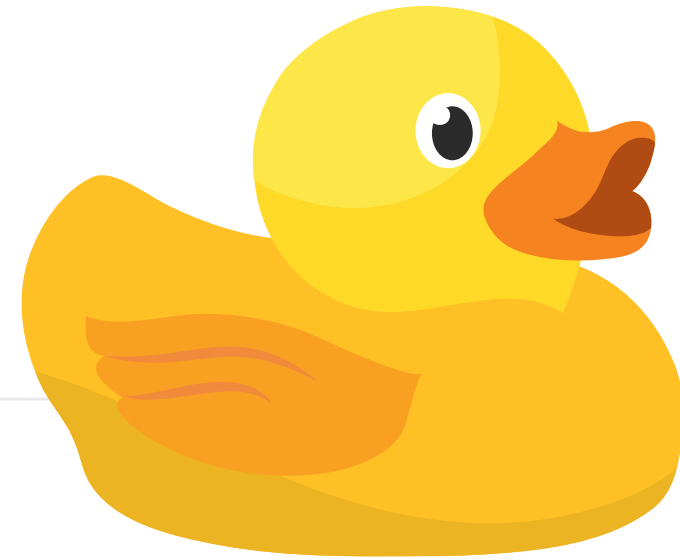
c) What does mālama honua mean? How could you take that translation and include it in your life in a meaningful way?

THOUGHTBOOK

Wow, most plastics have probably traveled around the world more than you have! Reflect on what you learned about plastic pollution traveling throughout the ocean via ocean currents.

REFLECT

1. How deep is the ocean compared to the large things on land like mountains and skyscrapers?



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2. How strong are ocean currents?



3. How do plastics travel around the world?



TAKE ACTION



By checking out the [Plastic Wise Partner Map by Ocean Wise](#), support a plastic reduction partner or encourage your favorite business or restaurant to #BePlasticWise and join the Plastic Wise partners!

THE WHY?

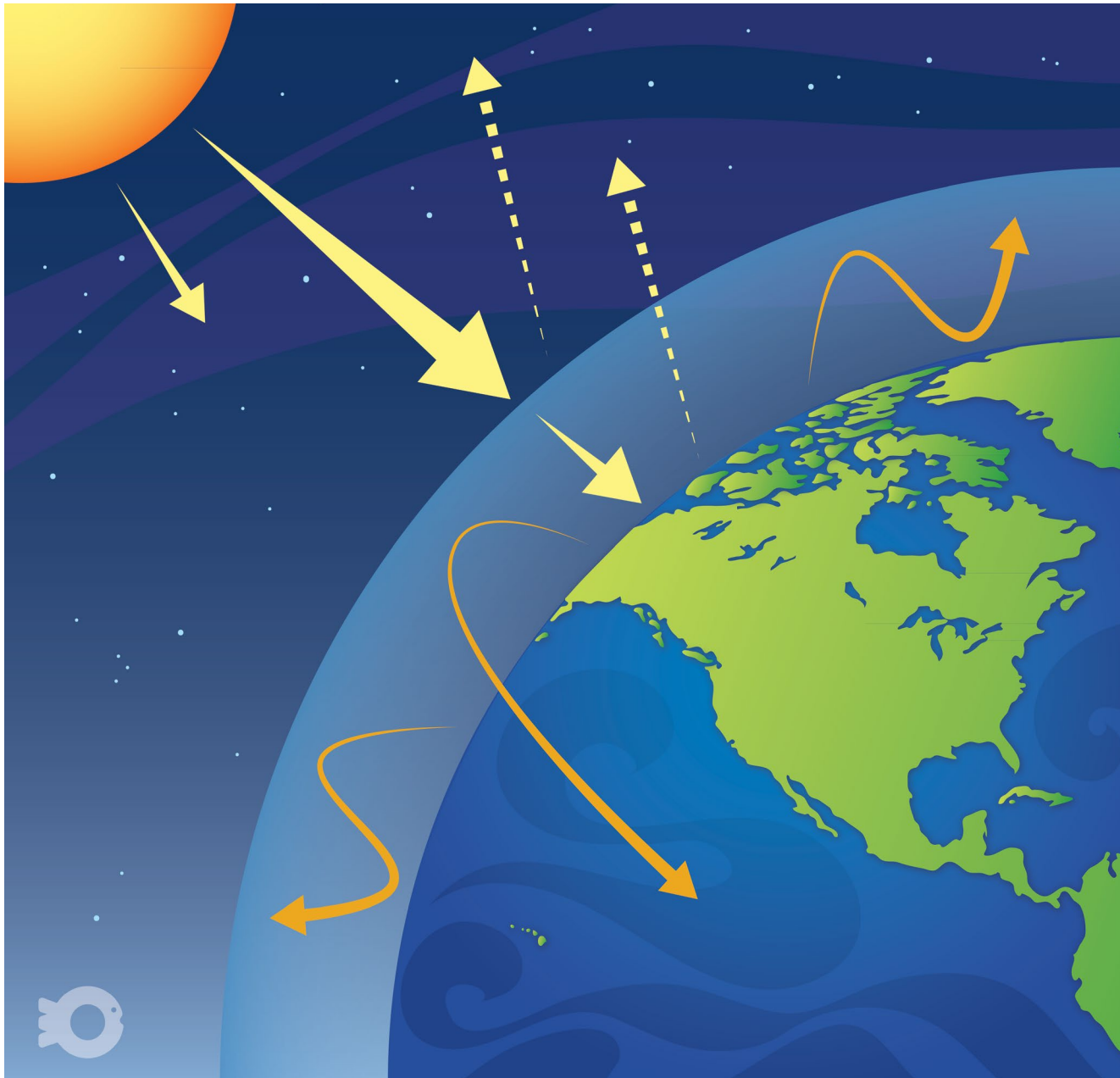
Plastic pollution isn't only produced by individuals or households, it's produced by businesses too. And, like it or not, the choices you make when supporting a business ties you to their plastic pollution. Have you ever gotten plastic boxes and cutlery when ordering take-out at a restaurant, or ordered something online and received it in a plastic bag? Whether you are buying from a business at home or abroad, you are (perhaps unknowingly) contributing to the international plastic pollution problem. By supporting plastic reduction partnered businesses, or encouraging your favorite companies to #BePlasticWise, whether they be local or international, you can help reduce the plastic pollution entering our ocean. This way, it won't be plastic pollution connecting us but the determination and efforts to protect the ocean!



Lesson 5

Plastics and Climate Change, a Never Ending Cycle





ACTIVITIES

1 Answer the following questions based on your observations from the [Greenhouse Effect Simulation by PHET](#).

a) How does the amount of heat returning to the atmosphere change as greenhouse gasses increase?

Answer:

b) What happens to the surface thermometer and surface temperature when greenhouse gasses increase? Explain why.

Answer:

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2 Create a poster to inform people of the different ways they can reduce their plastic consumption and plastic footprint. If completing this activity online, use a separate sheet of paper for this activity.

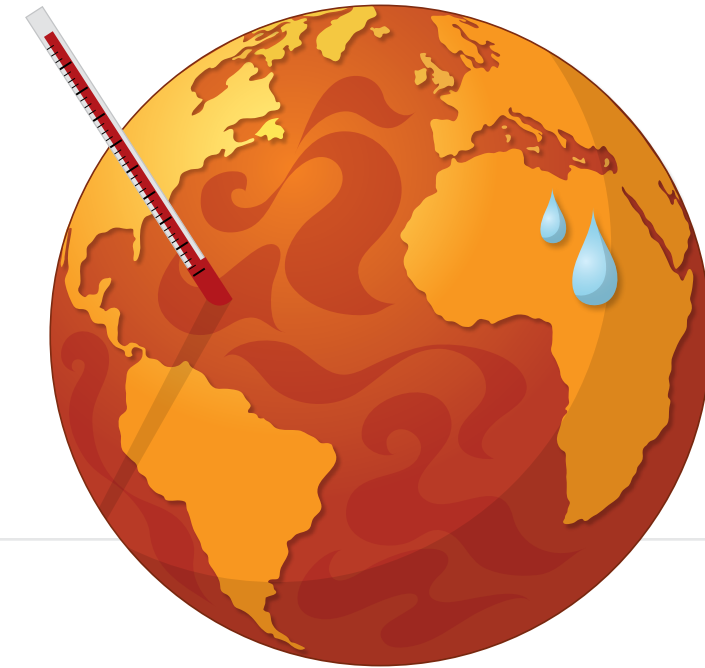


THOUGHTBOOK

Would you have ever thought that plastic can also contribute to climate change? Well now you know, and you are aware that the life cycle of plastic begins polluting before it's even discarded by the consumer. Take a minute to reflect on what you have learned and how it might urge you to change your habits.

REFLECT

1. What are greenhouse gasses?



2. How does plastic contribute to climate change?



3. How can you reduce your plastic footprint?



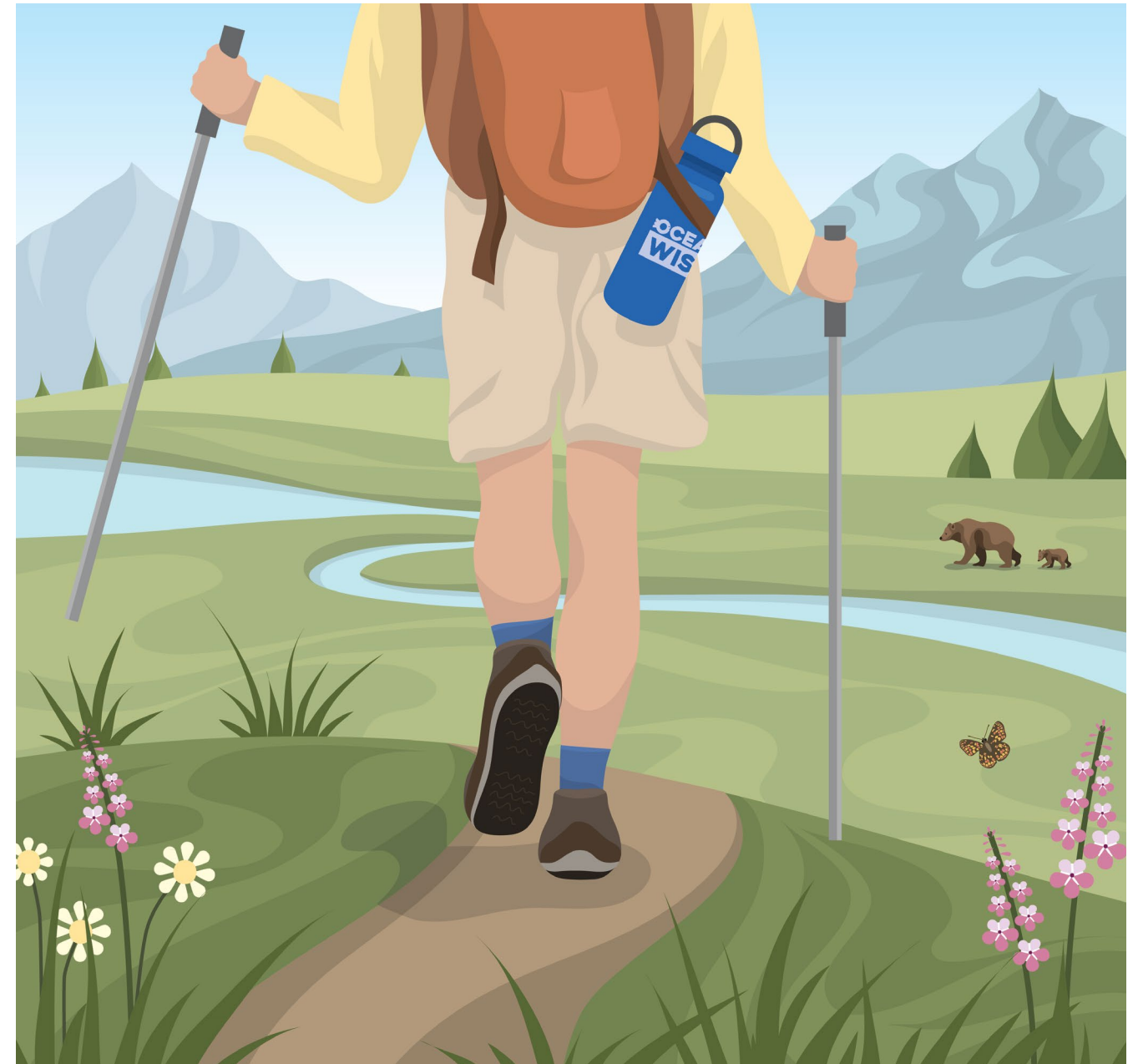
TAKE ACTION



Reduce your consumption of plastics! Buy a glass or stainless-steel water bottle, a cotton and non-woven polypropylene grocery bag, a bamboo toothbrush, or better yet, re-use items you already have at home!

THE WHY?

By reducing the amount of plastic you purchase, whether that be single use or multi-use, you are no longer supporting the plastic life cycle which contributes to climate change from start to finish. More specifically, you are preventing your consumer habits from contributing to oil production and fracking, the production of petrochemical byproducts, incineration of plastics, the overwhelming of landfills and recycling centers from plastics, and environmental pollution.



Lesson 6

Cleanup Your Shoreline for a Cleaner Ocean



ACTIVITIES

1 Record the different types of garbage you observed and collected during the garbage clean up in the data card here.



OCEAN WISE

SHORELINE CLEANUP

Presented by Loblaw Companies Limited

Individual Data Card

SITE INFORMATION:

Cleanup Site Name	Cleanup Date	
Site Coordinator	Distance Cleaned (KM)	
Total Weight (KG)	# of Garbage Bags	# of Recycling Bags
# of Volunteers Working On This Card	Most Unusual Item	

Citizen scientists: Pick up all litter that you find and record data only for the items listed on the back. Please do not use words or check marks. Only numbers are useful. Please return this card to the Site Coordinator when complete.

EXAMPLE:

Plastic Bags:		TOTAL #
	=	8

PRESENTING SPONSOR

Loblaw Companies Limited

NATIONAL SPONSORS

Trash Collected

<p>MOST LIKELY TO FIND ITEMS:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Cigarette Butts:</td><td style="text-align: right;">=</td></tr> <tr><td>Beverage Cans:</td><td style="text-align: right;">=</td></tr> <tr><td>Bottle Caps:</td><td style="text-align: right;">=</td></tr> <tr><td>Coffee Cups and Lids:</td><td style="text-align: right;">=</td></tr> <tr><td>Food Containers: <small>(i.e. yogurt or snack cups, milk containers)</small></td><td style="text-align: right;">=</td></tr> <tr><td>Food Wrappers:</td><td style="text-align: right;">=</td></tr> <tr><td>Glass Bottles:</td><td style="text-align: right;">=</td></tr> <tr><td>Paper:</td><td style="text-align: right;">=</td></tr> <tr><td>Plastic Bags:</td><td style="text-align: right;">=</td></tr> <tr><td>Plastic Bottles:</td><td style="text-align: right;">=</td></tr> <tr><td>Plastic Cups:</td><td style="text-align: right;">=</td></tr> <tr><td>Six Pack Holders:</td><td style="text-align: right;">=</td></tr> <tr><td>Straws:</td><td style="text-align: right;">=</td></tr> <tr><td>Takeout Containers:</td><td style="text-align: right;">=</td></tr> <tr><td>Utensils:</td><td style="text-align: right;">=</td></tr> </table> <p>TOP 3 ADDITIONAL ITEMS:</p> <p style="font-size: x-small;">Identify the top 3 items found that are not listed on the card</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>1:</td><td style="text-align: right;">=</td></tr> <tr><td>2:</td><td style="text-align: right;">=</td></tr> <tr><td>3:</td><td style="text-align: right;">=</td></tr> </table>		TOTAL #	Cigarette Butts:	=	Beverage Cans:	=	Bottle Caps:	=	Coffee Cups and Lids:	=	Food Containers: <small>(i.e. yogurt or snack cups, milk containers)</small>	=	Food Wrappers:	=	Glass Bottles:	=	Paper:	=	Plastic Bags:	=	Plastic Bottles:	=	Plastic Cups:	=	Six Pack Holders:	=	Straws:	=	Takeout Containers:	=	Utensils:	=		TOTAL #	1:	=	2:	=	3:	=	<p>FISHING GEAR:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Fishing Buoys, Pots or Traps:</td><td style="text-align: right;">=</td></tr> <tr><td>Fishing Net and Line:</td><td style="text-align: right;">=</td></tr> <tr><td>Rope (1 metre = 1 piece):</td><td style="text-align: right;">=</td></tr> </table> <p>PRODUCT PACKAGING</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Soft Plastic Packaging:</td><td style="text-align: right;">=</td></tr> <tr><td>Rigid Bottles and Jugs:</td><td style="text-align: right;">=</td></tr> </table> <p>PERSONAL HYGIENE:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Diapers, Wipes, Tampons, Condoms:</td><td style="text-align: right;">=</td></tr> <tr><td>Syringes:</td><td style="text-align: right;">=</td></tr> <tr><td>Personal Protective Equipment: <small>(i.e. gloves, masks)</small></td><td style="text-align: right;">=</td></tr> </table> <p>TINY TRASH LESS THAN 2.5 CM:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Styrofoam Pieces:</td><td style="text-align: right;">=</td></tr> <tr><td>Plastic Pieces:</td><td style="text-align: right;">=</td></tr> </table> <p>OTHER TRASH:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;"></td> <td style="width: 20%; text-align: right; font-size: small;">TOTAL #</td> </tr> <tr><td>Balloons:</td><td style="text-align: right;">=</td></tr> <tr><td>Clothing, Shoes:</td><td style="text-align: right;">=</td></tr> <tr><td>Construction Materials:</td><td style="text-align: right;">=</td></tr> <tr><td>Large Styrofoam:</td><td style="text-align: right;">=</td></tr> <tr><td>Tires:</td><td style="text-align: right;">=</td></tr> <tr><td>Toys:</td><td style="text-align: right;">=</td></tr> </table>		TOTAL #	Fishing Buoys, Pots or Traps:	=	Fishing Net and Line:	=	Rope (1 metre = 1 piece):	=		TOTAL #	Soft Plastic Packaging:	=	Rigid Bottles and Jugs:	=		TOTAL #	Diapers, Wipes, Tampons, Condoms:	=	Syringes:	=	Personal Protective Equipment: <small>(i.e. gloves, masks)</small>	=		TOTAL #	Styrofoam Pieces:	=	Plastic Pieces:	=		TOTAL #	Balloons:	=	Clothing, Shoes:	=	Construction Materials:	=	Large Styrofoam:	=	Tires:	=	Toys:	=
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Thank you for contributing to trash free shorelines.

[#teamshoreline](#)
 /shorelinecleanup
 @shorelinecleanup
 @cleanshorelines

2 Journal about your garbage clean up experience. What type of garbage did you collect? What animals did you see? How did you help those animals during your garbage clean up? How do you feel knowing you helped the environment and the people who depend on it for life?

Journal Entry:

3 In the table below, write down some of the *Dirty Dozen* items you use on a weekly basis and come up with non-plastic or reusable plastic alternatives.

Dirty Dozen Item	Non-Plastic Alternative

THOUGHTBOOK

Shoreline cleanups are a powerful environmental remediation and conservation tool. Reflect on how you can bring shoreline cleanups to your local community and make a difference!

REFLECT

1. How can you help clean up the environment?



2. When you take action to protect the environment, how does it make you feel?

3. How are you helping the environment, and other people by cleaning up your shorelines?



TAKE ACTION



Take part in an [Ocean Wise Shoreline Cleanup](#) with your classmates or within your community!

THE WHY?

So far, Ocean Wise's shoreline cleanups have removed 13,915kg of litter from coastlines in Canada and the United States. That's the equivalent of 700 killer whales! Shoreline cleanups have prevented plastics from entering marine ecosystems, reducing fatal impacts on thousands of species, such as the hawksbill sea turtle. Since plastics travel with ocean currents around the world, by participating in a shoreline cleanup, you are directly contributing to the removal of plastics in every ocean and shoreline around the world!



WHAT IS OCEAN WISE?

Ocean Wise is a non-profit organization whose mission is to empower communities and individuals to take action to protect and restore our world's ocean.

Ocean Wise does this by tackling three critical ocean challenges - climate change, overfishing and plastic pollution – through six intersecting initiatives: seaforestation, changing arctic, plastics, fisheries and seafood, youth, and whales. Through our work we make a real and measurable difference to the health and well-being of the ocean and the people who depend on it. You can learn more about the actions you can take at ocean.org.

Looking for more Ocean education?

Ocean Wise's Education team offers in-person mobile education opportunities, online virtual programs, and more. Ocean Wise's Professional Development Workshops are designed to train educators on discussing ocean health and literacy for students K-12. Visit ocean.org or email education@ocean.org to learn more.

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