Species at Risk

Student Workbook

Grade 9 - 12

OCEAN WISE

CONTENTS

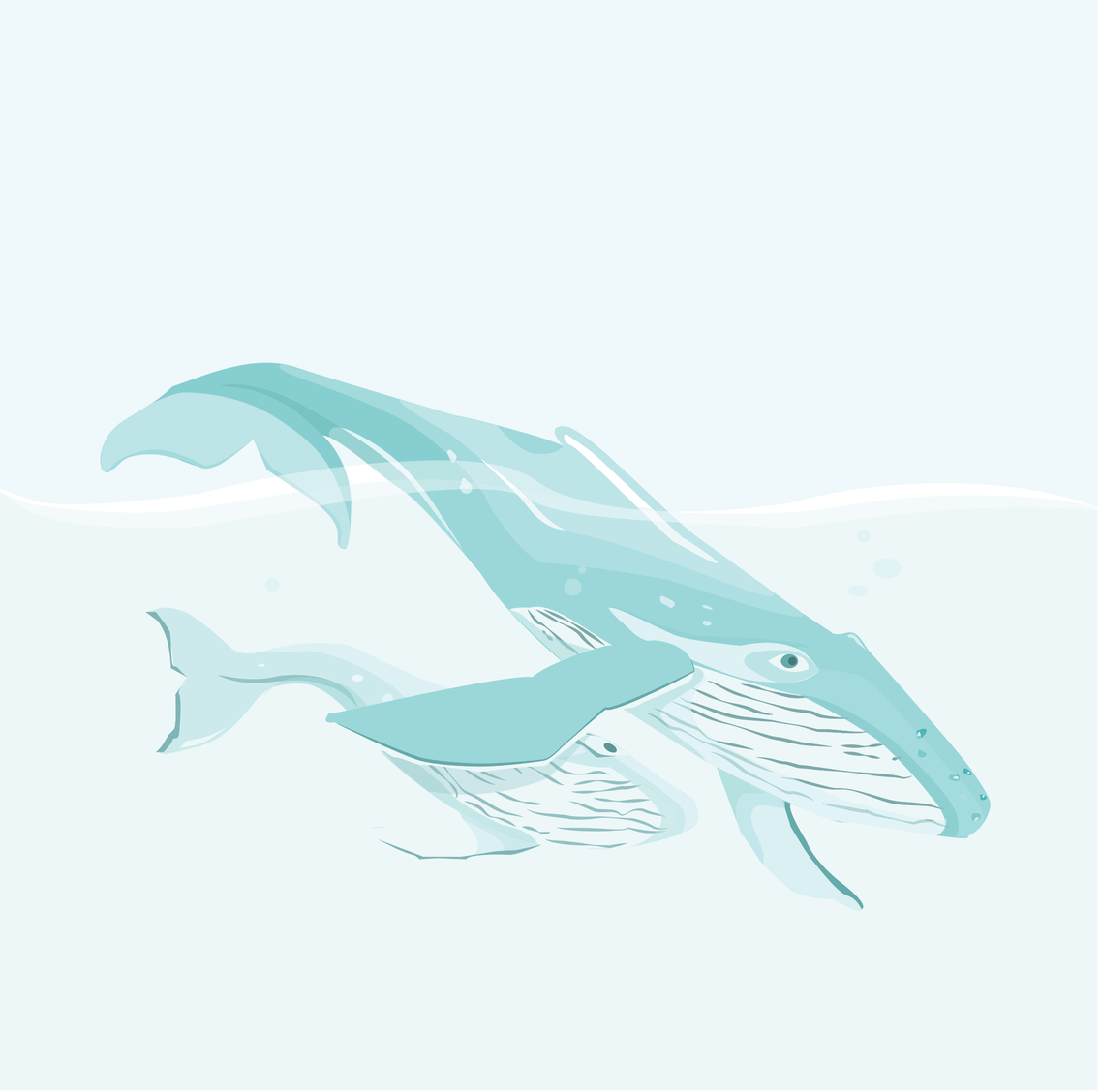
Ocean Wise | Howe Sound Coast

LAND ACKNOWLEDGEMENT

We acknowledge and are grateful that many Ocean Wise employees work and play on the traditional, ancestral and unceded territories of the xʷməθkʷəy̓əm (Musqueam), Sḵwxwú7mesh (Squamish), and səl̓ilwətaʔɬ (Tsleil-Waututh) peoples.

Lesson 1

Climate Change - Humpback Whale



ACTIVITIES

1. MISSION C: A GLOBAL SCALE CLIMATE PROTECTION MISSION

The ocean is a major contributor that makes earth habitable for all living things. They significantly influence our supply of food, fresh water, oxygen, and last but not least, a suitable climate to sustain life. Unfortunately, with the current climate crisis resulting in changes in global temperatures impacting all parts of the world, including our ocean, we have begun to experience a limitation and elimination of essential resources that we need to survive. Most significantly, by changing our climates, our actions have inhibited the ocean's ability to properly regulate global environmental conditions giving rise to social issues like food insecurity, inaccessibility to clean water, and more.

In order to solve the imminent threat that our own actions have created, we must act quickly… but how? Environmental law has the purpose to prevent, minimize, remedy, and/or punish entities that harm the environment.

By creating an environmental law which can be applied on a global scale, you can universally discourage and prevent the further degradation of our environment and mitigate contributors to climate change.

KEY OBJECTIVES

Propose a universal environmental law that will target the protection of Earth's natural climate. You must provide enough support to demonstrate that your proposed law will directly or indirectly sustain a habitable climate for all living things *without depleting or completely eliminating our dependence on any of the other resources needed to survive*. Your proposed law should also address the general mission focuses:

- **How can we attain a suitable climate for survival?**
- **What does securing a suitable climate depend on (i.e., people, animals, environments, etc.)?**
- **How can your law include Indigenous views and address Indigenous rights?**
- **How does the interdependence of all species affect your proposed law?**

Follow the *Guide to Building a Universal Environmental Law* below when writing your proposal.

GUIDE TO BUILDING A UNIVERSAL ENVIRONMENTAL LAW:

This guide indicates what information you will need to research to construct your universal environmental law. Note that the final step (step 5) of this guide consists of writing, in a short essay format, a proposal for your universal environmental law.

STEP 1

Select a phylum, animal group, or animal characteristic (i.e., photosynthesizers, decomposers, etc.) that directly or indirectly contribute to keeping ocean ecosystems healthy. For the category you have selected, you want to identify:

i. How do they help regulate the global climate?

ii. Which physical and/or behavioral characteristics directly or indirectly contribute to supporting a healthy ocean environment?

iii. What are the anthropogenic factors threatening this group?

STEP 2

Select an economic sector (i.e., agriculture, forestry, fashion, transportation, etc.) that directly or indirectly contributes to climate change. For this sector, identify:

iv. What are some of the associated environmental impacts?

v. How do the environmental impacts of this economic sector affect the group selected in step 1?

vi. Does this sector release greenhouse gasses? If so, which ones and how do they contribute to climate change?

STEP 3

Research how the environmental impacts and greenhouse gasses released by your selected economic sector adversely affect the health and/or functioning of the animal(s)/group selected in step 1. In your research, make sure to keep in mind:

vii. What mitigation measures exist for these environmental impacts? How can these existing mitigation measures protect your target animal/group?

viii. What mitigation measures exist for the greenhouse gasses released by your selected sector? How can these mitigation measures be used to protect your target animal/group?

STEP 4

Come up with a set of mitigation measures that aim to protect your selected species/ group from the environmental impacts and climate change contributors released by the economic sector you have selected.

ix. These can be pre-existing measures that have yet to be legally implemented or your own solution(s), just make sure they are realistic! (i.e., Avoid creating a total ban on a certain practice and think of why this would be problematic.)

x. Make sure to apply and highlight Indigenous knowledge, values, and rights when considering your mitigation measures.

STEP 5

Using the information gathered by your research, write up your universal environmental law! This should take the form of a short essay and should specify the following informations:

xi. The animal/group you are trying to protect and why.

xii. The economic sector and associated environmental impacts and contributors to climate change you are addressing.

xiii. The law/regulation/mitigation measure(s) you will implement and why.

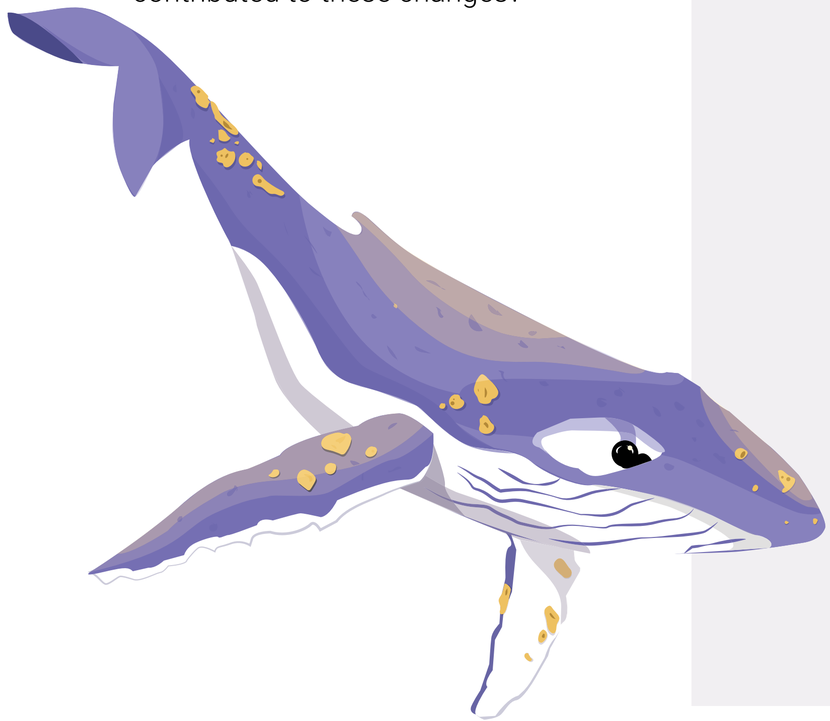
xiv. Indigenous connections to your proposed law.

xv. The management and enforcement strategies you will implement to assure that people follow your law (here, you should consider that this law will be applied on a global scale).

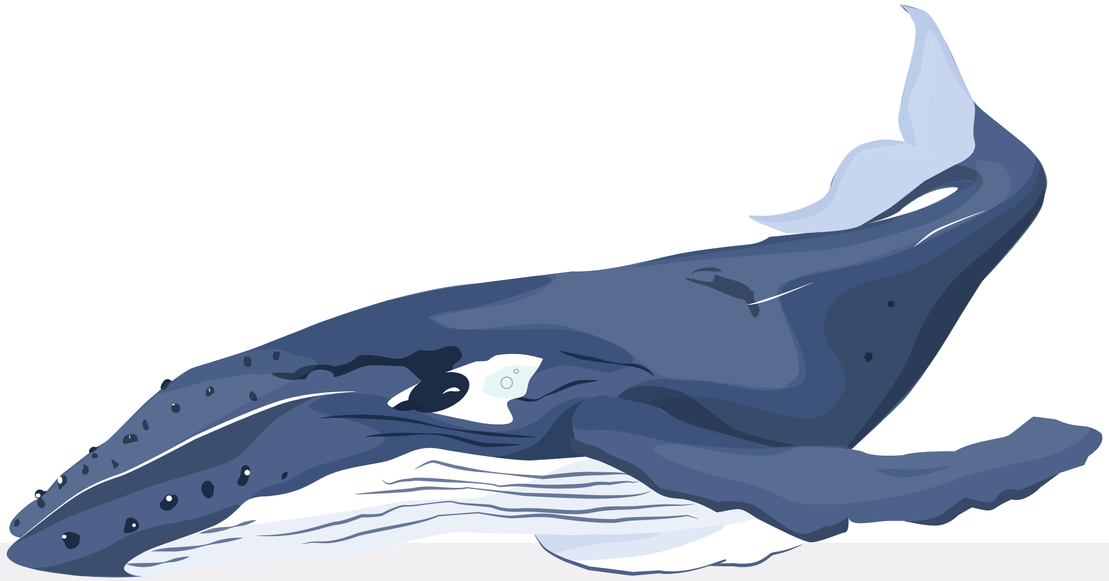
Make sure to be as specific as possible and avoid space for misinterpretation and loopholes.

ALTERNATIVE / ADDITIONAL ACTIVITIES

2. Take a look at the Carbon Dioxide and Global Temperature topics on the ***Climate Change Machine*** and play with the timeline. As time progresses, is there any overlap of the patterns observed? What phenomena created by the progression of which economic activities have contributed to these changes?



THOUGHTBOOK



This lesson focused on the different ways we contribute to climate change and how we can change our practices to reduce our environmental impacts and footprint. Take time to journal on your thoughts and the things you have learned.

REFLECT

1.What are the most significant ways that the changing climate can impact ocean health?

2. What are some of the ways marine animals can help mitigate climate change?

3. What are some measures that can be implemented to resolve or reduce the adverse impacts of climate change?

TAKE ACTION

Report a whale sighting using ***Ocean Wise Whale Report Alert System***.

THE WHY

Reporting a whale sighting provides researchers with information about the abundance of a species in order to properly determine the status of the population (i.e., improving, steady or declining). It also informs scientists about the distribution of whales and how feeding and breeding grounds may be impacted due to climate change. With a better understanding of the abundance and distribution of whales, people in the vicinity can be made aware of their presence and reduce the risk of vessel strikes and other human inflicted disturbances. By helping provide more information to scientists and the community, you can have a role in contributing to climate change mitigation and conservation measures to help protect species like the humpback whale!

Lesson 2

Ocean Pollution - Killer Whale

ACTIVITIES

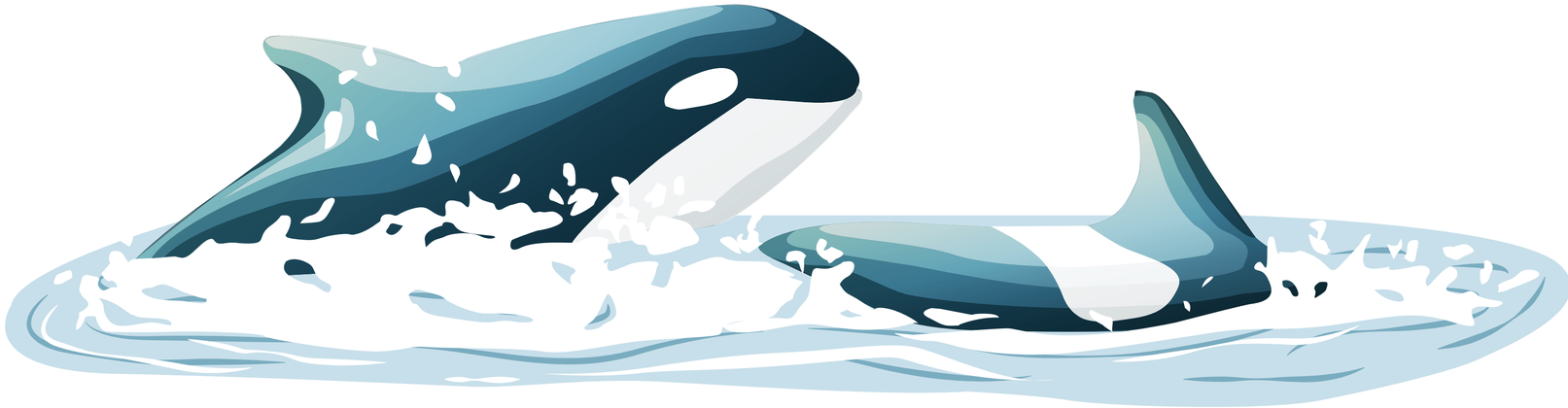
1. Read ***Ocean Wise Blog: Tracking Contaminants in Killer Whale Habitats by Ocean Wise*** and answer the following questions:

a) Select a top ocean predator and draw their respective food chain. Include the species' latin and common names for each trophic structure (from producer to top predator).

b) Research an ocean pollutant that affects the food chain of your top predator.

Name of Ocean Pollutant:

c) What are some of the chemical and physical properties that make this pollutant toxic for the species in this food chain?



d) Describe how this pollutant impacts the top ocean predator as it relates to their physiology (muscular, reproductive, nervous, digestive, and other organ systems) and behavior. Here, you should keep in mind how biomagnification and bioaccumulation disproportionately affects top ocean predators.

e) Describe how indigenous communities may be directly or indirectly affected by this pollutant. Does it pose a threat to their health and traditions?

f) Why and how has this pollutant been used? Has it been banned from usage?

g) Describe how this pollutant ends up in waterways.

h) Come up with 3 ways that individuals and/or corporations can prevent this pollutant from entering waterways. You should address the advantages for the environment and society and the costs for those implementing these practices.

ACTIVITIES

2. Look at ***Ocean Wise Pollution Tracker by Ocean Wise*** interactive map and select a coastal location and a pollutant. For the coastal location and pollutant selected, create a scientific briefing that you will present to the class. If you are unsure of how to create a scientific briefing, read ***What is a Research Briefing by Oxford Review***. Your scientific briefing should include:

- **The location of the pollutant.**
- **The name and properties of the pollutant.**
- **The concentration of the pollutant in the sediment and mussels, and why they may be different.**
- **How the pollutant affects the killer whale and Indigenous communities.**
- **What can be done to protect the killer whale and humans from this pollutant?**

THOUGHTBOOK

In this lesson, you learned about ocean pollution and how it impacts not one, but nearly all species in a food chain or ecosystem, as well as pollution's negative impact on all species, especially those most at risk. Take a moment to pause and reflect on what you have learnt and how it made you feel.

REFLECT

1. What pollutants (or properties of pollutants) have the most impact on ocean health?

2. How do pollutants affect all species in an ecosystem? Why are certain species more affected by ocean pollutants than others?

3. Why are Indigenous peoples disproportionately affected by ocean pollution?

TAKE ACTION

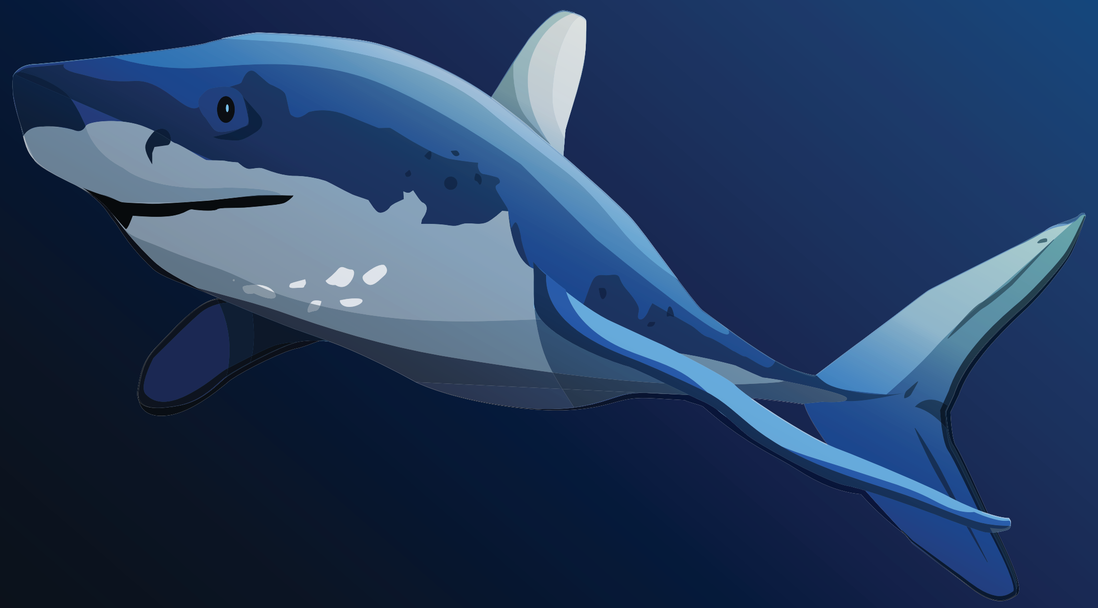
Take ***The Ocean Wise Plastic Pledge***. Reduce your consumption of single-use plastic, for example: bring a reusable water bottle or reusable containers in your lunchbox!

THE WHY

Not only does reducing your consumption of single-use plastic (such as plastic straws or bags) prevent plastics from entering the environment, but it also discourages their production and the release of harmful chemicals used to create them (including the industrial chemicals harming killer whales!) By taking Ocean Wise's' Plastic Pledge and reducing your use of plastics, you are contributing to the reduction of not one, but two types of ocean pollutants from entering our waterways.

Lesson 3

Fishery Bycatch - Great White Shark



ACTIVITIES

1. SUSTAINABLE FOOD SUPPLY TO FEED THE WORLD ACTIVITY

The ocean provides us with the largest amount of food in a wide variety of ways. With fish like tuna and salmon, shellfish like oysters and mussels, crustaceans like shrimp and crab, and even seaweed, the ocean resources that we depend on for food are countless. However, for centuries, we have taken for granted that the provisions the ocean gives us will always be there for us to depend on. As a consequence of our dependence and thus overexploitation of seafood, ocean health is declining. While a simple solution to all this would be to simply put fishing on hold for a couple of years, our growing population and the need to put food on the table for billions of people makes this solution quite unrealistic. Therefore, we will need to figure out a way to secure a sustainable food supply that optimizes its provisions and minimizes its negative impacts, such as the occurrence of great white by-catch in wild capture fisheries! The first step to achieving this is by setting up a sustainable wild capture fishery or aquaculture facility.

KEY OBJECTIVES

- You have been tasked with creating a sustainable wild capture fishery or aquaculture facility to provide enough food to the human population without depleting any other resources and minimizing environmental impacts. Your proposal should also address the general sustainability focuses which include:
- **How can we sustainably acquire enough seafood to survive?**
- **What other entities (aside from fisheries) does acquiring seafood depend on?**
- **How does the interdependence of fish species in the wild play a role in achieving sustainability in your fishery?**

Your proposal should follow the *Guide to Building a Sustainable Fishery* and include reasoning for the selection of your approaches. You should also include scientific reasoning, statistics and references.

GUIDE TO BUILDING A SUSTAINABLE FISHERY:

This guide serves to indicate what information you will need to determine/research to construct your sustainable wild capture fishery or aquaculture facility. Note that once you have completed all the steps in this guide, you shall present your sustainable wild capture fishery or aquaculture facility to the class.

STEP 1: TARGET/INSPIRATION – CHOOSE A TARGET SPECIES:

What aquatic animal would be the best renewable source of food and provide an adequate source of nourishment for the global population? Select a species and explain why.

A) Research animals (or sea plants) to learn about their characteristics. These characteristics should inform you of their potential use as a renewable source and source of nourishment.

- Research an animal from at least each of the four seafood categories being fish (i.e., salmon, tuna, cod, etc.), crustaceans (i.e., crab, lobster, shrimp, etc.), shellfish (i.e., clams, mussels, oysters, etc.) and others (i.e., caviar, algae, etc).
- Study different materials like artifacts, pictures, videos, statistics, and infographics. This will help uncover more clues about animal characteristics and subsequently their potential contribution to your plan.
- Research how the species can contribute as a renewable source. This should include their diet (protein intake), trophic level, physiology, living requirements, age of maturity, fecundity, etc.
- Research how the species can contribute as a source of nourishment. This should include their protein content.

B) Select a species you believe is the best suited to be targeted in a sustainable fishery and explain why based on the research you have conducted.

STEP 2: OPERATION AND METHODS – CHOOSE A TYPE OF OPERATION AND METHOD(S):

What type of operation (wild capture fishery or aquaculture farm) and associated methods would be best to maximize production while minimizing negative environmental impacts? Select the type of operation and method(s) and explain why.

A) Investigate the different types of operations including wild capture fisheries and aquaculture farms. Determine the main differences between the two, especially as it relates to their sustainability and select one.

B) Investigate the different types of methods used based on the operation (wild capture fishery or aquaculture farm) you have selected. Keep in mind how each of the methods will produce waste, by-catch, and/or contribute to overfishing. Identify the impacts of their short- and long- term use. These considerations should be included in your proposal. The resources linked below may be helpful in your research:

- ***An Introduction to Fishing Methods by Best Fish Forward***
- ***Fishing and Farming Methods by Monterey Bay Aquarium Seafood Watch***

Wild Fisheries:

- ***Commercial fishing methods by Sustainable Fisheries UW***
- ***Fishing methods and gear types by Marine Stewardship Council***

Aquaculture:

- ***Aquaculture Methods by SeaChoice.org***

C) Consider the Traditional Indigenous fishing methods and compare them to the western fishing methods you have researched above. How are they different and which type of fishing methods could be considered more sustainable? These considerations may be of interest for your proposal when addressing the concept of sustainability. The resources linked below may be helpful in your research:

- ***Indigenous Fishing Methods by Wild Salmon Center***
- ***Indigenous Systems of Management Fisheries by The Fisheries Blog***

STEP 3: MANAGEMENT APPROACH – LAUNCH STRATEGY AND REGULATIONS:

What management strategies would be best for compliance? What would be the best way to enforce rules and regulations? Select and explain your strategies and rules and regulations and explain why.

A) Investigate the different rules and regulations that exist for the operation you have selected and incorporate them into your company. You can also add your own rules and regulations.

B) Build sustainable development goals for your company! Sustainable development goals aim to promote and protect the sustainable use of ecosystems across the world. For more information and ideas on sustainable development goals, scroll through the ***17 Goals by the United Nations***.

C) Research the Ocean Wise Recommendations and determine which ones you will incorporate into your company to optimize its sustainability.

- ***Ocean Wise Aquaculture Recommendations by Ocean Wise***
- ***Ocean Wise Wild Capture Fishery Recommendations by Ocean Wise***

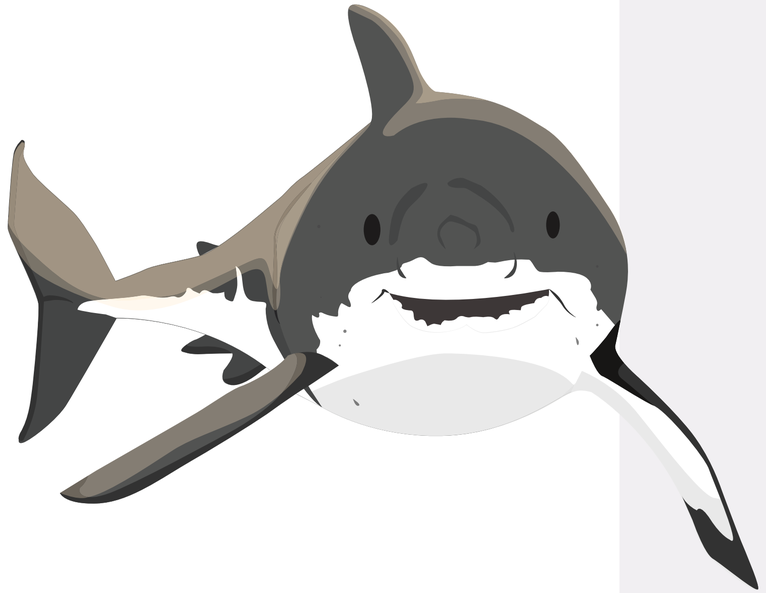
D) Determine how you will enforce these rules, regulations, sustainable development goals, and recommendations into your practices.

ALTERNATIVE / ADDITIONAL ACTIVITIES

2.a) Read ***What is Bycatch by the Consortium For Wildlife Bycatch Reduction***.

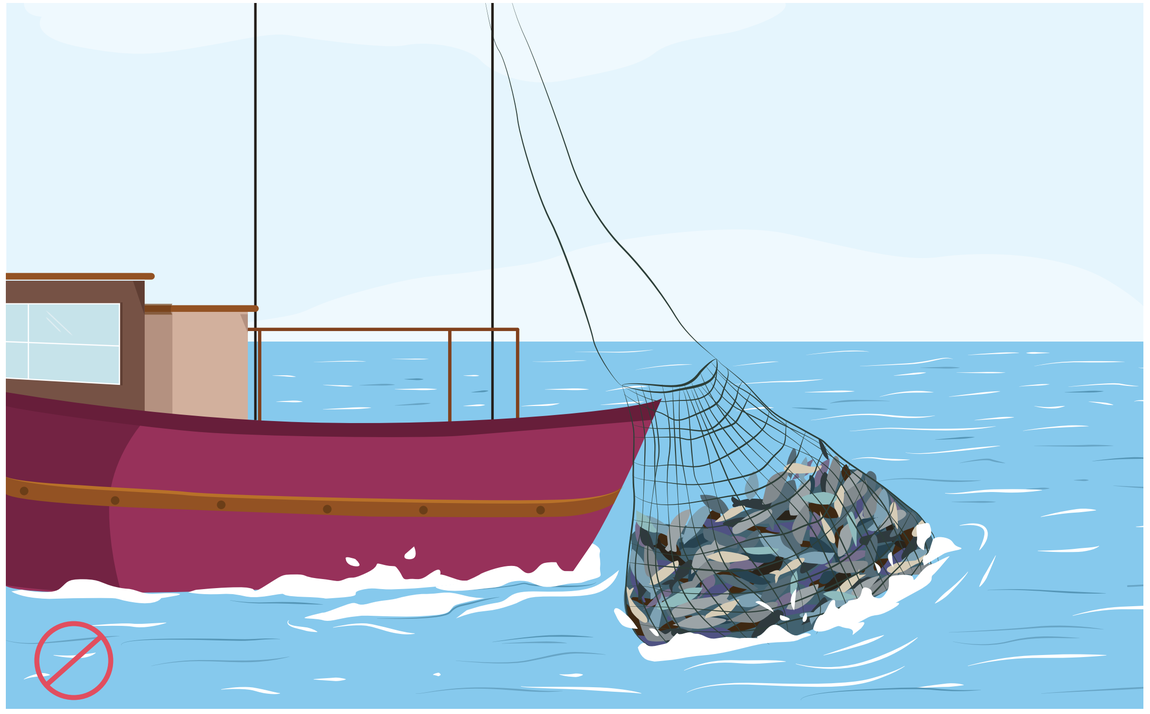
b) Research the physiology and behavioral characteristics of the great white shark and apply your findings to design a potential by-catch reduction system for this specific species.

3. Research an overfished species and come up with 2 conservation measures which can help restore this fish stock. Consider Traditional Indigenous fisheries management approaches by reading ***Want to Save BC Salmon? Bring Back Indigenous Fishing Systems, Study Says by Stephanie Wood***.



THOUGHTBOOK

From these activities, you should understand how unsustainable fishing practices, such as overfishing and by-catch, impact ocean health. Reflect on the environmental cost of the overexploitation of ocean resources such as seafood.



REFLECT

1.What are the differences between the sustainable and unsustainable use of ocean resources?

2. What are the most damaging effects that human seafood consumption has on ocean ecosystems? How has our reliance on seafood impacted ocean health?

3. How can traditional indigenous knowledge and practices inform fisheries on how to use and manage ocean resources sustainably and respectfully?

The Ocean Wise Seafood symbol is your assurance of an ocean-friendly choice.

TAKE ACTION

Use the ***Ocean Wise Seafood Partner Map*** and the ***Ocean Wise Seafood Recommendations*** before purchasing a seafood product and look for our logo on seafood packaging!

THE WHY

Ocean Wise's seafood recommendations identify sustainably farmed or fished seafood products. By using the variety of tools created by Ocean Wise, such as the Seafood Partner Map and Seafood Recommendations Search Tool, you can easily make an informed choice regarding the sustainability of the seafood that you are purchasing. By doing so, you will be directly contributing to ocean sustainability by supporting fisheries which have implemented the appropriate measures to protect and respect our ocean and its resources and encouraging others to do the same.

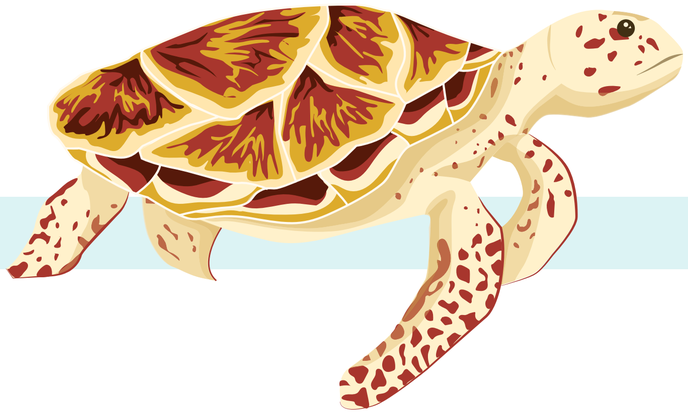
Lesson 4

Plastic Pollution - Hawksbill Turtle

ACTIVITIES

1. GARBAGE CLEAN UP X CITIZEN SCIENCE

a) Identify and record the different types of plastic garbage gathered in the space below.



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: 𝍸 III = TOTAL # 8

PRESENTING SPONSOR

Loblaw Companies Limited

NATIONAL SPONSORS

Corona O'NEILL

Trash Collected

MOST LIKELY TO FIND ITEMS: TOTAL #

- Cigarette Butts: =
- Beverage Cans: =
- Bottle Caps: =
- Coffee Cups and Lids: =
- Food Containers: (i.e. yogurt or snack cups, milk containers) =
- Food Wrappers: =
- Glass Bottles: =
- Paper: =
- Plastic Bags: =
- Plastic Bottles: =
- Plastic Cups: =
- Six Pack Holders: =
- Straws: =
- Takeout Containers: =
- Utensils: =

TOP 3 ADDITIONAL ITEMS:

Identify the top 3 items found that are not listed on the card TOTAL #

- 1: =
- 2: =
- 3: =

FISHING GEAR: TOTAL #

- Fishing Buoys, Pots or Traps: =
- Fishing Net and Line: =
- Rope (1 metre = 1 piece): =

PRODUCT PACKAGING TOTAL #

- Soft Plastic Packaging: =
- Rigid Bottles and Jugs: =

PERSONAL HYGIENE: TOTAL #

- Diapers, Wipes, Tampons, Condoms: =
- Syringes: =
- Personal Protective Equipment: (i.e. gloves, masks) =

TINY TRASH LESS THAN 2.5 CM: TOTAL #

- Styrofoam Pieces: =
- Plastic Pieces: =

OTHER TRASH: TOTAL #

- Balloons: =
- Clothing, Shoes: =
- Construction Materials: =
- Large Styrofoam: =
- Tires: =
- Toys: =

Thank you for contributing to trash free shorelines.

#teamshoreline /shorelinecleanup @shorelinecleanup @cleanshorelines

b) Triage the garbage you gathered and dispose of it in the appropriate bins.

c) Open the ***iNaturalist app*** and Identify animals or insects within your designated clean-up area.

d) Complete a scientific report encompassing the different types of waste, with an emphasis on plastics, that hinder the habitat and health of one of the species you have identified using the iNaturalist app. The scientific report should include an introduction, methods, results, discussion, and conclusion section. Follow the Student Guidelines for a Citizen Science Report when typing your report.

STUDENT GUIDELINES FOR A CITIZEN SCIENCE REPORT

You should consult these guidelines as an outline of the type of information and topics you want to address in your report.

Introduction

- General information about the garbage clean-up and citizen science project you participated in.
- The ecology of the species you are targeting in this study.
- The social context and importance of your report.

Methods and Materials

- Describe, in enough detail that the project could be replicated, the steps you took during the garbage clean up and citizen science components of this project.
- List the materials you used.

Results

- Use pie charts, bar graphs, diagrams, maps, tables, and more to depict your results.
- For each figure, you should include a figure caption.
- Include a paragraph briefly describing the observations you made from your results.

Discussion

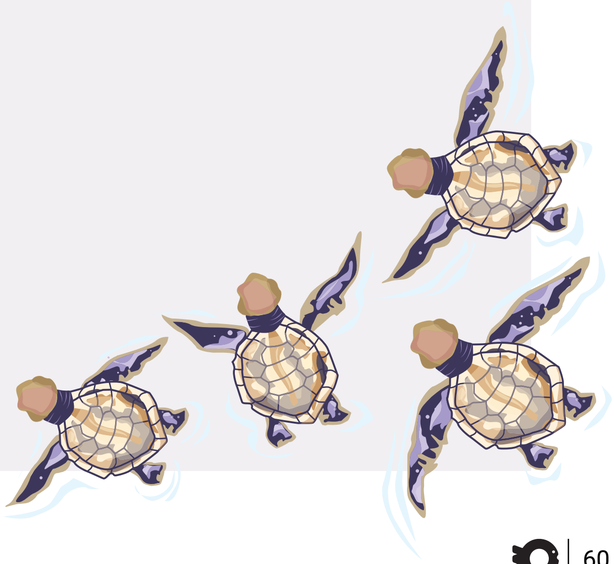
- Discuss the different ways the garbage you observed impacts the environment. Include the impacts of transformed plastics (i.e., micro- and nano- plastics formed from weathering).
- Discuss how this garbage can affect the habitat and health of your target species. When addressing this relationship, think of the behavior and diet of the species.
- Include a paragraph about how these types of pollutants can affect the hawksbill turtle (or sea turtles in general) if and when they enter waterways.
- Discuss how the types of plastic pollution you identified can disproportionately harm indigenous communities. You can read ***How Seabirds and Indigenous science illustrate the legacies of plastic pollution by Stephanie B. Borelle et al.*** and ***Climate Change Threatens Indigenous populations and Traditional Ecological Knowledge by Samantha Chisholm Hatfield*** for reference.
- In this section, make sure to refer back to your results and use references to support your findings!

Conclusion

- Sum up your findings and the relationships you uncovered between the pollution and your target species.
- Make some suggestions on how to reduce waste and single-use plastics.
- Reflect on the importance of your project and citizen science initiatives.

Scientific Report

use the following space for your report if you do not have access to a computer



THOUGHTBOOK

Now that you have participated in your own garbage clean up and citizen science project targeting plastic pollution, reflect on the positive impact you brought to your school, community, and environment!

REFLECT

1. How does plastic pollution adversely impact ocean health and marine species?

2. What are some alternatives to single-use plastic that are less detrimental to the environment?

3. How can we use citizen science to inform small-scale conservation initiatives?

Ocean Wise | Shoreline Cleanup

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. Shoreline cleanups have prevented these 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 organizing or participating in a shoreline cleanup, you are contributing to the removal of plastics in every ocean and shoreline around the world!

Lesson 5

Habitat Loss - Sea Otter

ACTIVITIES

1. CREATE A KELP PRODUCT BUSINESS!

Kelp products are known to have multifaceted benefits. All while providing a product to the consumer and contributing to the economy, the process of growing kelp helps mitigate climate change and provides a habitat and nursery to a variety of marine species, including sea otters. Therefore, by creating a sustainable kelp product you will be providing a product to consumers which has significant benefits for their health as well as the health of the environment.

When creating a product or building a business, it is important to create a business plan. This allows you to carefully go through every step you need to take to start up your business. Not only does this help you prepare for success but it also reveals some imminent weaknesses and challenges which you can address from the start. When writing your business plan, you should spend your time researching, documenting, and thinking of the who, why, how, where,and when of your company.

KEY OBJECTIVES

You are tasked with creating a sustainable kelp product and writing a business proposal for that product. You will later need to pitch this idea to a group of investors.

Use the *Business Plan Guide* below when writing your business proposal.

BUSINESS PLAN GUIDE

a) The Executive Summary

The executive summary is what allows investors to determine if this product interests them. Make sure to captivate their attention and show them that they should be just as excited about this as you. Your executive summary should be written last but presented first. This section should include:

i. An overview of your business idea.

ii. A description of the product.

iii. Your business goals (i.e., where do you see yourself in one year).

iv. Your competition and what makes you different.

v. Financial outlook - how much money you need and why?

b) Company Information and Description

This should include basic elements for your business such as:

i. General information: name of business, name of owners, contact information.

ii. Problem/Opportunity: explain the problem you are solving or the opportunity provided to the consumer and how it differentiates from competing products.

iii. Description of business and product: what do you sell and how is it manufactured?

iv. Company goals and milestones: specify your long- and short-term goals and any milestones you will use to measure your progress. Answer by drawing a timeline.

c) Market Opportunity and Strategy

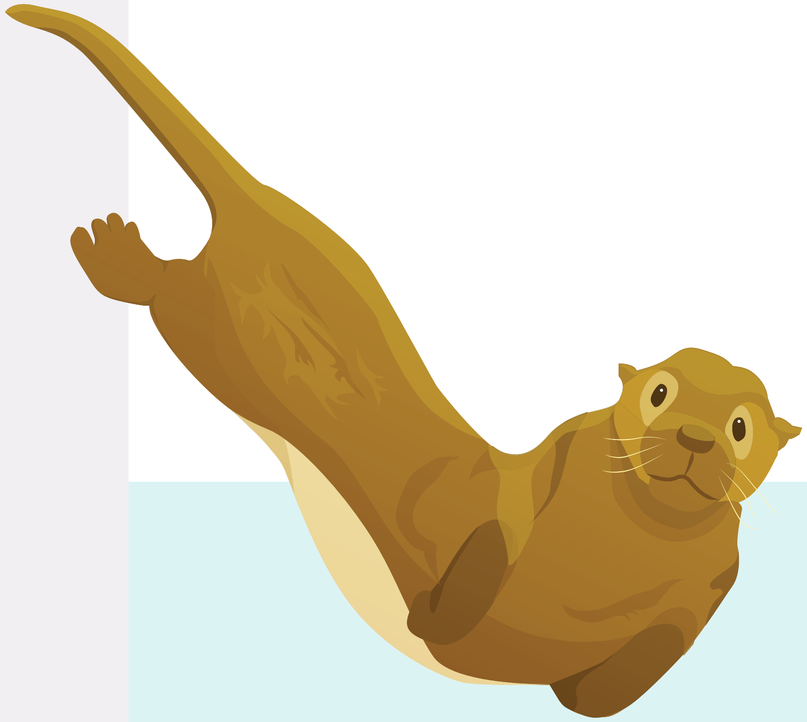
This section provides details on your industry, the competition, your target market and how you will market your business to those customers. For this section, you should conduct market research which informs you on:

i. Industry trends: is it growing, shrinking, are customer needs changing, etc.

ii. Target market: what are the characteristics of the buyer?

iii. Barriers to entry: what will be your initial challenge when entering the market? This can include; high costs, brand recognition challenges, finding employees, etc.

iv. Key competition: list key companies or products and determine how they are compatible with your idea.



v. Marketing and advertising strategy: how will you market and advertise your product? Think of the image you want to project for your company/product. Use a diagram or drawing to answer.

d) Sales and Financials

This section should address basic information about the costs, profits and funding needed for your idea to be realized. You should include:

i. Sales projection: your sales goal for the milestones identified in b)iv.

ii. One year sales forecast: what will be your sales in the first year based on your market research?

iii. Cost: the pricing of your product (and why) and how it fits the competition in your market. Make sure to consider how your pricing will address costs and attract consumers.

iv. Start up costs and promotional budget: the costs to start your operations and market your product.

v. Use of capital: how much money or other entities you will need to start your business and how they will be used.

	AMOUNT ($)	REASONING
SALES PROJECTION		
1 YEAR SALES FORECAST		
COST		
STARTUP COST		
USE OF CAPITAL		

e) Management and Operation Plan

This section should include information on:

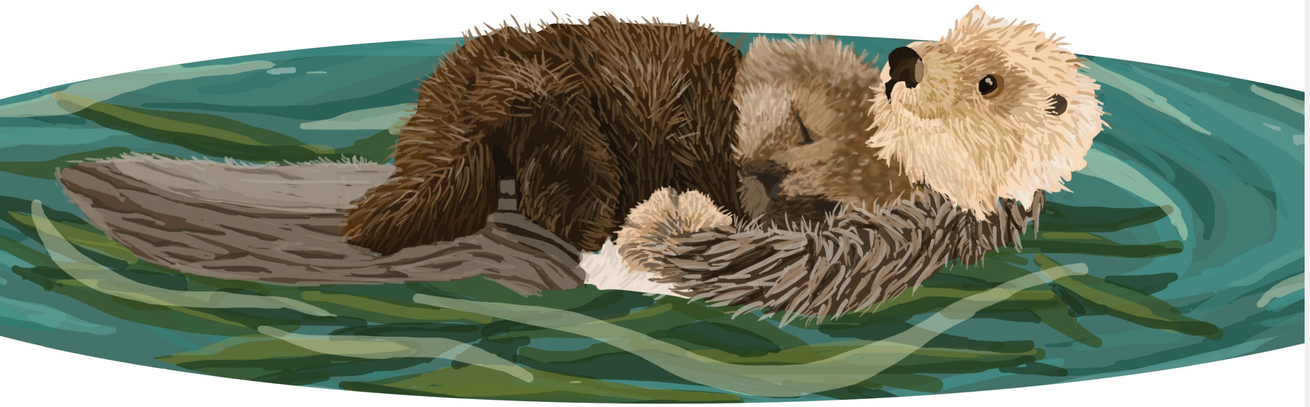
i. Production : describe the production of your product in terms of methods, equipment, resources and more.

ii. Location: where you will produce the product (may want to consider some local restrictions or regulations).

iii. Personnel: how many people will you hire and do they need to possess qualifications?

ALTERNATIVE / ADDITIONAL ACTIVITIES

2. Read ***Return of sea otters to B.C. coast by CBC***. Come up with a list of pros and cons for reintroducing a species to an area where it had previously been eliminated as a conservation



Pros and Cons List / Debate Notes

Pros and Cons List / Debate Notes

THOUGHTBOOK

Now that you have a better understanding of how each species has a special role in an ecosystem, especially keystone species, you should also better understand the consequences if one of those species disappears. Reflect on the role of all species as it relates to the integrity of an ecosystem.

REFLECT

1. What are the potential effects, negative or positive, of removing a species from an ecosystem?

2. How does ocean health depend on ecosystem relationships?

3. How can humans create consumer goods which simultaneously protect critical ecosystem components?

TAKE ACTION

Buy a sustainable kelp product!

THE WHY

Similar to your business ideas, there are many great products with kelp in them! Next time you go to the grocery store, take a look at the toothpaste, shampoo, salad dressings, dairy products, and/or frozen foods to see if they contain kelp. By buying sustainable kelp you are supporting and ensuring the planting of kelp. In other words, you are enabling greater carbon storage by kelp and better protection of sea otters and other ocean creatures which rely on kelp for a home! Kelp is also incredibly healthy and considered to be an excellent source of micronutrients, antioxidants, vitamins, and dietary fiber. So, buy a sustainable kelp product to make sure you and the ocean stay healthy!

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 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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Have feedback? We would love to hear from you!

Please take 4 minutes to ***rate us***.

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