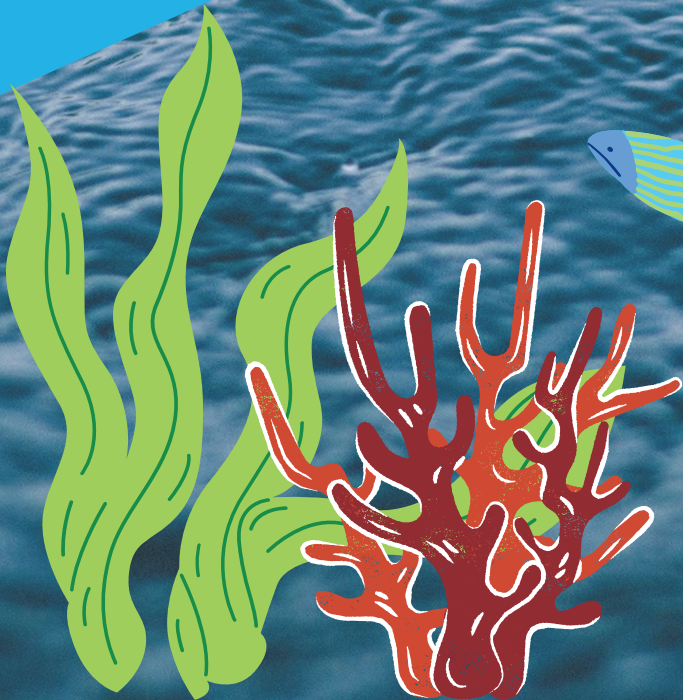


Marine Education Student Guidebook Grades 4-6



NOVA SCOTIA
SEAFOOD
PURE.  CANADA.

Contents

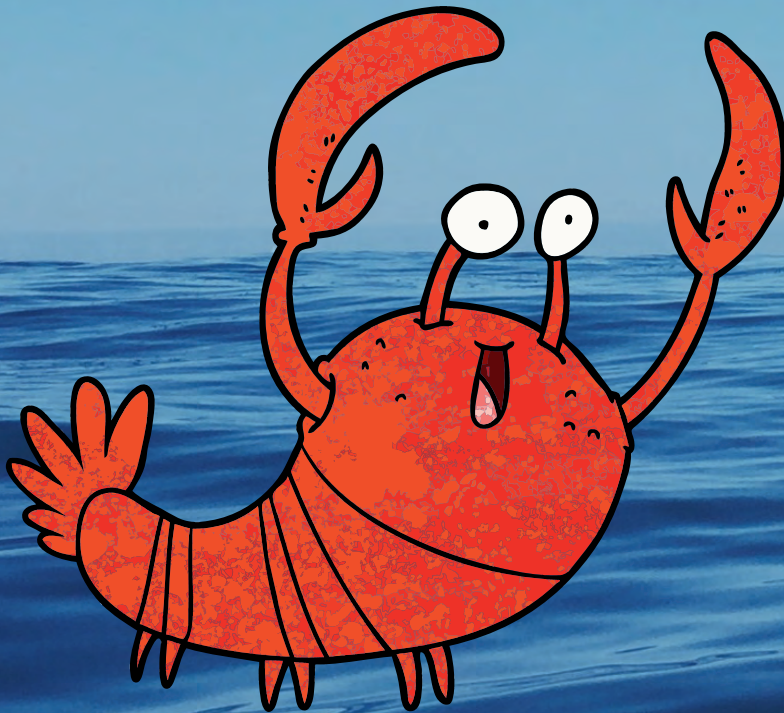
0 Land Acknowledgement

1 Interconnectiveness: People, The Ocean, and Lobster

2 Sustainable Practices: Taking Care of the Ocean

3 Climate Change: Environmental and Cultural Impacts

4 Livelihoods: Jobs, Culture, and Food



Land Acknowledgement

Before we begin it is important to acknowledge that we are in the ancestral and unceded territory of the Mi'kmaq People. This territory is covered by the "Treaties of Peace and Friendship" which Mi'kmaq, Wəlastəkwewiyik (Maliseet), and Passamaquoddy Peoples first signed with the British Crown in 1726. We are all Treaty People.



African Nova Scotian Acknowledgement



It is also important to acknowledge that people of African descent have been in Nova Scotia for over 400 years, and we honour and offer gratitude to those ancestors of African descent who came before us to this land.

Lesson 1

People, The Ocean, and Lobsters



Activities

PLEASE NOTE: All green text is a link to a video or article to watch or read.

LESSON QUESTIONS:

- How does the ocean and marine life connect to you?
- How does the Netukulimk concept connect humans and marine life such as lobsters?
- How do the concepts expressed by Netukulimk (respect, responsibility, relationship and reciprocity) connect to students lives?
- How does marine life, such as lobster, support the social and economic connections our communities?



1. WHY THE OCEAN MATTERS

Watch:

[Oceans 101 \(2:53\)](#)

[Why the Ocean Matters \(2:40\)](#)

In your own words, write three sentences or draw an image about why the ocean is important- to you, your community, and the planet. Or, create a digital word cloud (ex. [wordart.com](#)), to create a digital collage representing connection with ocean.

2. HOW ARE WE CONNECTED TO THE OCEAN?

In small groups create a mindmap of all of the ways that humans are connected to the ocean. Consider:

- Food and environmental
- Economic
- Socio-cultural
- Political
- Others?

Activities

Interconnectedness

Sustainable Practices

Climate Change

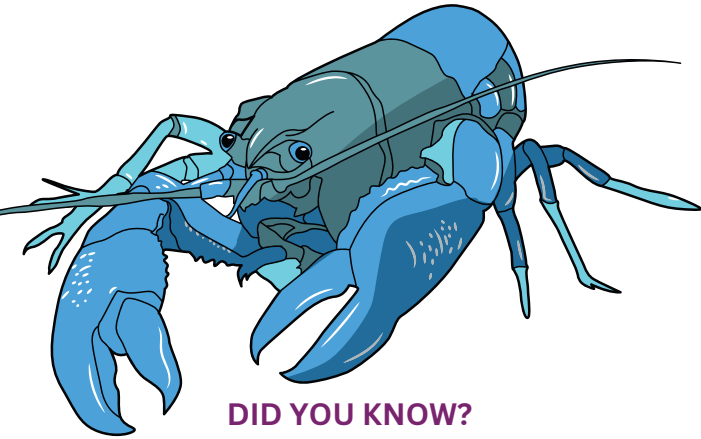
Livelihoods

3. NETUKULIMK

Part A- Watch and Write:

- Netukulimk (0:26)
- Netukulimk with Clifford Paul (4:18)

In your own words, write three sentences or draw an image about how Netukulimk supports balance and harmony in the ocean. Or, create a digital word cloud (ex. wordart.com).



DID YOU KNOW? THE SCIENCE BEHIND THE COLOUR OF LOBSTERS

Watch:

The science behind the colours of lobsters (4:30)

ALFRED DEVEAU- Acadian Fisher

Watch:

Alfred Deveau (3:29)

Part B- Create a short story:

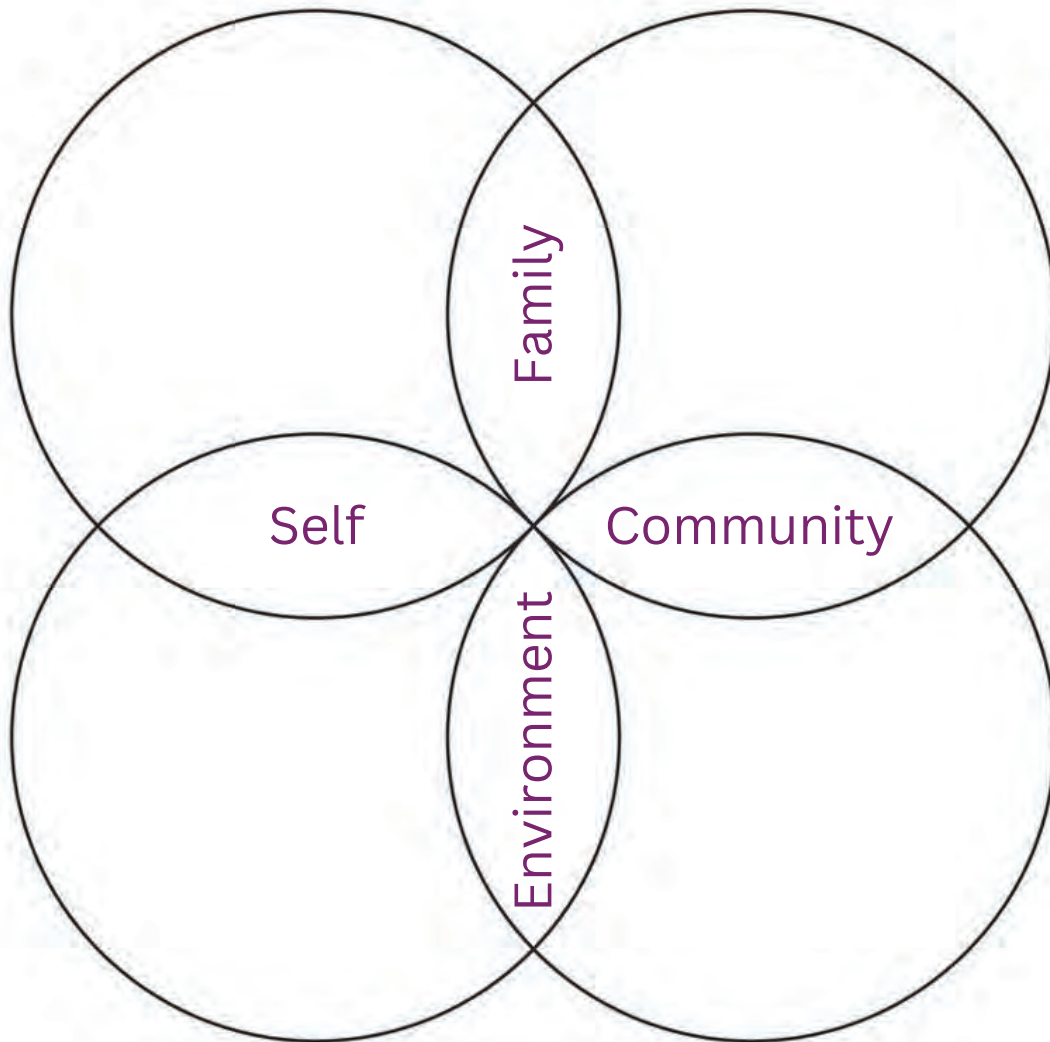
Create a short story about the oceans using the character of a lobster and include at least 2 concepts of Netukulimk in the story.

Activities

4. JIGSAW- INTERCONNECTION

The class will be divided into 4 groups, with each group responsible for one circle and all the questions. Then all groups will share back with the class.

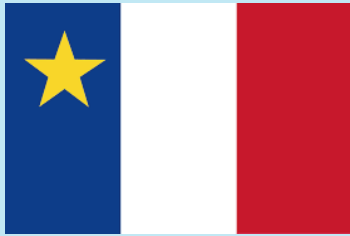
What are the ways in which we are interconnected through the oceans? Fill out the circles using the questions as prompts.



Questions to Consider:

- In what ways is the ocean a part of your life?
- What do we eat that comes from the ocean?
- What do you use every day that comes from the ocean, or has parts that come from the ocean?
- Do you ever travel to the ocean? If so, where?
- Think about the physical geography of where you live. What travels to the ocean?
- How are we specifically connected to the ocean in Nova Scotia?
- How does the air we breathe connects us to the ocean?

Activities



5. CULTURAL FLAGS

Write a few sentences each to describe what the colours and symbols of each of the flags represents.

Acadian flag



African Nova Scotian flag



Gaels of Nova Scotia symbol



Mi'kmaw flag

Activities

6. ALL ABOUT LOBSTERS

Read and watch. Then, fill in the answers on the next two pages.

Read: Lobster Institute, Maine.

Watch:

- The Lobster Fishery in Southwest Nova (2:16)
- Lobster Molt Caught on Camera! (1:01)
- Lobster Measurement: Undersized (1:01)

Where do lobsters live?

Lobsters live at the bottom of the _____. They like the cold and _____ waters.

They also like to hide in _____.

What do lobsters eat? Do they have teeth?

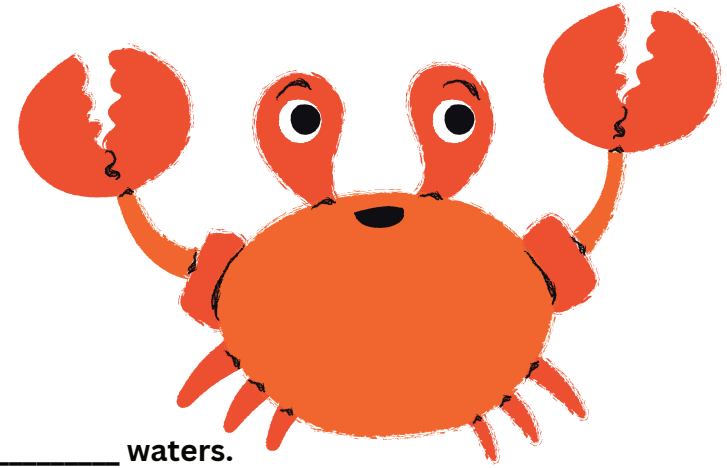
Lobsters like to eat _____. A lobster does have teeth – but they are not in its mouth, they are in its stomach. What are a lobster's teeth called?

How big can a lobster get? How does it grow?

The biggest lobsters ever seen were about _____ feet long from the tip of their claws to the end of their tails. The world record weight for a lobster is _____! Lobsters grow by molting. What does that mean?

Why is a lobster's shell so hard?

Lobsters do not have bones or a skeleton on the inside, like people do. Instead, they have a hard outer shell or _____ to protect and shape them. Lobsters are also called crustaceans because they have a hard outer shell and two sets of antennae.



Activities

Who can fish for lobsters?

You have to get a special fishing license to catch lobster. You also need a boat and equipment or you can work on a boat for another captain.

How do you catch a lobster?

Lobsters are caught in _____. A lobster fisher will put a bag full of bait in each trap. What do they use for bait?

Harvesters will then go out in the ocean in their lobster boat and drop their traps into the water, and hope that the lobster will go into the trap because they want to eat the bait. Once a lobster is in the trap it is hard for it to get out. After a day or two, the lobster fisher will pull up the traps they dropped into the water and hope to see lobsters inside.

Can you keep all the lobsters you catch? Why or why not?

No. Sometimes lobsters have to be put back in the ocean. Most of the time, lobster fishers will put _____ back into the ocean; and also the smaller, younger lobsters. Sometimes they put the very big lobster back too. They do this to be sure there will always be enough lobsters in the ocean and enough for fishers to catch and people to eat. This is called conservation.

Lobster fishers must put back which lobsters?

How big does a lobster need to be to keep it?

How long does it take a lobster to reach that size?

What do you call a lobster with one claw? Will that lost claw grow back?



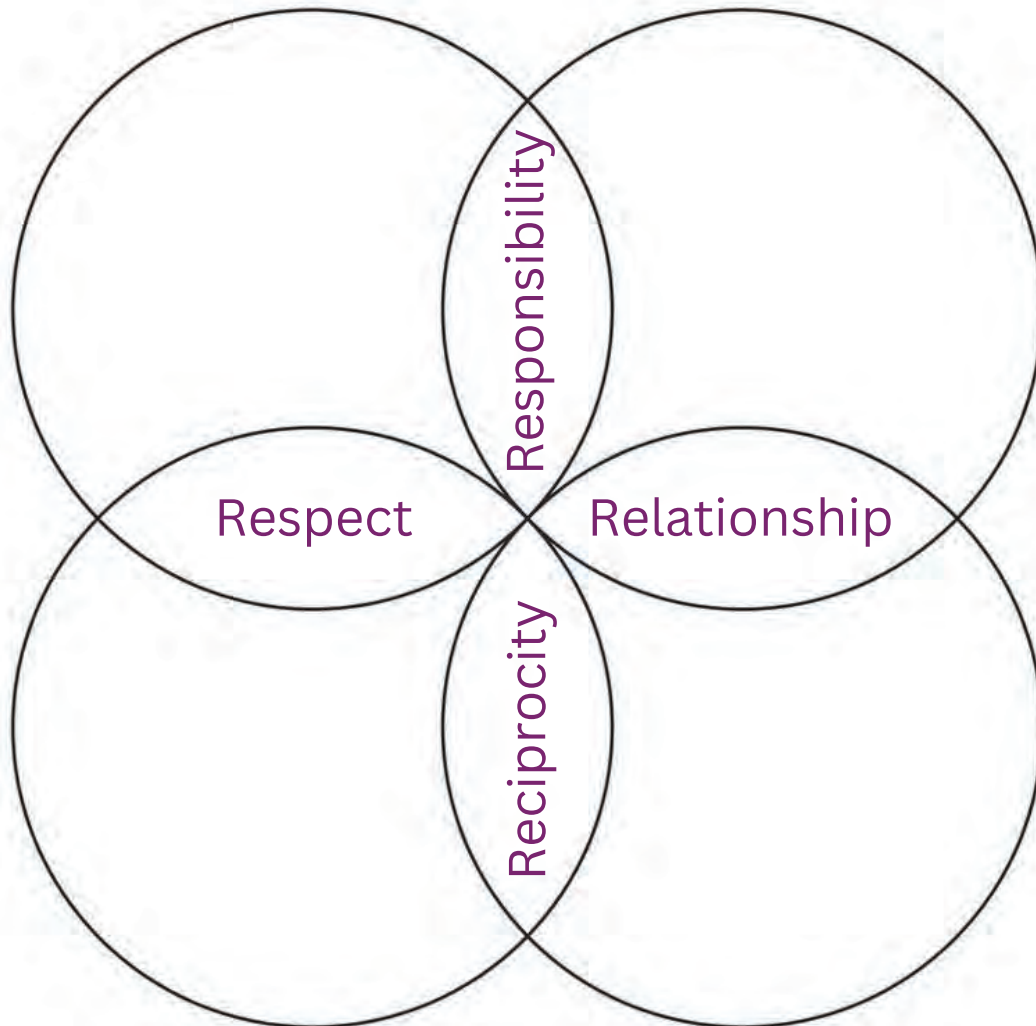
Activities

7. NETUKULIMK VALUES

Watch:

- Ocean School- Netukulimk (4:00)

How do Netukulimk values of respect, relationship, reciprocity, and responsibility support a healthy and harmonious environment? How do you / your family / your community make decisions based on these values? Fill out each circle.



Examples:

Respect- the rhythms, cycles and patterns of all living beings and nonliving things.

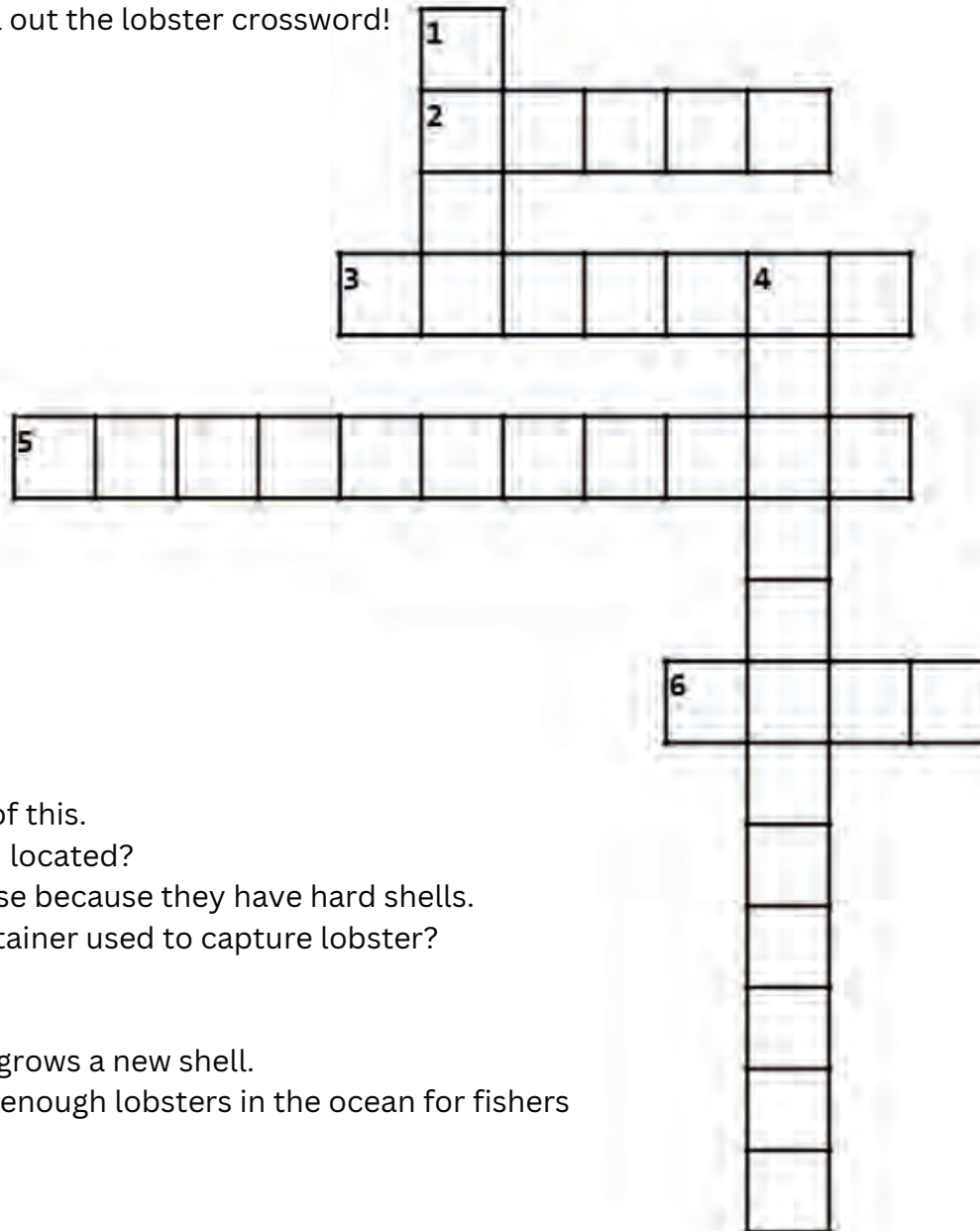
Relationship- the relationship one has with family extends to the plant world, the animal world, and the four elements of earth, air, water, and fire.

Reciprocity- only taking what you, your family, and/or your community may need. A good example of this is knowing how much one can harvest during times of scarcity or times of over population.

Responsibility- people were given responsibility to care for Wskitqamu (Mother Earth).

Activity

8. **LOBSTER CROSSWORD:** Fill out the lobster crossword!



Across:

- 2. Lobsters live at the bottom of this.
- 3. Where are the lobsters teeth located?
- 5. Lobsters are considered these because they have hard shells.
- 6. What is the name of the container used to capture lobster?

Down:

- 1. What a lobster does when it grows a new shell.
- 4. Practice to ensure there are enough lobsters in the ocean for fishers to catch and people to eat.

Thoughtbook

Take time to journal your thoughts and things you have learned using the reflection questions. You can write a paragraph, draw a picture, a comic strip, write a poem, or any other form of creative expression.

Reflect:

- How does the ocean connect to you?
- What does Netukulimk mean to you?
- How is the ocean connected to your health and the health of lobsters?

Lesson 2

Sustainable Practices: Marine and Lobster Stewardship



REMEMBER: ALL GREEN TEXT IS A LINK TO A VIDEO OR ARTICLE TO WATCH OR READ.

LESSON QUESTIONS

- What does sustainability mean to you?
- What are some of the environmental, economic, and social factors that affect our oceans?
- What is the location of Mi'kmaw, Acadian, and African Nova Scotian communities in Nova Scotia in relation to lobster fishing areas?
- What is Etuaptmumk (Two-Eyed Seeing)?

1. MARINE ECOSYSTEMS

Watch:

- [Atlantic Ocean video \(0:55\)](#)
- [What is an ecosystem | Ecosystem video for kids | Ecosystem Types \(3:06\)](#)
- [Up close and personal with mysteries of the Atlantic Ocean's Ecosystem \(5:05\)](#)
- [Marine Ecosystem \(6:04\)](#)

What is unique about the Atlantic Ocean's marine ecosystem? Identify at least 3 unique things about the Atlantic ocean ecosystem. Write a short paragraph and draw an image that represents the 3 things.



Want to know more? Watch [Nature Talks: The Diversity of Marine Ecosystems in Nova Scotia \(59:10\)](#)

Activities

2. TWO-EYED SEEING

On your own, or with a small group:

Watch:

- Elders' Stories: Two-eyed Seeing (4:51)
- Etuaptmumk: Two-Eyed Seeing | Rebecca Thomas (14:22)
- Netukulimk Mi'kmaq Sustainability Mi'kmaq History Month (7:09)



Image Source: Parks Canada, 2022.

What does Two-eyed seeing mean to you / the group? Write a short paragraph or poem, and create a collage, drawing, or short skit to present to the class.

3. HOW DOES LOBSTER FISHING WORK?

Read [this story](#) and [watch this 360 degree tour](#) to answer the following questions:

- What is setting day? Where are Lobster Fishing Areas (LFAs)?
- How are traps set? Why are lobsters attracted to traps?
- How are lobsters sorted? How is the price for lobsters set?

4. SUSTAINABLE FISHING

Watch:

- Sustainable Fishing (14:45)
- Atlantic Canada Lobster (5:04)
- 100 Wild Islands: A grassroots story of conservation (9:15)
- How to Care for the Ocean (6:34)

What does sustainability of marine ecosystems mean to you? How sustainable are lobster harvesting practices?

5. LOBSTER FISHING SEASONS

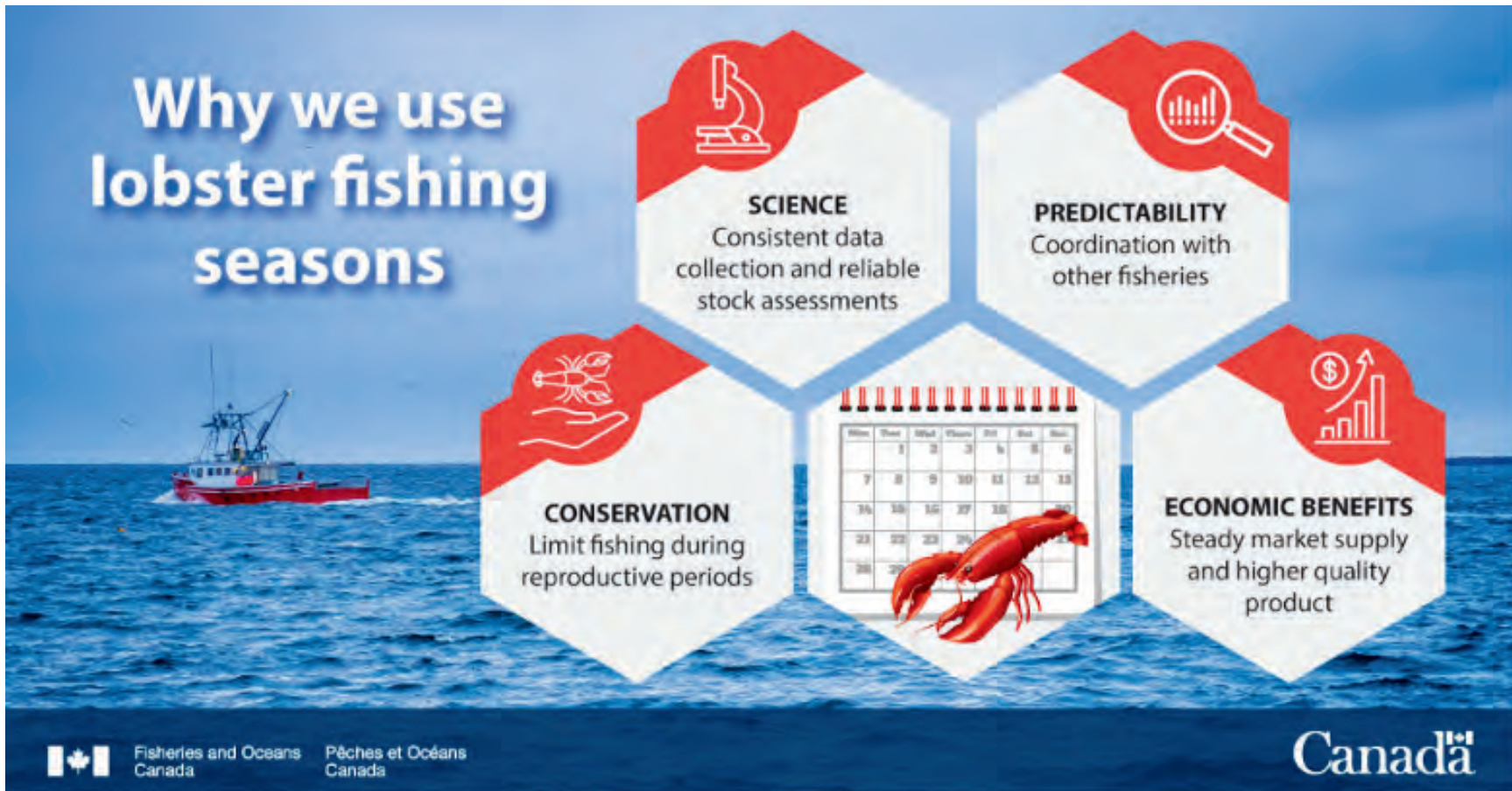


Image Source: [DFO- Lobster Fishing Seasons Infographic](#)

How do lobster fishing seasons contribute to sustainability?

6. BE YOUR OWN CAPTAIN:

Students are fishing captains who will harvest lobster for sale in their community. They have a fishing license for their LFA. Based on the information from the maps and charts – students create a presentation in Google slides (minimum 5 slides) with the following information:

- 1) Name your boat: Find a picture of a fishing boat and give your fishing boat a name.
- 2) Using the Lobster Fishing Area (LFA) maps below, locate the LFA closest to your community.
- 3) Using the links below, identify other Mi'kmaq, Acadian, Gaelic, and African Nova Scotian communities near to you.
- 4) Determine the number of traps you will need, based on Figure 2 (link below). What is the maximum number of traps allowed in your LFA?
- 5) When can you fish? Based on Figure 2 in the link below – determine your fishing season.
- 6) How much profit will you make? Calculate what profit you would make if:
 - The average trap can hold an average of 5.5 lobsters.
 - Each lobster weighs an average of 1.5 pounds.
 - Lobster traps are typically checked on average 2.5 times per week.
 - Research the latest price per pound and calculate how much you would make during a 1 week period. Remember that you have operational costs including labour, fuel, bait, and boat maintenance, etc. Guesstimate these costs.



Maps:

- [NS Lobster Fishing Areas \(Figure 2\), and North Shore Fishing Areas](#)
- [NS Mi'kmaq Communities Map](#)
- [Historic and present day Acadie in NS Map \(p.13\)](#)
- [African Nova Scotian Communities Map](#)

Questions to consider:

How do lobster fishing seasons and areas contribute to sustainability?

What are some sustainable lobster harvesting practices you would use as captain of your boat?

Thoughtbook

Take time to journal your thoughts and things you have learned using the reflection questions. You can write a paragraph, draw a picture, a comic strip, write a poem, or any other form of creative expression.

Reflect:

- **What does sustainability mean to you?**
- **What are some of the environmental, economic, and social factors that affect our oceans?**
- **What is the location of Mi'kmaw, Acadian, and African Nova Scotian communities in Nova Scotia in relation to lobster fishing areas?**
- **What is Etuaptmumk (Two-Eyed Seeing)?**

Lesson 3

Climate Change



Activities

REMEMBER: ALL GREEN TEXT IS A LINK TO A VIDEO OR ARTICLE TO WATCH OR READ.

LESSON QUESTIONS

- How does climate change impact coastal communities?
- How are coastal communities adapting to a changing environment?
- How does the lobster fishery support sustainable development in local communities?

1. CLIMATE CHANGE:

Watch:

- [Climate Change 101 with Bill Nye | National Geographic \(4:09\)](#)
- [Climate Change for kids \(11:34\)](#)
- [Aquatic Climate Change \(6:22\)](#)

Read:

[Warming pushes lobsters and other species to seek cooler homes](#)
[Ocean Shock](#)



What does climate change mean to you? How is climate change impacting marine ecosystems and coastal communities?

Activities

2. ADAPTING TO CLIMATE CHANGE:

Watch, read, and respond:

- The Lobster Trap
- Transforming Climate Action (10:30)
- Adapting to sea level rise (7:57)

How are coastal communities adapting to a changing environment?

What are three ways climate change is impacting the ocean?

What influences Nova Scotia's water temperatures? What happens to lobsters when water temperatures rise?

How can the lobster industry adapt to climate change?



Activities

3. COMMUNITY ACTION ON CLIMATE CHANGE:

Step 1: Your teachers will divide the class into 6 different groups. Each group is responsible for responding to the impacts of climate change on the oceans. As a group, discuss and dialogue what your group can do to reduce greenhouse gas emissions, mitigate and adapt to climate change.

Groups:

- 1) **Lobster Fishers:** considerations your group may want to think about include technology, lobster seasons, location for fishing, etc.
- 2) **Provincial Government:** you are responsible for the management, promotion, support and development of the fishing, aquaculture and seafood processing industries.
- 3) **Citizens group:** you are a group of concerned citizens who care about the environment and want to reduce greenhouse gas emissions
- 4) **Local Chamber of Commerce:** you are a group of local businesses who rely on the oceans and tourism to keep your business going (e.g. hotels).
- 5) **Scientists:** you are a group of scientists who are looking to determine the best ways to respond to reducing greenhouse gas emissions and mitigating and adapting to climate change. What research do you need to do to manage the number of traps, legal size of lobster, etc.
- 6) **Federal Government:** you are responsible for managing lobster stocks, permitting harvesting licenses, etc.

Step 2: Present your ideas to the local community forum. Each group will have 10 minutes to present their ideas (in PowerPoint or presentation, poster or through song and dance). Get creative.

Step 3: Vote on the 3 best ideas that your community can undertake to respond to climate change.



Thoughtbook

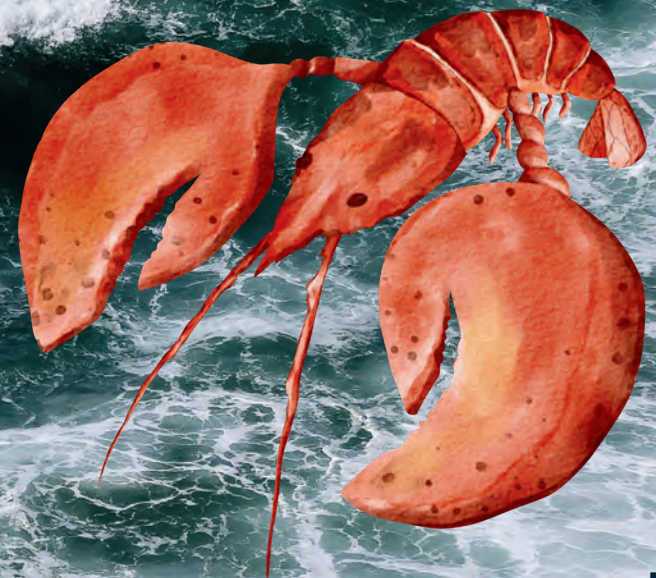
Take time to journal your thoughts and things you have learned using the reflection questions. You can write a paragraph, draw a picture, a comic strip, write a poem, or any other form of creative expression.

Reflect:

- How does climate change impact coastal communities?
- How are coastal communities adapting to a changing environment?
- How does the lobster fishery support sustainable development in local communities?

Lesson 4

Food and Jobs



Activities

REMEMBER: ALL GREEN TEXT IS A LINK TO A VIDEO OR ARTICLE TO WATCH OR READ.

LESSON QUESTIONS

- What jobs in Nova Scotia involve the ocean?
- How do Nova Scotians make a living from the ocean?
- What are the unique opportunities in the lobster industry?

1. LOBSTER FISHING:

- [360 Virtual Reality Experience on a Canadian Lobster Fishing Boat \(3:13\)](#)
- [All female lobster crew \(1:58\)](#)

What are the key messages you are taking away from these videos about who can fish and how they fish?



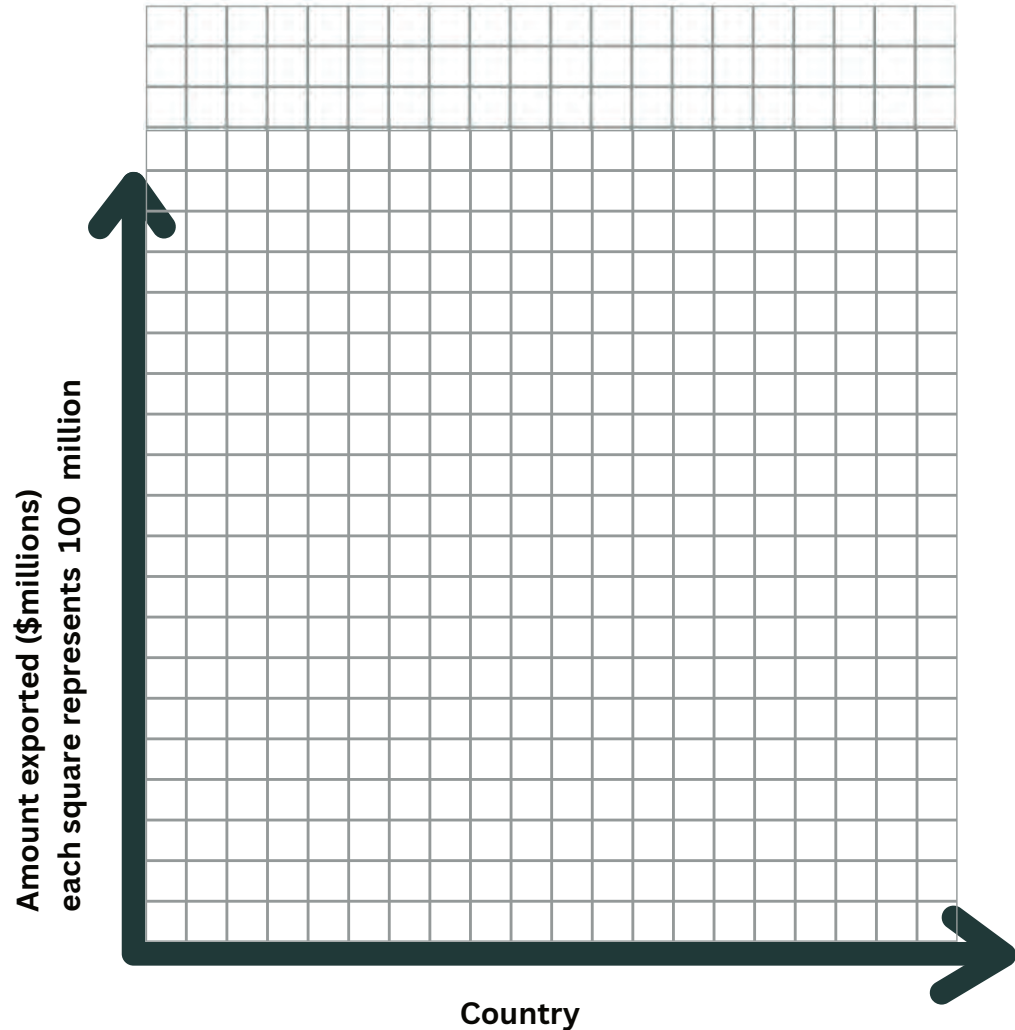
Activities

GRAPH: WHERE ARE LOBSTERS SOLD?

Create a graph showing the top **5 countries** that buy Canadian lobster, and the amounts they buy, from the **smallest to the largest**.

Destination countries and amount exported (\$ millions).

- Japan- 33
- European Union- 255
- South Korea- 114
- Singapore- 7
- China- 483
- Taiwan- 14
- Vietnam- 7
- United States- 2,248
- Hong Kong- 45
- United Kingdom- 38



3. JOBS CONNECTED TO THE OCEAN: Google Slideshow

Beyond fishing, there are many ways to have a job connected to the ocean. Review the Google slideshow with this lesson that describes jobs connected to the ocean. These jobs include fishing, aquaculture, seafood processing, as well as support services such as research, equipment, sales, and tourism.

Follow the steps below:

Step 1: Select a career / livelihood that would be of most interest to you.

Step 2: Watch one or more of the videos in the slideshow that illustrates the career you have chosen.

Step 3: Consider what skills and education you would need to perform the job you selected.

Step 4: Write a job ad for the career you are interested in, including 3 skills required for the job.

Name of job:

3 things that describe the job:

-
-
-

3 skills required for the job:

-
-
-



Activities

JOBS CONNECTED TO THE OCEAN: Additional Videos

Want to know more about jobs connected to the ocean?
Watch these additional videos.

Processing and sales:

- [Pierce Industries \(1:19\)](#)
- [Riverside Industries \(1:11\)](#)
- [Gidney Industries \(1:44\)](#)
- [Fisherman Premium Atlantic Lobster \(2:28\)](#)

Food and Restaurants:

- [Places to grab lobster on the South Shore \(5:23\)](#)

PLACEHOLDER FOR ADDITIONAL INTERVIEWS.



Thoughtbook

Take time to journal your thoughts and things you have learned using the reflection questions. You can write a paragraph, draw a picture, a comic strip, write a poem, or any other form of creative expression.

Reflect:

- **What jobs in Nova Scotia involve the ocean?**
- **How do Nova Scotians make a living from the ocean?**
- **What are the unique opportunities in the lobster industry?**