

Lesson 1: The Great Bear Sea

Overview: Students will learn about the location and importance of the Great Bear Sea and why this ecosystem is important to conserve for future generations.

Subjects: Science, Social Studies, Art, Language Arts

Suggested Time: 4 classes (45-60 minutes)

* **Teacher Note:** Throughout this resource, additional materials, several images and colour resources are noted with a * in the materials list. These resources are available on the Great Bear Sea USB, or at www.greatbearsea.net.

Materials and Resources:

- Computer, projector, and screen
- Lesson 1 Film Clips:
 - Introduction (6 mins)
 - Respect (10 mins)
 - Ratfish (4 mins)
- Teacher Background – Lesson 1
- Digital cameras or phones
- 1.1: Importance of the Great Bear Sea
- 1.2: Connections to the Great Bear Sea
- 1.3: Biodiversity in the Great Bear Sea
- Maps (6) of the Great Bear Sea Regions (Great Bear Sea MaPP Study Area Map, Great Bear Sea MaPP Study Area With Sub-Regions Map, Central Coast Map, Haida Gwaii Map, North Coast Map, North Vancouver Island Map)*

Learning Objectives:

Students will:

1. Understand the Great Bear Sea is an ecosystem with ecological, economic, cultural and social significance, particularly for First Nations communities.
2. Explore the ideas of stewardship and leadership in planning for the future of marine resources and ecosystems in the Great Bear Sea.

Lesson Context

This lesson will introduce the students to the Great Bear Sea region, including the ecological, economic, cultural and social importance of this region. Students will learn about the four sub-regions of the Great Bear Sea and will explore key terms such as ecosystem, biotic parts, abiotic parts and biodiversity while thinking about their own place and how it connects to the Great Bear Sea. The idea of the land and sea being interconnected, and everything having a distinct and important role in an ecosystem will be presented. Students will begin to think about how the resources of the Great Bear Sea are important to future generations.

Learning Activities

Activity 1: The Great Bear Sea (45-60 minutes)

1. Ask the students if they have heard of the Great Bear Sea or the Great Bear Rainforest. Discuss as a class to understand what the students already know.
2. Introduce the students to the Great Bear Sea and the four sub-regions. Show the students two maps: **Great Bear Sea MaPP Study Area Map*** and **Great Bear Sea MaPP Study Area With Sub-Regions Map***. Continue to look at the individual maps of each sub region (**Central Coast Map, Haida Gwaii Map, North Coast Map, North Vancouver Island Map***). Let the students pinpoint other land areas on the maps that they are familiar with including where they live in relation to the Great Bear Sea (additional local maps may be necessary).
3. Have students create a Know/Wonder/Learn (KWL) chart on the Great Bear Sea in their Science journal or notebook.
4. Watch the film clip **Introduction**.
5. Provide students with **1.1: Importance of the Great Bear Sea** and have them examine the ecological, economic, cultural and social importance of the region. Review these terms with the class. Have the students classify different components of the film clip. For example, the diversity of life in this region, the research that is happening here, the First Nations communities living in the region by the sea and land, the industry and people working in this area, etc. Then, pair/share to see what the students recalled and classified from the film clip and add to their list. Have students add to **1.1: Importance of the Great Bear Sea** as the lesson continues and they learn more about the region.
6. Have students add to their Know/Wonder/Learn chart after viewing the film.

Activity 2: Ecosystem (45-60 minutes)

1. Write the word **ecosystem** on the board. Ask the students to think about what the word means. Provide students with **1.2: Connections to the Great Bear Sea** and have them record their initial thoughts and the definition of the word ecosystem.
2. Introduce the terms **biotic** and **abiotic** and discuss what they mean. Continue using **1.2: Connections to the Great Bear Sea** to record definitions.
3. Have the students identify and classify the biotic and abiotic factors that they can recall from the film clip. Then, have the students work in small groups to share the biotic and abiotic parts identified and classified. As a class, discuss some of the following key points:
 - Did the students identify and classify the same parts?
 - Did everyone classify the parts the same way?
 - Discuss any differences in classification.
4. Review the location of the Great Bear Sea and the proximity to your local community. Have the students list how their community is similar and different to the Great Bear Sea region. Some points to consider:
 - Coastal or interior community
 - Water body near them? Fresh vs. salt water?
 - Industry and jobs
 - Tourism
 - First Nation territories
 - Animal and plant life
5. Explain to the students that no matter where in British Columbia they live the Great Bear Sea is an important ecosystem to everyone. Brainstorm as a class how the Great Bear Sea is important and how it's connected to them in their "place".
6. Have each student make their own web/collage connecting the Great Bear Sea to themselves in their place. Some potential guiding questions may include:
 - Have you visited the Great Bear Sea?
 - Do any animals that live in your region pass through the Great Bear Sea?
 - Do any of your parents' or other family members' jobs connect to the Great Bear Sea?
 - Do you like to eat salmon?
 - What do you breathe? How is oxygen connected to the Great Bear Sea?
 - Are you a steward of Earth? How does this help the Great Bear Sea?

Activity 3: Biodiversity (45-60 minutes)

1. Ask the students to think about the word **biodiversity**. What does it mean? Discuss as a class. Provide each student with **1.3: Biodiversity in the Great Bear Sea** and have them record the definition of biodiversity.
2. Continue using **1.3: Biodiversity in the Great Bear Sea** and have the students recall and identify the different species that are found in the Great Bear Sea from the film clip **Introduction**. Next, head outside using the school field or green space near by and have the students go on a digital scavenger hunt to find as many different species as possible by taking pictures in this outdoor location (option to sketch species if cameras/phones are not available). Share the pictures with a partner. As a class, discuss the biodiversity of species living in the Great Bear Sea region and living in their own community. How are the species similar or different? Can any of these living organisms be classified into groups? For example, plants and animals or invertebrates and vertebrates or marine and land mammals, or threatened and endangered species, etc., and have the students list examples of organisms from the film that fit into the classification groups.
3. Have the students write a paragraph in their Science journal about why they think biodiversity is important in the Great Bear Sea, how humans fit into the region, and similarities and differences between their community.

Activity 4: Respect (45-60 minutes)

1. Watch the **Respect** film clip, Underwater Big House, Story of Gitnuganaks as told by Vernon Brown, Kitsoo/Xai'xais Nation.
2. Using the **Respect** film clip, discuss with the students how the Great Bear Sea is home to many different First Nations who have lived in their territories for thousands of years, having close relationships with the land and sea. Some potential guiding questions may include:
 - Who is telling the story? From what cultural perspective?
 - How is the land and sea important to the First Nation culture?
 - What is the lesson of the story?
 - Why is respecting animals important?
 - Why do we need to protect ecosystems?
3. Give the students time to add to **1.1: The Importance of the Great Bear Sea** or their Know/Wonder/Learn chart.

4. Share the quote:

"The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat."

– Jacques Yves Cousteau, Oceanographer

Discuss with the students what this quote means to them, how we are all connected and how this quote could be connected to the Great Bear Sea ecosystem.

5. To close, have the students each share one part of the Great Bear Sea that they respect.

Extension Ideas

- Learn more about ratfish by watching the film clip **Ratfish**. Do additional research to learn more about the ratfish. Have the students design a poster, brochure or fact sheet on the ratfish.
- Have students organize key terms using cue cards, Science journal/notebook or electronically using a program such as Quizlet www.quizlet.com.
- Create a puzzle poster using actual puzzle pieces or hand made puzzle pieces to display the diversity living in the Great Bear Sea and how the ecosystem is interconnected through the biotic and abiotic parts. Each puzzle piece would represent a biotic or abiotic part of the Great Bear Sea. The students can use the biotic and abiotic parts that were identified throughout the film clips. Students could write their own quotes about how their puzzle piece is connected to the Great Bear Sea.

Assessment Ideas

- Formatively assess students' engagement in individual work, group work and large group discussion.
- Assess student work from the lesson.

Teacher Background – Lesson 1

The Great Bear region of British Columbia's north coast is one of Canada's unique ecological treasures. It is home to islands, wild rivers and cold-water seas, a rich marine ecosystem and one of the world's last intact temperate rainforests. The Great Bear region is interconnected between the land and the sea and truly is an ecosystem that is unlike anything else in the world.

The Great Bear Sea covers a large area from the northern tip of Vancouver Island to the Alaska border. It can be divided into four sub-regions: North Coast, Haida Gwaii, Central Coast, and North Vancouver Island, as described in the film. The Great Bear Sea is home to many species of living organisms and many different kinds of habitat. For example, 20% of the world's remaining Pacific salmon are in this area, moving from the rivers to the sea and returning to spawn in their life cycle. It is home to two species of bears including a special type, or sub-species, of black bear called the spirit bear that lives nowhere else on Earth. Many types of marine mammals such as sea otters, dolphins, porpoises, humpbacks and killer whales call this area home or migrate through the waters. The area contains globally significant populations of breeding seabirds as well as important foraging habitat for transequatorial migrants that spend the summer in BC when it is winter in Australia and New Zealand. The area also is part of the Pacific Flyway and each fall and spring, hundreds of thousands of shorebirds, ducks, geese and other birds fly between the breeding grounds in the Arctic and their wintering areas in Mexico and South America, stopping at the nutrient-rich estuaries and mud flats to refuel and regain body fat for the long journey. The Great Bear Sea contains important habitats for threatened and endangered species, and supports a rich, complex food web ranging from tiny pteropods to the giant whales – this is one of the most biodiverse temperate regions of the world.

The Great Bear region is the traditional, ancestral and unceded territory for many First Nations that have depended on the resources of the land and sea for thousands of years. This area is also very rich in culture, with various species, artefacts and landscapes holding great significance to the communities that call this area home. The Great Bear Sea provides employment for many in the region in a variety of industries such as fishing and tourism. At the same time, there are many threats to this region including overfishing, increased marine traffic, oil spills and development. The biodiversity of the region, the fact that so many communities depend on this area for sustenance, and the increasing global competition for natural resources and waterways, provides a good framework for understanding the importance of ecosystem protection and planning for the future.

The year 2015 marked an important milestone for shaping the future of Canada's North Pacific Coast and the Great Bear Sea. A co-led partnership between the Government of British Columbia and 18 First Nations – called the Marine Planning Partnership (MaPP) – developed marine plans for the purpose of guiding marine management and the future of the Great Bear Sea region. On April 27, 2015 the marine plans for the four sub-regions

were publicly announced. This collaborative planning process is extremely innovative, and can be used as a model for considering community engagement on planning for a sustainable future.

The Great Bear Sea: Reflecting on the Past, Planning for the Future explores the marine planning process from the perspective of the four sub-regions (North Coast, Haida Gwaii, Central Coast, and North Vancouver Island). The following First Nations* in each sub-region were involved in the MaPP:

Central Coast

- Nuxalk Nation, Heiltsuk Nation, Kitasoo/Xai'xais First Nation, Wuikinuxv Nation

Haida Gwaii

- Council of the Haida Nation, Old Massett Village Council, Skidegate Band Council

North Coast

- Gitga'at First Nation, Gitxaala First Nation, Haisla First Nation, Kitselas First Nation, Kitsumkalum First Nation, Metlakatla First Nation

North Vancouver Island

- Mamalilikulla Qwe'Qwa'Sot'Em First Nation, Tlowitsis Nation, Da'naxda'xw Awaetlatla First Nation, Gwa'sala-'Nakwaxda'xw First Nations, We Wai Kum First Nation, Kwiakah First Nation, K'ómoks First Nation

** This list contains over 18 First Nations. Some Nations and territories had been amalgamated post-contact and have very recently been re-defining traditional territories and spaces.*

Vocabulary

Ecosystem: the interactions between the living and non-living parts in an area. The Great Bear Sea is an example of an ecosystem that is truly unique and is interconnected to other ecosystems.

Biotic factors: living parts of an ecosystem examples: animals and plants.

Abiotic factors: non-living parts of an ecosystem examples: clouds, sun, rocks, water, sand etc.

Biodiversity: the variety of living organisms in a habitat or ecosystem.

Name: _____

1.1: Importance of the Great Bear Sea

The Great Bear Sea region is important for many reasons. Use the headings to classify different components captured from the film clips in this lesson.

Ecological (relation of living organisms to one another and their environment)	Economy (resources and management of those resources)	First Nations Importance (culture and social)

Name: _____

1.2: Connections to the Great Bear Sea

What does the word ecosystem mean to you?

Definitions:

Ecosystem:

Biotic:

Abiotic:

List of Biotic and Abiotic Examples in the Great Bear Sea

Biotic Examples	Abiotic Examples

List how your community is similar and different to the Great Bear Sea.

Similar	Different

Great Bear Sea and Me

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Name: _____

1.3: Biodiversity in the Great Bear Sea

Definition of biodiversity:

List of Different Species in the Great Bear Sea	List of Different Species in your community

Classification of Species in the Great Bear Sea

Identify three ways to classify species from your list. Make sure to include your sorting rule and examples of what would be in each group.

Sorting Rule:	Sorting Rule:	Sorting Rule:
Examples:	Examples:	Examples: