

# Great Bear Rainforest Activity Plan

## Inquiry:

How does climate change impact biodiversity in the Great Bear Rainforest?

In this activity plan, students choose one species of plant, animal, bird, or fish to research. They will answer questions and create a presentation about how this species is affected by climate change in the Great Bear Rainforest.

## Learning Objectives

Students will:

- Discuss the scientific evidence for climate change, its causes and effects
- Predict how climate change has impacted the biodiversity in the Great Bear Rainforest
- Recognize how ecosystem-based management helps mitigate the effects of climate change

## Preparing for the Activity Plan

**Note:** You may wish to teach this lesson after the Activity Plan, “How is the Great Bear Rainforest being protected?” so that students will be familiar with ecosystem-based management.

## Materials

- computer / projector
- student computers / tablets / devices
- access to Internet

## Websites

### **Biodiversity of the Central Coast**

Students can download the free App

<https://www.centralcoastbiodiversity.org/species-guide.html>

### **Climate Kids**

<https://climatekids.nasa.gov/>

### **Forests and Oceans for the Future, Unit 7**

Interviews with elders about climate change

<https://ecoknow.ca/documents/tekUnit7.pdf>

### **Great Bear Sea > Elementary > Lesson 2: Traditional Knowledge**

Includes information on Indigenous knowledge and traditional ecological knowledge.

<http://greatbearsea.net/elementary-curriculum/lesson-2/>

### **Great Bear Sea > Secondary Environmental Science > Lesson 2: Traditional Knowledge and Collaborative Research**

Includes information on Indigenous knowledge and traditional ecological knowledge.

<http://greatbearsea.net/environmental-science/lesson-2/>

### **Nature Canada; How is climate change affecting birds?**

<http://naturecanada.ca/what-we-do/bird-conservation/climate-change-birds/>

## Videos

### **Climate Change: Sea Lion Seizures, Toxic Algae, and the Nightmare Scenario for Oceans (5:10)**

<https://www.youtube.com/watch?v=ote4a7hhW6A>

## Blackline Master

- Forest and Oceans for the Future

# Delivering the Activity Plan

## Access Prior Knowledge

- Have students engage in a free write exercise for five minutes in response to the term “climate change.” They can write what they know, what they think they know, what they’ve heard, what they’re confused or unsure about, or what they want to know.
- After the five minutes, students read what they have written to a partner. After they have heard each other’s writings, pairs write a collaborative summary in which they combine their ideas.
- As a class, have students discuss what they noticed as they went through this process. What did they know? What did they learn from their peers? What questions do they have? Were there disagreements?

Project one or both of the following videos that explain climate change.

### **Climate Change 101 with Bill Nye | National Geographic** (4:09)

<https://www.youtube.com/watch?v=EtW2rrLHs08>

### **Climate 101** (4:33)

<https://www.youtube.com/watch?v=3v-w8Cyfoq8>

## Inquire

- Put chart paper on the wall with the following headings:
  - » Marine mammals (sea lions, sea otters, whales, harbor seal, etc.)
  - » Birds
  - » Plants and trees
  - » Marine life (fish, algae, mosses, terrestrial herbs, etc.)
  - » Terrestrial animals (bears, wolves, etc.)
- Have students write predictions under each heading of how they think climate change may impact each of the animal and plant groups in the Great Bear Rainforest.
- Show the class the following video:

### **Climate Change: Sea Lion Seizures, Toxic Algae, and the Nightmare Scenario for Oceans** (5:10)

<https://www.youtube.com/watch?v=ote4a7hhW6A>

- Discuss the video as a class.

## Experience

**Note:** For this activity students will be conducting research. In addition to online or library research, encourage students to contact First Nations communities in the GBR, environmental groups such as Rainforest Solutions Project, Greenpeace, Stand (at <https://www.stand.earth/> , formerly ForestEthics), the Sierra Club, and either email questions or set up a phone / video interview.

Hand out the blackline master Forest and Oceans for the Future. Have students refer to the interviews with the elders according to themes listed.

### Forests and Oceans for the Future, Unit 7

<https://ecoknow.ca/documents/tekUnit7.pdf>

- Review the term “ecosystem-based management.”

*EMS is an approach to managing human activities to ensure healthy coexistence of ecosystems and human communities. Ecological processes are sustained and human wellbeing supported.*

- Individually or in small groups, students choose either seaweed, salmon, shellfish, or herring eggs to study. Using the Forests and Oceans for the Future resource, as well as additional research, have students answer the following questions on the blackline master:
  - » How is climate change affecting the species you are studying?
  - » How do these changes also impact the people living in the GBR?
  - » How does traditional ecological knowledge inform scientists about the effects of climate change?
  - » How might ecosystem-based management lessen the effects of climate change on the species you are studying?
- Students choose how they will present their findings. Examples could include:
  - » assemble a time capsule
  - » present a newscast (Include an interview with experts)
  - » write an essay or article
  - » write a letter to the provincial or federal minister responsible for the environment
  - » create a board game or video game
  - » shoot a short documentary film
  - » create a museum exhibit
  - » write and act out a play

## Assess

- Did the student thoroughly research the species they chose to study?
- Did the presentation illustrate the answers to the research questions?
- In what ways did the student contribute to the group project?

## Go Beyond

- Have students research how climate change is affecting other species in the Great Bear Rainforest (terrestrial animals, birds, plants, etc.)
- Invite a First Nations elder to the class to discuss climate change and traditional ecological knowledge.
- Students explore or create action-based climate change projects in their own communities. Possible resources:
  - » BC Climate Action Toolkit: <https://www.toolkit.bc.ca/>
  - » Climate Justice in BC: <http://teachclimatejustice.ca/the-lessons/module-7-imagining-the-future-we-want/>

# » Forests and Oceans for the Future

<https://ecoknow.ca/documents/tekUnit7.pdf>

## Interviews

### Part One: Harvesting and Processing Traditional Foods

Seaweed—page 26

Salmon—page 29

Herring eggs—page 32

Shellfish – page 35

### Part Two: Observing Changes – page 38

Interviews with Elders:

Alberta Jackson – page 44

Marvin (Teddy) Gamble – page 51

Agnes Shaw – page 56

Sam Lewis – page 61

Martha Lewis – page 65

Answer the following questions:

How is climate change affecting the species you are studying?

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How do these changes also impact the people living in the GBR?

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How does traditional ecological knowledge inform scientists about the effects of climate change?

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How might ecosystem-based management lessen the effects of climate change on the species you are studying?

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