

Topic: Conservation of Biodiversity	Lesson: 1-3	Date:
Subject: Science	Time: 2-4 classes	Grade: 9

Intents/Objectives/Purpose

Curricular Connection:

Students will:

- Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making through:
 - describing ongoing changes in biological diversity through extinction and extirpation of native species, and investigate the role of environmental factors in causing these changes
 - evaluating the success and limitations of various local and global strategies for minimizing loss of species diversity
- Ask questions about the relationships between and among observable variables, and plan investigations to address those questions through
 - identifying science-related issues (*e.g., identify issues related to loss of species diversity*)
- Work collaboratively on problems; and use appropriate language and formats to communicate ideas, procedures and results through
 - *communicating questions, ideas, intentions, plans and results, using lists, notes in point form, sentences, data tables, graphs, drawings, oral language and other means (e.g., illustrate and, compare methods of reproduction in sample organisms studied)*

<i>Activities</i>	<i>Time</i>	<i>Displays/Resources</i>
<p>1. Introduction/Set/Advanced Organizers</p> <p>Display Slides: G9: Conserving Biodiversity</p> <ul style="list-style-type: none"> ● Start the class by looking at Mirolette case study on invasive species: SGin Xaana Sdiihl'tl'ixa: Night Birds Returning - Gwajii Haanas ● Ask: <ul style="list-style-type: none"> ○ What was the problem presented in the video? <ul style="list-style-type: none"> ■ Murelettes are at a great risk of extinction due to the introduction of invasive rats ■ Introduced rats have caused many species of Murelettess to disappear or go extinct ○ How do you think these invasive species got into Canada? 	10-15 mins	<p>PowerPoint Conserving Biodiversity</p> <p>Video: https://www.youtube.com/watch?v=cbYv54wC00s&t=54s</p>

<ul style="list-style-type: none"> ■ Ans: Usually through colonialism. Historically, invasive species are a part of how colonies solidified their presence on foreign lands. The rats came from ships from Great Britain that were coming to Canada. The rats reproduced and multiplied and spread across provinces wiping out species, like the Murelettes as well as causing other adverse effects. ○ What other problems do you think invasive species present to an ecosystem? <ul style="list-style-type: none"> ■ They can bring disease such as diseases that killed some Indigenous tribes ■ They can disrupt the ecosystem by throwing off the food web ■ Other answers along these lines ○ How do you think conservation can prevent the loss of biodiversity? <ul style="list-style-type: none"> ■ Take any answers that you get and record them somewhere as these will guide the lesson ○ How do you think a partnership with an Indigenous community could prevent a loss of biodiversity/promote conservation? <ul style="list-style-type: none"> ■ Take any answers that you get and record them somewhere as these will guide the lesson 		
<p>2. Clarifying/Creating -Understanding/Concept-Development</p> <ul style="list-style-type: none"> ● Continue going through slides 	30 mins	PowerPoint Conserving Biodiversity
<p>3. Review/Assessment</p> <ul style="list-style-type: none"> ● Student's tasks: <ul style="list-style-type: none"> ○ Pick <u>2</u> of the assigned Case Studies ○ Complete research on the two studies that you have picked. ○ Answer the questions on your graphic organizer using thought and detail: <ul style="list-style-type: none"> ■ What is the issue? How were Humans Involved? ■ How was biodiversity impacted? ■ How was the problem solved or minimized? ■ Were Indigenous People included and was the result of the inclusion? <ul style="list-style-type: none"> ● If no Indigenous People were 	60-120 mins	Graphic organizer

included, hypothesize what would occur if they were included.

- Consider the question: “**Why is Indigenous Partnership important to conservation efforts and minimizing the loss of biodiversity?**” in your answers.
- The Assigned Case Studies:
 - Indigenous Fire Management: <https://albertahistoricplaces.com/2016/03/02/alberta-on-fire-a-history-of-cultural-burning/>
 - IPCA at Bistcho Lake (watch video as well): <https://bistcholake.ca/bistcho-lake/>
 - Bison and the Power of Partnerships <https://parks.canada.ca/nature/science/autochtones-indigenes/bison>
 - Caribou Recovery: <https://parks.canada.ca/pn-np/ab/jasper/nature/conservation/retablissement-caribou-recovery/elevage-caribou-breeding/retour-caribou-comeback>
 - Research and Monitoring at Waterton Lakes National Parks: <https://parks.canada.ca/pn-np/ab/waterton/nature/conservation/ecologique-ecological>
 - Half-moon Hairstreak Butterfly: <https://parks.canada.ca/pn-np/ab/waterton/nature/faune-wildlife/invertebres-invertebrates/papillon-butterfly>

4. Extension Activity :

- If time permits, have students write a persuasive piece answering the question: “**Why is Indigenous Partnership important to conservation efforts and minimizing the loss of biodiversity?**”
- They should use the findings from their case study research to support their answers
- Assignment template (with rubric):
- Time estimate: 30-60 minutes

References

*Lesson plan content and assignment adapted from information provided by an Alberta teacher.

Government of Alberta. (2014). *SCIENCE GRADES 7–8–9 Program of Studies*. Alberta Education. https://education.alberta.ca/media/3069389/pos_science_7_9.pdf

Government of Canada. (2023, April 3). *Sgin XAANA sdiihltl'ixa: Night Birds Returning*. Parks Canada. <https://parks.canada.ca/pn-np/bc/gwaiihaanas/nature/conservation/restoration-restoration/retour-return#:~:text=Parks%20Canada%2C%20the%20Haida%20Nation%20and%20several%20international%20partners%20are,habitat%20and%20improve%20ecological%20integrity.>

Johnson, S. (2020, March 10). *What does “Rat free” Alberta actually mean?* Poulin’s Pest Control.
<https://poulins.ca/blog/what-does-rat-free-alberta-actually-mean/#:~:text=It%20all%20started%20in%20the,every%20province%20and%20spreading%20disease.>