

Invasive Species: Common Carp

Students will learn how plant diversity creates healthy habitat in Cootes Paradise Marsh. They will read the article “Common Carp Crisis” to learn more about an invasive species that threatens this important marsh ecosystem at the western tip of Lake Ontario.

Overview

Curriculum Subject	Science, Language	Grade Level	Grade 6
Topic	Invasive Species	Timeframe	1 hour

Language: Reading	Overall Expectations	1. Read and demonstrate an understanding of a variety of informational texts.
	Specific Expectations	1.4 Demonstrate an understanding of increasingly complex texts by summarizing and explaining important ideas and citing relevant supporting details
Science: Biodiversity	Overall Expectations	3. Demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefit to humans.
	Specific Expectations	3.5 Describe interrelationships within species, between species, and between species and their environment, and explain how these interrelationships sustain biodiversity 3.7 Explain how invasive species reduce biodiversity in local environments

Learning Goals	<ul style="list-style-type: none"> • We are learning how to read and understand informational texts. • We are learning how biodiversity keeps people and natural places healthy.
Success Criteria	<ul style="list-style-type: none"> • I can read a non-fiction text to understand the main idea of supporting arguments. • I can describe how plants in the marsh contribute to biodiversity. • I can describe what an invasive species is, and how common carp hurt biodiversity in the marsh.
Assessment and Evaluation	<ul style="list-style-type: none"> • Exit Ticket: reading comprehension response. • Active participation in discussion and paired work.
Prior Learning	Prior to this lesson, students will have... <ul style="list-style-type: none"> • Been introduced to the concept of biodiversity as the variety of life on earth. • Be familiar with information texts and some basic comprehension strategies.
Materials and Preparation Needed	<ul style="list-style-type: none"> • Please note, this lesson plan makes use of the following free presentation and collaboration applications: Google Maps, Google Earth, Microsoft PowerPoint. Feel free to substitute your preferred applications for the above, but we recommend trying these before your lesson to ensure they work as intended. • Prior to beginning this lesson, students should have access to the following files to read and refer to: “Biodiversity in Cootes Paradise” (pdf), “Common Carp Crisis” (pdf)

Procedure

Minds On:

- Review the definition of **biodiversity** that your class is familiar with. Explain that today they will be exploring a wetland which is famous for biodiversity and learning about a species of fish that threatens to destroy this biodiversity.
- Have students search Cootes Paradise in a mapping application (Google Maps, Google Earth, or similar). Can they tell where Cootes Paradise is in relation to where they live? Have them identify Royal Botanical Gardens, which owns all the property surrounding the marsh.
- Review, if necessary, any reading comprehension strategies that have been introduced or used in previous lessons: for example, how to identify the main idea and supporting arguments.

Action:

- Marshes are wetlands that provide homes to many different species of fish, plants, birds, insects, and more. Look at the picture of Cootes Paradise Marsh in the summer. Can you make a list of all the animals and plants you can imagine live there? Compare that to the list of living things that do live there. All these animals rely on the diversity of life in the marsh in order to survive.
- Use the example of plant diversity in the marsh. As a class (using a videoconference app) or individually, watch the PowerPoint presentation “Biodiversity in Cootes Paradise Marsh”. How do plants help to make the marsh a healthy habitat for other living things?
- Introduce concept of an invasive species. Invasive species are plants or animals which have been introduced to a local environment and outcompete native species for resources. They are originally from other places. Sometimes, like manna grass or honeysuckle, they were planted by humans for different reasons. In some cases, they hitched a ride as humans, plants, or animals travelled from one place to another. They are invaders who take up the space and resources that native species need in order to survive. If invasive species become too numerous, they can threaten the native species we rely on as part of our local biodiversity.
- As a class (using a videoconferencing app) or as a read-aloud (via recorded video), read the article “Common Carp Crisis”.
 - As a group or individually, have students identify the main idea and supporting arguments of this informational text.
 - Optional: view the photos of emergent vegetation in Cootes Paradise Marsh on https://www.rbq.ca/file/wetlandresources/maps/1934_1962_1985-Marsh-Vegetation-Maps.jpg. What story does the change in the amount of vegetation over the last hundred years tell you? What would be a cause of this change?

Consolidation and Connection:

- In pairs or individually, students will complete the reading comprehension questions and submit them to confirm their comprehension of the text
- As a class (using a videoconference or discussion board), discuss students’ reactions and responses to the question “Imagine that you are writing a letter to RBG’s Natural Lands department suggesting the best way to solve the carp problem. What would you suggest and why?”
 - Discuss which suggestions would have the best chance of working and which ones might not be feasible. Students should keep in mind that RBG needs to conserve the entire marsh and that killing cannot be part of the solution.

Extensions/Progression:

- The activities in this lesson plan act as a great bridge to Overall Expectation 1 for this science unit, which focuses on how human activities and decisions can impact biodiversity.

- 1.1 Students can analyse the problem of carp from different points of view, and then research solutions to this problem. RBG's Wetland Resources page at <https://www.rbg.ca/wetland-resources> contains primary data tracking the success of the largest-scale solution to date, the Cootes Paradise Fishway.
- 1.2 Students can assess the benefits of removing the carp from the marsh and the costs of taking no action at all.

Teacher's Feedback and Notes