Ducks Unlimited Canada

STUDENT | FOR GRADE 9 AND UP

Invasive species management case study

Moths, goats and herbicide: What tools can protect wetlands from invasive phragmites?

The St Lawrence-Great Lakes Region, located in southern Ontario, Québec, and eight American States, is one of the largest watersheds in the world. It contains one fifth of the world's freshwater, supporting millions of people and thousands of native plant and animal species.

The invasive grass *Phragmites australis* (common reed), which has no natural predators in North America, has spread quickly in Ontario and Quebec. With reeds growing up to six metres tall, dense stands of phragmites reduce space for habitat, impede native vegetation growth, and lower biodiversity and food supply in wetlands. Recreation and agriculture are also impacted: phragmites can absorb water from irrigation systems, dry out and become a fire hazard, obscure the sightline of drivers and block access to shorelines.

Conservation specialists with Ducks Unlimited Canada (DUC) work with academics, community groups and other partners to manage invasive species and protect these important aquatic environments. DUC uses science to understand the spread of invasive species and the most effective management tools.

Invasive phragmites threaten healthy wetlands. What are the possible solutions to address the invasive plant? For this case study, you will be exploring how to help revive biodiversity in a wetland invaded by phragmites.

Above: *The Great Lakes-St. Lawrence watershed (shown in green) is one of the largest watersheds in the world.*

THE CASE STUDY: CREATE A PLAN THAT WILL HELP ADDRESS PHRAGMITES AND RESTORE BIODIVERSITY TO A WETLAND.

Location: Great Lakes/St. Lawrence Region (Ontario and Quebec)

In this case study, you will explore a variety of tools used to control the spread of phragmites in wetlands. As a conservation organization, DUC is interested in protecting and improving biodiversity, while also working closely with people in the region to meet their needs.

Your task will include researching tools used by conservation professionals when working with phragmites, understanding the impacts of different strategies on local communities, and learning about the importance of healthy, biodiverse wetlands. You'll work together to propose a plan to address phragmites and restore valuable wetland functions.

First Nations communities are profoundly affected by phragmites' disruptive impacts to land and water. First Nation Phragmites Control was founded by Danalynn Williams of the Aamjiwnaang First Nation territory to take the lead in assisting communities with invasive phragmites control. First Nations including Aamjiwnaang, Kettle and Stony Point, and Walpole Island are working to address the impacts to culture, tradition, and lifestyle posed by phragmites through education, training and local partnerships. We encourage you to learn more by visiting First Nation Phragmites Control (FNPC) and exploring the suggested resources included in this case study.

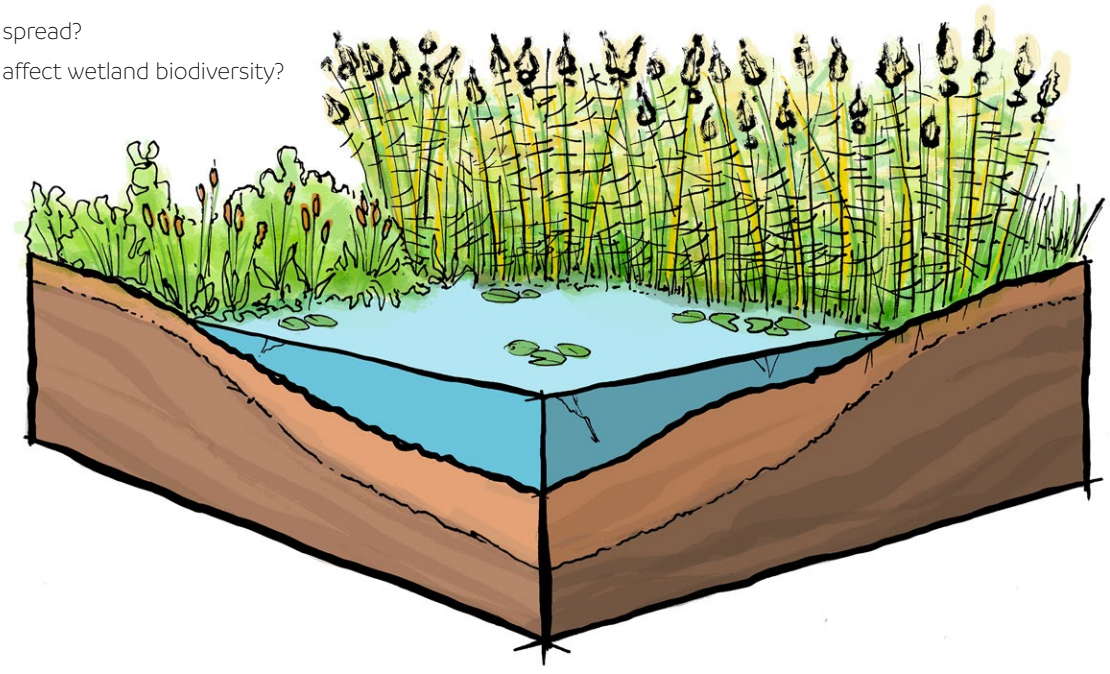
PART 1: BACKGROUND

Invasive species and wetlands background

1) Why is biodiversity important?
2) What makes wetlands rich in biodiversity?
3) What species live in wetlands in the St Lawrence-Great Lakes Region?
4) What is an invasive species?

Phragmites

1) What is invasive phragmites?
2) How does phragmites spread?
3) How does phragmites affect wetland biodiversity?



PART 2: RESTORATION TOOL CONSIDERATIONS

Consideration A: Mechanical control

1) What is mechanical removal of phragmites?
2) What are the different types of mechanical control used to control phragmites?
3) Is mechanical control effective in controlling phragmites?

Consideration B: Biocontrol

1) How has biocontrol been used to control invasive species? Have those efforts been successful?
2) How have moths (biocontrol) been used to successfully combat invasive phragmites?
3) What are the risks with using biocontrol?

Consideration C: Chemical control

1) Are herbicides effective in combatting invasive phragmites?
2) Are there drawbacks to using herbicides?
3) In what locations would herbicide be an appropriate method to address phragmites?

Consideration D: Community involvement

1) What impacts might different restoration tools have on local communities?
2) How might the restoration tools you explored be perceived by local communities? Will you incorporate this in your management plan?
3) How can different communities and experts be involved in addressing phragmites? (First Nations, volunteer groups, non-profits, academics and researchers)

Helpful Terms

Wetland: wet areas of land like marshes, bogs, swamps, etc. (i.e., land saturated with water long enough to support aquatic plants and animals).
Invasive species: introduced organisms including plants and animals not native to a region that cause harm to the environment.
Phragmites *(Phragmites australis)*: an invasive reed that spreads quickly in wetlands and disturbed environments, outcompeting native species and reducing important habitat.
Conservation: protection of land that might otherwise be neglected, developed or deteriorated.

Useful links to start your research

- Ducks Unlimited Canada: Great Lakes-St. Lawrence – https://www.ducks.ca/places/the-great-lakes-st-lawrence
- CBC News: Ontario scientists are using caterpillars to combat an invasive aquatic plant – https://www.youtube.com/watch?v=S0Kfm-VfxPc&ab_channel=TVOToday
- CBC News: Ontario scientists are using caterpillars to combat an invasive aquatic plant – https://www.cbc.ca/news/canada/hamilton/phragmites-control-1.7216345
- CBC News: These women teach First Nations how to stop an invasive plant from choking Ontario's ecosystems – https://www.cbc.ca/news/canada/london/first-nation-phragmites-control-1.7212070
- CBC News: Goats are helping Niagara Parks mow down a big problem – https://www.cbc.ca/news/canada/hamilton/niagara-goats-phragmites-1.7250226
- Ducks Unlimited Canada: Phragmites biocontrol in Ontario progress so far – https://www.ducks.ca/places/ontario/biocontrol-in-ontario/phragmites-biocontrol-progress
- Ducks Unlimited Canada: Fighting back against invasive Phragmites – https://www.ducks.ca/stories/partnerships/fighting-back-invasive-phragmites

PART 3: YOUR CONSERVATION PLAN

Now you can prepare your recommendation, answering the key question: Which restoration tools will be most beneficial for wetland biodiversity and controlling invasive phragmites?

You can now use your research to develop a conservation plan! In small groups review your research and create a conservation plan using one or more of the restoration tools you researched. Present your findings in a 500-word document or a seven-minute oral presentation. Make sure to identify:

1) The problem
2) Your proposed solution
3) Evidence to support your solution

Meet the DUC conservationist who specializes in invasive species and helped create this case study.

Matt Bolding is an experienced wetland ecologist who works as the Ontario Invasive Species Program Lead with Ducks Unlimited Canada. He holds a M.Sc. in Biology from the University of Waterloo and GIS certifications from the Northern Alberta Institute of Technology. Matt provided scientific background and guidance on the phragmites case study and has extensive experience working on addressing phragmites in wetlands.

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