

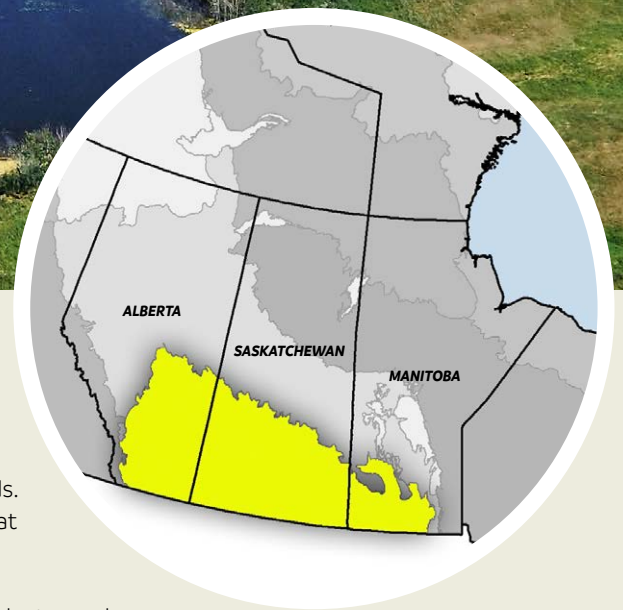
Canada's grasslands: Case study

Grasslands in the Canadian Prairies evolved over thousands of years.

They were formed by the unique climate, grazing of large animals and fire – all of which kept the trees away and helped grasses thrive. But grasslands are not alone on the landscape. When the glaciers receded 10,000 years ago, they left millions of depressions that are now wetlands. Together, wetlands and grasslands form rich, biodiverse ecosystems that support hundreds of species and many species at risk.

Sadly, more than 75% of Canada's grasslands have been lost as cities, industry and agriculture take up more and more space on the land. In 2008, the International Union for the Conservation of Nature declared temperate grasslands as the world's most endangered ecosystem. With the loss of the grasslands, pollinators lose large swaths of their habitat, and we lose many important ecosystem services. Grasslands are powerful carbon sinks, helping to store an estimated two to three billion tons of carbon, as well as helping to protect soil, capture and store water, and help mitigate droughts and floods.

We need to protect our endangered grasslands, but how? What are the possible solutions? This is what you will research and explore through this case study.



THE CASE STUDY: DEVELOP A CONSERVATION PLAN THAT WILL MAXIMIZE BIODIVERSITY IN OUR CANADIAN GRASSLANDS

Location: The Canadian Prairies

You have been hired by Ducks Unlimited Canada (DUC) as a conservation planner to develop a conservation strategy for a new area of land that has grasses, forests and wetlands on it. 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.

This case study will explore several conservation strategies for how to manage grassland ecosystems. It will also explore how to engage with people in the community to prepare a conservation plan. In the Canadian Prairies, grassland ecosystems have been around for thousands of years, but the way we use and manage the land has changed. You will work together to develop a conservation plan for the region that aims to best meet the needs of community members while also maximizing biodiversity.

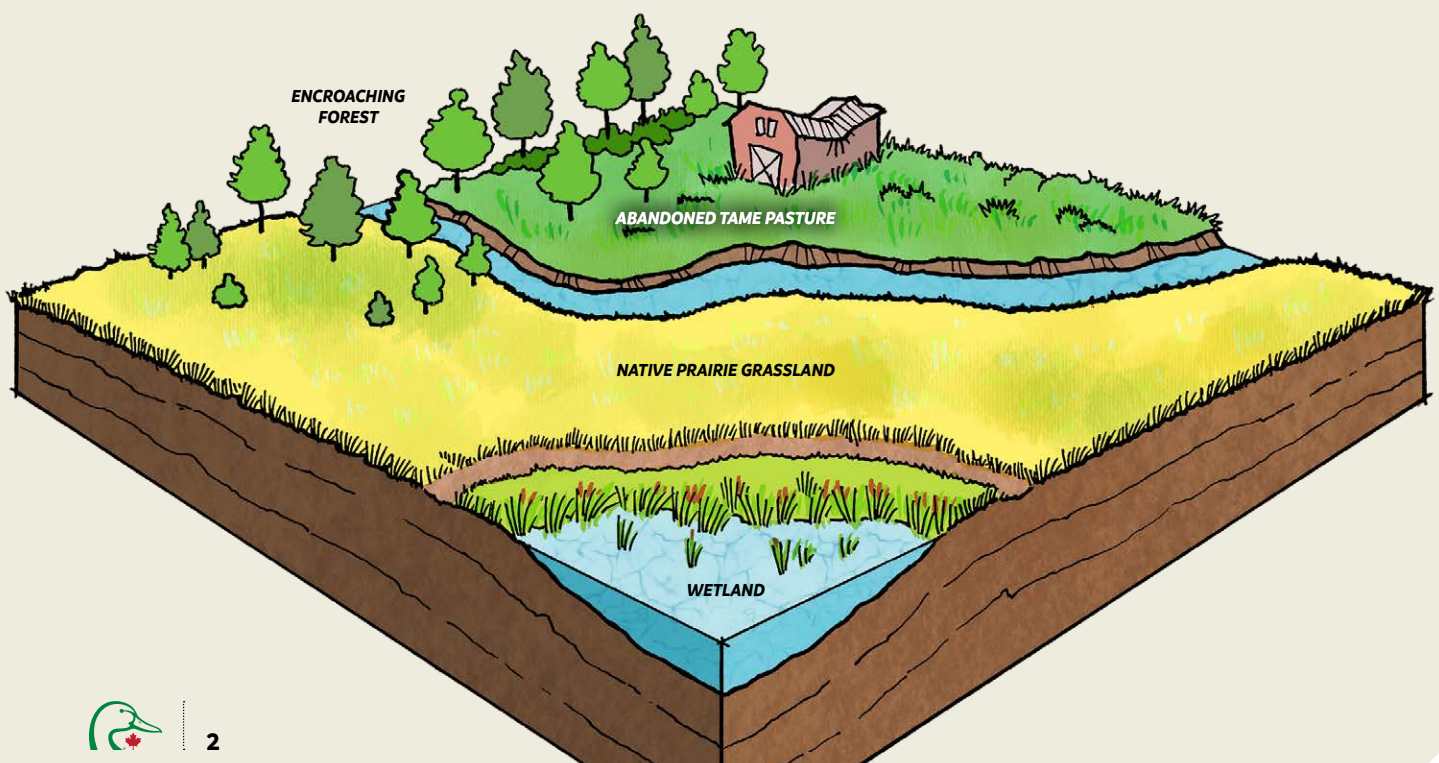
The land you're trying to conserve has the following habitat:

Encroaching forest: Over time, the surrounding aspen forest has been moving into the large, open grassland ecosystems in the area.

Native prairie grasslands: Grasslands are comprised of a mix of native grasses, plant and terrestrial species and provide important habitat for many endangered species.

Abandoned tame pasture: This section was once native grassland before it was converted to tame pasture and seeded with non-native species for livestock. It is now abandoned and not in use.

Wetlands: Wetlands are areas of land that are covered in water for part or most of the year and help support aquatic plants and animals. Examples of wetlands include bogs, marshes, swamps, and fens. Wetlands provide important habitat for many waterfowl species that nest in the nearby grasslands. They also provide an important source of water for the area.



PART 1: BACKGROUND

Before we can look for solutions, we must first get a baseline understanding of our topic. Answer questions 1-4 individually or in a group.

1 Research grassland ecosystems in Canada.

- What is a grassland ecosystem?
- What type of grasslands would you expect to find in Canada?
- What is the biggest threat to Canada's grasslands?

2 Research how grasslands are biodiversity hotspots.

- What is biodiversity and what is a biodiversity hotspot?
- Why is biodiversity important for healthy ecosystems?
- Which species rely on Canada's grasslands?

3 Research keystone species and the role they play in Canada's grasslands.

- What is a keystone species?
- How were bison a keystone species in Canada's grasslands?
- Are current bison populations what they once were? Why or why not?
- Describe the historical and cultural importance of the bison for Indigenous Peoples in the Prairies.

4 Research why it is important to protect and conserve Canada's grasslands.

- What are ecosystem services?
- What are some key ecosystem services that Canada's grassland ecosystems provide?
- Can you identify at least one ecosystem service from each of the following categories?
i.) Provisioning ii.) Supporting iii.) Regulating iv.) Cultural

PART 1: CONSIDERATIONS

Now that we have a baseline understanding of our grassland ecosystems, it's time to research management techniques. Separate into groups, each group researching one element (A, B or C).

Consideration A: Manage with fire

- How does fire help maintain grassland ecosystems and biodiversity?
- How was fire management traditionally used by Indigenous Peoples in grasslands?
- Why was the use of fires to manage grasslands prevented for a period (fire suppression) and what happened to grasslands when there was no fire?
- How do land managers use fire today to maintain grasslands for biodiversity?
- What are some concerns or risks associated with using fire as a management technique?





Consideration B: Manage with grazing

- 1 What happens to a grassland ecosystem when it's not grazed?
- 2 How do cattle play a similar role to the bison in managing grasslands?
- 3 Research how ranchers can manage grasslands with cattle sustainably:
 - a.) **Grazing management:** how can ranchers prevent overgrazing?
 - b.) **Water resource management:** how can ranchers protect water quality of nearby wetlands and streams?
- 4 Why do cattle and the beef industry often get blamed for being bad for the environment?
- 5 In the Canadian context, how can cattle be beneficial for the environment and grassland ecosystems?

Consideration C: Talk to the community

- 1 What is a conservation plan?
- 2 Why is it important to talk to different members of the community when making a conservation plan?
- 3 What are the benefits and challenges of involving community members in conservation decision making?
- 4 Who will you talk to if you're going to do a burn on the land? Why?
- 5 Who will you talk to if you're going to set up grazing on the land? Why?

Helpful Terms

Upland habitat: the vegetated areas (woodlands, grasslands, shrublands) that are next to or near water bodies

Tame pasture: specialized non-native species that are good for grazing to feed domestic animals

Wetlands: areas of land that are covered or saturated by surface or ground water for part or most of the year and help support aquatic plants and animals. Examples of wetlands include bogs, marshes, swamps, and fens.

Rancher: a person who owns or manages a farm or land used for raising cattle, horses, or sheep

Useful links to start your research

- + Ducks Unlimited Canada – Conserving Canada's Grasslands: <https://www.ducks.ca/our-work/grasslands>
- + Guardians of the Grasslands – Raising Canadian Beef: https://www.youtube.com/watch?v=_CG4ROvCu0Y
- + The Narwhal – Meet the people saving Canada's native grasslands: <https://thenarwhal.ca/carbon-cache-grasslands>
- + Parks Canada – Grazing the Grasslands: <http://parkscanadahistory.com/wildlife/sar-success-stories/grazing-e.pdf>
- + Restoring fire to native grasslands – The Nature Conservancy: <https://www.nature.org/en-us/about-us/where-we-work/united-states/stories-in-mn-nd-sd/restoring-fire-to-native-grasslands>

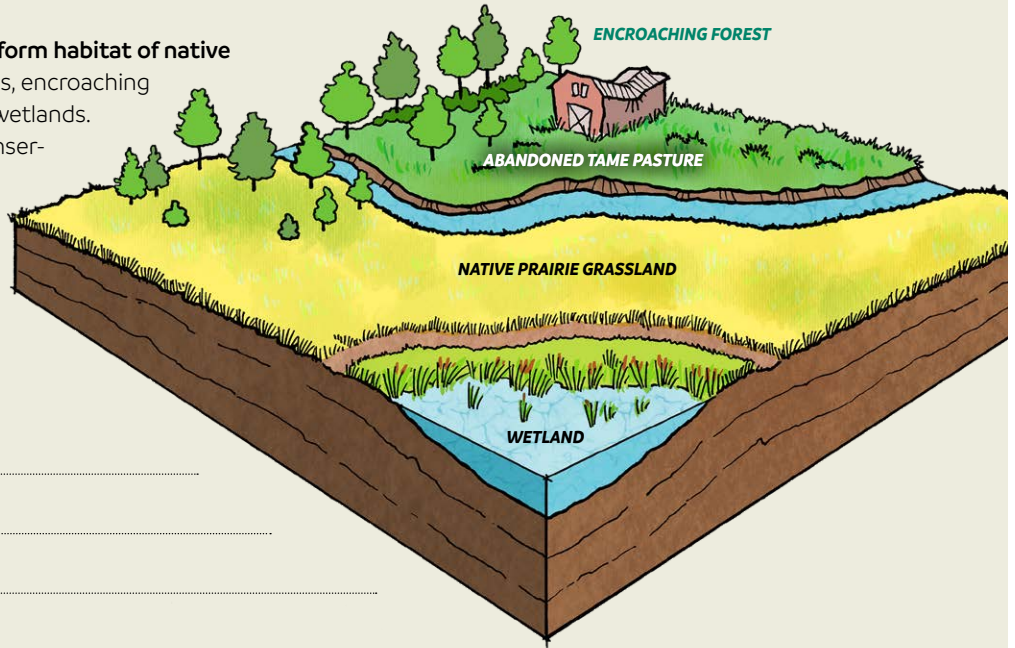


PART 3: YOUR CONSERVATION PLAN

Which conservation approach will be most beneficial to maximize biodiversity in our Canadian grasslands? It's time to develop a conservation plan!

Form groups that each have at least one member of group A, B, and C. Together, you will develop a conservation plan that incorporates fire management, grazing management, and community perspectives to help maximize biodiversity and protect the grassland ecosystem.

Remember, your property is not a uniform habitat of native grassland. It includes native grasslands, encroaching forest, abandoned tame pasture, and wetlands. Take time to think about how your conservation plan will maximize biodiversity in these different habitat types.



To maximize biodiversity in the patch of **native grassland**, we will:

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To manage the **abandoned tame pasture**, we will:

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To manage the **encroaching forest**, we will:

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To protect the **wetland**, we will:

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We will **consult with the following people** to carry out our conservation plan:

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.....

Submit your conservation plan.

You have conducted your research and asked all the important questions. Now it's time to present your conservation plan to the Ducks Unlimited Canada conservation team. You can present your findings in a 500-word document or a five-minute oral presentation. Once you upload your document or presentation to the WCE (Wetland Centres of Excellence) hub, you will then get access to the case study video explainer, highlighting DUC conservation and science staff that will explain how they would approach grassland management.

Meet some of DUC's conservation specialists and partners who specialize in grassland research and helped create this case study.



Charlotte Crawley grew up on a mixed farming operation north of Clanwilliam, Man.. She is an agrologist with DUC and started working off the farm with DUC in 2015, where she helps to establish new forage fields, assists with grazing management, and helps to manage existing grasslands to optimize waterfowl habitat. She currently lives in Rapid City, Man., where she helps out on her partner's farming operation.



Leah Rodvang was raised on a cow-calf and backgrounding operation. She pursued her love of agriculture with a degree in Range and Pasture Management at the University of Alberta. Since 2016, Leah has been working as the research technician at Manitoba Beef & Forage Initiatives, where she facilitates on-farm research and demonstration projects from data management and collection through project results, reporting, manages animal health and manages cattle grazing.



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