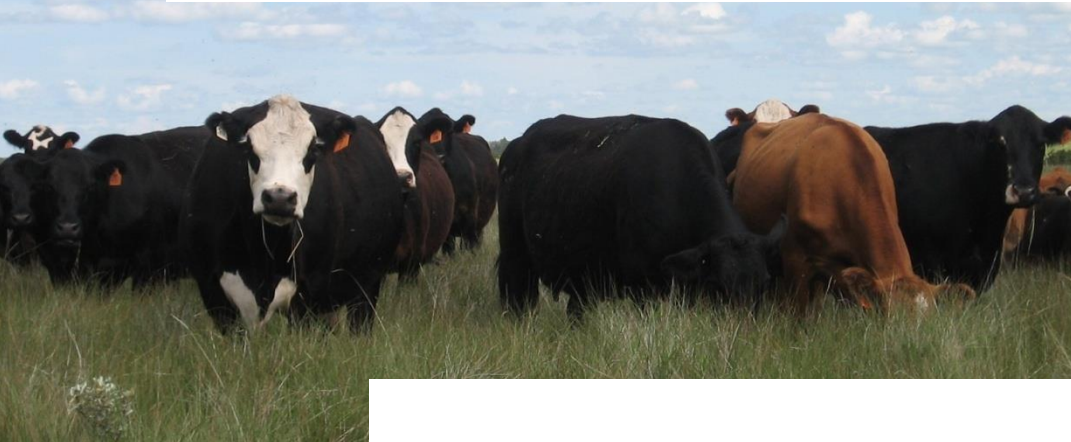




# Adopt a Rancher



# Teacher's Guide



Saskatchewan  
Prairie Conservation  
Action Plan



**Thank you to Heidi Juule of HJ Bioservices Inc for developing this program. The project was undertaken with the financial support of the Government of Canada through the federal Department of the Environment. Ce projet a été réalisé avec l'appui financier du gouvernement du Canada agissant par l'entremise du ministère fédéral de l'Environnement.**

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**Saskatchewan  
Prairie Conservation  
Action Plan**

# The Ranch Ecosystem

## A Case Study For Saskatchewan Education Grade 10 Science: Sustainability of Ecosystems

The **Saskatchewan Prairie Conservation Action Plan (SK PCAP)** Partnership brings together 31 agencies and organizations representing producers, industry, provincial & federal governments, environmental non-government organizations, research and educational institutions working towards a common vision of prairie and species at risk conservation in Saskatchewan.



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## Welcome to the Adopt a Rancher Program!

The native grassland ecosystems of Saskatchewan are threatened. The great herds of bison that thundered across the prairie are gone. Bison evolved with the grasses, forming a close relationship in which their health depended on each other.

Today ranchers manage native grasslands to keep them healthy. Making the right management choices ensures that native grasslands can be a sustainable resource for Saskatchewan in which the biodiversity of native species is conserved. Grasslands have other values and functions that are important for society such as regulating water flow and maintaining soil stability.

Students in the Adopt a Rancher program analyze a ranch ecosystem in a case study that they develop themselves. By using a student guide and online resources and communicating with the adopted rancher, students will answer this question:

**How can ranching protect Saskatchewan's native grasslands while providing economic benefits for Saskatchewan people?**

## The Adopt a Rancher Program Structure

**Part 1:** The Adopt a Rancher program coordinator meets with the rancher in the summer or fall prior to your involvement in the program. The tentative areas for activities are selected for the May or June Field Day. Safety issues or other concerns are discussed. The rancher and the coordinator take pictures for the Rancher's Portfolio which students will use to study the ranch ecosystem and to become familiar with the ranch. The rancher fills out the Ranch Profile to provide information about the land and its management.

**Part 2:** The second part takes place when you teach the Sustainability of Ecosystems unit—the timing is up to you. Components of the Adopt a Rancher program support learning objectives in the Sustainability of Ecosystems unit so you know that your students are covering the needed material as they develop their case studies.

**Part 3:** A date for Field Day will be set. Groups of students collect data for projects they have designed as they tour the ranch. A picnic lunch and group games round out the day.

**Part 4:** After Field Day, students complete their case studies and participate in a class discussion examining the sustainability of the ranch ecosystem.

## Contents of the Program Kit

- Teacher's Guide
- Student's Guide (one for each student)
- Ranch Profile
- Rancher's Portfolio (flash drive)
- Program Evaluation Form
- Ecoregions and Ecosites (5 copies)
- Range Health Assessment Field Workbook (5 copies)

## Program Support

If you have questions, the Adopt a Rancher program coordinator will help you. If the coordinator is unavailable, please contact the PCAP office at (306) 352-0472 or [pcap@sasktel.net](mailto:pcap@sasktel.net).

Program Coordinator \_\_\_\_\_

Telephone \_\_\_\_\_ Email \_\_\_\_\_

Your class may be using letters, emails, texts, Skype or phones to communicate with the rancher. It will depend on the rancher chosen for your class.

Rancher \_\_\_\_\_

Contact Information \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_



## Curriculum Support for Foundational and Learning Objectives

The following information has been reproduced from Science 10 Curriculum Guide, Saskatchewan Learning 2005

### **SE1 Explore cultural perspectives on sustainability**

#### **Learning Objectives**

2. Explain changes in the scientific worldview (paradigm shift) of sustainability and human's responsibility to protect ecosystems.
3. Select and integrate information from various human, print and electronic sources (government publications, community resources, and personally collected data) with respect to sustainability and the environment.
4. Communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others with respect to sustainability and the environment.

### **SE2 Examine biodiversity within local ecosystems**

#### **Learning Objectives**

1. Observe and document a range of organisms to illustrate the biodiversity within a local ecosystem.
2. Select and use apparatus and materials safely when documenting biodiversity.
3. Identify biotic and abiotic components of an ecosystem.
4. Explain how the biodiversity of an ecosystem contributes to its sustainability.
5. Identify energy flow in ecosystems using the concept of the pyramid of energy, numbers, or biomass.
8. Describe and apply classification systems and identify key ecological terms used in the environmental sciences.
9. Demonstrate a sense of personal and shared responsibility for maintaining a sustainable environment.
10. Examine the impact of invasive species on an ecosystem.
11. Identify the factors that result in species becoming at-risk in Saskatchewan, the Prairies, and Canada.
12. Explore ecology-related work settings and work roles in the community.

### **SE3 Analyze population dynamics within an ecosystem**

#### **Learning Objectives**

1. Explain various ways in which natural populations maintain equilibrium and relate this equilibrium to the resource limits of an ecosystem.
2. Construct and/or interpret graphs of population dynamics.
3. Explore the technologies used to study biotic and abiotic components of ecosystems.
4. Discuss the ethics of studying biotic components of ecosystems.

### **SE5 Investigate human impact on ecosystems**

#### **Learning Objectives**

2. Compare a natural and a disturbed (altered) ecosystem and suggest ways of assuring their sustainability.
3. Explain why different ecosystems respond differently to short-term stresses and long-term changes.
4. Compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology.

## Adopt a Rancher Program Outline

Teacher's Guide Page	Student's Guide Page	Title	Description
6	2	How to Develop Your Case Study	Instructions and the outline to use for the case study
6	3	A Short History of Native Prairie	Create a mind map based on a short text.
6	4	Find the Ranch	Use legal land descriptions to locate the ranch on Google Earth.
6	6	Describe the Ranch Ecosystem	Collect data to create a unique description for the ranch ecosystem. Add elements to the mind map.
	6	1.	Use satellite imagery to describe the ranch ecosystem.
	6	2.	Use online resources to describe the ranch's ecoregion.
	7	2a.	Identify species at risk in the ranch's ecoregion.
	7	2b.	Identify invasive alien plants in the ranch's ecoregion.
	8	3.	Use the Ranch Profile to describe the ranch ecosystem.
	8	4.	Use the Rancher's Portfolio to describe the ranch ecosystem.
6	9	Sustainable Grazing Management	Show relationships between soil, water, grasses and cattle in a flow chart. Add information to the case study.
7		Say Hello to the Rancher	Create a scrapbook or large card to introduce the class to the rancher.
8	13	Ecological Goods and Services	Add information to the case study. Add elements to the mind map. Create a public service advertisement for an ecological good or service.
8	14	Measure Range Health	Design projects for Field Day to examine indicators of range health. Student groups communicate with the rancher.
10		<b>FIELD DAY</b>	Preparation for Field Day. Collect data for range health projects. Tour the ranch. Play "Oh Steer!"
12	16	The Human Factor	Examine the emerging ecological worldview. Add information to the case study. Add elements to the mind map.
12		Case Study Analysis	Conduct a sustainability analysis of the ranch ecosystem
13		Say Goodbye to the Rancher	Create a thank you card for the rancher.
Evaluation Form		Evaluation	Evaluate the program.



## Teaching Notes

### The program activities answer key questions:

- How does the ranch ecosystem function?
- How much biodiversity exists on the ranch?
- How important is the ranch as habitat for prairie plants and animals?
- Would species at risk find suitable habitat on the ranch?
- How has productivity changed or been maintained?
- What are limiting factors for grazing cattle on the range?
- What types of invasive alien plant species are present?
- How does range management protect native grasslands?
- What benefits does society receive from healthy native prairie?
- How do the choices we make affect the sustainability of ecosystems?

The Adopt a Rancher program is student-centered. Background information and instructions are given in the Student's Guide.

Links to Saskatchewan non-governmental and governmental online resources about native prairie are provided so students can access a wealth of information for their case studies.

Two publications, *Ecoregions and Ecosites* and *Range Health Assessment Field Workbook*, are included in the program kit as reference material. They are also available online.

Check your library resources. There may be books about native prairie or field guides to bring on Field Day.

Each student develops a case study, although students could work in groups. For Field Day, small groups (you determine the size) plan a range health project and collect data for their case studies.

Encourage students to write down questions that they may have about the ranch. There will be an opportunity to ask the rancher questions on Field Day. As well, when students are planning their projects, they may need to check some details with the rancher.



## Student's Guide: How to Develop Your Case Study

The case study document should be well organized, with clearly marked sections. Point form is a concise format for some data. Encourage students to use photos, maps, data tables, art and other visual aids.

## Student's Guide: A Short History of Native Prairie

The **mind map** functions somewhat like a journal. Students begin to create a mind map that will be completed by the end of the program.

It can be electronic or paper, but it should be adaptable so information can be added. For example, additional paper can be attached to expand a section. If the mind map is electronic, then earlier versions can be saved and compared to later versions. Encourage the use of colour, art and imagery.

The mind map could also be a class project that is displayed on a wall.



## Student's Guide: Find Your Ranch

Provide the students with the legal land descriptions from the Ranch Profile. (Don't give the students the rest of the information yet.)

## Student's Guide: Describe the Ranch Ecosystem

Students should follow the steps sequentially so that they can build on what they learn. Save the Ranch Profile and Rancher's Portfolio until students have acquired information about grassland ecosystems from online or print sources.

## Student's Guide: Sustainable Grazing Management

Students create a **systems flowchart** involving soil, water, grass and cattle after reading about grassland ecology and sustainable range management.

There are many ways to create this diagram as not all students will select the same information for their chart. Discuss the similarities and differences among the flowcharts.



### Say Hello to the Rancher

The students have studied the Ranch Profile and Rancher's Portfolio, as well as seen the ranch on Google Earth. They have placed the ranch in the larger context of its ecoregion, learned about ecological processes and functions in grasslands, and range management practices. They have learned a lot about the ranch!

BUT what about the rancher? What does this person know about your Grade 10 class?

Have some fun!

As a class, create a **scrapbook or large card** for the rancher (digital or paper, depending on communication methods used with the rancher).

Use photos taken by students and from the Rancher's Portfolio or use clipart photos (ensure copyright law is followed). Include photos of students or class activities but doing so must be in accordance with school guidelines.

Some possible categories could include:

- What sustainability means to us
- What we value about nature
- Ranch ecosystem products we use
- The most interesting things we learned about your ranch
- Cultural expressions of who we are
- Student or class profiles
- Messages from students

## Student's Guide: Ecological Goods and Services

Ecological goods and services are the benefits that society receives from ecosystems. Students research the ecological goods and services provided by the ranch for their case studies and mind maps.

Students then promote a good or service by creating a public service **advertisement**. Lead a discussion:

- What are characteristics of a good advertisement?
- Do public service advertisements work? Why are they important?
- What public service advertisements have students seen?
- What made them effective or not?

Students can use letter or poster-sized advertisements, videos of students acting or reciting, live presentations or any other form of communication.

## Student's Guide: Measure Range Health

Just like education, sustainable grazing management uses indicators for assessing status. The objective of maintaining a healthy native prairie ecosystem can be assessed by examining specific indicators of range health.

Some range health indicators have been used for decades but others have been added more recently to provide a more holistic view of an ecosystem:

- Plant species composition
- Community plant structure
- Invasive species
- Site stability
- Hydrologic function and soil protection

Small groups of students design projects that are centered on one or two indicators of range health. These are not research projects as there is not enough time to do any rigorous testing. The data collection should take no more than one hour on Field Day.

The Range Health Assessment Field Workbook (in this kit) provides quick methods of assessing range health indicators. Students will probably only use the grassland section of the workbook.





The Range Health Assessment Field Workbook is intended as a source of ideas for projects. Students do not necessarily need to assess an indicator; instead they could design a project that documents an aspect of it. Suggestions for projects are provided in the Student's Guide but students can develop their own versions if they wish.

The Rancher's Profile has information about the types of areas that will be visited on Field Day. For example, native grasslands, riparian areas or roadside ditches may be described so these areas would be available for projects.

**The main objective of the project is to provide students with skills that will allow them to look at native prairie and form an opinion about its health.**

Students create group names that are thematically connected to their project and use this name when they write letters about their projects to the rancher. Have some fun with this. The letter provides an opportunity to ask questions that have arisen while planning the projects.

Discuss the ethics of collecting plant specimens (rarity, collecting with or without roots) and disturbing the soil (invasive species could colonize). How can they avoid damaging the ecosystem? How can damage be minimized?

You may want to check with the program coordinator about the type of projects that can be conducted. For example, it may be permissible to dig a small hole or use a soil auger (if available) if the hole is filled and the litter returned.



Students design tables for data that will be collected on Field Day. Afterwards, groups write up their results and conclusions. Group members add the report to their own case studies.

## Field Day

### Field Day Agenda

- Meet the rancher.
- Go on a ranch tour while participating in a photo scavenger hunt and collecting data for projects
- Eat lunch and play “Oh Steer!”

### Check List for Field Day

- Encourage students to wear appropriate clothes for the weather: shoes for running and hats. There will be very little shade.
- Encourage students to bring a litterless lunch—it’s a choice that contributes to sustainability.
- Students should bring drinking water, sunscreen and insect repellent (only used if needed).
- Students can bring binoculars or field guides from home.
- Pack a first aid kit, extra water, hand sanitizer, insect repellent and sunscreen.
- Create name tags for students.
- Bring cameras and take lots of pictures for the case studies and for fun.
- Gather project equipment so it’s ready to go.
- Bring the photos for the Photo Scavenger Hunt.
- Remind students to bring their questions for the rancher.

### Meet the Rancher

Students introduce themselves to the rancher and ask a question about the ranch or the rancher. Some questions can be saved for the tour if the class is large.

### Photo Scavenger Hunt

The Adopt a Rancher program coordinator has labeled some photos from the Rancher’s Portfolio as PSH. They will be used in the Photo Scavenger Hunt as students tour the ranch. Students will identify the actual sites where the photos were taken. **Student groups should be provided with a set of these photos or some students could load them on their phones.**

### Collect Data for Projects

Depending on the projects, data collection may take place in one or a few locations.

### Oh Steer!

Familiarize your class with the game “Oh Steer!” See the following page for the instructions. The Adopt a Rancher program coordinator will bring the equipment needed for the game.



## Oh Steer!

This outdoor game is adapted from “Oh Deer!”  
Project Wild 1994 p207

**Group size** of 15 or more is recommended

### Equipment

- 4 markers to identify the start lines
- Large paper to draw a graph
- Marker pen



Needing little more than grass and water, cattle can look after themselves on the native prairie. The problem is that grasslands need to rest after grazing so they can be rejuvenated. Without rest from grazing, the grass and water resources are at risk of being depleted, thereby decreasing the carrying capacity of the range. Lack of time for rejuvenation is an indirect limiting factor.

1. Mark two parallel start lines at each end of an 18 metre long playing field.
2. Tell the students that they will be participating in a game that emphasizes three factors that are critical to sustaining native prairie and using it as a resource while protecting biodiversity.

“Oh Steer!” examines the affect of two essential habitat components (**grass** and **water**) and one range management process (**range rest**) on the carrying capacity for cattle in the ranch ecosystem.

Students will decide which of these factors they will portray at the beginning of each round.

Demonstrate the following signs that all students will use to indicate the factors:

- Grass** – hands on stomach
- Water** – hands on mouth
- Range Rest** –hands clasped behind head

3. Divide the class into two groups: **one quarter** of the students, the steers, go to one start line; **three quarters** of the students go to the other start line which is the native prairie.

4. Each group lines up behind the start lines, with their backs turned to the students on the other line. Each student picks a factor and displays the sign.

5. On a signal, all students turn around, continuing to hold their signs and the steers look to see who in the native prairie is displaying the same sign as themselves.

(Once students have picked a factor, they cannot change it to one that they see is available on the other side when they turn around. Watch for this!)

The steers run to the factors they need on the prairie while continuing to display their signs. The first one to reach a needed factor takes that student, who now becomes a steer, back to the steer start line.

If a steer cannot tag the right factor, it will be sent off to market as the carrying capacity has decreased! However it comes back right away as a factor in the native prairie in the next round.

6. Plan on about 15 rounds and keep the pace moving. At the end of each round, count the number of steers. Plot the number on a graph where X= number of rounds and Y = number of steers. Connect the numbers.

7. During the wrap up, show students how the population of cattle fluctuated depending on which factors were limiting. For example, drought could cause a water shortage or decrease the forage yields. Not allowing range rest could lead to overgrazing.

## **Student Guide: The Human Factor**

Students have been learning about two principles of sustainability: employing ecological frameworks in management and attaching economic values to ecosystems. The third principal involves taking responsibility for the wellbeing of future generations.

Ranchers who choose to use sustainable grazing management are stewards, keeping native prairie healthy which benefits future generations. Choosing actions or behaviours can be very powerful. When enough people choose similar actions or behaviours, the world viewpoint changes. Anyone can choose to use beneficial practices to support environmental health at home, school or work.

What beneficial practices do students currently use? What practices could they adopt? What would Saskatchewan be like if ecological principles guided all our decision-making? What would happen to the economy and our social systems?

### **Analyze the Ranch Ecosystem Case Study**

Students have completed their case studies, gaining much knowledge and many skills. Now is time for the class to use all that they have learned about ranch ecosystems to analyze the use of sustainable grazing management as one solution to protecting prairie ecosystems.

#### **How can ranching protect Saskatchewan's native grasslands while providing economic benefits for Saskatchewan people?**

Use the following questions to generate a discussion. You may have other questions.

- What ecological processes are used in developing sustainable grazing methodology?
- What data collected on Field Day is helping you assess the sustainability of the ranch ecosystem?
- Does sustainable grazing management make economic sense?
- What challenges are involved in achieving a sustainable grazing system?
- How do species at risk benefit from the beneficial management techniques used on the ranch?
- Are there other beneficial management practices that could be used on the ranch to improve ecosystem health?
- Because managing for sustainability does not provide yearly cash flow, some ranchers feel it makes more economic sense to break native prairie and then plant and manage tame forages and/or annual crops. Is this good resource diversification for the short or long term?
- Many people have never heard of ecological goods and services (and may not care). How could you change people's viewpoint so that they would begin to value these goods and services?
- Can we apply what has been learned about sustainable ranch ecosystems to other environmental problems worldwide?
- Have you changed a personal viewpoint since studying the ranch ecosystem?





### **Say Goodbye to the Rancher**

Create a thank you card for the rancher. Use photos taken on Field Day to illustrate the card. Each student could contribute a short paragraph about some aspect of the field trip such as an interesting thing seen or learned, a funny thing that happened or something really enjoyable.

**You may want to enlist the students' help when you complete parts of the program evaluation. Their input will provide important feedback.**

**Thank you for participating in the Adopt a Rancher program!**



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## Notes



# Teacher's Evaluation

Thank you for participating in the Adopt-a Rancher program. Our goal is to provide an educational program that is fun and promotes sustainable grazing management. To help us achieve our goal, please complete this program evaluation.

School \_\_\_\_\_

Date \_\_\_\_\_

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Teacher's Guide contains the information needed to teach the program.					
The program supports curriculum objectives.					
The program is age-appropriate.					
Students had enough resources to create their case studies.					
The time required for the program fit my teaching schedule.					
Students enjoyed learning about a ranch ecosystem.					
Students learned about stewardship.					
The Field Day was an educational field trip.					
The communication methods used with the rancher worked well					
The PCAP program coordinator provided the support I needed.					
I would participate in this program again.					

**Please complete the second side!**

1. How have students benefited by participating in the Adopt a Rancher program?

2. What did you like **the most** about the Adopt a Rancher program?

3. What did you like **the least** about the Adopt a Rancher program?

4. What changes would you make to the program?

4. Other comments:

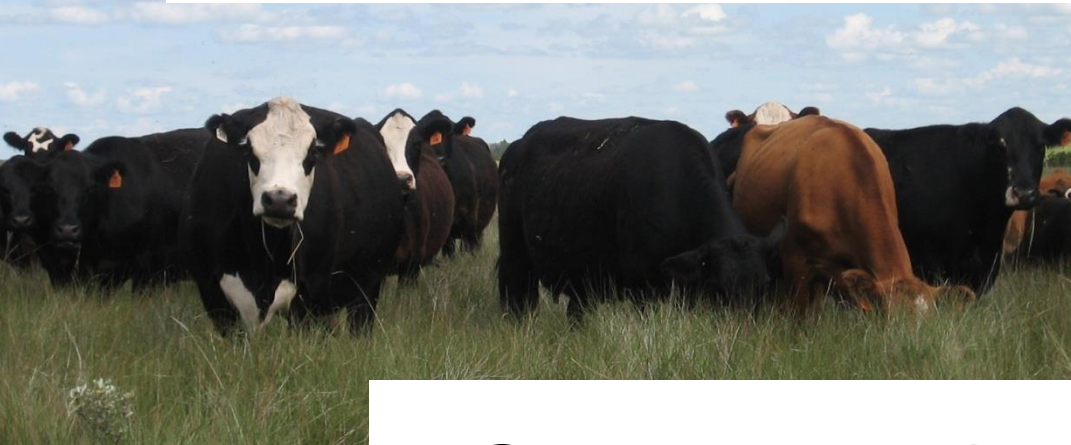
Thank you for filling out this evaluation!







# Adopt a Rancher



# Student's Guide



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# Adopt-a-Rancher

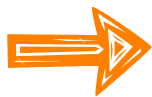
## Why Are You Adopting a Rancher?

Ranchers manage some of the largest remaining tracts of native prairie in Saskatchewan. Management decisions based on ecological principles helps maintain sustainable rangelands. Not only do these ranchers make a living for themselves, they also provide many benefits to society by protecting ecosystem health.

By adopting a rancher, you will have an opportunity to learn about one particular ranch ecosystem. Each ranch has its own specific location which displays unique ecosystem characteristics. Each rancher has developed management practises that work for them in that location.

Society faces many environmental issues concerning sustainability. By studying systems which support ecosystem health, one can see what works and apply it to other systems.

**This manual contains information and instructions to develop a ranch ecosystem case study.**



**The arrow points to instructions.**

Apply systems thinking about how the parts of the ranch ecosystem work together in relationships.

Consider the inputs and outputs of the system, including cultural, societal and economical components as well as biological ones. How does positive or negative feedback change how the system works?

The case study will be used in a class discussion on sustainable grazing management and its value to society.





# How to Develop Your Case Study

Case studies are useful aids, providing examples which help us understand problems and how to solve them. A problem we face in Saskatchewan is how to take care of shrinking native prairie ecosystems while maintaining a sustainable ranching industry.



**How can ranching benefit native prairie grasslands? Write a case study for a unique ranch ecosystem in your geographic location.**

A case study is a collection of detailed information about how parts of a system interact in a particular real-life situation. It is used as a tool to understand relationships and solve problems. It is different from a report which is an account of something seen, heard or done.

Include the following:

- **Title**
- **Introduction**
  - **Why is it important to study sustainable ranch ecosystems?**
- **The Ranch Ecosystem**
  - **This portrayal includes:**
    - a description of the land and land history
    - biotic and abiotic characteristics
    - value of the ranch for species at risk
    - threats from invasive alien plants
    - sustainable management practices
    - ecological goods and services
- **Ecological Indicators of Range Health**  
(Groups design projects and collect data on Field Day)
  - **This analysis includes:**
    - importance of chosen indicator(s)
    - methodology used to collect data
    - results and conclusions



Convey some of the information visually by using data tables, maps (provide legends), art and photos for illustration.

Check with your teacher to ensure that you are complying with copyright guidelines for schools. Reference the sources of your data.

As you develop your case study, make a list of questions that you would like to ask the rancher about the ranch ecosystem and its management.

# A Short History of Native Prairie

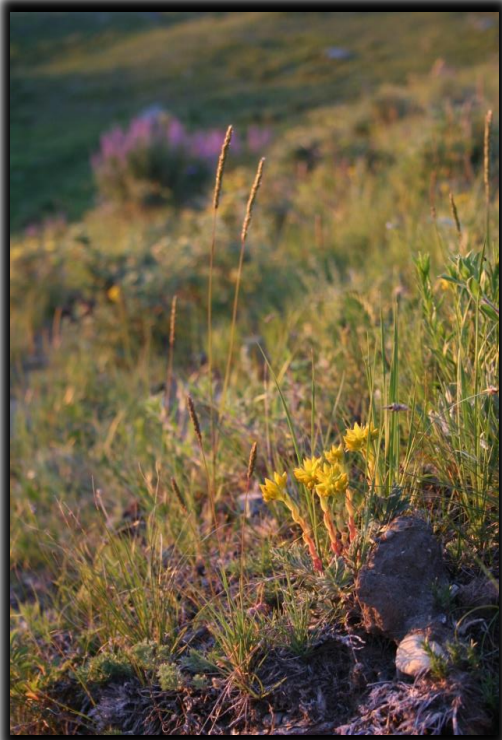
A seemingly endless sea of native grasses rippling in the wind surrounded the first settlers to the prairies. No trees to fell or rocks to move; easy to plow and bursting with fertility: this land was a dream-come-true if you could handle the weather.

Now most of the grasslands are covered with annual crops or tame forage and the remnants of native prairie become smaller and more tattered with time. Native prairie is the most endangered ecosystem in North America.

Native prairie is well adapted to our climate. In the past, disturbances like wildfires and herds of thousands of bison thundering by just made it stronger and healthier. Grasses evolved with grazing animals in a relationship which kept them both healthy. Grazing removes biomass, both living and dead, that would smother native grasses over time.

Over the past hundred years, grazing pressure on the rangelands has increased and decreased depending on cycles of drought and the economics of producing beef. Much has been learned since early settlement when the federal government mandated an initial stocking rate of one head of livestock per acre—a rate that far exceeded the carrying capacity of the land!

While there are still examples of overgrazed rangeland, more ranchers manage their range according to ecological principles, producing a sustainable ecosystem. Among the benefits to society that this provides is the protection of native biodiversity and water resources.



## Draw a Mind Map

In the center of a page, write Ranch Ecosystem.

Use the above information in *A Short History of Native Prairie* to identify components, characteristics or processes of the ecosystem or positive or negative human actions that affect it. Historical information is important as well as it helps explain the current conditions.

Arrange the elements on the page as words, art or pictures. Use colour to convey information.

Add any other elements that you think are important. With a line, link components that have a relationship and write what the relationship is on the line.

You will be adding elements to the mind map as you get to know the ranch. You may wish to change or delete elements over time.



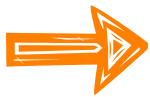
# Find Your Ranch!

© 2013 Cnes/Spot Image  
© 2013 Google

611

Google earth

In the late 1800s as European settlers flocked to the West, the Dominion Land Survey created a grid system so that the location of a specific parcel of land could be identified. This system is still in place today; ranchers and farmers describe their legal land locations in terms of this grid.



Record the legal land location of the ranch. Use the following information to understand what this data means.

## How to Interpret a Legal Land Location

The grid system was laid out using the British imperial system of measurement. How can you change the landscape grid from miles to kilometres now that we have gone metric? Not possible! Referencing miles will always be part of our Saskatchewan culture.

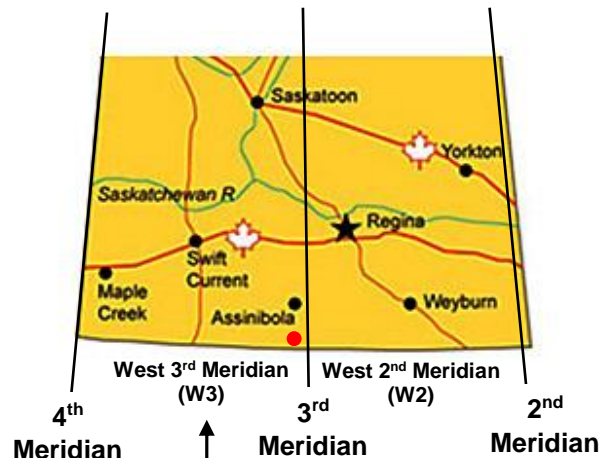
**Meridians** are lines of longitude running North-South.

There are 30 **ranges** between meridians.

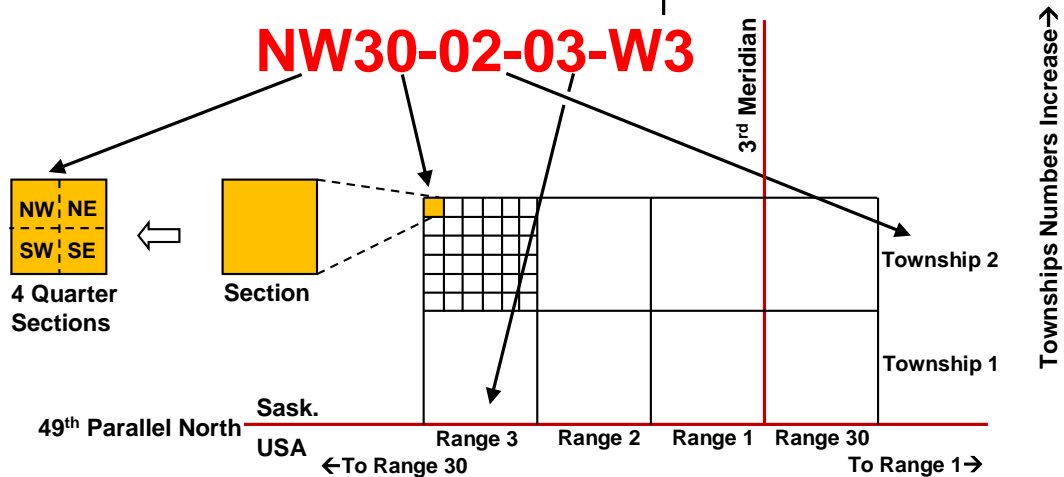
A **township** contains 36 numbered **sections** starting with Section 1 in the lower right corner.

A section is 1 mile x 1 mile in area and contains 640 acres.

A section contains 4 **quarter sections**.



**NW30-02-03-W3**



The Dominion Land Survey grid system provided a method for the orderly development of roads and fields – an easy process on much of the Prairies. Viewed from the air, the Prairies are a patchwork of squares and rectangles.

Roads are essential to our wellbeing but they also have environmental consequences for the ecosystem. For example, when the native vegetation is removed in a road cut, invasive alien plant species can become established.

The Sprague's Pipit, a native ground-dwelling bird species at risk, requires large tracts of land where they can scurry through the grasses and stay hidden from predators. If a road intersects their habitat, they don't cross to the other side—there's too much open ground. They become trapped in habitats that are too small to support them.



**Add elements to your mind map about the environmental consequences and social benefits of roads.**



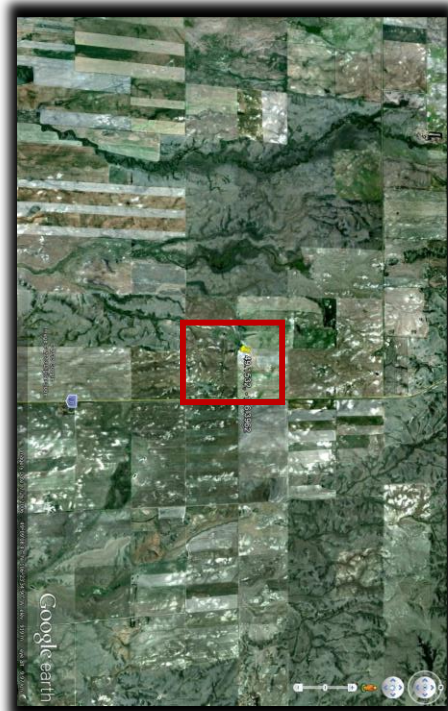
**Convert the legal land description(s) from the Ranch Profile to geographic coordinates.**

Go to <http://prairielocator.com/> or other app that makes this conversion. Omit the quarter section information when entering the location.

**30-02-03-W3**      →      **49.1532, -106.3962**  
**Legal Land Description**                      **Geographic Coordinates**

In order to copy satellite images, you need to go to Google Earth and enter the geographic coordinates. The centre of the section is shown by a yellow tack so use the Google Earth ruler to measure a 1 mile square box around it. These are the borders of the section. With this information you should be able to provide the legal land locations of the quarter sections as well as the surrounding sections.

Make copies of the landscape from different altitudes to show details as well as the relationship the ranch has with external landscape. They can be used in your case study report. Ensure that the Google Earth logo remains in the copied pictures so as not to break copyright law.



# Describe the Ranch Ecosystem

Sustainable grazing management is tailored for specific ecosystem characteristics of a location. What landforms and soil types are present? What is the typical composition of a healthy native plant community for this location? What is the composition of the current plant community? What is the history of land use? The answers to these kinds of questions help determine stocking rates and the grazing systems needed to maintain or improve range health, as well as to identify suitable habitat for native species of plants and animals.



## 1. Use Satellite Imagery to Describe the Ranch Ecosystem

Use Google Earth satellite imagery to find information about the range ecosystem. Different scales of images provide different kinds of information.

Convert the Google Earth image to Google Maps to see natural or human-made features that may not be apparent from the satellite image.

Can you delineate the borders of the ranch based on the legal land descriptions? Can you see buildings or infrastructure such as roads?

Ecosites are features such as plains, hills or wetlands which have unique abiotic and biotic characteristics. Can you delineate some ecosites?

Are there water features such as streams, wetlands or coulees (dry stream beds), signs of salinity or other elements?

What type of vegetation is present? Is there native prairie, tame forages, annual crop or other kinds? Are there riparian areas or bush in some areas? Knowing the scale of the maps, can you estimate the area for each cover type?

What appears to be the land use on the surrounding land?



## 2. Use Online Resources to Describe the Ranch's Ecoregion

Larger ecosystems can be divided into smaller ones. The Prairie ecozone contains four ecoregions. Find the ecoregion in which the ranch is located at <http://www.biodiversity.sk.ca/>.

Use links at this site for more information about the ecoregion characteristics. Record ecoregion data that includes the following:

Annual precipitation	Landforms
Annual mean temperatures	Soil description
Climate type	Land use
Typical plant and animal species	Concerns

Other resources:

*Managing Saskatchewan Rangeland*, 2008 Agriculture and Agri-Food Canada  
<http://www.saskforage.ca/publications/ManagingRangeland.pdf>

Soil zones in Saskatchewan at [http://www.agriculture.gov.sk.ca/soil\\_zones\\_map](http://www.agriculture.gov.sk.ca/soil_zones_map)

*Ecoregions and Ecosites* classroom copies or at <http://www.pcap-sk.org> (Resources)





## 2a. Identify Species at Risk in the Ranch's Ecoregion

**Biodiversity promotes ecosystem health. When species decline or disappear, a chain reaction can occur. Altered food chains, increased pest problems, decreased pollination and degraded habitat may be some of the outcomes.**

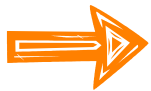


**Greater Short-Horned Lizard**

Go to <http://www.biodiversity.sk.ca/> (Reports and Publications, Species List) Federal Species at Risk to view species at risk in Saskatchewan. This site also has fact sheets on some of the species.

Select two grassland species at risk, one plant and one animal, which could occur in the ranch's ecosystem. Describe their distribution, habitat needs, special adaptations to their environment and why they are at risk. Include beneficial management practices that are used to protect them. Some species are profiled (with distribution maps) at <http://www.pcap-sk.org> (Resources).

Conduct an on-line search for more information about your species.



## 2b. Identify Invasive Alien Plants in the Ranch's Ecoregion

**If we could put on high tech glasses that showed native plants as green and introduced species as red, most of the prairies would be a sea of red.**

Go to <http://www.biodiversity.sk.ca/> (Reports and Publications, Species List), Invasive Species Lists to view invasive plant species in Saskatchewan. Select two invasive alien plant species that might occur in the ranch ecosystem. Ensure they are species that can invade native grassland ecosystems.

See also the Saskatchewan Invasive Plant Species Guide at <http://www.pcap-sk.org> (Resources) for more information on your chosen species. Describe the plant, habitat needs and the characteristics that make the invasive species a threat. Include beneficial management practices that are used for its control.

Conduct an on-line search for more information about your species.



**Canada Thistle**

### ➔ 3. Use the Ranch Profile to Describe the Ranch Ecosystem

The Ranch Profile contains information about the ranch history, management practices, habitat, wildlife and plants. Add this information to customize the various components of your case study for the ranch location.

### ➔ 4. Use the Rancher's Portfolio to Describe the Ranch Ecosystem

The Rancher's Portfolio contains a set of photographs taken at the ranch. Use these ground view photos as an information source and as illustrations for your case study.

Are there land forms (plains, hills, valleys, dunes, wetlands etc.) that were not apparent from the satellite images?

Are different plant communities visible on different land forms?

Which habitats might be suitable for the species at risk that you researched?

Are there areas where invasive alien species are located or may find habitat?

What infrastructure is seen? What effects might the infrastructure have on the ecosystem?

What other information is conveyed by the photos?



➔ Add elements to your mind map to illustrate new information or processes that you have discovered as you described the ranch ecosystem.

# Sustainable Grazing Management

**Disturbance in the form of grazing is the key ecological process used in range management.**

Reference or climax plant communities are specific to a particular ecosite and can be used as a benchmark for measuring ecosystem health. Ecosites are parts of ecoregions that display distinctive landforms, soils and environmental conditions thereby giving rise to distinctive plant communities.

For example, in the Mixed Grass ecoregion a plant community growing on a sandy hill is different from one on a loamy plain. If too much disturbance occurs, then the climax or near-climax plant community reverts to earlier successional stages and perhaps non-native species will have an opportunity to colonize the grassland.

Grazing systems can improve some damaged rangeland although it takes time as it involves changing the plant community. Grazing systems are customized for ecosites. Many of these systems involve moving cattle from one pasture to another.

Cattle may be kept in one pasture for the season as long as the carrying capacity is not exceeded and the grassland remains healthy. The challenge then is to change cattle behaviour and prevent them from grazing the preferred grass species at the same time year after year. Such behaviour acts as selective pressure against these grasses, causing a shift in the species composition of the plant community.



Short intervals of intensive grazing may decrease the number of less desirable plant species or long periods of rest from grazing pressure may be needed to rejuvenate others. Moisture conditions need to be considered; wet soil can be compacted by cattle, reducing oxygen and water penetration into the ground.

Special care must be used to keep riparian and wetland ecosites healthy as cattle tend to seek these out for water, forage and shelter. Sometimes alternative watering systems such as solar-powered stock water systems are used to reduce impacts.



How much forage (biomass) will the range produce?

How much forage is required over the grazing season by each animal?

The answers determine the carrying capacity of the rangeland. Sustainable grazing systems incorporate time for the range to recover before grazing can occur again.



Ecologically sustainable stocking rates are determined for different ecosites. The rates are calculated from data collected from rangeland productivity studies and from grazing experience.

Cattle are removed from a site when about 50 percent or less biomass has been grazed. The remaining biomass is needed to maintain ecological functions such as conserving biodiversity, regulating water flow, protecting soil resources and cycling nutrients.

Experienced ranchers can determine the carrying capacity by looking at the condition of the rangeland.

A mathematical method is also used to plan sustainable grazing systems.

**1 Animal Unit Month (AUM) = a 450 kg cow with a monthly requirement of 355 kg dry forage**

**Stocking Rate = AUM per unit area**

E.g. If a quarter section (160 acres) can support 20 cows for 4 months, then  $20 \text{ cows} \times 4 \text{ months} / 160 \text{ acres} = 0.5 \text{ AUMs/acre}$ .

How many kilograms of dry forage (biomass) would this herd consume during this time period?

AUMs are calculated for different ecosites. The carrying capacity can change if environmental conditions change. If drought occurs, the biomass production will decline.



Rough Fescue



Needle and Thread



Blue Grama

## Ecologically-based grazing is focused on grasses, not cattle!

How grass grows is critical to its use in grazing. Dormant buds which produce new shoots are nestled down in the base of the grass, protected from weather, fire or grazing. Cattle can't crop grass closer than about 2.5 centimetres—their lips get in the way.

After grazing, the grass plant stops root growth. Photosynthesis in the remaining leaves must provide enough energy for buds to develop and root growth to resume. If too much grass is eaten, the plant doesn't have the photosynthetic apparatus to recover quickly.

Overgrazing decreases the number of roots as well as their diameter and depth, making the plant more susceptible to drought.

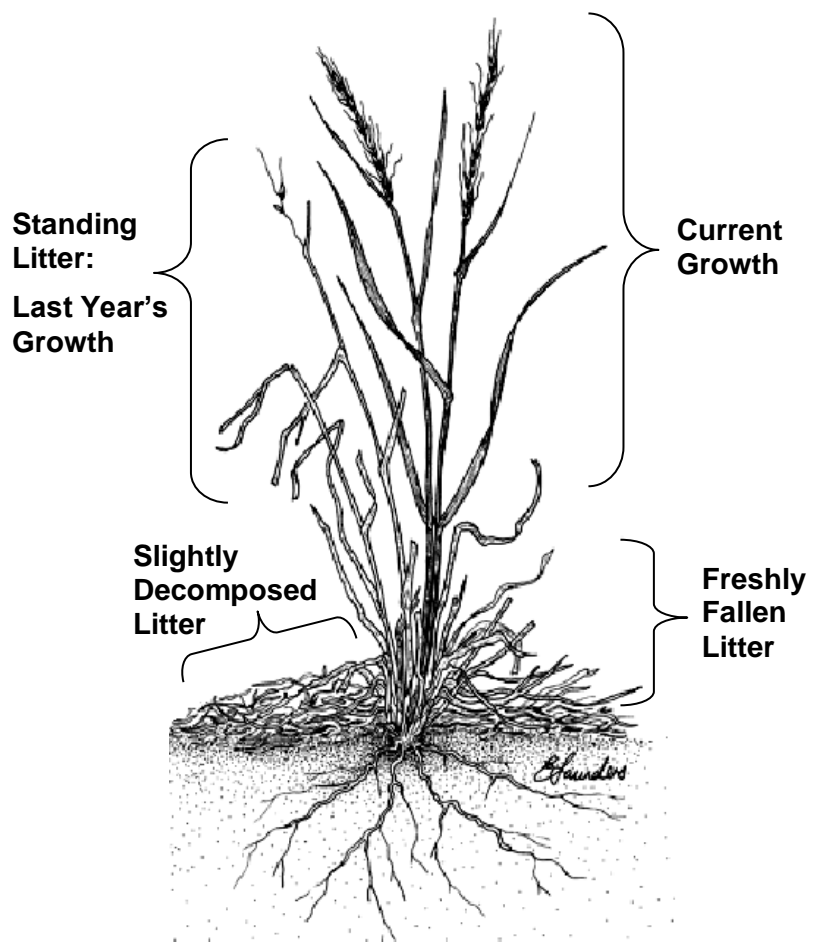
Some grass species are more vulnerable to disturbance at certain times of the year—this knowledge can be used to increase or decrease their populations.

Litter shades the ground, keeping the soil temperature cool. It acts like a sponge to soak up water.

Overgrazing prevents the build up of plant litter, changing the micro-environment in which the grasses grow. The soil becomes hotter and drier, stressing the grasses.

Litter is also the source for much of the organic matter supply for the soil. Decomposers break down the litter, making nutrients available for plants.

Litter is habitat for decomposers and the predatory food chains that feed on them. Removing litter decreases this biodiversity and the ability of the grassland to recover from adverse conditions.



Grass Biomass



The preceding information about grassland ecology and sustainable range management is found in the following publications. Check them out for more details.

**References:**

*Managing Saskatchewan Rangeland*, 2008 Agriculture and Agri-Food Canada  
<http://www.saskforage.ca/publications/ManagingRangeland.pdf>

*Management of Canadian Prairie Rangeland*, 2010, Agriculture and Agri-Food Canada  
[http://publications.gc.ca/collections/collection\\_2010/agr/A52-178-2010-eng.pdf](http://publications.gc.ca/collections/collection_2010/agr/A52-178-2010-eng.pdf)

*Native Grassland and Forest Rangeland Health Assessment Field Workbook*,  
2008, Prairie Conservation Action Plan  
[http://www.pcap-sk.org/docs/5\\_resandlit/Native\\_Grassland\\_and\\_Forest-Red.pdf](http://www.pcap-sk.org/docs/5_resandlit/Native_Grassland_and_Forest-Red.pdf)



Blue Grama



**Use the information in this Sustainable Grazing Management section to create a system flow chart. This type of graphic uses words and arrows to show components of a system and their relationships. It is useful to think about cause and effect when working with systems.**

**Show the relationships between the grassland ecosystem and range management. Use components like litter, water, cattle, communities and biodiversity. Include processes such as photosynthesis, decomposition, grazing and overgrazing. Think about time, as used in AUMs/acre, as a factor.**

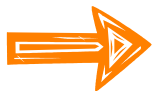


**Combine what you have learned about sustainable grazing management and the management information from the Ranch Profile to develop the sustainable management practises section of your case study.**

# Ecological Goods and Services

In some parts of the world, poor air quality contributes to the death of thousands; in other parts, large rivers and lakes are drying up due to deforestation, overgrazing, irrigation and other human activities. The problem is our human footprint on Earth is so large that many ecosystems are collapsing and no longer able to absorb our waste products, provide our food or moderate water flow.

In the past, the goods and services provided by healthy ecosystems have not been given value—a problem for our consumer-oriented society! Currently there is a large effort by scientists, governments and non-profit organizations to quantify these goods and services. It is very important that society knows these ecological values before making decisions that will affect future generations. Our ecosystem resources are our natural capital and must be protected.



**For your case study, document the ecological goods and services that are provided by the ranch. Include descriptions of the goods and services, their environmental and economic values and consequences of their loss.**

<http://www.ducks.ca/learn-about-wetlands/what-do-wetlands-do/> has a factsheet series, *Natural Values: Linking the Environment to the Economy*, with information on natural capital, ecological goods and services, biodiversity, soil, grasslands and other topics.

See <http://www.pcap-sk.org> (Resources) for:

*Ecological goods and Services: What You Need to Know* (Prairie Conservation Action Plan, 2011)

*Agriculture & Biodiversity: The Value of Biodiversity to Ranching On the Prairie* (Nature Saskatchewan, 2006)



**Add elements to your mind map about ecological goods and services**



**Create a public service advertisement to “sell” a good or service that the ranch provides.**



# Measure Range Health

All the components of the ranch ecosystem must be present and work together in order for the rangeland to function properly and be sustainable. Functions include maximizing primary productivity, maintaining soil stability, regulating water movement, cycling nutrients and protecting biodiversity. Range health is a measure of the ability of the land to perform such functions.

But how can an ecosystem, with its complex web of interacting components, be practically and quickly assessed? Ranchers and other range managers determine the state of range health by using ecological indicators.

An indicator provides biological, chemical or physical information about an ecological process. The current state of some component is compared to an optimal reference state for that particular ecosystem. It aids management by tracking or predicting changes on the range and by identifying environmental stresses.



## Design a project that examines indicators of range health. Collect data for your project on Field Day.

For this part of your case study, you will be working in a group. You are not conducting a scientific experiment (there's not enough time) but rather examining indicators of range health to see what they tell us about the health of the ranch ecosystem.

Pick one or two indicators to assess. Possible projects are listed for each ecological indicator in this section. Your group may choose, however, to create a completely different project.

Use the *Native Grassland and Forest Rangeland Health Assessment Field Workbook* (class copies or online) to learn about ecological indicators and sampling methods. You do not need to follow the procedures exactly as given; you may wish to modify them or develop your own procedures.

*Native Grassland and Forest Rangeland Health Assessment Field Workbook*,  
[http://www.pcap-sk.org/docs/5\\_resandlit/Native\\_Grassland\\_and\\_Forest-Red.pdf](http://www.pcap-sk.org/docs/5_resandlit/Native_Grassland_and_Forest-Red.pdf)



## Write a group report with the following information:

- Importance of the chosen indicator(s)
- Objective of project
- Methodology
- Results (add after Field Day)
- Conclusions

Create data tables to record the field data.

Include the report in your case studies.







## Project Information

- It's important that your project doesn't damage the native prairie ecosystem. If soil is left exposed, invasive alien plants can colonize or erosion can occur. If a plant is rare, it shouldn't be collected.
- Decide on a group name that is thematically linked to the project. Be creative. This is the name to use when communicating with the rancher.
- Use the description of the Field Day locations from the Ranch Profile as a factor in deciding what type of project your group can develop.
- On Field Day you will have about one hour to record data for your project.
- Use different types of data collection like quadrat or transect sampling, taking photos and measurements and writing notes.
- After the group has completed project planning, send a group letter to the rancher briefly explaining the project for Field Day. The group may also ask information about project locations, permission to do certain types of sampling or other questions related to the project. Sign the letter with your group name.
- Make an equipment list. Remember items like rulers, data tables (on a clipboard) and pencils.
- Use GPS coordinates, if possible, to record your locations for data collection.

# Indicators of Range Health Project Ideas

## 1. Species Composition

- In an assessment of plant species composition, the reference plant community of an ecosite is compared to the current plant community. Look in the Ecoregions and Ecosites class copies or the Ecosite Guides at <http://www.pcap-sk.org/> (Resources) to find the reference plant community. Use species information from the case studies as well.
- Survey the diversity of grasses in native grasslands and compare to the diversity of grasses in a roadside ditch.
- Plant identification is part of assessing species composition. Your group may do a photo survey of plants occurring in different habitats or microhabitats. A data table could be used to code each photo to the species name and specific habitat conditions.

## 2. Community Structure

- Energy absorption and nutrient uptake is usually more efficient in a plant community when there is a diversity of species providing different levels of structure. Tall plants will absorb sunlight from a different zone than short plants; deep roots will reach different nutrients than shallow roots. Find methods to measure the diversity of community structure in one or two ecosites.

## 3. Invasive Species

- Range that has been degraded is easily colonized by invasive plants. Document the presence of invasive alien species in two locations: native prairie and a roadside ditch. Compare the habitat characteristics.
- Measure the distribution and density of invasive plants in a location.

## 4. Site Stability

- Soil covered with vegetation is protected from erosion by water and wind. Measure the density of plant cover versus bare soil in healthy rangeland and/or areas with natural instability or human-caused instability.

## 5. Hydrologic Function and Soil Protection

- The dead plant material (litter) at a site functions to regulate water flow and prevent soil erosion. Find methods to measure the amount of litter at one or more ecosites.



# The Human Factor

**“How we look at the world makes a difference. The things that we identify as important get special attention and care while all the rest is apt to be neglected. Our sense of what is important comes partly from our tradition and culture and partly from our own experience and thought. In western culture, neither our tradition nor our experience has made us look at the world as being important or sacred.”**

J. Stan Rowe 1980  
Landscapes: A Guide to the Landforms and Ecology  
of Southern Saskatchewan  
Saskatchewan Environment



**Dr. Rowe, a plant ecologist at the University of Saskatchewan, thought deeply about the relationship that people have with ecosystems. His great love for the landscapes of Saskatchewan made him concerned about declining ecosystem health and so he promoted stewardship. Whether a city or country dweller—he felt everyone should be involved because people are part of ecosystems, not apart from them.**

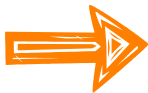
**How we think determines the kinds of societies we built.**

**Many of our problems such as climate change and loss of biodiversity are created by society, so in order to tackle these problems, we need to go back to the beginning and change how we think. Then we can build sustainable societies.**

In the early 1900's, European settlers began colonizing the land and building communities. Native prairie was broken, with little regard to how much remained. The worldview was that human enterprise improved wild lands and brought order to the landscape by taming it. Since then the worldview has been changing.

In the 1960's, the new science of ecology gained importance as the signs of failing ecosystems became more obvious. Developing the technical ability to measure and monitor various environmental components and processes has greatly advanced society's understanding of ecosystem functions. Beneficial management practises for grazing, protecting species at risk and reducing the impact of invasive alien species are methods developed from this knowledge.

Dr. Rowe thought of ecosystems as our homes and as such, we should look after them. This new way of thinking sustainably is gaining acceptance in society. Personal beneficial practices like reducing waste or conserving water are promoted along with community and globally based sustainability initiatives to reduce our footprint on ecosystems.



**Add information about society and worldviews from this section to the introduction of your case study.**



**Add yourself to your mind map. Think about three beneficial practises that you can adopt that will contribute to sustainable ecosystems. They could include personal habits, school or community initiatives or stewardship behaviour for natural lands.**

**Add the three beneficial practices to your mind map.**



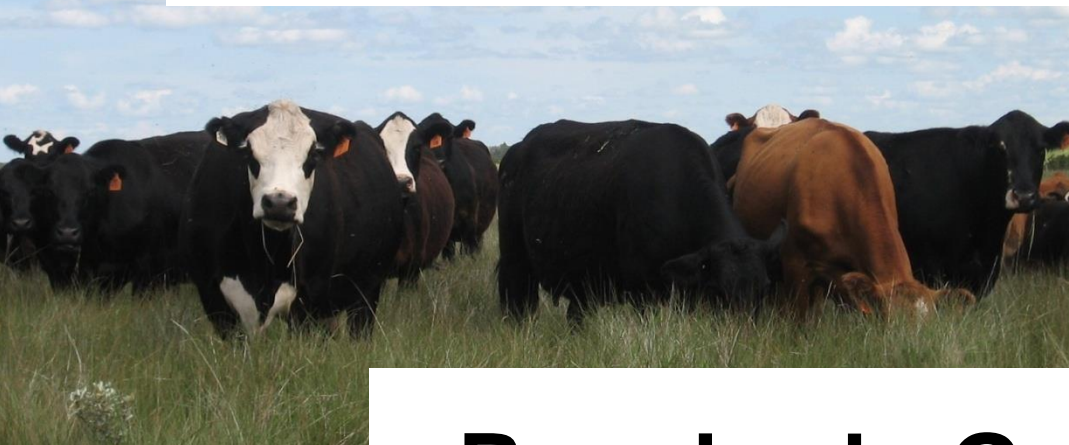
**Stone Crop**

**Now your case study is complete. Using systems thinking to understand the complex relationships among biological, economical, cultural and societal components of the ranch ecosystem provides you with the information needed to participate in a class discussion about the value of sustainable grazing management in Saskatchewan.**





# Adopt a Rancher



# Rancher's Guide



Saskatchewan  
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**Thank you to Heidi Juule of HJ Bioservices Inc for developing this program. The project was undertaken with the financial support of the Government of Canada through the federal Department of the Environment. Ce projet a été réalisé avec l'appui financier du gouvernement du Canada agissant par l'entremise du ministère fédéral de l'Environnement.**

**The project was also funded in part by the Saskatchewan Beef Industry Development Fund, as well as partner contributions.**

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**Saskatchewan**  
**Prairie Conservation**  
**Action Plan**



The **Saskatchewan Prairie Conservation Action Plan (SK PCAP)** Partnership brings together 31 agencies and organizations representing producers, industry, provincial & federal governments, environmental non-government organizations, research and educational institutions working towards a common vision of prairie and species at risk conservation in Saskatchewan.



Saskatchewan  

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Prairie Conservation  
Action Plan



# **Adopt a Rancher**

## **A Stewardship Program For Grade 10 Science Students**

**Welcome to the Adopt a Rancher Program!**

**Grade 10 students studying the Sustainability of Ecosystems science unit will have an opportunity to combine classroom learning with real-life application thanks to your involvement in this program.**

**These students are learning about how people's interactions with ecosystems affect ecological functions and why these functions have value. By examining a ranch ecosystem and finding out how sustainable grazing management can protect native grasslands, students experience firsthand how sustainability is achieved in their own region.**

## Adopt a Rancher Program Support

Contact the Adopt a Rancher program coordinator if you have questions about the program. If the coordinator is unavailable, please contact the PCAP office at (306) 352-0472 or [pcap@sasktel.net](mailto:pcap@sasktel.net).

Program Coordinator \_\_\_\_\_

Telephone \_\_\_\_\_ Email \_\_\_\_\_

Teacher \_\_\_\_\_

School \_\_\_\_\_

Telephone \_\_\_\_\_ Email \_\_\_\_\_

Notes



## **Adopt a Rancher Program Structure**

### **Part 1: Program Setup at the Ranch**

The Adopt a Rancher program coordinator meets with you in the summer or fall prior to program implementation in the school. The tentative areas for a tour and other activities for the May or June Field Day are selected. Safety issues and any concerns are discussed. The coordinator (and you, if you like) takes pictures for the Rancher's Portfolio. The Ranch Profile form is filled out; see page 5 of this guide for more information.

### **Part 2: Classroom Studies**

During the school year, the Grade 10 teacher will begin the Adopt a Rancher program when the Sustainability of Ecosystems Science Unit is scheduled to be taught. Grade 10 students will develop case studies of your ranch using Google Earth maps and internet resources about ecoregions and ecosites, species at risk and invasive alien plant species. They will personalize the case study with information from the Ranch Profile and Rancher's Portfolio.

Students, working in groups, design projects which examine indicators of range health. They will collect data for their projects on Field Day. They will be in touch with you to let you know what they are planning and perhaps ask you a few questions.

### **Part 3: Field Day at the Ranch**

A date for a Field Day will be set for spring. You are the guide, leading students on a tour of your ranch as they collect data for their case study projects and participate in a Photo Scavenger Hunt. Students bring picnic lunches. A game called "Oh Steer!" rounds out the day.



### **Part 4: Classroom Wrap up**

After Field Day, students will complete their case studies in preparation for a class discussion about how ranching can protect Saskatchewan's native grasslands while providing economic benefits for Saskatchewan people.



## Program Components

### Rancher's Portfolio

Grade 10 students will first get to know your ranch through a set of photos taken when the project coordinator comes to see you. Depending on your interest and time, you may wish to take some of the pictures. The pictures are used by the students to study your ranch ecosystem.

Types of photos needed:

- Landscape views
- Landscape features (plains, hills, coulees, water features, riparian areas, etc)
- Roads and other infrastructure
- Roadside ditches with invasive plants
- Rocks and soil (if exposed)
- Plant communities
- Cattle and cattle operations
- Close ups of plants and lichens
- Close ups of invasive plants
- Any animals encountered
- Plant or animal species at risk
- Yourself, if you want
- Anything else you find interesting or unique



If possible photos of a variety of landscape features on your ranch should be taken, not just of the areas where students will visit. This will provide students with a greater understanding of your ranch ecosystem.

When students are touring your ranch, they will participate in a Photo Scavenger Hunt in which they match some of the photos from the Rancher's Portfolio with actual objects or views.

The subject matter for these scavenger hunt photos should be kept in mind as you and the program coordinator look at the areas where students will visit. As photos are taken in summer or fall, the vegetation will be different from what is seen on Field Day, an interesting comparison for students to make. Photos of small or large permanent features as well as landscape views should be included.

## Ranch Profile

Provide information on the Ranch Profile that will help students develop their case studies. The two-page Ranch Profile form is included in this folder, as well as an example of a completed form.

Students, in groups, will be communicating with you as they develop projects to examine range health on Field Day. Indicate on the Ranch Profile how you wish to communicate and provide contact information such as surface mail or email addresses.

The history notes can be cultural (settlement, family involvement in the ranch) or ecological (areas that have been altered, improved or maintained).

The descriptions of your cattle operations should include rotations, watering, rest periods for range and other management processes that you think are important. A few notes are all that's needed.

Decide where you want the Field Day activities to take place. You may decide to use a few different sites or be focused in one area, depending on your location.

The description of field day sites in the Ranch Profile is important as it helps define the type of projects students will attempt. What features will students see (native grasslands, riparian areas, roadside ditches with invasive plant species, etc.) while visiting your ranch? What are the dominant plant species in these areas?



## Projects

As students at school develop their case studies of your ranch's ecosystem, they learn about the indicators of range health used to assess grasslands.

Included in the Adopt a Rancher program kit for schools is PCAP's *Native Grassland and Forest Rangeland Health Assessment Field Workbook*. Students use this resource to design projects that examine some aspect of the indicators. A lot of flexibility is given to students' interpretations of projects so be prepared for some creativity!

You will know what students will be doing for their projects from the correspondence they send. If any project concerns you, contact the program coordinator. Students are told to use ethical sampling or measuring methods that do not harm the grassland. You may get questions about looking at soil or roots or collecting specimens. As students are working in groups, the volume of correspondence that you reply to shouldn't be too great.

The main objective of the project is to provide students with some skills that allow them to look at native prairie and form an opinion about its health.

## Field Day

You have already planned where activities will take place when the program coordinator came on the first visit. You have decided where you want students to eat their packed lunches and discussed washroom protocols with the program coordinator

How you wish to conduct the tour is up to you. You know the things you want to show or tell the students. Students will be collecting data for their projects and participating in the Photo Scavenger Hunt during this portion of the day.

They'll probably have questions as you take a look at their projects and perhaps offer a little assistance. Collecting data should take no more than one hour.



The program coordinator will lead “Oh Steer!” after lunch. Students learn about the carrying capacity of rangeland for cattle and the limiting factors that control it.

This fast-paced game involves running between two lines 18 metres apart so a reasonably flat area free of ground squirrel holes or other hazards is needed.

## Evaluation

Please fill in the program evaluation form found in this folder. Your comments are valued and important to the success of this program.



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# Adopt a Rancher Ranch Profile

Rancher \_\_\_\_\_

Ranch \_\_\_\_\_

Legal Land Description(s) \_\_\_\_\_

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Preferred communication method(s)

Letters      Emails      Texts      Skype      Telephone

Contact information

Brief history of ranch

Herd size and breeds

How the stocking rate is determined

Grazing management practices



Important native grasses used for forage

Some native prairie plants (forbs or shrubs - not grasses) growing on ranch

Prairie animals seen on the ranch

Mammals

Birds

Reptiles and amphibians

Species at risk

Other

Invasive alien plants on the ranch

Description of Field Day site(s)

Concerns about native grassland sustainability

Message to class



# Rancher's Evaluation

**Thank you for participating in the Adopt-a Rancher program. Our goal is to provide an educational program that is fun and promotes sustainable grazing management. To help us achieve our goal, please complete this program evaluation.**

Name \_\_\_\_\_

Date \_\_\_\_\_

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The Rancher's Guide contains the information needed to participate in the program.					
The program coordinator provided the support I needed.					
The Rancher's Portfolio was a quick and easy way to showcase the ranch.					
The Ranch Profile was quick and easy to complete.					
The communication methods used with the class worked well.					
Communicating with the students was not too time-consuming.					
Students learned a lot about native prairie and sustainable grazing management.					
I enjoyed hosting the Field Day for Grade 10 students.					
The time required to participate in the program fit my schedule.					
I would participate in this program again.					
I will encourage other ranchers to become involved in this program.					

1. How have students benefited by participating in the Adopt a Rancher program?

2. What did you like **the most** about the Adopt a Rancher program?

3. What did you like **the least** about the Adopt a Rancher program?

4. What changes would you make to the program?

4. Other comments:

Thank you for filling out this evaluation!

