

NATIVE PRAIRIE

*manage it today to
appreciate it tomorrow*



Saskatchewan
Prairie Conservation
Action Plan

acknowledgements

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The Saskatchewan Prairie Conservation Action Plan (SK PCAP) Partnership brings together 30 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.

TABLE OF CONTENTS

Introduction to Range Management	2
Goals of Range Management	6
Grazing Plan	10
Range Math and Definitions	12
Quiz: Range Management.....	16
Invasive Plant Species	20
Hunting for Weeds Activity	22
Species at Risk on the Prairies.....	24
Species at Risk and Ranching	32
Create Habitat for Wildlife	34
Riparian Areas	35
Riparian and Wetland Management	38
Activity: Species at Risk.....	42
Quiz and Activity Solutions	46

INTRODUCTION TO RANGE Management

WHAT ARE RANGELANDS?

- Land supporting indigenous or introduced vegetation that either is grazed or that has the potential to be grazed and is managed as a natural ecosystem.
- Rangelands include native grasslands, modified grasslands, grazeable forestland, shrubland, tame pastureland and riparian areas.

FUNCTIONS OF HEALTHY RANGELANDS

- Productivity
- Soil/Site Stability
- Capture and Slow Release of Water
- Nutrient Cycling
- Plant Species Diversity

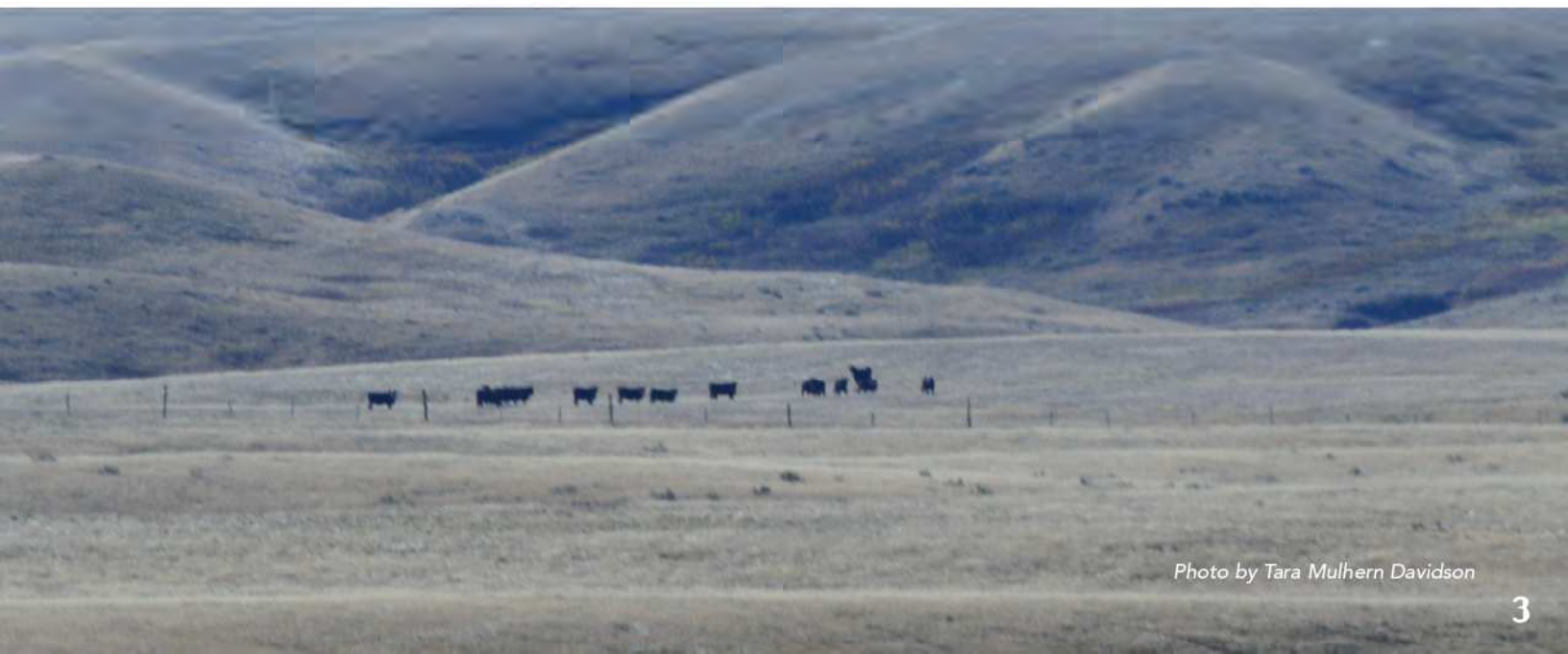


BENEFITS OF HAVING HEALTHY RANGELANDS

- Sustainable Grazing for Wildlife and Livestock
- Stable Productivity
- Water Conservation
- Efficiency and Flexibility
- Economic Stability
- Diversity of Habitat for Wildlife

WHY (AND HOW) YOU SHOULD MONITOR YOUR RANGELAND?

- Determine Starting Point – What do I have?
- Create End Goal – What should I have?
- Understand Trends
- Evaluate Management Impacts
- Determine and Adapt Management Changes to be Made on the Landscape.



Rangeland Health Assessment



RANGE HEALTH PARAMETERS ARE INDIRECT MEASURES OF THE FOLLOWING INDICATORS

VEGETATION STATUS

1) Species composition

- a. What is the reference plant community?

Under light disturbance, what is the plant community that is expected on the site?

- b. What are the plants on the site?

2) Plant Community Structure

- a. Are all the expected vegetation layers present?

Rangelands normally have a diversity of plant species that vary in size, height and rooting depth. 1) low shrubs, 2) tall graminoids and forbs 3) medium graminoids and forbs and 4) ground cover (graminoids, forbs, moss and lichen)

HYDROLOGIC FUNCTION AND SOIL PROTECTION

4) Site Stability

- a. Is the site subject to accelerated erosion?
- b. Is there management caused bare ground?

5) Litter

- a. Is the expected amount of litter present

How much litter is present (estimate weight)?

GOALS

OF RANGE MANAGEMENT

- *Maintain healthy native prairie*
- *Reduce the number of undesirable plants*
- *Prevent, eliminate or stop the invasion of noxious weeds*
- *Prevent and control soil erosion*
- *Increase water storage in soils*
- *Assure proper nutrient cycling and store carbon*
- *Maintain or increase wildlife habitat*
- *Provide ample grazing opportunity for livestock*

Photo by Tara Mulhern Davidson

LITTER

Insulates the soil,
moderating soil temperature.

PRINCIPLES OF RANGE MANAGEMENT

1) Balance Livestock Needs With Forage Supply

- a. Proper stocking rates ensure that the amount of forage produced in a field will support the number of animals for the length of time that they graze. This is achieved by determining the following:

- i. Animal inventory– **How much forage do we NEED?**

- 1. Animal requirements vary depending on:

- a. Species
 - b. Weight
 - c. Age
 - d. Production Cycle

- ii. Forage Production – **How much forage do we HAVE?**

- 1. Forage Production depends on the characteristics of the site:

- a. Soil factors (soil zone , soil texture)
 - b. Forage species
 - c. Age of stand – perennial seeded pastures
 - d. Condition and health of the pasture
 - e. Fertility level
 - f. Growing conditions (precipitation, warm/cool)

- iii. Manage for carryover – Litter

- Consider future needs

DO NOT OVERGRAZE!!

Increases soil moisture
by acting like a sponge holding
water, reducing evaporation
rates, and preventing
water from flowing overland.

Cycles nutrients
as it decomposes.

2) Provide Effective Rest

- a. How much time plants have for GROWTH before grazing or REGROWTH after grazing.
 - i. Plants must have an opportunity to replenish carbohydrates and recharge root systems
 - ii. Rest must be in the growing season.
- b. Rest is a key component in maintaining the long term health and vigour of plants
- c. This is achieved by determining proper stocking rates and using a planned grazing system. ie.
 - i. Rotational grazing systems ensure that fields receive rest during the growing season.
 - ii. Using large herd sizes (stock density) speeds up the rate in which the animals are moved through the field, reducing the time livestock spend in any one area.

3) Timing of Use (i.e. minimize the negative impacts of grazing during sensitive periods)

There are many factors to consider when determining the timing of grazing on rangelands. Land managers must determine the goals and values they wish to achieve and implement grazing strategies that minimize impacts.

- a. Vegetative factors: - Plants are most susceptible during the early part of their growing season, when root reserves are at the lowest. A plant's ability to recover after defoliation and disturbance is greater when carbohydrate reserve levels, in the roots, are high later in the season. Special consideration must be made if the producer is managing for woody species, such as willows. Woody species are typically more susceptible to browsing later in the year when all forage species have matured and are less palatable to livestock.
- b. Soil Factors - Soil, in the spring, is commonly saturated with water and any disturbance in this area will result in greater impacts to health and function.

- c. Wildlife factors – When managing for wildlife, the life cycle of that animal must be taken into consideration and grazing should occur at times when impacts will be minimal.

4) Distribute grazing pressure evenly

Livestock have patterns of behavior:

- a. Livestock graze areas that are easy first.
- b. Livestock selectively graze their favourite or most palatable plants first.
- c. Livestock will graze easy areas or favourite plants again and again.

**TO ENCOURAGE LIVESTOCK TO
GRAZE LESS DESIRABLE PLANT
SPECIES AND LANDSCAPES LAND
MANAGERS HAVE MANY OPTIONS:**

*Fencing, stock water, salt,
supplements, oilers.*

*Move livestock to areas of the field
that they have not been before.*

Increase stocking density, or herd size.

Animal behavior

Herding

GRAZING Plan

A PLAN OR SCHEDULE FOR
MANAGING WHEN AND WHERE
LIVESTOCK GRAZE



A GOOD GRAZING PLAN SHOULD FOLLOW THE FOUR BASIC PRINCIPLES OF RANGE MANAGEMENT:

1. Be Efficient- This will be determined by the producer. Everyone knows that what is efficient for one is not for the other.
2. Reduce Overgrazing, by controlling cattle movements and grazing habits.
3. Improve Forage Quality - more forage, more litter, more nutrients.
4. Allow Range Health to improve or be maintained while being used.

IN ADDITION:

- Drought proof - allow for stockpiled forage.
- Provide Economic stability.



RANGE MATH

and Definitions

Animal Unit (AU): one mature cow weighing 1000 pounds (450 kg), with/without calf up to 6 months age

- Daily consumption is about 26 pounds (12 kg) of forage on a dry matter basis

Animal Unit Months (AUM): the amount of dry matter or forage that one Animal Unit (AU) uses in one month (M)

- Consumes about 780 pounds (363 kg) of forage in a month (26 lbs a day X 30 days)

Stocking Rate: The number of specific kinds and classes of animals grazing a unit of land (area) for a specified time period (AUM/acre)

Carrying Capacity: The stocking rate which is truly sustainable over time for a specific area of land (AUM/acre).

Animal Unit Equivalent: A number relating the forage dry matter intake of a species of animal relative to one Animal Unit

- Larger animals eat more forage
- Generally intake increases with weight to about 1500 pounds then levels off
- Rule of thumb: add or subtract 0.1 AUE for every 100 lbs above or below the standard of 1000 lbs

Cow (1200 lb)	1.2 AUE
Breeder cows (1,400 lbs)	1.4 AUE
Weaned Calf (500 lbs)	0.5 AUE
Yearlings (800 lbs)	0.8 AUE
Bulls (2yrs and older)	1.5 AUE
Sheep (ewes)	0.2 AUE
Horses (<1,200 lbs)	1.5 AUE



Photo by Tara Mulhern Davidson

EXAMPLE:

1) What is the Forage Demand for 150 cows (1300 lbs) for a 5 month grazing season?

- 150 cows
- Average weight is 1300 lbs
- Grazing 5 months

Reminder:

- 1 AUM = 1 animal 1000 lbs grazing for 1 month
- add 0.1 AUE for every 100 lbs above the standard of 1000 lbs

What is the forage demand? (AUM)

A) 150 B) 1300 C) 577 D) 975

___ AU X ___ AUE X ___ months = ___ AUM

$150 \text{ AU} \times 1.3 \text{ AUE} \times 5 \text{ months} = 975 \text{ AUM}$

2) How many yearlings (800 lbs) can you graze for 2 months on 960 acres of Native Grassland?

- Native grassland pasture
- Dark brown soil zone
- Loamy Range site
- 960 acres
- Healthy Rangeland 0.29 aum/ac

Step one: Determine the forage supply in this field.

___ AUM/ac. X ___ acres = ___ AUM

A) 345 AUM B) 960 AUM C) 278 AUM D) 434 AUM

$$0.29 \text{ AUM/ac.} \times 960 \text{ acres} = 278 \text{ AUM}$$

Step two: Determine the total forage demand for each yearling?

- We want to graze for 2 months.
- The yearlings average 800 lbs

___ months X ___ AUE = ___ AUM

A) 1.6 AUM B) 2 AUM C) 2.5 AUM D) 800 AUM

$$2 \text{ months} \times 0.8 \text{ AUE} = 1.6 \text{ AUM}$$

Final step: Determine how many yearlings can graze in this field for the desired time period?

- This native field has a predicted forage supply of 278 AUM (Step 1).
- Each yearling animal has a forage demand of 1.6 AUM (Step 2).

___ AUM supply ÷ ___ AUM demand = ___ yearlings

A) 10 B) 280 C) 100 D) 174

$$278 \text{ AUM supply} \div 1.6 \text{ AUM demand} = 174 \text{ yearlings}$$

QUIZ:

RANGE MANAGEMENT

1. List 3 reasons why healthy rangelands are important to you.

2. List 3 ways you can help protect and improve the health of rangeland around you.

3. List 3 management strategies that the range managers practice on the grasslands visited today.

4. What is litter? Why is litter important in rangeland health?

NOTES

NOTES

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invasive PLANT SPECIES

THE BAD GUYS

An invasive plant species is a non-native plant with the capacity to grow rapidly and replace existing native vegetation. Invasive plants have negative economic and ecological effects. Some invasive species, such as leafy spurge, can diminish the productivity of a rangeland site, threaten biological diversity, and reduce the structure, function, and sustainability of grassland ecosystems.

Prevention is the most cost effective and environmentally responsible control of invasive plant species. Seeds of invasive plants can travel in soil, hay, equipment, animals or humans from one location to another. Most invasive species require some bare ground to establish. Keeping rangelands in healthy range condition minimizes the opportunity for invasive plant species to make a home. Wash or check clothing, pets, horses, livestock, equipment and vehicles before coming into or leaving a new area.



Photo by Wally Vanin



Photo by Nadia Mori

Early identification increases the chances of eradication. Take the time to identify plants that look out of place or that you have never seen before. If you do identify an invasive plant species consult with your local Rural Municipality, your local Weed Management Area, your local Agrologist, or the Saskatchewan Ministry of Agriculture Knowledge Centre at 1-866-457-2377.



Photo by Tara Mulhern Davidson

HUNTING FOR WEEDS

P U R P L E L O O S T R I F E
A A R A K Y C S C E T Y O L S
L T L O R U F E I L B E T E A
E O G O X E Y E D A I S Y S O
A B S I N T H T A A I L N K N
F A E I T T K O C H I A H K Y
Y O S D R E L R T T E I E N O
S D G R I R O G O Y Y A R A T
P E R S I A N D A R N E L P A
U P E A E I O O A S R E O W E
R D N O D A M E S R O C K E T
G S E D O W N E Y B R O M E L
E C O M M O N T A N S Y I D R
C N B U R D O C K A E A A T B
D S I S M N P G K C L P E E A

Absinth
Dames rocket
Downey brome
Oxeye daisy

Burdock
Persian darnel
Knapweed
Nodding thistle

Common tansy
Kochia
Leafy spurge
Purple loostrike

Solution on page 46

NOTES





SPECIES AT RISK ON THE PRAIRIES

Saskatchewan's prairies are home to a large diversity of plant and wildlife species, many of which are considered at risk.

WHAT IS A SPECIES AT RISK?

Species that are at risk of disappearing from the wild and are often sensitive to human disturbance or natural events. One reason why these species still persist on Saskatchewan's prairies is because of the sound management of native grasslands.

PRAIRIE ECOZONE (4 ECOREGIONS)

	Aspen Parkland
	Moist Mixed Grassland
	Mixed Grassland
	Cypress Upland



THERE ARE APPROXIMATELY 50 WILDLIFE SPECIES THAT ARE CONSIDERED SPECIES AT RISK IN SASKATCHEWAN'S GRASSLANDS.

The Burrowing Owl (*Athene cunicularia*) is considered Endangered in Canada – the Canadian population has declined by more than 90% since 1988. Loss of native prairie to cropland and urban development, and habitat fragmentation by roads and energy developments, are factors contributing to this decline.

Burrowing Owls nest underground in the abandoned burrows of other animals. They depend on the burrows of other animals, like American Badgers (*Taxidea taxus*) and Coyotes (*Canis latrans*) because they cannot dig their own.



Photo by Brian Jeffery

WHY ARE SOME OF SASKATCHEWAN'S GRASSLAND SPECIES AT RISK?

1) HABITAT LOSS, FRAGMENTATION AND DEGRADATION:

In Saskatchewan, approximately 17-21% of our grasslands remain in a relatively natural state. Cultivation, urbanization, industry and other land uses have all impacted grasslands. Many grassland animals and plants require healthy, contiguous blocks of native habitat for their survival. Habitat that is fragmented by man-made developments can reduce the overall amount of habitat that a species can use by an area much greater than just the physical footprint of the feature.

SWIFT FOX



Photo by Larry Ditto

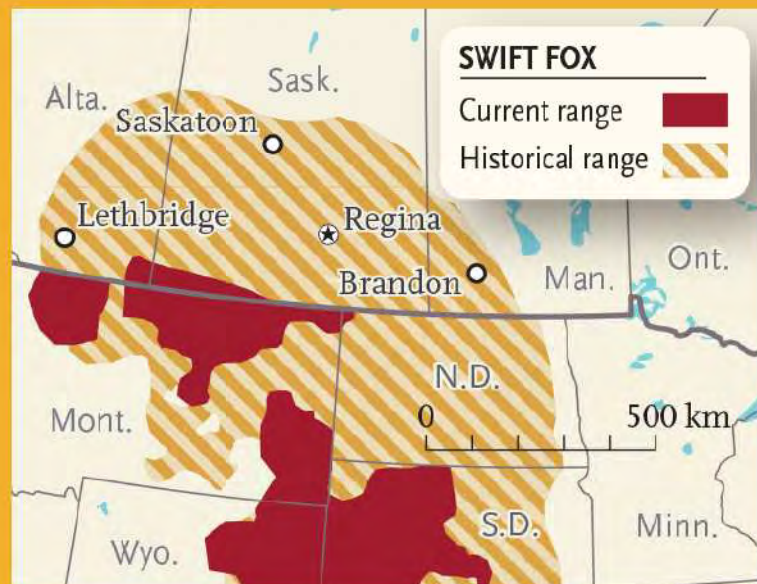
2) INVASIVE SPECIES:

Invasive species are those that are not native to the grasslands of Saskatchewan but have been introduced either intentionally or unintentionally. Some invasive species have caused our native species to decline in numbers. Invasive plants can replace native plants in grassland habitats, causing a loss or degradation of habitat for native wildlife. For example, Common Tansy (*Tanacetum vulgare*) reduces the productivity of pastures, displaces native vegetation, and can hinder forest restoration efforts.



SWIFT FOX (*VULPES VELOX*)

are found in less than 40% of their historic range. One of the main threats facing the Swift Fox is habitat loss as a result of conversion of grasslands for agriculture.



3) PESTICIDES:



Chemicals that are used to control insects and weeds can sometimes have negative effects on other wildlife. Some pesticides get transferred through the food chain, impacting species other than the target species they were intended to control. For example, the Common Nighthawk (*Chordeiles minor*) is dependent on insects for their

diet. If insect populations are low because insecticides are being used, this species could struggle to find food.



Photo by J. Ng

4) HUMAN DISTURBANCE

Some species are very sensitive to human activities while others are more tolerant. Wildlife species that you see around your house are tolerant of human activity and often benefit from living in close proximity to humans. Many of our species at risk, including the Greater Sage-grouse (*Centrocercus urophasianus*) and Ferruginous Hawk (*Buteo regalis*), are sensitive to human disturbance. Greater Sage-grouse are known to abandon their breeding grounds when humans get too close to observe their mating rituals.



SPECIES AT RISK AND RANCHING CAN GO HAND-IN-HAND

Ranchers depend on the prairies for their livelihood and play a vital role in the maintenance of healthy prairie ecosystems. Rangelands act as a buffer between urban or industrial use of the land and nature itself through the retention of natural vegetation and the establishment or re-establishment of permanent cover to encourage biodiversity. Even subtle changes by producers to the landscape can improve biodiversity, reduce their inputs and increase their outputs.

RANGE MANAGEMENT FOR SPECIES AT RISK

- Maintain heterogeneity across the landscape using a grazing rotation that results in large areas of differing grass heights. This provides a variety of habitat that supports diverse species. For example, the Burrowing Owl requires short, sparse vegetation in its nesting area while the Sprague's Pipit (*Anthus spragueii*) prefers vegetation of intermediate height and density.
- Retain adequate carryover and litter in pastures to catch snow, insulate the soil and plants, and reduce erosion.
- Delay haying until after ground-nesting wildlife have finished reproducing. This is July 1st or later in most areas of Saskatchewan.



Photo by D. Fontaine

CREATE HABITAT FOR WILDLIFE

- Seed cultivated land to perennial grass to reduce soil erosion, protect water quality, and are more efficient at storing carbon in the soil than annual crops.
- Use long-lived native grasses and forbs to eliminate the need for periodic rejuvenation of pastures, and to provide new habitat for native plants and animals.
- Retain any natural habitat remaining. Natural habitat supports a greater amount of biodiversity than any altered habitat.



Photo by Tara Mulhern Davidson

RIPARIAN AREAS

WHAT ARE RIPARIAN AREAS?

- Riparian areas are lands adjacent to streams, rivers, lakes and wetlands, where vegetation and soils are strongly influenced by the presence of water.
- While riparian areas represent only 5% of Canada's prairie landscape, they are important sources of biological diversity. As much as 80% of Saskatchewan's wildlife relies in whole or in part on the shelter and food found in healthy riparian areas to survive, such as the Northern Leopard Frog (*Lithobates pipiens*).



Photo by K. Connick-Todd

HOW TO IDENTIFY A RIPARIAN AREA:

- Usually the area that has green plants when the uplands are dry and brown.
- Different kinds of plants and soil than the uplands.
- Usually much taller plants than in the uplands. More kinds of plants and animals than the uplands.

THERE ARE TWO MAIN TYPES OF WETLAND SYSTEMS

LENTIC

areas influenced by standing water (Lakes, Ponds, Wetlands, Sloughs)

LOTIC

areas that are influenced by flowing water (Creeks, Streams, Rivers)



Photo by Kayla Balderson Burak

LENTIC

WHY DO WE WANT HEALTHY RIPARIAN AREAS?

- A buffer and filter to improve and maintain water quality.
- Shelter and habitat for livestock, wildlife and fish.
- These areas help control the flow and volume of water and also help store water during floods. They reduce erosion and help filter chemicals and sediment out of runoff.
- Proper management of riparian areas can benefit the producer both environmentally and economically. Clean drinking water for livestock and high quality forage production can increase the annual weight gain in livestock resulting in a net economic gain.



Photo by Kayla Balderson Burak

LOTIC

RIPARIAN and WETLAND Management

- Control access to water by providing off-site water systems and/or fences in high risk or problem areas or gravel pads at crossings.
- Avoid grazing wet and soft streambanks or shorelines during periods when the soil is vulnerable to compaction.
- Maximize the rest period between grazing so the vegetation can recover from defoliation.

At least 50% carryover should be left to allow for proper regrowth and to protect against erosion.

RESOURCES

Michalsky, S. and E. Saunders, 2009. *At Home on the Range: Living with Saskatchewan's Prairie Species at Risk*. Special Publication No. 28. Nature Saskatchewan, Regina, Saskatchewan.

Nature Saskatchewan, 2006. *The Value of Biodiversity to Ranching on the Prairies*. Accessed on 08/03/2016 from:

http://www.naturesask.ca/rsu_docs/ranching-and-biodiversity.pdf



Photo by R. McCulloch



Photo by Ducks Unlimited Canada

Photo by Tara Mulhern Davidson

QUIZ:

SPECIES AT RISK

1. What are 3 threats facing native prairie conservation?

2. Name 1 species at risk on the prairies, 1 threat facing that species, and something you can do to help that species.

3. Why is proper range management so important to species at risk conservation?

4. How would you identify a riparian area if you were out for a walk on the prairies?

5. What is the difference between a lentic and a lotic riparian area?

6. Why is it important to maintain healthy riparian areas?

ACTiViTY:

SPECIES AT RiSk

FILL IN THE BLANKS:

The Burrowing Owl is a small bird that lives on native prairies, where it nests _____ in abandoned burrows.

The Burrowing Owl is known as a _____ predator, which means that they will eat just about anything, including insects, mice, voles, toads, salamanders and small birds!



Photo by John C. Avise

Loggerhead Shrikes will often impale their prey on _____ as a way of storing excess food, displaying hunting skills to females, or to aid in eating large prey.

Piping Plovers nest on _____ or sandy shorelines of saline or fresh water lakes. Nests are lined with _____ collected by the male.

Sprague's Pipits are rarely found in _____ areas, or in areas where native grasses have been replaced with planted forage species.

TRUE OR FALSE:



Photo by Wayne Hathaway

Canada accounts for nearly 36% of the world's total Piping Plover population, and about 64% of the Canadian population breeds in Saskatchewan.

● TRUE ● FALSE

The male Sprague's Pipit performs the shortest known flight display of any song bird.

● TRUE ● FALSE

Many of Saskatchewan's rare plants are in decline because of invasive plant species. For example, Western Spiderwort and Hairy Prairie-clover are two species that cannot tolerate much competition from other vegetation.

● TRUE ● FALSE



Photo by Ecobirder

MULTIPLE CHOICE:

1. In what areas are Burrowing Owls most likely to choose a place to nest and successfully raise a family?
 - a) In an area of very dense vegetation
 - b) In an area with an abundance of burrows
 - c) In a dry area with no water nearby
 - d) In cropland

2. How can you help protect the Loggerhead Shrike?
 - a) Plant and/or maintain shelterbelts
 - b) Reduce pesticide use as much as possible, particularly around nest sites.
 - c) Learn about Loggerhead Shrikes and share your knowledge with others.
 - d) All of the above

3. The following plant species at risk can be found in the sand dunes of Saskatchewan's prairies (there are more than 1):
 - a) Tiny Cryptanthe
 - b) Smooth Goosefoot
 - c) Dwarf Woollyheads
 - d) Slender Mouse-ear-cress
 - e) Western Spiderwort



Photo by Candace Elchuk

NOTES

HUNTING FOR WEEDS



Absinth
 Dames rocket
 Downey brome
 Oxeye daisy

Burdock
 Persian darnel
 Knapweed
 Nodding thistle

Common tansy
 Kochia
 Leafy spurge
 Purple loostripe

ACTiViTY:

SPECiES AT RiSk

ANSWERS:

FILL IN THE BLANKS:

Underground

Generalist

Barbed wire or thorns

Gravelly or sandy

Pebbles

Cultivated/agricultural

TRUE OR FALSE:

True

False - Pipits can sing up to 100 meters in the sky for up to 3 hours at a time!

True

MULTIPLE CHOICE:

1 – b

2 – d

3 – a, b and e



Environment
Canada

Environnement
Canada

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Ministry of Agriculture



Saskatchewan
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Action Plan

