Ducks Unlimited Canada

AGRICULTURE AND GRASSLANDS: PARTNERS IN CONSERVATION

Ducks Unlimited Canada

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PART ONE

GRASSLAND ECOSYSTEMS

What does a tide pool on the Nova Scotia coast have in common with the alpine tundra in British Columbia?

THEY ARE BOTH ECOSYSTEMS!

WHAT IS AN ECOSYSTEM?

An **ecosystem** has both a **biotic** *(living)* and **abiotic** *(non-living)* component to it creating a bubble of life where plants, animals, organisms, weather and landscapes work and interact together.

TIDAL POOLS

- Rocky Shoreline
- Sunlight
- Consumers
- Tides
- Plants
- Predators
- Salinity

ALPINE TUNDRA

- High Elevation
- Snow
- Wildlife
- Small Shrubs
- Cold Temps
- Thin Air
- Grasses

ECOSYSTEM SERVICES

An endangered ecosystem is an ecosystem which is at risk of disappearing due to human activity

When you think of some the world's most endangered ecosystems, what comes to mind?

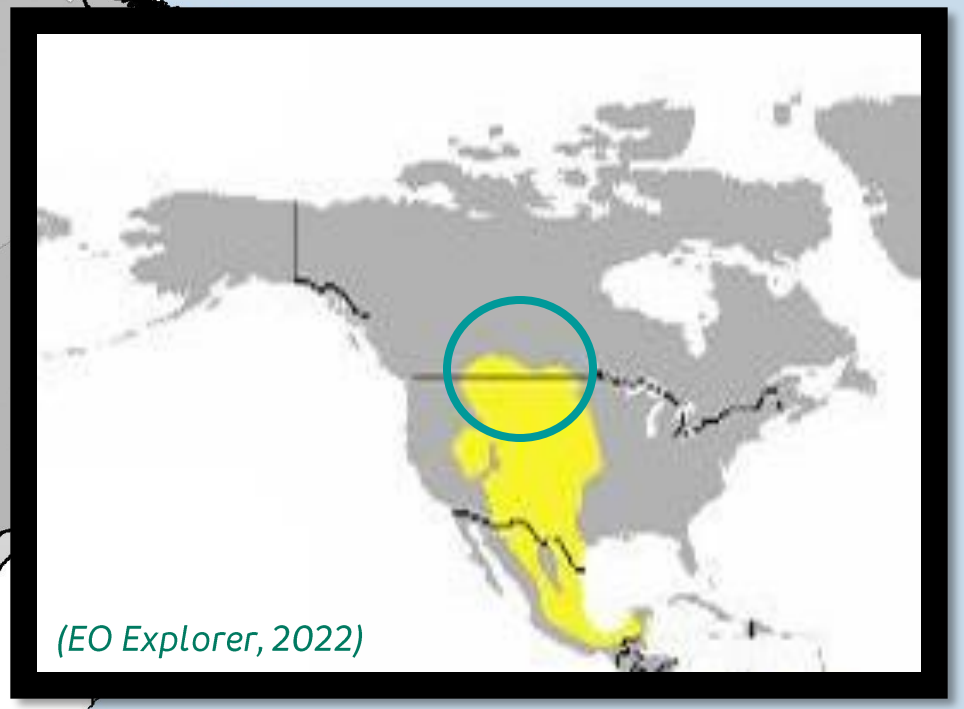
ENDANGERED ECOSYSTEMS


The most endangered ecosystem is in our own backyard.
TEMPERATE GRASSLANDS

TYPES OF GRASSLANDS

When you think of these spaces, what do you imagine? What species would you expect to find here?

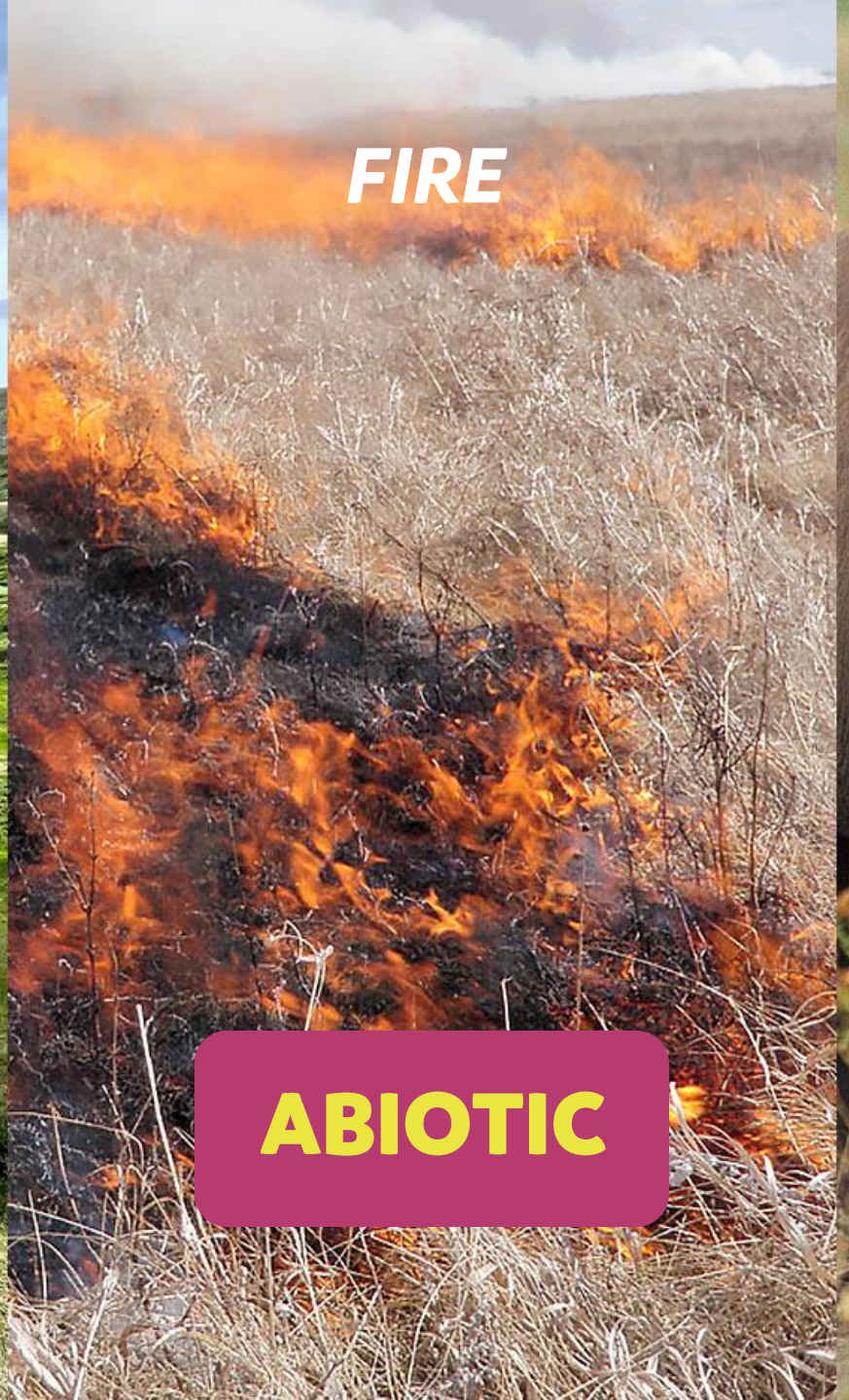
TEMPERATE GRASSLANDS IN CANADA

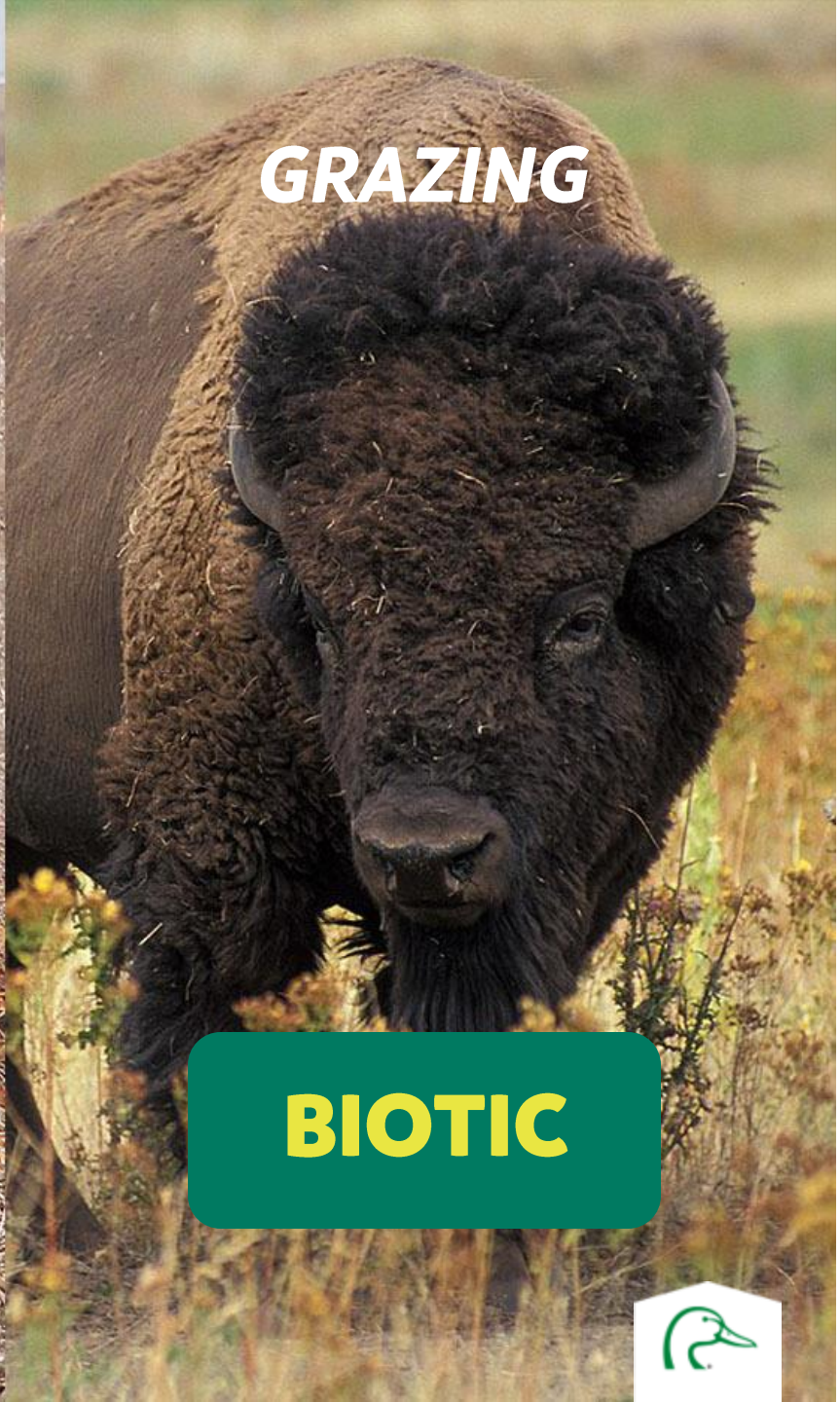


(EO Explorer, 2022)

The Canadian Prairies, aka the Prairie Pothole Region


CLIMATE
ABIOTIC


FIRE
ABIOTIC


GRAZING
BIOTIC

A keystone species is a species which the ecosystem depends on. The loss of this species would drastically change the ecosystem.

Bison once played such a key role in shaping the grassland ecosystem through their grazing and today cattle fill this role.

Keystone species comes from the word 'keystone', the central stone in an arch that holds it together

ECOSYSTEM ENGINEERS

Why do we care about grassland ecosystems?

WHY DO WE CARE ABOUT GRASSLAND ECOSYSTEMS?

#1 GRASSLANDS ARE BIODIVERSITY HOTSPOTS

BIODIVERSITY HOTSPOTS

Biodiversity is the variety of life on earth and includes:

- Genetic diversity
- Species diversity
- Ecosystem diversity

Biodiversity hotspots contain high levels of biodiversity and are rich with life.

Grasslands Hillside Grass – by Geoff Phillips

NATIVE SPECIES

BLACK-FOOTED FERRET
Extirpated

BURROWING OWL
Endangered

LONG-BILLED CURLEW
Special Concern

PLAINS BISON
Threatened

NATIVE PLANTS

WESTERN PRAIRIE FRINGED ORCHID
Platanthera praeclara

BLUE GRAMA GRASS
Bouteloua gracilis

PASTURE SAGE
Artemisia frigid

SILVER SAGE BRUSH
Artemisia cana

WHY DO WE CARE ABOUT GRASSLAND ECOSYSTEMS?

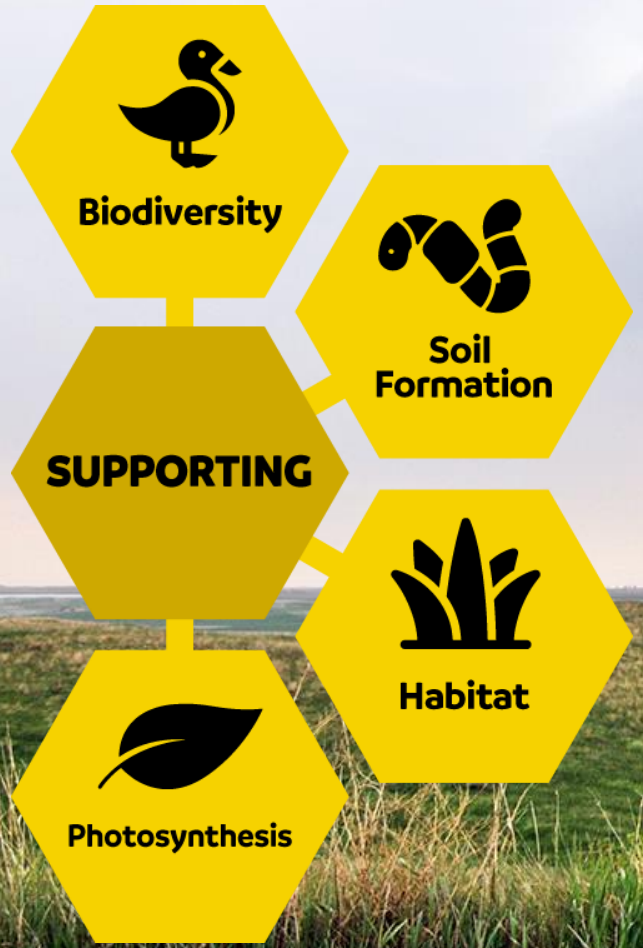
#2 GRASSLANDS PROVIDE ECOSYSTEM SERVICES

Harmony in Nature – by Norval Morrisseau

*"**Two-eyed seeing** refers to learning to see from one eye with the strengths of **Indigenous ways** of knowing and from the other eye with the strengths of **Western ways** of knowing and to using both of these eyes together."*

(Bartlett, Marshall, & Marshall, 2012, p. 335)

HABITAT AND BIODIVERSITY



BOBOLINK
Songbird

PRONGHORN
Grazing species

SWIFT FOX
Predator

NORTHERN PINTAIL
Nesting waterfowl

ENVIRONMENTAL SPACES AND CULTURAL PRACTICES

Photo: Tourism Saskatchewan/Eric Lindberg

FOOD AND RESOURCES


NO BEES
= NO FOOD
Pollination
Cleaning our air and water
REGULATING
Climate Regulation
Flood Control

WHY DO WE CARE ABOUT GRASSLAND ECOSYSTEMS?

#3 GRASSLANDS CAN HELP LESSEN THE IMPACT OF CLIMATE CHANGE

CARBON STORAGE

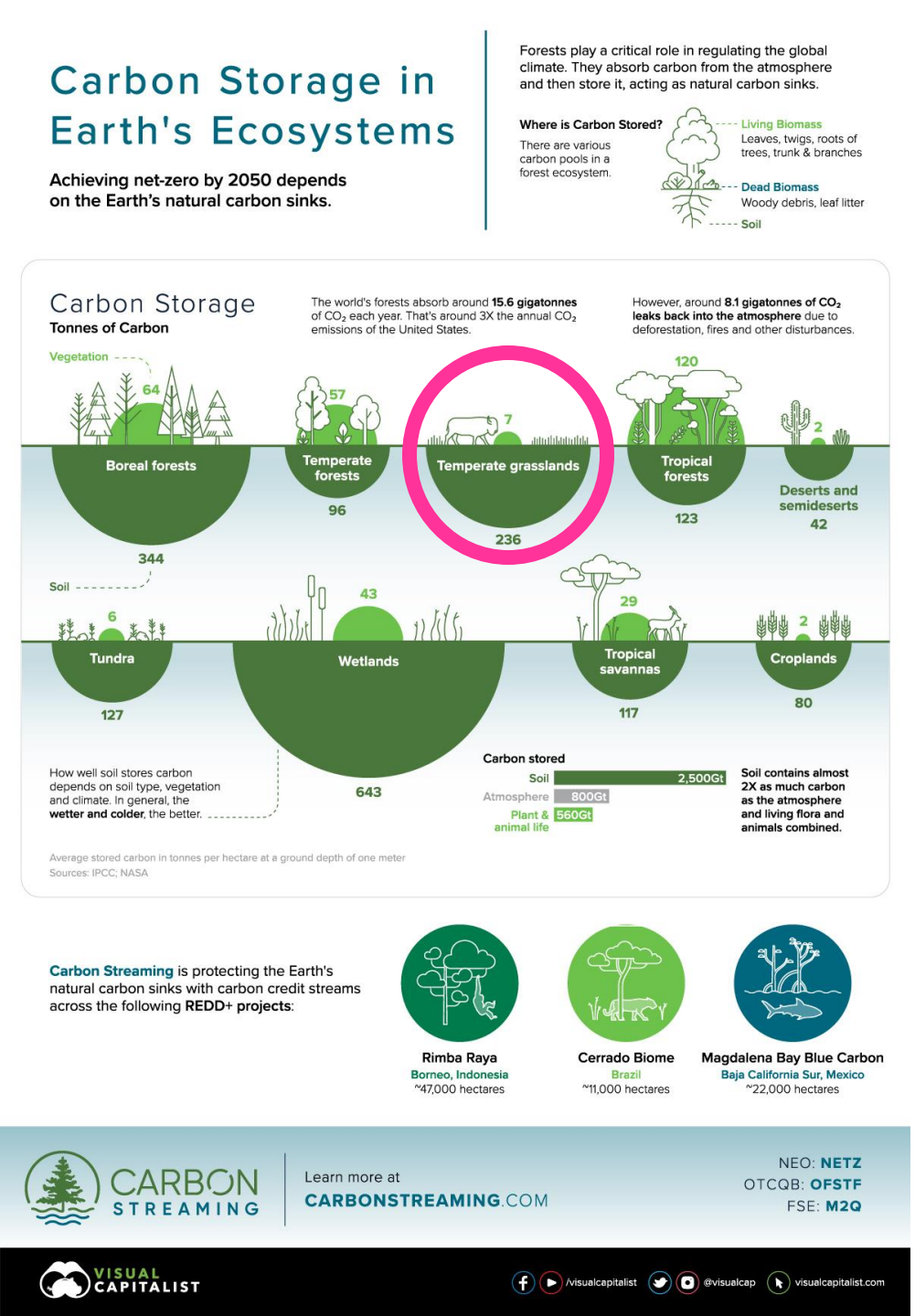
Grasslands are carbon sinks. They absorb more carbon than they release.

LIVING BIOMASS

DEAD BIOMASS

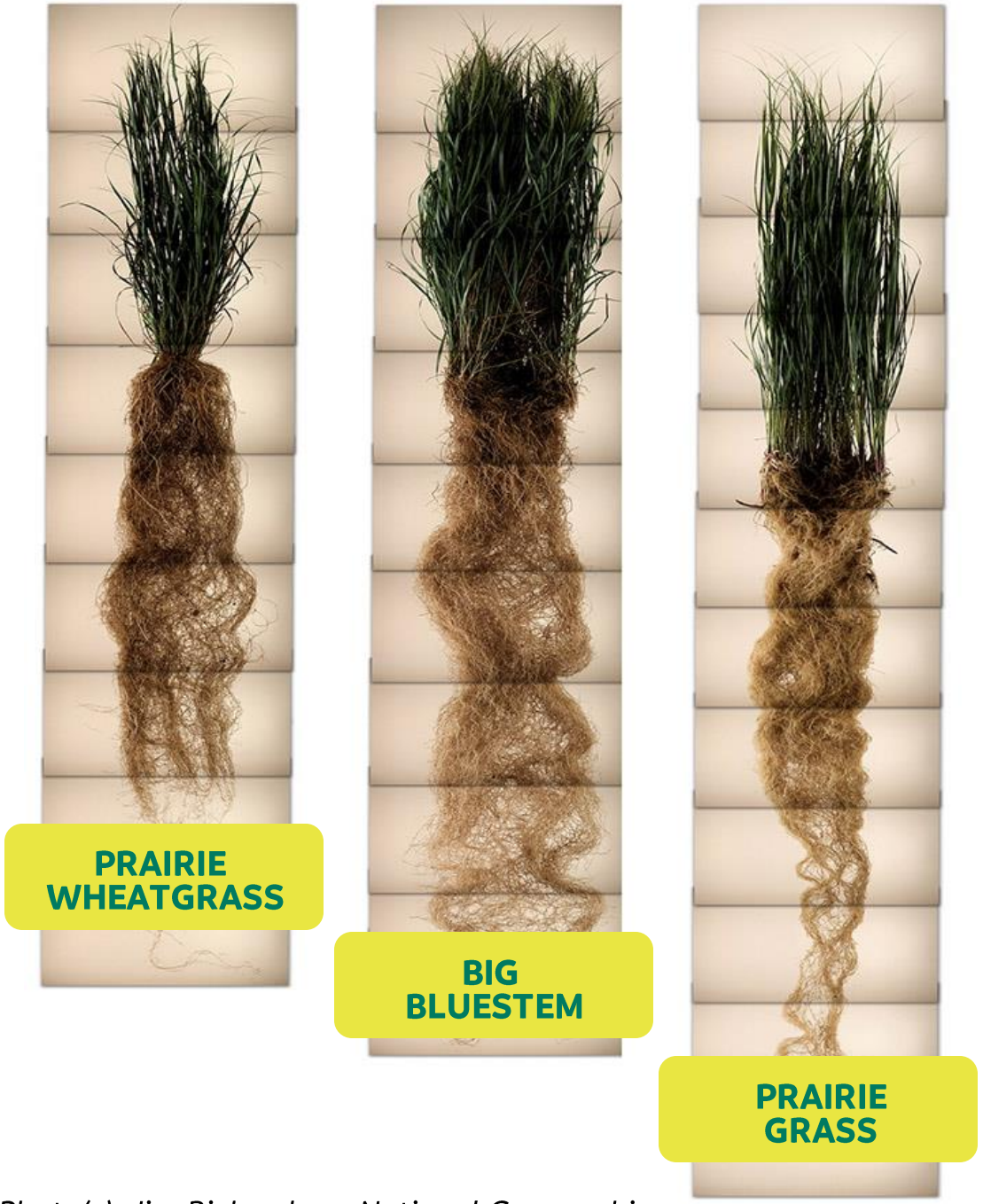
SOIL

Photo: The Ecological Landscape Alliance



GRASSLANDS: A POWERFUL CARBON SINK

(Visual Capitalist, 2022)



ROOTS ARE THE POWERHOUSE OF CARBON STORAGE.

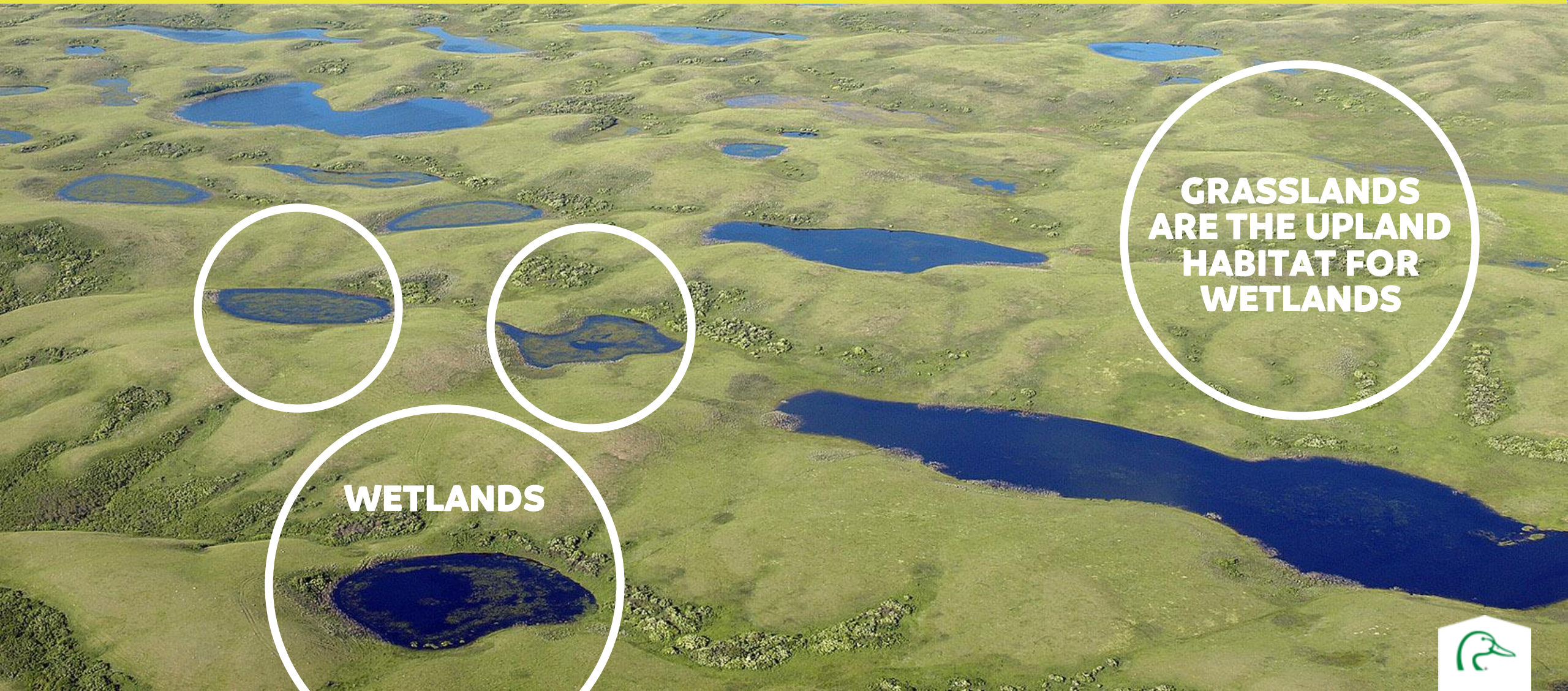
Photo(s): Jim Richardson, National Geographic

ROOTS ARE THE POWERHOUSE OF CARBON STORAGE.

“CARBON UP IN SMOKE” [1]

Grasslands may be more reliable carbon sinks than our forests in areas that are prone to wildfires!

THE DYNAMIC DUO



What is a wetland?

Wetlands are areas of land that are covered or saturated in surface or ground water for part or most of the year.

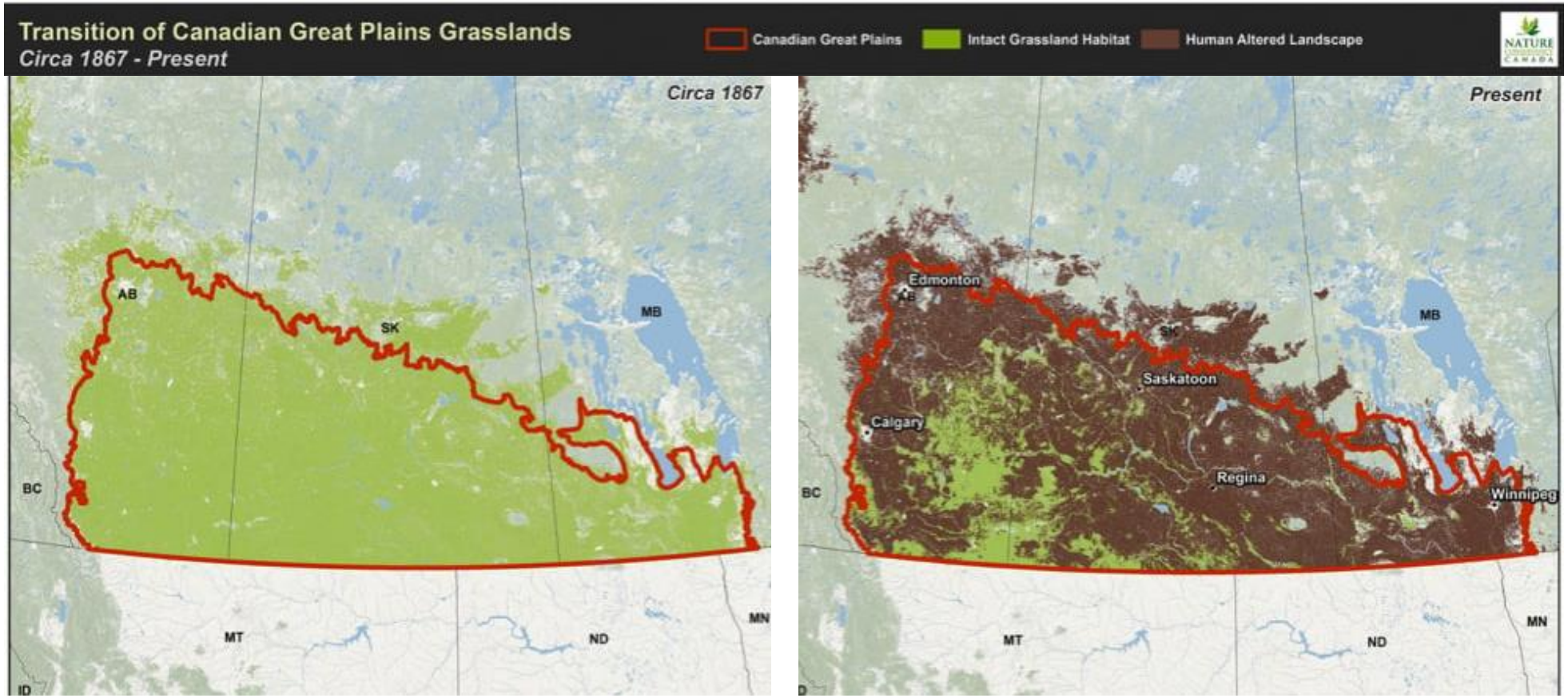
THE BENEFITS OF WETLANDS


GRASSLANDS AND WETLANDS
ARE AT RISK

Between 75-90% of grasslands have been lost.

Map: Alicia Carvalho / The Narwhal

Between 75-90% of grasslands have been lost.



Map from the Nature Conservancy of Canada

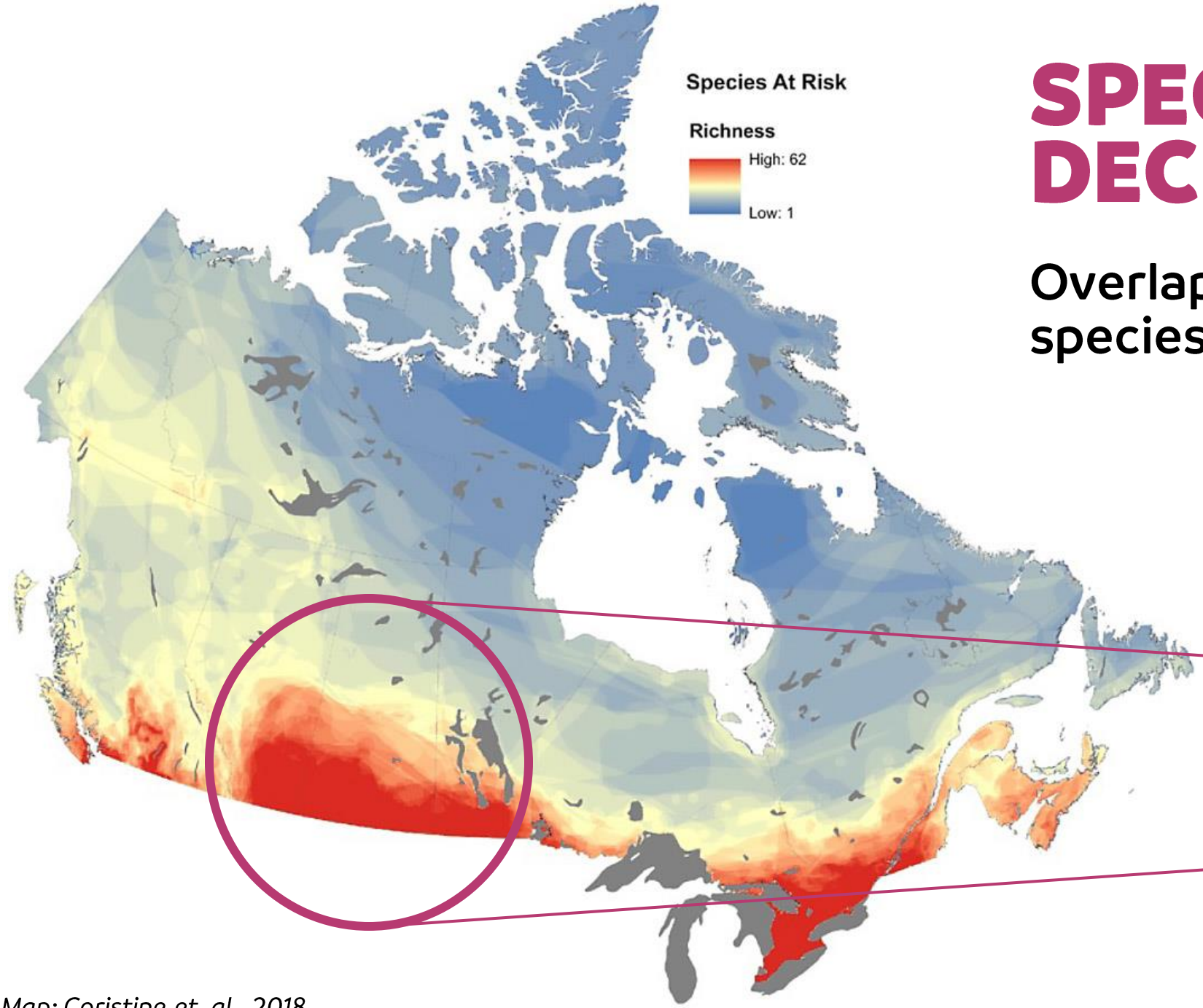
The biggest threat to grasslands in the Prairie Pothole Region is **land conversion** for the use of crop production and development.

Photo: Jim Brandenburg/Minden Pictures


WHY IS THIS
A PROBLEM?

SPECIES DECLINE!

Overlapping areas of species at risk in Canada



EXTENT OF CANADA'S TEMPERATE GRASSLANDS

Map: Coristine et. al., 2018

SPECIES DECLINE: GRASSLAND BIRDS

Chestnut-collared Longspur

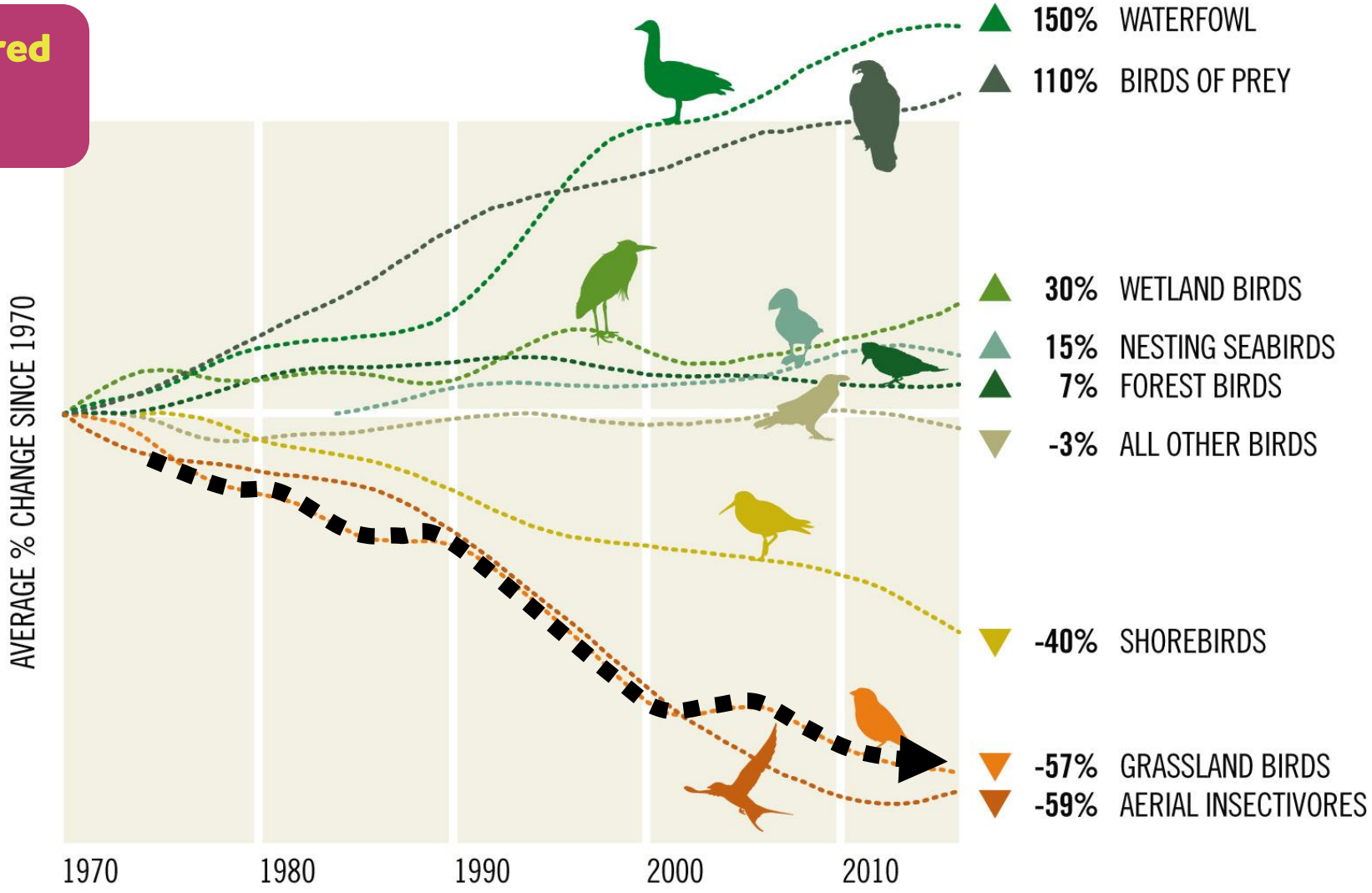
Photo: Dan Arndt

Baird's sparrow

Photo: Christian Artuso

Bobolink

Photo: May Haga

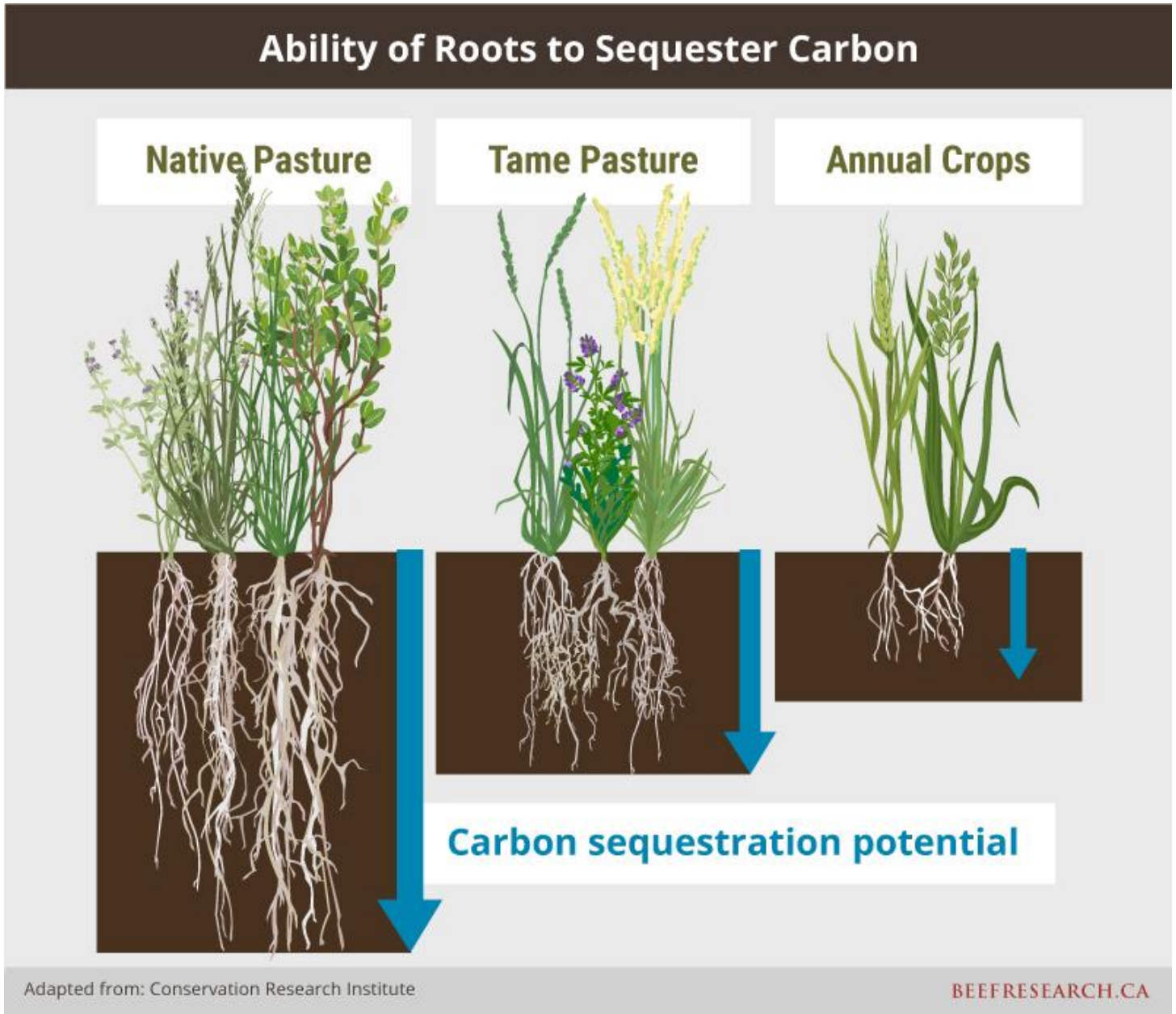


(*North American Bird Conservation Initiative Canada, 2019*)

BIODIVERSITY AND ECOSYSTEM SERVICES DISAPPEAR

Over the last 200 years, Canada's prairie landscape has changed from grasslands to agriculture.

Transformations – by Mai Ly



NOT ALL CARBON SINKS ARE EQUAL

When grasslands are converted in to crops, they lose half of the carbon they have stored in the soil!

WETLANDS ARE AT RISK

MODULE 2: A BRIEF HISTORY

AGRICULTURE AND GRASSLANDS ACROSS TIME

MODULE 3: THE FUTURE OF CONSERVATION

GRASSLANDS AND SUSTAINABLE AGRICULTURE