The Explorer's Guide to Central Nebraska Prairies

When you are out in nature what is it you see?
What do you want to experience?

The purpose of this publication is to assist visitors in observing the subtle charm of Nebraska's native prairie. We challenge you to look closer, to ask questions about what you see, and develop the ability to interpret what you encounter.

We hope what you find in these pages will enhance your understanding and appreciation of Nebraska's grasslands and inspire you to learn more.

"Now Voyager sail thou forth to seek and find"
-Walt Whitman

Contents

Acknowledgements

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Native/Non-Native Grasses

A native plant is a plant that grew on the prairies before European contact. This includes plants that have developed, occur naturally, or existed for many years in an area (e.g. trees, flowers, grasses, and other plants).

- Notice in the spring, most of the grasses you see are short cool-season grasses such as June grass.
- In summer, big bluestem, Indiangrass, and switchgrass can dominate the landscape.
- The location of a species depends on the environment, such as soil type, terrain, and water conditions.
- Grasses can be very difficult to identify. You will need to look closely. The easiest way to identify is by the seed head.
- Big bluestem's seed head looks like a turkey foot.
- Indian grass has tooth-like or rabbit ear projections where the leaf joins the stem.
- Observe how non-native grasses crowd out native grasses and discourage plant diversity.

Big Bluestem
Andropogon gerardii

Indiangrass
Sorghastrum nutans

Smooth brome *Bromus inermis*
(M or W constriction in leaf, a good identification marker)

Central Nebraska is a mixed grass prairie because it is in the transition zone between tall grass prairies to the east and short grass prairies to the west.

Trees and shrubs

Look for trees and shrubs, such as cottonwoods, Russian olive, and plums, near water and around the perimeter of a prairie.

- Some trees can spread quickly, decrease wildlife density in the area, and produce shade that is not tolerated well by native plants.
- Though native, the Eastern red cedar has become invasive due to the suppression of fire.
- Notice the change in habitat and wildlife near the trees and shrubs.
- Look for identifiers such as thorns, leaf shape, and bark pattern.

Eastern red cedar
Juniperus virginiana

Cottonwood *Populus deltoides*

Russian olive
Elaeagnus angustifolia

Wild plum *Prunus americana*

Often a broken small twig or branch of a cottonwood tree has the shape of a star in the inside center. According to Plains Indian legend, this is where stars in the sky come from.

Flowers

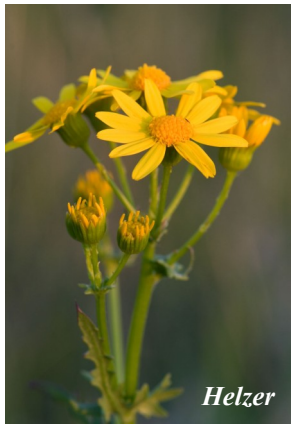
Wildflowers of the prairie come in a wide array of colors, shapes, sizes and vary by habitat and season. Those characteristics provide hints to how they are pollinated and their strategies for competing with other species.

Characteristics to look for:

- What kind of habitat is it growing in? Wet prairie, dry prairie, mesic (moderate moisture), sand prairie or savanna (scattered trees).
- What season is it? Most flower in a particular season—spring, summer, or fall.
- Look at the color, arrangement on the stem, shape, size, and number of petals.
- Are the flower heads branching low on the stem or near the top?
- Observe the leaf shape and arrangement. Are they opposite of each other, alternating, or in a whorl?
- Is there the presence of fuzz, hairs, or prickles? Is it fragrant?
- Pinch the stem —is the liquid clear or milky?

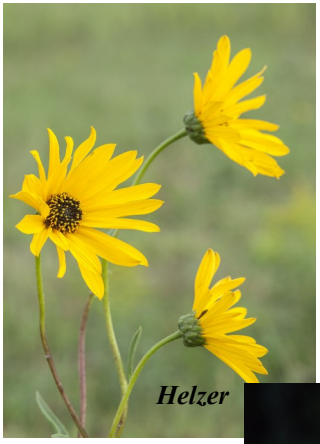
Fleabane
Erigeron annuus
(summer/fall)

Hoary vervain *Verbena stricta*
(summer bloom)

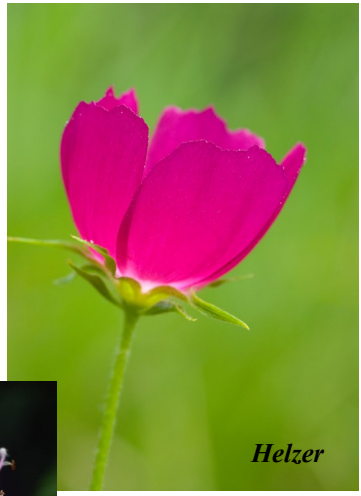


Prairie ragwort
Packera plattensis
(early spring flower)

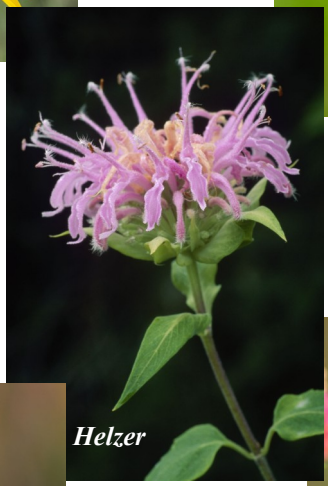
Fleabane was used by pioneers to stuff mattresses because it was believed to repel fleas and other insects.



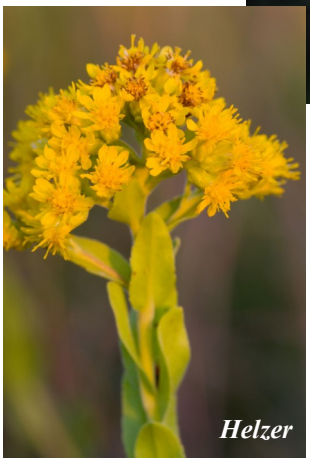
Stiff sunflower *Helianthus pauciflorus (*summer/ fall)



Purple poppy mallow *Callirhoe involucrata* (spring/summer)



Wild bergamot *Monarda fistulosa* (summer bloom)



Stiff goldenrod *Solidago rigida* (summer/fall)

Purple prairie clover *Dalea purpurea* (late spring)

Look on the underside of a thistle leaf. If it is white, it is a native thistle.

Grassland Birds

Few creatures are as mobile as birds and this mobility gives them access to a wide variety of habitats. You will find different birds in different habitats. Most birds look for the places that provide them with most or all of their needs, such as food and water, nesting sites and cover from predators and inclement weather.

- Pay attention to the height and the density of the grasses. Each bird species has its own unique habitat preference.
- Most nest in grasses away from trees which can shelter predators.
- Listen. Each grassland bird has its own song, which is one way to identify them.
- Red winged blackbirds, ducks, and shorebirds favor wetlands.

Meadowlark
Sturnella spp.

Dickcissel, male *Spiza americana*

Red winged blackbird, female
Agelaius phoeniceus

The loss of native prairie habitat is a major cause of the decline in grassland birds.

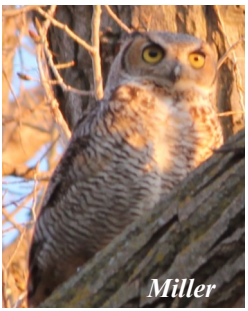
Raptors

Raptors are also known as birds of prey because they seize and carry away their prey. They have curved beaks, sharp talons, and excellent eyesight.

- Look up in tall trees for their nests. They will be made up of mostly sticks.
- Use these markings for identification: Head shape, crown markings, eye ring or line, chin color, beak color, and shape; breast color and markings (clear, streaked or spotted); wing bars, patterns, length, and color of underside if flying; tail length, shape, and pattern; size, average length from bill to tip of the tail; behavior and flight pattern.
- Red-tailed hawks nest in the perimeter of woodlands and hunt in open prairie during the day.
- Owls are nocturnal and are seldom seen flying during the day and do their hunting at night.

American kestrel
Falco sparverius

Talons of bald eagle
Haliaeetus leucocephalus



Great horned owl
Bubo virginianus

Red tailed hawk
Buteo jamaicensis

The shape and size of a bird's beak gives clues to its diet.

Animal Tracks & Signs

Wild animals are wary of humans and much of their activity is hidden. But even if they themselves are not seen, close examination of their tracks will not only give you indications of what species they are but also clues to their movements, habitats, and life history.

Tracking tips:

- Look for tracks in the mud after a rain or in fresh snow.
- Early morning or late evening when the sun is low creates shadows that make tracks easier to see.
- Note the size, look for a heel, count the number of toes, and look for claw marks.
- Measure the length of the stride to gauge how large the animal is and how fast it was moving as it passed.
- Watch for droppings known as scat. Details to look at are size, shape, location, and content. They can tell you about the animal's diet.
- Moisture content in the scat can give clues as to how long ago the animal passed by. Animal scat dries from the inside out.

Raccoon Track; left: forefoot
right: hind foot

White -tailed deer hoof print

Animal tracks are considered by some to be the oldest form of writing on earth.

- Owls regurgitate the parts of their prey that cannot be digested (fur, claws, bones). Look for these "pellets" under trees and on paths. Dissecting them can give you clues as to their diet and the types of small prey in the local environment.
- Burrows, tunnels, and cavities in trees are places where animals seek shelter, raise their families, and hibernate. Size of the entrance and prints in the immediate vicinity give clues to the identity of the resident.

Mouse burrow

Bird print in snow

Beaver dam in stream

Fresh beaver chews on a willow tree

Many mammals, especially carnivores, use scat and urine to leave scent marks that communicate specific information about age, sex, and health of the animal that left it.

Insects

Insects are an incredibly diverse group of organisms. There are thousands of insect and other invertebrate species in every prairie.

- Listen to the sounds in the prairie—most are from insects.
- Get down on your hands and knees and see how many different insects you can find in a square foot.
- Follow an insect and see where it leads you.
- Predator insects, such as the soldier beetle, eat other insects, larvae, and eggs of other insects.

Soldier beetle
Chauliognathus spp.

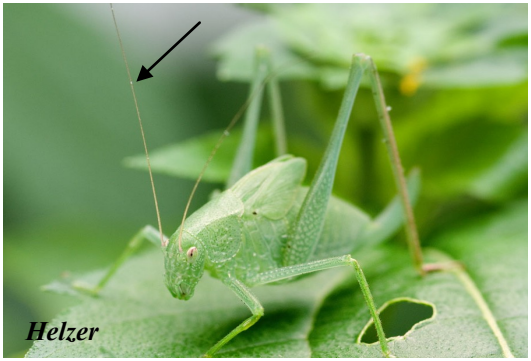
Large milkweed bug
Oncopeltus fasciatus

Bush cicada
Tibicen dorsata

Dogbane leaf beetle
Chrysochus auratus

The brilliant iridescent metallic green dogbane leaf beetle seems to change color as it moves.

- Grasshoppers eat half their body weight in plants per day.
- Approximately 108 species of grasshoppers are found in Nebraska.
- Katydids are a relative of grasshoppers but are distinguished by their long antennae —usually twice as long as their body.



Katydid *Microcentrum rhombifolium* (notice how its long antenna compares to a grasshopper's)

Some insects use camouflage to hide themselves-so look closely!

Do you see it?

Inchworm camouflaging itself with purple prairie clover

Most grasshoppers have "ears " on their abdomen and katydids hear through organs located on their forelegs.

Spiders

Spiders are everywhere. Look under rocks, tree bark, and logs. You can find them in leaf litter and on all parts of plants and flowers. They can also be found around ponds, streams, rivers, and lakes.

- Spiders are vital to a healthy ecosystem. They are a valuable food source for many animals and eat more insects than birds and bats combined.
- Spiders use silk for a variety of purposes- capturing prey, constructing shelters, protecting eggs, and transportation.
- Sit and watch how they capture their prey. Some hide and ambush their prey and others chase prey down.
- Female spiders are larger than the males.
- Most have 6-8 eyes but are very near sighted.
- Notice the tiny hairs on their legs. These help them hear and smell.

Crab spider *Thomisidae spp.*

Garden spider *Argiope spp.*

Wolf spider *Lycosidae spp.*

Long jawed orb weaver *Tetragnatha spp*

Newly hatched spiderlings are immobile, most will remain in their egg sacs till their first molt.

Damselflies and Dragonflies

It is hard to get a close look at dragonflies and damselflies because of their speed but there are differences between them.

- Notice that dragonflies have thick bodies while damselflies are slender.
- Both begin life as a nymph in water.
- Observe the position of the wings. Dragonflies usually keep wings open at rest, and can be found a distance from water, while damselflies close their wings and are found closer to water.
- Dragonflies are excellent fliers, and can even fly backwards.
- Both eat insects; they are considered predator invertebrates.
- A dragonfly's eye can contain 30,000 individual lens, though it cannot see detail very well.
- Some species of dragonflies migrate.

Bluet damselfly *Enallagma spp.*

Halloween pennant *Celithemis eponina* (wings move like a pennant in the wind)

Widow skimmer *Libellula luctuosa*

Dragonfly or Damselfly?

The dragonfly is a symbol of pure water to the Navajo people.

Bees

The most common pollinators of prairie flowers are bees and flies. But many flies closely resemble bees and can be difficult to tell apart. There are several characteristics that will aid in identification. You will need to look closely.

- Bees are fuzzy, have four wings, and long antennae. Females have depressions or sacs on their hind legs to carry nectar-moistened pollen back to their nests to feed their young.
- Bumble bees and honey bees are social and nest in colonies.
- Ground nesting native bees are solitary but will build their nests in groups where appropriate habitat exists.
- Look for holes on the ground with conical piles of dirt around them on sandy south facing slopes.
- Bees' nests might also be found in wood and hollowed out stems of plants.
- Most bees will pollinate many varieties of flowers but some are specialists and will only pollinate one species of plant.

Bumblebee
Bombus spp.

Notice the pollen sacs on the hind legs—a good way to distinguish between bees & flies

Sweat bee
Sphecodes spp.

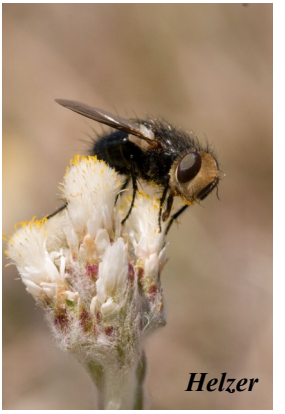
Bumblebee queens incubate their eggs like mother birds.

Flies

To distinguish a fly from a bee look at the antennae, flies have short, fat turned-down antennae. They only have two wings and usually sparsely hairy bodies.

- Unlike bees, flies do not build nests for their young so they do not have pollen sacs on their legs.
- Flower flies are flower visitors as adults but play a double role in ecosystems because some larvae feed on insect pest species.

Hover or flower fly *Syrphid spp.*



Trachinid fly
Archytas spp.

Drone fly or honey bee mimic
Enstalis spp.

Bee mimic *Bombylius spp.*

Pollinating flies, also known as flower flies, are second in importance as pollinating insects.

Butterflies

Both butterflies and moths are members of the scientific order Lepidoptera, meaning scale wing. Correct identification depends on close observation of their characteristics.

- Butterflies are brightly colored and fly during the day (diurnal).
- Look at the antennae, butterflies have a single filament with a club like tip.
- At rest butterflies hold their wings closed vertically over their bodies or are open and flat while sunning.
- Many butterflies can "taste" with their feet in order to determine if the leaf they are sitting on is the appropriate food for their caterpillars**.**
- Skippers are usually small, with brown or dark colored very fuzzy bodies.

Eastern tiger swallowtail
Papilio glaucus

Red admiral
Vanessa atalanta

Regal fritillary *Speyeri idalia*

Black swallowtail
Papilio polyxenes

The fastest butterflies are the skippers, which can fly at 37 miles per hour.

Moths

Moths are similar to butterflies but are usually colored in muted browns and grays and some are active only at night (nocturnal). Those that are active during the day are quite colorful and can be mistaken for butterflies, bees, and hummingbirds.
Characteristics to look for:

- Moths have plump, furry bodies and hold their wings flat over their bodies. The forewing covers their hind wing.
- Antennae on males are broadly feathered. Females have a single filament that tapers to a point.
- They like to hide on or under surfaces that are similar to their wing pattern and coloration, so look closely.

Underwing moth
Catocala spp

White-lined sphinx
Hyles lineata

Close up of moth showing proboscis, which is the tongue

Hyralophora cecropia moth
(male– notice the antennae)

Male moths have a strong sense of "smell" because their feathery antenna have an abundant surface area that collects chemical "scents" in the air.

Reptiles

Keep a sharp eye out for snakes and lizards basking along trails, roads or any other places where vegetation is sparse-especially if the air is cool and the sun is out.

- Reptiles and amphibians are ectothermic (cold -blooded) and rely on the warmth of the environment to regulate body temperature.
- Look for lizards hunting for insects by a sunny embankment.
- Snakes shed their skins in one piece as they grow and those skins can be found in areas they frequently pass through.

Juvenile prairie skink
Plestiodon septentrional

Fence lizard *Sceloporus spp.*

Garter snake
Thamnophis sirtalis

Garter snakes mating

Snakes do not have eye lids or ears but can "hear" through the vibrations in the ground.

Amphibians

Amphibians live in both water and on land, but return to water to breed in late winter, early spring, and summer. They lay eggs in water and remain there in their larval (tadpole) stage. Because they require water they are especially susceptible to pollution and toxins in waterways.

- Toads and frogs can be found on prairies, though they all return to water to breed.

Can you tell the difference between a toad and frog?

- Toads have dry bumpy skin and are commonly found away from water.
- Frogs have smooth, clammy skin . Although frogs are more dependent on water they can be found surprisingly far away from water.

Woodhouse toad
Anaxyrus woodhousi

Northern leopard frog
Litobates pipies

Copes gray tree frog
Hyla chrysoscelies

Bull frog
Lithobates catesbeianus

Frogs can breath not only with their lungs but through their skin as well.

Turtles

Turtles have recently been reclassified, and are technically no longer considered reptiles. They are easy to recognize because of their shells, which are actually part of their skeletal system.

Terrestrial (land based) turtles, are slow moving partly because of heavy shells but also due to short sturdy feet which restrict their stride.

- They spend their entire lives on dry upland prairies.
- If you are lucky enough to see a box turtle, look at its eyes. Males have red eyes and females have brown.

Ornate box turtle
Terrapene ornata

Look for *aquatic* turtles in and around the edge of standing water or basking on logs. They will sometimes make trips across land, which could include trips to lay eggs.

- Aquatic turtles have similar legs to terrestrial turtles but have webbing between their toes.
- Observe the long claws —these assist them in climbing up banks or on to logs.

Snapping turtle *Chelydra serpentina*

Painted turtles
Chrysemys picta

Soft shell turtle *Apalone spinifera*

Turtle have a keen sense of smell and good color vision.

PRAIRIE MANAGEMENT

Is managing a prairie necessary? Doesn't it just take care of itself? In order for prairies to maintain their plant diversity they must be managed to some degree. All plant species in the prairie have to be able to reproduce and maintain their populations. The primary job of prairie managers is to facilitate that process.

Fire is a critical component of the ecology of grasslands. Without fire and grazing, a select few plant species would dominate the prairie community. Fire helps to suppress invading trees and shrubs and removes the buildup of thatch from previous year's plant growth. The season during which a fire occurs has a lot to do with its impact on the plant community. Fire during the dormant season has very little impact on most plants so they can therefore take advantage of the bare soil conditions when the growing season begins. Growing-season fires are usually slower moving and less likely to burn large areas than dormant-season fires. These fires suppress the growth of warm-season plants and favor cool-season plants. Growing-season fires also have a stronger impact on trees and shrubs because all the energy those woody plants have invested in the year's growth is lost.


Helzer

All prairies have evolved with herbivores (plant-eating animals). What comes to mind for most people is an image of large herds of bison scattered across the plains. But other mammals such as elk, deer, pronghorn, prairie dogs, rabbits, voles, and mice played their part as well in the grazing arena as did many insects. Grazing defoliates plants, primarily grasses, which opens up the aboveground canopy to let more light through to the ground and also reduces the size of the root mass those plants can maintain.

The increased availability of light and root space allow other less dominant plants to reproduce and flourish. Today, most of the grazing that occurs in prairies is by cattle. In the last decade scientists and conservationists have experimented with cattle and fire together in an attempt to replicate some of the positive effects of the bison/fire interaction.

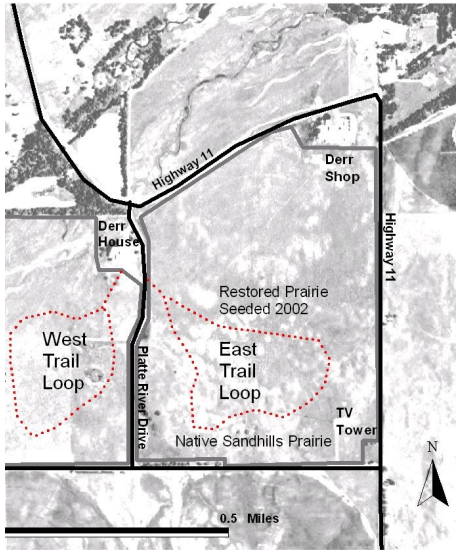
This "patch-burn grazing" method , in which a portion of a prairie is burned each year , has shown some very positive results.

Both fire and grazing can also help suppress invasive grasses and other weeds, but herbicides and other techniques are also part of the solution. No single management system will fit the needs of the prairie. Prairies change as the conditions change. If it is managed for a diversity of native species and communities everything in the prairie, including grassland birds, game species, butterflies, and wildflowers will do well.

The Nature Conservancy's
Platte River Prairies /Native Prairie Nature Trails

DIRECTIONS:

At Exit 300 on Interstate 80, take State Highway 11 south-southeast for approximately 2 miles. Highway 11 will make a sharp curve to the east. As Hwy. 11 makes this curve, turn onto Platte River Dr. headed south. There will be a driveway that leads to a red brick house on the hill (13650 S. Platte River Dr., Wood River, NE). You may park there.



What to Look For

These prairies have a great diversity of plants, particularly grasses, sedges, and wildflowers. That plant diversity provides resources and habitat for a host of animal species, from insects to birds. During the summer, common bird species can include grasshopper sparrows, bobolinks, dickcissels, upland sandpipers, bobwhite quail, sedge wrens, eastern and western meadowlarks, and many others.

The **west** trail passes through restored mesic and wet-mesic prairie. These lowland grasslands are on alluvial soils-soils formed by historic Platte River flows. The resulting mixture of sandy and sandy-loam soils distributed across the landscape results in a patchwork of plant communities tied to those soil types. Plant species such as big bluestem, Indiangrass, Canada milkvetch, purple prairie clover, and wild bergamot are common in these prairies.

The **east** trail starts in mesic prairie but soon travels uphill into sandhill prairie. Both the restored and native portions of this prairie are underlaid by sand dunes constructed by historic winds blowing sand from the wide Platte River valley. The plant communities on these sandhills are dominated by plants such as sand lovegrass, sand dropseed, needle-and -thread, stiff sunflower, blazing star, spiderwort, and many others.

Cattle may be present along the trails. Please be sure to close the gate behind you.

Prairies of Central Nebraska

The following are a few additional prairies in the south central region of Nebraska that are available for visitation. More details for each prairie are available online.

- **Pearl Harbor Survivors Preserve:** Riverdale, 150 acres natural prairie with buffalo
  Contact: contactppri@hamilton.net for visitation.
- **Oldfather's Prairie**: Kearney, at Cottonmill Park. Trails for hiking and horse riding
- **Rowe Audubon Sanctuary**: Gibbon, on the Platte River and has an inside nature center with displays
- **Crane Trust Nature and Visitors Center:** Alda, on the Platte River with hiking trails, buffalo, and inside displays
- **Hall County Park**: Grand Island, camping, paths for hiking and biking
- **Bader Park:** Chapman, hiking trails in native prairie and along the Platte River, camping, ponds for fishing and kayaking
- **Griffith Prairie:** Marquette**,** open vistas, intimate small valleys and draws, steep cliffs, ravines and 0.6 miles of Platte River frontage. Paths for hiking.

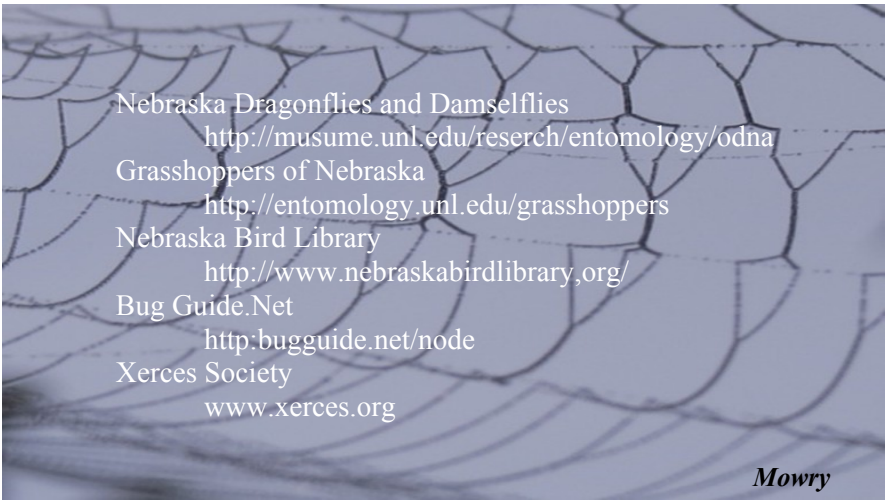
Oldfather's Prairie

Mowry

Notice the invasion of red cedar trees

Resources

The Field Guide to the Amphibians and Reptiles of Nebraska
-Daniel D. Fogell University of Nebraska-Lincoln
Kaufman Field Guide to Mammals of North America
- Nora Bowers, Nick Bowers and Kenn Kaufman
Animal Tracks- A Falcon Guide
- Todd Telander
Kaufman Field Guide to Butterflies of North America
- Jim P. Brock and Kenn Kaufman
Roger Troy Peterson Field Guide to Moths
- Charles V. Covell Jr.
Field Guide to Wildflowers of Nebraska and the Great Plains
- Jon Farrar
Kaufman Field Guide to Insects of North America
- Eric R. Eaton and Kenn Kaufman
Kaufman Field Guide to Birds of North America
- Kenn Kaufman
The Sibley Guide To Birds
- David Allen Sibley
Field Guide to Trees, Shrubs, Woody Vines, Sedges, and Rushes
- Ratzlaff, N. S. and Barth, N. E.



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Field Notes