

Wildlife

Study Guide – Review Materials

Information Provided By:

Nebraska’s Game and Parks: Lindsay Rogers

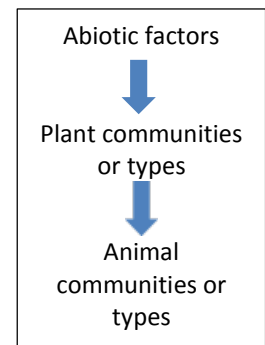
Introduction

Nebraska is home to a lot of wildlife. To be exact, we have over 450 species of birds, 95 mammals, 106 different fish, 61 amphibians and reptiles, and nearly 1,500 plants. On top of that, there are over 28,000 species of insects. And, that does not even begin to count the *thousands* of crustaceans, arachnids, and mussels.

To put in other terms, Nebraska has a high biodiversity. If we break this word into its different parts, we have “bio” which means “life,” and we have “diversity” which means “variety.” So, biodiversity is a term which means “variety of life.”

Why do we have such a high biodiversity or abundance of different species? This biodiversity is due to the vast variety of ecosystems found in Nebraska – Tallgrass prairie, Shortgrass prairie, Mixedgrass prairie, Sandhills, wetlands, eastern deciduous forest, Pine Ridge forests, rivers and lakes. Additionally, Nebraska has farm, range and urban habitats.

What drives this high diversity of different habitats? Habitat type is generally determined by the plant communities. The plant communities are generally determined by the non-living or abiotic factors in an area. These abiotic factors include precipitation, temperature, wind, soil type and bedrock composition.



Because Nebraska is in the center of the continent, we have a convergence of different abiotic factors. The western part of the state receives significantly less rainfall leading to a drier climate. The eastern part of the state receives more rainfall and thus is more humid and more developed soils.

The study of living things and the relationship they have with the physical environment is called “ecology.” All living things are dependent on other living things in addition to the non-living characteristics in the ecosystem. Whether you are a hunter, bird watcher or general nature enthusiast, enhancing your knowledge of the wildlife and habitats – ecology – where you live is very important for the long term survival and conservation of many species.

Objectives

Wildlife

1. Identify the tracks, physical characteristics (skulls, furs, antlers, horns, etc.), movement patterns, and eating habits of common Nebraska mammals, birds, fish, and reptiles.
2. Differentiate between endangered and threatened species, and recognize species of each category.
3. Differentiate between game and non-game species, and recognize species of each category.

4. Describe the habitat of Nebraska mammals, birds, fish, and reptiles and recommend management practices for each habitat.
5. Illustrate a food web or energy flow diagram featuring mammals, birds, fish or reptiles.
6. Approximate the age of mammals by physical characteristics. -Spurs on male pheasants - Teeth on deer
7. Differentiate between carnivores, herbivores, and omnivores
8. State three characteristics that distinguish mammals from all other animals.
9. Define the theory of natural selection and recognize instances where wildlife have adapted to changes in the environment.
10. State two characteristics that fish and reptiles have in common
11. Illustrate migration pathways that migratory fowl follow. Which flyway is Nebraska in?
12. Describe predator prey relationships. What happens to the predator population when you increase the prey population and vice versa?
13. Describe factors that limit or increase populations. Discuss the concept of carrying capacity and limiting factors.
14. Discuss various ways the public and wildlife managers can help in the protection, conservation, management and enhancement of wildlife populations.
15. Describe major factors affecting threatened and endangered species and methods used to improve the populations of these species.
16. Understand the roles of wildlife in an ecosystem
17. General animal species to be familiar with include:
 - a. Beaver, Bobcat, Black Bear, Coyote, Mink, Mountain Lion, Muskrat, Opossum, River Otter, Raccoon, Black-footed Ferret, Mountain Plover, Least Tern, Bald Eagle, Sandhill Cranes, Whooping Cranes, Bobwhite Quail, Prairie Dogs, Cottontail Rabbit, Whitetail Deer, Mule Deer, Pronghorn Antelope, Elk, Turkey, Bighorn Sheep, Prairie Chicken, Sharp-tail Grouse, Morning Dove, Threatened Species, Endangered species, song birds of Nebraska, fresh-water fish of Nebraska Discuss the potential impacts of introduction of a non-native species
18. Understand the various methods wildlife use to communicate and be familiar with the calls of various big game animals and game birds.
19. Understand the role of hunting in managing wildlife populations and some of the laws and regulations that direct such activities.
20. Understand the differences between native and introduced species and be able to identify such pelts and or skulls of various Nebraska animals. Focus on Bobcat, Great Horned Owl, Coyote, Fox, Cottontail Rabbit, Raccoon, and Muskrat.

Legislation and Key People

- Identify assisting agencies, programs, and laws that govern Nebraska wildlife.
- Understand the Pittman-Robertson Act, Migratory Bird Act, Lacey Act, Dingell-Johnson Act and their impacts on wildlife management today.
- Discuss impacts made by key leaders such as Aldo Leopold, John Muir, Gifford Pinchot and their efforts in conservation.

Suggestions

Review this information in the United States Fish and Wildlife Web Site as well as the Nebraska Game and Parks Commission Web Site.

Habitat

1. Differentiate between habitat and niche.
2. Describe ways in which wildlife managers manage and or manipulate wildlife habitats.
3. Understand why native wildlife require specific types of habitats.
4. Discuss how upland birds and mammals have adapted to their habitat to make the best use of their environment.
5. Understand the differences between annual, biennial and perennial plants.
6. Understand the process of Succession and how this impacts wildlife.
7. Describe the potential impact of the introduction of non-native species.
8. Understand the four main elements of habitat (food, water, shelter, space)
9. Know differences between various types of habitats found throughout Nebraska and be able to discuss them. This includes wetlands, forests, grasslands, ponds, lakes, rivers, etc. How do we categorize wetlands? What is a grassland? What species may be found in them?

Reference Materials: WEBSITES

- Nebraska Game and Parks Commission: www.outdoornebraska.org
- Nebraska Project WILD: www.nebraskaprojectwild.org
- Nebraska Wetlands: outdoornebraska.ne.gov/wildlife/programs/wetlands
- Nebraska Rare Species: www.rarespecies.nebraska.gov
- U.S. Fish and Wildlife Service Threatened & Endangered Species: www.fws.gov/endangered
- Project BEAK: www.projectbeak.org
- EPA Wetlands Page: water.epa.gov/type/wetlands/index.cfm

Reference Materials: BOOKS & CURRICULUM GUIDES

- Birds of Nebraska. Tekiela, S. 2003. Adventure Publications Inc.
- Mammals of North America. Kays and Wilson. 2002. Princeton University Press.
- Animal Tracks of the Great Plains. Eder. 2001. Lone Pine Publishing.
- A Field Guide to the Amphibians and Reptiles of Nebraska. Fogell. 2010. University of Nebraska – Lincoln.
- Tracks of Nebraska. Published by the Nebraska Game & Parks Commission. Contact Lindsay Rogers (Lindsay.rogers@nebraska.gov) for a free copy.
- Project WILD K-12 Curriculum & Activity Guide. Contact Lindsay Rogers (Lindsay.rogers@nebraska.gov for more information)
- Nebraska Hunt Guide – available at any Nebraska Game and Parks Commission Office.

Conservation Heroes

Edward Abbey

Born in Pennsylvania, Abbey spent most of his adult life in the American Southwest. He received a Master's degree in philosophy from the University of New Mexico. He spent one summer as a U.S. National Parks Service ranger at Arches National Monument (now a national park). During this summer, he wrote the journals that eventually helped create his most famous book *Desert Solitude*. This book talks of Abbey's love of nature and his disdain for commercialism in the national parks.

In 1976, Abbey wrote *The Monkey Wrench Gang*, a fictional book highlighting the eco-terrorism adventures of a group of environmentalists. This book is credited with being an inspiration to environmentalists and environmental groups.

Web Resources

EcoTopia: Edward Abbey

www.ecotopia.org/ecology-hall-of-fame/edward-abbey/biography

Wikipedia

http://en.wikipedia.org/wiki/Edward_Abbey

Aldo Leopold

Born 1887; Died 1948

Aldo Leopold was a true conservation hero. The Iowa native spent his life studying, teaching, and writing about ecology and nature. He had a devotion to "land ethics" and developed a philosophy of living in harmony with the land and nature.

Leopold had a strong interest in nature and ecology from a young age. He spent countless hours observing and exploring the woods around his boyhood home. He earned a degree in forestry from Yale University. After college, he joined the U.S. Forest Service and was stationed in Arizona and New Mexico. It was here where he began developing his theories of land ethics, the need for biodiversity, and an appreciation for wilderness areas.

In 1924, he was transferred to Wisconsin. He continued developing his theories of land ethics and ecology and became a professor at the University of Wisconsin.

Leopold is often credited with being the Father of Conservation. His most famous works include *Game Management* (1933) and *A Sand County Almanac* (1949).

Web Resources

Aldo Leopold Foundation

aldoleopold.org

Aldo Leopold Nature Center: Who Was Aldo Leopold

www.naturenet.com/alnc/aldo.html

Aldo Leopold Wilderness Research Foundation: Who Was Also Leopold

www.naturenet.com/alnc/aldo.html

Jon Muir

Born in Scotland, Muir immigrated to Wisconsin with his family in 1849. He attended the University of Wisconsin where he studied botany and geology. He meandered the country writing and sketching as he went. Eventually he made his way to California. He spent much time in the Sierra Nevada region where he developed his belief that mankind is just one part of an interconnected natural world, not its master.

He spent much of his life advocating for the protection of natural areas including the Petrified Forest and the Grand Canyon. He was also a huge proponent of national parks. He took President Theodore Roosevelt on a 3 day camping trip during which he convinced the President to preserve areas around Yosemite National Park.

Muir was co-founder and president of the Sierra Club. Muir died in 1914 as one of America's most famous naturalists and conservationists.

Web Resources

Sierra Club: Jon Muir Exhibit
www.sierraclub.org/john_muir_exhibit/about

PBS The National Parks: America's Best Idea: John Muir
www.pbs.org/nationalparks/people/historical/muir

Rachel Carson

Born in Pennsylvania in 1907, Carson spent her childhood days exploring the forest and streams around her family's farm. She attended college where she majored in Biology; she then went on to graduate school at Johns Hopkins University.

She went on to work for the U.S. Bureau of Fisheries (now the U.S. Fish and Wildlife Service) in 1936. While working for the BoF, Carson wrote many articles, pamphlets and books all dedicated to biology, conservation, and ecology. Her most famous book, *Silent Spring*, was first published in 1962. This book, widely credited for awakening American's to their responsibility to the environment and wildlife, and bringing much needed attention to environmental issues. Because of this book, the U.S. government reviewed the overall use of pesticides and eventually banned the use of DDT.

Carson once said, "man's endeavors to control nature by his powers to alter and to destroy would inevitably evolve into a war against himself, a war he would lose unless he came to terms with nature."

Web Resources

The Life and Legacy of Rachael Carson
www.rachelcarson.org

U.S. Fish and Wildlife Service: Rachel Carson: A Conservation Legacy
www.fws.gov/rachelcarson

U.S. EPA: Rachel Carson
www.epa.gov/history/topics/perspect/carson.htm

Federal Wildlife Laws

The Lacey Act (1900)

The Lacey Act protects both plants and wildlife by creating penalties for a variety of violations. It prohibits trade in wildlife, fish, and plants that have been illegally taken, possessed, transported, or sold. A person who violates the Lacey Act is charged doubly -- this is a separate offense from violating the Endangered Species Act or the International Migratory Bird Treaty Act.

This act prohibits falsifying documents for shipments of wildlife. It prohibits failure to mark wildlife shipments. Each of these violations is a separate offense.

Under the Lacey Act, it's unlawful to import, export, sell, acquire, or purchase fish, wildlife, or plants taken, possessed, transported, or sold:

- in violation of U.S. or Indian law, or
- in interstate or foreign commerce involving any of the same.

The act specifies felony criminal sanctions for violations involving imports or exports, or violations of a commercial nature in which the value of the wildlife is in excess of \$350.

It also establishes a misdemeanor violation with a fine of up to \$10,000 and a prison sentence of up to one year, or both.

International Migratory Bird Treaty Act (1918)

Under the International Migratory Bird Treaty Act, it's unlawful to ship, transport, or carry from one state or territory to another, or to carry to or through a foreign country, any bird, or any part, nest, or egg that is captured, killed, taken, shipped, transported, or carried at any time contrary to the laws of the state, territory, or district in which it was captured, killed, or taken, or from which it was shipped, transported, or carried.

In other words, if a bird (or part of a bird or its nest or its egg) is captured or killed or carried in a way that's illegal, it's against the law to transport the bird (or part or nest or egg) to another state, territory, or foreign country.

Violators of this act face fines of up to \$15,000, imprisonment for up to two years, or both, depending on the violation and conviction.

The Secretary of the Interior is authorized to issue special regulations so that the indigenous inhabitants of the State of Alaska are permitted to take migratory birds and collect eggs of migratory birds for their own nutritional and other essential needs, during seasons established to provide for the preservation and maintenance of stocks of migratory birds.

Pittman-Roberson Act (1937)

Officially known as the Federal Aid in Wildlife Restoration Act, this Act provides federal aid to the states for the management and restoration of wildlife. The aid, funded through an excise tax on sporting arms and ammunition, may be used to support a variety of wildlife projects, including acquisition and improvement of wildlife habitat.

This Act, provides states with funds (up to 75% of a projects total costs) to help enact wildlife restoration projects. By providing states with a dedicated, on-going source of funding, long-term conservation and restoration projects can be completed.

Bald and Golden Eagle Protection Act (1940)

The Bald and Golden Eagle Protection Act provides for the protection of the Bald Eagle and the Golden Eagle by prohibiting taking the birds, possessing the birds, and using the birds for commercial purposes.

Penalties under this act were increased in 1972. The act also provides rewards for information leading to arrest and conviction of violators.

In 1994, a policy was put in place concerning the collection and distribution of eagle feathers for Native American religious purposes. The National Eagle Repository serves as a collection point for dead eagles. Most of the dead Golden and Bald Eagles received by the U.S. Fish and Wildlife Service (FWS) have been salvaged by state and federal wildlife personnel. Some of the birds have died as a result of electrocution, some in vehicle collisions, some due to unlawful shooting and trapping, and some from natural causes.

The bodies of these eagles are shipped to the National Eagle Repository at the Rocky Mountain Arsenal National Wildlife Refuge in Denver, Colorado. Each bird is assigned a number for tracking and accountability purposes. Information about each bird is entered into a database. The condition of each eagle and its feathers is noted, and the eagle's species and age are recorded. If part of the bird or its feathers are missing, damaged, or broken, FWS staff may add replacement parts from another bird to make it complete. (The recipient is notified when this is the case prior to shipping.) The bird is then stored in a freezer until it is ready to ship, usually within three to five days.

Only enrolled members of a federally recognized tribe can obtain a permit from the FWS that authorizes them to receive and possess eagle feathers from the Repository for religious purposes.

Nebraska Nongame and Endangered Species Conservation Act (1943)

The Nebraska Nongame and Endangered Species Conservation Act protects birds from harassment, harm, pursuit, hunting, wounding, killing, trapping, capturing, and collecting, all of which are considered "taking."

Any federally threatened or endangered species is automatically on the Nebraska threatened or endangered species list, and Nebraska may also put species on their state threatened or endangered species list that aren't necessarily federally listed.

This act clearly makes it the responsibility of the individual to avoid actions which may have negative effects on these birds. It applies whether an individual is on public or private property.

Penalties for violating this state law include fines and potential imprisonment. Rewards of up to \$5,000 have been paid in Nebraska for information that led to the arrest and conviction of people unlawfully taking endangered species.

The Endangered Species Act (1973)

The Endangered Species Act provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend.

This act:

- establishes the circumstances under which a species can be listed as endangered and threatened
- prohibits the unauthorized taking, possession, sale, and transport of endangered species

- provides authority to acquire land for the conservation of listed species, using land and water conservation funds
- authorizes establishment of cooperative agreements and grants-in-aid to states that establish and maintain active and adequate programs for endangered and threatened wildlife and plants
- authorizes the assessment of civil and criminal penalties for violating this act or its regulations
- authorizes payment of rewards to anyone who furnishes information leading to arrest and conviction for any violation of this act or any regulation issued under this act

There are many amendments to the original Endangered Species Act, including the following from 1988:

- "person" was redefined to apply to municipal corporations
- the Departments of Interior and Agriculture were given equal authority for enforcing restrictions on import/export of listed plants
- the Secretary of the Interior was required to monitor all petitioned species that are candidates for listing and emergency listing authority was specified
- the Secretary of the Interior was directed to develop and review recovery plans for listed species without showing preference to any taxonomic group
- the recovery plan criteria were established for listed species
- a requirement was added for a status report to Congress on recovery plans every two years
- a provision was added for public review of new or revised recovery plans prior to final approval
- a requirement was added for five-year monitoring for species that have recovered and been delisted

Conservation on International Trade in Endangered Species of Wild Fauna and Flora (1973)

The CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) established a system of import/export regulations to prevent the over-exploitation of plants and animals listed by CITES.

Under CITES, different levels of trade regulations are provided, depending on the status of the listed species and the contribution trade makes to the decline of the species.

CITES was signed by 80 nations in 1973, and as of April 2009 has been adopted by 175 countries.

Wild Bird Conservation Act (1992)

- The Wild Bird Conservation Act established a new federal system to limit or prohibit U.S. imports of exotic bird species in several ways. The act:
- imposed an immediate moratorium on the importation of certain exotic bird species identified under CITES, and provided procedures for the Secretary of the Interior to suspend trade in any CITES-listed bird species and remove trade suspensions on species
- directed the Secretary of the Interior to publish in the Federal Register a list of exotic bird species for which trade is allowed, and provided procedures for determining such species
- provided criteria to determine whether exotic bird breeding facilities in other nations are "qualified" to export species to the U.S.
- required periodic review of the trade in non-CITES species, and authorized the imposition of emergency moratoriums or quotas if determined to be necessary for species conservation.

The Neotropical Migratory Bird Conservation Act (2000)

The purpose of The Neotropical Migratory Bird Conservation Act (NMBCA) is to establish a competitive, matching grants program that supports public-private partnerships carrying out projects in the United States, Canada, Latin America, and the Caribbean that promote the long-term conservation of Neotropical migratory birds and their habitats.

The goals of this act include:

- perpetuating healthy populations of these birds
- providing financial resources for bird conservation initiatives
- fostering international cooperation for such initiatives

Web Resources

U.S. Fish and Wildlife Service Congressional and Legislative Affairs; Resource Laws
www.fws.gov/laws/lawsdigest/ResourceLaws.html

U.S. Environmental Protection Agency; Legislation
www.epa.gov/lawsregs/laws/index.html

Association of Fish and Wildlife Agencies; Legislation
www.fishwildlife.org/legislation.html

Key Terms to Know

Adaptation: something that a plant or animal has or does to help it survive.

- **Physical Adaptation:** something that a plant or animal has (physically) which helps it survive. Examples include a deer's long legs, a human's opposable thumb, a turtle's hard shell.
- **Behavioral Adaptations:** something that a plant or animal does (behaviorally) which helps it survive. Examples include a Pronghorn running quickly to escape a predator, a turtle hiding in its shell from predators, a Sandhill Crane migrating south for the winter.

Limiting Factor: are things that prevent a population from growing any larger. For example, 10 rabbits may live in a habitat that has enough water, cover and space to support 20 rabbits. Once the population grows to 20 rabbits, the population growth will cease due to lack of water.

Ecosystem: a community of living organisms in conjunction with the nonliving components of their environment (things like air, water and mineral soil), interacting as a system.

Habitat: the natural home or environment of an animal, plant, or other organism consisting of its food, water, shelter and space in the proper arrangement.

Carnivore: an animal which eats only meat.

Omnivore: an animal which eats both meat and plants.

Herbivore: an animal which eats only plants.

Prescribed Fire: A method of habitat management which involves setting fire to a piece of land in an extremely controlled manner in an effort to control plant communities.

Threatened: a species that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Endangered: a species that is in danger of extinction throughout all or a significant portion of its range.

At-Risk: a species a species that is at-risk for becoming threatened or endangered; their populations have declines, but not to the point of listing the species as threatened or endangered. Or, an at-risk species may be one whose global population is stable, but is declining in a specific area; the species would then be listed as at-risk for the specific area.

Extirpated: a species that is no longer surviving in regions that were once part of their range; the species is extirpated from the specific area/region that is it no longer found.

Extinct: a species no longer in existence.

Endemic: a species whose entire range of distribution occurs within a specific area; there are no other species like this one found outside this specific location.

Renewable Resource: a resource for human use which is replaced naturally within a human lifetime and can be used again. Examples include: solar energy, trees/timber, oxygen.

Non-renewable Resource: a resource of economic value that cannot be readily replaced by natural means on a level equal to its consumption. Examples include: oil, natural gas, coal.

Native: a species that is naturally found within the area.

Non-native: a species which is not naturally found within the area but has been introduced to the area.

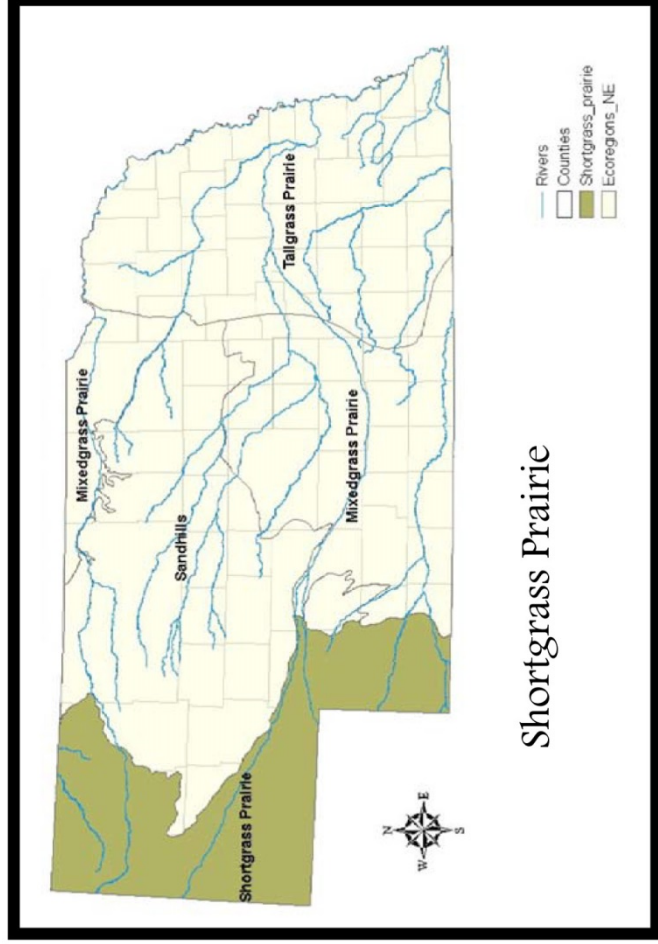
Invasive: A species – either native or non-native – which spreads rapidly and often overtakes other native species.

Central Flyway: a bird migration route that generally follows the Great Plains in the United States and Canada. The Central Flyway shape is like an hourglass which narrows over the state of Nebraska.

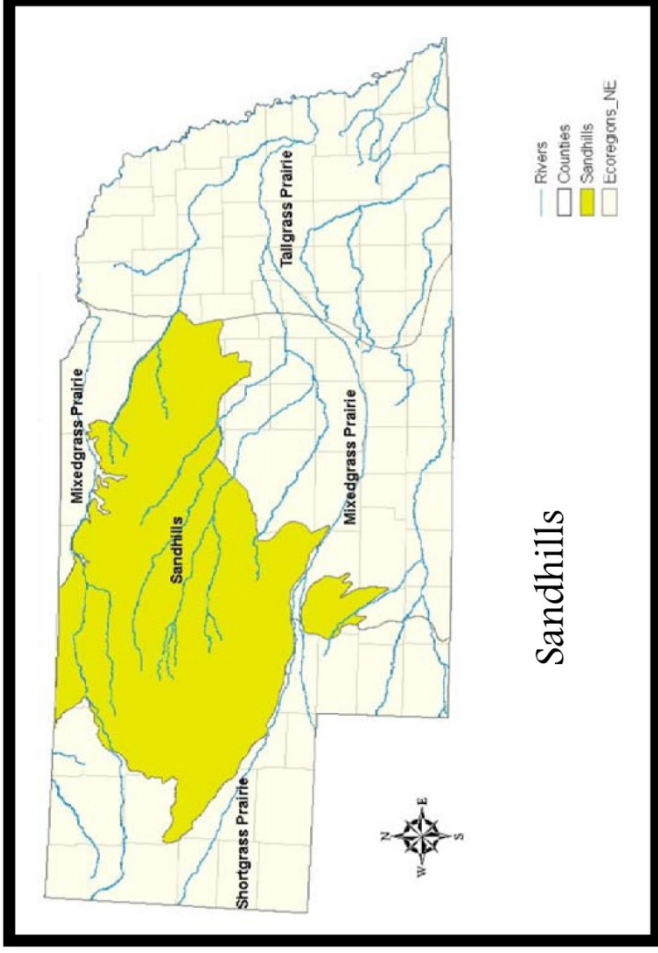
Pollination: the transfer of pollen from the anthers of a flower to the stigma of the same flower or of another flower. Pollination is a prerequisite for fertilization and thus to creation of new fruit and seeds. Pollination can take place through the help of pollinators (insects, birds, bats) or thorough wind.

Pollinator: the biotic agent (vector) that moves pollen from the male anthers of a flower to the female stigma of a flower to accomplish plant fertilization. Pollinators include insects, birds, bats.

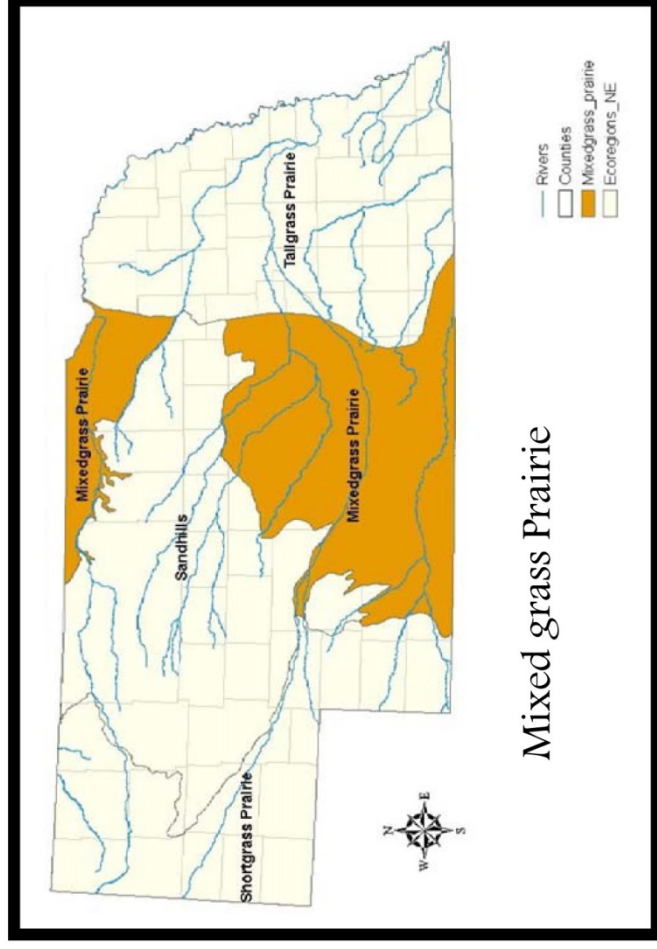
Nebraska Prairie Ecosystems



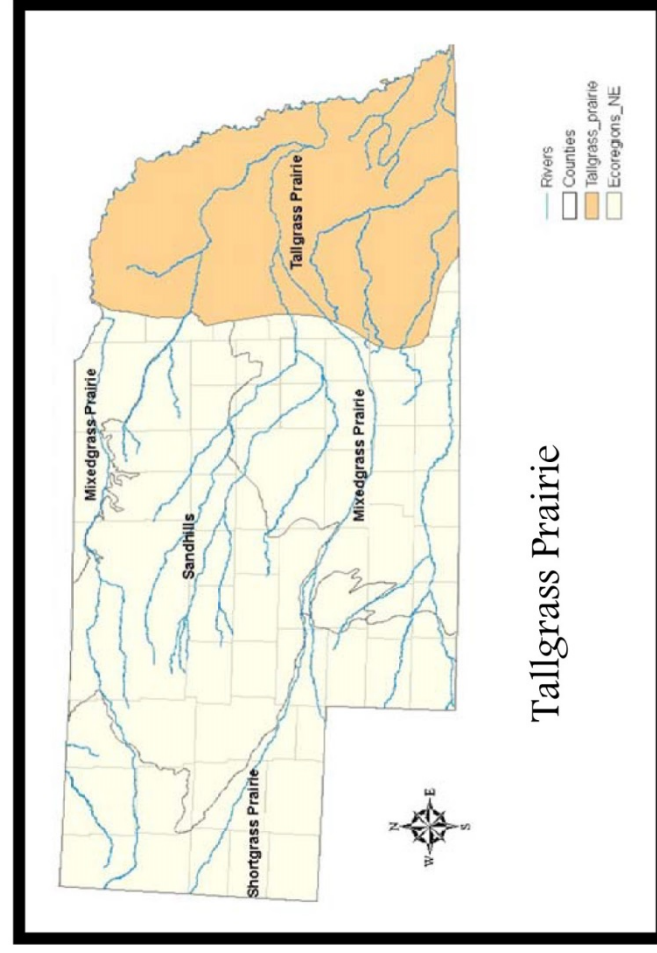
Shortgrass Prairie



Sandhills



Mixed grass Prairie



Tallgrass Prairie

Nebraska Animal Tracks

(tracks are not actual size)

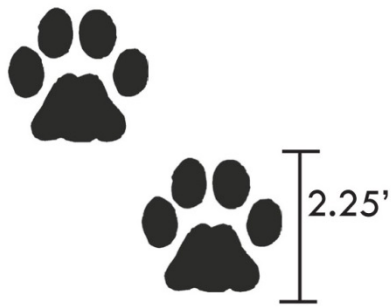
Antelope



Badger



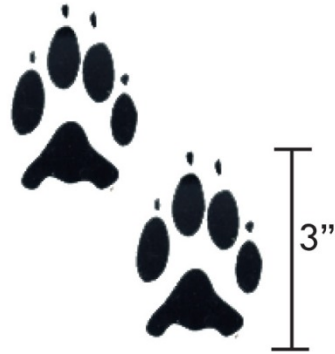
Bobcat



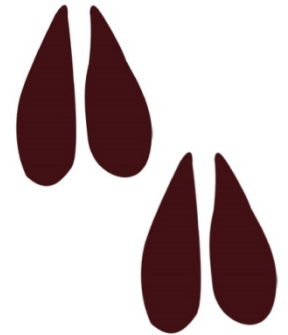
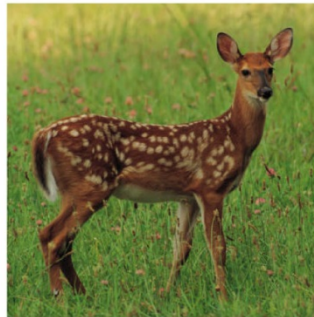
Cottontail Rabbit



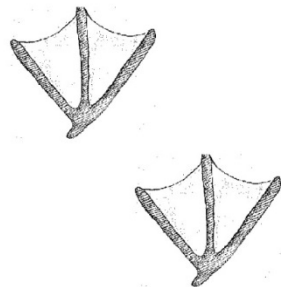
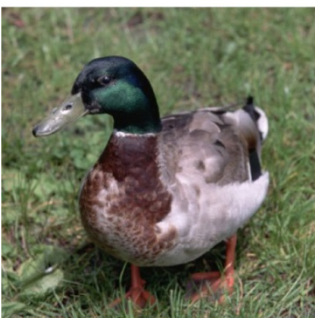
Coyote



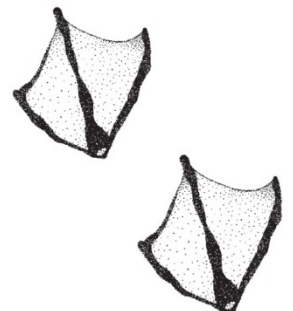
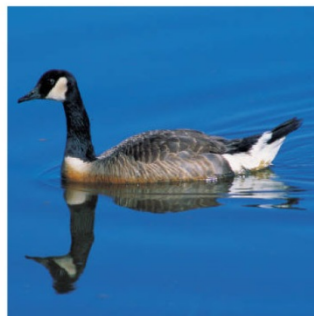
White-tailed Deer



Duck



Goose



Mink



Opposum



Raccoon



Red Fox



River Otter



Skunk



Woodchuck

