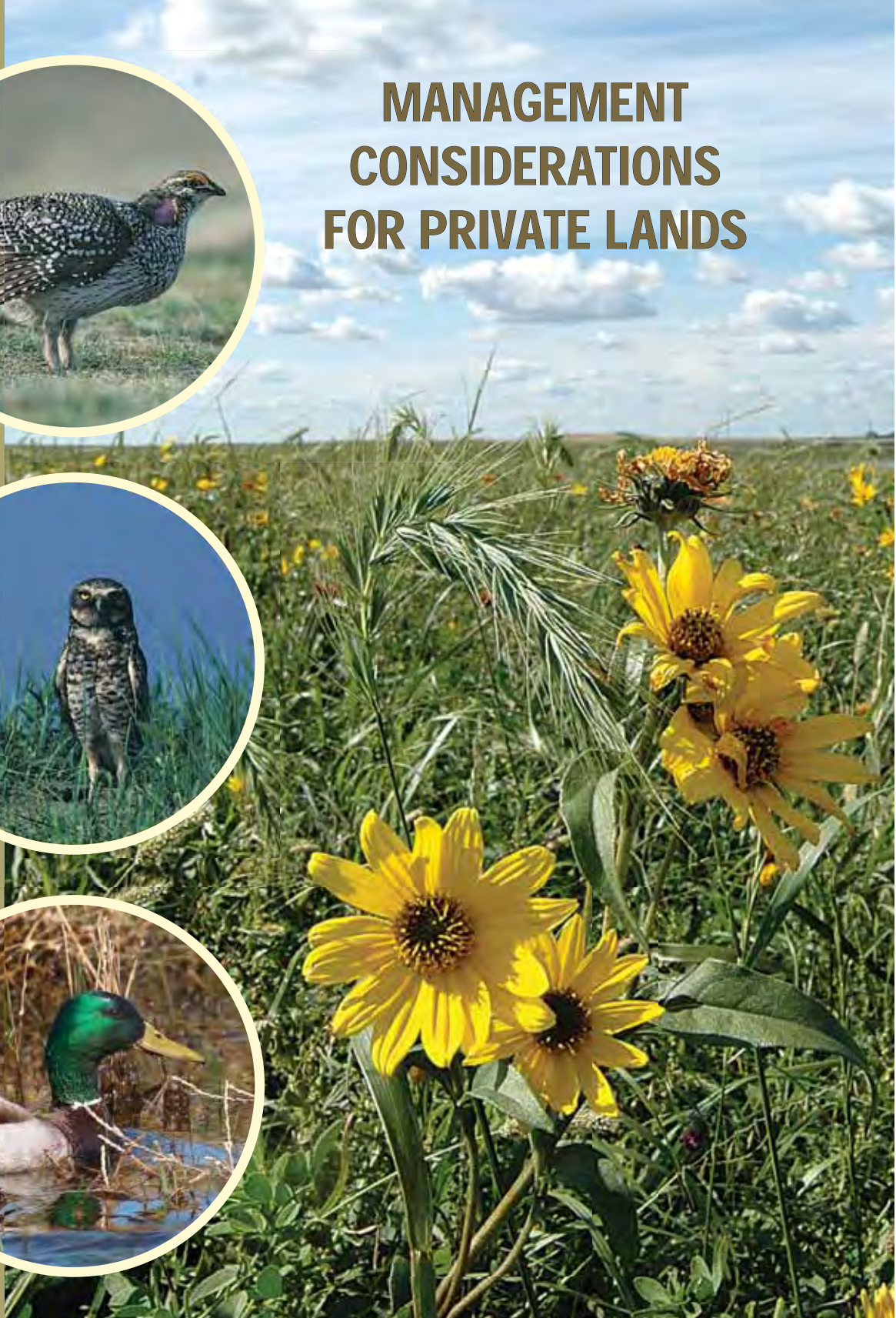


wildlife management

MANAGEMENT CONSIDERATIONS FOR PRIVATE LANDS



A GUIDE TO BASIC WILDLIFE MANAGEMENT
PRACTICES FOR NORTH DAKOTA



Introduction



The mission of the North Dakota Game and Fish Department is to protect, conserve and enhance fish and wildlife populations and their habitats for sustained consumptive and nonconsumptive use.

With over 90 percent of the land in North Dakota in private ownership, much of the state's wildlife and habitat is found on private land.

The Department works closely with private landowners to develop or maintain wildlife habitat on their land. The Department's Private Land Open To Sportsmen program has private land biologists who work with USDA farm bill programs, such as the Conservation Reserve Program, the Wildlife Habitat Incentives Program, Wetlands Reserve Program and many others. Game and Fish private land biologists can work with landowners to find conservation programs that best fit their farming or ranching operations.

There is a strong hunting heritage in North Dakota and we are fortunate to have gracious landowners who allow access to their land for hunting. Without the willingness of private landowners to allow hunting, the hunting heritage would suffer and wildlife agencies would face tougher challenges managing the state's wildlife populations.

The Department is excited to work with the USDA Natural Resources Conservation Service and other partners developing this wildlife management guide for private landowners. If you have questions about developing or maintaining wildlife habitat, or providing public access for hunting on your land, contact a North Dakota private land biologist in your area.

***Terry Steinwand, Director
North Dakota Game and Fish Department***



The Natural Resources Conservation Service is proud to be a partner with the North Dakota Game and Fish Department in the publication of this guide. NRCS has been providing technical and financial assistance to develop

wildlife habitat on private land since 1935.

All lands provide wildlife habitat. The quality of habitat depends on private landowners and their desire to manage land for wildlife. In many cases, it takes only minor tweaking to current management techniques to increase wildlife use dramatically. For instance, the installation of a grazing system designed to leave grass in the fall can help grassland nesting birds in the spring. However, providing winter habitat for resident wildlife species such as ring-necked pheasants and white-tailed deer may take a significant amount of effort and dedication of resources.

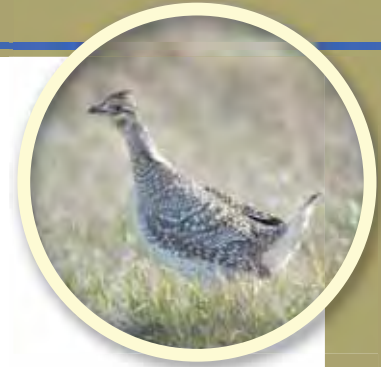
NRCS has offices in every county in North Dakota. Our field office personnel are trained to help develop wildlife habitat for species that interest you. NRCS also administers cost-share programs to help in the cost of practice installation. The Wildlife Habitat Incentives Program and the Environmental Quality Incentives Program are cost-share programs available to landowners across North Dakota. Other programs such as the Wetlands Reserve Program and the Grassland Reserve Program can provide long-term rental and easements along with cost-share assistance.

Stop by the NRCS field office in your county for more details. Good luck in your endeavors to develop and maintain wildlife habitat on your land.

***JR Flores, State Conservationist
Natural Resources Conservation Service***

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Craig Bibrle

Contributing Partners:



Management Considerations For Your Land

Wildlife are a resource that is held in public trust and belong to everyone. This is referred to as the North American Model of Wildlife Conservation, a principle which dates back to the early European settlement of our country. Europeans who settled our country had long standing traditions of hunting, but only nobles and aristocrats were allowed to hunt. After settlement and formation of our country, the notion of man as stewards of animals they hunted became apparent and hunters soon enacted laws, regulations and legislation to protect wildlife and the hunting heritage. This model continues strong today; hunters who purchase hunting licenses fund much of the conservation of fish and wildlife habitats in North America.

State wildlife agencies have statutory responsibilities for the management of wildlife within their borders. Managing public wildlife on private land creates many challenges. With less than 10 percent public land in North Dakota, most wildlife and their habitat is found on private lands. Therefore, private landowners play a large role in the management of the state's wildlife populations.

North Dakota's landscape has changed dramatically since settlement. Once a state of tall and mixed grass prairie interspersed with millions of acres of prairie pothole wetlands, the landscape has been fragmented with roads, fences, trees, cities, and various agricultural practices.

Private landowners make decisions on their land that affect wildlife populations and their habitats. As a private landowner concerned about wildlife habitat, there is much you can do to protect and improve wildlife habitat and the environment. Working alone or with neighbors, conservation organizations and government agencies, you can become better stewards of our state's natural resources.

The North Dakota Game and Fish Department and the Natural Resources Conservation Service, and other partners, provide technical and financial assistance to private landowners to develop wildlife habitat on private land. To see how conducive your property is for providing for wildlife, access the Wildlife Habitat Evaluation Guide at http://efotg.nrcs.usda.gov/references/public/ND/Wildlife_Habitat_evaluation_guide.xls, or contact a Game and Fish Department private land biologist in your area. Also available are individual species habitat guides at <http://www.whmi.nrcs.usda.gov/technical/leaflet.htm>. These provide information about specific wildlife species and their life history requirements, enabling private landowners to better understand their needs.



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Grassland Habitat Introduction

Native prairies provide many wildlife species with a portion or all of their life requirements, including nesting, brood rearing, roosting, escape cover, and feeding areas. North Dakota once was a state of endless acres of native prairie. However, today these large blocks of contiguous native grasslands are fragmented by trees, roads, ex-urbanization (i.e., 40-acre ranchettes) and agricultural fields. This fragmentation has resulted in the decline of many bird and mammal species dependent on large blocks of grassland. Fragmented habitat favors edge generalist species (i.e., robins, pheasant, white-tailed deer) while negatively impacting native species that tend to be edge sensitive (i.e., native grassland sparrows, sharp-tailed grouse, elk).

Restoration of Grassland Habitat

Grassland habitats can be re-established on lands previously tilled or cropped by planting a diverse mix of grasses and forbs. It is important to choose a seed mixture suitable to the soils. The NRCS web soil survey, located at <http://websoilsurvey.nrcs.usda.gov/app/>, provides soil data and other information. It is also important to reduce fragmentation of existing grasslands.

- *Native Seeding:* Native plant materials are adapted to the local soils and climate and may persist longer than introduced plants. Native species may take longer to establish from

seed than introduced species, but generally require less maintenance over time. Consider planting areas not profitable to farming such as small, wet or saline areas, along with highly erosive soils, back to native plant species. Plant a diversity of species including grasses and forbs, both warm-season and cool-season, bunchgrasses and sod-forming grasses suitable to the soils. Forbs are an important component of the mix, attracting insects, including native pollinators. Grasses providing good wildlife habitat include big bluestem, switchgrass, sideoats grama, western wheatgrass, green needlegrass and Indian grass. Forbs beneficial for wildlife include maximillian sunflower, prairie coneflower, purple prairieclover, blanketflower, and black-eyed susan. Trees should not be planted in grassland habitat as they will fragment the land, negatively impacting species reliant on larger blocks of grassland. Low growing native shrubs such as leadplant, saltbush or western snowberry can be planted. Existing native riparian areas or woody draws can be enhanced using existing native woody species.

- *Introduced Seeding:* Introduced grasses and legumes, planted and managed specifically for wildlife, have the potential to provide good habitat for many wildlife species. Avoid planting grass species that are considered invasive to North Dakota, such as smooth brome grass, crested wheatgrass and Kentucky bluegrass.

Native prairie grassland.

These species do not provide adequate winter cover. If possible, create herbaceous blocks of at least 40 acres to reduce predator concerns, reduce fragmentation, or tie existing grassland habitats together. Introduced plantings should include a mixture of grasses and legumes to provide at least 15 inches of tall standing cover in the fall. A common introduced mixture, dense nesting cover (DNC), consists of tall wheatgrass, intermediate wheatgrass, alfalfa and sweetclover.

Managing Grassland Habitat

Grasslands, whether native (a.k.a., rangeland, native prairie) or introduced, require management to invigorate and maintain desirable species in an optimum condition. Native grasslands evolved with disturbances such as grazing by native herbivores (bison, antelope, elk) and periodic fire. These frequent disturbances maintained the natural diversity of warm and cool-season grasses and forbs. The elimination of fire and changes to the grazing frequency following European settlement, drastically altered the natural disturbance regime. This, coupled with the introduction and invasion of nonnative species such as Kentucky bluegrass, smooth brome grass, crested wheatgrass, annual brome grasses, Russian olive and the spread of some native woody species (i.e., Rocky Mountain juniper), has, in some cases, dramatically altered the composition and health of native grassland habitats.

Left idle, excessive plant litter accumulates on native grassland reducing the amount of sunlight

reaching plant crowns near the soil surface. This shading shifts the competitive advantage to shade tolerant invasives such as Kentucky bluegrass and smooth brome grass. Unchecked, this shift in plant species composition can further accelerate the invasion of Kentucky bluegrass, smooth brome grass, crested wheatgrass, annual brome grasses, and enhance the spread of some native woody species. Ultimately, plant and wildlife species diversity is greatly reduced. The following management practices can be used to maintain grass and forb diversity.

- *Prescribed Grazing:* Grazing systems should be designed to change season of use for each pasture from year-to-year. This will improve plant vigor and provide undisturbed nesting cover in a portion of the grazing unit. Grazing systems should allow for adequate recovery time (45-65 days for native grassland, 25-35 days for introduced grassland) between grazing events to improve plant vigor and provide for residual cover for the nesting season and winter cover for resident wildlife species. Grazing systems should provide a diverse grass and forb community rich in insect populations to provide a protein source for chicks and fledglings. The flexibility afforded by multiple pastures within a grazing system enhances the manager's ability to control the amount of time any one pasture is grazed or rested. The ability to manage the time factor increases as the number of pastures within the rotation increases, permitting the manager to better meet habitat objectives.

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- **Prescribed Burning:** Burning can help reduce unwanted woody vegetation and invasive plant species. Prescribed burning is most effective on native grasses. Burning reduces plant litter, stimulating new plant growth. Burning must be timed to negatively impact the targeted invasive species. For cool-season invasive species such as smooth bromegrass and Kentucky bluegrass, burning must be done in early spring after plants have greened-up and prior to native species green-up. Burning should be done on a 3-5 year rotation, however, annual burning may be needed in the beginning for native grassland heavily invaded by smooth bromegrass and Kentucky bluegrass.
- **Mowing or Haying:** Typically, mowing or haying is used on introduced grass stands. Mowing or haying should be delayed until after the primary nesting season (April 15 through August 1). *(If haying or mowing is done during the primary nesting season, refer to Grassland Nesting Birds section on Page 25.)* It should be done on a rotational basis, mowing

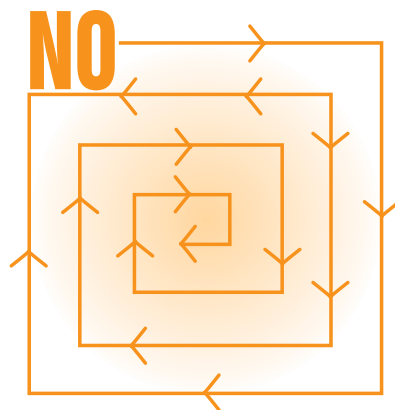


Renae Heinle

or haying an area once every 3-5 years. Haying should be done with a sickle bar mower and rake in order to remove plant litter. Haying equipment such as swathers or conditioners do not remove plant litter build-up. Haying should be done from the center outward or toward undisturbed habitat.

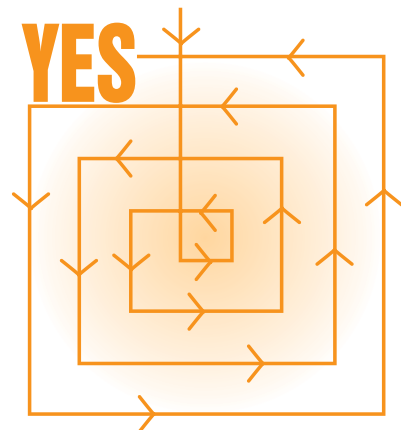
(See Figures 1 and 2.)

- **Light Disking or Harrowing:** Disking or harrowing can be done on introduced grass stands after the primary nesting season (April 15 through August 1) to help break down plant litter build-up and stimulate new plant growth. A minimum of 30 percent residue should remain on the soil surface for erosion protection.
- Preserve native prairie. It is not recommended to convert native prairie to wildlife food plots, introduced grass species, trees, etc.
- Maintain grasslands free of or with little woody vegetation.
- Preserve contiguous tracts of grassland. Control tall woody vegetation, including single trees that act as raptor perches or nest sites.



Cutting hay from the center of the field outward keeps wildlife from being herded into a bunch.

Figure 1



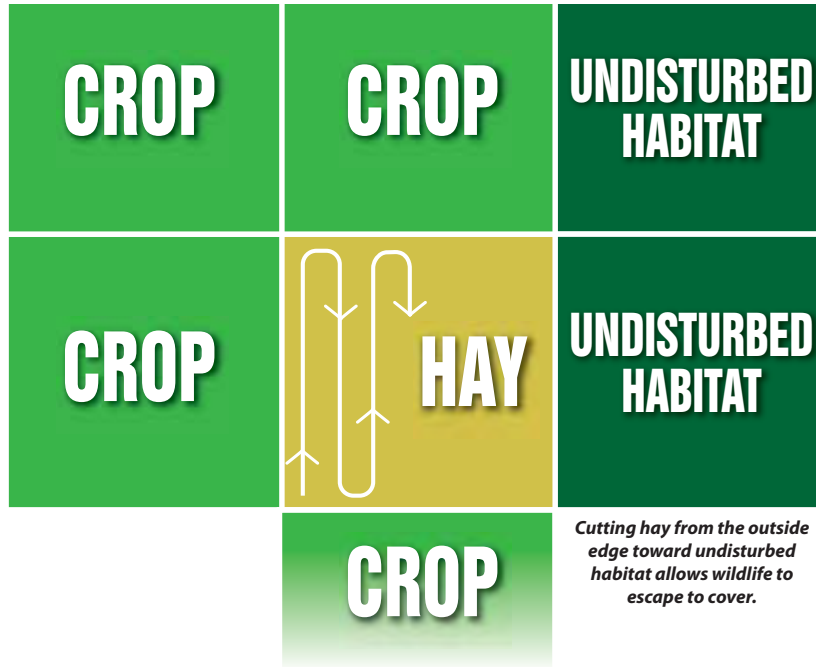


Figure 2

Chris Grondahl



Craig Bihrlé

Woodland Habitat Introduction

Although known as a prairie state, North Dakota does have areas of native woodland. Historically, only 700,000 acres, or 1.5 percent of North Dakota, was considered forested. Today, forestland covers approximately 450,000 acres or 1 percent of North Dakota's landscape. Fifty-five percent of the state's forests can be found in the Killdeer Mountains, Turtle Mountains, Pembina Hills and the Devils Lake area. The other largest concentrations of native forests exist as riparian forests along stream corridors and the Rocky Mountain juniper-dominated stands in the badlands. Approximately 43 percent of North Dakota forests are elm-ash, while 28 percent are aspen-dominated. Sixteen percent are dominated by oak, and 8 percent are dominated by cottonwood. Approximately 4,000 acres of ponderosa pine forest is located in extreme southwestern North Dakota. Many of the cottonwood-dominated forests along riparian zones of major rivers were established and maintained by periodic flooding. Dams built for

flood control have killed cottonwood forests by direct flooding or by reducing natural flooding events needed for seedling recruitment. Trees and shrubs planted for windbreaks, shelterbelts, and wildlife plantings have created another large woodland area in North Dakota. However, planted trees do not provide adequate habitat for woodland dependent species.

Restoration and Management of Woodland Habitats

Restoration of forestland will vary according to the forest type and location.

- *Riparian forests:* Plant native trees and shrubs along stream corridors in areas where woody vegetation has been removed or excessive grazing has diminished woody species. Avoid introducing invasive woody plants such as eastern red cedar and Russian olive. Consider how native riparian forests appeared on the

landscape. Avoid introducing conifers – they are not native to riparian forests in North Dakota. Reintroducing cottonwoods and willows on flood-controlled riparian areas may be difficult due to lack of available water. Where seed trees are available, manage abandoned cropland fields and pastureland to maximize recruitment from nearby native cottonwoods, boxelder, willows, green ash and bur oak. Stands of Kentucky bluegrass, bromegrass or reed canary grass will need to be controlled prior to planting trees.

- *Aspen forests:* Aspen reintroduction can be accomplished in areas historically forested with aspen. Seedlings can be planted in blocks of 25 trees with 7 to 8 blocks/acre. Aspen will actively sucker 10-15 years after planting. Eliminate tillage adjacent to aspen forests, allowing aspen to spread by suckering. Mature stands of aspen greater than 60 years old need management by shearing or timber harvest to stimulate new growth. Aspen stands of various ages are especially important in maintaining ruffed grouse populations.
- *Other forest types:* Expand existing forests by planting a diversity of native trees and shrubs adjacent to existing forests. Match tree and shrub species with adjacent woodland type. Mix species within the row to achieve a more natural restoration. In areas with an adequate seed source, plant the adjacent field to a mixture of sideoats grama (1.5 lbs./acre), big blue stem (1.5 lbs./acre) and Canada wild rye (2 lbs./acre). This grass mixture will colonize the site, but will leave enough bare mineral soil and sunlight penetration for tree and shrub seeds to germinate.
- Avoid season-long grazing in any woodland type.
- Graze woodlands when targeted understory grass species are most palatable.
- Cool-season grasses need to be grazed in spring and early summer while warm-season grasses need to be grazed in mid – to late summer.

- Avoid grazing when trees and shrubs are most attractive to cattle.

Establishment of Woodland Habitats

- When establishing woodland habitat, always consider fragmentation to grassland dependent wildlife.
- Avoid planting invasive woody species adjacent to native riparian forests.
- Limit shelterbelt type planting to previously disturbed areas such as cropland. Planting trees in or near herbaceous vegetation, native or introduced, negatively impacts grassland nesting birds such as waterfowl, pheasants, sharp-tailed grouse and many grassland passerines. Linear shelterbelt-type plantings provide opportunities for nest-parasitic species such as brown-headed cowbirds, and provide predator corridors for predators such as raccoons, skunks and crows.
- Linear type shelterbelt plantings of 1-8 rows do not provide the necessary habitat for forest species, nor do they provide effective winter cover for other wildlife species. Any shelterbelt type planting for wildlife needs to be as wide as possible, minimum 15 rows, to provide adequate woodland habitat benefits.
- Do not use weed control fabric on suckering shrubs. Weed control fabric inhibits the spread of most suckering shrubs, reducing wildlife benefits, especially thermal cover.
- Consider removing woody habitat near pheasant nesting habitat and sharp-tailed grouse dancing grounds. Pheasant nesting success is lower next to, and within, shelterbelts. Sharp-tailed grouse also have a negative association with trees.



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Wetland Habitat Introduction

Wetlands are the interface between uplands and deepwater habitat. Nearly half of North Dakota's wetlands have been drained or filled since settlement and many are now cropped. Wetlands are areas where water saturates or inundates the ground surface, providing hydrology for a sufficiently long period of time causing the soil to be considered hydric. Wetlands provide many functions including water storage, water quality improvement, wildlife and plant habitat, and ground water infiltration. Certain plant species (hydrophytic plants), are more adapted to these sites. Several types of wetlands exist in North Dakota, including prairie pothole wetlands. These relics of the last ice age are the North American duck factory. It is important to realize all wetland types provide significant habitat for a majority of mammals, birds and herptiles in North Dakota. Other wetland types include slope wetlands, intermittent streams, fens and bogs. Slope wetlands and intermittent streams may have areas of ponding, but for the most part, water seeps or flows downhill. Fens and bogs are unique and rare in North Dakota, exhibiting deep organic material and acidity. Fens differ from bogs by having flow-through hydrology, whereas bogs are stagnant. Some rare and beautiful plant species take advantage of the unique chemistry and hydrologic characters of these wetlands. Wetlands are classified by different characteristics such as degree of wetness, type of vegetation, water chemistry and type of bottom.

Migratory birds utilize small, shallow wetlands early in spring. These Type I wetlands are the first to warm and therefore the first to provide invertebrates to feed upon. These are particularly important as much of the calcium necessary for egg production is received through invertebrates. Type I wetlands typically dry up within a month of the frost leaving the soil.

Type III and IV wetlands provide longer duration water for waterfowl broods and other creatures. Type III wetlands typically dry up by early summer while Type IV wetlands are wet throughout the season in most years, only occasionally drying up. Type IV and V wetlands provide overwinter water for insects, fish and amphibians. These larger open waters remain ice-free later in fall, providing resting stops for migrating waterfowl.

These different types of wetlands are all important for different reasons. Most areas of the Prairie Pothole Region have diverse complexes of the various wetland types, thus providing varying water and vegetation conditions throughout the year. This diversity in wetland habitat ensures the life needs of all creatures utilizing wetlands as their habitat.

Restoration of Wetland Habitats

Wetlands are restored by returning hydrology and plants to areas that were formerly wetland or degraded wetland. Hydrology of pothole wetlands can be restored by ditch plugs, screw gates, stop logs and other structures. Sediment removal is an important aspect of wetland restoration. Accumulated sediments reduce wetland depth and increase nutrient loading, allowing for cattail domination. Wetlands that are too wet to be seeded should be left to revegetate on their own. Other wetland sites should be planted to diverse mixes of vegetation adapted to wet soils. Another method of establishment involves spreading hay with viable seed harvested from nearby wetlands. This method reduces expense, increases plant community diversity and assures that plants are adapted to the area. Restoration of slope wetlands, intermittent streams and floodplains is achieved by replacing meanders and oxbows and removing dikes as well as re-establishing native vegetation including fibrous rooted sedges and woody vegetation where appropriate.

Managing Wetland Habitats

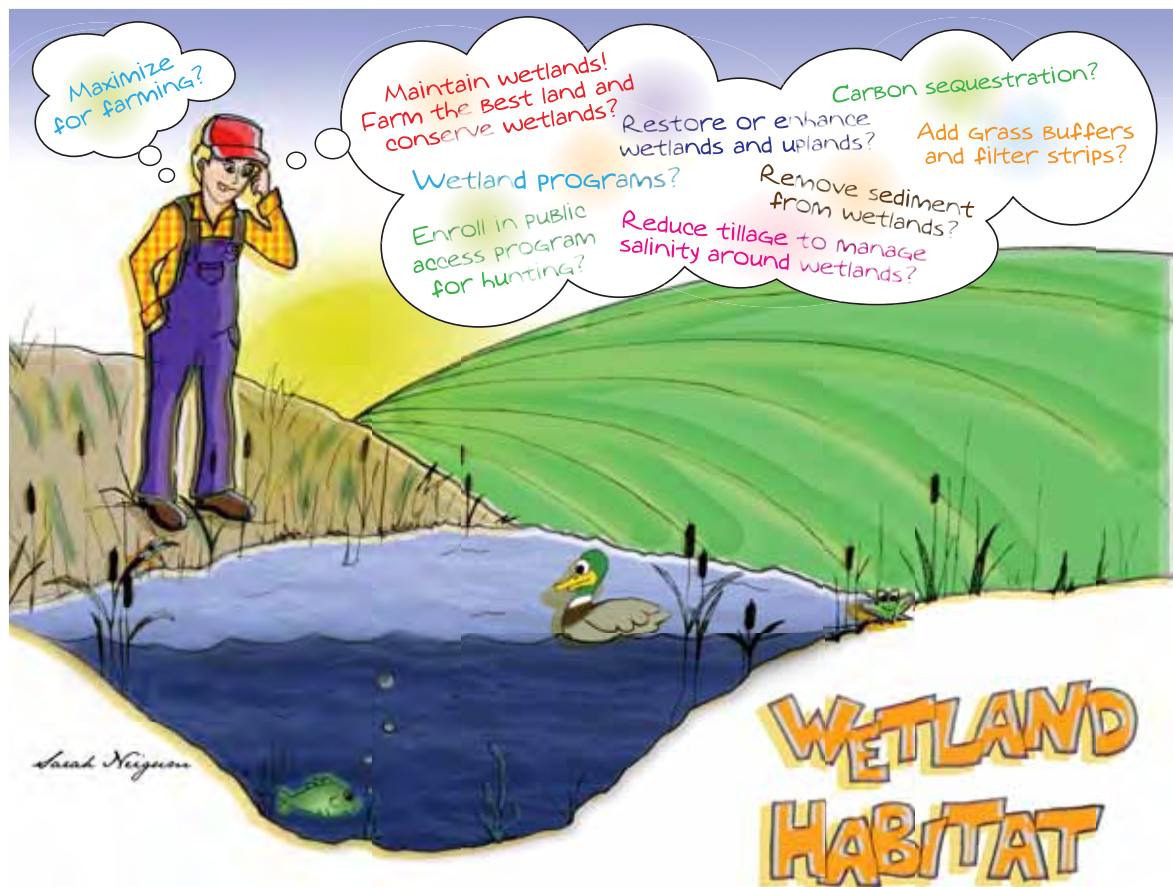
Compared to other habitats, wetlands are low maintenance areas. The additional wetness and biomass created in wetlands provides an active food web between microbes, insects and larger consumers, reducing the need for human intervention in wetland management. Occasionally, wetlands may benefit from prescribed burns, light disking, prescribed grazing or chemical treatments. Cattail monocultures

occur in some wetlands overloaded with nutrient rich sediments. These wetlands benefit from a combination of sediment removal and chemical application. Wetlands, especially cropped wetlands, are susceptible to invasion by Canada thistle, purple loosestrife, reed canary grass, phragmites and creeping foxtail. Diligence in weed control can prevent the need for broad spectrum control, which can be detrimental to plant diversity. Wetter is not always better. Periodic drying oxygenates the soil and subsequent chemical reactions are important parts of nutrient cycling and formation of hydric soils. Adding water to a wetland system may disrupt this natural process.

- Avoid adding woody vegetation adjacent to prairie pothole wetlands. Woody vegetation reduces wetland use by most waterfowl and increases mortality due to avian and mammalian predators.
- Avoid annual burning of wetland vegetation. Burning should only be prescribed on an intermittent basis for the long-term health of the wetland vegetation. Wetlands provide

winter habitat for white-tailed deer, pheasants and sharp-tailed grouse, along with numerous mammals.

- Add grass buffers adjacent to wetlands in crop fields to protect against sedimentation and reduce salt accumulation along wetland edges. Tillage along wetland edges increases salt accumulation when water evaporates leaving the salts behind.
- Wetlands attract waterfowl. Planting herbaceous vegetation on uplands adjacent to wetlands provides nesting habitat for waterfowl and other grassland birds. Grass planting adjacent to wetlands will reduce crop damage by Canada geese.
- Avoid long periods (greater than 5 years) of non-use causing vegetation build-up. Wetlands should be grazed as part of a prescribed grazing system or occasionally hayed or burned to reduce plant litter accumulation. Excessive plant litter build-up impairs nutrient cycling within a wetland.



Cropland Introduction

No bird or animal species are solely dependent on cropland for survival or as a requirement to complete their life cycle. However, some species can benefit from cropland. These benefits will vary depending on the season, species, and type of crop, mechanical disturbances, and availability of food, water and cover.

Many bird species use cropland during portions of their annual life cycle. Migratory waterfowl and songbirds feed on weed seeds, waste and volunteer grain during spring and fall migration. Overwintering birds, such as sharp-tailed grouse, use cropland as a winter food source and for food and cover during the breeding season. Only a few bird species, such as killdeer and horned larks, prefer bare cropland fields for nesting. Some birds will nest in cropland after the crop has been planted. Exposure to predation and chemical applications is a concern. Nests and young are vulnerable if harvesting or other mechanical disturbances occur during the nesting and brood-rearing season. Winter cereal crops are attractive to some nesting birds because of early green-up and fewer disturbances in spring.

White-tailed deer, elk, moose and pronghorn are attracted to cropland for food. Mature or taller crops also provide cover (e.g., sunflowers, corn, or wheat). Pronghorn use grains, weeds and crop residues as a replacement or substitute for their preferred foods of sage and coarse forbs. Small and medium-sized mammals also use cropland as cover and as a source of food. Many species of small mammals eat crop seeds or plants when available. Medium-sized predators, such as red fox, striped skunk and raccoon, hunt for birds, nests, rodents, and insects in cropland, and occasionally feed on grains.

Restoration of Cropland

In prairie regions, cropland can be restored by returning it to perennial vegetative cover. An appropriate mix of native grasses and forbs can be established. A combination of grasses and forbs will provide nesting cover, brood-rearing habitat, and foods for many species, including nesting waterfowl, upland game birds and many other grassland birds. Agricultural areas that were formerly wetlands can be restored by removing sediments, plugging drains, and re-establishing native wetland plants.



Many species of waterfowl and some shorebirds require upland grasslands for nesting, but also need wetland habitats for foraging and raising young. Pheasants and sharp-tailed grouse nest in grasslands and often roost in tall emergent wetland vegetation, especially during winter.

Managing Cropland

Wildlife habitat on cropland can be improved by using various techniques:

- Avoid fall tillage. Adopt no-tillage or minimum tillage practices, leaving weed seeds and waste grain on or near the surface as food sources for wildlife. Avoid mechanical activities and heavy pesticide use in spring. Inversion tillage destroys foods, cover and nests, and opens fields to erosion.
- Provide food on conventional crop fields by leaving several rows or strips of standing crops adjacent to permanent winter cover.
- In landscapes that are intensively farmed, provide nearby alternative nesting and roosting



Craig Bibrle

habitat, such as planted cover (i.e., CRP and other set-aside grasslands) and wetlands. Include undisturbed or low-disturbance areas in the landscape to balance out more intensively managed areas.

- Provide properly distributed food plots for wildlife. Food plots should be properly distributed across the landscape to prevent unnatural concentrations of wildlife, which may lead to starvation, disease outbreaks, or competition with domestic livestock food supplies. Food plots should be in blocks to minimize impacts of drifting snow.
- Avoid heavy herbicide and insecticide use that destroys many valuable food sources used by wildlife. Excessive or improper pesticide use will not only kill target weeds or insects, but also kill non-target plants and insects in crop fields and adjoining areas.
- Proper crop rotations can also improve soil health and provide plant and insect diversity.

Include grasses and legumes in the rotation, especially hayland that will not be disturbed until after the nesting season, preferably after August 1.

- Include direct-seeded winter crops in the rotation. These crops provide early spring green growth for nesting habitat and foods left from the previous crop.
- Choose crops such as sunflowers, corn, peas and winter wheat, which attract a broad spectrum of wildlife. Be aware that Genetically Modified Organism (GMO) crops might reduce wildlife benefits due to fewer weed seeds and insects.
- Managing crop residues can be beneficial to resident wildlife. Tall stubble can provide habitat for ring-necked pheasants. Tall stubble also provides food and thermal cover. Depending on snowfall amounts, the benefits could last throughout the winter. Combines equipped with stripper headers, which leave stubble height greater than 12 to 15 inches, provide the most benefit to pheasants.
- Cover crops can provide wildlife food and cover. Taller crops provide the obvious escape and thermal cover. Cover crop seed mixes used to improve soil health provide high protein forage for grazers and browsers. The diversity of plants used in mixes also adds to insect diversity for young birds.
- Cover crop mixes, which include many of the brassica species or soybeans, field pea, corn, sunflower, millet and sorghum, left standing to maturity will provide quality seed for winter food. (*See Water and Food for Wildlife section on Page 12.*)



Aaron Robinson

Water for Wildlife

All wildlife need water. Some species such as waterfowl and shorebirds are water dependent and spend all or part of their life cycle on or adjacent to wetlands, lakes or streams. Other species such as deer, pronghorn, elk, most bats and mourning doves require drinking water to survive. However, a large number of species do not require drinking water. Instead, they obtain water from foods (insects or vegetation) or from dew on vegetation. Sharp-tailed grouse, ring-necked pheasant, turkeys, song birds, greater prairie chicken and gray partridge do not need free drinking water to survive. Available free water will be used by these species, but is not critical to their survival.

In most cases, water is not a limiting factor for wildlife in North Dakota. North Dakota's network of lakes, streams and wetlands provide water for most species. Very few areas north and east of the Missouri River will require supplemental water. In some instances west and south of the Missouri River, wildlife may benefit from additional water.

Adequate drinking water needs to be available during critical periods – spring through fall. Drinking water can be made available through development of small dams, dugouts, wells with tanks or troughs, and guzzlers.

Excavated or embankment ponds may be developed by creating small earth excavations that catch runoff or intercept ground water. Small dugout excavations up to 600 cubic yards approximately 8 feet deep can provide wildlife water. Small dams can also be constructed. In either case, an adequate water supply from runoff or ground water is needed. These types of structures are friendly to wildlife species including birds and bats. Bats drink by skimming the water surface. The larger the water surface, the easier it is for bats to obtain water.

Existing livestock tanks work well for wildlife water if the rim is low enough for wildlife to reach into the tank. Tanks and troughs require ramps to allow access for target species and escape for non-target species where danger of drowning exists. (See *Figure 3.*) If bats are using the tank or trough, it is important to remove all obstacles on the surface in order for the bats to skim the water.

An escape ramp should extend into the water and meet the inside wall of the trough. (See *Figure 3.*) Animals swimming along the perimeter will find the structure rather than become trapped behind or beneath the structure. The ramp should reach to the bottom of the tank and be firmly secured to the trough. The ramp should be made of grippable material with a slope not steeper than 45 degrees.

Guzzlers are wildlife watering facilities composed of a storage tank filled by rainwater collected by an impervious apron. Storage tanks are usually fully or partially buried below ground. Water collection aprons are often used to supply adequate water quantities. The work consists of excavating, shaping and placing earth materials for placement of aprons, tanks and other required components. (See *Figure 4.*)

Food for Wildlife

All wildlife need food. Sometimes humans feel the desire to help wildlife out, or to prevent animals from starving by providing an artificial food source. If done correctly, providing a food source for wildlife can be beneficial, but in most cases, feeding wildlife is detrimental.

Most supplemental feeding is focused on individuals or groups of animals, not an entire population. Humans perceive they are helping wildlife populations by supplying a food source, when in fact; they may only be affecting a small number of individuals. Supplemental feeding of wildlife is not a natural part of an animal's life cycle. When wildlife are fed artificially, they can become dependent upon this artificial food source. Populations of wildlife can then become overpopulated and cause damage to property, spread diseases within the population and can become semi-domesticated around people.

Humans feed wildlife for various reasons. Some feel that they are helping out the animals, while others feed wildlife to attract animals to their property. Some people plant wildlife food plots, such as corn, to provide a source of food through winter. Other people place food stations, such as feed bunks, grain screenings, corn and grain piles or other food, to attract animals to their property. Baiting, or placing food such as corn or grain in locations to attract wildlife for the purpose of hunting, has become an increasingly popular method for hunting deer in North Dakota. This form of supplemental feeding can have many negative aspects, which can affect

LIVESTOCK WATER TANK WITH ESCAPE RAMP

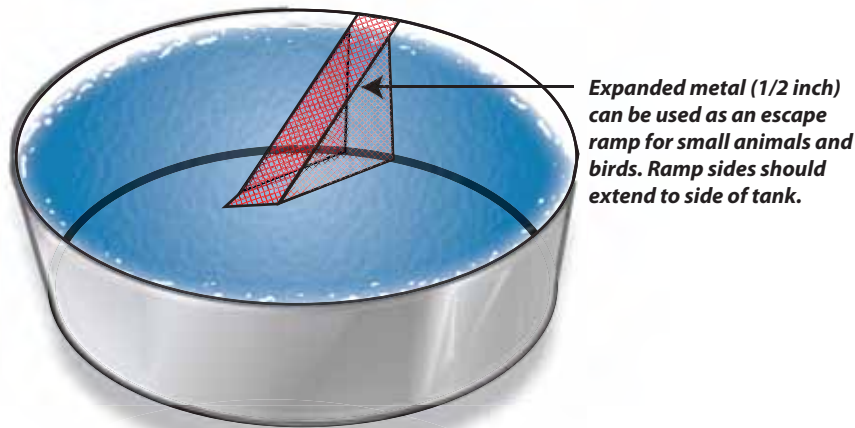


Figure 3

(Note: No obstructions or obstacles should be present on the surface to allow birds and bats to skim water.)

WILDLIFE GUZZLER

Rainwater collection apron

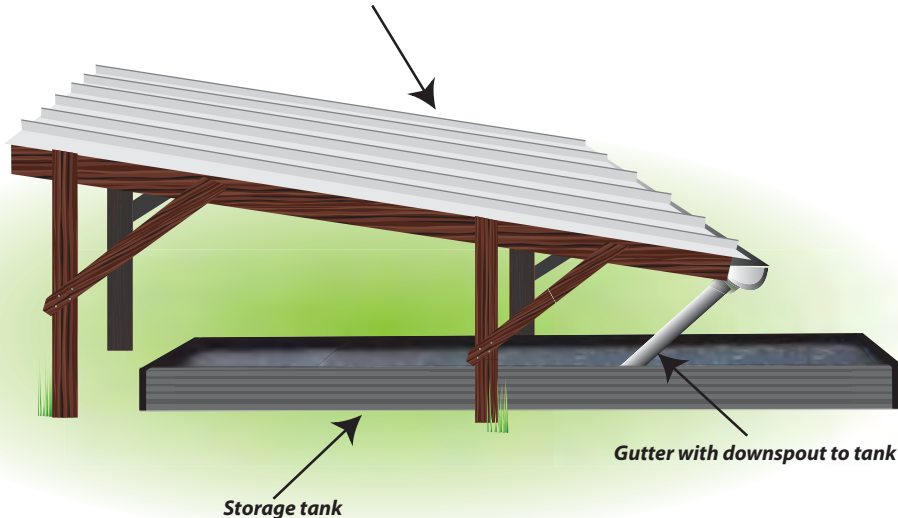


Figure 4

hunters, ranchers, farmers, the general public and the overall health of wildlife.

An alternative method of attracting wildlife includes a combination of quality habitat and a wildlife food plot rather than bait or feed stations. Wildlife food plots provide a long-term food source while still keeping wildlife more naturally distributed to prevent diseases and other concerns. There are various types of food to plant for wildlife; the most common include annual food crops such as sunflower and corn. There are also other seed mixes available for perennial food

plots. See the following recommendations for more information on annual and perennial food plots.

Annual Food Plots

Annual food plots can enhance wildlife survival and improve the wildlife habitat complex by providing readily available food. Food plots are especially important on land planned to provide a winter or early spring food source. In many areas with good quality winter habitat, the food source is unavailable or too far away. Food plots may reduce the impacts

of weather and predators when placed in close proximity to winter protection. Food plots can also provide good nutrition for females preparing for their offspring.

- The recommended food plot size is 1/2 - 5 acres. One pheasant needs approximately 1 bushel of corn for a 5-month period, while one deer needs approximately 8 bushels. Design the food plot size according to the estimated population of wintering wildlife.
- Consider multiple food plots where adequate winter cover exists.
- Food should be located adjacent to or within one-quarter mile of winter cover. Plots should be located on the leeward side of protected areas. If not located on the leeward side of protected areas, snow drifting into food plots can be lessened by establishing snow traps.
- No-till planting is recommended to minimize erosion.
- Planting of the plot should be early enough in the year to ensure maturity of food plants.
- Adequately prepare the seedbed to ensure food plant establishment.
- Food plots will be undisturbed until seedbed preparation the following spring, except for cultivating or spraying to control weeds.
- Avoid planting food plots in a location that will increase wildlife activity near livestock feed supplies, newly-planted trees or major roads and highways.
- Food plots established away from winter cover will increase wildlife mortality by exposing wildlife to weather elements and predators.

Suggested Seed Mix for Annual Food Plots		
Crop	Rate	Date*
Corn	12,000 -18,000 plants/acre	May 20
Sunflower (oil type)	12,000 -18,000 plants/acre row crop 4-6 lbs./acre solid-seeded	June 5
Millet (Proso)	15-30 lbs. /acre	June 25
Sorghum (Grain)	15-30 lbs./acre solid-seeded	May 25
Barley	60-90 lbs./acre	May 31
Buckwheat	50-60 lbs./acre	May 20
Flax	35 lbs./acre	June 10
Oats	50-80 lbs./acre	May 31
Rye	60-90 lbs./acre	Sept. 30
Wheat	60-90 lbs./acre	May 31
Sudangrass	15-30 lbs./acre solid-seeded	May 20
Lentil	40-70 lbs.	May 20
Winter Peas	100-180 lbs./acre	May 20

**Planting dates will vary with location, the crop variety and weather conditions.*

Perennial Food Plots

Perennial food plots provide added dividends for birds, especially those species whose chicks are dependent on insects for food. Pheasant and sharp-tailed grouse chicks for example, rely heavily on insects. Perennial food plots composed of flowering forbs attract insects and provide food for chicks. These forbs also attract pollinating insects such as bees, which are beneficial in plant reproduction.

Perennial food plots can vary in size, and be located throughout the nesting habitat to provide adequate bugging sites for chicks.

Choose sites that are relatively free of noxious and invasive weed species (plants and seed bank) and that have soils suitable for planting a perennial food plot. Perennial food plots should be adjacent to or surrounded by suitable herbaceous nesting habitat.

- Vigilance and timely control of weeds prior to and during the establishment period is required.
- Sites with weed problems should be maintained weed-free for at least two years prior to planting.
- A diverse mixture of native grasses and forbs is recommended. Do not exceed 25 percent grasses by seed count in the mixture. A suggested perennial food plot seed mix is listed on this page.



Kevin Kading

Forbs, such as blanketflower, attract insects, which provide food for young chicks and are beneficial in plant reproduction.

Suggested Seed Mix for Perennial Food Plots			
Species	Variety	%	Rate PLS LB/AC
Grasses			
sideoats grama	Pierre or Killdeer	5	0.375
blue grama	Bad River	5	0.125
switchgrass	Dacotah	5	0.225
Canada wildrye	Mandan	5	0.375
green needlegrass	Lodorm	5	0.375
Subtotal		25	
Forbs (lb./acre rate shown is doubled from percent seed count shown)			
blanketflower	northern	5	0.7
black-eyed susan	northern	5	0.08
blue flax	Appar	10	0.76
yellow coneflower	Stillwater	5	0.15
purple prairieclover	Bismarck or northern	15	1.14
white prairieclover	Antelope or northern	15	1.17
Canada milkvetch	northern	10	0.8
Maximilian sunflower	Medicine Creek	5	0.1
stiff sunflower	Bismarck	5	1.28
Subtotal		75	
Total		100	



Craig Bibrle

RING-NECKED PHEASANT

General Information

The head and neck of male pheasant are bright, metallic blue-green, casting an iridescence of purple and bronze. There is a red area of bare skin on either side of the head and a white ring around the neck, which may vary in width and completeness. Remaining body parts are brightly colored with brownish-orange, rufous, buff, blue and black. The leg is unfeathered and spurred. Roosters are typically 30-36 inches in length, including the tail, which may be more than 20 inches long, and they may weigh up to 3 pounds.

Adult females are 21-25 inches long and weigh about 2 pounds. Females also have long, pointed tails and unfeathered legs.

Ring-necked pheasants are native to southern Asia and were first introduced to North Dakota in 1910. Intermittent stockings took place through the 1920s, but birds also dispersed into the state from a rapidly expanding population in South Dakota.

General Habitat Requirements

With the coming of spring, winter groups break up as males become intolerant of each other. Roosters establish territories in March and crow to advertise these areas to females and to warn other males away. Territories may be as little as a few acres or as large as 75 acres or more, depending on the condition of habitat and population density. A crowing male gathers a harem of three to five females (or possibly more on occasion). After breeding in mid-April, the female nests alone in a shallow scrape lined with plant material and feathers. Nests are located in grassy areas, CRP, hayfields, fencerows, or right-of-ways. Hens lay a clutch of 11-12 eggs at the rate of two eggs every three days. After 23-25 days of incubation, the young hatch on the same day. Within a few hours, the chicks dry off and the hen leads her brood away from the nesting area to begin foraging.

Prime pheasant habitat is farmland or rangeland that has occasional weed fields, berry thickets, or brushy areas, grassy areas, wetlands, and overgrown ditches. Clean farming reduces most of these features and destroys the diversity and abundance of food and cover necessary for pheasant survival.

Cereal grains and row crops are important food sources. Although berries and weed seeds may be utilized, the high calorie content of small grains is needed to maintain a high metabolic rate through the winter months. Young pheasants feed heavily on insects for the first few weeks and then gradually shift to a more vegetarian existence.

Some of the best pheasant habitat in North Dakota can be found in the southern part of the state and on lands bordering river systems, Lake Sakakawea, and woody draws where adequate food, summer and winter habitat are maintained.

Winter habitat is just as important to pheasants in North Dakota as is good nesting and brood-rearing areas. Pheasants cannot tolerate North Dakota winters without excellent cover and food. Herbaceous wetlands (cattails, bullrushes, etc.), edges and brushy areas are all important features that allow pheasants to withstand the wind, snow and freezing temperatures.

Management Considerations

- Manage croplands to produce more pheasants by leaving unharvested crops near adequate cover.
- Provide winter cover (e.g., herbaceous wetlands and brushy habitats).
- Manage wetlands to maximize winter habitat (e.g., no fall burning or fall tillage).
- Preserve and maintain grassland/forb communities in large (over 40 acres) contiguous tracts by prescribed rotational burning and rotational mowing when and where appropriate.
- Prepare crop fields in early spring (March through late April) before peak nesting season, and plow fields to be left idle for a growing season in late July after nesting activities have ceased.
- When cutting hay or mowing, leave the highest possible height (12-24 inches).
- Use a stripper header, and delay cutting until after primary nesting season (April 15 through August 1).
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. (*See Figures 1 and 2 on Pages 4 and 5.*)
- Restore hydrology and vegetation to degraded herbaceous wetlands.
- Preserve contiguous tracts of grassland. Control tall woody vegetation, including single trees that act as raptor perches and nest sites.
- Include seeded winter cereal crops in crop rotations to provide early spring growth for nesting habitat.

RUFFED GROUSE

General Information

Ruffed grouse have slightly rounded tails, which are heavily barred and have a conspicuous black or brown band toward the tip. The tail band often is continuous in males and interrupted in females.

Plumage is wood brown, gray, or reddish-brown with white, black or buffy barring.

Rusty or black ruffs occur on the sides of the neck and are more pronounced in males. Adults are 16-19 inches long and weigh from 1 to nearly 2 pounds. Ruffed grouse have two color phases, red and gray. This color difference can be seen in the body plumage, but is most pronounced on the tail.

During April and May, a male drums to proclaim his territory to other males and to relay his position to females. Drumming is performed daily from a favored log. Drumming logs are selected in areas of dense overhead canopy cover with good lateral visibility just above the ground. This type of area allows the male to see visiting females and it offers some protection from aerial predators. Males drum twice daily, at sunrise and in late afternoon. Upon arriving on the log, the male begins drumming, at first slowly beating his wings, increasing the tempo, and finally ending in a rapid whirl. The drumming sound is produced on the backward stroke of each wing beat and is the result of compressed air.

Females visit different males before selecting a mate. A clutch of 10-12 eggs is laid at the base of a tree, log, or brush pile near a middle-aged clump of aspen. Incubation begins with the laying of the last egg and continues for 23-24 days. After the young hatch, all within one day, the female leads the brood away from the nest in search of food and shelter.

General Habitat Requirements

Typical ruffed grouse habitat in North Dakota can be found in the aspen forests in the Turtle Mountains in Bottineau and Rolette Counties and the Pembina Hills in Cavalier and Pembina Counties. In northern latitudes, ruffed grouse seem to be tied to large expanses (over 640 acres) of aspen woodlands for both

food and cover. Several age classes of aspen are needed for good grouse populations. Young aspen trees up to 10 years of age are used by broods; in these young forests, ground cover and associated insects are found in abundance. Middle-aged aspen stands (10-25 years) are used for food and winter cover. Older trees

(60 years or older) are needed for resting, drumming and feeding. In these older areas, brushy undergrowth is available for protection and the aspen produce good quantities of buds and catkins used as food. Chicks require a diet high in insects and other invertebrates for the first 7 to 10 days, after which they gradually shift to an adult diet of buds, catkins, fruits and berries. Adults continue to feed on buds and fruit in winter.



NDGF Photo

Management Considerations

- Aspen stands should be managed to provide a diversity of age classes within the normal home range of ruffed grouse.
- Avoid grazing in clear cut/managed stands until new trees are established (10 years and older).
- If grazing woodlands, a grazing plan should be implemented to protect a diversity of aspen age classes.
- Rejuvenate decadent stands by bulldozing or logging old trees (60 years and older).
- Reduce cropping/tillage along woodland edges to allow suckering of aspen.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.

Sharp-tailed Grouse

SHARP-TAILED GROUSE

General Information

Sharp-tailed grouse have occupied North American prairies for thousands of years and are well adapted to life on the plains. Both sexes are similar; adults are 16-19 inches long and weigh up to about 2 pounds. In spring, males collect on leks (dancing grounds) where they display at dawn and dusk. The exhibition is a ritualized display that establishes territorial boundaries and advertises the location of the lek to females. The lek serves as the focal point for the local population, and most year-round activities occur within a 1 to 2-mile radius of the lek. One or more dominant males occupy central territories and do most of the breeding. After mating, females nest usually within 1 mile or so of the lek. Nests are located in residual vegetation in uncultivated areas. Clutch size varies from 10-14 eggs. Populations fluctuate annually depending upon weather and available food and cover.

General Habitat Requirements

The sharp-tailed grouse is a plains grassland species with population strongholds in uncultivated areas interspersed with small patches of brush and trees. Sharp-tailed grouse feed on berries, seeds and small grains when available. Young grouse feed mainly on insects, but gradually shift to a vegetative diet. Winter is a time of increased energy demand. Brushy habitat that provides both food and cover are critical at this time. Sharp-tailed grouse burrow in the snow, which enables them to withstand periods of intense winter weather. Sharp-tailed grouse populations are most prevalent where agricultural practices are less intense, grassland is present, and brushy areas occur in draws and river drainages.

Management Considerations

- Delay cutting grasslands (nesting habitat) until after the primary nesting season (April 15 through August 1).
- Plant mixtures of grasses and forbs in reclaimed croplands, land retirement (CRP), and grassland restoration areas.
- Implement prescribed grazing plans that provide residual vegetation the following spring.
- Use prescribed burning where necessary to

control woody vegetation and rejuvenate decadent grass stands.

- Use prescribed grazing plans to eliminate over-utilization of woody draws, mesic swales and riparian areas.
- Control noxious weeds to prevent domination of grasslands and rangelands.
- Conscientious use of pesticides (e.g., least toxic to sharp-tailed grouse, use methods to minimize exposure by grouse, minimize negative impacts to desirable habitat, target pests instead of broad scale application, Integrated Pest Management).
- Reduce or eliminate fall tillage that leaves land fallow over winter.
- Preserve and maintain grassland/forb communities in large (over 40 acres) contiguous tracts by prescribed rotational burning and rotational mowing when and where appropriate.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.
- Avoid constructing new fences through or near leks. If fences are located near leks, install visibility markers (vinyl strips, flags, PVC pipe, tape, or high visibility wire) to existing fences.
- Preserve undisturbed grasslands, native rangelands, and other low-growing grassy and shrubby habitats, especially those within 1 mile of a lek.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. *(See Figures 1 and 2 on Pages 4 and 5.)*



Craig Bibrle

Greater Sage Grouse



Craig Bibrle

GREATER SAGE GROUSE

General Information

Sage grouse are the largest member of the grouse family found in North America. Greater sage grouse are located in the extreme southwest corner of North Dakota. Adult females weigh more than 3 pounds while males are much larger at an average of more than 5 pounds. Males begin gathering on breeding grounds (strutting grounds or leks) in early spring, usually after the ground is free of snow. Most reproductive activity (breeding, nesting and brood rearing) is within a 3-mile radius of the lek. Some populations are migratory and seasonal ranges are much larger than nonmigratory populations. Clutch sizes are relatively low when compared to other species of game birds, but sage grouse typically have higher annual survival. As their name suggests, sage grouse are closely allied with big sagebrush habitats, and rely on big sagebrush year-round for both food and cover. The big sagebrush food requirement is much more pronounced in fall, winter and early spring.

General Habitat Requirements

Sage grouse leks are typically in open areas surrounded by sagebrush, and are located in close proximity to nesting habitat. The lek serves as an approximate center of annual range for nonmigratory populations. Habitats used by breeding hens should provide a diversity of forbs, grasses and sagebrush. Most nests occur under sagebrush, although other plant species are used. Height of sagebrush used for nesting commonly ranges from 12-32 inches and generally has a larger canopy with more ground and lateral cover than surrounding cover. Grass height and cover are also important components of nesting habitat, with best success where grass cover is over 8 inches and occurs in sagebrush stands 16-32 inches tall. Early brood rearing habitats may be relatively open stands of sagebrush with a good cover of grasses and forbs. Broods are attracted to insect-rich areas typically associated with diverse forb communities. Mesic sites are important during late summer as

sagebrush habitats desiccate. Fall habitat is a mixture of summer and winter habitats, with the latter being big sagebrush stands with approximately 20 percent canopy coverage.

Management Considerations

- Include big sagebrush in planting mixtures when reclaiming croplands, seeding lands in retirement (CRP), and grassland restoration areas.
- Control fires to prevent loss of sagebrush as sagebrush will take 30-plus years to re-establish.
- Control noxious/invasive species to prevent encroachment and domination of sagebrush and rangelands.
- Avoid constructing new fences through or near leks. If fences are located near leks, install visibility markers (vinyl strips, flags, PVC pipe, tape, or high visibility wire) to existing fences.
- Use prescribed grazing plans to eliminate over-utilization of woody draws, mesic swales and riparian areas.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.

Greater Prairie Chicken

GREATER PRAIRIE CHICKEN

General Information

Greater prairie chickens have occupied tallgrass prairies of North America for thousands of years, but reports are unclear as to the exact distribution prior to settlement. Greater prairie chicken populations are found in Grand Forks County and in the Sheyenne National Grasslands in eastern North Dakota. It is known that prairie chickens made a huge expansion of their range as settlers moved onto the prairies and the great herds of buffalo disappeared. Both sexes are similar; adults are 16-19 inches long and weigh up to about 2 pounds. In spring, males collect on booming grounds (leks) where they display twice daily at dawn and dusk. This exhibition is a ritualized display that establishes territorial boundaries and advertises the location of the lek to females. The lek serves as the focal point for the local population and most year-round activities occur within a 2-mile radius of the lek. One or more dominant males occupy central territories and do most of the breeding. Leks are typically a flat area with sparse vegetation. After mating, females nest within a mile of the lek. Nests are lined scrapes located in residual vegetation in uncultivated areas. Clutches vary from 10-14 eggs. Populations fluctuate annually depending on weather and available food and cover.

General Habitat Requirements

The greater prairie chicken is a mid to tallgrass prairie species with population strongholds in extensive areas of grassland interspersed with cultivated areas and rangeland. Prairie chickens feed on berries, seeds and native forbs, but also utilize small grains and row crops (corn, sunflowers, soybeans) when available. Young grouse feed mainly on insects, but gradually shift to a vegetative diet. In northern climates, high energy foods are important to carry them through winter.

Management Considerations

- Delay cutting grasslands (nesting habitat) until after the primary nesting season (April 15 through August 1).
- Plant mixtures of grasses and forbs in reclaimed croplands, land retirement (CRP), and grassland restoration areas.
- Use prescribed burning where necessary to control woody vegetation and rejuvenate decadent grass stands.
- Control noxious weeds to prevent their domination of grasslands and rangelands.
- Conscientious use of pesticides (e.g., least toxic to grouse, use methods to minimize exposure by grouse, minimize negative impacts to desirable habitat, target pests instead of broad scale application, Integrated Pest Management).
- Avoid fall tillage methods to retain plant residue on the surface.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Prescribed grazing is the key to improvement and maintenance of prairie chicken habitat.
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. *(See Figures 1 and 2 on Pages 4 and 5.)*
- Preserve and maintain grassland/forb communities in large (over 40 acres) contiguous tracts by prescribed rotational burning and rotational mowing when and where appropriate.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.



NDGF Photo



Craig Bihrlé

GRAY PARTRIDGE

General Information

Most North Dakotans know this bird as the Hungarian partridge or Hun, but the accepted common name is gray partridge. Gray partridge are plump birds with short, rounded wings and short tails. Adults are 12-13 inches long and weigh 3/4 lb. to 1 lb. The breeding season begins in late February when birds pair. Nesting begins in late May with nests in shallow scrapes lined with dead herbaceous vegetation. Most nests are placed in hayfields, native grasslands, roadsides and other idle areas. Clutches contain 15-17 eggs and incubation is shared, but the majority is done by the female. If nests are destroyed, partridge are persistent re-nesters and

may make up to three attempts to re-nest. Chick mortality is high and may be intensified by cold, damp weather at time of hatching. Partridge are sedentary and rarely move more than 1 mile except during the mating season. Family groups remain together during fall and winter, and covey mixing does occur. Coveys break up in late winter with the onset of the reproductive season. Partridge tolerate North Dakota winters fairly well when adequate habitat and food are available. Addition of fat and dense plumage, along with thick foot pads, allows the birds to survive freezing temperatures. They also may tunnel through snow in search of food where they are protected from the wind.

General Habitat Requirements

Partridge tolerate moderately intense agricultural practices and are associated with areas of small grains and fertile soils in combination with adequate nesting, brooding and cover. As an edge generalist species, partridge are dependent on a combination of hay and grain fields, fencerows, rights-of-way, and farmsteads. Their diet consists of small grains, weed seeds and

green vegetation. As with most game birds, young require protein-rich foods during their first summer to meet the demands of rapidly growing bodies and feathers. Insects are important to their survival from hatching to four to five weeks of age. Winter is a time of food scarcity and grain and sunflower stubble, roadsides, and farmsteads all play an important role in survival as grains, weed seeds, sprouts, and grit lay exposed and are readily accessible.

Management Considerations

- Delay cutting grasslands (nesting habitat) until after the primary nesting season (April 15 through August 1).
- Plant mixtures of short to mid grasses and forbs in reclaimed croplands, land retirement acres (CRP), and grassland restoration areas.
- Use prescribed grazing plans to eliminate over-utilization of woody draws, mesic swales and riparian areas.
- Use prescribed burning where necessary to control woody vegetation and rejuvenate decadent grass stands.
- Control noxious weeds to prevent their domination of grasslands and rangelands.
- Conscientious use of pesticides (e.g., least toxic to birds, minimize negative impacts to desirable habitat, target pests instead of broad scale application, Integrated Pest Management).
- Avoid fall tillage methods to retain plant residue on the surface.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. (*See Figures 1 and 2 on Pages 4 and 5.*)

Wild Turkey



Craig Bibrle

WILD TURKEY

General Information

Wild turkeys are not native to North Dakota. Their historical range extended only as far north as southern South Dakota and Minnesota. The first introduction of turkeys into North Dakota took place in the early 1950s along the Missouri, Knife and Heart rivers. North Dakota is currently home to two subspecies of the wild turkey; the Eastern subspecies and the Merriam's subspecies.

Turkeys are easily identified by their large size, unfeathered head and large tail. Both sexes have bronze-colored plumage with variation between the subspecies. Male turkeys, referred to as toms or gobblers, are about 48 inches long and weigh 16-24 pounds. Males have a modified feather (beard), protruding from the breast, which is short and inconspicuous in year-old males and up to several inches (10-plus inches) long in older birds. Males also have caruncles (knobbed fleshy areas on the head and neck), spurred legs and black-tipped breast feathers. Females lack spurs (except in rare instances), beards (present in only 5-15 percent of the population), and black-tipped breast feathers. Hens are about 34 inches in length, weigh from 8-10 pounds and have buff-tipped breast feathers. The wild turkey is

a polygamous species; each male will attempt to attract and mate with many females during the spring mating season. Toms attract females in the spring by gobbling and strutting. When hens are in close proximity, the male will continue his courtship display by strutting. The male positions himself near the female with wings drooped to the ground, neck and head arched inward against the body, back feathers erect, and tail arched upward and spread. He then takes several steps, often in a sideways direction, to stay in clear view of the hen. During this strutting behavior, the male emits a short "spitting" sound followed by a deep drumming sound; the "spit and drum."

Female turkeys nest along habitat edges (intersections of grassy and shrubby cover types) or in tall grasses. Once the first egg is laid, the hen will return daily to sit on the nest and lay another egg. This process continues until the entire clutch has been laid (typically 10-13 eggs). Hens will then begin incubation; a period lasting 28 days. During this time, hens are highly susceptible to predators, as they remain on the nest day and night and only leave for short periods of time to water, feed, and defecate. Poults (young turkeys) leave the nest to forage with the female shortly after hatching. The hen and poults will roost on the ground until the

poults are old enough to fly (usually 3 weeks), at which point they will begin roosting in trees. Like other upland game bird species, young turkeys begin life by feeding almost entirely on insects, gradually shifting to an adult diet of berries, acorns, pine seeds and a variety of other plants.

General Habitat Requirements

Typical turkey habitat in North Dakota consists of riparian corridors and woody draws with adequate roost trees, forage, and nesting and brood-rearing habitat. In North Dakota, turkeys can be found along the Missouri River and the other major river systems in the state, the badlands in Billings and McKenzie counties, the pine forest in Slope County and the woodlands in Dunn, Pembina, and Bottineau counties. Turkeys need several types of habitat to survive: 1) trees for roosting; 2) grasses and shrubs for nesting and escape cover; 3) forb-rich areas for brood-rearing (forbs attract insects for poults); and 4) a reliable winter food source. This winter food source is often provided by waste agricultural grain or food plots. If these components are interspersed across a reasonably-sized area, wild turkeys can persist as a local population. Specifically, turkeys inhabit forested areas where food is found and trees are available for roosting. These forests should have grassy areas interspersed among the woodlands. River valleys, woody draws and upland forests near water are preferred by wild turkeys. In North Dakota, turkeys will utilize farmsteads and cattle feedlots in areas where winter

food is not readily available. To prevent turkeys from visiting these areas, food plots or other sources of winter forage should be implemented.

Management Considerations

- Maintain and provide roost trees.
- Maintain a diverse age class structure of forests.
- Manage croplands to provide a reliable winter food source for turkeys by leaving unharvested crops near escape cover.
- Use prescribed grazing plans to eliminate over-utilization of woody draws, mesic swales and riparian areas.
- Do not start an artificial feeding program, such as feeders, bait stations, corn piles, etc. Five to ten turkeys at a feeder can quickly turn into 50 to 100 turkeys and a much larger management problem. (*See Water and Food for Wildlife on Page 12.*)
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. (*See Figures 1 and 2 on Pages 4 and 5.*)

Grassland Nesting Birds

GRASSLAND NESTING BIRDS

General Information

Grassland nesting birds include songbirds (e.g., Baird's sparrow), upland nesting shorebirds (e.g., long-billed curlew), raptors (e.g., northern harrier), and even some waterbirds (e.g., American bittern). Numerous nongame species, or those not typically hunted, utilize grasslands during some part of their life cycle. These birds are often disregarded as sparrows or some other insignificant bird. Nongame species are an integral component of nature. Loss of a seemingly insignificant species can cause other animals to decline or vanish. Even so, animals that live in North Dakota are part of the state's legacy, and concern for the conservation of these birds is growing. Twelve grassland birds are considered endemic (or those that evolved specifically within grassland) to the Great Plains, and eight can be found in North Dakota. Species such as chestnut-collared longspur, marbled godwit, and Sprague's pipit evolved with large grazing animals (i.e., bison) and adapted to the open prairie. The principal factor negatively affecting grassland bird populations is the loss of native prairie. Nongame species from grasshopper sparrows to burrowing owls have benefited from conservation efforts for waterfowl and other game species. Most conservation practices benefiting game species also benefit nongame. There are, however, a few practices which may be detrimental to grassland birds, such as planting trees in, or near, native prairie.



Chestnut-collared Longspur.

General Habitat Requirements

Grassland nesting birds use a variety of grasslands, from tall to short, thin to dense and heavily grazed to idle. For example, some species use only grassland less than about 18 inches tall and others use only grassland more than 48 inches tall. Wilson's phalarope, a grassland nesting shorebird in which the male incubates the eggs, can be found nesting just feet away from blue-winged teal in shorter, less dense grass. Bobolinks, a striking black sparrow-like bird with a white back, will use tall, dense grassland that ring-necked pheasants prefer. Essentially, grassland nesting birds need open grasslands with few trees. They forage on forbs, grass seeds and a variety of insects found in grassland near

crop fields. A complex of wetlands in the grassland can also be beneficial.

Management Considerations

- Maintain large, contiguous areas of grassland, particularly native prairie.
- Provide a variety of grassland heights (i.e., tall grass over 48 inches to short grass of about 18 inches).
- Maintain grasslands free of or with little woody vegetation.
- Burn, mow, or graze on a rotational schedule (i.e., manipulate sections of a grassland, not the entire area at once).
- When cutting hay or mowing, leave the highest possible height (12-24 inches).
 - Preserve and maintain grassland/forb communities in large (over 40 acres) contiguous tracts by prescribed rotational burning and rotational mowing when and where appropriate.
 - Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.
- Use a stripper header, and delay cutting until after primary nesting season (April 15 through August 1).
- Plant a diverse mixture of native grasses and forbs on cropland.
- Restore hydrology and vegetation to degraded wetlands.
- Utilize no-till and minimum-till practices on cropland.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. (See Figures 1 and 2 on Pages 4 and 5.)



Western Meadowlark.

Craig Bibrle

species information



NORTH DAKOTA BREEDING WATERFOWL (Dabbling Ducks, Diving Ducks, and Canada Geese)

General Information

There are 11 species of waterfowl that commonly nest in North Dakota, with blue-winged teal being the most abundant. Of these most common species, seven are dabbling ducks (e.g., mallards and northern pintails), three are diving ducks (e.g., lesser scaup and canvasbacks); also included are Canada geese from the Great Plains population. North Dakota also falls into the “fringe” of six other waterfowl species’ breeding ranges, most of which are diving ducks (e.g., ring-necked ducks). North Dakota is part of the Prairie Pothole Region, North America’s most important waterfowl breeding area for ducks, supporting approximately 50 percent of the continent’s breeding duck population. Waterfowl conservation has been supported primarily by hunters from the

migratory bird hunting stamp or duck stamp. Funds from this stamp have conserved waterfowl habitat across North America since 1934, and have provided habitat for many other wetland and grassland bird species. The Conservation Reserve Program has provided substantial breeding habitat for grassland and wetland bird species in the form of large tracts of upland nesting cover and wetland restorations.

General Habitat Requirements

Breeding dabbling ducks require invertebrate rich, dynamic wetland communities for pairing, nutrient acquisition for nesting and egg formation, and brood rearing. Shallow, temporary wetlands typically dry up by late spring and are used for pairing and nutrient acquisition. Seasonal and semi-permanent (1.5-5 feet) wetlands are used for brood rearing and also nutrient acquisition by re-nesting ducks. These seasonal/semi-permanent wetlands are also used by diving ducks and Canada geese for nesting and brood rearing. Dabbling ducks also require large contiguous stands of dense upland cover comprised

Breeding Waterfowl



Craig Bibler

of grasses and forbs for nesting. Ducks will nest in small patches of grass and bushes, but these nests are prone to destruction by predators. Mallards, gadwall, and northern pintails have been known to nest 1 mile or more from brood rearing wetlands. Diving ducks generally build over-water nesting platforms from wetland vegetation, but may also nest in the uplands (lesser scaup), or lay eggs (redheads) in active nests of other ducks.

Management Considerations

- Do not drain or fill to eliminate wetlands, or alter hydrology to artificially deepen wetlands.
- Preserve undisturbed grasslands, native rangelands, and other low-growing grassy and shrubby habitats, especially those within 1 mile of wetlands.
- Preserve and maintain grassland/forb communities in large (over 40 acres) contiguous

tracts as possible, by prescribed rotational burning and rotational mowing when and where appropriate, prepare crop fields in early spring (March through late April) before peak nesting season, and plow fields to be left idle for a growing season in late July after nesting activities have ceased.

- When cutting hay or mowing, leave the highest possible height (12-24 inches).
- Use a stripper header, and delay cutting until after primary nesting season (April 15 through August 1).
- Use flushing bars, avoid night mowing, and cut hay fields from the center outward or toward undisturbed habitat. *(See Figures 1 and 2 on Pages 4 and 5.)*
- Restore hydrology and vegetation to degraded wetlands.
- Leave grassed buffer strips around wetlands and along waterways in cropped areas to prevent soil erosion, chemical runoff, nitrification, and sedimentation in wetlands.
- A 50-foot strip of tall dense grass around wetlands has been shown to deter family groups of Canada geese from walking into surrounding crop fields to feed on developing plants.
- Stocking fish in shallow wetlands is detrimental to waterfowl production.
- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- Maintain grasslands free of or with little woody vegetation.
- Include direct seeded winter cereal crops in the crop rotations to provide early spring growth for nesting habitat.



Craig Bibrle

PRONGHORN

General Information

Pronghorn are resilient wild ruminants native to North America. Pronghorn are the only surviving member of their family and are neither antelopes nor goats. One of the most unique characteristics of pronghorn is their horns. They have pseudohorns, the core covered by a black sheath made of cells similar to skin. Pronghorn are the only ungulate in the world that annually shed the horn sheath. Historically, pronghorn were very abundant in North America and occupied all of North Dakota before becoming nearly extirpated by the late 1800s. Unregulated hunting, conversion of native prairie to annual crop production, and construction of fences by European settlers resulted in only a few hundred pronghorn remaining in the state by 1920. Pronghorn numbers rebounded by the early 1960s after the regulation of hunting and translocation of animals from Montana in the 1950s. Today, pronghorn are primarily distributed across western North Dakota, although small numbers do exist east of the Missouri River. Pronghorn have exceptional speed and eyesight.

General Habitat Requirements

Pronghorn use open and arid landscapes. They are associated with sagebrush and grassland communities in western North Dakota. Pronghorn have proven to be adaptable to the available landscape in the state, by making use of available CRP grass plantings. Pronghorn are opportunistic foragers that consume forbs, shrubs, and grasses depending on

the availability and nutritional status. They also take advantage of nontraditional food sources found in North Dakota such as cereal grains, corn, sunflowers and alfalfa. Pronghorn have adapted to arid environments by being water conservers. They fulfill water needs through a variety of sources, such as streams, lakes, stock tanks, dug-outs, rain, snow, dew, as well as water in forage. Cover for pronghorn is provided by either topography or vegetation. Pronghorn utilize leeward sides of hills and buttes to find refuge from high winds and deep snow. Pronghorn will bed beneath trees and tall shrubs during periods of extreme heat. Females use shrub and grasslands with vegetative structure that provides concealment for newborn kids and forage for the doe.

Management Considerations

- Incorporate prescribed grazing plans that encourage a diverse landscape of grasses, shrubs and forbs.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.
- Consider not grazing or using light cattle stocking rates during mid-April to mid-June for pastures known to be used for pronghorn fawning.
- Replace barb wire with smooth wire, if possible, and consider changing heights of bottom wire to 16-18 inches.

Pronghorn

- Control tall woody vegetation, including single trees that act as raptor perches and raptor nest sites.
- If four-strand wire fences are being constructed, the bottom wire should be smooth and placed 16-18 inches above the ground to allow pronghorn to move under the bottom wire. (See Figure 5.) Six to 12-foot sections of PVC pipe can also be placed on various sections of fence to allow pronghorn to move under the bottom wire. (See Figure 6.)
- If three-strand wire fences are being constructed, the bottom wire should be smooth and placed 16-18 inches above the ground to allow pronghorn to move under the bottom wire, with a maximum fence height of 42 inches. (See Figure 7.)

FOUR-STRAND WIRE FENCE WITH SMOOTH WIRE ON BOTTOM

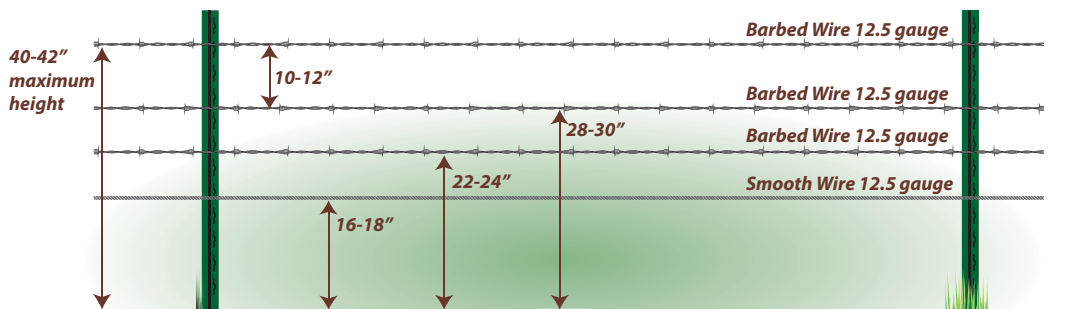


Figure 5

UNDERPASS FENCE WITH PVC PIPE

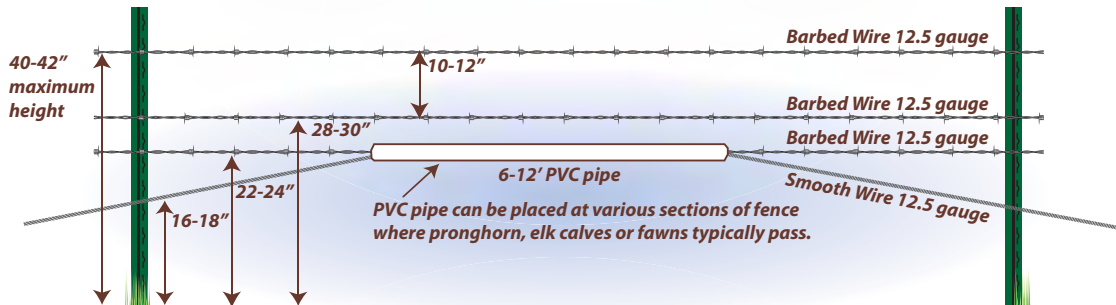


Figure 6

THREE-STRAND WIRE FENCE WITH SMOOTH WIRE ON BOTTOM

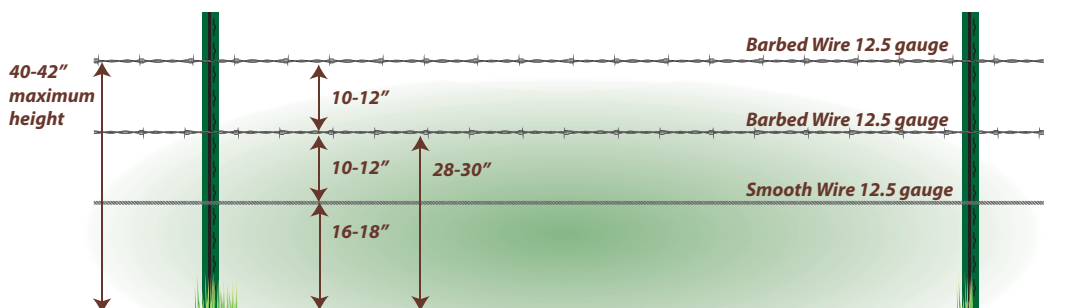


Figure 7

species information



Craig Bibrle

WHITE-TAILED DEER

General Information

White-tailed deer are the most abundant big game species in North America. They are most common in forested areas associated with farmland. Historically in North Dakota they were restricted primarily to the major riparian areas and wooded buttes. Introduction of the trade rifle and subsistence hunting dramatically reduced deer numbers throughout the region by 1860. The rush of European settlement in the 1870s and 1880s and subsequent subsistence and market hunting nearly extirpated all big game from the state by 1890. With the influx of annual crop production, tree rows, and regulated hunting, white-tailed deer numbers have dramatically increased throughout North Dakota.

White-tailed deer populations rebounded and flourished across the west during the 1950s and early 1960s after improvements in habitat management, regulation of hunting, stricter law enforcement, and predator control.

General Habitat Requirements

White-tailed deer are highly adaptable in their use of food and cover. They are opportunistic concentrate feeders. Depending upon the season, they will eat the palatable portions of a wide variety of sedges, grasses, forbs and browse. They will also feed on all species of domesticated crops grown for human and livestock consumption. Planted or naturally forested cover provides both browse and secure bedding sites. Open areas provide a variety of forage plants within reach of all deer age classes. Water is rarely a limiting factor for deer.

Management Considerations

- During the fawning season in June, use flushing bars, avoid night mowing, and mow hay fields from the center outward. *(See Figures 1 and 2 on Pages 4 and 5.)*
- Fencing cattle out of forested areas and abandoned farmsteads provides secure fawning and bedding areas for white-tailed deer.

- Multi-row or block tree plantings provide winter cover by blocking the wind and reducing snow depth.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.
- Dense cattail stands and CRP fields can provide cover for deer during winter, provided they are large enough not to fill in with drifting snow.
- Food plots planted close to bedding cover, but away from stored livestock feed and major roads or highways, may alleviate some depredation problems. (*See Water and Food for Wildlife on Page 14.*)
- Do not leave hay bales in the field. Stack hay in accessible areas where they can be fenced and monitored. Put alfalfa and the most palatable hay in the center or on top of the hay stacks. Fence off and gate silage pits.
- Do not start an artificial feeding program, such as feeders, bait stations, corn piles, etc. Five to 10 deer at a feeder can quickly turn into 50 to 100 deer and a much larger management problem. (*See Water and Food for Wildlife on Page 12.*)
- The only way to realistically control deer numbers is through regulated hunting and an adequate harvest of does from the population.



Craig Bibrle

MULE DEER

General Information

Mule deer, named for their mule-like ears, occur in western North America. Historically, mule deer numbers in the 1800s were similar to today. Mule deer were relatively scarce during the early 1900s following settlement, a time of unrestricted subsistence and market hunting, excessive livestock grazing, and unfavorable weather patterns. Mule deer populations rebounded and flourished across the west during the 1950s and early 1960s after improvements in habitat management, regulation of hunting, stricter law enforcement, and predator control. After a population peak, mule deer populations have experienced a declining trend due to changes in habitat conditions. Factors leading to habitat conditions less suitable to mule deer include fire suppression, invasive plants, urban and ex-urbanization expansion, and improper grassland management. Prior to European settlement, mule deer occupied all of North Dakota with highest numbers found in the western badlands. North Dakota is among those states currently experiencing a trend of increasing mule deer populations. As it was prior to settlement, the western badlands still have the highest densities of mule deer in the state. North Dakota is on the eastern fringe of their overall distribution and is a minor contributor to mule deer in North America.

General Habitat Requirements

Mule deer diets vary by the availability of forage in a particular region. Mule deer are considered opportunistic concentrate selectors that forage across the

landscape in search of high quality foods, typically shrubs and trees, followed by forbs, then grasses. Mule deer also take advantage of high quality agricultural crops and feeds grown in North Dakota. The primary range of mule deer in North Dakota occurs in the Badlands, which consists of a rugged landscape of clay buttes, covered by Rocky Mountain Juniper and green ash stands interspersed with a mixture of sagebrush, deciduous shrubs and grasses. Agricultural crops are grown along river bottoms and flats adjacent to the badlands and are utilized by mule deer. Secondary

ranges occur east of the badlands to the Missouri River, and consist of a landscape dominated by agricultural activities, interspersed with wooded draws, CRP, and native grasslands encompassing rugged buttes. Water is not a limiting factor for mule deer in North Dakota.

Management Considerations

- Incorporate grazing plans that prevent overgrazing and encourage a diverse landscape of grasses, shrubs, and forbs.
- Preserve native prairie. It is not recommended to convert native prairie for wildlife food plots, introduced grass species, trees, etc.
- Use prescribed grazing plans to eliminate overutilization of woody draws, mesic swales and riparian areas.
- If three-strand wire fences are being constructed, the bottom wire should be smooth and placed 16-18 inches above the ground to allow fawns to move under the bottom wire, with a maximum fence height of 42 inches. (*See Figure 7 on Page 29.*)
- Do not start an artificial feeding program, such as feeders, bait stations, corn piles, etc. Five to 10 deer at a feeder can quickly turn into 50 to 100 deer and a much larger management problem. (*See Water and Food for Wildlife on Page 12.*)



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wildlife management guide



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