



### 8 Predator Exclosure Fence

The refuge was established primarily for waterfowl production and management of other wildlife. Studies have shown that duck nest success in the open prairie is low. This fence is a cooperative effort by the U.S. Fish and Wildlife Service and Ducks Unlimited Inc. to create a 40-acre predator free nesting environment for waterfowl and other upland nesting birds. This predator free area is expected to greatly increase nest success and nest density as successful hens and their progeny return in following years. Mud Lake in the distance provides excellent brood rearing habitat.

**CAUTION!! FENCE IS ELECTRIFIED FROM APRIL THROUGH JULY — DO NOT TOUCH!!! 5000 VOLTS**



### 9 Farming for Wildlife

Nearly 800 acres of refuge land is farmed by refuge neighbors on a share crop basis. Refuge shares are left in the field and used to feed wildlife. A primary objective of Arrowwood National Wildlife Refuge is to provide optimum conditions for migrant waterfowl. Due to food availability and refuge protection, fall waterfowl populations often build to 25,000 geese and 30,000 ducks. Row crops are planted to provide a major winter food source for resident wildlife.



### 10 Coulees

French fur traders in the 1800's called these long, narrow valleys with low drainage areas, coulees. Coulees create their own climate, often cooler than the surrounding prairie in summer, and secluded from howling winter winds. This makes coulees especially attractive to wildlife. They also provide an excellent growing climate for berry producing shrubs and small trees — common wildlife food. Juneberries usually ripen in early July and chokecherries in late July thru early August. Visitors may pick these berries for their personal use when the berries are in season.



### 11 Retired Cropland

Nearly 4,000 acres of cropland have been retired to dense nesting cover. This cover is a planted mixture of alfalfa, sweet clover, and tall and intermediate wheatgrasses. It provides excellent nesting habitat for ducks and upland birds. Nest predation is lower in good dense stands because it requires more intense hunting by predators to find nests. This cover is also highly productive for other wildlife such as songbirds and deer.



### 12 Sharp-tailed Grouse/ Northern Greater Prairie Chicken

The native grassland on both sides of the trail is highly invaded with woody vegetation. This is typical of areas which have been excluded from periodic fire. The brush/grass habitat is excellent for sharp-tailed grouse. Both sharp-tails and prairie chickens are birds of the prairie. Sharptails have done well in the absence of fire and have actually increased in numbers.

Prairie chickens failed to adapt to the changes in the prairie. Fire exclusion and intensive use of the prairie for agricultural purposes probably led to its demise in this area. No prairie chickens were seen on the refuge after the late 1960's. Today, prescribed burns are used as a management tool by the refuge and have created conditions where prairie chickens might again exist. A reintroduction program is underway to return the prairie chicken to Arrowwood.

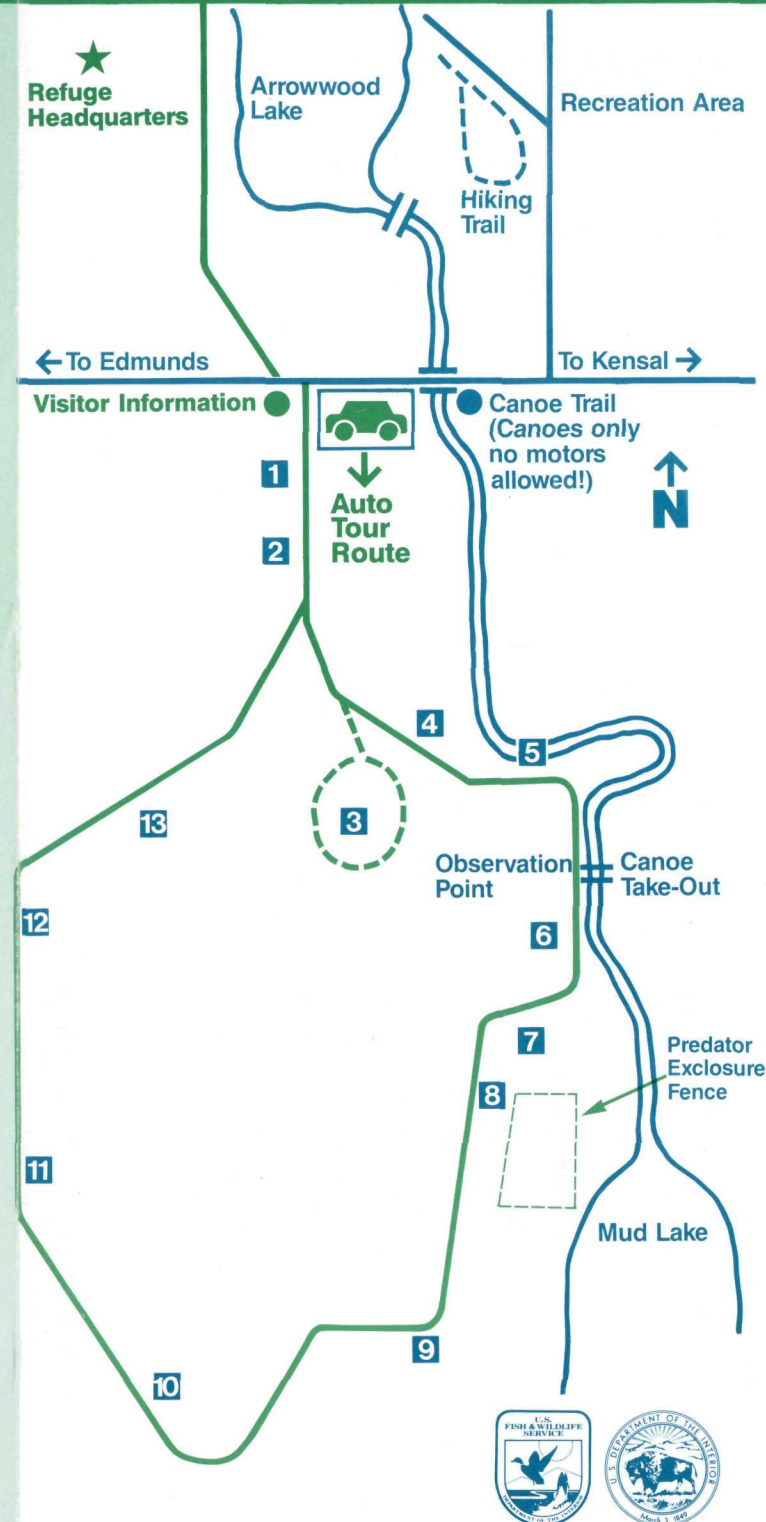


### 13 Prairie Songbirds

Grassland songbirds such as the bobolink and meadow lark are common in refuge prairies. Prairie sparrows such as the grasshopper, savannah, and the Baird's are often found by refuge birders. The refuge is also in the range where the eastern and western kingbirds overlap. Both species are common. The wide variety of habitats found on the refuge offer a unique opportunity for birders to observe a variety of prairie bird species.

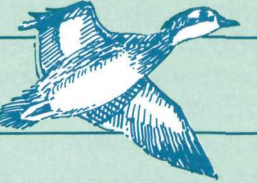
This is the last stop on the Auto Tour Route. Further down the road there is two-way traffic, so please drive carefully. We hope you enjoyed your visit and will welcome you back in the future.

## Route Map



## Auto Tour Guide

# Arrowwood National Wildlife Refuge



# Welcome to Arrowwood National Wildlife Refuge.

The refuge was established in 1935 for the preservation and propagation of migratory waterfowl and for management of other wildlife. Arrowwood is comprised of nearly 16,000 acres of wetlands, grasslands, croplands, and woodlands. The refuge follows the course of the James River for approximately 14 miles.

The auto tour is 5.5 miles long and has 13 numbered stops. To fully experience the refuge's wildlife we suggest you go slowly to see and hear things not described in the pamphlet and interpretive signs. You might see courtship displays of the western grebe, or a mink in search of its prey. You may even hear the howl of a distant coyote. These are some of the experiences which make the tour more enjoyable.

Refuge headquarters are open Monday through Friday, from 7:30 a.m. to 4:00 p.m. The recreation area on the east side of Arrowwood Lake is a scenic area for picnicking and enjoying the refuge's woodland wildlife. A short walking trail is also provided. Pamphlets are available at the beginning of the auto tour and at refuge headquarters.

The graphic signs along the route correspond to the points of interest described in the pamphlet. The tour begins on the south end of Arrowwood Lake across the Edmunds-Kensal Road. The first stop is approximately 100 yards south of the entrance.



## Seasonal Wetlands

Seasonal wetlands provide a variety of habitats depending upon the time of year. Wildlife found here change as the wetlands change.

**Spring** — Snow melts and spring rains fill the wetlands. Paired waterfowl such as mallards, blue-winged teal, and shovelers are often seen loafing on the wetlands edge. Deer drink from the waters during twilight periods and raccoon search the shores for food during the night.

**Summer** — As water recedes, invertebrates produced in the marsh vegetation concentrate. Duck broods can be seen feeding on this high protein food source. Male waterfowl colors change from the attractive bright hues to drab dull tones as feathers are replaced during the bird's annual molt. Numerous shorebirds search for food along the exposed mud shores.

**Fall** — The wetlands are dry now. White-tailed deer tracks are abundant in the moist soils of the wetland basin. Fawns sometimes appear in the hip high grasses, forbs, and shrubs which have replaced the water in the wetland. Mice scurry about in the tall grass while hawks soar overhead looking for an easy meal. Pheasants and songbirds in abundance feed on the seeds produced by moist soil plants.

**Winter** — The only evidence of life may be the track of a white-tailed deer or ring-necked pheasant. Although not readily observed, pheasants and deer can be found escaping the harshness of winter's cold by sheltering in the patches of thick willow and brush. Only hardy birds like the black-capped chickadee or the dark-eyed junco might be observed eating the seeds produced earlier in the prairie wetland.



## Nesting Structures

Nesting structures have been placed in the wetland to provide secure nesting sites for waterfowl. The structures range in size from small baskets to large culverts. All are designed to protect nesting hens from predators such as fox, skunk, and raccoon.

Waterfowl which nest on these structures experience a high nest success rate, while birds which nest in open grasslands have success rates that are significantly lower.



## Black-Tailed Prairie Dog

Before settlement of this area, the black-tailed prairie dog was an important part of the prairie ecosystem. This town was established on the refuge in the 1960's and the size of the town has remained fairly constant. This is due to the tall grass surrounding the town and nature of dogs to not wander far into the tall grass. Family groups of dogs are called "coteries." Dogs are highly territorial and will chase intruder dogs from a family territory. Dogs recognize other members within the family by what may appear to be a dog "kiss." Feel free to exercise your legs by walking about the town.



## Controlled Burning

The long history of the prairie ecosystem indicates that prairies evolved with natural fires. In fact, prairie grasses were maintained by periodic lightning fires. Today, controlled burning is used to increase the productivity of native grasses and control brush invasion on the grasslands. As you drive along the burn area in late summer, look for the abundance of native grasses such as big bluestem and prairie sandreed.



## Nesting Cavities

Because natural cavities are scarce, artificial nesting cavities have been placed in refuge woodlands for cavity nesting birds. Wood ducks, hooded mergansers, and some owls are known to nest in tree cavities. There are approximately 250 artificial cavities in refuge woodlands from which over 500 ducks and several owls are hatched annually. As you proceed along the trail you will see more of these cavities. In the spring you may see wood duck or merganser hens entering and leaving them. These birds might also be seen loafing along the river channel or moving broods to feeding areas.



## Riebe Homestead

In 1882, William C. Riebe, working on the construction of the Jamestown to Carrington railroad, was so impressed by this fine piece of land that he decided to settle here. Under the Homestead Act of 1862, Riebe was granted 160 acres providing that he "improved" the land within 5 years. Riebe met the terms of the grant by constructing a number of buildings and fences and raising wheat, barley, oats, and cattle. The land was eventually passed on to his son, Grover, who lived on the homestead until 1950.



## Natural vs. Artificial

One problem facing refuge managers is the question of trying to manage wildlife through natural or artificial means. Natural prairie habitats provide for the requirements of all prairie wildlife, while artificial developments may increase the abundance of certain wildlife species.

An example of an artificial development is the tree planting to the right. These trees provide food and cover for many wildlife species during the harsh North Dakota winters. An acre of prairie was altered to achieve this and several prairie wildlife species may have been displaced from this site as a result of the change. Wildlife management is an art that requires a manager to balance the needs of all wildlife with the primary objectives of the refuge. Guided by these objectives, the manager must occasionally favor some species over others.

The field on the left was previously a cropland unit. It has been seeded to native grasses to obtain as close to a natural prairie as possible and is managed by prescribed burning. A balance of natural and artificial management of refuge grasslands produces an abundance of desired wildlife, yet preserves a home for all prairie wildlife.