



# 4 Management Direction



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Development of refuge goals and objectives involved the melding of multiple sources of information: (1) the review and interpretation of national plans and existing scientific literature; (2) an evaluation of habitat conditions; and (3) the personal knowledge of planning team participants.

Objectives were derived using species' habitat requirements (appendix H). Many species deemed important in national plans were used as "indicators," to prepare objectives that satisfy the needs of multiple species.

Other consulted sources of information included Partners in Flight lists, Audubon Watch lists, Bird Conservation Region lists, and the refuge's wildlife observation logs.

Constraints considered during plan formulation include number of employees, financial resources, equipment availability, harsh winter conditions, arid

climate, lessons learned from previous management efforts, and the likelihood of success.

This chapter presents management direction for the following habitats and resources, public use, and other management aspects:

- riparian habitats
- wetland habitats
- meadow habitats
- upland habitats
- hunting
- fishing
- wildlife observation and photography
- environmental education and interpretation
- cultural resources
- research
- partnerships



Virginia Heitman

*Moose*

## Riparian Habitats

The riparian habitat goal will be met through the objectives and strategies that follow.

### Goal

Provide a riparian community representative of historical flora and fauna in a high valley of the southern Rocky Mountains to provide habitat for migratory birds, mammals, and river-dependent species.

Detailed habitat rationale is described in appendix H.

### Objective

Restore 50–100 acres of dense (40–100 percent) willow in patches greater than 0.5 acre and 20 meters wide in the central third of the Illinois River (from the north end of the island to the confluence with Spring Creek), to connect existing willow patches by 2014. Maintain 535 acres of dense willow in patches in the upper third of the Illinois River to benefit nesting Neotropical migratory songbirds (yellow warbler and willow flycatcher) and resident moose, river otter, and beaver.

### Strategies

- Plant willow along the stream corridor, combined with 8-foot fences, to exclude large herbivores.
- Manipulate water refuge-wide, which may involve decreased diversions, to maintain in-stream flows for willow establishment.
- Construct small, artificial dams in the river to raise water tables locally and aid in willow establishment.
- Establish a vegetation-monitoring plan to assess health of established willow stands, and measure and document success or changes needed in reestablishment efforts. Plan should include herbivory and hydrology factors.
- Monitor wildlife to document changes in wildlife use and possible correlations to changes in habitat.
- Experiment with alternative willow restoration strategies.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

### Rationale

Sections of the Illinois River on the refuge had willows removed prior to acquisition by the Service, probably in an effort to increase hay yields. These open stretches of river have the following:

- less bank stability, resulting in potential for increased sedimentation
- decreased shade over the stream, resulting in increased water temperatures for trout
- sparse woody vegetation for use by songbirds or other wildlife

A section of river further downstream from the proposed reestablishment site has had livestock grazing removed for 8 years, but has shown little willow regeneration.

Given the growth characteristics of willows, these results lead to the conclusions that there is either significant herbivory other than livestock restraining willow expansion, and/or hydrology has been altered enough with upstream diversions and recent drought conditions that lack of groundwater is keeping willow establishment from occurring.

With this in mind, willow plantings will only be done in association with fencing, and consideration of hydrological needs will be used as well.

Possible methods of increasing groundwater needs will include the following:

- diversion of less water upstream for other refuge purposes
- location of willow plantings adjacent to existing beaver dams to take advantage of higher water tables near these ponds
- placement of logs and other natural materials in the stream to create simulated beaver dams and raise water tables adjacent to areas to be planted

Monitoring will be essential to document reestablishment efforts and to note any significant changes to existing willow communities.

### Objective

Provide 3,630–3,845 acres, over a 5-year average, of a grass:forb (75:25) plant community composed primarily of native plants (rushes, sedges, grasses, and forbs) characterized by 10–30 centimeters visual obstruction reading, 0–10 centimeters duff layer, minimal (less than 5-percent) bare ground, and less than 40-percent (canopy closure) willow by 2019, to benefit nesting waterfowl (northern pintail, northern shoveler, gadwall, and green-winged teal) and sage grouse broods.

### Strategies

- Use grazing, resting, and burning practices to stimulate or maintain meadow conditions.
- Irrigate areas, as water is available, to help stimulate vegetative growth.
- Develop a vegetation-monitoring protocol.

- Develop a wildlife-monitoring plan that correlates wildlife use and habitat condition.
- Consider elk hunting as a management tool.

### Rationale

This grass-forb mix requires periodic manipulation to achieve the stated ranges of the objective. The combination of resting, grazing, and burning, combined with irrigation, where available and practical, are the best tools to accomplish this.

It is anticipated that, on average, one-third to two-thirds of this area will require grazing at an average rate of 0.4–1.0 animal unit months (AUMs) per acre, resulting in the removal of approximately 1,950–4,200 AUMs of forage.

Vegetative monitoring, combined with wildlife use data, will be needed to document that objective levels are correct.

### Objective

Provide 210–425 acres, over a 5-year average, of a grass:forb (75:25) plant community composed primarily of native species (grasses, sedges, forbs, and rushes) characterized by greater than 30 centimeters visual obstruction reading, 10–20 centimeters duff layer, minimal (less than 5-percent) bare ground, and less than 40-percent (canopy closure) willow, from mid-April through August, by 2009, to benefit nesting waterfowl (mallard, gadwall, northern pintail, and scaup), songbirds (savannah sparrow and meadowlark).

### Strategies

- Use grazing, resting, and burning practices to stimulate or maintain meadow conditions.
- Irrigate areas, as water is available, to help stimulate vegetative growth.
- Develop a vegetation-monitoring protocol.
- Develop a wildlife-monitoring plan that correlates wildlife use and habitat condition.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

### Rationale

This grass-forb mix requires periodic manipulation to achieve the stated ranges of the objective. The combination of resting, grazing, and burning, combined with irrigation, where available and practical, are the best tools to accomplish this.

To meet and maintain the taller vegetation and duff layers identified, it is anticipated that rest will be used more for this objective. It is anticipated that, on average, one-third to one-half of this area will require grazing at an average rate of 0.4–1.0 AUMs

per acre, resulting in the removal of approximately 100–350 AUMs of forage.

Vegetative monitoring, combined with wildlife use data, will be needed to document that objective levels are correct.

### Objective

Provide a properly functioning river channel characterized by a well-defined thalweg, outside river edges deeper than inside edges, a river sinuosity of 2.0–2.5, pool spacing every 7–9 channel widths active point-bar formation, and gradients in riffles that are higher than in pools by 2019. A properly functioning river channel is needed to benefit willow establishment for Neotropical migrants and indirectly provide suitable habitat for native and non-native fishes.

### Strategies

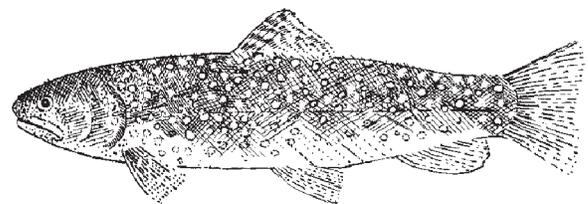
- Map river channel and identify problem areas. Prioritize stretches for rehabilitation.
- Alter irrigation diversions as needed to assist in-stream restoration.
- Install in-stream structures as necessary to adjust thalweg, create point bars, adjust depth ratios, increase sinuosity, and adjust pool spacing.
- Monitor wildlife and vegetative response to these strategies.

### Rationale

Mapping the river to identify current characteristics is needed to define where restoration is needed.

Increasing flows in the river by diverting less water on upstream refuge water rights may assist in maintaining higher water tables, especially when used in conjunction with in-stream restoration projects.

Documenting vegetative, fishery, and wildlife response is necessary to ensure that the projects are working.



Brook Trout  
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## Objective

Establish a private lands program to encourage restoration of degraded riparian zones through funding and technical assistance by 2009, to accomplish similar objectives as those defined for the refuge. High priority areas are those that have immediate influence on the refuge because of drainage or proximity.

### Strategies

- Add a full-time private lands position to the staff.
- Work with local partners and willing landowners to identify, prioritize, and restore degraded areas in North Park.

## Objective

Work with partners to address land health issues throughout Jackson County. Existing partnerships will be maintained and new ones fostered to address landscape issues in Jackson County by 2014.

### Strategies

- Continue active refuge participation in the sage grouse working group, North Park wetlands focus group, Owl Mountain partnership, North Park habitat partnership program, and any other group formed with the goals of improving land health and stewardship in Jackson County.
- Partner with the Jackson County weed coordinator to manage and minimize invasive plants on the refuge and throughout Jackson County.
- Effect variations in water diversion flows and/or grazing regimes to enhance habitat conditions.
- Use adaptive management techniques to implement new management ideas.

### Rationale

The refuge has the ability and resources available to restore and maintain a productive riparian area for the benefit of wildlife, fisheries, water quality, and a healthy landscape, while also using local agriculture. The streams within the refuge boundaries are a small fragment of those located within Jackson County, Colorado. By working with interested landowners and partners, the possibility exists of expanding the benefits of a healthy riparian zone throughout North Park.

From time-to-time, projects may be proposed within the county by other agencies, non-government organizations, or private landowners, which have a benefit to ecosystem health and wildlife outside the refuge boundary.

To make an off-refuge project succeed, resources normally reserved for refuge purposes such as water or vegetative cover could be used. These would not be long-term commitments of refuge resources, but rather a management decision that a short-term diversion of these resources would better be served to benefit the ecosystem as a whole.

## Wetland Habitats

The wetland goal will be met through the objectives and strategies that follow.

### Goal

Provide and manage natural and constructed permanent and semipermanent wetlands (in three wetland complexes) to provide habitat for migratory waterfowl, shorebirds, wading birds, and associated wetland-dependent wildlife.

### Objective

Maintain 10 acres of, and attempt to establish in one other wetland basin, tall (greater than 60 centimeters visual obstruction reading) emergent vegetation in water depths greater than 4 centimeters over a 5-year period, to provide nesting habitat for over-water nesting birds (black-crowned night-heron, white-faced ibis, coot, rail, waterfowl, marsh wrens, and blackbirds).

### Strategies

- Manipulate water levels, including drawdowns, and maintain water levels in specific wetlands from spring to fall when possible.
- Develop and apply a plan for transplanting cattail and hardstem bulrush into specific wetlands.
- Develop and use an over-water, nesting-bird monitoring plan.
- Develop and implement an annual water management plan as a component of an overall habitat management plan.

### Rationale

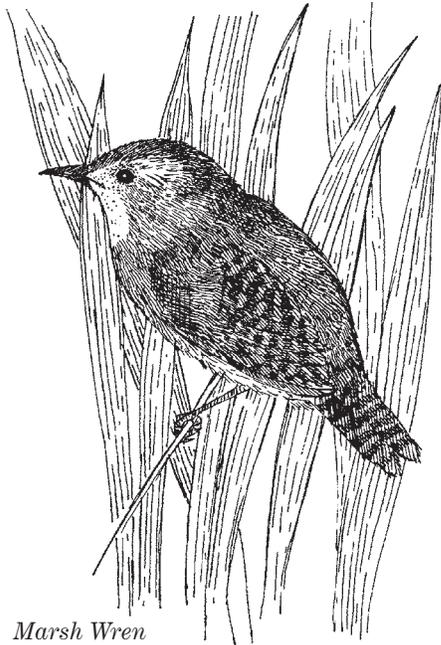
Wetlands with tall, dense vegetation provide a litter layer for use by nesting water birds, as well as flooded emergent litter for macroinvertebrate production.

Manipulation of water levels will contribute to maintaining the existing wetlands with tall emergent vegetation. Transplanting cattail and hardstem bulrush in wetlands with the highest potential for success will help increase the availability of this type of habitat. The criteria

for such wetlands would be based on such things as water control abilities, evaporation rates, and distribution.

Timing of needed drawdowns for expansion of the tall, dense vegetation will be planned in such a way as to get maximum benefit for all wetland objectives such as during shorebird migration or to stimulate submergent, aquatic vegetation beds.

Monitoring water bird species will help assess the level of success for habitat management.



*Marsh Wren*  
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## Objective

Provide 10 percent of the wetland acres, over a 5-year average, in short (less than 10 centimeters), sparse (less than 10 centimeters visual obstruction reading) emergent vegetation in water depths less than 4 centimeters, from April to August, to provide foraging habitat for shorebirds and waterfowl, as well as nesting and brood-rearing habitat for shorebirds.

## Strategies

- Manipulate water levels, including full and partial drawdowns, and maintain water levels in specific wetlands from spring to fall when possible.
- Use tillage of dry wetlands as a management tool.
- Rehabilitate and maintain dikes and infrastructures.
- Conduct shorebird surveys.
- Monitor monthly wetland bird use.

- Develop and apply a wetland emergent and submergent vegetation-monitoring plan.
- Develop and implement an annual water management plan as a component of an overall habitat management plan.

## Objective

Provide 20 percent of the wetland acres, over a 5-year average, of emergent vegetation greater than 25 centimeters tall with visual obstruction reading greater than 80 percent of vegetation height in water depths 4–18 centimeters, to provide escape cover and foraging habitat for dabbling duck broods and molting ducks, and foraging habitat for water birds.

## Strategies

- Manipulate water levels, including full and partial drawdowns, and maintain water levels in wetlands from spring to fall when water is available and conditions are appropriate.
- Use tillage of dry wetlands as a management tool.
- Rehabilitate and maintain dikes and infrastructures.
- Conduct waterfowl surveys.
- Monitor monthly wetland bird use.
- Develop and apply a wetland, emergent and submergent vegetation-monitoring plan.
- Develop and implement an annual water management plan as a component of an overall habitat management plan.

## Rationale

The availability of a variety of wetland habitat conditions may benefit a greater diversity of wildlife species and support species for longer periods in their annual life cycle.

The above two objectives contribute to habitats—varying from shallowly flooded, short, sparse emergents to both shallow water and moderately dense cover. Water manipulation techniques including drawdowns and back flooding can be used to create these conditions.

Monitoring to evaluate the response of the flora and fauna will indicate success of management techniques.

Short-term variations of habitat objectives may be considered, on a case-by-case basis, to promote other important ecosystem projects within North Park.

## Objective

Provide 10–20 percent of wetland acres within each wetland complex, over a 5-year average, with 70-percent coverage of submergent, aquatic vegetation species (pondweed and widgeongrass) in wetlands of greater than 18 centimeters water depth, to provide invertebrates and seed sources for foraging water birds, especially waterfowl broods, and escape cover for diving ducks.

## Strategies

- Manipulate water levels, including full and partial drawdowns, and maintain water levels in wetlands from spring to fall when water is available and conditions are appropriate.
- Use tillage of dry wetlands as a management tool.
- Rehabilitate and maintain dikes and infrastructures.
- Conduct waterfowl surveys and brood counts.
- Monitor monthly wetland bird use.
- Develop and apply a wetland, submergent vegetation-monitoring plan.
- Develop and implement an annual water management plan as a component of an overall habitat management plan.

## Rationale

Submergent vegetation provides complex structure for macroinvertebrate production and a seed source for foraging water birds.

Pondweed and widgeongrass both produce a food resource (plant foods and invertebrates) for waterfowl and broods. These submergents are used by other wetland birds for nesting, foraging, and escape habitat.

A variety of drawdown schedules and tillage are used to enhance the growth of these plants. Monitoring the responses of plant and wildlife will gauge the level of success in providing this habitat.

## Objective

Enhance the existing private lands program to encourage creation and restoration of wetlands in North Park and surrounding areas through funding and technical assistance by 2009, to accomplish the same objectives as on the refuge.

## Strategies

- Obtain funding and full-time equivalency for a Partners for Fish and Wildlife position.
- Work with willing stakeholders to create and restore wetlands in North Park.

- Develop a plan to identify wetland habitats throughout North Park.
- Consider wetland development opportunities as they become available.
- Continue participation in the North Park wetland focus group.
- Establish a monitoring plan for created habitats to ensure benefits are realized.

## Rationale

Since the refuge is only part of the total North Park landscape efforts, to look beyond the boundaries is important in an ecosystem approach. Many wetland potentials exist in North Park, and working to restore or create these wetlands will benefit not only wildlife, but society as well.

To achieve the most positive results, priority projects will be close to existing wetland complexes, reasonably well-functioning river segments, or larger reservoirs.

Wetland management would mimic above refuge objectives when possible. Work would be completed with the help of others to identify wetland habitats throughout North Park, in partnership with willing stakeholders to restore, protect, and improve wetland habitats for wildlife use.

Demonstration areas would be set up for the practice of sound, wetland habitat management and water levels in wetlands would be improved from spring to fall when possible.

## Meadow Habitats

The meadow goal will be met through the objectives and strategies that follow.

## Goal

Provide and manage irrigated, grassland-dominated meadows historically developed for hay production, to support sage grouse broods, waterfowl nesting, and meadow-dependent migratory birds.

Detailed habitat rationale is described in appendix H.

## Objective

Provide 20–50 acres, over a 5-year average, of a grass:forb (75:25) plant community composed primarily of native plants (rushes, sedges, grasses, and forbs) characterized by less than 20 centimeters height, less than 10 centimeters visual obstruction reading, with dry to moist soils (no standing water), adjacent to (within 50 meters) or intermingled with sagebrush (10- to 25-percent sage canopy cover), from early-June to late-July, to benefit sage grouse broods.

## Strategies

- Use grazing, resting, and burning practices to stimulate or maintain meadow conditions.
- Irrigate areas, as water is available, to help stimulate vegetative growth.
- Develop a vegetation-monitoring protocol.
- Develop a wildlife-monitoring plan that correlates wildlife use and habitat condition.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

## Objective

Provide 1,650–1,850 acres, over a 5-year average, of a grass:forb (75:25) plant community composed primarily of native species (grasses, sedges, forbs, and rushes) characterized by 10–30 centimeters visual obstruction reading, 0–10 centimeters duff layer, and minimal (less than 5-percent) bare ground from mid-April to the end of July, to benefit nesting waterfowl (gadwall, northern shoveler, northern pintail, and green-winged teal) and sage grouse broods.

## Strategies

- Use grazing, resting, and burning practices to stimulate or maintain meadow conditions.
- Irrigate areas, as water is available, to help stimulate vegetative growth.
- Develop a vegetation-monitoring protocol.
- Develop a wildlife-monitoring plan that correlates wildlife use and habitat condition.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

## Rationale

This grass-forb mix requires periodic manipulation to achieve the stated ranges of the objective. The combination of resting, grazing, and burning, combined with irrigation, where available and practical, are the best tools to accomplish this.

It is anticipated that, on average, one-third to two-thirds of this area will require grazing at an average rate of 0.4–1.0 AUMs per acre, resulting in the removal of approximately 950–2,100 AUMs of forage.

Vegetative monitoring, combined with wildlife use data, will be needed to document that objective levels are achieved, and whether or not objectives are correct.



*Thirteen-lined Ground Squirrel*  
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## Objective

Provide 630–790 acres, over a 5-year average, of a grass:forb (75:25) plant community composed primarily of native plants (grasses, sedges, forbs, and rushes) characterized by greater than 30 centimeters visual obstruction reading, 10–20 centimeters duff layer, and minimal (less than 5-percent) bare ground, to benefit nesting waterfowl (mallard, gadwall, northern pintail, and scaup) and songbirds (savannah sparrow and meadowlark).

## Strategies

- Use grazing, resting, and burning practices to stimulate or maintain meadow conditions.
- Irrigate areas, as water is available, to help stimulate vegetative growth.
- Working with partners, develop a vegetation-monitoring protocol.
- Working with partners, develop a wildlife-monitoring plan that correlates wildlife use and habitat condition.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

## Rationale

This grass-forb mix requires periodic manipulation to achieve the stated ranges of the objective. The combination of resting, grazing, and burning, combined with irrigation, where available and practical, are the best tools to accomplish this. To meet and maintain the taller vegetation and duff layers specified, it is anticipated that rest will be used more for this objective.

It is anticipated that, on average, one-third to one-half of this area will require grazing at an average rate of 0.4–1.0 AUMs per acre, resulting in the removal of approximately 350–700 AUMs of forage.

Vegetative monitoring, combined with wildlife use data, will be needed to document that objective levels are achieved and whether results support species requirements.

### Objective

Short-term variations of habitat objectives may be considered on a case-by-case basis for important ecosystem projects within North Park. Identification of these variations will be assessed every 5 years.

### Strategies

- Work with partners to identify potential projects in the county.
- Implement variations in water diversion, grazing regimes, and other refuge management strategies as deemed appropriate.

### Rationale

From time-to-time, projects may be proposed within the county by other agencies, non-government organizations, or private landowners, which have a benefit to ecosystem health and wildlife outside of the refuge boundary.

Resources normally reserved for refuge purposes such as water or vegetative cover could be used occasionally to help make a project successful. These would not be long-term commitments of resources, but rather a cooperative management decision that a short-term diversion of these resources would better be served to benefit the ecosystem as a whole.

### Objective

Establish a private lands program to provide funding and technical assistance to encourage wildlife-compatible land management practices in meadow habitats by 2009, to accomplish objectives similar to those of the refuge.

### Strategies

- Add a full-time private lands position to the staff.
- Work with local partners and willing landowners to identify, prioritize, and restore degraded areas and create new wildlife habitat in North Park.

### Objective

Work with partners to address land health issues throughout Jackson County. Existing partnerships will be maintained and new ones fostered to address landscape issues in the county by 2014.

### Strategies

- Continue active refuge participation in the sage grouse working group, North Park wetlands focus group, Owl Mountain partnership, North Park habitat partnership program, and any other group formed with the goals of improving land health and stewardship in Jackson County.
- Partner with the Jackson County weed coordinator to manage and minimize invasive plants on the refuge.

### Rationale

The refuge has the ability and resources available to maintain productive meadows for the benefit of wildlife, water quality, and a healthy landscape, while also using local agriculture.

There are thousands of acres of private hay meadows in the country managed very much like the refuge's meadows, with the exception that the refuge does not cut hay.

This results in a significant amount of meadow habitat being created annually on private land that may, or may not, meet its wildlife-production potential depending on site-specific management.

By working with interested landowners and partners, the possibility exists of expanding the wildlife benefit of meadows on the refuge and maintaining the benefits that are occurring off-refuge.



Columbine  
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## Upland Habitats

The uplands goal will be met through the objectives and strategies that follow.

### Goal

Provide a sagebrush/grassland upland community representative of the historical flora and fauna in a high valley of the southern Rocky Mountains to provide habitat for sage grouse, large mammals, and other shrub-associated species.

Detailed habitat rationale is described in appendix H.

### Objective

Provide 2,000 acres, over a 5-year average, of uplands composed of shrubs (greater than 70-percent sage) greater than 25 centimeters height and 20- to 30-percent canopy cover; greater than 20-percent grass cover; and greater than 10-percent forbs (native species preferred), to benefit sage grouse, vesper sparrow, Brewer's sparrow, elk, and pronghorn.

### Strategies

- Complete a sagebrush/grassland upland habitat inventory.
- Use cattle grazing at varying stock rates, seasons, and intensities as a management tool.
- Use rest of varying lengths of time as a management tool.
- Develop and implement an integrated pest management plan.
- Use a variety of mechanical treatments of the habitat as a management tool.
- Develop and implement a vegetation-monitoring plan.
- Develop and implement a wildlife-monitoring program.

### Objective

Provide 2,000 acres, over a 5-year average, of uplands composed of shrubs (greater than 70-percent sage) greater than 40 centimeters height and greater than 30-percent canopy cover, less than 20-percent grass cover, and greater than 5-percent forbs (native species preferred), to benefit Brewer's sparrow, sage thrasher, and pronghorn.

### Strategies

- Complete a sagebrush/grassland upland habitat inventory.
- Use cattle grazing at varying stock rates, seasons, and intensities as a management tool.

- Use rest of varying lengths of time as a management tool.
- Develop and implement an integrated pest management plan.
- Use a variety of mechanical treatments of the habitat as a management tool.
- Develop and implement a vegetation-monitoring plan.
- Develop and implement a wildlife-monitoring program.
- In partnership with the Jackson County weed coordinator, develop an integrated pest management plan for the refuge.

### Rationale

The refuge has five primary range sites that support sagebrush/grassland uplands. The 2,000 acres of each of the above objectives are scattered within several of these range types and intermingled with meadow areas. A completed inventory of uplands will assist in specifically defining these areas.

Sagebrush/grassland uplands in a mosaic of patchy sagebrush, with openings of grasses and forbs across the landscape, reflect the needs of most wildlife species. Moderate livestock grazing ranging from 0.05 to 0.15 AUM per acre in intensity, combined with rest, will help maintain these acres. This rest-rotational coverage will promote plant diversity, nutrient cycling, and cover.

Controlling or eliminating invasive plants that reduce the abundance and diversity of native forbs in the sagebrush/grassland habitats is important. Mechanical treatments will be considered for small areas to increase grass and forb components of the site.

Monitoring the response of the flora and fauna will aid in assessing the success of the tools applied and help improve these methods.

### Objective

Manage the remaining 10,225 acres of sagebrush/grassland uplands based on a better understanding of refuge habitats, wildlife usage, and affected variables using best management practices by 2014.

### Strategies

- Complete an upland habitat inventory, if financial resources are available.
- Conduct research and monitor outcomes of upland habitats over the next 15 years.
- Develop habitat-based goals and objectives for the remaining uplands (10,000 acres).

- Use cattle grazing at varying stock rates, seasons, and intensities as a management tool.
- Use rest of varying lengths of time as a management tool.
- Develop and implement an integrated pest management plan.
- Use a variety of mechanical treatments of the habitat as a management tool.
- Develop and implement a program for prescribed fire.
- Coordinate with existing projects, research, and monitoring efforts in the area.
- Short-term variations of habitat objectives may be considered on a case-by-case basis for important ecosystem projects within North Park.

### **Rationale**

In an effort to manage the sagebrush/grassland uplands, an inventory of what the refuge has is essential. A variety of tools is available to provide a structurally diverse shrub community, with a grass-forb component, to support migratory birds and other wildlife species.

Livestock grazing used in moderation at rates ranging from 0.05 to 0.15 AUM per acre will be used. It is anticipated that approximately one-third to one-half of the uplands will be grazed annually, resulting in 450–1,200 AUMs of forage being removed.

Rest also needs to be used in moderation; too much rest can result in dominate brush communities that prevent herbaceous species from recovering. Grazing, used in conjunction with rest, can enhance the nutrient cycles, plant regrowth, and plant community diversity.

Efforts to control or eradicate invasive plants will help maintain the diversity of plant life required to provide wildlife habitat needs. Mechanical treatments break up the soil and remove a variable percent of the brush species, depending on the coverage, to promote grasses and forbs growth.

Historically, frequencies of fire in the upland were low and occurred as small, patchy fires. Prescribed fire may be beneficial in some upland sites to control dense stands of sagebrush so that herbaceous species can increase.

The use of other upland habitat projects in the area with range types similar to the refuge will help to identify successful methods for manipulating habitat to reach objectives.

A portion of these sagebrush/grassland upland acres will be used to establish research plots to get a better understanding of how to increase sage

height and grass/forb abundance to benefit nesting and wintering sage grouse, songbirds (vesper sparrow, sage thrasher, Brewer's sparrow, and Swainson's hawk) and pronghorn. This information will focus on the tools that might get more upland acreage into the first two objectives.

In working with the entire North Park landscape, some habitat objectives may change to accommodate actions deemed essential elsewhere in the upland habitats of North Park to improve the overall quality of wildlife habitat.

### **Objective**

Manage known populations of North Park phacelia to ensure its continued existence.

### **Strategies**

- Initiate research to understand the plant's life history and develop a management plan.
- Develop a monitoring plan for the existing and new phacelia populations.
- Work with other entities to preserve North Park phacelia populations throughout North Park.

### **Rationale**

The North Park phacelia is the only known federally listed endangered plant species on the refuge. The plant is only found in North Park, with several scattered populations. Only two known populations of the plant exist on refuge lands. Little is known about its life history, so management is limited.

Research on the life history of the plant is essential. As part of a partnership approach, information and management techniques will be shared to help ensure the continued existence of the phacelia and eventually the down-listing of the species.

## **Cultural Resources**

The cultural resources goal will be met through the objectives and strategies that follow.

### **Goal**

The cultural resources of the refuge are preserved, protected, and interpreted for the benefit of present and future generations.

### **Objective**

Identify cultural resources and protect them from degradation by 2014.

## Strategies

- Complete a cultural resources survey, as needed, for management purposes.
- Determine National Register of Historic Places status for the Hampton, Allard, and Case Barns.
- Protect cultural resources by minimizing disturbance in sensitive areas.
- When possible, preserve historical records by conducting oral interviews with local residents.
- Apply for monies such as grants and maintenance management funds to restore and preserve the Case Barn.
- Support provisions within the Archaeological Resources Protection Act by developing a plan for managing refuge archaeological resources.

## Objective

Encourage protection of cultural resources and interpretation of their importance to North Park wildlife resources by 2014.

## Strategies

- Determine the historical status of Hampton Barn; make a decision to keep or eliminate the barn.
- Interpret the history of North Park at the Bocker Overlook.
- Develop an interpretive area within the headquarters building that demonstrates the connectivity of the refuge with the remainder of North Park.
- When requested and dependent on available funding, collaborate with other individuals and agencies to protect and preserve cultural resources that relate to wildlife throughout North Park.

## Rationale

A broader cultural resource role needs to be described for the refuge. The philosophy is to comply with existing cultural resource-related laws and policies and to protect cultural resources from degradation.

Protection and interpretation of cultural resources that relate to North Park wildlife is encouraged. Interpreting the role of ranches in the preservation of habitat can serve as an example for visitors to learn and gain a greater appreciation for wildlife and their habitats.

## Public Use

The 1997 National Wildlife Refuge System Improvement Act (P.L. 105-57) requires that each refuge be managed to fulfill the refuge system mission as well as the specific purpose(s) for which the refuge was established.

The Act also declares that compatible wildlife-dependent recreational uses are legitimate and appropriate priority general public uses of the refuge system.

These six uses (hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation) are to receive enhanced consideration in planning and management over all other general public uses of the refuge system.

These activities receive a special focus because they help foster an appreciation and understanding of wildlife and the outdoors.

Wildlife conservation is always the top obligation of national wildlife refuges.

However, when compatible, these wildlife-dependent recreational uses are to be strongly encouraged on refuges.



*Eared Grebe with Young*

© William H. Miller

Consequently, these six activities are first in line for the refuge's available staff and financial resources.

Although other public uses may be allowed on refuges, the process for considering proposed uses other than priority uses is more stringent and these uses must be reevaluated more frequently.

A compatibility determination is required for a wildlife-dependent recreational use or any other public use of a refuge. A compatible use is one that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from fulfillment of the refuge system mission or refuge purposes. Compatibility determinations for public uses are found in appendix B.

Arapaho public use opportunities are combined into five categories and include the following:

- hunting
- fishing
- wildlife observation and photography
- environmental education and interpretation
- other uses

Each public use evaluation contains a specific list of objectives, a list of strategies, and a supporting rationale statement.



*Wild Rose*

## Goal

Through wildlife-dependent recreation and education, people of a range of abilities and interests are able to learn of and appreciate the natural resources of this unique high-mountain park. Thereby, citizens become better stewards of nature in their own communities and stronger supporters of the refuge specifically and National Wildlife Refuge System generally.

## Hunting

The following objectives and strategies will lead to meeting the overall public use goal.

### Objective

Provide recreational hunting opportunities consistent with refuge goals and objectives and that facilitate North Park wildlife management objectives by 2014.

### Strategies

- Working with the State, develop a hunting step-down management plan that provides hunting opportunities to meet North Park and refuge objectives.
- Provide a quality hunting experience for a variety of users by separating types of hunting opportunities.
- When compatible, on request, provide special-use permits for hunters with disabilities.

### Objective

Work with the State of Colorado in promoting sound hunting practices as a wildlife management tool by 2014.

## Strategies

- In partnership with the State of Colorado and North Park Chamber of Commerce, disseminate information about hunting opportunities on the refuge and throughout North Park.
- Provide hunting brochures and information to hunters at the headquarters building.
- Assist Colorado Division of Wildlife off-refuge with law enforcement, hunter recruitment, and hunter education when requested.

## Objective

Maintain facilities and improve as necessary by 2014, to provide a quality recreational hunting experience while minimizing resource damage.

## Strategies

- Develop parking areas (figure 11–public use) using post and cable methods and minimize resource damage caused by vehicles. Parking areas also provide opportunities to inform the hunting public about rules and regulations.
- Where needed for resource protection, develop permanent gates that can be locked to prevent resource damage.
- Develop a travel management plan that will revegetate two-track roads (figure 11–public use) not needed for maintenance, law enforcement, hunting access, or other management purposes.
- Develop a signage plan that enhances public appreciation for the National Wildlife Refuge System, understanding of refuge management activities, public use, and safety.

## Rationale

The refuge is part of a larger system of lands known as North Park. Given that many wildlife species in North Park migrate on and off the refuge (waterfowl, elk, mule deer, pronghorn, and sage grouse), the refuge hunting program affects more than just refuge lands.

The key to success is a strong working relationship with sportsmen and sportswomen and with the State of Colorado, along with incorporation of refuge hunting goals and objectives into a step-down management plan for hunting.

Additional hunting opportunities will be determined in conjunction with the refuge objectives, the community, and the state. The refuge will continue to work with the state in promoting sound hunting practices as a wildlife management tool.

Public use facilities may be modified or expanded to include emphasis on hunting, both on the refuge and in North Park. The refuge will engage in

partnerships to disseminate information on hunting opportunities throughout North Park.

The refuge may continue to use habitat management units A, B, and C to provide resting areas for migratory birds, minimize conflicts between hunters and visitors, and distribute hunting pressure. However, the ABC system may be modified during development of a step-down management plan for hunting.

## Fishing

The following objectives and strategies will lead to meeting the overall public use goal.

### Objective

Where compatible, opportunities for fishing will be provided by 2019, based on refuge goals and objectives.

### Strategies

- Encourage fishing opportunities on the refuge in accordance with state seasons and regulations and refuge management objectives. Close fishing during June and July to protect nesting waterfowl and other riparian nesting species.
- Evaluate angler impacts to goals and objectives.
- Work with the state to develop a step-down management plan for sport fishing.

### Objective

Where possible, expand fishing opportunities throughout North Park and help promote fishing as a recreational activity by 2014.

### Strategies

- Provide fishing information and regulations to visitors when requested.
- When requested, assist the state with fisheries planning issues in North Park.
- Assist the state with law enforcement, fishery management, fisheries sampling, fisheries habitat projects, and spawning throughout North Park when requested.
- In partnership with others, enhance fishery habitats in North Park.
- Monitor Illinois River gauges on the upstream and downstream end of the refuge to evaluate river flows.

### Rationale

The above objectives encourage the refuge staff to not only provide sport-fishing opportunities on the Illinois River, but also to develop partnerships with the state and others to improve fishery habitats

and promote sport-fishing opportunities throughout North Park.

The Illinois River fishery is influenced by management actions that occur upstream of the refuge. Logically, it is important that the refuge assist when requested with habitat projects that impact the Illinois River upstream of the refuge and when deemed valuable to refuge wildlife resources.

Similarly, habitats throughout North Park are connected through a system of waterways. Refuge efforts to improve aquatic habitats, when requested, benefit all in North Park. The downside to this strategy involves using very limited personnel and resources on areas other than strictly refuge grounds, which may result in refuge goals and objectives being delayed or not being met.

Partnerships are the key to success when funds and personnel are limited. The refuge strives to be included as a partner on fishery-related habitat improvement projects in North Park.

## Wildlife Observation and Photography

The following objectives and strategies will lead to meeting the overall public use goal.

### Objective

Enhance opportunities for wildlife observation and photography by 2017, based on refuge habitat goals and objectives.

### Strategies

- Rebuild Bocker Overlook.
- Construct a multi-use trail from Walden to Bocker Overlook.
- Enhance the auto tour road.
- Maintain the visitor center for distribution of information.
- Keep brochures current with updated information.
- Complete and maintain the boardwalk section of the interpretive nature trail.
- Build a moose observation platform.
- Construct wildlife photography blinds on the auto tour route.
- Establish use limitations for wildlife observation and photography based on habitat goals and objectives.
- Maintain and potentially modify existing facilities to reflect new management strategies.

### Rationale

Current visitation to the refuge ranges from 7,000–9,000 visits, with a visit defined as a person crossing the refuge boundary.

Many opportunities to enhance viewing and photography of wildlife while maintaining habitat goals are available. Each strategy should be designed to facilitate a quality experience for the visitor while fulfilling refuge goals and objectives.

### **Objective**

Assist with funding, construction, and program development to enhance wildlife photography and observation in North Park by 2019.

### **Strategies**

- In partnership with the Colorado Division of Wildlife (CDOW) and others, construct and provide observation facilities for moose and other desirable species.
- Pursue funding and partners to assist with the construction of viewing/photography blinds at various other locations in North Park.
- Assist partners with revision of the “Watching Wildlife in North Park” guide.
- Create partnerships with other wildlife-oriented organizations and individuals.

### **Rationale**

Recreation plays a major role in the economy of North Park. Wildlife viewing and photography are key factors in the recreational opportunities available. Enhancing these uses will be beneficial to the economy as well as creating a better understanding of wildlife and its habitats.

## **Environmental Education and Interpretation**

The following objectives and strategies will lead to meeting the overall public use goal.

### **Objective**

Work with partners, including the North Park School District, to provide opportunities and facilities to conduct five environmental education programs per year based on habitat goals and objectives, by 2014.

### **Strategies**

- Work with partners to develop specific environmental education programs covering:
  - habitat management practices and principles
  - the natural history of North Park
  - agriculture and wildlife
  - the life history of various local species including waterfowl, sage grouse, elk, and moose
  - North Park and its importance to Colorado waterfowl
  - how a refuge comes into existence and what its role is
  - water issues and needs

- Use existing environmental education opportunities as they occur, such as the water carnival, bird banding, refuge field trips, and “Day in the Woods.”
- Develop programs for students and volunteers to assist with management tasks.

### **Objective**

Incorporate the refuge and its niche in the North Park landscape in other environmental education and interpretive messages developed in the county by 2014.

### **Strategies**

- In partnership with other land management agencies, non-governmental organizations, local schools, and private individuals, expand the network of environmental education programs and facilities in North Park.
- Hire an outdoor recreation planner to conduct outreach and education activities on the refuge and North Park.
- In partnership with other entities, develop interpretive material involving the land management of North Park to identify the role of the refuge.

### **Objective**

Update interpretive messages to reflect recent wildlife issues and concerns (elk and sage grouse), habitat-based decision-making, and local agricultural uses (how they are not mutually exclusive on or off the refuge), by 2009.

### **Strategies**

- Replace signs on kiosks, overlooks, trails, and visitor center; replace pamphlets; and update the refuge’s website to reflect a message of the refuge working for wildlife and county-wide environmental interests.
- Rehabilitate the Case Barn and develop an interpretive site presenting the relationship between the county’s ranching history and wildlife.
- Interpret prehistoric cultural resources of the refuge in relation to natural resources found in North Park.

### **Rationale**

The refuge is located almost in the geographic center of North Park. It is known to most residents as a major part of the county landscape, but exactly what the refuge does and how it contributes to that landscape is not fully understood. Similarly, most out-of-county visitors do not understand how the lands surrounding the refuge complement its wildlife-oriented goals.

An outdoor recreation planner position will facilitate integration of environmental education at the refuge and in Jackson County schools. Articulating the history of North Park and how the refuge and the surrounding lands benefit each other will be beneficial to all interests.



Wild Iris

USFWS

### Other Uses

The following objectives and strategies will lead to meeting the overall public use goal.

#### Objective

Encourage compatible, non-wildlife-dependent uses, but limit to less sensitive areas based on habitat goals and objectives by 2009.

#### Strategies

- Allow walking leashed dogs, horseback riding, and bicycling along designated roads.
- Use law enforcement, signs, information, and brochures to minimize impacts of other non-wildlife-dependent public uses.
- Prepare and implement a travel management plan to minimize vehicle impacts to refuge habitats.

#### Objective

Consider non-wildlife-dependent public uses and their benefits to North Park and its residents by 2009.

#### Strategies

- With partners, design and construct the Case Barn interpretive site. Incorporate North Park and refuge history and the preservation of wildlife habitats as a theme in the interpretation.
- Encourage partners to be sensitive to wildlife needs when developing recreational opportunities in North Park.
- Continue to allow the Colorado Department of Transportation to plow snow windbreaks along Highway 125 (appendix B).

#### Objective

Allow compatible, non-wildlife-dependent uses that support the refuge mission by 2014.

### Strategies

- Continue operation of the rifle range to facilitate law enforcement firearms re-qualification for refuge and CDOW officers, and other local law enforcement agencies on request.
- Identify and prioritize non-refuge mineral rights within refuge boundaries.
- Acquire, on a willing-seller basis, priority mineral rights.
- Continue operation of the Allard gravel pit to support both refuge and roads (on-refuge) requirements.

### Rationale

Compatible, non-wildlife-dependent uses should be limited to less sensitive areas based on habitat goals and objectives.

The refuge views mineral resource development as having negative impacts on wildlife habitat. Non-federally owned minerals within the refuge boundary must be identified and purchased, on a willing-seller basis, to minimize future resource damage.

The rifle range will continue to operate as it facilitates refuge and North Park law enforcement needs. The travel management plan must meet compatibility determination standards, and facilitate management and public use requirements. The Allard gravel pit supports the refuge and roads (on refuge) and will remain active to support goals and objectives.

## Research

The research goal will be met through the objectives and strategies that follow.

### Goal

The refuge is a learning platform for compatible research that assists management and augments the science of high-mountain park, sage-steppe communities.

### Objective

Identify and promote the biological research needed to help achieve the refuge's habitat goals and objectives by 2009.

#### Strategies

- Identify and prioritize habitat management research needs.
- Conduct in-house research on priority needs.

- Promote the refuge research needs within the scientific community.
- Encourage research that focuses on the refuge's habitat management goals.

## Objective

Identify and promote non-biological research as it relates and contributes to achieving habitat goals and objectives on the refuge and within North Park by 2009.

### Strategies

- Identify and prioritize research related to refuge and North Park wildlife in other disciplines' needs.
- Encourage research in non-biological disciplines that facilitates the refuge in achieving goals and objectives.
- Allow and encourage research that focuses on natural resource management goals throughout North Park.

## Rationale

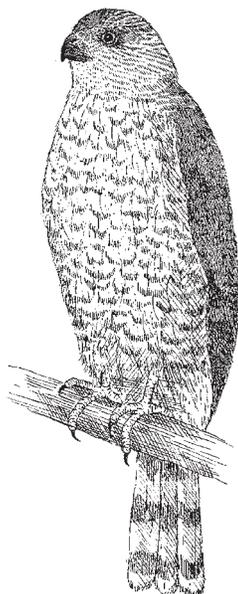
These objectives and strategies focus on identifying and implementing the biological research needs of the refuge and North Park.

Research will focus on achieving the habitat goals and objectives outlined in this plan. Identified research needs can then be promoted within the scientific community and actively encouraged by refuge staff.

Proposed research not falling within the categories identified would generally not be allowed. Conversely, research meeting identified refuge needs could be supported with funding, lodging, equipment sharing, etc.

Disturbance to resident wildlife and habitat is the primary concern.

Limiting non-refuge identified projects will minimize unnecessary disturbance and habitat damage.



*Cooper's hawk*  
© Cindie Brunner

## Partnerships

The partnerships goal will be met through the objectives and strategies that follow.

## Goal

A wide range of partners joins with the U.S. Fish and Wildlife Service in promoting and implementing the refuge vision.

## Objective

The refuge will participate in partnerships that promote sound wildlife management by 2009.

### Strategies

- Engage in partnerships that result in wildlife and land-health improvements.
- Participate in the habitat partnership program, Owl Mountain partnership, sage grouse working group, Colorado Wetlands Initiative, Platte/Kansas Rivers ecosystem team, and others to protect, enhance, and restore wildlife habitats.
- Work with partners to achieve goals and objectives.
- Work with the Colorado Historical Society and other partners to restore and rehabilitate the Case Barn interpretive site.
- Develop a conservation easement on Pole Mountain property.
- Work with Colorado Land Trust and others to help acquire lands and mineral rights within the refuge's approved boundaries. Minerals extraction may cause habitat disturbance within the refuge.

## Objective

Maintain existing, and form new, partnerships to achieve wildlife-related goals and objectives on the refuge and within North Park by 2009.

### Strategies

- Promote new partnerships (consider Ducks Unlimited, Trout Unlimited, Safari Club International, Audubon, Sierra Club, and others) to assist with achieving the refuge and North Park natural resource goals.
- Strive to develop a refuge "friends" group within 15 years to provide support through outreach and volunteer efforts on a variety of projects.
- Establish a full-time private lands coordinator position stationed at the refuge, to assist in wildlife habitat enhancement throughout North Park.

## **Rationale**

These objectives and strategies describe the potential level of partnership activity that will improve wildlife habitats throughout North Park.

The refuge staff will form partnerships to promote sound wildlife management within and outside the refuge. The refuge will actively participate in partnerships that result in improvements to land health and provide appropriate wildlife habitat in North Park.

The refuge will collaborate with partners on management of critical wildlife habitats in North Park. The private lands position will enable the Service to contribute its biological expertise and resources to private and public landowners when requested.

