

## Chapter 4: Management Goals and Objectives

The Environmental Assessment in Appendix A describes and analyzes three management alternatives for Swan Lake NWR. The Service identifies one as its preferred alternative and it is described in the following chapter as the proposed future management direction that would guide activities on the Refuge for the next 15 years.

Goals, objectives, and strategies comprise the proposed future management direction. Goals are descriptive broad statements of desired future conditions that convey a purpose. There are three goals for Swan Lake NWR. Goals are followed by objectives, which are specific statements describing management intent. Objectives provide detail and are supported by rationale statements that describe background, history, assumptions, and technical details to help clarify how the objective was formulated.

Finally, beneath each objective there is a list of strategies, the specific actions, tools, and techniques required to fulfill the objective. The strategies may be refined or amended as specific tasks are completed or new research and information come to light. Some strategies are linked to the duties of an employee position, which indicates that the strategy will be accomplished with the help of a new staff position. When a time in number of years is noted in an objective or strategy, it refers to the number of years from approval of this CCP. If no time is given, the objective is to be accomplished within the 15 years of the life of the Plan.

### Goal A: Habitat

**Wetlands, grasslands, and bottomland forests providing habitat for migratory birds, threatened and endangered species, and other wildlife within the Grand River floodplain.**

#### **Objective 1-1: Streams and Water Bodies**

Over the long term (50 years), mimic components of historic hydrologic function along reaches of Elk Creek, Turkey Creek, Tough Branch, and Yellow Creek that are within the Refuge (Figure 11). Over the 15-year life of the Plan, allow for seasonal and annual variations in



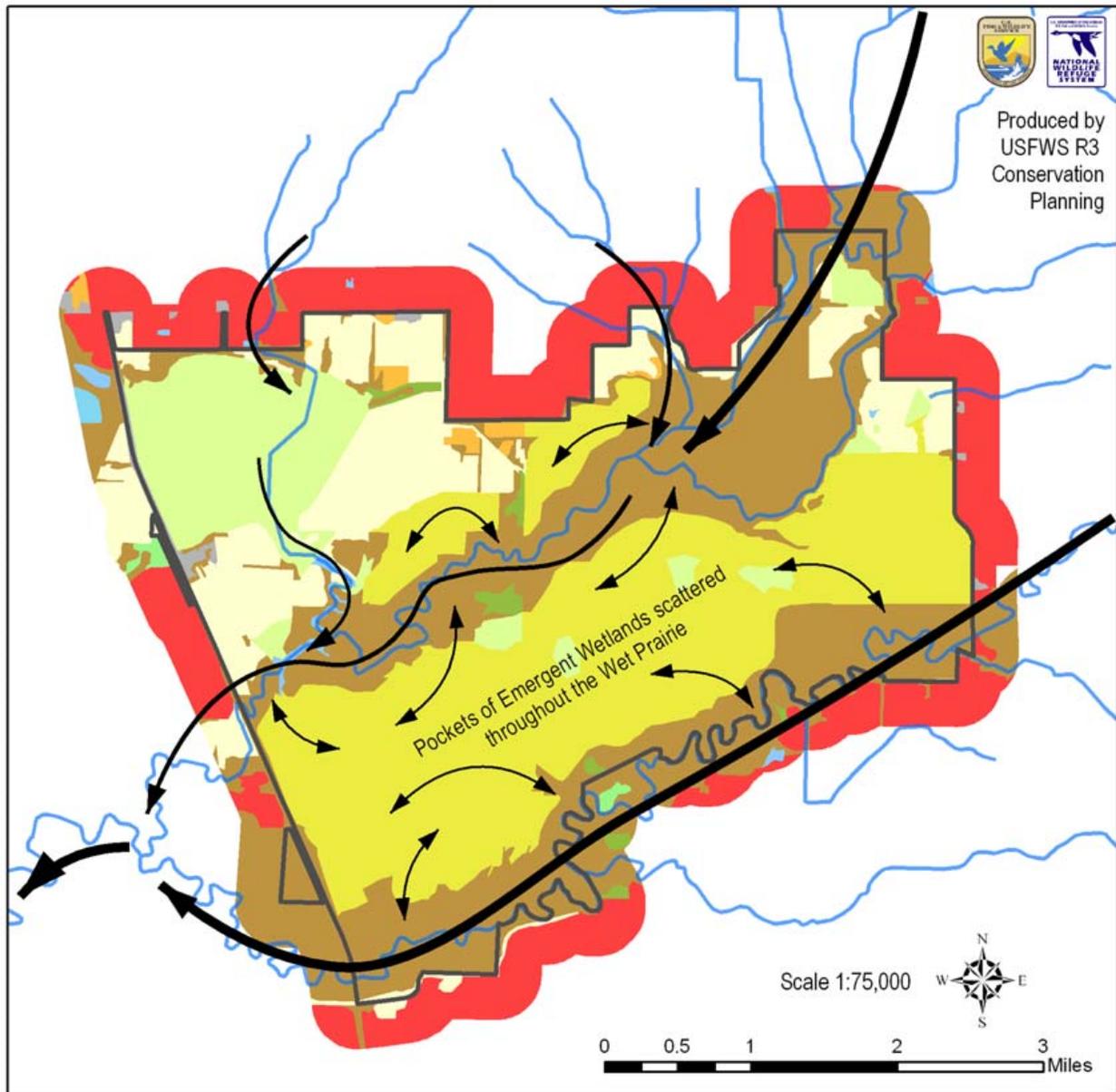
*Bullfrog. Photo credit: FWS*

water levels within the Swan Lake and Silver Lake basins to increase the amount and variety of native vegetation (see Objective 1-2 Emergent Wetland).

#### Rationale

Service policy calls for maintaining or, where feasible and consistent with Refuge purposes, restoring the composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment (U.S. Fish and Wildlife Service 2001). Alterations to hydrologic conditions – water movement, distribution, and quality – within the Grand River watershed over the past 150 years make it infeasible to fully restore historic hydrologic conditions, but it is possible to mimic some components of historic hydrology within the Refuge including seasonal and annual water level fluctuations and low impedance to water movement. Reintroducing these elements of historic hydrologic conditions is consistent with Service policy and would continue to meet the purposes of the Refuge by providing habitat for migratory birds and other wildlife. The near-term

**Figure 11: Potential Water Movement and Likely Associated Vegetation, Swan Lake NWR**



- Normal Streamflow
- Seasonal Flooding & Retreat

Wet prairie dominates the landscape and flooding occurs during high water events with lower areas remaining wet for longer periods of time.

Landcover based on NRCS SSURGO soils data and associated potential natural vegetation.

- FWS Approved Acquisition Boundary
- Potential Streamflow
- Potential Landcover**
- Agricultural Fields
- Bottomland Forest
- Developed
- Emergent Wetland
- Native Upland Prairie
- Oldfield
- Open Water
- Reseeded Grassland
- Scattered Tree Grassland
- Shallow Emergent Wetland
- Shrub Swamp
- Wet Meadow

Landcover based on NRCS SSURGO soils data and associated potential natural vegetation.

objective of increasing the amount and variety of vegetation within the impoundments also helps fulfill Refuge purposes. Presently (2009), the Silver Lake basin serves as a reservoir to provide source water for management activities across the Refuge, dedicating approximately one-fifth of total Refuge acres as open water that is largely devoid of aquatic vegetation and of little value to migratory birds for much of each year. Periodic dewatering of these basins would promote vegetative growth and increase their value as habitat.

### Strategies

1. Conduct a hydrogeomorphic evaluation of the Refuge and surrounding area to assess historic hydrologic functions.
2. Monitor surface waters that impact Refuge hydrology (e.g. stage, stream flow, volume) including seasonal inflow variations within Elk Creek and Turkey Creek.
3. Monitor common invasive species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species while continuing to treat known infestations as appropriate throughout the Refuge.
4. Conduct seasonal and annual drawdowns of the Swan Lake and Silver Lake basins and incorporate those drawdowns into the water management plan in conjunction with other water management on the Refuge.

### **Objective 1-2: Emergent Wetland**

#### Within Wetland Management Units

Current (2010) amount about 1,700 acres

Over the life of the Plan, maintain at least 1,200 acres and up to 1,800 acres of emergent wetland habitat primarily within the Silver Lake, Swan Lake, and South Pool basins where bulrush and cattails comprise 25-50 percent of areal cover-



Swan Lake NWR. Photo credit: FWS

age and narrow-leaved cattail, bur reed, lotus, and arrowhead comprise less than 5 percent of areal coverage. Within 1 year of CCP approval, develop a water management regime that helps maintain the plant species mix described above.

#### Within Moist Soil Management Units

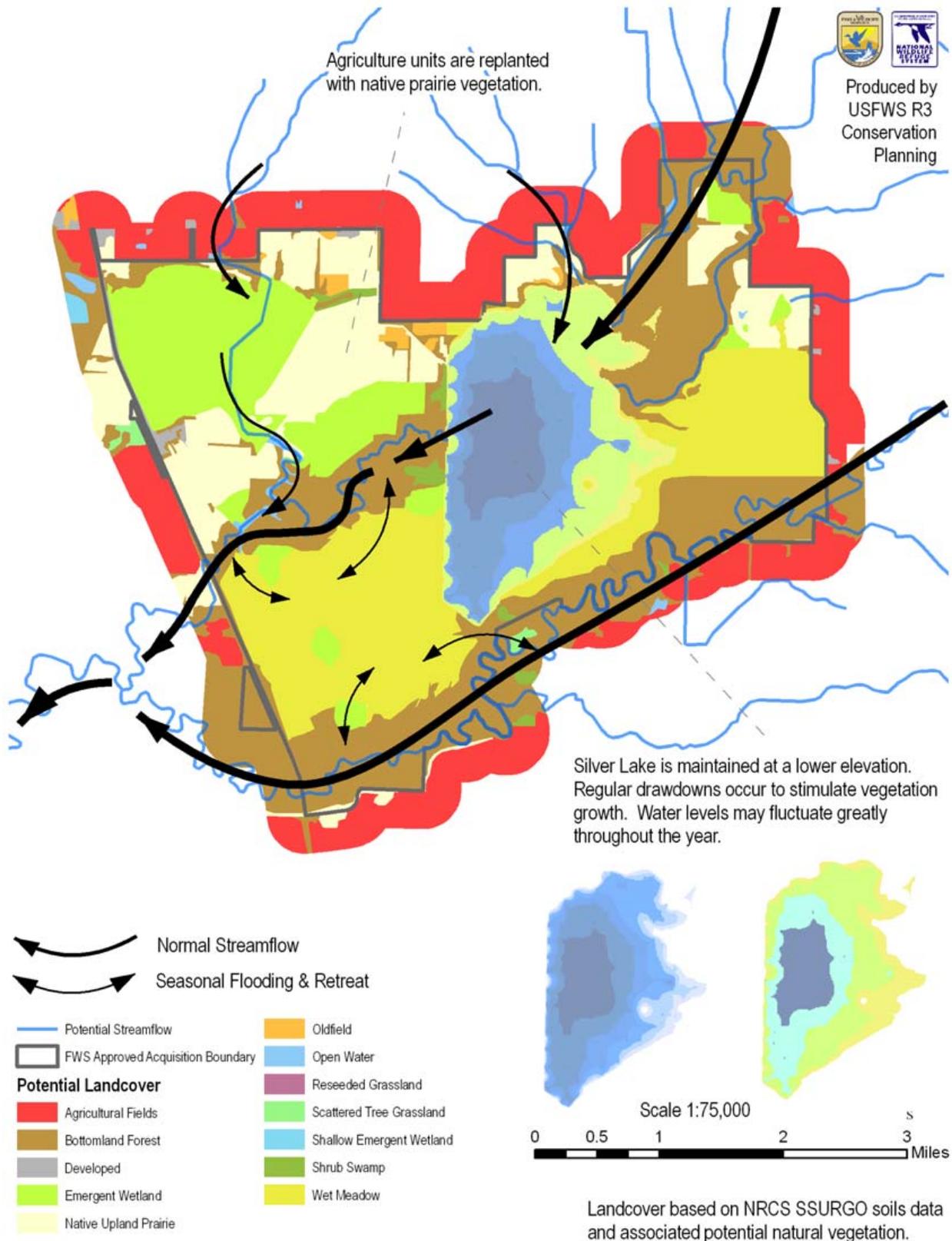
Current (2010) amount 13 units totaling about 800 acres

Over the life of the Plan, use moist soil techniques (as described in "Moist Soil Units" on page 26) to manage emergent wetlands at locations and an amount to be determined after the completion of an ongoing hydrogeomorphic evaluation. Manage moist soil areas to provide a diversity of native herbaceous plant foods such as wild millet (*Echinochloa* spp.); panic grass (*Panicum* spp.); smartweed (*Polygonum* spp.); sedges (*Cyperus* spp. and *Carex* spp.); and beggarticks (*Bidens* spp.), and ensure that up to 25 percent of the acreage is available as mud flat or shallow water (6 inches or less) unvegetated habitat in the spring and up to 10 percent of the acreage is available as mud flat or shallow water habitat with less than 50 percent cover in the fall for migrating shorebirds.

#### Rationale

The Upper Mississippi River and Great Lakes Region Joint Venture (UMRGLRJV) Waterfowl Habitat Conservation Strategy identifies two sets of habitat objectives: 1) Maintenance and Protection, that is the type and amount of habitat necessary to meet current waterfowl populations, and 2) Restoration and Enhancement, the amount and type of habitat necessary to meet waterfowl population goals. Emergent wetland managed using moist soil techniques fits within the Plan under the habitat categories Wet mudflat/moist soil plants and Shallow semi-permanent marsh, hemi-marsh. Within the portion of Missouri covered by the Joint Venture, the Plan identifies a need for more than 3,300 acres of Wet mudflat/moist soil plants and 197,551 acres of Shallow semi-permanent marsh, hemi-marsh habitat to meet existing waterfowl population levels. There is also a need for an additional 692 acres of wet mudflats/moist soil plant habitat and 840 acres of Shallow semi-permanent marsh, hemi-marsh to meet the target population goals. In addition, the Missouri Department of Conservation Wetland Management Plan (a step-down of the NAWMP) has an objective for state and federal refuges to provide habitat to support 29 million duck use days. Maintaining existing Wet mudflat/moist soil plant and Shallow semi-permanent, hemi marsh habitats on Swan Lake NWR contributes to meeting these larger conservation objectives as well as contributing to conservation objectives outlined in the United States

**Figure 12: 15-Year Desired Land Cover, Swan Lake NWR**



Shorebird Conservation Plan and the North American Waterbird Conservation Plan.

### Strategies

1. Use water manipulation to encourage growth of desired species of emergent marsh plants while retarding the growth of undesirable species.
2. Ensure that up to 25 percent of the acreage of moist soil units is available as mud flat or shallow water (6 inches or less) unvegetated habitat in the spring and up to 10 percent of the acreage is available as mud flat or shallow water habitat with less than 50 percent cover in the fall for migrating shorebirds.
3. Periodically disturb areas under moist soil management through burning, disking, cropping, and seeding to retard succession of woody vegetation.
4. Consider other opportunities to install additional levees and water control structures to create other moist soil units.
5. Remove mature willow stands to create more emergent marsh along the perimeter of emergent marsh habitats.
6. If necessary, install water wells to ensure water availability to flood moist soil units when water is not available from the Silver Lake Pool. Explore the feasibility of placing a pump station on Swan Lake so in the years that Silver is in draw down, water can be used from Swan Lake Pool to flood moist soil.
7. Treat known infestations of invasive species as appropriate within emergent wetland habitat while continuing to monitor common invasive species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species introductions.

### **Objective 1-3 Shrub Swamp**

Current (2010) amount is about 400 acres.

Over the life of the Plan, maintain 300 to 500 acres of shrub swamp dominated by at least 50 percent areal coverage of buttonbush and willow.

### Rationale

The Upper Mississippi River and Great Lakes Region Joint Venture (UMRGLRJV) produced four conservation strategies directed at shorebirds, landbirds, waterbirds, and waterfowl that identify habitat objectives necessary to maintain existing bird populations and additional habitat necessary to support target populations. The compiled habitat objec-

tives for all four conservation strategies are summarized in the UMRGLRJV Implementation Plan (2007). Shrub swamp fits within the Plan under the habitat category "Marsh" with associated forest/shrub. Within the portion of Missouri covered by the Joint Venture (approximately two-thirds of the state) the Plan identifies a need for nearly 17,000 acres of marsh with associated forest/shrub habitat to meet existing bird population levels and the need for an additional 3,367 acres to meet bird population goals. Maintaining existing shrub swamp habitat on the Refuge contributes to meeting this larger conservation objective.

### Strategies

1. Use water manipulation to encourage growth of desired species while retarding the growth of undesirable species.
2. Look at past aerial photography to determine the changes in the amount of this habitat within the Refuge.
3. Encourage and allow overgrowth of shrub communities along riparian areas and in some cases along the toe of Refuge levees.
4. Treat known infestations of invasive species as appropriate within shrub swamp habitat while continuing to monitor common invasive species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species introductions.

### **Objective 1-4 Wet Meadow**

Current (2010) amount is about 100 acres.

Within 5 years of Plan approval, convert approximately 530 acres of existing cropland; food plots; areas of dense early successional forest largely comprised of willow; buttonbush, and silver maple; and areas dominated by reed canary grass to wet meadow comprised of sedges (e.g. *Cyperus* spp. and *Carex* spp.), prairie cordgrass (*Spartina pectinata*), and forbs (e.g. *Asclepias* spp., *Polygonum* spp., *Vernonia* spp., *Solidago* spp., *Bidens* spp., *Ambrosia* spp., *Rudbeckia* spp.).

### Rationale

Service policy calls for maintaining or restoring Refuge habitats to historic conditions if doing so is feasible and does not conflict with Refuge purposes (U.S. Fish and Wildlife Service 2001). The primary purpose of the Refuge is to provide habitat for migratory birds. In addition to waterfowl, this includes many other water birds and migrant landbirds. Cropland and food plots are not native habitat, and although they attract wildlife, are not as diverse as native habitat. Properly managed wet

meadows can provide an important food source for migrating waterfowl. Wet meadows are a type of wetland that occurs where groundwater is at or near the surface most of the growing season following spring runoff. Wet meadows provide important ecological benefits including breeding and foraging habitat for birds and invertebrates and habitat for wetland plants. The single most important characteristic of a wet meadow is its hydrology. Seasonality and reliability of yearly water inflows and outflows largely determine the vegetational stability of wet meadows.

#### Strategies

1. Study the possibility of restoring sheet flow across the Refuge to create wet meadow habitat in support of the suite of species associated with wet meadow habitat.
2. Consider restoring wet meadow in the corridor that leads into Swan Lake.
3. Periodically disturb areas through burning, mowing, grazing, or other means to retard woody succession. Coordinate with Ecological Services regarding appropriate activities within habitat for eastern massasauga rattlesnake but, in general, avoid haying, grazing, mowing or other disturbance methods that may be harmful to the snake.
4. Treat known infestations of invasive species as appropriate within wet meadow habitat while continuing to monitor common invasive species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species introductions.

#### **Objective 1-5 Native Upland Prairie**

Current (2010) amount is about 1,000 acres.

Within 10 years of Plan approval, convert approximately 835 acres of existing cropland or food plots to native prairie, and maintain a diverse floral community within converted and existing grasslands composed of at least 50 percent of native prairie plant species identified for this area.

#### Rationale

Service policy calls for maintaining or restoring Refuge habitats to historic conditions if doing so is feasible and does not conflict with Refuge purposes (U.S. Fish and Wildlife Service 2001). The primary purpose of the Refuge is to provide habitat for migratory birds. In addition to waterfowl, this includes many other water birds and migrant landbirds. Cropland and food plots are not native habitat, and although they attract wildlife, are not as diverse as native habitat. Short and tall grass prai-

ries were major habitat types in much of the Great Plains including part of Central Missouri. These habitat types were actively maintained and managed by Native Americans using fire as a management tool. Fire suppression and a major shift to agriculture have dramatically reduced the extent of this ecosystem type. Providing a representative example of this habitat type on the Refuge will serve a variety of species that prefer this habitat and provide the public with an important environmental education opportunity as to the importance of this habitat and its history in the area.

#### Strategies

1. Increase species diversity of existing grasslands to include forbs, etc.
2. Develop a fire management plan for the maintenance of this habitat type.
3. Implement a grazing program that introduces natural grazing regimes to native grasslands to maintain grassland quality and biological diversity.
4. Coordinate with Ecological Services regarding appropriate activities within habitat for eastern massasauga rattlesnake but, in general, avoid haying, grazing, mowing or other disturbance methods that may be harmful to the snake.
5. Treat known infestations of invasive species as appropriate within prairie habitat while continuing to monitor common invasive species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species introductions.

#### **Objective 1-6 Cropland**

Current (2010) amount is about 1,400 acres.

Within 10 years of Plan approval, convert all cropland to other native habitats (see Objectives 1-2, 1-4 and 1-5).

#### Rationale

Service policy calls for maintaining or restoring refuge habitats to historic conditions if doing so is feasible and does not conflict with refuge purposes (U. S. Fish and Wildlife Service 2001). Cropland is not native habitat, it requires intensive management, and although it attracts some types of wildlife, it provides little value to wildlife for much of the year. Cropland is also abundant outside of the Refuge and native habitats such as prairie and wet meadow are scarce. Some sites will continue to be cropped for several years until they are converted to other habitats. In those locations it is likely farming practices will include the use of herbicide-resistant

crop plants that are genetically modified to make them resistant to herbicides used to chemically weed the crops. Herbicide-resistant crops are genetically modified organisms and their use on the Refuge is governed by regional policy.

#### **Objective 1-7 Bottomland Forest**

Current (2010) amount about 3,100 acres.

Over the long term (100-200 years), maintain the existing amount of bottomland hardwood stands with a mosaic of age and structural classes distributed across a narrow elevation gradient with lower elevations dominated by black willow, silver maple, and river birch, mid elevations dominated by pin oak, swamp white oak, red maple, green ash, sycamore, and cottonwood, and upper elevations dominated by other oaks, hickory, and pecan. Within 10 years of Plan approval ensure that approximately 20 percent of stands are converting to red oak species and their associates based on regeneration surveys.

#### **Rationale**

Bottomland hardwood forests provide important riparian habitat buffer for many watercourses on the Refuge. This buffer helps improve water quality in Refuge streams and provides habitat for a variety of native wildlife. In addition, a number of bottomland forest-dependent migratory songbirds are declining as a result of insufficient or fragmented habitat. Conservation and management of suitable habitat are principal strategies for attaining more abundant populations of these birds.

#### **Strategies**

1. Complete a forest resources inventory to determine the quality and quantity of woodlands for wildlife.
2. Study the causes for the loss of bottomland forests understory that is adversely affecting woodland birds and other wildlife.
3. Levels of forest on the Refuge need to be inventoried for composition, recruitment, survival, and growth rates.
4. Within 3 to 5 years of Plan approval, determine high priority areas for invasive plant removal based on level of threat, potential for reinfestation, etc., targeting areas where treatment will be most effective with the aim of allowing no more than 10 percent to be affected by invasive species.
5. Treat known infestations of invasive species as appropriate within bottomland forest habitat while continuing to monitor common invasive

species pathways (e.g. streams, waterways, roads, trails) to aid in early detection of invasive species introductions.

#### **Objective 1-8 Watershed Conservation**

Within 5 years of Plan approval, quantify water needs and available water sources necessary to meet Refuge management objectives. Also, over the life of the Plan, maintain or improve water quality within Refuge source waters to meet Refuge management objectives and comply with current standards of the Environmental Protection Agency and Missouri Department of Natural Resources.

#### **Rationale**

At present annual water requirements and available water sources (other than the Silver Lake basin) are not well documented for the Refuge. Because the purpose of the Refuge is to provide habitat for migratory birds, many of which depend on water, quantifying water needs and sources is necessary to meet current and future Refuge management objectives. Service policy regarding Biological Integrity, Diversity, and Environmental Health (U.S. Fish and Wildlife Service 2001) acknowledges the importance of water quality. Working within and beyond the Refuge to maintain or improve water quality helps meet the purposes of the Refuge and the goals of the National Wildlife Refuge System.

#### **Strategies**

1. Work with the Service's Partners for Fish and Wildlife program and other agencies and organizations to improve erosion control within the Refuge watershed.
2. Evaluate Refuge water control structures to ensure that they are adequate to minimize flooding on neighboring lands.
3. Within 3 years of Plan approval, collect baseline information on stream flora, fauna, and hydrology to help identify opportunities for restoring habitat and natural flow patterns.
4. Monitor current stream vegetation, and explore options for restoring natural flows.
5. Continue to participate as a partner in the Lower Grand River Conservation Opportunity Area.

### **Objective 1-9 Outlying Fee Title Properties and Easements**

Within 5 years of Plan approval, develop a strategy for ensuring that the condition and management of outlying fee title properties and easements are in compliance with Service direction.

#### **Rationale**

Beyond the core area of the Refuge proper, Refuge personnel are responsible for condition and management of 46 parcels and easements ranging in size from 10 acres to more than 200 acres at varying distances from the Refuge with some more than 100 miles from the Refuge headquarters.

#### **Strategies**

1. Annually contact landowners of all parcels.
2. Annually inspect easements.
3. Post boundaries of outlying parcels.
4. Survey/post all easement boundaries.
5. Consider priority public use opportunities on fee-owned easements.

## **Goal 2: Wildlife**

**Diverse wildlife teeming within native habitats of the Grand River floodplain.**

### **Objective 2-1: Threatened and Endangered Species**

Within 5 years of Plan approval, implement a monitoring program to track abundance, population trends, and/or habitat associations of selected species (of present interest is Indiana bat).

#### **Rationale**

Conserving a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered is one of the goals of the National Wildlife Refuge System. To evaluate whether management actions are having the predicted consequences, we need to monitor actual outcomes, most often using a representative sample of sites to ensure that, on average, the effects of a particular type of treatment match expectations. Information gained through monitoring helps us learn and adapt our management actions, increasing our effectiveness in meeting conservation objectives.

#### **Strategies:**

1. Working with the state of Missouri and the Indiana Bat Recovery Team, determine what role Swan Lake NWR plays in supporting viable populations of these species/subspecies.

From this information, the station can determine whether long-term monitoring is appropriate and what information with regard to future management is expected to be gained from such effort.

2. Follow Ecological Services guidelines when working in Refuge forested areas by not removing potential roost trees with loose exfoliating bark, primarily Shagbark Hickory, or dead or dying trees with a diameter (dbh) of 9 inches or greater.

### **Objective 2-2 Migratory and Resident Birds**

Within 5 years of Plan approval, implement a monitoring program to track abundance, population trends, and/or habitat associations of migratory bird species with emphasis on waterfowl and shorebirds. Link monitoring to management information needs and to species or habitats of concern or special interest.

#### **Rationale**

Conserving a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered, is one of the goals of the National Wildlife Refuge System. Furthermore, one of the purposes of Refuge is to provide habitat for migratory birds. To evaluate whether management actions are having the predicted consequences, we need to monitor actual outcomes, most often using a representative sample of sites to ensure that, on average, the effects of a particular type of treatment match expectations. Information gained through monitoring that is clearly linked to our management actions helps us learn and adapt, increasing our effectiveness in meeting conservation objectives.

#### **Strategies**

1. Develop an Inventory and Monitoring Plan that links monitoring to management information needs and to species or habitats of concern or special interest.
2. Work in support of the Missouri Department of Conservation with regard to ensuring Refuge management can be as compatible as possible to the surrounding management efforts of resident birds in Missouri without compromising the mission of the Refuge to create a win/win situation.

### **Objective 2-3: Eastern Massasauga Rattlesnake**

Within 10 years of Plan approval, provide habitat suitable to support a viable population of the eastern massasauga rattlesnake and potentially avoid listing the snake under the Endangered Species Act.

### Rationale

Populations of the eastern massasauga rattlesnake are in decline range-wide and the species is a candidate for listing under the Endangered Species Act. According to a 1998 Service status assessment of the snake, Swan Lake NWR harbors one of three remaining populations in Missouri (Szymanski 1998). The assessment rates the Swan Lake NWR population as vulnerable, meaning its long-term viability is in question, and notes the primary threat as limited habitat. The Service completed an environmental assessment in 2005 that called for protecting the remaining core populations of the snake found on public lands including the one on the Refuge. Maintaining the eastern massasauga rattlesnake population on the Refuge helps maintain their numbers, improves the long-term prospects for the species, and potentially avoids listing the snake. A viable population is defined here as one that has less than a 5 percent chance of extinction over 25 years as predicted by current population models (Redmer and Szymanski, in process). Durbian and others (2008) recommend that to sustain a population of eastern massasauga rattlesnakes requires at least 250 acres of contiguous habitat that contains a mosaic of open (free of any canopy created by trees or brush) early successional lowlands and uplands and is within easy traveling distance (approximately 1,300 feet) of hibernation sites. This is approximately the amount of habitat currently available for eastern massasauga rattlesnakes on the Refuge.

### Strategies

1. Work with the state of Missouri and Ecological Services to determine the best role for Swan Lake NWR in supporting a population of eastern massasauga rattlesnakes and clearly identify population objectives from which a monitoring program can be developed.
2. Working with the state of Missouri and Ecological Services and using data derived from a hydrogeomorphic analysis of the Refuge, determine what areas are suitable and desired in managing for critical habitat necessary to maintain a viable population of eastern massasauga rattlesnakes to help in recovering the species and potentially prevent its listing under the Endangered Species Act.
3. Limit managed grassland disturbances such as prescribed burning and mowing in grasslands where eastern massasauga rattlesnakes are present to periods during their hibernation period (November 16 through March 31). Additionally, late fall or early spring prescribed fires should not occur when either the soil temperature at 4 inches depth reaches 43

degrees Fahrenheit or the high ambient daily temperature reaches 50 degrees Fahrenheit for three consecutive days.

4. Increase the amount of contiguous habitat for eastern massasauga rattlesnakes on the Refuge.
5. Coordinate with Ecological Services on management activities (such as prescribed burning, mowing, haying, construction activities, etc.) occurring within massasauga habitat.

## **Goal 3: People**

**Visitors enjoy wildlife-dependent recreation and understand the natural and cultural resources of the Refuge and its role in their conservation.**

### **Objective 3-1: Welcoming and Orienting Visitors**

Within 10 years of Plan approval, provide a staffed point of contact during normal working hours year-round on business days and seasonally on holidays and weekends to accommodate up to 50,000 visitors annually.

### Rationale

Welcoming and orienting Refuge visitors contributes to several of the criteria defining a quality wildlife-dependent recreation program (U.S. Fish and Wildlife Service 2006a). Maintaining a staffed point of contact during periods of highest visitation is an effective way to help welcome and orient the largest volume of visitors.

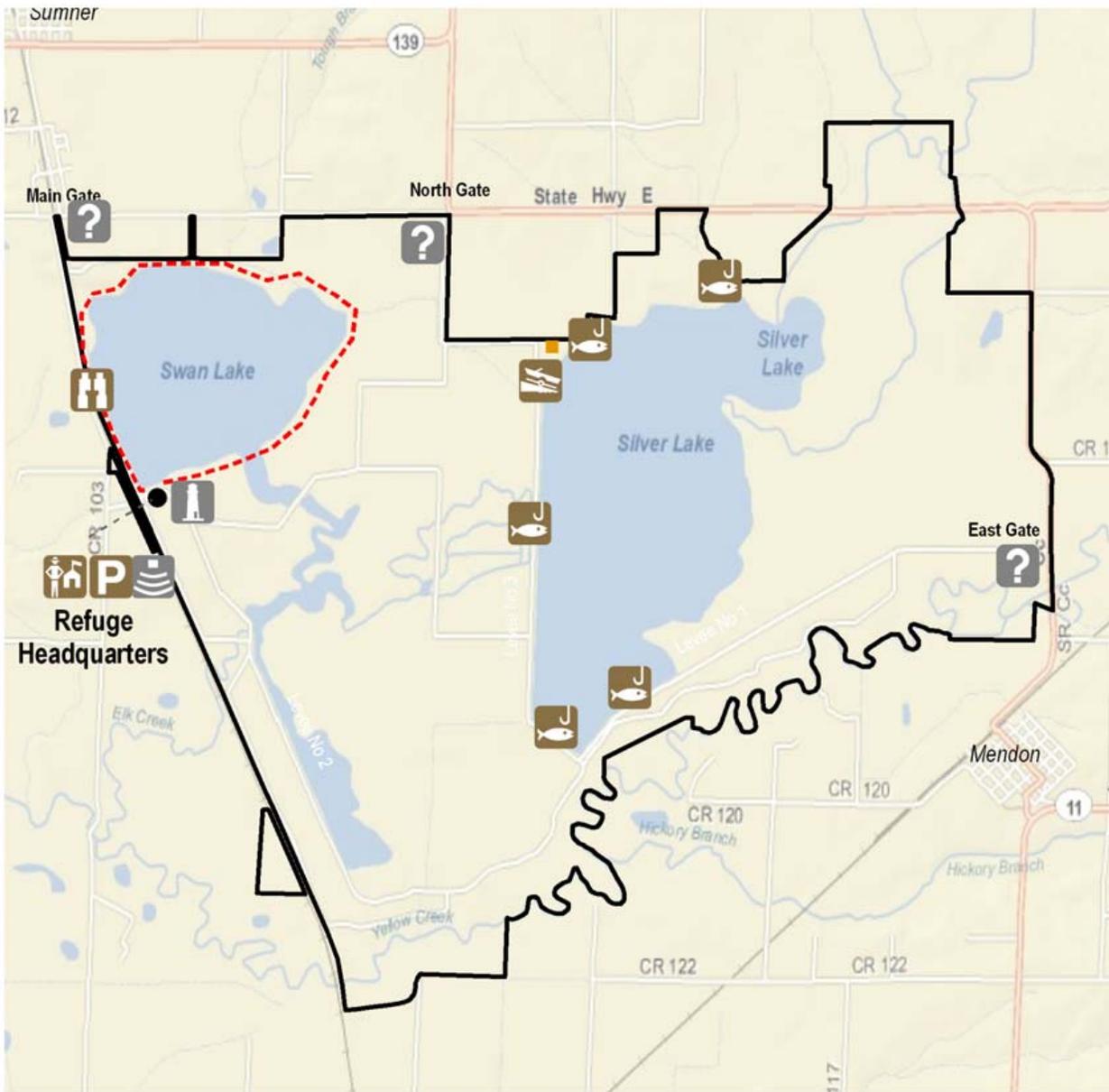
### Strategies

1. Determine options for increasing opportunities for compatible public uses to occur concurrently.
2. Develop and have available brochures that are up-to-date and informative.
3. Office personnel will ensure that the office is open to the public as much as possible during business hours.
4. Use volunteer resources to keep the visitor center staffed on holidays, weekends, and evenings.
5. Fully utilize Refuge website and Refuge phone systems to update visitors about Refuge information, including wildlife counts.

### **Objective 3-2: Hunting**

Maintain existing hunting opportunities and within 2 years of CCP approval, propose changes to Refuge regulations (as part of a formal opening package) that includes introducing duck hunting and small game hunting, and

**Figure 13: Future Visitor Facilities, Swan Lake NWR**



- FWS Approved Acquisition Boundary
- ADA Hunting Blind
- Current Facilities**
- Piers
- Boat Launch
- Parking Lot
- Spotting Scope
- Future Facilities**
- Kiosks
- Bench
- Observation Tower
- Future Swan Lake Trail

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Scale 1:65,000



emphasize opportunities for youth and the disabled. Within 7 years of approval of the Plan, reliably determine the number of hunting visits to the Refuge and that at least 85 percent of hunters judge that they are being provided a quality opportunity.

### Rationale

Hunting is an important wildlife management tool that the Service recognizes as a healthy, traditional outdoor pastime, deeply rooted in the American heritage. Hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. Hunting programs help promote understanding and appreciation of natural resources and their management on all lands and waters in the Refuge System. Hunting is a priority general public use of the National Wildlife Refuge System, and Service policy directs us to provide hunting opportunities when compatible (U.S. Fish and Wildlife Service 2006b). To initiate or expand hunting programs, the Service must publish in the Federal Register any proposed and final refuge-specific regulations pertaining to that use prior to implementing or publishing them in Refuge hunt brochures or other public documents. These regulations may include an entirely new hunt program, a new category of hunting (e.g., small game), a new species not addressed in a previous opening package (e.g. ducks), or a new area(s) open to public hunting not addressed in a previous opening package. Monitoring hunter participation and satisfaction are necessary to evaluate the quality of the Refuge hunting program.

### Strategies

1. Any existing Refuge waterfowl hunting sites affected by the conversion of cropland to other habitats would be offset by providing hunting opportunities at other locations.
2. As appropriate, prepare hunting opportunities for disabled hunters.
3. Maintain one or more sanctuary areas free of hunting and other human disturbance to provide a feeding and resting area for migratory birds.
4. Compile annual hunting statistics to determine hunter use, success, etc.
5. Host a pre-season hunt public meeting to discuss and inform hunters about the hunting program and a post season hunt public meeting to receive feedback from hunters regarding the Refuge hunt program.



*Hunting is a popular wildlife-dependent recreation on the Refuge. Photo credit: FWS*

6. Develop a mentoring program for youth waterfowl hunters.
7. Continue cooperating with MDC in implementing seasons for resident game species.

### **Objective 3-3: Fishing**

Over the life of the Plan, provide access for fishing in accordance with state and Refuge regulations.

### Rationale

The primary purpose of the Refuge is to provide for the needs of migratory birds. Although the Refuge does harbor some sport fish of interest to anglers, the small, warm water streams and turbid waters within the Silver Lake basin do not support a diverse or abundant fishery. The Service recognizes fishing as a healthy traditional outdoor pastime that is deeply rooted in America's natural heritage, but neither the purpose of the Refuge nor the available resources are well suited to providing a quality fishing experience as defined by Service policy (U.S. Fish and Wildlife Service 2006c). The Refuge will continue to provide access for the limited fishing opportunities that exist, but these opportunities are likely to be sporadic and not a focus of Refuge management.

### Strategies

1. Ensure adequate access to Refuge fisheries resources so that the fishing public can access fishing opportunities that exist on the Refuge in accordance with Missouri state regulations and specific Refuge regulations.
2. Allow fishing access to the Taylor Point area of Elk Creek during the winter closure of the Refuge (November through February).

### **Objective 3-4: Wildlife Observation and Photography**

Provide quality wildlife observation and photography opportunities by continuing to allow visitors access to the entire Refuge from early March through late October, and by allowing visitors limited access to selected portions of the Refuge during closed periods.

### Rationale

Service policy supports providing opportunities for wildlife observation and photography when it is compatible with Refuge purposes and the mission of the National Wildlife Refuge System (U.S. Fish and Wildlife Service 2006d). Wildlife observation can promote understanding and appreciation of natural resources and their management on all lands and waters in the Refuge System. Providing opportunities to observe wildlife fosters a sense of stewardship for the Refuge System, wildlife, and habitat resources through direct experience. Wildlife observation is a popular activity at the Refuge especially in October and November during fall migration. Allowing visitors limited access during fall and winter months is one way to accommodate this use while also minimizing disturbance to wildlife.

### Strategies

1. Provide quality wildlife observation and photography opportunities by continuing to allow visitors access to the entire Refuge from early March through late October.
2. Allow visitors limited access to selected portions of the Refuge during closed periods.
3. Develop a foot trail around Swan Lake and incorporate photo blinds, overlooks, and interpretation within the trail system.
4. Provide for periodic guided tours through the interior of the Refuge throughout the year. Limit participants to a reasonable number to minimize disturbances between October 31 and February 28.
5. Rehabilitate the old observation tower to meet safety standards and make it available to the

public. Incorporate a video camera on the tower for accessible viewing opportunities.

### **Objective 3-5: Interpretation**

Within 10 years of Plan approval, provide staffed interpretive facilities during normal working hours year-round on business days and seasonally on holidays and weekends.

### Rationale

Well-designed interpretive programs can be effective resource management tools that provide us an opportunity to influence visitor attitudes about natural resources, refuges, the Refuge System, and the Service to influence visitor behavior when visiting units of the Refuge System. Interpretation is a priority general public use of the National Wildlife Refuge System, and Service policy directs that refuges provide interpretation when it is compatible with refuge purposes and the mission of the National Wildlife Refuge System (U.S. Fish and Wildlife Service 2006g).

### Strategies

1. Consider using a portion of the Refuge headquarters to house a diorama of important habitat types on the Refuge.
2. Train a volunteer visitor center host to interpret Swan Lake NWR, the National Wildlife Refuge System and the U. S. Fish and Wildlife Service.
3. Place a kiosk at each Refuge entrance providing a Refuge map, regulations, activities and interpretation.
4. Develop an auto tour route that includes interpretive information.

### **Objective 3-6: Environmental/Conservation Education**

Within 5 years of Plan approval, develop an environmental education site that includes an outdoor classroom. Once the site is developed, 80 percent of educators using the site annually report it supports their curriculum and helps in promoting resource stewardship and conservation.

### Rationale

Providing and promoting environmental education helps develop a citizenry that has the awareness, knowledge, attitudes, skills, motivation, and commitment to work cooperatively toward the conservation of our nation's environmental resources. Environmental education is a priority general public use of the National Wildlife Refuge System, and Service policy directs refuges to provide environmental education programs when they are compati-

ble with refuge purposes and the mission of the Refuge System.

#### Strategies

1. Develop an environmental education site at a suitable location outside of the flood plain and in an area that does not lose access due to flooding. Conservation education will be a priority use for this small area. Until that site is identified and established, utilize the current Refuge Headquarters and Visitor Center site (approximately 10 acres) for this purpose.
2. Work with area schools and educational organizations to develop educational/interpretive facilities that meet state conservation education requirements.
3. Ensure that environmental education facilities fit into the natural landscape of the Refuge and that they are energy efficient and facilitate students getting to the outdoors.
4. Develop a wetland education program that uses a wetland within the environmental education site to provide year-around access for students.
5. Incorporate outdoor education related to the priority public uses within the education program.
6. Use special events throughout the year for public interpretation and education.

#### **Objective 3-7: Other Compatible Recreation and Uses**

Over the life of the Plan, provide compatible opportunities for gathering mushrooms, berries, and antlers for personal use.

#### Rationale

The National Wildlife Refuge System Improvement Act of 1997 identifies six priority public uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. These priority uses receive enhanced consideration over other general public uses in planning and management of the Refuge System. Other uses can occur but must support a priority public use or not conflict with priority public uses. No use of a national wildlife refuge can detract from accomplishing the purposes of the Refuge or the mission of the System. Gathering of mushrooms, berries, and antlers has historically been allowed on the Refuge and has become a custom of the local community. The Refuge is open to the public during the time periods that the use is allowed, so no additional disturbance is created by allowing this use. Gathering allows the public to build a connection to the Refuge through personal outdoor experiences that

engage the senses and foster an appreciation of the outdoors.

#### Strategies:

1. Provide opportunities for these harvesting activities including gathering nuts, berries, mushrooms, and deer antlers consistent with Refuge regulations.
2. As part of the Visitor Services step-down management plan, develop Refuge policy that defines times and limitations on gathering mushrooms, berries, and antlers so as to allow equity among visitors for access to these resources.

#### **Objective 3-8: Friends and Volunteers**

Over the life of the Plan, continue to develop the Friends group and provide volunteer opportunities that total at least 1,000 hours annually.

#### Rationale

A Refuge Friends Group is a grassroots organization formed by citizens who have a shared vision of supporting their local national wildlife refuge. They join with Service personnel in a partnership that seeks to accomplish mutually defined goals. Establishing a Friends group helps build a constituency of support for the Refuge, provides people with opportunities to assist us in accomplishing our mission, and enhances our performance through the creativity, innovations, labor, and expertise contributed by Friends members.

#### Strategies

1. Refuge staff will initiate and nurture relationships with volunteers and Refuge support groups with the goal of fortifying important Refuge activities.
2. Refuge personnel will seek to make the Refuge an integral part of the community by providing volunteer opportunities that total at least 1,000 hours annually.
3. Develop a work camper program to provide volunteer services for the visitor services program and Refuge management and maintenance activities.
4. Develop a volunteer program by utilizing members of the local community to provide volunteer services to the Refuge. This will include volunteers for mentoring youth hunters as well.

#### **Objective 3-9 Community Relations**

Within 3 years of approval of the Plan increase local community support and appreciation for

fish and wildlife conservation and endorse the Refuge's role in conservation.

Rationale

The Service's National Outreach Strategy (U.S. Fish and Wildlife Service, 1997) defines outreach as two-way communication between the U.S. Fish and Wildlife Service and the public to establish mutual understanding, promote involvement, and influence attitudes and actions, with the goal of improving joint stewardship of our natural resources. Providing a clear, consistent message about the role of the Refuge helps build support and understanding.

Strategies

1. Speak to local civic and outdoor enthusiasts groups and at special events throughout the year.
2. Continue to provide information and interviews for local news media and outdoors writers as well as distribute news annually.
3. Refuge staff will provide support and assistance to the local community in planning and carrying out the annual Goose Festival in Summer.
4. Refuge staff will attend and make presentations to area service organizations providing information about the Refuge.
5. Make use of an established friends group to better educate the public in outlying communities such as Chillicothe, Brookfield, Carrollton, Moberly, etc. about the Refuge.

**Objective 3-10 Archeological, Cultural, and Historic Protection**

Over the life of the Plan, avoid and protect or mitigate against disturbance of all known cultural, historic, or archeological sites.

Rationale

The integrity of cultural resources located on Service lands is subject to threats from erosion, neglect, vandalism, grazing, cultivation, and other land disturbing activities. The Service is required by statute to exercise caution in carrying out its activities to assure that historic properties are not inadvertently sold, demolished, substantially altered, or allowed to deteriorate significantly without adequate review and protection.

Strategies

1. Conduct an archeological, cultural and historical review of Refuge properties and facilities and ensure any areas identified are managed within archeological, cultural and historic policy.