

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ENVIRONMENTAL ASSESSMENT

Final (1/2011)

for
Proposed Hunting Plan for Sherburne National Wildlife Refuge
Sherburne County, Minnesota

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Abstract: The United States Fish and Wildlife Service proposes to provide additional hunting opportunities on Sherburne National Wildlife Refuge in Zimmerman, Minnesota that are compatible with the purpose of the Refuge. This environmental assessment evaluates three possible alternatives for hunting opportunities. The preferred alternative would offer compatible hunting opportunities while providing non-hunting visitors with other priority public use opportunities (i.e., wildlife observation, wildlife photography, environmental education and interpretation). The broad goals of the Sherburne NWR Hunting Plan are as follows:

- Provide the public with safe and enjoyable hunts that are compatible with Refuge purpose.
- Provide quality hunting opportunities that minimize conflict with other public use activities.
- Provide the public with opportunities to hunt wildlife species consistent with the laws and regulations of the State of Minnesota that do not adversely affect local wildlife populations, and are consistent with the 1997 National Wildlife Refuge System Improvement Act.
- Provide additional hunting opportunities for persons with disabilities and youth if it is determined there is a need to expand beyond existing opportunities.

This EA is being submitted to address Hunting Opportunities Proposed on Sherburne NWR, and has incorporated a Cumulative Impact Analysis to meet NEPA requirements.

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Sherburne

National Wildlife Refuge

Environmental Assessment

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Chapter 1: Purpose and Need

1.1 Background

1.1.1 Refuge Establishment

Sherburne National Wildlife Refuge was established in 1965 under the general authority of the Migratory Bird Conservation Act of 1929 (16 USC 715d) "...for use as an inviolate sanctuary, or for any other management purposes, for migratory birds." This includes "... conservation, management, and restoration of the fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans, [16 U. S. C. 668dd(a)(2) (National Wildlife Refuge System Administration Act)]. Other activities may also be accommodated, provided they are compatible with the Refuge purpose (as per Service Compatibility Policy, Federal Register 65 (202): 62484-62496).

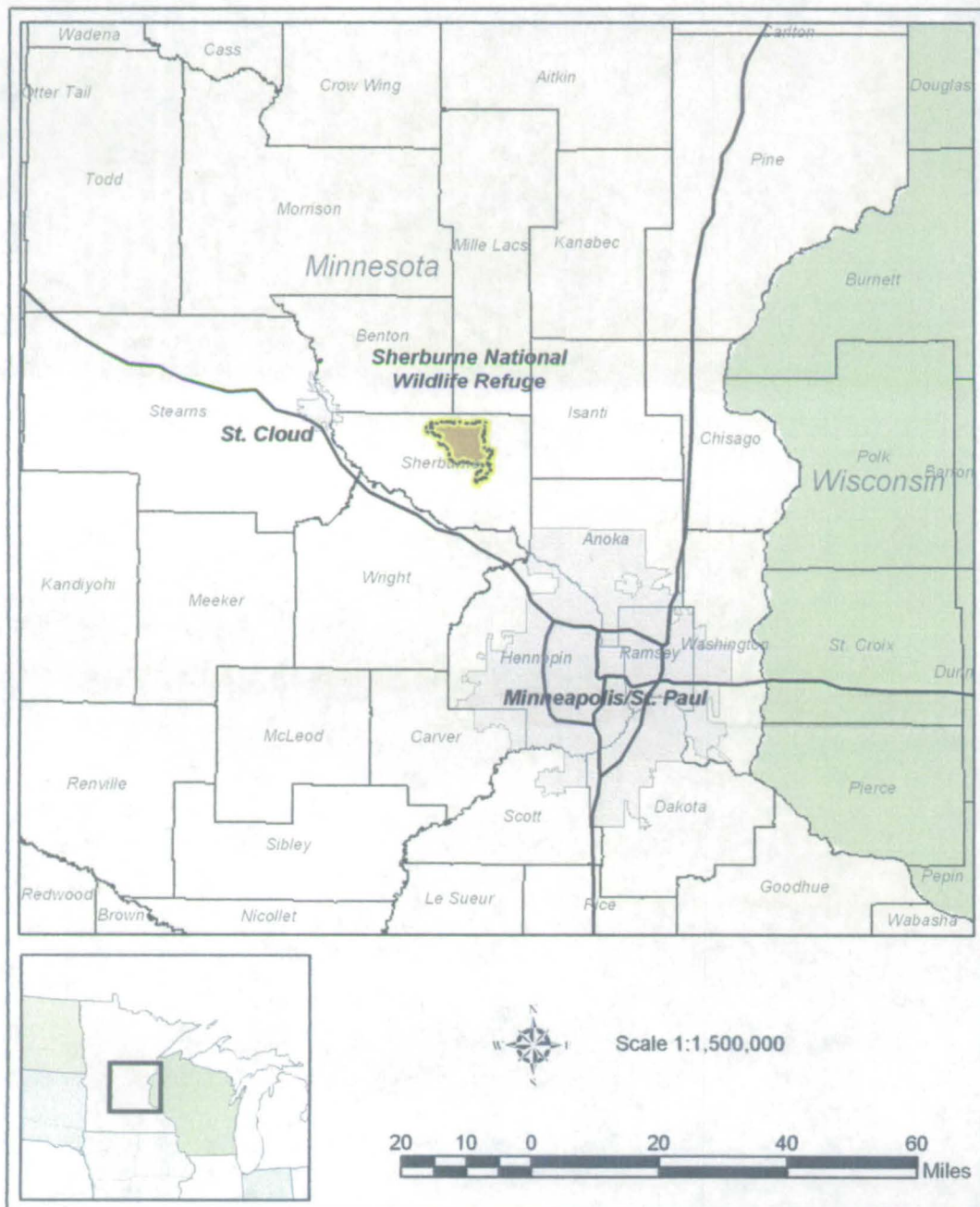
Final approval of the Refuge was received from the Migratory Bird Conservation Commission on May 18, 1965, and land was purchased with Federal Migratory Bird Hunting Stamp (Duck Stamp) funds. It appears the intention of the Migratory Bird Conservation Commission in establishing the Refuge was primarily to provide habitat for migratory waterfowl. Considering the wording of the establishing legislation, along with recent policy and legislation, the Refuge purpose is interpreted to include all migratory birds as identified in the Code of Federal Regulations (50 CFR 10.13).

This Environmental Assessment (EA) was prepared using guidelines established under the National Environmental Policy Act (NEPA) of 1969. NEPA requires examination of the effects of proposed actions on the natural and human environment. This EA covers the hunting chapter, which is preceding the overall Visitor Services Plan for the Refuge. In the following sections three alternatives are described for future Hunting Opportunities on the Refuge, the environmental consequences of each alternative, and the preferred management direction based on the environmental consequences and the ability to achieve Sherburne NWR's purpose.

In July 2005 a Comprehensive Conservation Plan for Sherburne National Wildlife Refuge, which involved an EA, was approved. The EA and CCP addressed future management of the Refuge, including visitor services. Six priority public uses (hunting, fishing, wildlife observation, photography, environmental education and interpretation) as identified in the 1997 National Wildlife Refuge Improvement Act occur on the Refuge.

Sherburne NWR (Figure 1) is located in Sherburne County, in east Central Minnesota, about 50 miles northwest of Minneapolis/St. Paul metropolitan area along Sherburne County Road 9 (17076 293rd Ave, Zimmerman, MN, 55398).

Figure 1. Location of Sherburne NWR in Minnesota.



Major access to the Sherburne NWR includes the following Sherburne County Roads Figure 2:

- Sherburne County Road (SCR) 5 - bisects the refuge in an north-south direction
- SCR 1, 4, 15 – southern boundary
- SCR 9 – access from Hwy 169 to refuge headquarters
- SCR 11, 16, 48–western boundary access
- SCR 3, 70 –northern boundary

Several township roads provide access along several boundaries. Portions of interior roads may be open depending on the specific hunting season. Concerns related to safety or weather may close interior roads at any time.

Figure 2. Major access roads to Sherburne NWR.



1.1.2 Current Hunting Program

There is a long history of hunting on the Refuge and it continues to be a compatible and supported public use today. It was a group of local conservationists and sportsmen that initiated the establishment of the Refuge for the purpose of restoring the St. Francis River Basin, primarily to provide habitat for migratory waterfowl. Hunting comprises approximately 11 percent of Refuge visitation. Limited sport hunting is permitted on the Refuge in accordance with all applicable federal and Minnesota State laws. The current hunting program consists of small game (for certain species), waterfowl, and deer hunting in designated areas (Figure 3, Table 1).

Figure 3. Sherburne National Wildlife Refuge designated hunting areas.

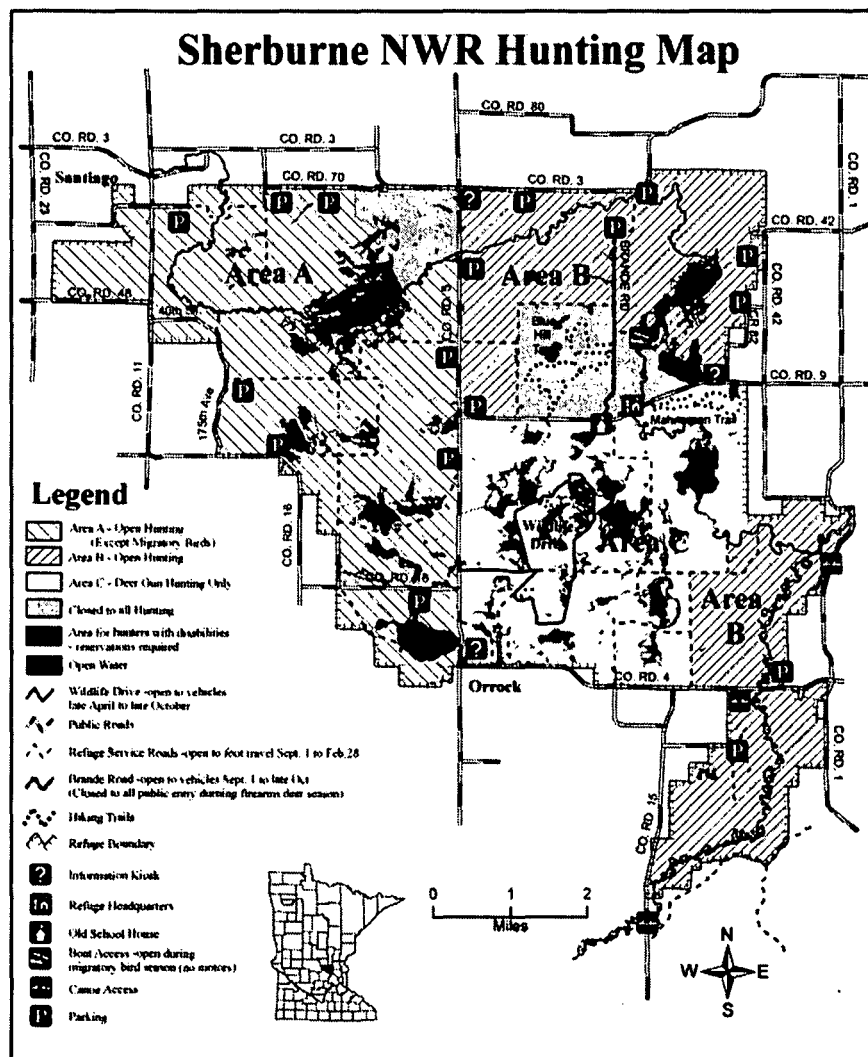


Table 1. Game species open for hunting on the Refuge with respective areas.

<u>Small Game</u>	<u>Area A</u>	<u>Area B</u>	<u>Area C</u>
Ruffed Grouse	State Season	State Season	Closed
Gray & Fox Squirrel	State Season	State Season	Closed
Rabbit & Hare	State Season	State Season	Closed
Pheasant	State Season	State Season	Closed
<u>Migratory Birds</u>			
Ducks, Coots & Geese	Closed	State Season	Closed
Rails, Woodcock, & Snipe	Closed	State Season	Closed
<u>Big Game</u>			
Deer - Archery	State Season	State Season	*Closed
Deer - Firearms Season	State Season	State Season	State
MN-DNR Zone 2			
Permit Area 224			
*Area C is closed to archery deer hunting, except during the State firearms-deer season			

In addition to the state and federal hunting regulations, hunters are subject to follow special regulations identified in the hunt brochure specific to Refuge lands that are listed below:

- Vehicles are permitted only on roads designated on the map (public roads and Brande Road). Foot travel is permitted throughout the Refuge September 1 – February 28 except in Closed Areas. The Refuge is closed during the sanctuary period March 1 to August 31, except official hiking trails (Blue Hill Trail and Mahnomen) and the auto-tour (Prairie's Edge Wildlife Drive).
- Vehicles may be parked in parking areas shown on the map or on the shoulder of the road in accordance with county and state regulations.
- The Refuge is not open for the state special goose hunts, deer muzzleloader, mourning dove, predator, bear, crow, raccoon or turkey hunting.
- Only non-motorized boats can be used. Launching only at designated sites.
- Overnight parking and camping are not permitted on the Refuge. Camping is available at the Sand Dunes State Forest and private campgrounds.
- Fire danger can be extremely high during spring and fall. Please take special precautions with all flammable materials. *Campfires are not permitted.*
- Blinds for hunters with disabilities are available by reservation during waterfowl

and firearms-deer seasons.

- Serious injuries or accidents occurring on the Refuge should be reported to the Refuge headquarters.
- Species not listed in this brochure are protected and may not be killed. It is the hunter's responsibility to identify game and the protected species. Bald Eagles, swans and other protected birds are common in hunting areas.
- No target or indiscriminate shooting is permitted.
- Shotgun hunters must possess and use *only non-toxic shot* while hunting small game and migratory birds on the Refuge.
- Field possession of migratory birds is prohibited in areas closed to migratory bird hunting.
- All personal property brought out to the refuge must be removed each day. This includes vehicles, boats, decoys, and trash.
- Deer hunting stands, including those made from natural vegetation, and all other hunting equipment must be dismantled or removed from the Refuge at the end of each day.
- Destruction of natural vegetation is not permitted in the placing of deer stands. The use of spikes, screw in steps or bolts in trees is not allowed.
- Only species listed in this brochure may be taken
- During firearms-deer season the Brande Road off Co. Rd. 9 is closed to all access including foot travel.
- The use of dogs while hunting birds is allowed. All dogs must remain under strict control.
- Dog training and target shooting are not permitted.

This hunt plan and environmental assessment will discuss two alternatives that describe opening a spring turkey hunt for special interest groups in addition to the current program and also to expand opportunities for hunters with disabilities for waterfowl and deer (archery and firearms) hunting.

1.2 Purpose

The purpose of this Environmental Assessment is to evaluate different alternatives for implementing an expanded Hunt Plan on Sherburne National Wildlife Refuge. These alternatives include the existing hunt program and two other alternatives exploring new hunting opportunities. Hunting is consistent with the 1997 Improvement Act which supports hunting along with 5 other public use activities.

1.3 Need for Action

Providing compatible wildlife-dependent recreation and educational activities on units of the National Wildlife Refuge System is a Service priority. One of the goals of the National Wildlife Refuge System is, "to provide an understanding and appreciation of fish and wildlife ecology and man's role in his environment, and to provide refuge visitors with high quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife to the extent these activities are compatible with the purposes for which the refuge was established." (National Wildlife Refuge Administration Act of 1966, 16 U.S.C. 688dd-ee)

In addition, the National Wildlife Refuge Administration Act of 1966 as amended in The Refuge Improvement Act of 1997 finds in Section 2, "When managed in accordance with principles of sound fish and wildlife management and administration, fishing, hunting, wildlife observation, and environmental education in national wildlife refuges have been and are expected to continue to be generally compatible uses."

Hunting, as herein proposed, is intended to: A) fulfill the Service's commitment to provide the public opportunities for outdoor recreation; B) provide valid wildlife management techniques to influence the distribution and abundance of wild turkeys on Sherburne NWR; and C) help ensure healthy populations are in balance with available habitat.

1.4 Decision Framework

The Regional Director for the Great Lakes-Big Rivers Region (Region 3 of the U.S Fish and Wildlife Service) will need to make two decisions based on this EA: (1) select an alternative and (2) determine if the selected alternative is a major Federal action significantly affecting the quality of the human environment, thus requiring preparation of an Environmental Impact Statement (EIS).

Following are the three Alternatives that were developed. Alternative C has been recommended to the Regional Director. The Draft Hunt Plan was developed for implementation based on this recommendation.

1. Alternative A: No Action: Allows current hunting program to continue which is limited to deer firearms and archery, small game (including Ruffed Grouse, gray and fox squirrel, rabbit and hare, and pheasant), migratory birds (including ducks, coots,

geese, rails, woodcock, and snipe), and specialty hunts that consist of waterfowl hunting for youth, and waterfowl and deer hunting for persons with disabilities.

2. Alternative B: Current; plus a spring turkey hunt for persons with disabilities. Open a select portion (designated areas and blinds) of the Refuge to turkey hunting, in accordance with the State of Minnesota regulations.
3. Alternative C: Preferred Alternative: Current; plus a spring turkey hunt for persons with disabilities and youth. Open the south spur and "closed" area around the maintenance facilities on the Refuge to turkey hunting for hunters with disabilities, in accordance with the State of Minnesota regulations and seasons; and to increase opportunities for persons with disabilities by expanding the current designated hunting area by approximately 50 percent (Figure 3 and 4) and adding up to 8 more blinds for both waterfowl and deer (archery and firearms) hunting.

1.5 Authority, Legal Compliance, and Compatibility

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of fish, wildlife and plant species. National wildlife refuges are established under many different authorities and funding sources for a variety of purposes. The purposes for the Sherburne NWR were established by a specific executive order of the president of the United States and are listed in Section 1.1.

In the past, the ability to open the Refuge to hunting was covered under the National Wildlife Refuge Administration Act, 16 U.S.C 688dd (a) (2). This Act was amended in 1997 by the National Wildlife Refuge Improvement Act of 1997 (Public Law 105-57). These Acts support past hunting activities on Sherburne NWR and future hunting opportunities as proposed in this document as follows:

"... conservation, management, and ... restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans..." 16 U.S.C. § 668dd(a)(2) (National Wildlife Refuge System Administration Act)

"...compatible wildlife-dependant recreation is a legitimate and appropriate general public use of the System, directly related to the mission of the System and the purposes of many refuges...." Public Law 105-57, 111 STAT.1254, Sec.5. (B) (National Wildlife Refuge Improvement Act of 1997).

The U. S. Fish and Wildlife Service developed a strategic plan for implementing the 1997 National Wildlife Refuge System Improvement Act called "Fulfilling the Promise" (USFWS, 1999). This plan clarifies the vision for the National Wildlife Refuge System and outlines strategies for improving delivery of the System's mission. The proposed hunting plan is compatible with the priorities and strategies outlined in "Fulfilling the Promise".

Additional authority delegated by Congress, federal regulations, executive orders and several management plans, such as the 2005 Comprehensive Conservation Plan (CCP), guide the operation of the Refuge. Appendix E of the CCP contains a list of the key laws, orders and regulations that provide a framework for the proposed action.

1.6 Scoping of the Issues

The Sherburne NWR CCP planning process began in November 2000 with a team comprised of Refuge staff, regional and Washington Office planners, representatives of regional office programs, and biologists from the U.S. Geological Survey, Biological Resources Division. The team agreed to proceed through a combination of expert technical groups and workshops open to the public and facilitated by Conservation Breeding Specialist Group (CBSG), which is a Species Survival Committee (SSC) member of the International Union for the Conservation of Nature (IUCN). Three technical groups (upland, wetland, and public use) met throughout the year. Concurrently, four CBSG workshops were held. These workshops were designed to incorporate the technical group findings and the public meetings and to consolidate work to produce a mission statement, vision statement, and goals and draft objectives for the environmental assessment and comprehensive conservation plan. The CCP incorporates the results of these meetings and workshops. In addition to the general public, we invited individuals from a diversity of groups and institutions.

Public involvement is a key element of comprehensive conservation planning, and throughout this planning process we strive to provide as many opportunities for public participation as possible. A Notice of Intent to prepare a comprehensive conservation plan for Sherburne National Wildlife Refuge was published in the Federal Register May 4, 2001. Subsequently, articles in local newspapers notified citizens and a web page was developed. In addition, over 5,000 letters were sent to surrounding residents inviting them to participate. Seven public meetings were conducted between May 29, 2001, and September 13, 2002. Invitees and participants included members of the public, Ojibwe and Dakota Tribes, Sherburne NWR Friends Group, Minnesota Department of Natural Resources, private conservation groups (NGOs), university faculty and government scientists. The planning effort benefited from the creative involvement of the public, tribal, state, university and federal participants.

Scoping for the Hunt Plan began with the CCP and continued until the present. Refuge staff met and communicated annually with the DNR and other hunting organizations such as the Minnesota Deer Hunter Association, Wheelin' Sportsmen, and other interested parties to discuss the possibility of expanding the hunting program to include turkey hunting and increase deer and waterfowl hunting opportunities for underserved audiences on the Refuge. All requests received encouraged Refuge managers to propose opening more hunting opportunities, which are outlined in this document.

1.6.1 Issues and Concerns

A variety of issues, concerns, and opportunities were addressed during the CCP process. Several recurring themes, including those related to hunting, emerged from discussions among citizens, open house attendees, focus group participants, resources specialists, and Refuge planning staff. In general, additional hunting opportunities for underserved audiences are supported by the majority of the public and encouraged by other interested parties including MN Department of Natural Resources, and these opportunities have been an expectation since the completion of the CCP. A complete list of issues may be found in the Environmental Assessment that accompanied the 2005 CCP.

Chapter 2: Description of Hunting Alternatives

2.1 Formulation of Hunting Alternatives

During the development of the Sherburne NWR CCP, the planning team developed an objective to guide the hunting program through the next 15 years. The objective states, to “Increase hunting opportunities from the level offered in 2004”. This objective was associated with several strategies including:

- Annually provide at least four blinds for hunters with disabilities for deer and waterfowl seasons.
- Reserve blinds for exclusive use by hunters with disabilities on a first come/first serve basis.
- Provide annual firearms deer hunt within the framework of the Minnesota State Department of Natural Resources on at least 70% of the Refuge lands.
- Continue small-game hunting opportunities as defined by state regulations on areas identified in the Refuge hunting brochure.
- Add a spring turkey hunt for hunters with disabilities in designated blinds in specific areas.
- Continue the youth waterfowl hunt.
- Continue waterfowl hunting within the state framework on areas identified in the Refuge hunting brochure.
- Continue archery deer hunting with the state framework on areas identified in the Refuge hunting brochure.
- Develop operational definition of success and measures for hunting through a survey of hunter satisfaction. Include indicators directed toward recreational users with disabilities.

After the completion of the Sherburne NWR CCP, the previously authorized hunts continued throughout at least 70 percent of Refuge lands as directed. Specialty deer and waterfowl hunts for persons with disabilities began in 1994 with the installation of blinds and a designated hunting area (see Figure 3), small game hunting, waterfowl hunting, youth waterfowl hunting, and archery deer hunting have continued. To date, there is no spring turkey hunt offered on the Refuge for hunters with disabilities.

The CCP directed Refuge managers to develop an alternative to add a spring turkey hunt for persons with disabilities. The CCP also discussed a spring turkey hunt for youth, expansion of the deer/waterfowl hunting zone and adding additional blinds for persons with disabilities.

Factors considered in the development of alternatives were:

1. Compatibility with the purpose of the Refuge and the mission of the National Wildlife Refuge System.
2. Natural resources of the Refuge
3. Demands, expectations and conflicts of public use, with concerns for safety.
4. Issues identified in the CCP and the CCP Environmental Assessment
5. Comments from partners
6. Hunting opportunities on adjoining State Wildlife Management Areas
7. Requirements and guidance provided in establishment legislation.

2.1.1 Alternative A: Current Direction (No Action) – allow previously authorized hunts to continue

Under Alternative A (No Action), hunting at Sherburne NWR would be limited to deer firearms and archery, small game (including Ruffed Grouse, gray and fox squirrel, rabbit, hare, and pheasant), migratory birds (including ducks, coots, geese, rails, woodcock, and snipe), and specialty hunts including waterfowl hunting for youth, and deer and waterfowl hunting for persons with disabilities. The Refuge is divided into 3 designated “Hunting Areas” Area A, B, and C (see Figure 3). Different regulations apply to each area. Hunting on the Refuge is used as a management tool to maintain optimal populations of targeted wildlife and also to provide recreational opportunities for the public. There would be no change to current hunting opportunities, public use, and wildlife management programs. All authorized hunts are consistent with the regulations set by the Minnesota DNR. Sherburne NWR lies within Minnesota DNR Zone 2 and is its own permit area (State Management Unit 224). Also, there are additional U.S. Fish and Wildlife Service regulations outlined in Chapter 1 (page 5).

2.1.2 Alternative B: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities

In addition to all previously authorized hunts described in Alternative A, under Alternative B select locations on the Refuge will be open to spring turkey hunting for persons with disabilities. The seasons, bag limits, and regulations will be consistent with those set by the Minnesota DNR. The turkey hunt will be limited in time, number of people, and location. Access for persons with disabilities will be by walking, non-motorized bicycling, or vehicle with pre-approved authorization when reservations are made. Ingress and egress routes will be predetermined and established for persons with disabilities to aid in mobility.

Turkey hunting will be restricted to the south spur of the Refuge (Figure 4, the Turkey* area highlighted in blue). The remainder of the Refuge (with the exception of the existing hiking trail

network and wildlife drive) is closed to public use during the spring of the year due to sanctuary time which is from the 1st of March to the 31st of August.

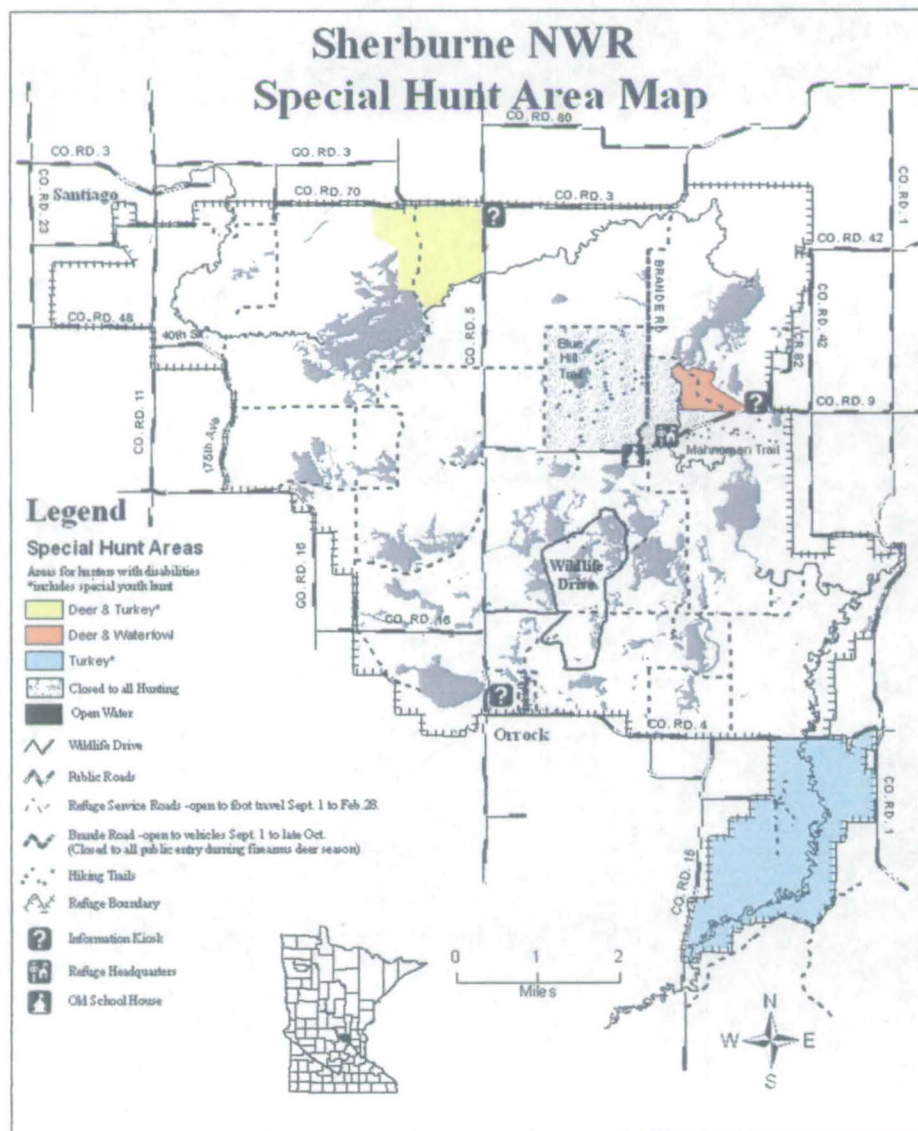
There are 8 spring hunting periods in the State of Minnesota, each lasting 5 days in length generally starting on the 2nd Wednesday of April. Turkey hunts for persons with disabilities on the Refuge will coincide with these state seasons. A maximum of 5 disabled hunters per 5 day hunting period will be permitted and they may be accompanied by one non-hunting assistant per hunter. Thus, the maximum number of people during a given 5 day period will be 10. These limitations will minimize disturbance of habitat and other wildlife species. A maximum of 5 portable hunting blinds provided by the Refuge will be setup in advance and placement will be based on many factors including proximity to roads, accessibility, biological concerns, turkey sign and movement patterns, etc. Blind decisions and placement will be decided by several FWS personnel. Hunters and assistants will be restricted to established blinds as well as ingress and egress routes to and from the blind. Access will be limited to location, designated ingress and egress routes, and number of people to minimize disturbance both to flora and fauna and to limit disturbance to these localized areas designated for the turkey hunt.

2.1.3 Alternative C: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities and Youth and expand opportunities for Persons with Disabilities for Deer and Waterfowl Hunts (Preferred Alternative).

Under Alternative C, all current hunting programs discussed in Alternative A will continue, and a spring turkey hunt will be implemented for persons with disabilities and youth hunters in the south spur and "closed" area around the maintenance facilities; and opportunities for hunters with disabilities will increase by expanding the current disabled hunting area by 50 percent as well as installing up to 8 additional blinds for both waterfowl and deer (firearms and archery) hunting (Figure 4). The seasons, bag limits, and regulations will be consistent with those set by the Minnesota DNR.

The turkey hunt will be limited in time, number of people, and location. Youth turkey hunting access will be by walking or non-motorized bicycling only. Access for persons with disabilities will be by walking, non-motorized bicycling or by vehicle with pre-approved authorization when reservations are made. Ingress and egress routes will be predetermined and established for persons with disabilities to aid in mobility to and from designated hunting blinds. The proposed turkey hunt in this alternative is equivalent to the turkey hunt described in Alternative B, but will also include youth hunters that must be accompanied by one mentor, in addition to hunters with disabilities. Seasons for youth and persons with disabilities will be determined by a first come first serve basis through an application process with the intent to accommodate both interest groups.

Figure 4. Proposed areas for specialty hunts at Sherburne NWR. The designated hunting areas highlighted in this figure are in addition to the hunting map, seasons, and regulations outlined in Figure 3 and Table 1. The "Deer & Turkey*" area (yellow) is the "closed" area surrounding the Refuge maintenance facilities shown in Figure 3 and will be open to spring turkey for youth and hunters with disabilities and to deer (firearms and archery) for hunters with disabilities. The "Deer & Waterfowl" area (orange) will be open to waterfowl and deer (firearms and archery) only for persons with disabilities; this area expanded from the levels shown in Figure 3. The "Turkey*" area (blue), called the "south spur," will be open to spring turkey for youth and hunters with disabilities.



2.1.4 Alternative(s) Considered But Not Developed

2.1.4.1 No Hunting

A No Hunting Alternative would require existing hunting to cease on the Refuge. Most lands within the acquisition boundary were hunted prior to Refuge establishment. With a few exceptions, those lands continue to be hunted on the Refuge for various game species. The original motivating factor for Refuge establishment was a movement from local conservationists and sportsmen to restore the St. Francis River Basin, which had been altered by a series of drainage ditches for agricultural production. Since these restoration efforts and Refuge establishment, hunting has always been a compatible use and a supported public use activity in the area. Also, numerous comments supporting the continuation of hunting were received during the scoping for the original EA and the 2005 CCP. The Improvement Act identifies hunting as one of six priority uses of lands within the Refuge System. To eliminate hunting on Refuge lands where it already has been determined compatible with Refuge purposes and the mission of the System would not meet the intent of the Improvement Act. The CCP identified the expansion of the hunting program as compatible and a visitor service priority.

Table 2. Actions Anticipated for Hunting Alternatives

Action	Alternative A (No Action) Allows current hunting programs to continue	Alternative B Current; plus spring turkey for persons with disabilities	Alternative C (Preferred) Current; plus spring turkey for persons with disabilities and youth
Species that will be hunted	Ruffed Grouse, gray & fox squirrel, rabbit, hare, pheasant, ducks, coots, geese, rails, woodcock, snipe, deer	Same; plus Wild Turkey	Same; plus Wild Turkey
Compatible with Refuge Goals and Purpose	Yes. Provides for priority public use while also providing sanctuaries on other parts of the Refuge during breeding and nesting season for wildlife species.	Yes. Same as No Action Alternative	Yes. Same as Alternative B
Provides for Priority Public Uses	Yes. Satisfies the needs of the 1997 National Refuge Improvement Act, but combines uses.	Yes. Same as No Action Alternative	Yes. Satisfies the needs of the 1997 National Refuge Improvement Act, but gives priority to hunting and more opportunities for special interest groups.
Hunting and non-hunting activities separated	Yes. The Refuge has designated areas open to the non-consumptive public.	Yes. Same as No Action; plus most of the Refuge is closed during turkey hunting season	Yes. Same as Alternative B
Meets needs identified by public and partners	No. Does not allow all hunting opportunities as identified to be important by the public and partners.	Y. Same as No Action	Yes. The public and partners requested a spring turkey hunt for special interest groups.
Interference with prescribed burning and other habitat management activities	No. But state seasons are prime time for fall burns.	No. Same as No Action; plus designated areas for spring turkey will avoid planned burn units.	No. Same as Alternative B
Impact to T&E species.	No.	No. Same as No Action	No. Same as Alternative B

Chapter 3: Affected Environment

3.1 Introduction

This chapter includes a summary description of the affected environment of the Refuge. Sherburne National Wildlife Refuge is situated in a transition zone of three important plant communities in Minnesota: the coniferous forests to the north, the broadleaf forests to the southeast and the prairies to the west.

The Refuge is located on the Anoka Sand Plain, a large flat and sandy glacial outwash area thought to be Lacustrine in origin and created by glacial recession 10,000 years ago (Minnesota Department of Natural Resources, Ecological Classification System). The St. Francis River runs through the Refuge and drains into Elk River, which ultimately enters the Mississippi River south of the Refuge boundary.

The area was originally surveyed in 1855, prior to European settlement, by James Marsh who described a typical township as follows, "There are quite a number of lakes and ponds in this township, with some fens, marshes, and tamarack swamps. The surface is gently rolling, soil sandy and light and... second and third rate timber very poor scattering. Mostly a growth of black and bur oaks, aspens with tamarack in the swamps... there are no settlers in this township."

The 30,700-acre Refuge was established in 1965 at the urging of local conservationists and sportsmen interested in restoring the wildlife values of the St. Francis River Basin, which had been altered by a series of drainage ditches for agricultural production. The land was purchased under the authority of the Migratory Bird Conservation Act of 1929 and is now part of the National Wildlife Refuge System.

The establishing purpose of Sherburne National Wildlife Refuge was under the general authority of the Migratory Bird Conservation Act of 1929 (16 USC 715d) "...for use as an inviolate sanctuary, or for any other management purposes, for migratory birds." This includes "... conservation, management, and restoration of the fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans, [16 U. S. C. 668dd(a)(2) (National Wildlife Refuge System Administration Act)]. Other activities may also be accommodated, provided they are compatible with the Refuge purpose (as per Service Compatibility Policy, Federal Register 65 (202): 62484-62496).

Final approval of the Refuge was received from the Migratory Bird Conservation Commission on May 18, 1965, and land was purchased with Federal Migratory Bird Hunting Stamp (Duck Stamp) funds. It appears the intention of the Migratory Bird Conservation Commission in establishing the Refuge was primarily to provide habitat for migratory waterfowl. Considering the wording of the establishing legislation, along with recent policy and legislation, the Refuge purpose is interpreted to include all migratory birds as identified in the Code of Federal Regulations (50 CFR 10.13).

3.2 Climate, Geology and Hydrology

Climate

The climate in east-central Minnesota is classified as 'sub-humid continental' and is characterized by significant variations between summer and winter temperatures. The region has four distinct seasons with moderate spring and fall weather. Summer is comfortable because lakes and trees serve as natural air conditioners. The winters in nearby Minneapolis, the second coldest city in the United States, have an average daily temperature of 35 degrees Fahrenheit. The temperature can drop to between minus 20 degrees and minus 30 degrees Fahrenheit on several days each winter. The June, July and August mean temperature is 68.2 degrees Fahrenheit. Frost is likely to occur until mid-May, and to return by the end of September. The latest recorded occurrence of a freezing temperature in spring is June 9, and the earliest in fall is September 3. The freeze-free period is long enough that such crops as corn, soybeans, small grain, and vegetables generally have time to reach maturity.

Precipitation is well distributed throughout the growing season. About 17.4 inches, or 60 percent of the total annual precipitation, falls during the period from May through September. The average annual precipitation ranges from around 26 to 31 inches. In 1976, a total of only 13.07 inches of precipitation was recorded at the DNR reporting station in nearby Zimmerman during the entire year. During the following 7 months, from January to July 31, 1977, 21.08 inches had fallen, thus indicating the substantial variation that can occur (USDA Climate Data).

Geology

The Refuge lies within the deciduous forest-woodland zone of Minnesota on the Anoka Sand Plain, a large flat sandy outwash area now thought to be Lacustrine in origin, with small dune features and low moraines exposed above the outwash (Wright, 1972). This zone in Minnesota is transitional between tall-grass prairie and deciduous forest. The uplands within the Refuge consist of these flat sandy areas with some rolling small sand dunes, interspersed with wetlands and four natural lakes. Upland soils are Zimmerman, Lino and Isanti loamy fine sands from 0 to 6 percent slope, good drainage, very low water holding capacity, and high erosion potential, severe limitations for crops, but suitable for pasture or range (USDA, Soil Conservation Service, 1968). These soils are placed in the Zimmerman-Lino-Isanti-peat Soil Association due to the presence of many small scattered peat bog inclusions. The pre-settlement vegetation on the uplands throughout the Anoka Sand Plain was oak barrens and openings.

Hydrology

The majority of the Refuge is located within the St. Francis River Watershed, which extends northward into Benton County. The Refuge was developed along a portion of the St. Francis River Valley, historically known for its wildlife resources. The St. Francis River begins in Benton County, about 18 miles from where it enters the northwest corner of the Refuge. After traveling through the Refuge, the St. Francis River exits the Refuge's "south spur" and drains into the Elk River just north of Big Lake, then drains into the Mississippi River within the city

limits of Elk River. The middle one-third of the Refuge's western boundary follows the boundary of the Snake River Watershed, which lies to its west. A small portion of the Refuge lies within the Snake River Watershed, including Johnson Slough and Orrock Lake.

3.3 Natural Resources

3.3.1 Habitats

The Refuge is approximately 30,700 acres. Larger vegetative types include: emergent marsh (3,500 acres), lowland brush (4,800 acres), wet meadow (2,200 acres), open water (3,500 acres) northern hardwoods (1,100) acres, oak woodlands (5,500 acres), oak savanna (1,500 acres) and grasslands (8,000 acres).

Wetlands

Prior to European settlement, 44 percent of the acres within the current Refuge boundaries were wetlands. During the 1930s, 2,152 wet acres were drained resulting in a 10 percent decrease of natural wetlands. In the early 1970s the impoundment system returned more than the original wet acres and now approximately 50 percent of Refuge lands consist of wetlands of various types including: permanent mixed-emergent marshes, wet meadows, shrub-scrub, tamarack bog, and open water. Twenty-two of the original impoundments are still actively managed and water levels on these pools are manipulated to improve the productivity of the aquatic communities mainly for waterfowl production, but also to provide habitat for other wetland-dependent species. In addition to the impoundments, there are 4 large wetlands that do not contain water control structures and were naturally formed during glaciation.

Woodlands/Forests

Approximately 6,600 acres of woodlands and forests cover Refuge lands including oak woodlands, northern hardwood forests, oak forests, and riparian forests. These woodlands and forest types consist of various species including red oak, northern pin oak (or a red-northern pin hybrid), maple, green ash, cherry, basswood, aspen, and American elm. Some of this habitat type will be retained and some will ultimately be restored to oak savanna habitat as directed by the 2005 CCP and the 1997 Refuge Improvement Act.

Oak Savanna

The distribution of oak savanna throughout the Midwest was widespread before European settlement. This habitat type once occupied as much as 50 percent of Midwestern landscape covering 11 to 13 million hectares (Nuzzo 1986). Only 0.02 percent of pre-European oak savannas remain today in small fragments and scattered remnants. The Refuge contains approximately 732 acres of oak savanna remnants. Oak savanna was historically the predominant habitat in the uplands of Refuge lands. Thus, restoration of oak savanna habitat is a high priority and is one of the main focuses of habitat management.

Grasslands

Very few small, scattered tracts of native prairie exist on the Refuge, amounting to less than 1,000 acres. These rare grasslands include both mesic and dry prairie and are frequently interspersed throughout woodlands and oak savannas. Currently grasslands comprise about 8,000 acres of the Refuge and are actively managed. Many of these grassland areas will ultimately be converted to oak savanna habitat as directed by the 2005 CCP and the 1997 Refuge Improvement Act.

3.3.2 Landuse

Thirty-two percent of the upland land cover of the Refuge at the time of establishment was dominated by agriculture in the form of cropped fields. The most dominant “natural” habitat types were shrub swamp (19 percent) and oak savanna comprising 17 percent of the land area. Much of the uplands were grazed by domestic livestock. Wet meadows had approximately 10 percent of the land cover, mixed hardwoods with 6 percent and conifer plantations, at that time consisted of 3 percent of the Refuge’s acreage.

Today, most of the land east and south (beyond Sand Dunes State Forest) of the Refuge is developed with homes. The west and north sides are still predominantly agriculture, but changes are moving toward housing developments in these areas as well.

3.3.3 Local Socio-Economic Conditions

Sherburne County has grown substantially in the 1990s. The townships surrounding the Refuge (Becker, Orrock, Blue Hill and Santiago) experienced population increases of 74 to 106 percent. Three cities within Sherburne County have more than doubled in population during this time. Sherburne County has also recently been included in the newly expanded nine-county metropolitan area of the Twin Cities.

Employment in Sherburne County escalated between 1980 and 2001 (71 percent). While Sherburne County population has grown considerably over the last 20 years, the rise in employment has outpaced population growth. The employment increase in Sherburne County is double the rate of employment increase in the State of Minnesota over the same time period.

3.3.4 Wildlife

Birds

The Refuge attracts over 230 species of birds each year to its diverse habitats. Of these, over 120 are known to nest in the area. The Refuge wetlands provide habitat for approximately 40 nesting pairs of Greater Sandhill Cranes. Also during the nesting and breeding season, the Refuge supports several waterfowl species including Canada Geese, Trumpeter Swans, Mallards, Wood Duck, Blue-winged Teal, and Hooded Merganser. During fall and spring migration, the Refuge

serves as an important staging area and stopover location for thousands of cranes, waterfowl, and many other migratory bird species.

Mammals

The Refuge lies within the known breeding range of 54 mammal species. Of these, 46 species have been confirmed on the Refuge. Two species, bison and elk, known to historically reside on Refuge lands, were extirpated in the early 1940s.

Reptiles and Amphibians

Twenty-three species of reptiles and amphibians have been reported on the Refuge, but little is known about their populations or potential limiting factors. Many of these, such as the snapping and painted turtles are associated with wetland habitats, while others such as the common garter, Blanding's turtle, and hognose snakes occur in the oak savanna and prairie habitats.

3.3.5 Threatened and Endangered Species

Gray wolves are currently listed as threatened in the state of Minnesota and federally endangered throughout its historical range. Wolves do not have any established packs on the Refuge but individuals intermittently disperse through the area. Bald Eagles were once federally listed as threatened, but were delisted on August 9, 2007 and moved to a protected status under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. This species is commonly observed in the area during spring and fall migration and the Refuge currently supports 9 nesting pairs. Since 1983 when the first eagle nest was documented after their dramatic population decline, there have been approximately 164 eaglets produced on the Refuge. State-listed threatened or special concern bird species common to the Refuge include Trumpeter Swan, American White Pelican, Loggerhead Shrike, and Upland Sandpiper. The Refuge supports a Blanding's turtle population, a state-listed threatened species, and other reptiles with special concern status including snapping turtles, western hognose snake, and gopher snake.

3.4 Cultural Resources

An archeological resource survey was conducted near the time of Refuge establishment and with only one percent of the Refuge surveyed, there were 53 known historical sites identified. The Refuge contains two important Woodland period mound groups and associated villages. The Refuge has 20 reported archeological collections totaling almost 17,000 items. These collections are stored primarily at the Minnesota Historical Society, with a smaller collection at Mississippi Valley Archeology Center. There were four, sub-surface sites showing evidence of Native American origin and were included in the National Register of Historic Places. These sites include archeological sites No. 13 and No. 14, the northern mound burial site and the southern mound group burial site. While not on the National Registry, the Grundrude Cemetery is a pioneer family cemetery near Orrock and is of local historical significance.

3.5 Fire Management

This section contains detail about the prescribed fire and wildfire suppression procedures used on the Sherburne NWR. We have included more detail on this subject here and in Chapter 4 of the CCP EA in order to fully document the Refuge's recent Fire Management Plan (FMP) in compliance with the National Environmental Policy Act.

3.5.1 Prescribed Fire

The Refuge's fire program focuses on prescribed burning for the purpose of habitat restoration, wildlife management, and wildfire control. Though the main reason for conducting prescribed burning is to restore and maintain a healthy Refuge ecosystem, fuel reduction for wildfire management also benefit from the program. Prescribed burning consumes dead vegetative fuels under controlled conditions, reducing the wildland fuel load. Reducing these fuel loads under controlled conditions facilitates the suppression of wildfires, should they start. This is particularly important because the Refuge lies in an area that has a lot of residential development.

Oak savanna is a fire-dependent plant community that today is restored and maintained by prescribed burning. Burning serves three primary functions. It encourages the growth of native wildflowers and warm season grasses, such as big and little bluestem, Indian grass and switch grass, which provide food and cover for nesting waterfowl and wildlife. It also reduces competition from exotic cool season grasses and encroaching trees and shrubs that are not fire tolerant. In addition, prescribed burning opens up the canopy in more heavily wooded areas to re-create oak savanna.

Trained and qualified personnel perform all prescribed burns under precise plans. The Refuge has an approved FMP that describes in detail how prescribed burning will be conducted. A burn is conducted only if it meets specified criteria for air temperature, fuel moisture, wind direction and velocity, soil moisture, relative humidity, and several other environmental factors. The specified criteria (prescription) minimize the chance that the fire will escape and increase the likelihood that the fire will have the desired effect on the plant community.

How often established units are burned depends on management objectives, historic fire frequency, and funding. The interval between burns may be 2 to 5 years or longer. As part of the prescribed fire program, the Refuge established a monitoring program to verify that objectives are being achieved.

Spot fires and escapes may occur on any prescribed fire. The spot fires and escapes may result from factors that cannot be anticipated during planning. A few small spot fires and escapes on a prescribed burn can usually be controlled by the burn crew. If so, they do not constitute a wildland fire. The burn boss is responsible for evaluating the frequency and severity of spot fires and escapes and, if necessary, slowing down or stopping the burn operation, getting additional

help from the Refuge staff, or extinguishing the prescribed burn. If the existing crew cannot control an escaped fire and it is necessary to get help from the Minnesota DNR or other local fire units, the escape will be classified as a wildland fire and controlled accordingly. Once controlled, we will stop the prescribed burning for the burning period.

3.5.2 Fire Prevention and Detection

In any fire management activity, firefighter and public safety will always take precedence over property and resource protection. Historically, fire influenced the vegetation on the Refuge. Now, fires burning without a prescription are likely to cause unwanted damage. In order to minimize this damage, we will seek to prevent and quickly detect fires.

Fire detection for the Refuge is primarily done by the Minnesota DNR and Refuge staff. The Sand Dunes State Forest Fire Tower south of the Refuge provides constant surveillance during periods of high fire danger. The DNR's fire detection aircraft also flies a route that crosses the Refuge several times a day during these periods. Fires are also frequently called into the DNR, or the Refuge, by sharp eyed public that see smoke while out driving or hiking. The common occurrence of cell phones has increased the speed at which the public can report a fire. This allows fire personnel to act while a fire is still small. Table 3 lists the recent wildfire history on Sherburne NWR.

3.5.3 History of Prescribed Burns and Wildfire

Wildfires were known in this area prior to the establishment of the Refuge in 1965. On average the refuge has four to five wildfires per year. Table 3 shows the number and acreage of prescribed and wildfires from 1989-2008. Most fires are less than 5 acres in size; however, a few of the fires have burned considerable acreage.

The period of highest fire danger occurs from 1 April to 15 May and 1 September to 15 November. Generally, spring rains and vegetative green up have occurred by Memorial Day; in the fall, precipitation and colder temperatures reduce the fire hazard by early November.

Table 3. Sherburne NWR wildfire history for the 20 year period from 1989-2008.

Year	# of Wildfires	Acres	# of Rx Burns	Acres	Total Acres
2008	1	1	11	797	798
2007	1	2	21	4,683	4,685
2006	0	0	18	4,379	4,379
2005	3	24	13	5,218	5,242
2004	8	5.32	1	1,531	1,536.32
2003	4	2.3	15	6,064	6,066.30
2002	13	25.5	8	7,953	7,978.50
2001	7	136	1	945	1,081
2000	9	276	9	4,743	5,019
1999	7	13	6	4,120	4,133
1998	11	61	10	6,426	6,487
1997	2	16	5	3,459	3,475
1996	3	1,300	3	3,357	4,657
1995	10	330	5	4,103	4,433
1994	1	12	4	466	478
1993	4	7	7	2,490	2,497
1992	3	6	8	6,821	6,827
1991	4	72	7	2,490	2,562
1990	3	914	1	1,200	2,114
1989	1	0.3	5	4,334	4,334.30

3.5.4 Fire Suppression

We are required by Service Policy to use the Incident Command System (ICS) and firefighters meeting National Wildfire Coordinating Group (NWCG) qualifications for fires occurring on Refuge property. Our suppression efforts will be directed towards safeguarding life while protecting Refuge resources and property from harm. Mutual aid resources responding from Cooperating Agencies will not be required to meet NWCG standards, but must meet the standards of their Agency.

3.6 Economic Resources

Sherburne County (451 sq. Miles) is located in east central Minnesota, with the County Seat in Elk River. Cities and towns in the county include Becker, Big Lake, Clear Lake, Elk River, Princeton, St. Cloud, and Zimmerman. According to the U.S. Census Bureau the 2009

population estimate for Sherburne County is 87,832 with a median household income of \$70,212.

The implementation of the Sherburne NWR Hunt Plan is anticipated to have a beneficial impact to the local economy. Sherburne NWR is located in an area where hunting and outdoor recreation is a strong part of the current and historical culture. According to the 2006 U.S. Fish & Wildlife Service report "Banking on Nature," Sherburne NWR contributes \$1.3 million total economic activity related to Refuge recreational use and 18 jobs for the nearby communities. Hunters coming to the Refuge support the local economy by purchasing hunting licenses, gasoline, food, and miscellaneous hunting merchandise. Some hunters may also come from outside the region utilizing local motels and eating establishments.

3.7 Recreational Opportunities

A complete review of future public uses will be addressed in the Visitor Services Plan that will be written by 2012. In general, as described in the CCP, public uses that are permitted include: wildlife observation and photography, special events/outreach, environmental education, hunting and fishing.

Hunting opportunities proposed on the Sherburne NWR already exist on state and other public lands in Sherburne County or adjacent counties. Sherburne County has about 14,500 acres of public land open to hunting on State Wildlife Management Areas (WMA) and Sand Dunes State Forests.

Chapter 4: Environmental Consequences

This chapter describes the foreseeable environmental consequences of implementing each of the three management alternatives discussed in Chapter 2. When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences will be presented, which is described as "impacts" or "effects." When detailed information is not available, those comparisons are based on the professional research and experience of the Service, Refuge staff, and state biologists.

As described in Chapter 2, three alternatives are being considered:

- **Alternative A- (No Action):** Allows current hunting program to continue which is limited to deer firearms and archery, small game (including Ruffed Grouse, gray and fox squirrel, rabbit and hare, and pheasant), migratory birds (including ducks, coots, geese, rails, woodcock, and snipe), and specialty hunts including waterfowl hunting for youth, and waterfowl and deer hunting for persons with disabilities.
- **Alternative B:** Current; plus a spring turkey hunt for persons with disabilities. Open a select portion (designated areas and blinds) of the Refuge to turkey hunting, in accordance with the State of Minnesota regulations.

- **Alternative C- (Preferred Alternative):** Current; plus a spring turkey hunt for persons with disabilities and youth. Open the south spur and the “closed” area around the maintenance facilities on the Refuge to turkey hunting for youth and persons with disabilities in accordance with the State of Minnesota regulations; and increase opportunities for persons with disabilities by expanding the designated disabled hunting area and by installing additional blinds for waterfowl and deer (firearms and archery) hunting (see Figure 4).

Table 4. Summary of Hunting Opportunities by Alternative

Hunting Opportunity	Alternative A	Alternative B	Alternative C
Deer (Firearms/Archery)	Y	Y	Y
Deer (Muzzel loader)	N	N	N
Deer - Disabled	Y	Y	Y
Wild Turkey (General)	N	N	N
Wild Turkey – Disabled	N	Y	Y
Wild Turkey – Youth	N	N	Y
Small Game (Ruffed Grouse, gray and fox squirrel, rabbit, hare, pheasant)	Y	Y	Y
Waterfowl (General)	Y	Y	Y
Waterfowl – Disabled	Y	Y	Y
Waterfowl – Youth	Y	Y	Y
Woodcock	Y	Y	Y
Other Migratory Birds (Coots, rails, snipe)	Y	Y	Y
Predator	N	N	N

Y = Yes, opportunity is available; N = No, not permitted or available

National Wildlife Refuges, including Sherburne NWR, will conduct hunting programs within the framework of state and federal regulations. All of the following alternatives are at least as restrictive as the State of Minnesota. By maintaining hunting regulations that are as, or more, restrictive than the State, individual refuges ensure that they are maintaining seasons which are supportive of management on a local and regional basis. The proposed hunt plan has been reviewed and is supported by the Minnesota Department of Natural Resources (MN DNR). Additionally, refuges coordinate with the MN DNR annually to maintain regulations and programs that are consistent with the state management program.

4.1 Effects Common to all Alternatives

Specific environmental and social impacts of implementing each alternative are examined in five broad issue categories: big game, upland game, migratory birds, threatened and endangered species, habitat, and other public use activities and social implications. However, several potential effects will be very similar under each alternative and are summarized below:

4.1.1 Cultural Resources

The Service is responsible for managing archeological and historic sites found on national wildlife refuges. Cultural resources are important parts of the Nation's heritage. The Service is committed to protecting valuable evidence of human interactions with each other and the landscape. Protection is accomplished in conjunction with the Service's mandate to conserve fish, wildlife, and plant resources. An archeological resource survey was conducted soon after the Refuge was established. With only 1 percent of the Refuge surveyed, there are 53 known sites. The Refuge contains two important Woodland period mound groups and associated villages. There was also a National Register of Historic Places property known as the Glidden-Fox house that was moved to the Town of Becker. There are four additional sites on the Refuge that are eligible for the National Register of Historic Places. These sites are of Native American origin and are sub-surface. While not on the National Registry, the Grundrude Cemetery is a pioneer family cemetery near Orrock and is of local historical significance.

No site listed on the National Register of Historic Places is located on the Refuge within the proposed hunting area. Hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on and/or near the Refuge. Hunting meets only one of the two criteria used to identify an "undertaking" that triggers a Federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

- 1- an undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the "area of potential effect;" and
- 2- the project, activity, or program must also be either funded, sponsored, performed, licenses, or have received assistance from the agency.

Consultation with the pertinent State Historic Preservation Office and federally recognized Tribes are, therefore, not required.

Hunting activities will result in no ground disturbance or disturbance to standing structures, and it will have no effect on any historic properties or cultural resources.

4.1.2 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Bill Clinton on February 11, 1994, to focus Federal attention on the environmental and human health conditions of minority

and low-income populations with the goal of achieving environmental protection for all communities. The Order directed Federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority and low-income communities' access to public information and participation in matters relating to human health or the environment.

None of the hunting alternatives described in this EA will disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations. The percentage of minorities in Sherburne County, where Sherburne NWR is located, is lower than the state average and is much lower than the United States as a whole. Hunting activities that would be offered under each of the alternatives are available to any visitor regardless of race, ethnicity, or income level.

In 1837, before Minnesota was a state, the United States signed a treaty with the Chippewa Indians including the Mille Lacs Band of Ojibwe and several other tribes. The tribes that signed this treaty sold, or ceded, land to the United States government on the condition that they would still have the right to hunt, fish and gather in the ceded territory. Today, Mille Lacs Band members and members of the other tribes that signed the treaty can still exercise their treaty rights to hunt, fish and gather on public lands within the ceded territories under tribal regulations. Treaty rights are exercised on the ceded portion of the Refuge, following state and Refuge specific regulations. Every year tribe members harvest sage from the refuge.

4.2 Alternative A: Current Direction (No Action)

This Alternative allows existing hunting programs to continue and no new hunts would be initiated. Hunting is used as a management tool to maintain optimal populations of game species and also to provide recreational opportunities for the public. Second to wildlife observation, hunting is a popular public use activity on the Refuge and accounts for approximately 11 percent (on average) of total Refuge visitation (Table 4). There would be no change to current hunting opportunities, public use, and wildlife management programs under this alternative.

Table 5. Visitation at Sherburne NWR by category. Hunter visitation accounts for approximately 11% (6-year average) of total visitation on the Refuge.

	2004	2005	2006	2007	2008	2009
Total Visitation	113,000	122,682	53,134	61,380	65,765	68,324
Wildlife Drive	21,770	17,774	17,516	19,631	19,874	21,708
Foot Trails	22,741	21,066	20,181	20,834	22,390	23,352
Hunting	9,237	8,905	8,669	7,779	9,187	9,608

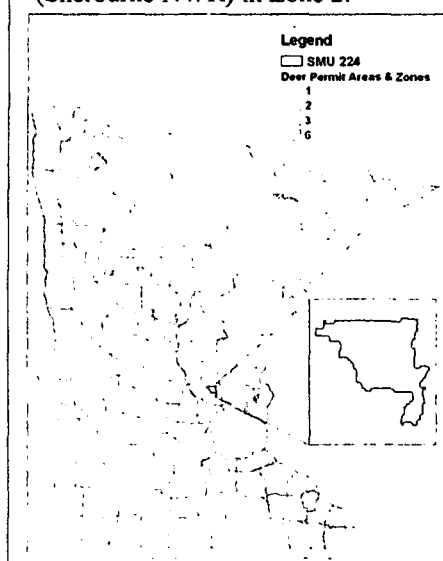
Table 6. Visitation of hunters by hunting activity.

	2004	2005	2006	2007	2008	2009
Waterfowl Hunting	1,912	1,484	1,578	529	1,816	1,528
Upland Game Hunting	2,399	2,527	2,393	2,380	2,489	2,489
Big Game Hunting	4,926	4,894	4,698	4,870	4,882	5,591

Firearms-Deer Hunt

The firearms deer hunt accounts for the majority of total hunter visitation and may have the greatest impact on wildlife and their habitats during the 9-day season. Over 3,516 hunters participated in the firearms-deer hunt on the Refuge during the state season in November of 2009. Approximately 808 hunters were hunting the Refuge on opening day.

Figure 5. Location of SMU 224 (Sherburne NWR) in Zone 2.



Sherburne NWR lies within Minnesota DNR Zone 2 and is its own permit area (State Management Unit (SMU) or Permit Area (PA) 224, Figure 5). Permit Area 224 has been a long established unit. All authorized hunts are consistent with the regulations set by the Minnesota Department of Natural Resources and the additional U.S. Fish and Wildlife Service regulations described in Chapter 1 of this document. Refer to Section 1.1.2 for specific details on current hunting opportunities.

4.2.1 Habitat

Conserving and restoring habitat for the benefit of wildlife species is an integral part of any long-range plan for national wildlife refuges. Thus, any public use activity deemed compatible should have no or minimal disturbance to habitat. Hunters access the Refuge by county roads adjacent to or crossing through the Refuge and vehicles must be parked in designated parking areas or alongside county roads. Brande Road is the only interior Refuge road open for vehicle access. This road leads to the boat landing on an impoundment located within Area B (see Figure 3) and the hunting blinds are reserved only for persons with disabilities. Otherwise, from parking areas and roadsides, hunter access will be by walking or non-motorized bicycles. Hunters may also use non-motorized boats but they must be launched at designated access sites located on Long Pool and the St. Francis River. Wheeled carts and sleds are permitted in all areas open for hunting, for hauling deer out. Temporary deer stands are permitted, but must be removed each day. Screw-in steps are prohibited. All hunters and their belongings leave the area each day. No ATVs, OHVs or snowmobiles are permitted on the Refuge. Because of these limitations, there are no expected adverse impacts of the No Action alternative on habitats. Damage to vegetation is minimal, temporary and should basically be non-detectable.

4.2.2 Game Species

Under this alternative, the game species that are legal to hunt within state seasons and regulations include: white-tailed deer, waterfowl, Ruffed Grouse, gray and fox squirrel, rabbit, hare, pheasant, rails, woodcock, and snipe.

White-tailed Deer Population Assessment and Harvest: Deer population dynamics are annually evaluated by the State of Minnesota (MN DNR) as part of a county, regional and state population surveys. The Minnesota DNR conduct specific surveys relative to deer which include doe/fetus road kill and aerial big game counts. These surveys combined with a winter severity index, harvest statistics, and biological knowledge of the species are all used to assess and model deer populations. These population models are used to establish permit numbers to maintain a sustainable harvest. The MN DNR annually adjusts harvest quotas for each Permit Area (PA) to reflect deer populations. This harvest adjustment is anticipated to limit negative impacts related specifically to species populations and habitat. In PA 224, deer harvest rates are set jointly each year by MN DNR and Refuge staff based on population estimates and biological knowledge of the population. The Refuge coordinates with the MN DNR with deer management and harvest parameters. This coordination will insure sound management of the deer populations locally and regionally while minimizing negative impacts on habitat and neighboring landowner's crops.

Desired population goals have been established for white-tailed deer at Sherburne NWR (PA224) and are clearly defined in the 2005 CCP as follows:

Objective 3.5: Maintain deer population densities that are less than or equal to numbers sustainable by the habitat. Information at the time the CCP was written indicated that a spring population of no more than 16 per square mile meets this objective.

Rationale: It is necessary to maintain the deer population at a healthy density. If the population exceeds a certain density, disease and starvation occur in the herd and the deer will damage the Refuge vegetation and habitat. A large deer herd also will spill onto neighboring suburban developments.

Strategies:

- Control through annual hunt.
- Identify the deer densities that impact habitat.
- Management hunt (if necessary).
- Consider using alternative treatments in addition to hunting to control deer.
- Monitor chronic wasting disease.
- Develop a chronic wasting disease contingency plan.

Estimates of deer densities for Permit Area 224 for the last 6 years are outlined below in Table 6 based on models developed by the MN DNR. The MN DNR decided not to conduct density estimates in 2008 and 2009 for PA 224 because of model deficiencies. Permit Area 223 encompasses all of PA 224 within its boundaries. 2009 pre-fawn density models for PA 223 were 11-20 deer/ mi². Spring density goals in PA 223 were set by the state at 6-10 deer/ mi² and 18-22 deer/ mi² for PA 224.

Table 7. Annual deer population estimates for PA 224 (47 mi²) for 6 years (that were modeled, 90% CI).

Year	Deer Population	Deer/mi ²
2009	-	Not modeled
2008	-	Not modeled
2007	1930+	41+
2006	1500 - 1880	31 - 40
2005	1500 - 1880	31 - 40
2004	700 - 1130	14.8 - 24
2003	720 - 1130	15.3 - 24
2002	660 - 1080	14 - 23

According to the population models developed by the MN DNR, the deer population has increased from levels estimated in 2002 and is above the density goals of the Refuge. The nearest measured Winter Severity Index (WSI) in Isanti County suggested mild winters with an index of less than 90 for the last 4 years.

Three quarters of the Refuge (Areas A and B) is open to the deer archery season from mid-September to the end of December and most of the Refuge (Areas A, B, and C) is open to the 9 day deer firearms hunt held during the first week of November, except two closed areas located around headquarters and maintenance facilities that provide sanctuary for deer during the hunting seasons (see Figure 3). Since 2009 Sherburne NWR deer season is a lottery hunt with 350 permits available and a 1 deer/hunter bag limit (1 either sex for archery or 1 legal buck or 1 either sex for firearms). Before 2009, Sherburne NWR was a "managed" unit (an over-the-counter tag for either sex deer with an option to take an additional 2 antlerless deer for a total of no more than 3 deer per person). Harvest statistics over the past several years for PA 224 are summarized in the following tables (Table 7 and 8).

Table 8. Number of deer harvested, the average number of hunters per day, and hunting pressure (hunters/mi²) throughout the 9-day season in PA 224 for the last 3 years.

Year	Total Deer Harvested	Deer Harvested/mi ²	Avg. # Hunters/day	Avg. Hunter/ mi ²
2009	190	4.0	340	9.2
2008	215	4.6	391	10.6
2007	306	6.5	387	10.5

Table 9. Hunting season type, number of antlerless permits issued and deer harvest for age and gender groups for PA 224.

YEAR	HUNT TYPE	# of Antlerless Permits	ADULT MALE	FAWN MALE	ADULT FEMALE	FAWN FEMALE	TOTAL
2009	Lottery	350	103	15	58	14	190
2008	Managed	N/A	100	22	65	28	215
2007	Managed	N/A	118	32	119	37	306
2006	Managed	N/A	111	25	120	32	288
2005	Managed	N/A	90	26	69	25	210
2004	Managed	N/A	129	49	134	23	335
2003	Managed	N/A	143	61	142	58	404
2002	Lottery	650	115	35	96	30	276
2001	Lottery	450	150	26	90	30	296
2000	Lottery	300	126	22	66	22	236
1999	Lottery	300	132	33	63	25	253
1998	Lottery	400	118	45	89	39	291
1997	Lottery	128	92	17	40	14	163
1996	Lottery	200	68	23	30	28	132
5 year average (2005-2009)			109.8	25.4	88.6	34.4	252.2
10 year average (2000-2009)			121.2	32	97.1	30.5	280.8

Table 10. Harvest density (deer harvested/ mi²) for Permit Area 224 (Sherburne NWR).

Year	Harvest density	Year	Harvest density
2009	2.5-4.1	2004	9-12.2
2008	4.3-6.4	2003	7.1-10.1
2007	5.3-7.2	2002	4.9-7.4
2006	4.4-7.6	2001	4.0-6.5
2005	4.5-7.1	2000	3.8-6.6

Migratory Game Bird Population Assessments and Harvest:

Because the Service is required to estimate the annual abundance of migratory game birds, the Service implements a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies, and others. To determine the appropriate management framework for each species, the Service considers factors such as population size and trends, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for hunting of migratory game birds, management of migratory game birds becomes a cooperative effort between State and Federal Governments. After Service establishment of final frameworks for hunting, the states may select season dates, bag limits, and other regulatory options for their specific hunting seasons. States may always be more conservative in their selections than the federal frameworks but never more liberal. Area B (Figure 3) is the only unit open for hunting of migratory birds. The remaining portion of the Refuge, approximately 70 percent, is a haven for these species during hunting season. This is one reason no negative impacts associated with this alternative are expected to occur.

Waterfowl: Waterfowl surveys are conducted weekly during spring and fall migrations. In addition, a breeding survey is conducted to estimate waterfowl production on the Refuge for species that commonly breed in the area. The data are used to provide managers and the public with current information on the distribution and abundance of waterfowl using the Refuge, and to identify annual trends in waterfowl use of wetlands and impoundments on the Refuge.

During fall and spring migration, the Refuge wetlands support thousands of waterfowl, including Trumpeter Swans, Canada Geese, Wood Ducks, Northern Pintail, Ring-necked Ducks, Mallards, Gadwall, American Wigeon, Northern Shoveler, Blue-winged Teal, and Green-winged Teal that use the Refuge as a stopover for rest and forage. Waterfowl that commonly use the Refuge for nesting include Canada Goose, Mallard, Wood Duck, Blue-winged Teal, and Hooded Merganser (Tables 10 and 11). Based on these estimates, waterfowl use the Refuge more during fall migration, the number of waterfowl using the Refuge is decreasing during spring migration over the last 3 years, fall migration numbers are fairly steady in recent years, and waterfowl production was low in 2009.

Table 11. Daily peak waterfowl estimates on Sherburne NWR during spring migration from 2007-2009.

Year	Canada Goose	Mallard	Blue-winged Teal	Wood Duck	Green-winged Teal	Ring-necked Duck	Total # Daily Peak (all species obs.)
2009	1,800	4,000	2,900	3,400	600	6,600	15,000
2008	2,500	800	3,000	2,000	1,300	12,000	24,500
2007	2,200	6,700	1,200	2,000	1,800	16,500	31,000

Table 12. Daily peak waterfowl estimates on Sherburne NWR during fall migration from 1998-2009.

Year	Canada Goose	Mallard	Ring-necked Duck	Total # Daily Peak (all species obs.)
2009	10,800	10,020	3,140	51,030
2008	4,880	5,190	4,930	45,630
2007	6,200	21,800	3,400	55,000
2006	2,820	10,700	2,360	49,990
2005	6,200	20,000	3,000	44,900
2004	3,500	6,500	2,000	15,600
2003	7,000	9,240	2,050	20,500
2002	9,000	12,300	2,400	29,700
2001	4,800	10,800	2,500	25,400
2000	12,150	14,100	1,300	54,800
1999	10,000	20,800	8,500	73,500
1998	7,000	18,500	5,200	35,130

Table 13. Waterfowl production on Sherburne NWR from 1992-2009.

YEAR	Canada Goose	Mallard	Blue-winged Teal	Wood Duck
2009	1569	909	499	-
2008	3461	487	1019	1591
2007	1357	545	743	1659
2006	1595	613	977	-
2005	2960	997	655	1059
2004	2646	879	1062	
2003	2687	885	811	-
2002	1438	398	783	784
2001	1890	939	471	600
2000	3263	1553	531	570
1999	3833	1207	790	1268
1998	1939	665	490	612
1997	1327	478	240	625
1996	1550	378	270	810
1995	2327	1192	497	704
1994	1266	1095	342	1674
1993	1063	839	952	2157
1992	605	2564	3247	1521

The 2005 Sherburne CCP does not have specific population goals for waterfowl species; however, it outlines several habitat objectives that are directed towards benefiting waterfowl species (see Objectives 2.7 – 2.11 in 2005 Sherburne CCP). The Refuge offers sanctuaries for waterfowl where hunting is not permitted. Waterfowl hunting on the Refuge is moderate; but there are no anticipated impacts of this alternative to local populations mainly because annual harvest rates of approximately 300 ducks and 50 geese are an extremely small proportion of peak fall migration numbers, and also because hunting of migratory birds is only permitted on approximately one-third of Refuge lands.

Woodcock, Rails, and Snipes: Although these species are all frequently heard and seen on the Refuge, there are no formal surveys conducted for woodcock or snipe within Refuge boundaries. As part of a national monitoring program, there is a woodcock survey route located just south of the Refuge. Current surveys on this route suggest the woodcock population has been in decline, likely due to habitat loss (Cooper and Parker 2009). However, there are several woodcocks observed in certain areas on the Refuge every year, primarily during spring and fall migration. Short-term trends of woodcock populations in Minnesota are increasing, but over the long-term

woodcock populations are decreasing throughout central Minnesota (Figures 5 and 6). Rail surveys were conducted as part of a secretive marshbird survey. The survey was conducted for 4 years (2003-2007) for the following species: Pied-billed Grebe, American Bittern, Least Bittern, Sora, Virginia Rail, and Yellow Rail. The survey indicated that among the rails, Soras are most common, Virginia Rails are fairly common, and Yellow Rails are very rare on the Refuge. Throughout the 4 years of the survey, 375 Soras, 174 Virginia Rails, and 1 Yellow Rail were detected. Hunting pressure of these species on the Refuge is low or non-existent compared to harvest levels and populations in the Mississippi Flyway. There are no foreseeable impacts of these species under Alternative A.

Figure 6. Short-term trends in the number of American Woodcock heard on the Singing-ground Survey, 2008-2009 (Cooper and Parker 2009).

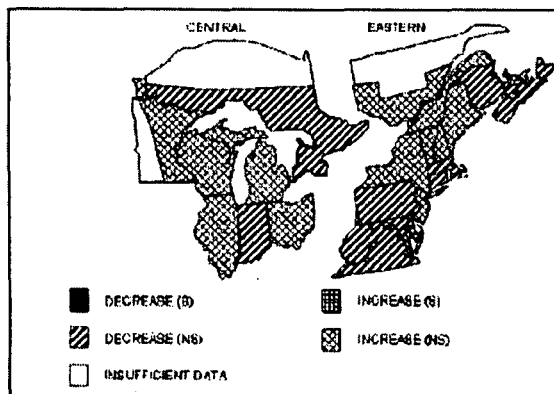
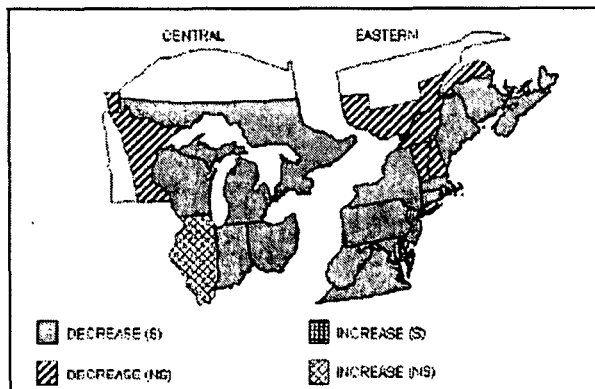


Figure 7. Long-term trends in the number of American Woodcock heard on the Singing-ground Survey, 1968-2009 (Cooper and Parker 2009).



Ring-necked Pheasant Population Assessment and Harvest: Pheasants are an exotic species that were introduced to areas of North America for hunting. Population surveys for pheasants are not conducted at Sherburne NWR. Pheasant hunting is not permitted in Area C (see Figure 3), thus this area remains a sanctuary for this species during the season. Hunting pressure of this species is fairly low and there are no anticipated impacts of this alternative to local populations.

Ruffed Grouse Population Assessments and Harvest: Sherburne NWR is located on the very southern edge of Ruffed Grouse range in the 'Central Hardwoods' region of Minnesota (MN DNR 2005). Annual population surveys for this species are not conducted specifically at Sherburne NWR, but are conducted throughout its known range in Minnesota since 1949. These surveys have indicated that Ruffed Grouse populations fluctuate cyclically at 10-year intervals. Hunting does not affect Ruffed Grouse populations even at the low point of their population cycles and (Larson 2010). Hunting pressure is expected to be low on the Refuge and Area C (see Figure 3) remains a sanctuary for this species during the season. For these reasons, there should be no adverse impacts on local or state-wide populations of Ruffed Grouse under Alternative A.

Gray and Fox Squirrels Population Assessments and Harvest: There are no surveys conducted at Sherburne NWR for these species. However, it is known that both species are abundant in Minnesota and are popular game species. Squirrel hunting pressure on the Refuge is moderate. Because of their naturally high abundance and tolerance to human disturbance, populations of these species can sustain a substantial harvest on the Refuge and there will be no negative impacts of Alternative A to these populations. Gray squirrels typically breed twice a year and have 2 to 4 young per litter. Female fox squirrels two or more years of age may have more than one litter per year; and litters usually consist of 2 to 4 young as well. Hunting small game mammals is not permitted in Area C (see Figure 3), thereby providing these species with a haven during hunting season.

Rabbit and Hare Population Assessment and Harvest: There are no formal surveys conducted for rabbits or hares on the Refuge. The eastern cottontail is one of the most common small mammals in Minnesota and is known to be common on the Refuge. Eastern cottontail females may have 7 litters per year, with 3 to 6 young per litter. Snowshoe hares and white-tailed jack rabbits are less common. Hares typically breed 2 to 5 times per year with 1 to 8 young per litter and jack rabbits in the northern parts of their range have 1 litter per year usually with 4 to 5 young per litter. Sherburne NWR is located on the very southern edge of snowshoe hare range and the very eastern edge of jack rabbit range in Minnesota. The last observation of jack rabbits on the Refuge was in 1990. There should be no negative impacts associated with hunting rabbits or hares on the Refuge because hunting pressure of these species is low, they are prolific, and also because Sherburne is located on the edge of the current range of hare and jack rabbit making opportunities for harvesting these two species rare.

See Cumulative Impacts section 4.5 for state-wide harvest statistics, population assessments, and discussion of regional impacts for above game species.

4.2.3 Migratory Birds

Other than the migratory bird species listed above (waterfowl, woodcock, rails, and snipes), there are no other migratory species that will be hunted on the Refuge. All hunting on the Refuge occurs in the fall, after breeding and nesting season for all migratory birds. Most migratory bird species have left the area. Impacts on these species should be minimal under Alternative A.

4.2.4 Other Non-hunted Wildlife Species

Non-hunted wildlife that are residents of the Refuge include several non-migratory bird species such as songbirds (including American Crows, Black-capped Chickadee, Blue Jay), raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, gophers, ground squirrels, and raccoons; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory butterflies and moths, most of these species have limited home ranges and hunting does not affect their populations regionally, but these species may be affected at local levels. Because the migratory species will have left by fall hunting

season and many of the other non-migratory species will be in hibernation or torpor, there are no foreseeable negative impacts to these species under Alternative A. Any impacts to Refuge wildlife would continue as is presently caused by non-consumptive users and consumptive users on already approved hunting seasons and other public use activities. As evident in Table 4 hunting accounts for less than 15 percent of total Refuge visitation. Approximately 15 percent of current total hunter activity on the Refuge occurs within 2 days, opening weekend of firearms season for deer. Thus, the greatest amount of disturbance associated with hunting on the Refuge occurs for a very limited amount of time. For these reasons, this alternative should not have any negative impacts on other wildlife species and the Refuge will remain closed as a wildlife sanctuary during the nesting and breeding season of most wildlife species.

4.2.5 Threatened and Endangered Species

No effect is expected for federal or state listed threatened or endangered species or their critical habitat (See Cumulative Impacts Analysis section (4.5) for more details). A consultation pursuant to Section 7 of the Endangered Species Act was conducted as part of this assessment and is attached.

The 2005 CCP committed to providing habitat for all listed species as stated below.

Objective 3.4 Federal and State Endangered, Threatened and Candidate Species: Annually, provide habitat for all federal and state-listed species documented as of 2005 and that are associated with historically occurring habitats on the Refuge.

Rationale: Sherburne NWR is home to two wildlife species that are federally listed threatened species when the 2005 CCP was completed: the Bald Eagle and Gray Wolf. Since then, the Bald Eagle has been delisted to protected status, but wolves remain threatened in Minnesota and endangered nation-wide. In 2010, seven Bald Eagle pairs nested on the Refuge. Approximately 164 eagles have been produced since nesting eagles returned to the Refuge in 1983. Transient, individual gray wolves are also occasionally observed on the Refuge, but there are currently no established packs or breeding pairs in the immediate area. Sherburne is currently located just south of the southern portion of wolf range in Minnesota.

In addition, several species listed by the State of Minnesota have also been documented on the Refuge including Henslow's Sparrow, Trumpeter Swan, Loggerhead Shrike, and Blanding's turtle. Many of the State-listed species are also Regional Resource Conservation Priority species of the Service.

Strategies:

- Endangered and threatened species will be protected to the maximum extent possible under all management actions discussed in this plan.
- Adhere to "avoidance of adverse effects" stipulations listed in the Intra-Service Section 7 Biological Evaluation Form completed for the CCP and dated November 2005.
- Support research activities that are directed toward these species.

4.2.6 Other Public Use Activities

Wildlife viewing, photography, environmental education, interpretation and festivals are all activities enjoyed by non-hunters and hunters alike. There are 2 designated hiking trails, Blue Hill Trail and Mahnomen Trail. Blue Hill Trail is also open for cross-country skiing during the winter. The entire Refuge is open to snowshoeing with the exception of the administrative areas around the office and maintenance facilities and the Blue Hill trail. There is also an auto-tour route that contains 2 other short hiking trails. The auto-tour is closed when the first major snow fall occurs. If snow has not accumulated enough to close the auto-tour it is closed during the firearm deer season in November. The Blue Hill Trail and headquarters area is off limits to hunters and this boundary is clearly marked. The Mahnomen Trail is open to hunters only during the 9-day deer firearms season. It remains open to non-consumptive users as well, but visitors will be warned of hunting activity at the trailhead. To date, there have been no reported incidents between hunters and non-consumptive users.

Because hunting occurs during an offpeak visitor time in areas with little other visitor use, it is unlikely that conflicts will not develop between consumptive uses (hunting) and non-consumptive public uses such as wildlife observation, photography, environmental education, and environmental interpretation. Also, hunting is prohibited in most designated public use areas, with the exception of Mahnomen trail and Wildlife Drive being open during the deer firearms season. In which case, the Wildlife Drive is closed to vehicle entry and signs are posted to inform non-consumptive users about the 9-day firearms deer season. There have been no known conflicts with the non-hunting public and hunters during the firearm deer season. By November, non-hunting uses drop off dramatically. Non-hunting winter activities, such as cross-country skiing and snowshoeing, will continue to be permitted.

4.2.7 Social Implications

The attitude of the local public toward the current hunting program is positive by the majority of people. During the scoping process for the CCP and subsequent local public meetings, there were no comments that advocated stopping all hunting on the Refuge. However, there were numerous comments related to safety, quality of the hunts, the need for a more accurate estimates of the deer population, sustainable management of the deer herd, conflicts between different hunting groups, disruption of non-hunting visitors, injured deer, disturbance of migratory birds, and impacts of hunting on small game populations. There were several comments suggesting that, in addition to the current hunting opportunities, the Refuge should host a muzzleloader season, spring turkey hunt, a turkey hunt for hunters with disabilities, early goose, and predator hunting and trapping (see the 2005 CCP, 'Issues and Critical Needs' on page 16 for more details). Because there will be no additional hunting opportunities or changes to the current hunting program under Alternative A, there will be no change of the public's attitudes toward hunting on the Refuge. However, under this alternative the Service will not be meeting public use demands based on the comments listed above to add hunting opportunities. The other

alternatives in this document, suggest a specialty turkey hunt for hunters with disabilities and youth hunters. Under the No Action alternative, these underserved audiences will not be able to experience quality turkey hunting opportunities on the Refuge. Public relations will not be enhanced with the local community, the State of Minnesota, and groups dedicated to assisting persons with disabilities and encouraging young Americans to hunt.

4.3 Alternative B: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities

In addition to all previously authorized hunts described in Alternative A, select locations on the Refuge will be open to spring turkey hunting for persons with disabilities under Alternative B. The seasons, bag limits, and regulations will be at least as limited as those set by the Minnesota DNR. The turkey hunt will be limited in time, number of people, and location.

4.3.1 Habitat

Impacts similar to Alternative A, plus;

Special access accommodations for persons with disabilities will be allowed on a situation basis and approved when reservations are made; but these accommodations will have restrictions to limit adverse impacts to Refuge habitats. No sizeable adverse impacts are expected under this alternative on Refuge habitats. Additional disturbance to surface soils and vegetation may occur in areas selected for turkey hunting for persons with disabilities. Variables causing disturbance will be controlled, limited to permitted hunting areas, and the anticipated impacts will be minimal. Cutting of sizable vegetation or any other manipulation near or around hunting blinds or access routes will be done prior to the hunt by Service personnel. All hunters will use permanent blinds set up by Refuge personnel or use portable blinds in pre-approved locations. Therefore, there will be no need for additional vegetation removal or destruction. Ingress and egress points will also be restricted to control access by hunters and their assistants and to minimize habitat degradation.

4.3.2 Game Species

Under this alternative, potential impacts to game species will be the same as Alternative A because the same hunting seasons will be permitted. However, in addition to the hunting seasons of game species listed in Alternative A, a spring turkey hunting season for persons with disabilities will be added under Alternative B.

Wild Turkey Population Assessment and Harvest: The historical range of the Eastern Wild Turkey (*Meleagris gallopavo silvestris*) in Minnesota was limited to the extreme southern portion of the state (Leopold 1931 and Mosby 1959) and did not include Sherburne County, Minnesota. Shortly after European-settlement (approximately 1880), turkeys were extirpated from Minnesota because of habitat loss and unregulated hunting. The first successful

reintroduction attempt began in 1971 with the release of 29 individuals relocated from Missouri and released in Houston County, Minnesota (Department of Natural Resources- MN DNR 2007); with intent to establish a viable population that could sustain annual spring and fall hunting seasons. After this reintroduction proved successful, the Minnesota Department of Natural Resources (MN DNR) released more birds in suitable habitat in other counties. Because of this trap and transplant program, the wild turkey population has expanded its range throughout the entire southern and western portions of the state including areas north of its historic range and the northernmost limit that is biologically feasible. Wild turkeys have now occupied most of the suitable and available habitat in Minnesota. To increase hunting opportunities, the MN DNR continues to improve existing habitat to encourage population growth of turkeys and identify new areas that can naturally sustain populations.

In 2004, Sherburne National Wildlife Refuge served as a research site to study winter survival, habitat use, and productivity of turkeys transplanted north of their ancestral range without supplemental feeding (Sherburne NWR Narrative 2004). Researchers trapped 15 wild turkey hens in southeast Minnesota and fitted them with radio transmitters. These birds were released on the Refuge on January 23, 2004. The study continued for two breeding years from the initial release. This study determined that supplemental feeding or nearby agricultural lands increases the probability of winter survival of turkeys in the northern most limit of their current range. In addition to the 15 released on the Refuge in 2004, the MN DNR released 100 birds in other locations in Sherburne County in 1992, 1996, and 2005. The wild turkey population in areas Sherburne County has increased substantially since 2005 and is naturally sustainable and growing, despite hunting pressure and without the release of more individuals.

Through the trap and relocation program organized and administered by the Minnesota DNR as well as natural population and range expansion, the turkey population has significantly increased throughout Minnesota. The state estimates its turkey population based on harvest records. Within the last 25 years, it has grown to more than 60,000 birds, and the opportunities and demand for turkey hunting have also increased. The state's first turkey hunt, after the initiation of the program, was in 1978. During this hunt, 94 birds were harvested. The annual number of birds harvested has increased ever since. Since 1999 more than 5,000 birds have been harvested each spring.

Currently, about half of Minnesota is open to turkey hunting and hunts are primarily concentrated in the southern half of the state. Permit Area 223 (Sherburne County) which surrounds the Refuge has been open to turkey hunting for many years. Since the year 2000, permits issued in Permit Area 223 have increased sevenfold in response to the growing turkey population in Sherburne County. In 2009, 273 turkeys were harvested in Permit Area 223 (Table 13).

Table 14. Spring wild turkey harvest in Permit Area (PA) 223. (Sherburne NWR is located as its own unit (PA 224) within PA 223, but there is currently no turkey hunting permitted in this unit).

Year	Permit Area	Total Permits Available	Total Permits Issued	Registered Harvest	Success (%)
2009	223	760	668	273	41
2008	223	720	638	278	43.6
2007	223	680	586	176	30
2006	223	640	567	190	33.5
2005	223	600	520	198	38.1
2004	223	480	441	161	36.5
2003	223	440	400	146	36.5
2002	223	360	332	111	33.4
2001	223	280	241	86	35.7
2000	223	200	183	48	26.2
1999	223	120	114	26	22.8

Spring gobbling surveys and counts are conducted on the Refuge annually to monitor turkey population trends through space and time. Based on harvest statistics and feedback from willing deer hunters, there are approximately 2,000 wild turkeys in Permit Area 223 (typically 46 percent of the population are gobblers). This survey and the state's population estimate for Permit Area 223 indicates that the local population on the Refuge could easily sustain the harvest proposed in Alternative B.

Turkey hunting for hunters with disabilities on the Refuge will follow State guidelines and should there be a detrimental decrease in turkey populations, hunting on the Refuge will be more restrictive or eliminated if necessary.

The bag limit for the disabled turkey hunt on the Refuge will be consistent with State regulations for the spring; one wild turkey with a visible beard per hunter. The beard is a feathered appendage protruding from the breast and is typically found only on male birds. With a one bird bag limit, the impacts to the wild turkey population on the Refuge will be little to none.

The maximum number of birds harvested on the Refuge will be 40 birds annually. The probability of all hunters taking a bird is low, but if 40 birds are harvested, the local population will experience minimal impacts. If harvest success is similar to Permit Area 223, only about 16 turkeys would be harvested per year. See Cumulative Impacts Analysis section for discussion on regional impacts of populations of wild turkey and statewide harvest statistics.

4.3.3 Migratory Birds

Same as Alternative A.

4.3.4 Other Non-hunted Wildlife Species

Same as Alternative A, plus;

The Service will make every effort to minimize any negative impacts on non-target wildlife species during the turkey hunt under Alternative B. Because the turkey hunt will be during the nesting and breeding season (i.e. “sanctuary time”) of most wildlife species, the hunt will be limited to:

- Number of people: a maximum of 10 participants (hunters plus assistants) per period,
- Duration: 5 day hunting periods regulated by the state.
- Season: the spring season (regulated by the state) 8 weekly seasons,
- Hunting area: south spur (2,200 acres) and “closed” area around the maintenance facilities (820 acres); approximately 3,000 acres of total Refuge lands (30,700 acres) with a maximum of 5 portable blinds distributed in select locations throughout these areas.

Potential disturbance by the turkey hunt for persons with disabilities to non-migratory birds, mammals, reptiles, insects, etc. should not have negative impacts for the following reasons; the overall hunting season and size of hunt (number of people involved) is limited to the spring and a maximum of 10 people per 5-day period (5 hunters plus 5 assistants), turkey hunting is usually a quiet and concealed activity, and the hunt will be limited to two areas of the Refuge, the “south spur” and the “closed” area around the maintenance facilities (see Figure 4). Any interaction of wildlife species with turkey hunters would be commensurate with that of non-consumptive users in areas open for public use during this time.

4.3.5 Threatened and Endangered Species

Same as Alternative A, plus;

The spring turkey hunt coincides with nesting season of Bald Eagles. During this time eagles are usually incubating for approximately 35 days. Because it is important to restrict any human activity near active eagle nests during this time, the designated turkey hunting blinds will be established at least 300 meters away from any active eagle nest on the Refuge. Trumpeter Swans are also common nesters on the Refuge, but are inhabitants of wetlands, areas that will be avoided by turkey hunters.

4.3.6 Other Public Use Activities

Same as Alternative A, plus;

Under this alternative, the spring turkey hunt on the Refuge will be during “sanctuary time”

when no public use is permitted (with the exception of the hiking trail network and wildlife drive). Areas designated for turkey hunting will not be near any of the open hiking trails or wildlife drive; thereby eliminating any potential conflict between the turkey hunters and non-consumptive users.

4.3.7 Social Implications

Same as Alternative A; plus. Youth hunters would not have the opportunity to hunt the Refuge for turkey in the spring.

4.4 Alternative C: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities and Youth; and expand opportunities for Persons with Disabilities for Deer and Waterfowl Hunts (Preferred)

4.4.1 Habitat

Same as Alternative B.

4.4.2 Game Species

Same as Alternative B.

4.4.3 Migratory Birds

Same as Alternatives B.

4.4.4 Other Non-hunted Wildlife Species

Same as Alternative B.

4.4.5 Threatened and Endangered Species

Same as Alternative B.

4.4.6 Other Public Use Activities

Same as Alternative B.

4.4.7 Social Implications

Same as Alternative B.

Summary of Effects by Alternative

This section describes the environmental consequences of adopting each Refuge management alternative. Table 2 addresses the likely outcomes for specific issues and is organized by broad issue categories.

4.5 Cumulative Impact Analysis

"Cumulative impact" is the term that refers to impacts on the environment that result from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. In this section, the cumulative impacts of the Alternative C (Preferred Alternative) are fully developed. Alternative A (No Action) cumulative impacts are minimally developed as this has been a long-term activity that will continue. Alternative B was not fully developed as it is not the preferred alternative because it does not fulfill needs of the public and partners. However, if a closer look at this alternative is necessary, the cumulative impacts associated with Alternative B will be the same as Alternative C, the Preferred Alternative.

4.5.1 Alternative A: Current Direction (No Action)

4.5.1.A. Cumulative Impact of No Action on Wildlife Species

Deer Populations

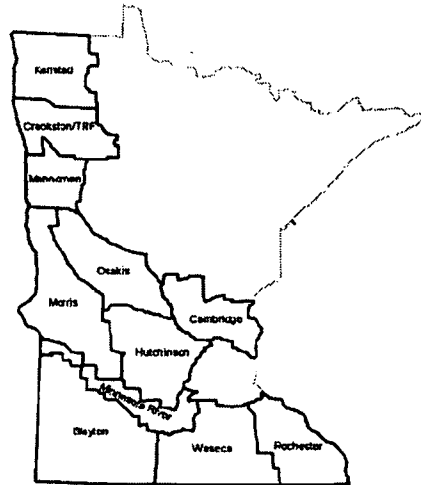
Refuge Deer Population Assessment: Deer populations on Sherburne NWR were summarized in Section 4.2.2. As discussed in this section deer densities continue to increase throughout most of the farmland/transition zone. In central Minnesota, simulated deer densities indicate a stable or slight increasing trend over the last couple years. Efforts to reduce deer in this area may be having an impact on the overall population. However, the agency responsible for managing deer populations in Minnesota are concerned that there are still too many deer in central Minnesota.

Regional Deer Population Assessment: Deer densities are generally stable or near density goals throughout most of the Farmland Zone in 2009. Pre-fawn deer densities were highest in the Osaki, Rochester, and Cambridge DMUs, lowest in Morris, Waseca, and Slayton, and at intermediate levels in Hutchinson, Minnesota River, Karlstad, Crookston, and Mahanomen (Table 14, Figure 9).

Table 15. Pre-fawn deer densities (deer/mi²) as simulated from population modeling for each DMU in the Farmland Zone of Minnesota (MN DNR)

DMU	Average Density
Karlstad	6
Crookston	6
Mahnomen	6
Morris	4
Osakis	13
Cambridge	12
Hutchinson	6
Minnesota River	6
Slayton	4
Waseca	5
Rochester	13

Figure 8. Deer Management Units (DMUs) in the Farmland Zone of Minnesota (MN DNR)



Sherburne NWR lies within the Cambridge DMU and within Permit Area 223 as its own Permit Area 224 which was not included in this model. Detailed long-term trends for the Cambridge DMU can be reviewed in the following table.

Table 16. Long-term trends of pre-fawning deer density in the Cambridge DMU (Grund, 2009).

Permit Area	Area (mi ²)	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
221	642	10	10	11	12	11	12	13	13	12	13	13	12	11	12
222	413	13	13	14	14	14	15	15	14	14	14	13	11	10	15
223	377	10	9	8	11	10	9	11	9	8	11	11	10	11	12
225	618	14	14	15	18	19	16	16	15	13	13	14	14	13	14
227	471	13	13	13	13	12	11	11	10	9	13	14	13	13	15
229	287	5	5	5	6	6	6	7	7	6	7	7	6	7	8
236	372	16	16	17	17	16	17	17	18	18	18	18	18	17	20
Total	3180	12	11	12	13	13	12	13	12	11	13	13	12	12	14
Average															

Pre-fawning deer densities in 2010 were generally stable or slightly increasing in the Cambridge DMU compared to 2009 levels. However, most populations remained around or slightly above the density goals set for Permit Areas. The DNR set a spring population goal of 6-10 deer/mi² for PA 223 and 18-22 deer/mi² for PA 224. In general, density goals and past population estimates for PA 224 are higher than PA 223. Pre-fawning population densities in 2010 averaged 14 deer per square mile in the Cambridge DMU (SD = 3 deer per square mile).

State-wide Deer Population Assessment: Pre-harvest population estimates range between 900,000 and 1,200,000 deer in Minnesota. Hunting is used as a tool to manage deer populations at acceptable levels that are sustainable and that limit excessive damage to their surrounding

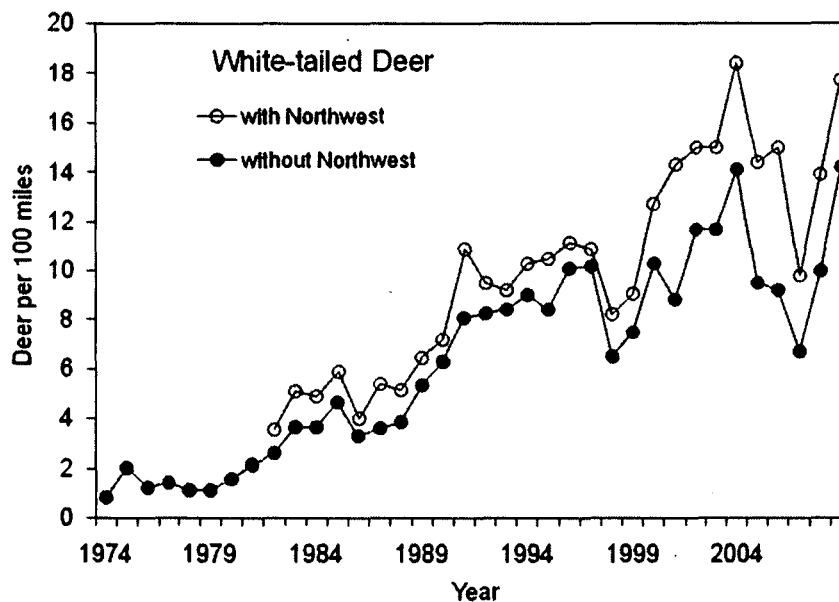
environment through herbivory. Each year, Minnesota hunters harvest between 150,000 and 200,000 deer (approximately 17-20 percent of the population).

2009 Minnesota August Roadside Survey: The index for white-tailed deer (17.8/100 mi) increased by 30 percent (95% CI (confidence interval): 2 to 58%) from last year, and was 31 percent above the 10-year average (95% CI: 8 to 54%) and 104 percent above the long-term average (95% CI: 61 to 147%). Among regions, deer indices increased significantly from 2008 only in the Southwest region. Based on this survey, the general trend of the deer population in Minnesota is increasing.

Table 17. State-wide trends (% change) in number white-tailed deer observed per 100 miles driven, Minnesota August roadside survey, 1955-2009 (MN DNR).

Change from 2009 ^a					Change from 10-year average				Change from long-term average			
n	2008	2009	%	95% CI	n	1999-09	%	95% CI	n	LTA	%	95 CI
170	13.7	17.8	30	±28	168	13.7	31	±23	169	8.8	104	±43

Figure 9. Range-wide index of white-tailed deer seen per 100 miles driven. Based on all survey routes completed (MN DNR).



Local Deer Harvest Assessment for PA 224: Local harvest statistics for the Refuge are discussed in Section 4.2.2.

State-wide Deer Harvest Assessment: Each year, 500,000 hunters harvest between 150,000 and 200,000 deer in Minnesota. In 2009 hunters registered 194,186 deer. 2009 was an average year for harvesting deer.

Table 18. Includes harvest in 2009 for the entire state by zones; PA 224 lies in the central portion of Zone 2 (MN DNR).

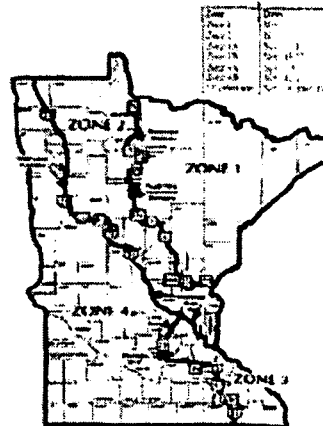
Firearms/Zone	Hunters	Harvest			Overall Success
		Bucks	Antlerless	Total	
1	172,988	34,015	30,570	64,585	33.4%
2	221,221	41,374	37,150	78,524	31.8%
3A	22,873	5,729	4,602	10,331	38.7%
3B	17,405	1,890	4,945	6,835	32.9%
Early Season	11,559	0	2,891	2,891	21.4%
Free Landowner ¹	3,631	0	1,036	1,036	28.5%
Muzzleloader ²	63,282	2,844	5,085	7,929	11.3%
Archery ³	99,474	7,650	12,979	20,629	17.5%
TOTAL⁴	489,096	94,367	99,819	194,186	33.8%

¹Includes deer taken during regular firearms, muzzleloader, and archery seasons.

²Total number of people who bought only a muzzleloader license was 10,262.

³Includes Camp Ripley. Total number of people who bought only an archery license was 28,293

⁴Due to the fact that a hunter can buy multiple licenses, hunter numbers are an estimate.



Cumulative Impacts Summary for Existing White-tailed Deer Hunting Opportunities at Sherburne NWR (PA 224)

Sherburne NWR is 30,700 acres in size. Deer harvest rates for the deer hunting season are set jointly each year by MNDNR and Refuge staff based on an annual winter deer survey, harvest rates from previous years, and biological opinion. This annual assessment allows managers to react accordingly to either increase or decrease harvest rates based on deer densities. The existing deer harvest in PA 224 accounts for only 0.0024 percent of harvest in Zone 2 and 0.00098 percent of the state-wide harvest. Sherburne NWR has been able to maintain moderate population levels of deer with the current hunting pressure. Thus, this hunt has a minimum affect on the long-term deer population in this unit and miniscule impact on the state-wide deer population of 1.2 million deer.

Table 19. Cumulative impacts of existing deer hunt on Sherburne NWR/ PA 224 (2009 data) compared to state-wide harvest.

Hunt Location & Type	Harvest
Sherburne/PA 224 2009 Deer Firearms Harvest	168
Sherburne/PA 224 2009 Deer Archery Harvest	22
Sherburne/PA 224 2009 Deer Harvest Total	190
Zone 2	78,524
State-wide Harvest (all types)	194,186

Table 20. State-wide firearms, archery, and muzzleloader harvest, license sales, and success rates 1993-2009 (MN DNR)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
REGULAR FIREARMS																	
Resident License Sales	426,215	427,343	419,965	389,745	369,190	378,320	395,745	400,814	401,005	367,964	344,875	309,698	291,298	299,774	285,286	376,006	377,077
Non-Resident License Sales	8,498	9,190	9,339	8,535	7,830	8,852	9,970	10,595	10,972	10,835	11,334	12,036	12,523	12,520	12,520	11,883	11,759
Bonus Permit Sales	18,140	19,308	22,603	27,148	32,229	20,884	23,785	34,802	59,013	105,699	194,201	183,186	184,566	167,343	145,522	190,156	140,920
Multi-Zone Buck License Sales	16,881	24,590	29,902	38,806	42,803	44,739	43,903	42,669	41,921	35,658	32,929	32,359	28,233	15,984	15,051	N/A	N/A
Youth License Sales			1,835	2,964	3,844	3,445	2,038	3,215	4,011	2,884	34,463	51,347	50,501	49,599	49,242	50,397	56,678
All Season Deer License Sales								2,394	3,986	22,125	30,998	46,008	59,090	75,511	76,385	N/A	N/A
Total License Sales	469,734	480,879	483,644	467,198	455,896	456,240	475,441	495,289	519,601	545,165	648,800	634,634	626,211	620,731	584,006	628,442	586,434
Registered Buck Harvest ¹	79,463	85,579	88,997	71,242	64,867	82,921	92,584	102,961	98,894	101,333	110,440	116,612	95,594	95,695	97,528	85,646	83,820
Antlerless Permits Offered	236,055	199,950	201,525	154,195	150,195	140,280	177,380	232,595	286,540	365,667	31,625	30,760	28,830	18,925	18,830	32,325	60,100
Antlerless Permits Issued	194,888	164,418	162,761	116,650	105,481	108,016	135,852	180,490	196,603	192,907	25,386	24,111	25,656	18,925	18,830	32,325	60,100
Antlerless Permits App.	262,402	260,086	257,653	174,329	142,260	151,148	214,597	237,571	225,341	202,086	30,253	28,454	31,403	31,403	31,403	31,403	90,882
Registered AL Harvest ¹	108,646	92,704	109,196	68,106	62,038	60,475	71,681	88,492	98,169	102,280	147,420	123,278	119,363	135,981	118,860	98,147	78,525
Registered Total Harvest ¹	188,109	178,283	198,193	139,348	126,905	143,396	164,265	191,453	197,063	203,613	257,860	239,890	214,957	231,676	216,388	183,793	162,345
Registered % Successful ²	40	37.1	40.1	29.8	27.8	31.4	34.8	38.6	37.9	37.349	39.7	37.8	34.3	37.3	37.1	35.1	32.1
Gun	451,594	461,123	461,041	440,050	423,667	435,356	451,656	459,677	461,895	439,466	454,599	451,448	441,645	453,388	438,484	438,286	445,514
ARCHERY																	
Resident License Sales	69,434	71,409	70,056	67,058	63,499	63,826	66,226	68,947	69,608	57,532	59,339	50,601	50,293	49,595	52,780	87,872	88,707
Non-Resident License Sales	1,128	1,156	1,171	1,098	980	1,029	1,073	1,271	1,288	1,275	1,428	1,144	1,207	1,286	1,509	1,509	1,610
Youth Archery Sales	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3,748	7,261	7,489	7,688	7,663	9,005	9,157
Mgmt Permit License Sales	14,907	13,121	15,387	15,632	17,478	15,846	16,945	20,393	22,141	18,126	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total License Sales	85,469	85,686	86,614	83,788	81,957	80,701	84,244	90,611	93,037	76,933	60,767	59,006	58,989	58,569	61,952	99,033	99,474
Total Harvest - Archery Lic/Bonus	13,722	13,818	14,521	14,338	13,258	12,306	13,376	15,776	15,884	14,744	19,335	17,237	18,975	17,076	17,261	22,632	20,629
Total Harvest - All-Season license											2,356	3,489	4,563	8,284	6,900	N/A	N/A
Total Archery Harvest	13,722	13,818	14,521	14,338	13,258	12,306	13,376	15,776	15,884	14,744	21,691	20,726	23,538	25,360	24,161	22,632	20,629
Registered % Successful ²	16.1	16.1	16.8	17.1	16.2	15.2	15.8	17.411	17.1	19.2	22.3	29.2	24.6	24.8	24.3	18.5	17.5
MUZZLELOADER																	
Total Muzzleloader License Sales	--	--	--	--	--	--	--	11,972	13,043	11,764	9,142	10,512	9,226	10,781	9,867	64,673	63,282
Estimated All-Season Hunters	--	--	--	--	--	--	--	--	--	--	12,020	14,168	23,293	23,293	26,813	N/A	N/A
Total Muzzleloader Harvest	1,097	1,725	2,452	3,367	3,164	3,152	2,928	4,548	4,494	3,505	9,466	9,289	15,421	13,507	12,138	9,572	7,929
Registered % Successful ²								37.989	34.5	29.8	44.7	37.6	47.4	39.6	28.2	13.4	11.3
TOTAL Registered Harvest	202,928	193,826	215,166	157,317	143,327	158,854	180,569	211,777	217,452	222,050	290,525	260,604	255,736	270,778	260,434	221,837	194,186

¹ Does not include free landowner licenses

² Based on total license sales - does not include all-season deer

Migratory Game Birds

The U.S. Fish and Wildlife Service annually prescribe frameworks, or outer limits, for dates and times when hunting may occur and the number of birds that may be taken and possessed. These frameworks are necessary to allow State selections of season and limits for recreation and sustenance; aid Federal, State, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which States may select season dates, bag limits, shooting hours, and other options for the each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

Migratory game birds are those bird species designated in conventions between the United States and several foreign nations for protection and management. Migratory game birds that are affected by this alternative are discussed in Section 4.2.2. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg" of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after consideration of "the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, and are updated annually" (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead Federal agency for managing and conserving migratory birds in the United States. Acknowledging regional differences in hunting conditions, the Service has administratively divided the Nation into four flyways for the primary purpose of managing migratory game birds. Each Flyway (Atlantic, Mississippi, Central, and Pacific) has an associated Flyway Council; a formal organization generally composed of one member from each State and Province located within that flyway. Sherburne NWR is within the Mississippi Flyway.

The process for adopting migratory game bird hunting regulations, located in 50 CFR part 20, is constrained by three primary factors; legal, administrative, and biological. Legal and administrative considerations dictate how long the rule making process will last. Most importantly, however the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on "early" and "late" hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the Virgin Islands; migratory game birds other than waterfowl (e.g. dove, woodcock, etc.); and special early waterfowl seasons, such as teal or resident Canada geese.

Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl season not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties. Bird monitoring data are available through the Service's Division of Migratory Bird Management Website <http://www.fws.gov/migratorybirds/>.

Because the Service is required to take abundance of migratory birds and other factors in to consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies and others to determine the appropriate frameworks for each species. We consider factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of State and Federal Governments. After Service establishment of final frameworks for hunting seasons, the States may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative in their selections than the Federal frameworks but never more liberal. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an environmental assessment developed when a National Wildlife Refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the State allows.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, "Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88-14)," filed with the Environmental Protection Agency on June 9, 1988. We published Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582), and our Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment, "Duck Hunting Regulations for 2006-07," and an August 24, 2006, Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53376), the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, Federal Register notice (71 FR 12216). More information may be obtained from: Chief, Division of Migratory Bird Management., U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, NWR, Washington, DC 20240

Waterfowl Population Assessment on Sherburne NWR: The waterfowl population assessment and harvest statistics are described in 4.2.2, under the Migratory Game Bird Population Assessments and Harvest section.

Waterfowl Population Assessment and Harvest: In 2010 the total duck population estimate was 40.9 ± 0.7 [standard error] million birds in North America. This estimate was similar to last year's estimate of 42.0 ± 0.7 million birds and was 21 percent above the long-term average (1955-2009). The Breeding Bird Survey estimated 540,124 (adjusted for visibility and area coverage) ducks breeding in Minnesota, a 6 percent decrease from 2009 (Table 21). In 2010 a midwinter survey estimated 9,046,690 ducks in the Mississippi Flyway and 25,985 of those ducks were counted in Minnesota.

Breeding ground surveys of Canada Geese conducted in 2010 indicated the presence of 339,300 ($\pm 86,000$) breeding adults in the Mississippi Flyway, 42 percent more than in 2009 ($P = 0.049$). Transect level analyses of breeding pairs indicated the 2010 estimates were lower ($P = 0.031$) than the previous year mean. Surveys indicated a total population in the Mississippi Flyway of 359,700 ($\pm 88,000$) Canada Geese, a 31 percent decrease from the 2009 estimate ($P = 0.141$). The survey estimated approximately 146,960 (adjusted for visibility and area coverage) Canada Geese in Minnesota during the breeding season (Table 21); and midwinter surveys in January estimated an average of 1,033,000 Canada Geese in the Mississippi Flyway and 60,354 in Minnesota (averages from 2007 and 2008).

Table 21. Population estimates of the most common breeders in Minnesota (Mallard and Blue-winged Teal), total ducks (all species), and Canada Geese from the Minnesota Waterfowl Breeding Population Survey, 2000-2010 (preliminary).

Year	Mallard				Blue-winged teal				Total Ducks		Canada Geese			
	Unad. PI	VCF	PI	SE	Unad. PI	VCF	PI	SE	Unad. PI	PI	Unad. PI	VCF	PI	
2000	157,853	2.02	318,134	36,857	60,288	2.97	179,055	32,189	370,675	815,299	105,932	2.84	301,298	
2001	146,034	2.20	320,560	39,541	37,706	3.60	135,742	19,631	290,653	761,267	89,418	2.17	193,887	
2002	145,191	2.53	366,625	46,264	91,982	4.67	429,934	87,312	340,967	1,224,143	78,200	2.42	189,353	
2003	115,974	2.42	280,517	34,556	46,759	4.13	193,269	36,176	214,646	748,925	87,663	3.78	331,094	
2004	158,416	2.37	375,313	57,591	94,152	3.75	353,209	56,539	378,579	1,099,250	98,339	1.58	155,859	
2005	82,472	2.89	238,500	28,595	48,394	4.01	194,125	37,358	190,060	684,791	83,384	2.02	168,469	
2006	72,843	2.21	160,715	24,230	38,328	4.53	173,674	60,353	155,475	529,801	75,688	2.73	206,757	
2007	76,979	3.15	242,481	30,020	29,407	4.20	123,588	20,055	139,243	495,575	98,316	1.47	144,289	
2008	103,411	2.88	297,565	27,787	40,777	3.74	152,359	24,157	258,617	782,758	70,311	1.99	139,708	
2009	78,368	3.02	236,436	36,539	37,286	3.63	135,262	32,155	190,950	575,245	67,473	2.44	164,405	
2010	80,922	2.99	241,884	33,940	32,742	4.04	132,261	27,430	172,039	540,124	66,085	2.22	146,960	
Averages:														
10-year (2000-2009)	113,754	2.57	283,685	36,198	52,508	3.92	207,022	40,593	252,987	771,705	85,472	2.34	199,512	
% change from:	2009	3%	-1%	2%	-7%	-12%	11%	-2%	-15%	-10%	-6%	-2%	-9%	-11%
10-year average		-29%	16%	-15%	-6%	-38%	3%	-36%	-32%	-32%	-30%	-23%	-5%	-26%
¹ Unad. PI - unadjusted population index, VCF - Visibility Correction Factor, PI - adjusted population index, SE - standard error.														

Table 22. Minnesota waterfowl breeding populations by species, expanded for area coverage but not for visibility, 1992-2010 (preliminary)

Species	Year																		
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Dabblers:																			
Mallard	144,126	123,771	138,481	142,556	153,473	160,628	188,972	169,213	157,853	146,034	145,191	115,974	158,416	82,472	72,843	76,979	103,411	78,368	80,922
Black Duck	0	0	56	0	0	0	0	0	0	117	0	0	174	56	0	174	174	0	0
Gadwall	7,258	3,282	4,457	5,413	5,324	3,515	4,740	5,733	6,482	13,670	4,951	3,400	12,635	3,752	8,064	5,298	5,075	3,616	3,677
American Wigeon	929	348	1,335	194	1,512	699	1,570	56	1,045	285	1,218	230	4,634	1,327	174	404	810	230	754
Green-winged Teal	0	810	569	0	2,170	638	858	117	1,613	1,564	1,267	630	678	230	694	167	278	400	172
Blue-winged Teal	93,107	64,670	70,323	47,737	57,196	45,495	47,788	36,106	60,288	37,706	91,982	46,759	94,152	48,394	38,328	29,407	40,777	37,286	32,742
Northern Shoveler	13,684	3,311	3,997	6,236	15,614	15,120	5,377	6,661	26,175	12,058	9,762	2,550	6,747	915	1,273	1,276	5,469	3,456	10,413
Northern Pintail	1,326	2,180	1,331	575	1,154	867	1,449	1,153	979	1,028	56	402	404	174	230	582	230	56	174
Wood Duck	46,347	46,333	39,996	29,848	43,132	35,103	46,659	45,866	49,067	31,777	21,603	21,759	37,553	16,253	12,616	10,281	27,652	19,802	22,664
Dabbler subtotal	306,777	244,705	260,545	232,559	279,575	262,065	297,413	264,905	303,502	244,239	276,030	191,704	315,393	153,573	134,222	124,568	183,876	143,214	151,518
Divers:																			
Redhead	13,034	5,522	8,729	9,176	2,876	3,809	3,880	5,616	5,911	7,552	2,289	1,092	3,656	2,438	842	2,373	3,107	1,926	1,878
Canvasback	2,111	3,709	4,914	4,034	2,792	2,034	5,200	3,262	6,072	2,549	2,996	3,516	3,684	972	833	2,517	4,311	2,785	1,687
Scaup	66,071	11,801	57,670	28,420	65,585	31,138	28,416	14,041	32,376	15,743	13,016	5,117	30,906	12,397	1,971	1,894	14,854	12,571	3,299
Ring-necked Duck	11,297	8,249	12,481	4,030	23,755	9,913	7,986	6,060	18,565	14,768	16,542	5,294	15,675	13,829	12,085	4,525	43,169	22,501	8,579
Goldeneye	1,617	1,391	1,706	2,291	3,834	1,340	1,041	1,687	1,684	2,367	3,477	1,539	1,269	1,383	1,216	1,092	976	1,384	864
Bufflehead	1,944	465	1,374	56	1,439	291	404	111	56	111	2,609	1,011	2,944	517	513	868	4,231	2,521	1,206
Ruddy Duck	8,513	5,858	3,223	2,633	1,937	993	11,052	1,613	0	779	22,054	3,192	2,567	2,443	1,060	261	1,114	1,384	437
Hooded Merganser	1,143	1,154	1,275	1,439	2,411	1,719	1,202	2,641	2,392	2,299	3,432	1,209	2,251	1,785	1,776	519	1,947	1,993	1,890
Large Merganser	576	0	230	174	0	56	0	0	117	228	522	972	234	723	957	626	1,032	681	681
Diver subtotal	106,306	38,149	91,602	52,253	104,629	51,293	59,181	35,031	67,173	46,396	66,937	22,942	63,186	36,487	21,253	14,675	74,741	47,746	20,521
Total Ducks	413,083	282,854	352,147	284,812	384,204	313,358	356,594	299,936	370,675	290,635	342,967	214,646	378,579	190,060	155,475	139,243	258,617	190,960	172,039
Other:																			
Coot	85,011	18,546	14,777	4,965	193,021	34,700	6,331	15,020	72,793	5,321	21,804	11,319	106,845	11,641	15,633	6,290	55,927	9,213	691
Canada Goose	33,965	43,858	48,595	58,066	60,870	60,449	79,147	80,012	105,932	89,418	78,200	87,663	98,339	83,384	75,688	98,316	70,311	67,473	66,085

Cumulative Impacts Summary for Existing Migratory Bird Hunting Opportunities at Sherburne NWR (PA 224)

Waterfowl: Waterfowl hunting has declined in both the United State and Canada. Hunter numbers in the U.S. have dropped 30 percent since the peak in the 1970's. This is evident in the decline of duck stamp sales from the peak in 1971. The slight increase in the late 1990's and early 2000's may be attributed to increased waterfowl populations due to wet conditions in the prairie pothole area and initiation of a campaign to encourage non-hunters to purchase duck stamps for habitat. This nation-wide and international-wide trend may be consistent with the local waterfowl hunting as well. However, for the entire 2009 waterfowl season (October 3-December 1) it was estimated that approximately 1,528 hunter visits during the waterfowl hunting season on the Refuge. The waterfowl hunt on the Refuge is consistent with state seasons and regulations. Area B is the only hunting zone open to waterfowl on the Refuge. There are currently 3 waterfowl blinds for hunters with disabilities. For more details of waterfowl hunting season on the Refuge refer to Section 1.1.2, Figure 3, and Table 4 for visitation trends of waterfowl hunters.

- **Minnesota and Mississippi Flyway Harvest for 2008 and 2009:** The total number of ducks harvested in Minnesota by hunters was approximately 392,300 in 2009 and 584,000 in 2008. The number of Canada geese harvested in Minnesota was 147,700 in 2009 and 220,972 in 2008.

The total number of ducks harvested in the Mississippi Flyway was approximately 6,121,500 ($\pm 6\%$) and 975,895 geese in 2009 and 6,522,900 ($\pm 6\%$) and 1,021,696 respectively in 2008. See Table 20 for comparison of harvests from local to landscape levels and species composition of harvest for 2008 and 2009 (access USFWS report via <http://www.fws.gov/migratorybirds/NewReportsPublications/HIP/hip.htm> for more information).

- **Ducks & Geese Harvested in the United States in 2008 and 2009:** About 1.2 million waterfowl hunters harvested 13,635,700 ($\pm 4\%$) ducks and 3,792,600 ($\pm 5\%$) geese in 2008, and about 1.1 million waterfowl hunters harvested 13,139,800 ($\pm 4\%$) ducks and 3,327,000 ($\pm 5\%$) geese in 2009.

Table 23. Preliminary estimates of waterfowl harvest and hunter activity in Minnesota and the Mississippi flyway (USFWS).

Duck Species Composition	Minnesota		Flyway Total	
	2008	2009	2008	2009
Mallard	188,974	101,280	2,282,128	2,076,235
Domestic Mallard	0	0	3,311	1,990
Black Duck	1,120	0	29,641	30,373
Mallard x Black Duck Hybrid	560	641	5,850	6,104
Mottled Duck	0	0	67,785	51,860
Gadwall	19,877	23,931	906,308	713,277
Wigeon	13,718	10,470	160,218	96,709
Green-winged Teal	61,592	49,999	852,849	755,233
Blue-winged/Cinnamon Teal	60,752	34,828	517,937	732,594
Northern Shoveler	10,079	16,666	252,481	283,039
Northern Pintail	7,279	3,632	158,218	106,727
Wood Duck	78,949	53,204	662,706	647,412
Redhead	10,079	8,974	43,108	59,860
Canvasback	280	3,846	1,234	27,831
Greater Scaup	840	1,496	24,649	24,567
Lesser Scaup	10,639	10,043	97,340	111,522
Ring-necked Duck	80,629	45,726	251,356	186,243
Goldeneyes	11,198	7,051	29,540	30,017
Bufflehead	17,358	12,607	101,118	91,175
Ruddy Duck	280	214	10,970	12,243
Long-tailed Duck	0	0	7,690	5,530
Eiders	0	0	0	0
Scoters	0	0	1,585	3,599
Hooded Merganser	8,679	7,478	38,201	41,645
Other Mergansers	1,120	214	8,139	7,534
Other Ducks	0	0	8,571	18,179
Total Duck Harvest	584,000±14%	392,300±14%	6,522,900±6%	6,121,500±6%
Total Active Duck Hunters	71,700±9%	61,100±10%	466,400 ^c	468,400 ^c
Total Duck Hunter Days Afield	409,900±11%	335,800±14%	3,410,000±4%	3,455,500±5%
Seasonal Duck Harvest Per Hunter	8.1±17%	6.4±17%		
Goose Species Composition				
Canada Goose	220,972	147,700	1,021,696	975,895
Snow Goose	1,543	0	104,291	69,775
Blue Goose	0	0	64,191	39,438
Ross's Goose	0	0	14,625	6,842
White-fronted Goose	386	0	138,097	71,451
Brant	0	0	0	0
Other Geese	0	0	0	0
Total Goose Harvest	222,900±19%	147,700±19%	1,342,900±8%	1,163,400±8%
Total Active Goose Hunters	50,500±10%	49,100±11%	289,000 ^c	281,700 ^c
Total Goose Hunter Days Afield	275,800±13%	252,000±16%	1,733,800±5%	1,773,900±6%
Seasonal Goose Harvest Per Hunter	4.4±21%	3.0±22%		
Active Waterfowl Hunters	83,400±8%	71,500±10%	530,300 ^c	521,900 ^c

The current waterfowl hunt is estimated to cause mortality to an average of 300 ducks and 50 geese annually (based on bag checks for opening weekend, and hunter participation and success). The hunt occurs during the state season which opens the 1st Saturday in October through December 1. Hunters can access wetland areas by foot or non-motorized bicycles. Non-motorized boats are also permitted via boat ramp access and designated launch sites. Hunters with disabilities may have special requests for access. These requests must be approved prior to the hunt. The majority of the disturbance will be on opening day and the following Sunday. After opening weekend usage will be at fairly consistent lower levels throughout the remaining season, with more activity on weekends. Because this activity will be restricted to the northeast corner and the south "spur" of the Refuge (Area B; see Figure 3), disturbance will be limited and temporary to this area and disturbance associated with waterfowl hunting to the remaining portion of the Refuge will be essentially non-existent. Disturbance to waterfowl and geese may occur by hunter vehicles on county roads and the Brande Road (the only Refuge road open for vehicle access) while driving next to impoundments or walking through wetland areas to access hunting locations, especially during early morning hours when waterfowl are still roosting. Waterfowl typically move out of the area when ice-up occurs.

The current hunting program will not conflict with the waterfowl goals of the Refuge as outlined in the 2005 CCP. The cumulative impacts of the waterfowl hunt at Sherburne NWR to local, state, and nation-wide waterfowl populations is miniscule because it accounts for an extremely small percentage of annual harvest levels at all scales. Also, harvest rates at Sherburne NWR are insignificant compared to duck and geese population numbers at state, flyway, and/or national levels. Thus, there should be no cumulative impacts to waterfowl populations for the existing waterfowl hunting opportunities.

Woodcock, Snipe, and Rails: Hunting pressure on other migratory bird species on the Refuge is minimal and any harvest that does occur is dependent on fall migration activity levels and hunter effort. Populations of these species are not estimated in total, but population and abundance trends are monitored and hunting regulations and harvest rates at state and flyway levels are set accordingly in a collaborative effort by federal and state agencies. If harvest rates (seasonal bag per hunter) at Sherburne NWR are comparable to state-wide harvest rates, cumulative impacts of hunting these species on the Refuge to flyway populations are minimal and are inconsequential relative to flyway harvest rates and populations.

Table 24. Woodcock harvest statistics in Minnesota and harvest in Central Region (CR, see Figure 6 and 7).

Year	Harvest in MN	Active # of hunters	Avg. seasonal bag per hunter	Harvest in CR
2005	42,176	11,951	3.5	270,954
2006	38,738	14,934	2.6	232,557
2007	34,400	15,295	2.3	214,162
2008	19,871	8,672	2.3	174,262
2009	15,998	9,729	1.6	175,121

*Preliminary Results

Table 25. Snipe harvest statistics in Minnesota and harvest in the Mississippi Flyway.

Year	Harvest	Active # of hunters	Avg. seasonal bag per hunter	Harvest in Flyway
2005	2,848	1,274	2.2	41,367
2006	5,265	2,261	2.3	24,776
2007	1,364	1,169	1.2	35,761
2008	2,355	2,153	1.1	20,197
2009	7,801	2,656	2.9	20,928

*Preliminary Results

Table 26. Rail harvest statistics in Minnesota and harvest in the Mississippi Flyway.

Year	Harvest	Active # of hunters	Avg. seasonal bag per hunter	Harvest in Flyway
2005	0	0	0.0	32,122
2006	708	1,062	0.7	10,821
2007	0	828	0.0	3,500
2008	2,496	1,184	2.1	8,138
2009	882	882	1.0	1,514

*Preliminary Results

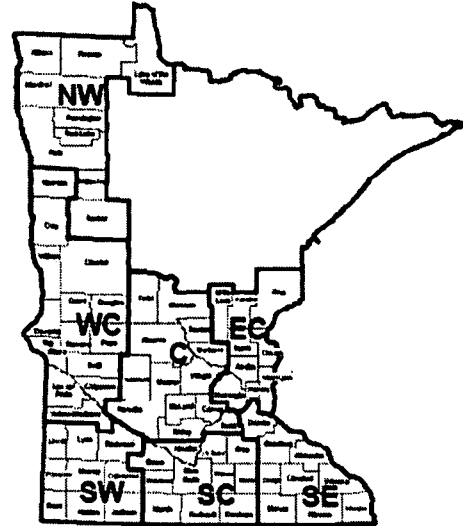
Small Game Populations

State-wide and regional population assessment of the following game species are based on the 2009 Minnesota August Roadside Survey by the Farmland Wildlife Populations and Research Group. Analyses of these data are done range-wide for each species and also at a regional level (Figure 10).

Ruffed Grouse Population Assessment and Harvest:

Ruffed Grouse are considered Minnesota's most popular game bird with annual harvest varying approximately 150,000 to 1.4 million state-wide. The MN DNR performs an annual survey consisting of spring drumming counts along 125 routes. In addition to hunter harvest statistics, these counts provide an index to long-term trends in populations and monitors changes in the densities of grouse over time.

Figure 10. Survey regions for Minnesota's August roadside survey (MN DNR)



These surveys have indicated that Ruffed Grouse populations fluctuate cyclically at 10-year intervals. The 2010 drumming counts and harvest statistics suggest that the population trend is 27 percent lower than the 2009 index, suggesting that the peak abundance within the 10-year cycle was in 2009 (Figure 11). Hunting is not known to affect Ruffed Grouse populations either at the top or bottom of their population cycles and (Larson 2010). Although estimates for the state population are not modeled, trends in the population are monitored by the drumming count surveys and such studies have indicated that hunting pressure does not impact grouse populations even when trends indicate a lower abundance; thus, there are no expected cumulative impacts to Ruffed Grouse populations under Alternative A.

Figure 11. Ruffed Grouse drum count index values in Minnesota. Vertical error bars represent 95% confidence intervals based on bootstrap samples (MN DNR).

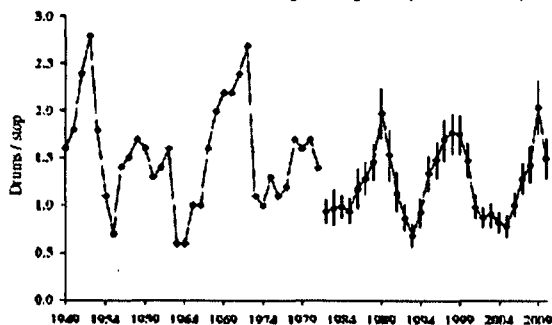


Figure 12. Ruffed Grouse drum count index values for the Central Hardwoods region. Vertical error bars represent 95% confidence intervals based on bootstrap samples. (MN DNR)

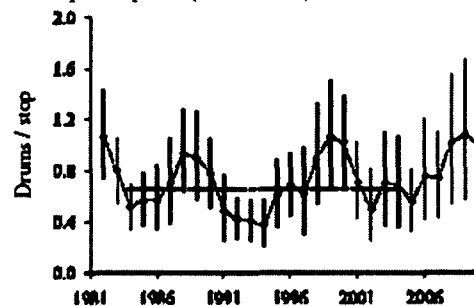
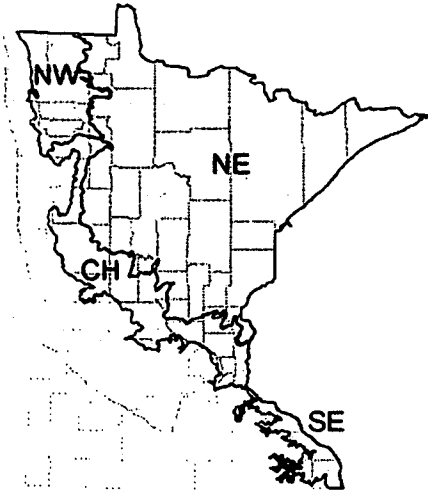


Figure 13. Minnesota survey regions for Ruffed Grouse. Sherburne NWR lies within the 'Central Hardwoods (CH)'. (Survey regions are based on the Ecological Classification System developed by the Minnesota Department of Natural Resources).



Ring-necked Pheasants Population Assessment and Harvest:

The 2009 pheasant index (58.5 birds/100 mi) declined 27% from 2008 and was 27% below the 10-year average, 43% below the long-term average, and 78% below the benchmark years of 1955-64 (soil-bank years with marginal cropland in long-term set-aside, a diversified agricultural landscape, more small grains and tame hay, and less pesticide use). The 2009 hen pheasant index (9.4 hens/100 mi) was significantly lower (decline of 34%) and declined 22% from the 10-year average. Spatial distribution of hens varied from 1.4 hens/100 miles in the Southeast to 19.6 hens/100 miles in the Southwest.

This reflected reduced overwinter survival associated with the first moderately severe winter since 2001. The cock index (7.6 cocks/100 mi) declined 39 percent (95% CI: -54 to -23%) from 2008, but was similar to the 10-year average. The 2009 hen:cock ratio was 1.24, which was below average (1.53) for the CRP years (1987-2009). A low sex ratio may reflect a delayed nesting effort, but evidence of this is relatively weak for 2009. The number of broods observed was 25 percent below last year, which reflected fewer hens available for nesting. Average brood size in 2009 (4.6 ± 0.1 [SE] chicks/brood) was similar to last year (4.5 ± 0.1 [SE] chicks/brood), but below the 10-year mean (4.8 chicks/brood) and the long-term average (5.6 chicks/brood).

The median hatch date for pheasants was June 12 ($n = 340$), the same as last year and 4 days later than the 10-year average. The distribution of estimated hatch dates for observed broods was unimodal and approximately normally distributed, which suggests that many early nesting attempts were successful (vs. wide-spread nest failure, which often leads to an extensive renesting effort and a wide or bimodal peak in hatch dates). However, successful late-season nests will likely be underrepresented in roadside data. Median age of broods observed was 8 weeks (range: 1-16 weeks).

A moderately severe winter throughout the pheasant range (the first since 2001) resulted in reduced hen counts. In addition, habitat loss reduced nesting opportunities and one period of cool and wet weather at the normal peak of pheasant hatch appeared to reduce early brood survival. Thus, a decrease in the range-wide pheasant index was not surprising. Overall, the size of the fall population will be close to that in 2004, when 420,000 roosters were harvested. The best opportunity for harvesting pheasants appears to be in the Southwest region, although good

opportunities will likely also be available in the West Central, Central, and South Central regions. Total pheasants observed per 100 miles ranged from 9.6 in the Southeast to 115.8 in the Southwest. Declines from last year were significant only for the West Central and South Central regions. The pheasant population is managed by the state by setting harvest rates and enforcing specific regulations for a sustainable harvest of this species. Even though the population is experiencing declines, the harvest is sustainable and hunting of this species will continue unless state managers decide otherwise.

Figure 14. Ring-necked Pheasant population and harvest trends in the State of Minnesota from 1955-2009 (MN DNR).

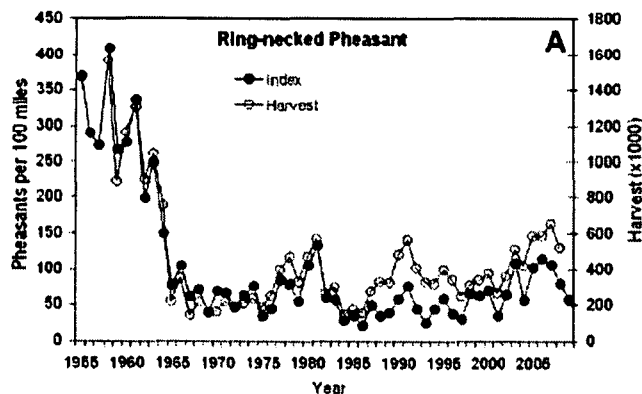


Figure 15. Long-term Ring-necked Pheasant population trends in the Central region of Minnesota (where Sherburne NWR lies) 1955-2009 (MN DNR).

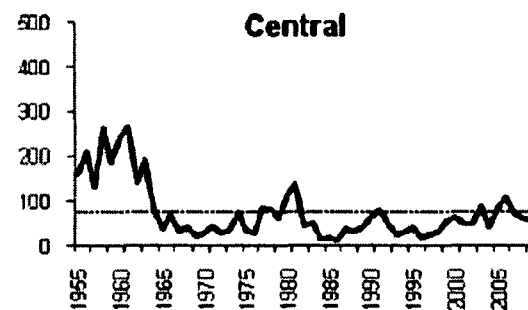


Table 27. Range-wide trends (% change) in number of wildlife observed per 100 miles drive, Minnesota August roadside survey, 1955-2009 (MN DNR).

Species Subgroup	Change from 2008 ^a					Change from 10-year average ^b				Change from long-term average ^c			
	n	2008	2009	%	95% CI	n	1999-08	%	95% CI	n	LTA	%	95% CI
Ring-necked pheasant													
Total pheasants	152	80.3	58.5	-27	±14	150	81.0	-27	±11	151	102.4	-43	±10
Cocks	152	12.4	7.6	-39	±15		8.0	-4	±16		11.5	-33	±14
Hens	152	14.3	9.4	-34	±17		12.3	-22	±12		14.8	-36	±12
Broods	152	11.9	9.0	-25	±16		12.7	-28	±10		13.4	-33	±12
Chicks per brood	341	4.5	4.6	3			4.8	-4			5.6	-17	
Broods per 100 hens	341	83.1	94.5	14			103.8	-9			101.4	-7	
Median hatch date	340	Jun 12	Jun 12				Jun 08						

Gray and Fox Squirrel Population Assessment and Harvest: Gray squirrels have increased in recent years due to suburban sprawl and backyard bird feeders and are highly abundant throughout central Minnesota (MN DNR). Fox squirrels are also abundant. Each year these populations sustain a harvest of approximately 150,000 gray squirrels and 160,000 fox squirrels. Life history traits and reproductive capabilities of these species allows for a sustainable harvest at those rates (see Section 4.2.2 for more information). At Sherburne NWR, hunting pressure of these species is moderate, but under Alternative A, there are no foreseeable cumulative impacts on these populations.

Rabbit and Hare Population Assessment and Harvest: Cottontail rabbit hunting is a popular sport in Minnesota and on average hunters harvest approximately 60,000 individuals each year. This species is very abundant and populations can sustain a sizable harvest. The snowshoe hare population can rapidly rise and fall on a 10-year cycle. During high population years, researchers estimate there are about 3,400 hares per square mile. Although snowshoe hares have been confirmed on the Refuge, they are uncommon because the Refuge is located just south of their range and has limited areas comprised of their preferred habitat of dense woodlands and forest bogs.

The eastern cottontail rabbit index (3.7 rabbits/100 mi) declined 42 percent from last year (95% CI: -61 to -23%), 46 percent from the 10-year average (95% CI: -59 to -33%), and 39 percent from the long-term average (95% CI: -52 to -27%). The cottontail rabbit index ranged from 0.2 rabbits/100 miles in the Northwest to 6.3 rabbits/100 miles in the Southwest region. Declines from 2008 were significant in the Central, East Central, and South Central Regions. Declines in the population are likely attributed to the natural cyclic tendencies of the population. Like hare populations, cottontail rabbit populations also run in cycles of highs and lows usually occurring at 10-year intervals. Hunting is not known to impact cottontail rabbit populations at high or low occurrences in the cycle. The best opportunities for harvesting cottontail rabbits are in the Southwest, South Central, Southeast, and East Central regions.

The index of white-tailed jackrabbits did not change significantly from 2008 or the 10-year average but was 86 percent below the long-term average (95% CI: -102 to -70%). The range-wide jackrabbit population peaked in the late 1950's and declined to its lowest level (0.2 rabbits/100 mi) in 1993 and again in 2008. The long-term decline in jackrabbits probably reflects the loss of their preferred habitats (i.e., pasture, hayfields, and small grains). The greatest potential for white-tailed jackrabbit hunting is likely in the Southwest region. However, indices of relative abundance and annual percent change should be interpreted cautiously because estimates are based on low numbers of sightings.

Figure 16. Eastern cottontail rabbit population trends in the Central region of Minnesota (MN DNR).

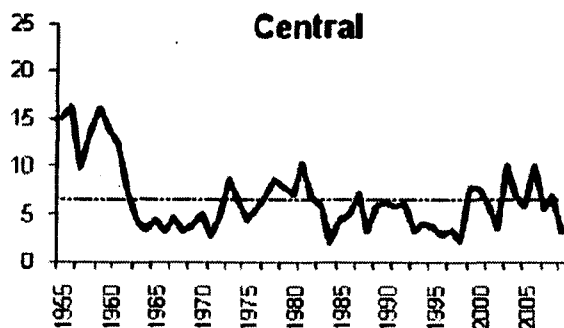
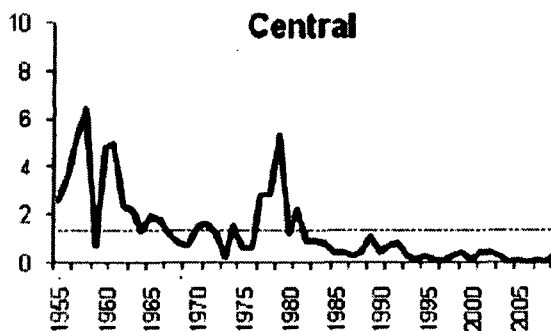


Figure 17. White-tailed jack rabbit population trends in the Central region of Minnesota (MN DNR).



Change from 2008 ^a					Change from 10-year average ^b					Change from long-term average ^c				
n	2008	2009	%	95% CI	n	1999-08	%	95% CI	n	LTA	%	95% CI		
Eastern cottontail		170	6.4	3.7	-42	±19	168	6.9	-46	±13	151	6.8	-39	±12
White-tailed jackrabbit		170	0.2	0.3	39	±108	168	0.4	-36	±43	151	1.9	-86	±16

There are no expected cumulative impacts associated with hunting rabbits or hares on the Refuge because hunting pressure of these species is minimal relative to state and regional harvest levels, and also because Sherburne is located on the edge of the current range of hare and jack rabbit making opportunities for harvesting these two species rare. See Section 4.2.2 for information on rabbits and hares at Sherburne NWR.

Non-hunted Resident Wildlife & Migratory Birds

Non-hunted wildlife that are residents of the Refuge include several bird species such as songbirds (including American Crows, Common Raven, and Blue Jay), raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, gophers, ground squirrels, and raccoons; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory butterflies and moths, most of these species have limited home ranges and hunting does not affect their populations regionally; thus, only local effects will be discussed (See Section 4.2.4 and 4.3.4).

Some species of butterflies and moths are migratory. Cumulative effects to these species at the “flyway” level (i.e. Mississippi Flyway) should be negligible. These species are in torpor or have completely passed through central Minnesota by the hunting seasons in the fall. Any disturbance by hunters would be cumulative to that of other visitation but hunting only accounts for only 11 percent of total Refuge visitation making impacts associated with hunting minimal.

Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds including nuthatches, finches, chickadees, etc. Any potential disturbance as a result of the current hunting activity to non-hunted migratory birds should not have cumulative negative impacts for the following reasons: 1) hunting pressure will be minimal, and 2) fall hunting season does not coincide with the nesting season.

Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Most migratory shorebirds and waterbirds (rails, bitterns, grebes, etc.) have moved out of the area, especially if ice-up has occurred. Migratory birds of prey (eagles, rough legged hawks, etc.) are still in the area, but disturbance is expected to be minimal. Disturbance to the daily wintering activities, such as feeding and resting, of residential birds might occur during fall hunting seasons, but it should be temporary.

Disturbance to other non-hunted wildlife such as small mammals may occur. However, impacts would be minimal for the following reasons. Many small mammals are less active during November when the 9 day firearm deer hunt occurs, which accounts for the majority of annual hunter-visits. Many of these species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blooded reptiles and amphibians also limits their activity during the deer season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Over 3,516 hunters participated in the firearms-deer hunt on the Refuge during the 9-day state in November 2009. An estimate of 808 hunters participated on opening day. The Refuge has estimated current hunter density during the regular deer firearms season at 1 hunter per 80 acres. This is based on an average of 391 visits for each day over the entire season.

This alternative will continue the Refuge's current status as a non-hunting sanctuary for wild turkeys. Disturbance to Refuge wildlife would continue as is presently caused by non-consumptive users and consumptive users on already approved hunting seasons. Turkey populations may someday increase to a level where they may become nuisance animals. But currently, there are no negative associations with the turkey population in the area.

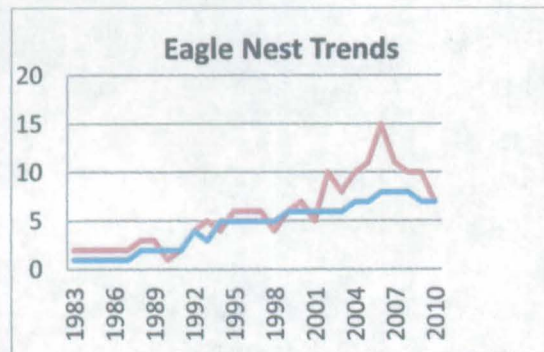
In summary, Alternative A should not affect other wildlife species and the Refuge will remain closed during the nesting and breeding season of most wildlife species thereby providing sanctuary for these species.

Threatened and Endangered Species

At the time of the completion of the 2005 CCP, Federally listed Threatened Species that occur on Sherburne NWR included Bald Eagles and gray wolves. Since then, Bald Eagles have been delisted to protected status but gray wolves remain threatened in Minnesota. Populations of both of these species have recovered well throughout their natural ranges.

Bald Eagles: There are currently 9 nesting pairs of Bald Eagles on the Refuge, 8 of which were active in 2009 and 7 of those pairs produced young. Since the first Bald Eagle nest was found on the Refuge in 1983, 164 eaglets have been produced. Any cumulative impacts of hunting activity on Bald Eagles on the Refuge are minimal or undetectable. The eagles that occur at the Refuge are both migratory and non-migratory and are observed during different times of the year. Eagles are most abundant during the spring and fall migration.

Figure 18. Eagle population trends at Sherburne NWR from 1983-2010. Red line = fledged eaglets, blue line = active pairs.



There has been no evidence of eagles being shot during any hunting season on the Refuge. Non-toxic shot must be used to hunt waterfowl and upland game on the Refuge; thereby limiting the probability of lead poisoning. Crippled/dead birds may provide an easy food source for eagles, especially for young eagles. Many Bald Eagles stay at Sherburne NWR during winter months and are non-migratory. Deer harvested on the Refuge will provide gut pile remains for eagles to scavenge.

As a result, lead poisoning may occur through ingestion of deer carcasses remains. Lead poisoning has been documented in eagles since the early 1970s and is known to cause several health issues and may be the ultimate cause of mortality among raptors that ingest lead. Consumption of lead contaminated waterfowl is thought to be the predominant source of lead exposure for wintering bald eagles (Kramer and Redig 1997). However, because Refuge-specific regulations prohibit the use of lead-based ammunition, with the exception of deer hunting, the probability of ingestion is lower. Ingestion of lead presumably from hunter-harvested deer remains has been documented in the Midwest (Kramer and Redig 1997). To date, there are no known eagle mortality on the Refuge caused by lead poisoning; but because lead-based ammunition is permitted during deer hunting season, there may be some potential cumulative impacts to eagle populations, but it will likely be minimal and are undetectable at this time.

Gray Wolves: The potential for cumulative impacts to wolves is unlikely because there are no current packs or breeding pairs inhabiting the Refuge. However, increased human activity during the fall hunting seasons may deter wolves from establishing in the area or traversing through. There is low probability for potential illegal killing of wolves during hunting seasons because wolf sightings on or near the Refuge are rare. Injured animals or carcass remains may provide a food source for any wolves that may be in the area. Lead poisoning from ingesting hunter-harvested deer remains may have negative impacts on wolves that scavenge on the Refuge during hunting season. However, the probability of this occurrence is low because wolves do not frequently visit the Refuge.

4.5.1.B. Cumulative Impact of No Action on Refuge Programs, Facilities, and Cultural Resources

Other Refuge-Wildlife-Dependent Recreation: Annually there are on average about 90,000 visitors to the Refuge. Most of the visitations are from May- August for bird and wildlife observation. During this time, visitation is restricted to designated hiking trails and the auto tour due to 'sanctuary time'. The rest of the Refuge is closed to the public between March 1 to August

31 to give wildlife species a haven to breed and raise their young without human disturbance. Potential public use conflicts should not develop between consumptive uses (hunting) and non-consumptive public uses such as wildlife observation, photography, environmental education, and environmental interpretation because hunting seasons occur after most migratory birds have left the Refuge and the non-hunting visitation is decreased. During hunting seasons, non-consumptive users that visit Headquarters or call, will be informed of hunting activities. If snowfall has not accumulated, the auto-tour is closed to non-consumptive users for during the 9-day firearms season. The Mahnomen Trail is open for both non-consumptive users and hunters alike, but visitors will be informed of hunting activity at the trailhead. There have been no reported public use conflicts of issue between hunting and other public uses on the Refuge. More details concerning public uses will be outlined in the Visitor Service Plan.

Refuge Facilities: The Service defines facilities as: "Real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, etc."

Under Alternative A, those facilities most utilized by non-consumptive visitors are the Refuge office, parking lots (mostly by designated trails and the auto-tour), auto-tour route, observation decks, restrooms, and interior roads (access by foot or non-motorized bicycle, with the exception of Brande Road which is open for vehicle travel during non-sanctuary time (September 1 through the end of February). Facilities used by hunters are the same; however, hunters more frequently use other parking lots and the Brande Road. In addition, there are currently 4 hunting blinds available for hunters with disabilities. Under this alternative, impacts of the hunting program to Refuge facilities will be commensurate with impacts associated with non-consumptive users.

Routine maintenance or improvement of existing facilities cause minimal short term impacts to localized soils and may cause some temporary disturbance to nearby wildlife and damage to vegetation.

Cultural Resources: There are no direct or cumulative impacts to cultural resources. See section 4.1.1 for detailed discussion.

4.5.1.C. Cumulative Impact of No Action on Refuge Environment and Community

Refuge personnel expect no adverse impacts of No Action on the Refuge environment which includes soils, vegetation, air quality, water quality, hydrology, and solitude. Some disturbance to surface soils and vegetation occur; however they are minimal and temporary. Hunting can indirectly benefit vegetation as it is used to keep deer populations in balance with the environment by reducing herbivory, thereby benefiting vegetative communities and associated wildlife species.

The local community and the state of Minnesota, in general, strongly support outdoor activities such as deer hunting. The state has passed legislation ensuring the right of Minnesotans to hunt.

Impacts to the natural hydrology and air quality will be negligible. The Refuge expects impacts to air and water quality to be very minimal and only due to visitor use of automobiles for

transportation. Existing state water quality criteria and regulations on use are adequate to achieve or maintain desired on-Refuge conditions; thus, implementation of the No Action Alternative should not have cumulative impacts on the Refuge environment.

4.5.1.D. Other Past, Present, Proposed, and Reasonable Foreseeable Hunts & Anticipated Impacts

The No Action Alternative will not have an adverse impact on past or present hunting programs. Under this alternative there will be no new hunts proposed and the current hunting program will be maintained. Deer and waterfowl hunting have been a long standing tradition in the area and Sherburne has been open to migratory bird, small game and white-tailed deer hunting since inception of the Refuge in 1965. Visitation by hunters has been fairly consistent throughout the last 5 years for all hunting seasons (Table 4), but is nowhere near the numbers from the past.

A spring turkey hunt for persons with disabilities and youth are proposed in the Preferred Alternative C. No other additional hunting is anticipated in the foreseeable future.

If visitation levels expand in the unforeseen future, unanticipated conflicts between user groups may occur. Service experience has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) and limiting visitations are effective tools in eliminating conflicts between user groups.

4.5.1.E. Anticipated Impacts if Individual Hunts are Allowed to Accumulate

National Wildlife Refuges, including Sherburne NWR, conduct or will conduct hunting programs within the framework of State and Federal regulations. Additionally, refuges coordinate with the MN DNR annually to maintain regulations and programs that are consistent with the State management program. The No Action Alternative poses no issues with accumulated hunts. Under Alternative C, the preferred alternative, a spring turkey hunt for youth and persons with disabilities is proposed.

4.5.2 Alternative B: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities

The Cumulative Impact for Alternative B will not be fully developed in this Environmental Assessment because it is not the Preferred Alternative. However, cumulative impacts associated with Alternative B will be the same as Alternative C which is described in Section 4.5.3.

4.5.3 Alternative C: Current; Plus Open Spring Turkey Hunting to Persons with Disabilities and Youth (Preferred)

4.5.3.A. Cumulative Impact of Proposed Hunt on Wildlife Species.

Deer Populations

Same as Alternative A. Changes to the hunting program under Alternative C should not have any additional cumulative impacts on local, regional, or state deer populations.

Cumulative Impacts Summary for Existing White-tailed Deer Hunting Opportunities on Sherburne NWR (PA 224)

Same as Alternative A. Changes to the hunting program under Alternative C should not have any additional cumulative impacts on local, regional, or state deer populations.

Migratory Game Birds

Same as Alternative A. Changes to the hunting program under Alternative C should not have any additional cumulative impacts on local, state, or nation-wide migratory game bird populations.

Cumulative Impacts Summary for Existing Migratory Game Bird Hunting Opportunities on Sherburne NWR (PA 224)

Same as Alternative A. Changes to the hunting program under Alternative C should not have any additional cumulative impacts on local, state, or nation-wide migratory game bird populations.

Wild Turkey

Refer to Section 4.3.2 for turkey population assessment and harvest information for local levels (Permit Area 223).

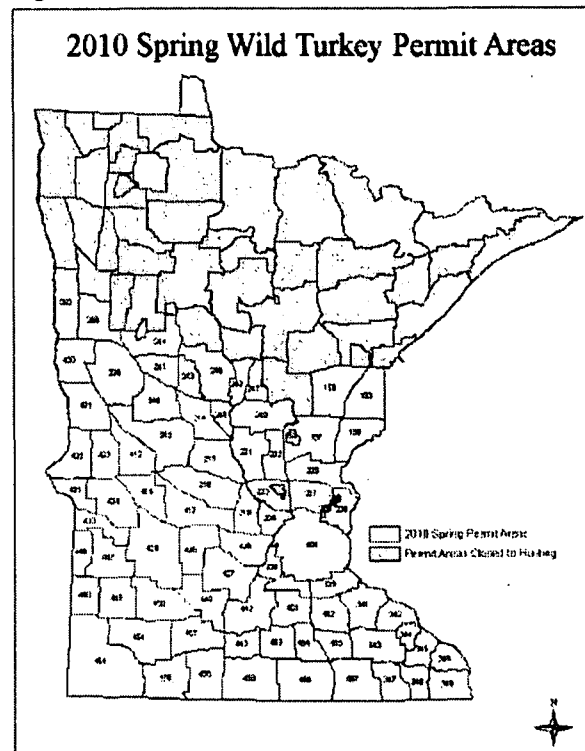
State-wide Population Assessment and Harvest:

The Minnesota DNR uses a model based on annual harvest statistics to estimate the turkey population throughout their known range in the state. In 2009, the spring turkey population estimate was approximately 81,373; in 2010 it increased to 86,400. In permit area 223 (the permit area surrounding the Refuge) there were an estimated 1,820 birds in the spring prior to the harvest. This estimate is derived from harvest statistics from the previous year and assuming that harvest takes approximately 15% of the population.

In Minnesota, the spring wild turkey hunting season is designed to regulate harvest and distribute hunting pressure by allocating permits across 77 permit areas (PAs, Figure 19) and 8 time periods using a quota system. Hunters interested in pursuing wild turkeys are required to apply for a permit through a drawing based on a system of preference.

During 2010 51,312 applications were received for 55,982 permits. More than 46,500 general lottery, landowner, youth, and surplus permits were issued to hunters, and more than 2,900 additional permits were issued to archers. Hunters registered almost 13,500 turkeys, an increase of 10 percent from 2009 and the highest turkey harvest on record. Hunter success averaged 29 percent, which is below the 5-year average of 32 percent. Hunter success by PA ranged from 13 percent to 40 percent. Hunter success varied by license type from 7 percent (archery) to 31 percent (youth), 36 percent (general lottery and landowner), and 42 percent (surplus). Similar to the 10-year average, hunter success rates were highest during the first 2 time periods. The majority of general lottery (71 percent), landowner (92 percent), and youth (79 percent) permits were issued during time periods A – D, while the majority of surplus permits (98 percent) were issued during time periods E – H.

Figure 19. (MN DNR)



The 8,490 permits issued to resident and non-resident youth hunters (general lottery, surplus, archery, and mentored) in 2010 was a 69 percent increase over the 5,024 youth permits issued in 2009. Approximately 10 percent (1,398) of harvested turkeys were registered using the phone registration system, 12 percent (1,662) through the internet, and 77 percent (10,407) at a registration station (MN DNR).

Figure 20. Trends in turkey hunting applications, permits issued, and turkeys harvested from 1978-2010 (MN DNR).

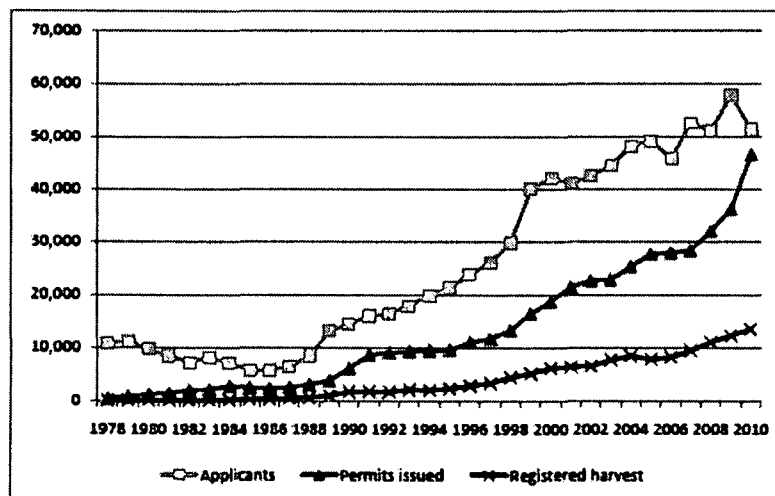


Table 28. Spring applicants, permits available and issued, and registered harvest from 1978-2010 for all spring turkey hunting seasons, Minnesota (MN DNR).

Year	Applicants	Permits			Registered harvest	Success (%) ^a
		Available	Issued	Issued (%)		
1978	10,740	420	411	97.9	94	22.9
1979	11,116	840	827	98.5	116	14.0
1980	9,613	1,200	1,191	99.3	98	8.2
1981	8,398	1,500	1,437	95.8	113	7.9
1982	7,223	2,000	1,992	99.6	106	5.3
1983	8,153	2,100	2,079	99.0	116	5.6
1984	7,123	3,000	2,837	94.6	178	6.3
1985	5,662	2,750	2,449	89.1	323	13.2
1986	5,715	2,500	2,251	90.0	333	14.8
1987	6,361	2,700	2,520	93.3	520	20.6
1988	8,402	3,000	2,994	99.8	674	22.5
1989	13,007	4,000	3,821	95.5	930	24.3
1990	14,326	6,600	6,126	92.8	1,709	27.9
1991	15,918	9,170	8,607	93.9	1,724	20.0
1992	16,401	9,310	9,051	97.2	1,691	18.7
1993	17,800	9,625	9,265	96.3	2,082	22.5
1994	19,853	9,940	9,479	95.4	1,975	20.8
1995	21,345	9,975	9,550	95.7	2,339	24.5
1996	23,757	12,131	10,983	90.5	2,841	25.9
1997	25,958	12,530	11,610	92.7	3,302	28.4
1998	29,727	14,035	13,229	94.3	4,361	33.0
1999	39,957	18,360	16,387	89.3	5,132	31.3
2000	42,022	20,160	18,661	92.6	6,154	33.0
2001	41,048	22,936	21,404	93.3	6,383	29.8
2002	42,415	24,136	22,607	93.7	6,516	28.8
2003	44,415	25,016	22,770	91.0	7,666	33.7
2004	48,059	27,600	25,261	91.5	8,434	33.4
2005	49,181	31,748	27,638	87.1	7,800	28.2
2006	45,704	32,624	27,876	85.4	8,241	29.6
2007 ^b	52,566	33,976	28,320	83.4	9,412	33.2
2008 ^b	51,000	37,992	31,942	84.1	10,994	34.4
2009 ^b	57,692	42,328	36,193	85.5	12,210	33.7
2010 ^b	51,312	55,982	46,548 ^c	83.0	13,467	29.0

^a Success rates not adjusted for non-participation

^b Youth hunt data included

^c 2,910 permits were issued to archery hunters and are not included in this figure.

Table 29. Permits available and issued, registered harvest, and success (2010 and mean) by time period for the 2010 spring wild turkey season, Minnesota (MN DNR).

Time period ^a	Permits		2010		2000 – 2009 Mean success (%)
	Available	Issued	Registered harvest	Success (%) ^b	
A	5622	7910	3180	40	43
B	5622	5298	1903	36	39
C	5622	6942	2107	30	31
D	5622	6282	1711	27	29
E	5622	5353	1484	28	33
F	5622	4327	898	21	29
G	11125	7085	1502	21	25
H	11125	3254	634	19	24
Youth hunt ^c					
Z		12	7	58	
Camp Ripley ^d					
802A		6	5	83	
801B		33	11	33	
802B		3	1	33	
801C		43	24	56	

^a A = April 14 – 18, B = April 19 – 23, C = April 24 – 28, D = April 29 – May 3, E = May 4 – 8, F = May 9 – 13, G = May 14 – 20, and H = May 21 – 27

^b Success rates not adjusted for non-participants

^c In 2010 mentored youth hunts are coded to time period A due to regulation change which allowed youth hunters to purchase permits over the counter

^d Disabled veterans hunt

Cumulative Impacts Summary for Proposed Turkey Hunting Opportunities at Sherburne NWR

Turkey hunting on the Refuge will be limited in time, number of people, and location to prevent conflict with other non-consumptive uses on the Refuge and to help eliminate any potential cumulative impacts to the environment or other wildlife species. The bag limit for the disabled and youth turkey hunting on the Refuge will be consistent with state regulations for the spring; one Wild Turkey with a visible beard per hunter. Thus, only a maximum of 40 turkeys may be harvested on the Refuge per year, but based on average hunter success rate of 40 percent in Permit Area 223, the probability of bagging the maximum harvest per season is low. If a 40 percent success rate is applied to the hunt at Sherburne NWR, 16 turkeys would be harvested and this accounts for approximately 6 percent of the 2009 harvest (273 birds) and less than one percent of the current population in permit area 223. Local and state-wide turkey population estimates indicate an increasing trend and that the population within the Refuge can easily sustain this type of managed, limited harvest without cumulative impacts to local or state-wide populations. The local population may experience minimal impacts and a slight increase in

mortality due to Refuge hunts, but it will be miniscule and will only contribute an extremely small percentage of total Wild Turkey harvest in the state. For this reason, the proposed hunt will have no cumulative impacts to the local or state turkey populations.

Small Game

Same as Alternative A, except potential impacts on local wild turkey populations that are discussed in Section 4.3.2.

Non-hunted Resident Wildlife & Migratory Birds

Same as Alternative A, plus;

Cumulative impacts of the proposed turkey hunt to migratory species at the “flyway” level (i.e. Mississippi Flyway) should be negligible. Disturbance by hunting to non-migratory birds, mammals, reptiles, insects, etc. should not have cumulative negative impacts for the following reasons; 1) the overall hunting season and size of hunt (number of people involved) is limited to the spring and a maximum of 10 people per 5-day period (5 hunters plus 5 assistants), 2) turkey hunting is generally a quiet activity, and 3) any potential disturbance will be temporary. Disturbance to these species by hunters would probably be commensurate with that caused by non-consumptive users in authorized public use areas during that time. The potential impacts of hunters would likely be disturbance to the daily activities of these species but such disturbance would likely be temporary and have minimal (if any) cumulative impacts.

Threatened and Endangered Species

Same as Alternative A, plus;

Bald Eagles: There is potential for the Preferred Alternative to have minimal impacts on nesting eagles. Bald Eagles that nest on the Refuge typically begin incubating in March and hatch in April, near the time of the proposed spring turkey hunt. It is very important during this time to minimize disturbance to nesting eagles. Refuge staff will insure the designated hunting blinds and ingress and egress routes will not be located near any known eagle nests and hunting activity should remain at least 300 meters away from eagle nests.

Gray Wolves: The Preferred Alternative will not have any cumulative impacts on wolves given their current status on the Refuge. However, wolves typically breed in February and after a 6 week gestation period; pups are born in April around the time of the spring turkey hunt. Thus, if wolves were to become established on the Refuge, precautionary steps will be taken to avoid any known den or rendezvous sites during these specialty hunts to minimize disturbance and potential cumulative impacts to the population.

4.5.3.B. Cumulative Impact of Proposed Action on Refuge Programs, Facilities, and Cultural Resources

Other Refuge-Wildlife-Dependent Recreation: Same as Alternative A.

Refuge Facilities: Same as Alternative A, plus;

Special access accommodations for persons with disabilities will be allowed on a situational basis. These access routes will be established prior to the actual hunt and limited to designated ingress and egress routes to access hunting blinds. Disturbance by vehicles will mostly be limited to existing Refuge roads and parking lots. Refuge roads and parking lots are regularly used by Service vehicles, visitors, and volunteers throughout the year. No adverse impacts on Refuge roads, parking lots, or trails are expected.

Cultural Resources: Same as Alternative A.

4.5.3.C. Cumulative Impact of Proposed Action on Refuge Environment and Community

Same as Alternative A.

4.5.3.D. Other Past, Present, Proposed, and Reasonable Foreseeable Hunts & Anticipated Impacts

In the past, no hunting has been allowed during the time of year (spring) of the Proposed Action on Sherburne NWR since it was established in 1965. No turkey hunting is currently allowed on the Refuge. Under the Preferred Alternative, a spring turkey hunt for youth hunters and persons with disabilities in the spring in coordination with state seasons and regulations is being proposed. No additional hunting besides the Proposed Action is anticipated or being considered during of the spring of the year in the foreseeable future.

4.5.3.E. Anticipated Impacts if Individual Hunts are Allowed to Accumulate

National Wildlife Refuges, including Sherburne NWR, will conduct hunting programs within the framework of State and Federal regulations. Additionally, refuges coordinate with the MN DNR annually to maintain regulations and programs that are consistent with the state management program. Under Alternative C, Preferred and Proposed Alternative, hunting opportunities are expanded to include a spring turkey hunt for youth and persons with disabilities, and expand the deer and waterfowl hunting opportunities for persons with disabilities by adding addition land and blinds. Sherburne NWR proposed action is at least as restrictive as the State of Minnesota. In addition, only small designated portions of the Refuge are open to spring turkey hunts. Impacts to hunted species populations are not significant. Impact to Refuge staff managing a variety of hunts will be substantial if staff reductions occur. If there are no staff reductions impacts will be minimal. Law enforcement coverage will need to be coordinated with regional USFWS and MNDNR law enforcement staff.

The proposed hunts will not conflict with...

1. the migratory bird goals of the Refuge since most hunting activities occur after the birds leave; and in the case of the spring turkey hunting opportunities will be limited by location and number of people
2. spring prescribed burning because the turkey hunt will be restricted to designated locations on a situational basis
3. or other non-consumptive uses.

Chapter 5: List of Preparers for CCP

LIST OF PREPARERS FOR HUNTING ALTERNATIVES

Submitted by:

Anne Sittauer
Project Leader

Date

Concur:

Jim Leach, Refuge Supervisor Area 3

Date

Rick Schultz, Regional Chief
National Wildlife Refuge System

Date

Approved:

Thomas Melius, Regional Director
Region 3, U.S. Fish & Wildlife Service

Date

Chapter 6: Consultation and Coordination with Stakeholders

A draft Comprehensive Conservation Plan (CCP) and Environmental Assessment was completed for Sherburne NWR in 2004, final signatures were done in 2005. Both were prepared in compliance with the National Wildlife Refuge Improvement Act of 1997, the National Policy Act of 1969, and Service policy set forth in the Departmental Manual on National Wildlife Refuge Planning (part 602 FW 1).

Public involvement is a key element of any proper planning. The Service strives to provide as many opportunities for public participation as possible. A notice of intent was published in the Federal Register. Subsequently, articles in local newspapers notified citizens and it was placed on the Sherburne NWR website. Letters were sent to interested parties including Minnesota DNR representatives, other natural resource professionals, local hunting clubs, disabled veteran organizations, state and local government offices, local media contacts and tribal officials. A listening post for those interested in commenting in person was held December 7, from 2 pm to 6pm. The planning effort benefited from the creative involvement of the public, tribal, state university and federal participants.

This EA will be available for a 30 day public review period in November 15 to December 15, 2010.

Meeting with partners. The Refuge Manager discussed the addition of a limited turkey hunt with the general public, the Ojibwe and Dakota Tribal representatives, Minnesota State Department of Natural Resources, Sherburne Natural Resource Conservation, and Soil and Water Conservation District, Sherburne County Commissioners, the Sherburne Friends Group, local special interest, sportsman and conservation clubs, and Refuge volunteers.

Refuge letters. Both the Ojibwe and Dakota Tribes, and Minnesota Department of Natural Resources were contacted about the potential for a special spring turkey hunt and invited to participate or comment for a public meeting in December 2010. Following the public meeting, letters were sent to both agencies requesting comments on the draft Hunting Plan, draft Environmental Assessment, an draft Compatibility Determination. A reply was received from both departments (see attached).

In November 2010, consultation letters on the cumulative impacts of turkey hunting were submitted to the Fish & Wildlife Service Regional Biologist. A consultation letter was also submitted to the MN DNR for consultation on the impacts of turkey hunting on the Refuge. FWS and MN DNR personnel concurred that impacts would be minuscule.

Contact with Landowners. The Refuge Manager contacted landowners living adjacent to the west side of the south spur of the Refuge via phone or visit. The purpose was to inform them about the potential to host a turkey hunt in the area and to discuss their concerns.

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Appendix

Response to Public Comments

The following are comments received during the comment period from November 15 to December 15, 2010 and from the listening post held on December 7, 2010. summarizing public involvement, comments and responses.

General Public written comments:

Comment

Expressed support for turkey hunting on the Refuge. Commenter hunts turkey during the spring season on adjacent lands to the Refuge and observes many turkeys. Would like to see it expanded to all hunters not just youth and persons with disabilities.

Response

Appreciative of support for new hunts. Turkey hunting was not proposed for all hunters because of the conflict it would create with management practices, specifically spring burning season.

Comment

Spring turkey hunt for youth and disabled hunters; Consideration should be given to opening it up to all hunters.

Expanding fall waterfowl and white-tailed deer hunting for disabled hunters; Sounds like a good idea, if it isn't duplicating other programs.

Please allow me to offer an additional suggestion. Consideration should be given to cutting a 3 foot wide section out of the pipes that block off the closed bridge on the very north end (directly north of the old school house) of the Refuge. Having a 3 foot wide unobstructed walking path across the bridge will make it much safer for young deer hunters, who currently may be climbing over those pipes with loaded guns.

Response

Appreciative of support for new hunts. Turkey hunting was not proposed for all hunters because of the conflict it would create with management practices, specifically spring burning season.

The expansion of waterfowl and deer hunting for person with disabilities is not a duplication of other programs it is just an improvement of the current hunt available at Sherburne NWR.

A project is planned for the replacement of the old bridge to replace it with a pedestrian bridge. This is an expensive project and is on hold until funds are available.

Comment

Commenter and brother have visited and hunted the Refuge for over twenty years and do not want expansion of current hunting program for person with disabilities and do not want the Refuge to be open to turkey hunting.

Response

Appreciate the perspective of not changing any programs. All other comments are in favor of expansion of hunts and expansion of the hunting programs is in support of the Fish and Wildlife Service mission.

Verbal Comments:**Comment**

Commenter requested the use of a battery operated motorized wheelchair to be used in all areas open to hunting on the Refuge.

Response

Use of motorized wheelchairs will be permitted on a case by case basis through a Special Use Permit. Reasonable accommodations will be made when the accommodation directly relates to a disability and will not cause habitat destruction. Consideration will be given to mobility impaired individuals that meet the state defined standard of disability.

Comment

Commenter expressed that he could no longer hunt on his own property because of zoning changes and would like to participate in the turkey hunt for persons with disabilities.

Response

Appreciative of support and desire to hunt on public lands.

Comment

Tom Glines from the National Wild Turkey Federation was very supportive of opening turkey hunting on Sherburne National Wildlife Refuge. He offered assistance with organizing and providing supplies for the hunts.

Response

Appreciative of support and will contact for assistance when conducting hunts.

**Comments from Minnesota Department of Natural Resources – Division of Wildlife
Fred Bengtson, Area 3 Manger, (comments received were both verbal and written)**

Comment

- Extremely supportive of opening a spring turkey on Sherburne NWR
- Verbally expressed how important it is to maintain rigorous harvest of the deer population on the Refuge because of extremely high numbers of deer in the 1980s and early 1990s.
- Stated that the hunt is currently maintaining acceptable population levels.
- Consider adding a muzzleloader hunt for deer.
- Provided information on deer density estimations for Sherburne NWR.

Response

- Appreciative of support for turkey hunting.
- Will continue to work with and support the Minnesota DNR in management of the deer population.
- Concur with remark about maintaining acceptable levels of deer populations.
- Did not add a muzzleloader season to proposed hunts at this time. There have been very few requests to add a muzzleloader season to the Refuge hunt program. Hunters currently have the ability to use muzzleloaders during the regular firearms season. Harvest from muzzleloader season typically adds little to the total number of harvested deer and since the current hunts are maintaining the level of harvest needed it was not added to this proposal.
- Incorporated information on deer density estimations into the document.