

U.S. DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ASSESSMENT

Final (01/05)

Revised (03/07)

**Hunting Plan for the Glacial Ridge National Wildlife Refuge, Polk
County, Minnesota**

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Abstract: The United States Fish and Wildlife Service through an approved 2005 Hunting Plan and Environmental Assessment have provided hunting opportunities on the Glacial Ridge National Wildlife Refuge in Polk County, Minnesota that are compatible with the purpose of the Refuge. This revised Environmental Assessment, See Section 4 (specifically subsections 4.3 – 4.7), addresses concerns regarding accumulative affects as per court order (Funds of Animals vs. U.S. Fish and Wildlife Service, August 31, 2006). All other aspects of the original Environmental Assessment remain the same, with no changes to the original Hunting Plan.

This environmental assessment evaluates four 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). Hunting opportunities for persons with disabilities would be provided through use of specially located and designed blinds. Parking lots would provide appropriate access and help distribute use. The approved acquisition boundary, which includes lands owned by the State of Minnesota, The Nature Conservancy, Red Lake Watershed District and private citizens, must be considered when developing hunting opportunities. The Service intends to continue its partnership with the various agencies, universities, and units of government that facilitated the birth of the Glacial Ridge National Wildlife Refuge. The general goals of the hunting program are:

1. Provide the public with safe and enjoyable hunts that are compatible with the Refuge purpose.
2. Provide quality hunting opportunities that minimize conflict with other public use activities.
3. Provide the public with opportunities to hunt wildlife species allowed by the State of Minnesota. Hunts will not adversely effect localized wildlife populations and will be consistent with the 1997 National Wildlife Refuge System Improvement Act and state of Minnesota regulations.
4. Provide special opportunities for persons with disabilities.

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Section 1. Purpose of and Need for Action

1.1 Purpose

The purpose of this Environmental Assessment is to evaluate different alternatives for implementing a hunting plan on the Glacial Ridge National Wildlife Refuge (Refuge).

1.2 Need

The 1997 National Wildlife Refuge System Improvement Act mandated six priority public uses be provided when feasible and compatible with the purpose of the Refuge. These priority uses include hunting, fishing, wildlife photography, wildlife observation, environmental education and interpretation. The need for action therefore revolves around hunting as a priority use. There is also a need to reserve a portion of the Refuge for non-hunting visitors and special hunts for youth and persons with disabilities (termed accessible hunts), as well as designating no more than a maximum of 40% of Refuge lands for migratory bird hunting (per requirements of the Migratory Bird Conservation Act). The combination of hunting and non-hunting areas balances the needs of hunters, who may want as much hunting land as possible, with the needs of the non-hunting public. Since Refuge lands will come to the U.S. Fish and Wildlife Service (Service) over the course of many years, rather than all at once, the plan must also introduce a conceptual plan of hunting which addresses the entire 35,750 acres within the acquisition boundary. Other entities or interests affecting the management of hunting opportunities include: private in-holdings, State Wildlife Management Areas, Scientific & Natural Areas, surface gravel extraction easements, active railroad right-of-way, and rare/endangered plant communities.

1.3 Background/Introduction

This Environmental Assessment covers the hunting chapter, which is preceding the overall Visitor Services Plan for the Glacial Ridge National Wildlife Refuge. The Hunting Chapter must address lands owned by the Service, while anticipating changes as additional lands are acquired and become part of the Refuge.

Glacial Ridge National Wildlife Refuge is located in Polk County, in northwestern Minnesota, approximately 10 miles east of Crookston along U.S. Highway 2. The approved acquisition boundary of 35,750 acres includes approximately 5,000 acres of non-cultivated native prairie. Future habitat restoration potential includes approximately 18,000 acres of prairie and 12,000 acres of wetland. These habitats are important breeding areas for waterfowl, sandhill cranes, shorebirds, greater prairie chicken, many grassland nesting songbirds and a host of mammals.

The catalyst for the development of the Glacial Ridge area and the establishment of the Refuge was a partnership of 30 non-profit organizations, universities, government and other agencies. The unique landscape was carved with wind and water over 12,000 years ago as water levels in Glacial Lake Agassiz fluctuated over time. The variety of prairie grasslands and wetlands that formed provided the ingredients for a very diverse and continentally important biological community. The Glacial Ridge NWR will be the center point for the restoration of this fragile ecosystem, as less than one percent of native tallgrass prairie remains in Minnesota.

In January 2001, a draft Environmental Assessment (EA) and an Interim Comprehensive Conservation Plan was developed and approved. The EA addressed future management of the proposed Refuge, including visitor services. The remnant native prairie areas, combined with restored grasslands and wetlands, provide an ideal setting for interpretation of the historical and future importance of this once massive ecosystem. Of the six priority public uses (hunting, fishing, wildlife observation, photography, environmental education and interpretation) identified in the 1997 National Wildlife Refuge Improvement Act, only fishing does not present itself as a potential public use.

The Glacial Ridge NWR lies in Polk County, rich in historical hunting and outdoor tradition. In 2004, over 25,200 licenses were sold for hunting and fishing related activities in Polk County, generating over \$674,000.

Past hunting opportunities within the proposed Refuge boundary involved mainly the hunting of white-tailed deer, greater prairie chicken, sharp-tailed grouse (associated with the prairie chicken hunt) and waterfowl. Rules and regulations for hunting these species were established by the State of Minnesota and the U.S. Fish and Wildlife Service.

Major access to the Glacial Ridge NWR includes: U.S. Highway 2, which borders the entire north boundary; Minnesota Highway 32, which runs north/south and bisects the Refuge in nearly equal halves; and Polk County Road 45, which runs east/west and bisects the Refuge in nearly equal halves. Polk County Road 44 and several township roads provide addition access in and around the Refuge. Currently over 40 miles of federal, state, county or township roads either border or bisect the Refuge acquisition boundary. Nearly 23,000 acres of the Refuge will be within ½ mile of a road, representing nearly 65% of proposed Refuge lands.

Wildlife observations made by various biologists and researchers from 1995 through 2004 on the Pembina Trail Preserve included 73 bird species, 35 butterfly species, 11 mammal species, 5 amphibian species, and 5 reptile species. Pembina Trail Preserve is The Nature Conservancy (TNC) property within the Glacial Ridge NWR acquisition boundary. It is expected that these wildlife species will be found throughout the Refuge as lands are acquired and restored. Opportunities for viewing these species will be discussed with the writing of the Visitor Services Plan.

The National Wildlife Refuge System Improvement Act specifically required that people be provided the opportunity to enjoy, understand and be part of wildlife conservation on refuges. Lands purchased by the Service are open to limited wildlife-dependent recreational uses. The National Wildlife Refuge System Improvement Act states that compatible, wildlife-dependent recreational uses involving hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation are priority public uses of the Refuge System. The Service determines whether these uses are compatible for each individual refuge. A use is determined to be compatible if it does not interfere with the fulfillment of the mission of the Refuge System or the purpose of the individual refuge.

1.4 Decisions that Need to be Made

The Service's Regional Director will select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this Environmental Assessment (EA) is adequate to support a Finding of No Significant Impact (FONSI) or whether an Environmental Impact Statement (EIS) will be required.

1.5 Alignment with Existing Conservation Plans

The Glacial Ridge National Wildlife Refuge Draft Environmental Assessment and Interim Comprehensive Conservation Plan (signed in April 2001) determined that hunting would be allowed on the Refuge and provided guidance for the hunting of small game, big game, and waterfowl. Therefore, a no hunting (not to be confused with No Action) alternative will not be considered in this EA. The Interim CCP also cited the limitation of migratory bird hunting to no more than 40% of Refuge lands and advocated special hunting opportunities be provided for persons with disabilities.

The Service developed a strategic plan for implementing the National Wildlife Refuge System Improvement Act called "Fulfilling the Promise" (U.S. Fish and Wildlife Service, 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 consistent with the priorities and strategies outlined in "Fulfilling the Promise".

1.6 Scoping

The concept for the establishment of the Glacial Ridge NWR was formulated from a partnership of 30 non-profit organizations, universities, governments and other agencies. This same partnership recently met in December 2004 to discuss opportunities for hunting and evaluate pros and cons of issues raised during discussion.

The original planning team, while writing the proposed Glacial Ridge National Wildlife Refuge Draft Environmental Assessment and Interim Comprehensive Conservation Plan, conducted radio interviews, group discussions, made personal contacts with landowners and transmitted hundreds of phone calls. Communications included discussion of future hunting opportunities for the proposed Refuge.

1.7 Issues and Concerns

No comments about hunting were received during the public review period of the Interim Comprehensive Conservation Plan.

Key comments noted during the December 2004 meeting included:

- Provide good public access.
- Open as much of the Refuge as possible to priority public uses.
- Determine whether the 40% limitation on migratory bird hunting applies.
- Consider impacts to private landowners adjacent to the Refuge.

- Provide waterfowl sanctuaries to maintain a nucleus of birds in the area.
- Buffer areas to Scientific and Natural Areas not necessary.
- Prairie chicken hunt has been established and should continue on Refuge.
- Be consistent with other National Wildlife Refuges.
- Consider the overall Visitor Service Plan.
- Polk County has a tradition of hunting.
- Hunter pressure will be light; therefore hunting species with limited numbers will not be a concern.

Section 2. Alternatives

2.1 Introduction

This section explains how alternatives were formulated and eliminated from further study, describes alternatives, and identifies the preferred alternative. While the habitat types and percentage of areas available for hunting will remain fairly consistent, specific areas opened or closed could change annually until a larger land base is acquired.

2.2 Formulation of Alternatives

This Environmental Assessment evaluates the environmental consequences of hunting alternatives on the Refuge. Four alternatives are presented in this document: 1) No Action Alternative – allow areas to be hunted as permitted by prior landowner; 2) Open entire Refuge to deer and upland game hunting and permit migratory bird hunting on 40% of Refuge lands, per establishment legislation; 3) Open a portion of the Refuge to deer and upland game hunting and permit migratory bird hunting on 40% of Refuge lands, per establishment legislation, while maintaining an area for non-hunting visitors and special hunts for youth and persons with disabilities (preferred alternative); 4) Open a portion of the Refuge to deer and upland game hunting and permit migratory bird hunting on 20% of Refuge lands, while maintaining an area for non-hunting visitors and special hunts for youth and 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 and expectations of public use, with concerns for safety.
4. Issues identified in the Draft Environment Assessment and Interim Comprehensive Conservation Plan and comments from partners.
5. Requirements and guidance provided in establishment legislation, specifically the Migratory Bird Conservation Act and the Emergency Wetland Resources Act of 1986.

2.3 Alternatives Eliminated from Detailed Study

An alternative that would have closed the Refuge to all hunting was not considered for detailed analysis because:

- The Interim Comprehensive Conservation Plan identified hunting as a future use after a Draft Environmental Assessment determined a Finding of No Significant Impact (FONSI).
- A No Hunting Alternative would conflict with the 1997 National Wildlife Refuge System Improvement Act, which mandates hunting opportunities be provided when feasible and compatible.
- Hunting is a tradition in Polk County.
- Hunting is a useful management tool to control wildlife populations.

2.4 Description of Alternatives

2.4.1 Alternative 1- No Action – Allow areas to be hunted as permitted by prior landowner.

This action would utilize the parameters of hunting established by the prior landowner. There would be no closed areas for hunting. Species hunted would be those allowed by the prior landowner and the State of Minnesota.

No area will be designated specifically for non-hunting recreation. Non-hunter visits are expected to increase after establishment of the area as a National Wildlife Refuge. Hunters and non-hunters will be occupying the same areas of the Refuge at the same time. Safety concerns would exist with mixing of hunter and non-hunter use.

2.4.2 Alternative 2 - Open entire Refuge to deer and upland game hunting and permit migratory bird hunting on 40% of Refuge lands, per establishment legislation.

Under this alternative the entire refuge would be open to deer and upland game hunting. Migratory bird hunting would be permitted on 40% of Refuge land. This alternative assumes that hunting is the primary purpose for the Refuge. Land designated for migratory bird hunting would encompass mainly the southern half of the proposed Refuge boundary; that is, south of Polk County Road 45.

No area will be designated specifically for non-hunting recreation, such as wildlife viewing and photography. With expected increased visits from the non-hunting public, hunters and non-hunters will be occupying the same areas of the Refuge simultaneously. Safety concerns would exist with mixing of hunter and non-hunter use. Although this alternative would limit the hunting of migratory birds to 40% of the Refuge, it doesn't limit the movement of deer and upland game hunters into other areas of the Refuge that serve as migratory bird sanctuaries. Disturbance to all species would still be probable.

Hunting of upland game would include prairie chicken and sharp-tailed grouse. The hunting of other upland game (rabbits, squirrels, ruffed grouse, raccoon, fox, etc.) would be permitted after Refuge specific surveys justify huntable populations. If these surveys justify hunting, an amended Environmental Assessment would be prepared, including a public comment period, prior to opening the Refuge to hunting any new species.

2.4.3 Alternative 3 - Preferred Alternative - Open a portion of the Refuge to deer and upland game hunting and permit migratory bird hunting on 40% of Refuge lands, per establishment legislation, while maintaining an area for non-hunting visitors and special hunts for youth and persons with disabilities (a “non-hunting” area)

This alternative provides opportunities to hunt deer, upland game and migratory birds as outlined in the Glacial Ridge NWR Interim Comprehensive Conservation Plan. Annual population surveys will determine species to be hunted and will set harvest regulations. Beginning in 2005, deer, greater prairie chicken, sharp-tailed grouse, mourning doves, woodcock, common snipe, rails, geese, ducks, and coots will be hunted. Seasons and limits would correspond to Minnesota state regulations. There would be no limit on the number of hunters permitted in the hunting area. Non-hunting areas, encompassing approximately 25% of the Refuge, would generally provide sanctuaries for wildlife, protection of Refuge facilities, and provide non-hunting visitors areas to view wildlife. Special hunts to provide opportunities for youth and persons with disabilities would be established in the non-hunting area and would maintain wildlife populations. Hunters and non-hunters would be separated to promote public safety.

The hunting of other upland game (rabbits, squirrels, ruffed grouse, raccoon, fox, etc.) would be permitted after Refuge specific surveys justify huntable populations. If these surveys justify hunting, an amended Environmental Assessment would be prepared, including a public comment period, prior to opening the Refuge to hunting any new species.

2.4.4 Alternative 4 - Open a portion of the Refuge to deer and upland game hunting and permit migratory bird hunting on 20% of Refuge lands, while maintaining an area for non-hunting visitors and special hunts for youth and persons with disabilities (a “non-hunting” area).

This alternative will decrease the area available for migratory bird hunting and increase the sanctuary area. The area open for deer and upland game hunting would remain the same as in Alternative 3. Deer and upland game hunters would still be allowed to hunt in the area open for migratory bird hunting. Species opened for upland game hunting would be the same as Alternatives 2 & 3.

2.5 Comparison of Alternatives

The table below summarizes actions that are anticipated under each alternative. Some of the issues are carried into the impact assessment and described in more detail in Section 4.

Action	ALTERNATIVE 1 (No Action) All Lands Open to Hunting	ALTERNATIVE 2 Open entire Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 3 (Preferred) Open a portion of Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 4 Open a portion of Refuge to deer and upland game, 20% to migratory birds
Provides for 60% of Refuge land closed to migratory bird hunting, as required under MBCA	No, all areas open	Yes.	Yes.	Yes (actually 80% of Refuge will be closed to migratory bird hunting).
Species that will be hunted	All species allowed by prior landowner and State of Minnesota.	Deer, prairie chicken, sharp-tailed grouse, migratory game birds.	Same species as Alternative 2.	Same species as Alternative 2.
Compatible with Refuge Goals and Purpose	No, violates Migratory Bird Conservation Act and the Emergency Wetland Resources Act of 1986 by permitting more than 40 % of Refuge open to migratory bird hunting.	Yes.	Yes.	Similar to Alternative 3.
Provides for Priority Public Uses	Yes, satisfies the needs of the 1997 Refuge Improvement Act, but gives priority to hunting.	Yes, satisfies the needs of the 1997 Refuge Improvement Act, but gives priority to hunting.	Yes, satisfies the needs of the 1997 Refuge Improvement Act.	Same as Alternative 3.
Hunting and non-hunting activities separated	No, doesn't separate uses, conflicts possible.	Same as Alternative 1.	Yes.	Yes.
Meets needs identified by public and partners	Yes, maximizes hunting opportunities as identified by most public and partners.	Yes, maximizes hunting opportunities as identified by most public and partners.	Yes, and provides a compromise between hunting and non-hunting uses.	Yes, and provides a compromise between hunters and non-hunters. Reduces opportunities for migratory bird hunting.

Section 3. Affected Environment

3.1 Landscape of Glacial Ridge National Wildlife Refuge

Glacial Ridge National Wildlife Refuge is located in Polk County, in northwestern Minnesota, approximately 10 miles east of Crookston along U.S. Highway 2. The approved acquisition boundary of 35,750 acres includes approximately 5,000 acres of non-cultivated native prairie. Future habitat restoration potential includes approximately 18,000 acres of prairie and 12,000 acres of wetland. These habitats are important breeding areas for waterfowl, sandhill cranes, shorebirds, greater prairie chicken, many grassland nesting songbirds and a host of mammals.

The unique landscape was carved with wind and water over 12,000 years ago as water levels in Glacial Lake Agassiz fluctuated over time. The variety of prairie grasslands and wetlands that formed provided the ingredients for a very diverse and continentally important biological community. The Glacial Ridge NWR will be the center point for the restoration of this fragile ecosystem, as less than one percent of native tallgrass prairie remains in Minnesota.

The Glacial Ridge NWR contributes runoff flows to the Red Lake and Sandhill River subwatersheds of the Red River of the North watershed, a system that flows north into Canada and ultimately enters Hudson Bay. The majority of the inter-beach ridge wetlands and native prairie grassland habitats were converted to agricultural fields. Farming practices removed most native vegetation, resulting in diminished wildlife habitat and associated wildlife. These actions also reduced hunting opportunities as species declined or disappeared.

3.2 Refuge Lands

The Glacial Ridge NWR was formally established on October 26, 2004 when The Nature Conservancy (TNC) donated nearly 2,300 acres to the U.S. Fish and Wildlife Service. The 35,750-acre acquisition boundary was approved by Service Director Steve Williams on October 12, 2004. As TNC restores habitats within the acquisition boundary, or as land is purchased from willing sellers, additional acres will be added to the Refuge. Although annual additions to the Refuge are hopeful, there is no yearly guarantee. The Hunting Chapter of the Visitor Services Plan must contain a general concept for hunting opportunities within the acquisition boundary, while allowing flexibility in open/closed areas as land is added to the Refuge.

When all restorations have been completed and acquired, the Refuge will consist of approximately 12,000 acres of wetlands and 23,000 acres of tallgrass prairie grassland, of which 5,000 acres are original unplowed prairie. Remaining acres will include a mix of willow and aspen scrubland. The fen type wetlands currently support western prairie fringed orchid (*Platanthera praeclara*), a federally listed species. It's anticipated that as more fen wetlands are restored, the western prairie fringed orchid will expand its range within the Refuge. There remains less than one percent of original prairie in Minnesota. The restoration of prairie habitat on the Glacial Ridge NWR will represent a major accomplishment in returning prairie habitat to the landscape.

3.3 Fish and Wildlife of the Refuge

Wildlife observations made by various biologists and researchers from 1995 through 2004 on the Pembina Trail Preserve included 73 bird species, 35 butterfly species, 11 mammal species, 5 amphibian species, and 5 reptile species. Pembina Trail Preserve is TNC property within the Glacial Ridge NWR acquisition boundary. It is expected that these wildlife species will be found throughout the Refuge as lands are acquired and restored.

3.4 Federally Threatened and Endangered Species

Three federally listed species are known to occur on the Refuge. The endangered western prairie fringed orchid, the threatened bald eagle (*Haliaeetus leucocephalus*), and the threatened gray wolf (*Canis lupus*). An active bald eagle nest is currently located within the acquisition boundary of the Refuge.

One state listed butterfly species, the threatened Dakota skipper (*Hesperia dacotae*), is also known to occur within the acquisition boundary of the Refuge.

As most hunting opportunities will be limited to foot access only, little impact on habitats for any of the above species is anticipated. Existing trails/disturbed sites will be utilized to access hunting blinds reserved for persons with disabilities. The orchid blooms in mid-summer and hunting seasons are in the fall.

3.5 Cultural Resources

European settlement of the Glacial Ridge area was slow and sparse compared to other regions of Minnesota. During the mid-19th century, the area was part of the historic Red River oxcart trail system. The oxcart trails were used by immigrants traveling between St. Paul and the Selkirk Settlement near present day Winnipeg, Manitoba. The Woods (Pembina) Trail, a segment of the main route, traversed the west end of the area (Minnesota Historical Society 1979).

Two western culture building sites are located on adjacent federal Waterfowl Production Areas. These are the only archeological sites to be considered when evaluating potential impacts of hunting on the Glacial Ridge NWR. There is the possibility that undiscovered prehistoric sites are located on the property, mainly from the Woodland culture (500 B.C. to A.D. 1650). The Cheyenne tribe is the earliest historic period tribe in the area, replaced by the Ojibwa.

The implementation of this hunting plan is not anticipated to have any negative impacts on potential historical or archeological resources. Prior to the construction of parking lots or erection of signs, the potential for adverse effect on historical or archeological resources will be considered by the Historic Resource Preservation Officer.

3.6 Economic Resources

The Glacial Ridge NWR lies in Polk County, rich in historical hunting and outdoor tradition. In 2004, over 25,200 licenses were sold for hunting and fishing related activities in Polk County, generating over \$674,000. The implementation of this hunting plan is not anticipated to have a major impact to the local economy. The Refuge will support additional hunting in the general area, but the majority of hunters will be local residents that already purchased hunting licenses and miscellaneous hunting merchandise. Some hunters may come from outside the region and utilize local motels and eating establishments, but this will be limited.

3.7 Recreational Opportunities

A complete review of future public uses will be addressed in the Visitor Services Plan that will be written within the next couple of years. In general, as described in the Interim Comprehensive Conservation Plan, public uses to be considered include: a combination of hiking and auto interpretative trails, wildlife viewing and photography areas, environmental education stations, visitor center with exhibits, and special seasonal wildlife programs.

Hunting opportunities proposed on the Glacial Ridge NWR already exist on state, federal and other public lands in Polk County. Currently, Polk County has nearly 23,000 acres of State Wildlife Management Areas, and 13,000 acres of federal Waterfowl Production Areas open for hunting of big game, upland game and migratory birds.

Section 4. Environmental Consequences

4.1 Impacts by Alternatives

4.1.1 Alternative 1 - No Action Alternative

This action would continue to allow hunting according to the rules of the prior landowner and the state of Minnesota.

Big Game Wildlife

The white-tailed deer population is not expected to change as a result of this alternative. The number of hunters utilizing the Refuge should also remain the same. The deer population on the Refuge should continue to reflect deer densities within respective State Management Units. Currently, Glacial Ridge NWR represents less than 5% of unit 406 and less than 4% of Unit 405.

Upland Game

Hunting of prairie chickens (since recovery) has only occurred in the last two years. The prairie chicken hunt on Glacial Ridge NWR would follow recommendations made by the Minnesota Department of Natural Resources (MNDNR). Currently, the Refuge represents about 20% of State Permit Unit 405A. This alternative is not expected to affect the prairie chicken population in Unit 405A.

Sharp-tailed grouse hunting is generally not permitted in this part of Minnesota. Hunters that are selected to hunt prairie chicken are also allowed to take sharp-tailed grouse, as it is difficult to distinguish species in flight. Hunting of sharp-tailed grouse on the Refuge is not expected to affect the population within the State Management Unit.

Hunting of other upland game species would continue with no anticipated change in population trends.

Migratory Bird

Migratory bird hunting was allowed over the entire area by the previous landowner. The hunting of migratory birds on the entire Refuge would place the Refuge out of compliance with the Migratory Bird Conservation Act.

Habitat

Hunting access would be walk in only, with parking restricted to designated parking lots. Thus impacts on vegetation should be non-detectable. Development of hunting opportunities for persons with disabilities would utilize existing roads or trails.

Threaten and Endangered Species

The careful placement of parking lots for walk-in access should prevent any detrimental impacts to the prairie fringed orchid or fen habitat. This same control will eliminate the potential of detrimental impacts to the Dakota skipper. The majority of hunting will occur after the butterflies become caterpillars and are in wintering ground-level vegetation.

Historical and Cultural Concerns

There were no historical or cultural resource concerns identified in the Draft Environmental Assessment and Interim Comprehensive Conservation Plan. The finding or disturbance of any undiscovered prehistoric sites or cultural concerns is not likely.

4.1.2 Alternative 2 - Open entire refuge to deer and upland game hunting and 40% to migratory bird hunting.

Big Game

Same as No Action Alternative

Upland Game

The hunting of prairie chicken and sharp-tailed grouse would continue, with no affect on population trends. Other upland game species would benefit from not being hunted, until huntable populations are justified.

Migratory Birds

Under this alternative only 40% of the Refuge would be opened to migratory bird hunting. Although migratory birds will benefit from not being hunted on the remaining 60% of the Refuge, disturbance by deer or upland game hunters is still possible.

Habitat

Same as No Action Alternative

Threaten and Endangered Species

Same as No Action Alternative

Historical and Cultural Concerns

Same as No Action Alternative

4.1.3 Alternative 3 - (Preferred Alternative) Open a portion of the Refuge to deer and upland game hunting and 40% to migratory bird hunting

Big Game

This alternative will establish an area closed to deer hunting by the general public. Increased deer populations in this portion of the Refuge will provide the non-hunting visitor with an increased chance of seeing deer, including an increased percentage of mature bucks. The use of special hunts for youth and persons with disabilities will be established in this area and will prevent off-Refuge depredation by helping to control deer numbers

Upland Game

The area closed to deer hunting by the general public would also apply to all upland game hunting. This should have positive effects on all upland game populations in that portion of the Refuge. The portion of the Refuge open for hunting of prairie chicken and sharp-tailed grouse should not affect population trends of either species. The non-hunting of other upland game species will have a positive affect on those species' populations. If MNDNR expands hunting of prairie chicken/sharp-tailed grouse to other permit zones that incorporate the Refuge, special hunting opportunities for youth and persons with disabilities will be pursued.

Migratory Birds

The limitation of hunting only 40% of the Refuge should have a positive impact on migratory birds. Migratory birds will be able to feed and rest with little or no disturbance. This will benefit both hunted and non-hunted migratory bird species (e.g., sandhill cranes). The non-hunting visitor should be provided with many opportunities to view these species. If non-hunted areas cause the build up of birds that in turn cause depredation on neighboring farm crops, adjustments could be made to alleviate the problem. The overall effect of this alternative on migratory birds should be positive.

Habitat

Same as No Action Alternative

Threaten and Endangered Species

Same as No Action Alternative

Historical and Cultural Concerns

Same as No Action Alternative

4.1.4 Alternative 4 - Open a portion of the Refuge to deer and upland game hunting and 20% to migratory bird hunting

Big Game

Same as Alternative 3

Upland Game

Same as Alternative 3

Migratory Birds

This alternative would reduce the size of the area open to migratory bird hunting from 40% to 20%. Migratory birds would directly benefit from having a smaller percent of the Refuge open to migratory bird hunting. A minimal amount of disturbance from deer and upland game hunters is anticipated to occur.

Habitat

Same as No Action Alternative

Threaten and Endangered Species

Same as No Action Alternative

Historical and Cultural Concerns

Same as No Action Alternative

4.2 Comparison of Environmental Impacts by Alternative

RESOURCE	ALTERNATIVE 1 (NO ACTION)	ALTERNATIVE 2 Open entire Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 3 (Preferred) Open a portion of the Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 4 Open a portion of the Refuge to deer and upland game, 20% to migratory birds
Big Game	No impact on current deer populations	No impact on deer populations	A slight increase in deer populations may occur on a portion of the Refuge	Same as Alternative 3

RESOURCE	ALTERNATIVE 1 (NO ACTION)	ALTERNATIVE 2 Open entire Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 3 (Preferred) Open a portion of the Refuge to deer and upland game, 40% to migratory birds	ALTERNATIVE 4 Open a portion of the Refuge to deer and upland game, 20% to migratory birds
Upland Game	No impact on current upland populations	No impact on prairie chicken and sharp-tailed grouse populations. Other upland game populations would benefit from not being hunted.	Initially, the non-hunting area would benefit all upland game populations. The current MN prairie chicken hunting zone is in the designated hunting area of the Refuge, no impact on populations will result from this Alternative. If MNDNR expands prairie chicken hunting, the non-hunting area would be evaluated for development of special hunts. Other upland game populations would benefit from not being hunted on the entire Refuge.	Same as Alternative 3
Migratory Birds	No impact, all areas would be open as in the past.	Sanctuaries should increase bird numbers and use days, especially during spring and fall migration.	Migratory birds would benefit from the 40% limitation on migratory bird hunting. Should positively affect bird use.	Migratory birds would benefit from the 20% limitation on migratory bird hunting. Positive effect on bird use should exceed Alternative 3.
Other Concerns - Habitats	No change expected	No impact	No impact	No impact
Threatened and Endangered Species	No impact	No impact	No impact	No impact
Historic and Cultural Resources	No impact	No impact	No impact	No impact

4.3. Anticipated Direct and Indirect Impacts of Proposed Hunt on Wildlife Species.

Resident Wildlife: *White-tailed Deer*

Local and Regional Analysis: The hunting of white-tailed deer on the Glacial Ridge NWR is incorporated into State Management Areas (256 and 257) which represents 2 of 46 management areas within Minnesota State Zone 2. Each management area represents a specific segment of the State's deer population, with specific harvest quotas. The Refuge portion of State Management Area 256 is approximately 6% representing 37 sq. miles of 655 sq. miles, and 5% of State Management Area 257 with 20 sq. miles of 426 sq. miles. The harvest data of white-tailed deer for Management 257 and 256 from 2005 – 2003 was: 257 (1504, 1336, and 1391) respectively and 256 (1630, 1472, and 1537) respectively. It is anticipated that harvest from the Refuge will be proportional to the each respective Management Area. Therefore the estimated annual harvest from 2005 to 2003 from Refuge portion of State Area 257 would be 70 with 93 for State Area 256.

The Refuge and the Minnesota Department of Resources (MN-DNR) conducts annual or periodic big game surveys to document white-tailed deer populations. The refuge completed a post-winter aerial deer survey in 2005 and 2006. The survey area includes the entire approved refuge boundary and adjacent deer wintering habitat. In 2005, 182 deer were estimated compared to 387 in 2006, which represents 3.2 and 6.7 deer per square mile. This deer survey did not separate deer by management areas, as winter conditions and farm crop availability greatly influence deer movement in and out of each area. The number represents a trend count for correlation with MN-DNR estimates. MN-DNR conducts annual aerial deer census on randomly selects management areas within each Zone. In 2005, deer density in Area 257 was estimated at 6 deer per sq. mile and Area 256 was flown in 2006 with an estimated 7 deer per sq. mile.

The MN-DNR annually adjusts harvest quotas for each management area to reflect deer populations. This harvest adjustment is anticipated to limit negative impacts specifically related to species population. A high deer population in 2006 prompted the MN-DNR to allow each hunter to harvest 5-deer during the regular season and 2 additional deer during an early antlerless season. High harvest quotas were essential to lower crop depredation and vehicle/deer collision. From July 2005 to June 2006, Minnesota ranked 7th in the nation in deer-vehicle collision claims. During this period 7,025 claims were made to State Farm Insurance offices in Minnesota. The State Farm Insurance Heartland Division data shows a 6% increase in claims from last year. This data supports the need to harvest deer to reduce property damage losses and to save human lives on highways caused by deer-vehicle collisions.

The Refuge plans to continue coordination with the MN-DNR with deer management and harvest parameters, including annual surveys to justify adjustments to the annual harvest. It is anticipated that this coordination will insure sound management of the deer populations locally and regionally while minimizing negative impacts on habitat and neighboring landowner's crops, caused by an overpopulated deer herd.

Resident Wildlife: Prairie Chicken

Local and Regional Analysis: The hunting of prairie chicken is conducted in coordination with the MN-DNR. Historically, prairie chicken hunting was not allowed in Minnesota from 1943-2002. In 2003, prairie chicken population in a portion of west-central Minnesota had recovered to justify the re-establishment of a hunting program. See Table 1 & 2 for hunting data.

Table 1, Prairie Chicken Hunting Data (2006 Minnesota Prairie-chicken Hunter Survey, Minnesota Department of Natural Resources.)

Year	# of Permit Areas	Total # of Permits	# of Prairie Chicken Harvested	# of Sharp-tailed Grouse Harvested
2003	7	100	129	*
2004	7	100	55	*
2005	7	110	89	0
2006	11	182	92	23

- A five day season with a two bird per hunter limit was common for all years.

* Not permitted to be hunted.

The west portion of the approved acquisition area for Glacial Ridge NWR lies within Prairie Chicken Permit Area # 405A (changed to 805A in 2006), representing about 30% of the Area. The east portion of the refuge lies within Prairie Chicken Permit Area # 804A, representing about 11% of the Area. Table 2 provides data specific to these two Permit Areas.

Table 2, Prairie Chicken Hunting Data Areas 805A & 804A (2006 Minnesota Prairie-chicken Hunter Survey, Minnesota Department of Natural Resources.)

Year	# of Permit		# of Prairie Chicken Harvested	
	805A (405A)	804A	805A(405A)	804A
2003	13	*	25	0
2004	13	*	1	0
2005	12	*	11	0
2006	18	15	10	8

* 804A was closed to hunting until 2006

Greater prairie chicken population is monitored to detect changes in trend densities. From 1974 to 2003 the Minnesota Prairie Chicken Society coordinated the annual survey. In 2004 the responsibility shifted to the MN-DNR. In 2006 there were 10 survey blocks located within the original 7 hunting permit areas and 7 survey blocks outside the original 7 hunting permit areas. A total of 1,766 male prairie chickens were located on 152 booming grounds. Within the survey blocks there were 0.29 leks per sq. mile and 13.9 males per leks. Densities calculated were greater than the means observed from 1993-2002.

Prairie chicken hunting on the refuge, when coordinated with the MN-DNR and with harvest adjustments to reflect population trend should allow prairie chicken population to expand both on the refuge and into other areas of the west and northwest Minnesota. The limited number of annual licenses combined with the off-road vehicle restriction greatly reduces other potential environmental issues or prairie chicken ecology concerns.

Resident Wildlife: *Sharp-tailed Grouse*

Local and Regional Analysis: MN-DNR regulations don't permit the general hunting of sharp-tailed grouse in this region of the state. The harvest of sharp-tailed grouse is only allowed by those hunters permitted to hunt prairie chicken, which began with the 2005 hunting season. Hunting of sharp-tailed grouse in this region of the state was originally closed to prevent the accidental take of prairie chicken prior to 2005, when prairie chicken populations were in a recovery mode of these management areas. The MN-DNR decided that since prairie chicken hunting was now allowed the barrier to not allowing the hunting of sharp-tailed grouse was removed. As noted in Table 1, no sharp-tailed grouse were harvested in 2005, with 23 in 2006. Since permitted prairie chicken hunters can only hunt sharp-tailed grouse in their respective area the ratio of refuge lands to each state management area remains the same, 30% for 805A and 11% for 804A. It's anticipated that the limited number of hunters combined with the ratio of refuge to total permit area will not result in negative impacts to sharp-tailed grouse on the refuge or this area of the State.

Non-hunted resident wildlife

Local and Regional Analysis: The total number of resident species allowed to be hunted under the approved hunting plan for the refuge is less than historically allowed. This area was controlled by private landownership which allowed the hunting of all resident wildlife under the rules and regulations of the Minnesota Department of Natural Resources. As Refuge land acquisition increases more land will be subjected to the approved Glacial Ridge National Wildlife Refuge hunting plan. Also as refuge lands increase and other public use activities are developed, the area designed as non-hunting will provide an additional area with limited disturbance by hunters. If this non-hunted area develops an increase in deer numbers with corresponding deer/vehicle collisions a limited hunt maybe be warranted. Poaching and improper identification will occasionally take non-target species. Public education through refuge interpretation programs and active law enforcement presence from both state and federal officers should minimize this illegal harvest. Not permitting off-road driving and allowing hunting only during non-nesting/birthing seasons will greatly reduce direct and indirect impacts on all wildlife species.

Migratory Birds

Local, Regional and Flyway Analysis: Hunting of migratory birds is annually regulated by the U.S. Fish and Wildlife Service through the Service's Migratory Bird Regulations Committee and the Mississippi Flyway Council and are further regulated by the Minnesota Department of Natural Resources from a State management perspective for the species to be hunted on the Glacial Ridge NWR. Further more from a national and flyway perspective, NEPA considerations are covered by the "Final Supplement 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. Likewise, considerations to Section 7 of the Endangered Species Act, as amended (16 U.S.C. 1531-1543; 87 Stat. 884), provides that,

“The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act” (and) shall “ insure that any action authorized, funded, or carried out is not likely to jeopardize their continued existence of any endangered species or threatened species or result in the destruction or adverse modification of (critical) habitat. Consequently, formal consultations to ensure that actions resulting from these regulations would not likely jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of their critical habitat. Findings from these consultations are included in the biological opinion, which concluded that the regulations are not likely to adversely affect any endangered or threatened species. Annually seasons and bag limits are adjusted to reflect species population changes. While each agency provides opportunities for Americans to participate in hunting of migratory birds their long-term goal is to preserve the many species of migratory birds. Intense surveys are conduct to coordinate bird populations with the management of hunting opportunities.

Tables 3 through 12 and associated data provides regional, state and flyway harvest and population information about migratory bird species being hunted at Glacial Ridge.

Table 3, Common Snipe Harvest Data (*Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service*)

Common Snipe						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	35	-	20	-	-
Regional						
Minnesota	6,300	2,800	6,900	1,400	1.6	2.2
Mississippi Flyway	32,000	39,500	37,600	20,800	-	-

- information not available

United States Geological Survey’s (USGS) Breeding Bird Survey data for Minnesota from 2001 -2005 and long trend information from 1966 – 2005 indicates a stable populations with neither an upward or downward trend in species population. With stable populations, the harvest of an estimated 35 birds (representing less than 2% of the harvest for Minnesota and less than .1% of the Mississippi Flyway harvest) will not have an impact on the population of Common Snipe for the region, state or flyway.

Table 4, American Coot Harvest Data (*Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service*)

American Coot						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	50	-	50	-	-
Regional						
Minnesota	4,500	11,700	6,000	10,000	1.8	5.3
Mississippi Flyway	125,000	110,600	72,300	41,000	-	-

- information not available

Information combined from American and Canadian Waterfowl breeding populations surveys indicate American coot populations for 2005, 2004 and the 10-year mean to represent a 3%, 23% and 54% increase respectively compared to the 1958-2005 long term average. Wintering population counts in Mexico shows no significant long-term (1966-2000) or short-term linear trends in the overall populations of American coots. While an overall population decrease has occurred since 1981, large population fluctuations are common with wintering American coot population estimates. Habitat losses and mixing of birds with the Pacific flyway contributes to the fluctuations. USGS'S Breeding Bird Survey data for Minnesota from 2001 -2005 indicates no significant trend.

The estimated annual harvest of 50 American coot, representing less than .5% of birds harvested in Minnesota and less than .05% of the Mississippi Flyway harvest is not anticipated to impact the population of American coot in the region, state or flyway.

Table 5, Rail Harvest Data (*Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service*)

*Rails:						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	5	-	10	-	-
Regional						
Minnesota	1,900	-	6,800	-	1.5	-
Mississippi Flyway	30,900	32,100	35,900	11,700	-	-

*Minnesota allows hunting of Sora and Virginia rails. In the Mississippi Flyway 98% of rails harvested are Sora Rails and 2% are Virginia Rails.

- information not available

USGS'S Breeding Bird Survey data for Sora rails in Minnesota from 2001 -2005 and from 1966 – 2005 indicates no significant trend relationship. Virginia rails from 1966 to 2005 also indicated no significant change, but there were only five routes that were conducted. Very few

birds of either species are anticipated to be harvested at Glacial Ridge, which represents a very small percentage of the Minnesota and Mississippi Flyway total harvest. Hunting of Sora and Virginia rails at Glacial Ridge NWR is not anticipated to significantly contribute to an accumulative negative impact of rail populations.

Table 6, Mourning Dove Harvest Data (*Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service*)

Mourning Doves						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	150	-	60	-	-
Regional						
Minnesota	107,000	48,800	61,100	14,700	7.8	8.2
Central Unit	9,807,7000	9,891,400	1,844,300	1,729,800	-	-

- information not available

In the Central Management Unit (CMU) for Mourning Doves, which consists of 14-states, the number of doves seen on survey routes did not significantly change in either a 10-year or 41-year comparison. Also for the CMU, the 21.1 doves heard per route were similar to the predicted long-term trend of 21.6. Based on data from surveys in Minnesota, both short term (2001-2005) and long term (1966-2005) showed no significant trend in Mourning Dove populations. Annually in August the MN-DNR conducts roadside surveys for trend data for a variety of wildlife. The same routes are completed annually prior to harvest of local crops. Three routes: Polk County #1, Polk County #2 and Red Lake County #1, are all within a regional location of the Glacial Ridge NWR. From 2002 to 2006 the yearly total of Mourning Doves counted for all three counts were: 31, 158, 87, 26, and 177, respectively. Data indicates that survey numbers for doves are variable and are probably influenced by many other factors besides actual population trends.

Based on the ratio of expected birds harvest at Glacial Ridge versus the entire State of Minnesota, 150/48,800 (3%), hunting should not have a significant affect on the local, regional or flyway population of Mourning Doves.

Table 7, American Woodcock Harvest Data (*Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service*)

Woodcock						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	10	-	20	-	-
Regional						
Minnesota	38,500	42,200	67,000	60,200	2.7	3.5
Central Unit	234,800	225,000	366,100	356,100	-	-

- information not available

Glacial Ridge NWR lies on the extreme western edge of the Central Woodcock Management Unit. Although the 2006 Singing-ground Survey experienced an 8% decline from 2005, this was the third consecutive year since 1992, that the 10-year trend estimate did not indicate a significant decline. While the 1968-2006 long term trend showed a decline in population in Minnesota, the 2005-2006 data did not show a not significant decrease. Woodcock Survey Route - Roseau # 6 located approximately 40 miles north of the Glacial Ridge Area, indicated no significant change from 2003-2006 with 6, 5, 7 & 6 birds heard respectively. Woodcock Survey Route – Polk #36 located 30 miles east was an inactive route prior to 2004, with no birds heard the previous 5 years. In 2005, 2 birds were recorded with 1 in 2006.

While an estimated number of woodcock being harvested is insignificant as it relates to the birds harvested in Minnesota and the Central Woodcock Management Unit, hunting of Woodcock on the Refuge will be in coordination with the Migratory Bird Commission and the Minnesota Department of Natural Resources. Also recommendation made by the Woodcock Task Force and their Woodcock Conservation Plan will be taken into consideration with future hunting activities on the Refuge. Following the recommendation of these agencies/workgroups will provide data needed to insure that harvesting of woodcock on Glacial Ridge NWR will not significantly effect woodcock populations regionally in Minnesota or in the Central Management Unit.

Ducks

Table 8, Duck Harvest Data (Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service)

Ducks – All Species						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	250	-	200	-	-
Regional						
Minnesota	683,600	531,500	595,600	404,100	7.6	7.5
Mississippi Flyway	5,505,500	5,270,000	3,857,300	3,075,500	-	-

- information not available

Table 9, 2006 Waterfowl Breeding Population Summary Status – Nationwide (U.S. Fish and Wildlife Service. 2006. Waterfowl Status)

Species	2006 Population	% Change from 2005	% Long-term Change
Mallard	7.3 m	*	*
Green-winged Teal	2.6 m	+20%	+39%
Blue-winged Teal	5.9 m	+28%	+30%
Gadwall	2.8 m	+30%	+67%
Redhead	0.9 m	+55%	+47%
Canvasback	0.7 m	+33%	+23%
Northern Shoveler	3.7 m	*	+69%
Am. Widgeon	2.2 m	*	-17%
Scaup	3.2 m	*	-37%
Northern Pintail	3.4 m	+32%	-18%
Total All species	36.2 m	+14%	+9%

* No Significant Change

Table 10, 2006 Minnesota Waterfowl Breeding Population (Waterfowl Breeding Population Survey, 2006. Minnesota Department of Natural Resources & U.S. Fish and Wildlife Service)

Species	2006 Population	% Change from 2005	% Long-term Change
Mallard	161,000	-33%	-28%
Blue-winged Teal	174,000	-10%	-24%
Other Ducks *	187,000	-6%	+5%
Total All species *	521,000	-18%	-17%

* excluding Scaup

This survey timing in Minnesota in 2006, and other factors, may have contributed to lower

estimates of duck abundance. Spring phenology (ice-out, leaf-out, duck migration) was well advanced in 2006, up to 10 days earlier than normal. Weather delays resulted in most (80%) of the survey being flown after 15 May. During most years, some migrant ducks are counted during the survey. Few migrant ducks were in the state during this period of time in the spring of 2006 when most of the survey was flown.

Glacial Ridge is in the midst of restoring over 8,000 wetland acres. Wetland restoration projects will greatly change the landscape picture of the Glacial Ridge NWR over the next 5-year period. These restored acres will greatly influence and change the dynamics of waterfowl production and trend data for the area and region. Because of survey design and wetland habitat changes, data comparison on a local basis is currently not relevant. As such, information for area/regional consideration utilized data from the Agassiz National Wildlife Refuge which was established in 1937 and is located approximately 60 miles to the northeast.

Agassiz NWR Waterfowl Population Information:

Duck production in 2005 was estimated using the traditional brood surveys conducted on 6 July and 18 August. Based on standardized survey methods and correction factors there were 238 broods. Based on average brood sizes of 6 and 5.25 for dabblers and divers respectively the traditional model gives an estimated production of 9,406 dabblers and 12,346 divers for a total of 21,752 ducklings. This was a 90% increase over 2004 and well above the long term average production of 13,263. This estimate is the highest since the late 1970's when production estimates were between 19,000 and 23,000 for a four year period. Figure 2 summarizes duck production on Agassiz NWR for the last 35 years

Agassiz NWR Duck Production (Brood) Population for 2006 was estimated at 14,227 for dabblers and 9,015 for divers combining for a total of 23,242 ducklings. This was a 7% increase over 2005 and well above the long term average production of 13,533. The production estimates for the past two years are the highest since the late 1970's when production estimates were between 19,000 and 23,000 for a four year period. Mallard broods regained the number one spot in the dabbler category with 56 broods compared to 32 blue-winged teal broods. Ring-necked ducks also returned to being the number one diver species with 22 broods compared to 16 redheads. In the past some large production estimates have been questioned because of drought conditions concentrating broods in road ditches. This was not the case in 2006 as the pools were only a little below objective level during the first brood count, and airboat trips in Agassiz Pool revealed an abundance of broods through out the pool during July and August.

Coordination with federal and state agencies in monitoring waterfowl populations and establishing annual waterfowl harvest quota will provide the oversight to analyzing potential threats to the accumulative affect of harvest from a regional, state and flyway level. This coordination will include locally developed surveys to monitor area specific changes in waterfowl populations. This coordinated effort will provide the information need to develop local strategies to minimize any negative impacts to the overall populations of waterfowl, including individual species.

Table 11, Goose Harvest Data (Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service)

Goose – All Species						
Location	#'s Harvested		Hunter Days Afield		Season Harvest Per Hunter	
	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	300	-	400	-	-
Regional						
Minnesota	235,500	207,500	470,600	366,300	3.3	3.5
Mississippi Flyway	1,235,600	1,275,300	2,086,800	1,928,500	-	-

- information not available

Table 12, Seasonal Goose Harvest Data (Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service)

Canada Geese Harvest								
Location	September		Regular		Late		Total	
	2004	2005	2004	2005	2004	2005	2004	2005
Glacial Ridge	-	5	-	260	-	20	-	285
Regional								
Minnesota	115,000	108,700	101,000	90,200	17,300	8,400	234,100	207,300
Mississippi Flyway	291,700	316,200	631,400	586,400	29,100	26,000	952,200	928,600

- information not available

The Mississippi Flyway spring population estimate of giant Canada Geese has steadily increased from 810,900 birds estimated in 1993 compared to 1,686,300 birds estimated in 2006. From 1997 to 2006 a 5% annual average increase was detected. Spring Canada goose population estimates in Minnesota have also shown a steadily increase from 285,220 in 2001 to 375,571 in 2006. While the Eastern Prairie Population (EPP) of Canada Geese was lower in 2006 than 2005, the Migratory Flyway data indicates that from 2002-2004 the Minnesota regular season's harvest was comprised of approximately 90% giant Canada geese and 8% EPP interiors geese. The overall flyway harvest data was comprised of about 6% EPP birds and 75% giant Canada geese.

The hunting of geese harvest from Glacial Ridge is estimated to represent less than .15 % of the Minnesota harvest and less than .03% of the Mississippi Flyway harvest total for all goose species. The harvest of geese at Glacial Ridge NWR will not have major impact on regional, state or flyway goose populations. A larger concern is the potential build up of Canada geese during fall migration, resulting in depredation complaints by local agricultural producers. The increase in corn production to supplement the ethanol industry may greatly influence depredation complaints. If this issue develops, strategies including additional hunting opportunities will need to be developed.

Non-hunted Migratory Birds :

The establishment of the Glacial Ridge NWR has one major change as it relates to migratory bird hunting and potential threats to other non-hunted migratory birds. The primary effect will be the limitation of opening only 40% of the refuge to migratory bird hunting. This compares to the entire area being opened historically. Restricting vehicle access to designated parking lots will reduce impacts to both hunted and non-hunted species. Also as hunting will not be permitted during the nesting season, disturbance during critical nesting times by hunters will not exist. Poaching and improper identification will occasionally take non-hunted migratory bird species. Public education through refuge interpretation programs and active law enforcement presence from both state and federal officers should minimize this illegal and unintentional harvest.

Endangered Species

As described in Section 3.4 of this Environmental Assessment, three federally listed species, one endangered and two threaten, are known to occur on the Refuge. Also noted is one candidate species. Direct possible impacts to these species includes unintentional and/or deliberate killing of a Gray wolf or Bald Eagle, or the physical picking or collecting of a western Prairie Fringed Orchid or a Dakota Skipper. Public education through refuge interpretation programs and active law enforcement presence from both state and federal officers should minimize this illegal and unintentional harvest. An indirect impact to all species would include hunter caused fires. Refuge fire crews, State and The Nature Conservancy fire crews, and fire agreements with local fire department will aid in minimizing fire impacts. While hunting will remove some animals that would provide a prey base for wolves and eagles, surveys, annual harvest quotas, and non-hunted species will insure an adequate prey base. It is anticipated the hunting season's dates and restricted vehicle travel will minimize all potential threats to these species. The Intra-Service Section -7 Biological Evaluation described these impacts.

4.4. Anticipated Direct and Indirect Impacts of Proposed Action on Refuge Programs, Facilities and Cultural Resources.

Hunting on the Glacial Ridge NWR is not anticipated to have significant direct or indirect impacts of other Refuge programs, facilities or cultural resources. Approximately 25% of the refuge will be closed to the general hunting of all species as identified in the Hunting Plan. While this area closed to the general hunting of all species maybe used in a limited capacity for special hunting opportunities for youth hunters or people with disabilities, its primary focus will be to provide non-hunting visitor use opportunities. Currently, there are no major Fish and Wildlife Service facilities on the property. Logistics, equipment needs and other management utilization tools are stored at the Rydell National Wildlife Refuge 10 miles to the east. Only boundary signs, entrance signs and parking lots with associated signage are present on the landscape. Future construction of facilities will be focused in areas away from major hunting areas, or would establish a non-hunting area around such facilities. It is not anticipated that new roads will be established on the refuge. Currently, nearly 23,000 acres within the approved boundary of the refuge are within ½ miles of current township, county, state and federal highways, representing nearly 65% of the refuge. Walking trail development for other wildlife

dependent recreation will occur within that area of the refuge not opened to the general hunting program or will be developed to minimize conflicts between user groups.

An Environmental Property Assessment prepared by the Nature Conservancy of the Glacial Ridge area did not identify any cultural structures. It is possible that isolated artifacts, not associated with permanent campsites, might be associated with the beach ridges as past cultures probably used these drier sites as travel corridors.

4.5. Anticipated Impacts of Proposed Hunt on Refuge Environment and Community.

Prior to the establishment of the refuge and lands being transferred into U.S. Fish and Wildlife Service ownership, nearly the entire area was open to hunting in accordance with the rules and regulations of the Minnesota Department of Natural Resources. With most of the land in private landownership all species permitted by the State of Minnesota were hunted. With most of the lands being utilized for agricultural purposes, especially livestock, wildlife that caused potential harm to this industry were probably shot. This would have included pocket gophers and badgers that cause tripping hazards for livestock, and wolves, coyotes and eagles that prey on newly born calves. Under the proposed hunting plan these species would be protected, and only dealt with on a case by case basis should a major concern be documented.

Issues with soil disturbance, air and water quality concerns, solitude and damage to vegetation should be minimal or even reduced as vehicle access will be limited to designated parking lots. Historically, vehicle access with potential disturbances to vegetation and wildlife were at the discretion of the landowner. It is anticipated that the overall negative impacted on these environmental issues should be reduced. Approximately 25% of the refuge, which will not be opened to general hunting, should have no direct impacts on the environment from hunters. The limitation of opening only 40% of refuge lands to migratory bird hunting will also minimize hunter related environmental and solitude concerns.

The establishment of the Refuge has brought new visitors to the area that now have the ability to hunt lands that were once posted with no trespassing sign. The analysis assumes that there will be more hunters, but fewer disturbances because of foot access restriction. Hunting opportunities for people with disabilities will involve some off gravel access, but this will be highly supervised and directed by refuge staff to avoid damage to vegetation or other disturbances to wildlife and will utilize existing roads and dikes.

There are five State Wildlife Management areas within the approved acquisition boundary for the Glacial Ridge NWR totaling approximately 1,923 acres. These Minnesota Lands are opened to hunting of all species as identified in the annual Minnesota Hunting and Trapping Regulations Handbook. While there maybe some confusion with differing rules and regulations between State Lands and Refuge Lands, outreach efforts and information in the Minnesota Hunting and Trapping Regulations Handbook will aid hunters. Also maps with regulations located at refuge parking lots will provide hunters with additional information. Some hunter dissatisfaction is anticipated as some areas will be closed to hunting and from the restriction to only open 40% of the refuge to migratory bird hunting. It is expected that acknowledgement of the need to provide opportunities for non-hunting public visitation and providing non-disturbance areas for

wildlife is a positive aspect of the proposed action.

While some hunting visitation will occur from September through December, the peak period of hunter use will be during October and November. This same time period corresponds to hunting opportunities outside the refuge boundary. Annually Minnesota residents and non-resident have associated these months with hunting activities. Hunting of wildlife has been a tradition for many generations and is accepted as being appropriate by the majority of citizens. Therefore hunting opportunities on Glacial Ridge NWR are accepted by this same majority of citizens. Refuge neighbors will be concerned about trespass issues onto their lands, but good boundary signage, parking lot information, refuge brochures and news release should curtail this potential trespass issue. Conflicts could arise between hunters and non-hunters, but providing space and opportunity for both should reduce this conflict.

It is anticipated that these new hunters to the area will provide a benefit to local vendors including: convenient stores for fuel and food, restaurants for food, motels and campsites for lodging, sporting goods stores for various hunting items and souvenir store for a variety of nick-knacks.

4.6. Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts.

The history of the Glacial Ridge area in the last 30 years included periods when the landscape presented native tallgrass prairie habitat with naturally occurring beach ridge wetlands. The area was hunted extensively by local citizens, especially local and adjacent landowners. In the last 20 years, the landscape was greatly exploited as agricultural interests plowed the land and drained wetlands to grow row crops. Local wildlife population correspondently declined with the lost habitat, including usage of the area by migratory birds. Although some species, like sandhill cranes unnaturally adapted to forging of domestic cereal grains and their migratory habits reflects this food opportunity to stay around the area longer. In the last 5 years a 30-agency partnership has begun the effort to restore the tall-grass prairie landscape in and around the Glacial Ridge NWR. This restoration effort will benefit wildlife species native to this prairie ecosystem, which will also improve opportunities of all users of wildlife dependant visitation on the refuge. The beneficial aspects of this restoration effort on wildlife populations and increased wildlife dependant visitation opportunities should observed for many lifetimes.

Past hunting, prior to establishment of the Refuge, included mammals as rabbits, fox, raccoon, coyote, skunk, and badger. Past hunting of birds included crows, ruffed grouse, Hungarian partridge and pheasant. The current status of these species on the Refuge to authorize hunting is not known. As data on these species increase, and populations warrant, hunting opportunities could be evaluated. The Minnesota Department of Natural Resources is currently managing a bovine-TB outbreak in an isolated deer herd approximately 60 miles northeast of the Refuge, any potential spread of this disease or any other disease could dictate changes to this hunt plan. Adjustments to the hunting plan could also evolve around depredation complaints from increased migratory bird or deer populations. Increased problems related to deer/vehicle collisions could also warrant change.

4.7. Anticipated Impacts if Individual Hunts are Allowed to Accumulate.

It will be important to monitor all species hunted or not hunted with any of the Hunting Alternatives described in the previous sections of this Assessment to insure compliance with State and Flyway population's goals and management objectives. A combination of local surveys combined with State and Flyway surveys will be annually correlated to discern issues related to individual species hunted. While the establishment of the Glacial Ridge NWR may bring new and more hunters to the area, the percentage of the area opened to hunting compared to historical usage should actually have a positive impact of individual species. Local surveys currently conducted will continue to monitor both hunted and non-hunted wildlife species, providing data need to asset species concerns. The potential for accumulative effects of hunting at Glacial Ridge NWR with other hunting opportunities in Minnesota or the Flyway would be annually analyzed and addressed from the combined surveys results at the appropriate level of control: Regional and State Level - Minnesota Department of Natural Resources and/or Flyway Level – U.S. Fish and Wildlife Service Migratory Bird Flyway Council.

Accumulative Effects Analysis as per Alternatives

Alternative 3 (Preferred): As discussed in the subsections 4.3-4.6, the entire area of the Glacial Ridge NWR was formally hunted for all species as prescribed by the Minnesota Department of Natural Resources. Alternative 3, represents a more restrictive hunt than historical opportunities which should have positive impacts, especially for species not hunted under this plan. It's anticipated that the enjoyment of non-hunting visitors will be enhanced with increased wildlife populations. A combination of habitat restoration, habitat management and controlled hunting opportunities will have a positive accumulative effect on all wildlife species. It will be important however to complete annual deer population surveys to avoid high population densities that could increase deer-vehicle collisions on local highways, depredation complaints on neighbors' crops and habitat related issues.

Alternative 1 (No Action): This action would continue the historical pattern of hunting opportunities as prescribed by the Minnesota Department of Natural Resources. As the State of Minnesota has been managing both resident and migratory wildlife species that are inherent to the State, it's assumed that their annual changes in rules and regulations directly contribute to minimizing negative accumulative impacts on all species hunted, as well as addressing habitat and landowner concerns. Current and future wildlife inventories specific to Glacial Ridge NWR have and will further contribute to assuring compatibility for the purpose of the Refuge, including minimizing accumulative impacts. Compared to Alternative 3(Preferred), this alternative would allow more species to be hunted. There would also be potential for increased conflicts between user groups, as hunters and non-hunters would be occupying the same area.

Alternative 2: Compared to Alternative 3 (Preferred), this Alternative will have the same analysis for accumulative impacts on migratory birds. Deer and upland bird hunting will reflect historical hunting with impacts the same as identified in Alternative 1.

Alternative 4: The deer hunting portion of this Alternative is the same as the Alternative 3 (Preferred) as such all impacts would be the same. Under this alternative a smaller portion of the

refuge would be open to migratory bird hunting. It is assumed that all direct impacts to migratory bird species hunted would be reduced. It is however probable that indirect impacts to the area opened would be greater as hunters would be concentrated into a smaller area. Also under this alternative there will be greater chance for migratory bird populations to build up during migration and cause depredation problems.

All Alternative: It is not anticipated that the relatively small number of animal/birds taken on Glacial Ridge National Wildlife Refuge will have an impact on the overall population of the Refuge. Current and future surveys will help to insure the accumulative harvest over a long term will not have a negative effect on any of the species hunted. The annual review of the compatibility determination for hunting will provide an additional means to reflect upon the goals and strategies of the Glacial Ridge Hunting Plan, accumulative impacts, and associated environment assessment. The actual number of animal/birds harvested for all species on the refuge represents a very small percentage of the total harvest for the region, state or flyway. Current analysis by State and federal biologist already address concerns for accumulative hunting effects, and adjust annual harvest to insure this compatibility.

Section 5: List of Preparers

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Section 6: Consultation with Others

For issues identification and public use ideas:

Terry Wolfe, Ross Hier, Ruth Ann Franke – Minnesota Department of Natural Resources, Crookston, Minnesota

Keith Mykleseth and Jason Ekstein – The Nature Conservancy – Glacial Ridge Project, Mentor, Minnesota

Gerald Jacobson – Polk County Commissioner, Polk County, Minnesota

Penny Doty – West Polk Soil and Water Conservation District, Crookston, Minnesota

Gary Lee – East Polk Soil and Water Conservation District, McIntosh, Minnesota

Don Osborne, Aaron Parrish and Scott Kleven – City of Crookston, Crookston, Minnesota

Brian Winter and Anton Benson – The Nature Conservancy, Bluestem Preserve Office, Glyndon, Minnesota

Eric Anderson – Ducks Unlimited, Thief River Falls, Minnesota

Greg Bengtson and Melissa Behrens – Natural Resources and Conservation Service, Crookston, Minnesota

Public comments from public review of the Draft Environmental Assessment and Interim Comprehensive Conservation Plan for establishment of the Glacial Ridge National Wildlife Refuge.

For Service policies and guidance regarding public use and NEPA compliance:

Donna Stanek, Suzanne Baird, Jeff Gosse - U.S. Fish and Wildlife Service, Ft. Snelling, MN

Federally listed threatened and endangered species:

<http://endangered.fws.gov/wildlife.html#Species>

http://ecos.fws.gov/tess_public/TESSWebpageUsaLists?state=MN

<http://www.dnr.state.mn.us/ets/index.html>

<http://www.dnr.state.mn.us/ets/dragonflies.html>

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Section 7: Public Comments and Responses

This chapter of the Environmental Assessment (EA) presents comments that were received on the draft EA and Hunting Plan, and provides the Service’s response to the comments. Some comments specifically addressed alternatives in the EA, while others provided single topic suggestions. All comments and/or questions are addressed in the table below. The number of general respondents supporting an Alternative is first listed, followed by suggestions/questions. Support and comments from agencies and organizations are listed separate from private citizens.

Respondent	Comment	Response
Supported Preferred Alternative 3	Support the Preferred Alternative with the following suggestions:	The Service appreciates the support of everyone that took the time to read the Environmental Assessment and to respond.

Respondent	Comment	Response
<p>(10 responses of support from private citizens)</p>	<p>Want a minimum of 50% of Refuge open to deer hunting.</p> <p>Open as much as possible to migratory bird hunting.</p> <p>Include all small game species allowed by the State.</p> <p>Have lots of parking lots</p>	<p>We are glad that the Preferred Alternative is well received.</p> <p>Under the preferred Alternative 75% of the Refuge will be opened to the general public for deer hunting.</p> <p>Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p>A supplemental Environmental Assessment with public comment period will be issued for additional small game species to be hunted when species populations justify a hunt.</p> <p>Parking lots will be placed at current approaches along County, State and Federal Highways, and other locations as deemed appropriate.</p>
<p>Minnesota Department of Natural Resources</p>	<p>Ensure that the 40% rule applies to all migratory birds and not just migratory waterfowl.</p> <p>Should consider allowing the hunting of all small game species authorized by the State.</p> <p>Encourage a variety of recreational opportunities, will help with local economics.</p>	<p>Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p>Additional species of wildlife will be opened to hunting through a supplemental Environmental Assessment when species populations justify a hunt.</p> <p>A Visitor Services Plan, which covers all aspects of public use, is scheduled to be written in 2005.</p>

Respondent	Comment	Response
<p>Supported Alternative 1- No Action</p> <p>(2 responses of support from private citizens)</p>	<p>The following suggestions/questions accompanied the support of Alternative 1:</p> <p>Refuge could close all non-hunting activities during deer firearm season.</p> <p>All non-hunting use could be achieved at Rydell NWR.</p> <p>Why only 40%, when land was donated?</p> <p>If moose populations return will they be allowed to be hunted? Would like to hunt coyotes. Open hunting to all small game species allowed by the State.</p> <p>Provide lots of access, should be less than 1-mile to any area of the Refuge. Put in lots of parking lots</p> <p>If required to only allow 40% open to migratory birds, be reasonable when selecting areas.</p>	<p>While hunting was identified as a priority public use in the 1997 National Wildlife Refuge System Improvement Act, wildlife observation, wildlife photography, environmental education, interpretation and fishing were also identified. The Act didn't identify one use as higher priority over another.</p> <p>While Rydell NWR does provide non-hunting use activities, different and unique opportunities are present at Glacial Ridge National Wildlife Refuge.</p> <p>Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p>Additional species of wildlife will be opened to hunting through a supplemental Environmental Assessment when species populations justify a hunt.</p> <p>Parking lots will be placed at current approaches along County, State and Federal Highways, and other locations as deemed appropriate.</p> <p>Areas open for migratory birds will be appropriate for species hunted.</p>

Respondent	Comment	Response
<p>Supported Alternative #2 – Open entire Refuge to deer and upland game, 40% to migratory birds</p> <p>(2 responses of support from private citizens)</p>	<p>The following suggestions/questions accompanied the support of Alternative 2:</p> <p>A non-hunting area is not needed to view deer or other wildlife.</p> <p>Open all small game species to hunting allowed by the state.</p> <p>Why only 40%, when land was donated?</p> <p>Deer populations are high, maintaining or increasing harvest is essential.</p>	<p>Hunting and non-hunting activities are both recognized activities allowed on national wildlife refuges. The non-hunting area is not specifically established for the viewing of deer but for non-hunting visitors to enjoy all aspects of the environment.</p> <p>A supplement Environmental Assessment with public comment period will be issued for additional small game species to be hunted when populations justify a hunt.</p> <p>Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p>It is not the intention of the U.S. Fish and Wildlife Service to allow deer populations to overpopulate, resulting in damage to neighbor’s crops or other vegetation. Special hunts (Youth and Accessible hunts) will be developed in the non-hunting area to provide unique opportunities for these user groups and control wildlife populations. These special hunts will occur only a few weeks during the year, and are not anticipated to have a major effect on non- hunting public use activities.</p>
<p>Fertile Community Conservation Club</p>	<p>Would like to see food plots put in.</p>	<p>The use of food plots is a management decision normally utilized when there is a definite lack of natural food to nutritionally support desired wildlife species. If conditions warrant, the use of food plot could be an option.</p>
<p>The Nature Conservancy</p>	<p>Support hunting and trapping in accordance with State’s seasons and species allowed. Furbearer populations are high, need control.</p>	<p>A supplemental Environmental Assessment with public comment period will be issued for additional small game species to be hunted when populations justify a hunt.</p>

Respondent	Comment	Response
The Nature Conservancy	<p data-bbox="475 249 862 317">Why the 40% rule for migratory birds if land is gifted.</p> <p data-bbox="475 417 833 485">Control of deer populations is essential.</p> <p data-bbox="475 821 867 919">Registering hunters and alerting non-hunters of hunting programs will provide for safety concerns.</p>	<p data-bbox="937 249 1474 384">Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p data-bbox="937 417 1466 751">It is not the intention of the U.S. Fish and Wildlife Service to allow deer populations to overpopulate, resulting in damage to neighbor's crops or other vegetation. Hunting quota will be adjusted on an annual basis as needed to reflect deer populations. Special hunts (Youth and Accessible hunts) will be developed in the non-hunting area to provide unique opportunities for these user groups and control wildlife populations.</p> <p data-bbox="937 821 1451 919">The idea of registering hunters and alerting non-hunters for safety reasons is a good idea, and will be promoted.</p>

Respondent	Comment	Response
<p>Specifically recommended – No Hunting.</p> <p>(2 responses of support from private citizens)</p>	<p>The following suggestions/questions accompanied the specific recommendation of No Hunting:</p> <p>People need to find something better to do than to kill.</p> <p>Hunting doesn't make it safe or enjoyable for non-hunters.</p> <p>Return Refuge to the original vision of President Theodore Roosevelt by banning hunting.</p> <p>If you must allow hunting, have all hunting in one area, not spread out throughout the refuge.</p>	<p>The 1997 National Wildlife Refuge System Improvement Act identified hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation as permissible activities allowed on National Wildlife Refuges when deemed compatible with the purpose of the Refuge. The preferred Alternative described in the Draft Environment Assessment for the establishment of the Glacial Ridge NWR, and selected in the accompanying FONSI, included hunting as an activity that would occur on the Refuge.</p> <p>With all activities on a National Wildlife Refuge, safety is of major concern. Hunting on Glacial Ridge NWR will be conducted with concern for both hunters and non-hunters.</p> <p>The mission of the U.S. Fish and Wildlife Service is to work with others to conserve, protect, and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people. The 1997 National Wildlife Refuge System Improvement Act identified hunting as a benefit to the American people.</p> <p>One goal of the plan is to provide a safe, quality hunting opportunity. Requiring all hunters to occupy the same area would deviate from that goal.</p>

Respondent	Comment	Response
<p>No specific support of any alternative, but with specific comments.</p> <p>(5 responses from private citizens)</p>	<p>The following suggestions/questions were received:</p> <p>Allow the use of canoes.</p> <p>Allow as much migratory bird hunting as possible.</p> <p>Allow non-hunted area to be flexible in location to control deer populations.</p> <p>Appreciate any hunting opportunity.</p> <p>Will trapping be allowed?</p>	<p>It's not anticipated that many of the restored wetlands on the Refuge will accommodate canoeing. It was not our intent to encourage a use that would be very limited. As the use of canoes is a Refuge-specific regulation, the use of canoes can be evaluated in the future.</p> <p>Under the Migratory Bird Conservation Act, whether land is purchased or donated, no more than 40% of land can be opened to migratory bird hunting.</p> <p>Annual changing of hunted areas and non-hunted area would be confusing to the public and be very labor intensive to change signs and maps.</p> <p>The 1997 National Wildlife Refuge System Improvement Act identified hunting as a priority use. The goals of the hunting plan were established to insure compatibility with the purpose of the Glacial Ridge NWR.</p> <p>Trapping is a management tool used to control predators. If the use of trapping is necessary, a plan and Environmental Assessment will be written for public comment.</p>
<p>Minnesota Trail Hound Association</p>	<p>Allow hunting of predators (raccoon, red fox, bobcat and coyotes).</p> <p>Pheasants and Hungarian partridge should be hunted to eliminate competition to native ground nesting birds.</p>	<p>A supplemental Environmental Assessment with public comment period will be issued for additional small game species to be hunted when populations justify a hunt.</p> <p>Currently, there is not a documented problem with either species with nest parasitism on native ground nesting birds. If this were to be documented, designing a public hunt to help combat the issue would be an option.</p>
<p>Northwest Minnesota Houndsmen Association</p>	<p>Allow hunting of predators (raccoon, red fox, bobcat and coyotes).</p> <p>Pheasants and Hungarian partridge</p>	

Respondent	Comment	Response
	should be hunted to eliminate competition to native ground nesting birds.	
Red Lake Department of Natural Resources	Grammatical corrections needed. Budget estimates seem very low.	Thanks for the grammatical corrections. They have been corrected in the final EA. A closer examination of budget estimates will occur. Any deficiencies identified will be corrected through annual budget requests.
Options: Resource Center for Independent Living	Blinds for persons with disabilities need to be in areas closed to other public hunting to be worthwhile.	Adjustment to the hunting plan will be made for development of special hunts (Youth and Accessible hunts) in the non-hunting zone to address the issue of a quality opportunity for these user groups. This will also alleviate concerns about deer over-populating this area. These special hunts will normally utilize fewer than 10 days per year, and are not anticipated to have a major effect on non-hunting public use activities designed for this area.

Public Comments and responses to Revised Environmental Assessment:

Seven comments were received on the Revised Environmental Assessment (EA) for the Glacial Ridge National Wildlife Refuge. The public comment period for this Revised EA was March 8 – April 8, 2007. Five comments favored hunting and two apposed hunting.

Respondent	Comment	Response
Humane Society of the United States and The Funds for Animals	A letter from the Humane Society of America and The Funds for Animals contained general comments about the National Wildlife Refuge System, NEPA process and on a variety of wildlife species. There were no comments that specifically mentioned the Glacial Ridge NWR EA.	Comments were noted.

Respondent	Comment	Response
Safari Club International and Safari Club International Foundation (SCI and SCIF)	Devote additional consideration to how hunting prevents deer overpopulation and consequently inhibits damage that deer overbrowsing causes to habitat used and required by other wildlife species, including migratory waterfowl.	Management of the Glacial Ridge NWR to benefit both native prairie fauna and flora is a primary goal. Hunting will be used as a management tool to control deer populations to prevent habitat damage which could result in a negative impact to other species.
	Consider whether the loss of hunting of the Canada goose population could similarly result in an overpopulation of the species and consequent damage to the refuge's resources including the food sources for migratory waterfowl and other species...	The Revised EA does discuss the need for other strategies including additional hunting opportunities should goose populations increase and cause depredation complaints to local agricultural producers. These same strategies could be used should damage to native vegetation be documented. It's anticipated however that depredation to neighbor's crops would occur concurrently, thus justifying additional alternatives to benefit both issues.
	Update plan to reflect change in gray wolf status.	Comment noted. The original approval of the Glacial Ridge Hunting Plan and EA was prior to the delisting of the Gray wolf. This Revised EA, acknowledges the original signature as the approval date, only adding the cumulative effects of hunting based on the court order.
	Encourages the refuge to increase hunting opportunities on the refuge and to include hunting for additional species	As noted in the comments from initial public review, Additional species of wildlife will be opened to hunting

Respondent	Comment	Response
<p data-bbox="188 600 505 667">Minnesota Deer Hunters Association (MDHA)</p> <p data-bbox="188 930 516 997">3 Responses from private citizens</p>	<p data-bbox="610 235 980 373">as long as the populations of these historically hunted species prove sufficient to allow for hunting to resume.</p> <p data-bbox="610 415 1003 554">Recommends F&WS consider the beneficial aspects of hunting on the entire refuge system.</p> <p data-bbox="610 596 990 886">MDHA comments associated the EA with the Rydell NWR instead of the Glacial Ridge NWR, but made support of Alternative 3, recommending a greater emphasis on the detriments of not allowing hunting.</p> <p data-bbox="610 928 954 1033">Improve signage to inform people of the rules and regulations.</p> <p data-bbox="610 1108 1000 1213">Hunting is a tradition and helps to increase and continue interest in the refuge.</p> <p data-bbox="610 1255 1000 1436">I grew up in the area and have spent many hours hunting this area in the past. I support hunting as a management tool for the refuge.</p> <p data-bbox="610 1478 1000 1545">Keep hunting on wildlife refuge at a minimum if not nil</p>	<p data-bbox="1032 235 1367 373">through a supplemental Environment Assessment when species populations justify a hunt.</p> <p data-bbox="1032 415 1247 449">Comment noted.</p> <p data-bbox="1032 596 1260 630">Comments noted.</p> <p data-bbox="1032 928 1422 1066">Signs are an important means of communicating rules of the refuge, and will be placed at all parking lots.</p> <p data-bbox="1032 1108 1383 1247">Hunting is one of the six recognized activities in the 1997 Refuge Improvement Act.</p> <p data-bbox="1032 1255 1247 1289">Comment noted.</p> <p data-bbox="1032 1478 1406 1617">Comment noted. Hunting is one of the six recognized activities in the 1997 Refuge Improvement Act.</p>

The Glacial Ridge Hunting Plan will be a “Living Document”. It is anticipated that changes will need to occur as data is gathered, habitats are restored and wildlife populations fluctuate. All major changes will be announced through the development of a supplemental Environmental Assessment and must always remain compatible with the purpose for establishing the Glacial Ridge National Wildlife Refuge.

Section 8: References

Agassiz National Wildlife Refuge - Hunting Plan and Environmental Assessment. 2007. Agassiz National Wildlife Refuge. Middle River. MN.

American Woodcock Populations Status, 2006. U.S. Fish and Wildlife Service.
<http://www.fws.gov/migratorybirds/reports/reports.html>

Barr. 2000. Environmental Property Assessment, Tilden Farms. The Nature Conservancy – Glacial Ridge Project. Mentor. MN.

Bird Monitoring, Division of Migratory Bird Management, U.S. Fish and Wildlife Service,
<http://migratorybirds.fws.gov/statsurv/mntrtbl.html>.

Deer density – Spring 2004, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/deer/index.html>.

Ekstein, J., Personal Communications. Restoration Ecologist, The Nature Conservancy, Glacial Ridge Project, MN.

Grouse Surveys in Minnesota During Spring 2006, Spring 2006, Minnesota Department of Natural Resources, Forest Wildlife Populations and Research Group.

Kelley, J., Personal Communications. Wildlife Biologist, Migratory Bird Office, U.S. Fish and Wildlife Service, Ft. Snelling, MN.

Migratory bird hunting activity and harvest during the 2004 and 2005 hunting seasons, July 2006. U.S Fish and Wildlife Service. <http://migratorybirds.fws.gov>.

Migratory Bird Harvest Information Program (HIP), U.S. Fish and Wildlife Service,
<http://hip.fws.gov/>

Minnesota Department of Natural Resources, Ecological Services, Home Page for Endangered, Threatened and Special Concern <http://www.dnr.state.mn.us/ets/index.html>

Minnesota Department of Natural Resources, Ecological Services, Home Page for Endangered, Threatened and Special Concern, Butterflies <http://www.dnr.state.mn.us/ets/dragonflies.html>.

Minnesota grouse and hare report 2004, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/smallgame/index.html>.

Minnesota's total deer harvest, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/deer/index.html>

Mourning Dove Population Status, 2006. U.S. Fish and Wildlife Service.

<http://www.fws.gov/migratorybirds/reports/reports.html>.

Perez-Arteaga, A., & K. J. Gaston, 2004. 2004 status of American coot wintering in Mexico. Acta Zoologica Mexicana. Instituto de Ecologia A.C.

Ryan, J. Personal Communications. Auto Claim Team Manager, State Farm Insurance Company. Heartland Strategic Services.

Status of Wildlife Populations, Fall 2003. Division of Wildlife, Minnesota Department of Natural Resources. 2003. State of Minnesota.

Status of Wildlife Populations, Fall 2006. Division of Wildlife, Minnesota Department of Natural Resources. 2006. State of Minnesota.

U.S. Fish and Wildlife Service Endangered and Threatened Species List
<http://endangered.fws.gov/wildlife.html#Species>

U.S. Fish and Wildlife Service Endangered and Threatened Species List - Minnesota
http://ecos.fws.gov/tess_public/TESSWebpageUsaLists?state=MN

U.S. Fish and Wildlife Service. 1999. Fulfilling the Promise. The National Wildlife Refuge System. Department of the Interior, Washington, D.C.

U.S. Fish and Wildlife Service. 2001. Draft Environmental Assessment and Interim Comprehensive Conservation Plan for Glacial Ridge National Wildlife Refuge, Minnesota.

U.S. Fish and Wildlife Service. American Coot. Conservation Concern.
<http://www.fws.gov/birds/waterbirds/statusassessment/Americancoot6.pdf>

U.S. Fish and Wildlife Service. 2006. Waterfowl Status. <http://www.fws.gov/migratorybirds>

U.S. Geologic Survey. North American Breeding Bird Survey, summary of Population Change
<http://www.mbr-pwrc.usgs.gov/cgi-bin/tf05.pl>

Waterfowl Breeding Population Survey, 2005. Minnesota Department of Natural Resources & U.S. Fish and Wildlife Service.

Waterfowl Breeding Population Survey, 2006. Minnesota Department of Natural Resources & U.S. Fish and Wildlife Service.

Wolfe, T., Personal Communications. Area Wildlife Manager, Crookston, MN. Minnesota Department of Natural Resources.

2003 Roadside Count Survey, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/smallgame/index.html>.

2004 prairie chicken hunt information, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/prairiechicken/index.html>.

2004 Minnesota Prairie-Chicken Survey, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/prairiechicken/index.html>.

2006 Minnesota Prairie-chicken Hunter Survey, Minnesota Department of Natural Resources,
<http://www.dnr.state.mn.us/hunting/prairiechicken/index.html>.