

Chapter 4: Alternatives and Environmental Consequences

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The following chapter examines the potential environmental consequences, or impacts, of implementing each alternative. Service Planners heard a wide variety of issues, concerns, and opportunities during the public scoping for this plan (Table 3). However, the issues discussed in detail in this chapter were deemed by the plan authors to be of primary relevance to Refuge establishment.

Table 3: Summary of Environmental Consequences Identified in Public Scoping by Alternative

Issues/Opportunities	Alternative A: Current Direction	Alternative B: Refuge and Landscape Conservation Area	Alternative C: Cores and Corridors (Preferred Alternative)	Alternative D: Partnership Initiative
Habitat/Species				
General State of the Environment	Stable to decreasing. Existing public and private conservation programs will continue.	Improved through habitat restoration, reduced land development, and environmental education.	Same as B.	Same as B.
Wetland Preservation and Restoration	Steady to gradual increase due to local efforts.	Increased by up to 1,300 acres from current cover.	Increased by up to 880 acres from current cover.	Increased by up to 800 acres from current cover.
Grassland Preservation and Restoration	Steady to gradual increase.	Increased by up to 23,800 acres from current cover.	Increased by up to 8,150 acres from current cover.	Increased by up to 6,100 acres from current cover.
Habitat Fragmentation	Steady to gradual improvement through existing programs.	Connecting corridors increase.	Five new corridors connect new habitat blocks.	Same as C but using private and public partnerships.
Biodiversity	Reduced due to habitat loss.	Stable to slight increase if new species pioneer.	Same as B.	Same as B.
Endangered Species	Steady to gradual decrease in endangered plant populations.	Increased protection for known plant populations on new Refuge lands.	Same as B.	Same as B.
Recreation and Education				
Recreational Opportunities	Stable to slight increase due to demand and ongoing programs.	Moderate increase in wildlife dependent recreation on Refuge lands.	Slight to moderate increase in wildlife dependent recreation on	Slight increase in wildlife dependent recreation on Refuge lands in

Issues/Opportunities	Alternative A: Current Direction	Alternative B: Refuge and Landscape Conservation Area	Alternative C: Cores and Corridors (Preferred Alternative)	Alternative D: Partnership Initiative
			Refuge lands.	coordination with partners.
Snowmobile Use	Nominal reduction as land changes ownership and/or development occurs.	Same as A. Also, Refuge and county will work with local clubs if a conflict is identified.	Same as B.	Same as A.
Horseback Riding	Nominal reduction as land changes ownership and/or development occurs.	Same as A. Also, Refuge and county will work with local clubs if a conflict is identified.	Same as B.	Same as B.
Hunting	Nominal reduction as land changes ownership and/or development occurs.	Increased opportunities due to future opening of Refuge lands.	Increased opportunities due to future opening of Refuge lands.	Stable to nominal reduction as land changes ownership and/or development occurs.
Environmental Education	New opportunities focus on existing conservation lands.	Increased due to new programs on Refuge lands.	Same as B.	Same as A.
Societal Issues				
Federal Government	Refuge designation has no effect on the rights, privileges, and responsibilities of adjacent private landowners.	Refuge designation has no effect on the rights, privileges, and responsibilities of adjacent private landowners.	Same as B.	Same as B.
Property Taxes	Stable to slight increase. Will follow local economic needs based on land development.	Stable to slight increase. Undeveloped lands do not require new services.	Stable to slightly less than B. Undeveloped lands do not require new services.	Stable to slightly less than C. Undeveloped lands do not require new services.
Sand and Gravel Deposits	No impact.	Little to no impact. Land purchased for Refuge may include deposits. Refuge will consider inclusion of rehabilitated lands.	Same as B.	Same as B.
Economy and Tourism	Slight increase due to ongoing programs.	Moderate increase in nature-based tourism.	Slight to moderate increase in nature-based tourism due to NWR status.	Slight increase in nature-based tourism.

4.1 Environmental Consequences Related to Natural Resource Concerns

Migratory Birds

The protected and/or restored habitats within each Refuge action alternative will have positive benefits for many migratory birds (Table 4). As discussed in Chapter 3, grassland-dependent birds will receive the most benefits from the restored prairies areas. However, oak savanna and wetland habitats will also provide unique or rare habitat for birds in this region.

Table 4: Current and Future Potential for Select Migratory Bird Species Populations

Bird Species (Examples)	Alternative B						
	Current Potential				Future Potential		
	FWS (Core)	FWS (Corridor)	Con. Land	Total	FWS (Core)	FWS (Corridor)	Total
Grassland							
Henslow's Sparrow	720	0	175	895	6040	0	6215
Short-eared Owl*	0.5	0	0.5	1	125	0	125.5
Upland Sandpiper	35	0	10	45	310	0	320
Dickcissel	1870	0	460	2330	15725	0	16185
Savanna							
Red-headed Woodpecker	310	0	175	485	330	0	505
Wetland							
Pied-billed Grebe	18	0	30	48	555	0	585
Least Bittern	15	0	25	40	400	0	425
Total Potential Benefit over Existing Condition (All Species)							20517

Bird Species (Examples)	Alternative C						
	Current Potential				Future Potential		
	FWS (Core)	FWS (Corridor)	Con. Land	Total	FWS (Core)	FWS (Corridor)	Total
Grassland							
Henslow's Sparrow	435	730	180	1345	2190	3711	6081
Short-eared Owl*	0.5	0.5	0.5	1.5	45	75	120.5
Upland Sandpiper	20	35	10	65	110	190	310
Dickcissel	1130	1900	470	3500	5700	9660	15830
Savanna							
Red-headed Woodpecker	190	330	185	705	195	425	805
Wetland							
Pied-billed Grebe	15	1	25	41	365	255	645
Least Bittern	10	1	15	26	265	185	465
Total Potential Benefit over Existing Condition (All Species)							18573

Bird Species (Examples)	Alternative D						
	Current Potential				Future Potential		
	FWS (Core)	FWS (Corridor)	Con. Land	Total	FWS (Core)	FWS (Corridor)	Total
Grassland							
Henslow's Sparrow	440	110	200	750	1525	460	2185
Short-eared Owl*	0.5	0	0.5	1	30	10	40.5
Upland Sandpiper	20	5	10	35	80	25	115
Dickcissel	1150	285	515	1950	3970	1205	5690
Savanna							
Red-headed Woodpecker	215	60	195	470	250	85	530
Wetland							
Pied-billed Grebe	1.5	2	30	33.5	255	160	445
Least Bittern	1	1.5	20	22.5	185	115	320
Total Potential Benefit over Existing Condition (All Species)							6064

All species listed above are Birds of Conservation Concern for FWS Region 3, Habitat. "Block Size" was not incorporated into calculations.

* Typically 1 breeding pair per 182 acres (used above); however, can use areas as small as 70 acres if located close to blocks of contiguous grassland.

Current Potential = Potential number of existing breeding pairs, based on 2006 National Land Cover Data, **Represents No Action Alternative within the spatial area of each Action Alternative.**

Future Potential = Potential number of breeding pairs added to the population with implementation of the given Alternative, Based on Potential Natural Data derived from soil type.

FWS (Core) = Primary Area for Refuge Land

FWS (Corridor) = Secondary Area for Refuge Land

Con. Land = Existing conservation estates adjacent to proposed Refuge land; all public ownerships included, assumed no change for future potential

4.2 Environmental Consequences Related to Socioeconomic Environment, Outdoor Recreation, and Local Land Use

4.2.1 Impact on Local Taxes and Economy

Alternative A – Current Direction (No Action)

There would be no expected change in the local economy under the No Action alternative, as current development rates, tax revenues, and business revenues would remain subject to market influence. Any changes would be due to existing influences and market forces and would not be associated with federal activities. A potential, but unsubstantiated, economic outcome of not having a refuge in the region would be loss of refuge visitor expenditures at local businesses and establishments and increased local costs to provide roads, schools, and other infrastructure as development increases.

Alternative B-D – Refuge Establishment

The fiscal impact to McHenry County and its townships, if a refuge is established, would depend on both the quantity of land acquired and the rate of acquisition. While land owned by the U.S. Government is not taxable by state or local authorities, the federal government has a program in place to compensate local governments for foregone tax revenues. The Refuge System typically makes an annual payment in lieu of taxes to local governments. The amount of the payment depends on the final Congressional budget appropriations for the Service for that year. Recently, the payment has been less than what the state or local government may have received through normal taxation. It should be noted that the parcels with the highest assessed value within the Study Area (i.e., residential, industrial, and retail) are parcels that have the least desirable characteristics for conservation.

Recreational use on refuges generated almost 1.7 billion dollars in total economic activity during fiscal year 2006 (FWS, 2006). The report, titled *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation* was compiled by Service economists. According to the study, nearly 35 million people visited refuges in 2006, supporting almost 27,000 private sector jobs and producing about 543 million dollars in employment income. In addition, recreational spending on refuges generated nearly 185.3 million dollars in tax revenue at the local, county, state, and federal levels. The economic benefit is almost four times the amount appropriated to the Refuge System in Fiscal Year 2006. About 87 percent of refuge visitors travel from outside the local area (FWS, 2006). This information gives an indication of how the creation of a Hackmatack NWR could be of economic benefit to the local economy.

4.2.2 Snowmobile Use

Alternative A – Current Direction (No Action)

Currently, there are several dozen marked snowmobile trails in the Study Area (Figure 9). Most of these trails cross public and private lands and are maintained by local snowmobile clubs through informal

agreements with landowners. The seasonal use period for these trails is dependent upon the weather and snow depth. Local conditions can vary widely throughout the Study Area.

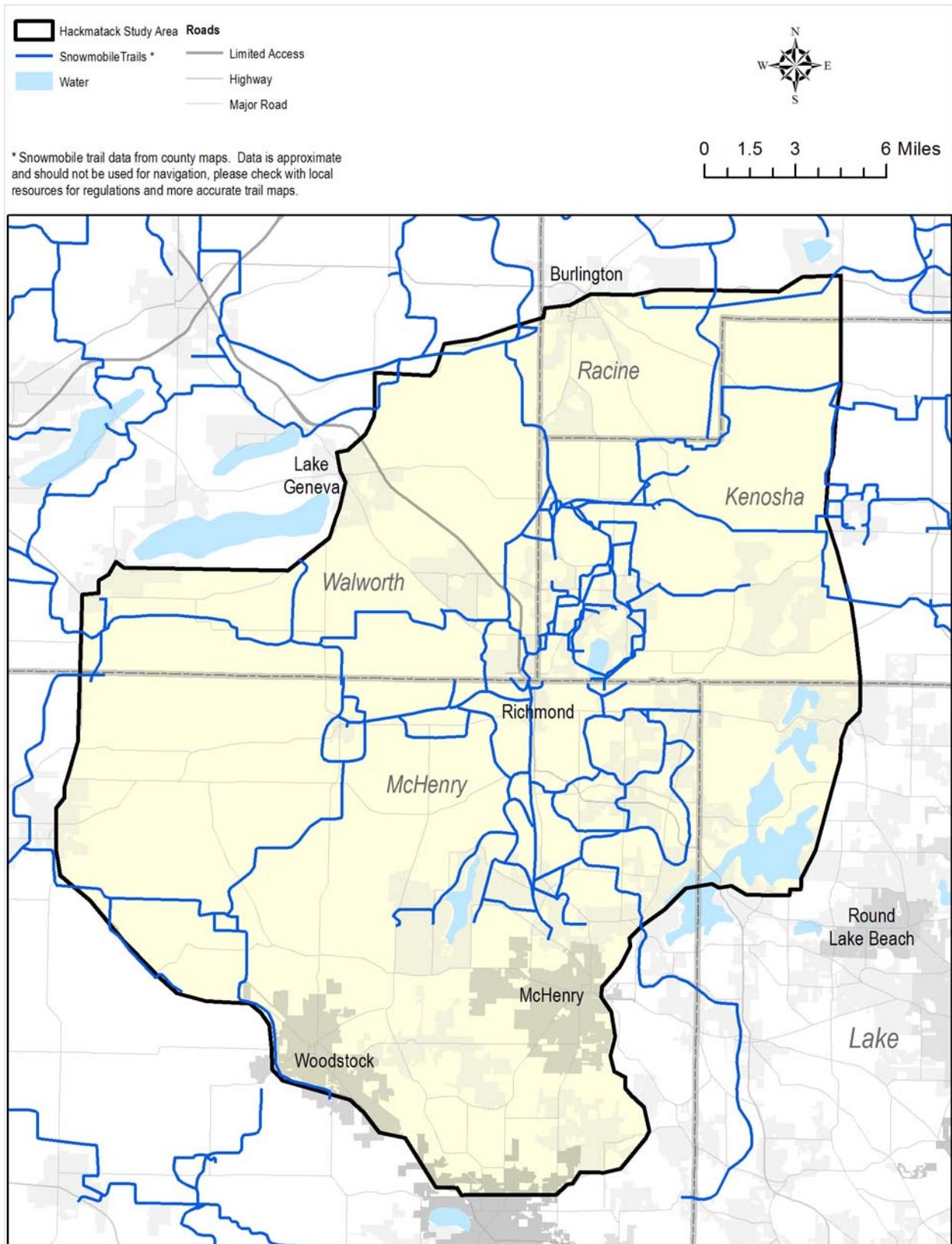
It is reasonable to expect that the number and length of snowmobile trails in the Study Area will see a nominal reduction as land changes ownership and/or development occurs. Local land use ordinances determine whether snowmobile use is compatible with residential expansion.

Alternative B-D – Refuge Establishment

Motorized vehicles on refuges are generally permitted only on designated roads during specified times of the year. Off-road vehicle use, including ATVs and snowmobiles, is generally not permitted due to impacts on vegetation, disturbance to wildlife and other refuge users, and safety and liability issues. However, the Service objective is not to eliminate or interrupt existing snowmobile trails.

It is possible that at some time in the future a landowner would offer land for sale to the Refuge that contains a portion of an existing snowmobile trail. We do not expect this situation to occur very often. The Service would work with the landowner and snowmobile clubs to either reroute the trail or encourage a third party to obtain a permanent trail easement prior to the federal purchase. McHenry County Conservation District has expressed an interest in working with landowners and the Service to secure trail easements if the situation arises. The DNR in Illinois and Wisconsin, the respective county governments, and local snowmobile clubs may also choose to be involved to secure an existing trail.

Figure 9: Location of Snowmobile Trails Drawn from Local Snowmobile Club Maps, 2010



4.2.3 Cultural Resources

Alternative A – Current Direction (No Action)

The No Action alternative could have a slight negative effect on the protection of historic and cultural resources, principally due to the lack of a continuous federal presence, which provides a clear responsibility for protection of these resources. Existing laws create an expectation on landowners and developers to take necessary precautions to ensure that no sites or structures on the National Historic register would be affected by their activities in the region. However, any undocumented sites, especially prehistoric sites, may not be protected under existing laws.

Alternative B-D – Refuge Establishment

The Service's protection of habitat would benefit cultural resources by ensuring that none of the substantial impacts related to development for residential or commercial uses would affect known or undiscovered cultural and historic resources on those lands. As with all federal activities, any activities involving soil disturbance will be reviewed by the Illinois or Wisconsin State Historical Preservation Office (SHPO) prior to any excavation work to ensure protection of cultural resources. Refuge staff would also promote archaeological research on refuge lands and add language from the Archaeological Resources Protection Act (ARPA) to appropriate public use materials to warn visitors about illegal looting, and maintain law enforcement personnel trained in ARPA enforcement.

4.2.4 Wildlife-dependent Recreation

Alternative A – Current Direction

The network of public and private conservation areas in the Study Area provide an array of recreation opportunities that would continue without refuge establishment. Glacial Park provides equestrian trails and camping. Lake Geneva and Chain O'Lakes State Park offer boating and fishing for residents and visitors. Long-distance hiking and bicycling are available on the Prairie Trail. Paddlers can canoe and kayak on the Nippersink Water Trail, and Wisconsin DNR Wildlife Areas offer hunting opportunities. The wide range of managed entities within the Study Area increases the visitor's recreational choices, as each offers its own suite of outdoor activities. However, opportunities for wildlife-dependent activities would continue to decrease on private lands as the region is developed.

Alternative B-D – Refuge Establishment

Each action alternative envisions core parcels, with a limited suite of recreational opportunities permitted under its management directives, working in concert with an interconnected network of publicly accessible lands that offer a broad range of recreation choices. However, refuges are required to emphasize wildlife-dependent recreation activities such as hunting and fishing, when compatible with wildlife, which may not be allowed on all nearby natural areas.

Beyond improving the Study Area's biological integrity, the conserved corridors connecting larger conserved areas offer potential recreational corridors, allowing visitors a less fragmented experience of the natural world. Increased access to parks and open space can improve activity levels among both residents and travelers.

Each of these alternatives envisions a connecting corridor between core Refuge units and/or existing conservation lands. The establishment of recreational trails along these corridors could be an ideal method to get visitors out into the environment. Future trails may be paved or unpaved and would need additional planning in order to be compatible with the terrain and Refuge purposes.

The proposed Refuge sits on the doorstep of literally millions of people who enjoy nature-based recreation. Both Illinois and Wisconsin Statewide Comprehensive Outdoor Recreation Plans have documented that opportunities for outdoor recreation are in short supply in the densely populated regions of northeastern Illinois and southeastern Wisconsin.

Designating a refuge in the Study Area would further diversify the region's recreational assets, protect quality natural habitats, and provide additional opportunities for wildlife-dependent recreation.

4.2.5 Environmental Education and Outreach

Alternative A – Current Direction (No Action)

The McHenry County Conservation District's Lost Valley Visitor Center, located in Glacial Park near McHenry, Illinois, opened to the public in August 2010. This 28,450 square foot facility hosts a number of environmental education programs, workshops, camps, and special events. An exhibit room, drop-in library, and research library (available by appointment) are open daily. The facility is also a regional center for the study of natural resources, housing under one roof the District's Natural Resource Management Department and Environmental Education Staff; the Research Field Station; the District's ecological data bases, resource library and map room; Restoration Internship Program, and the Ecological Restoration Certificate Program. In addition, the Illinois Nature Preserves Commission and the McHenry County Conservation Foundation have offices in the building.

Glacial Park has long been considered one of the jewels of the county's open space holdings, characterized by its rolling prairie, wetlands, delta kames, oak savanna, and the tranquil presence of Nippersink Creek. Encompassing 3,200 acres, Glacial Park is the District's most well-known conservation area, visited annually by more than 64,000 individuals. It supports nine miles of snowmobile trails, six miles of hiking trails, and four miles of horse trails; contains a five mile segment of the regional Prairie Trail, and offers canoeing and fishing in Nippersink Creek.

Alternative B & C – Refuge Establishment

The establishment of a refuge would bring new visibility and destination for local school groups and others wanting to learn about the natural environment. Initially, the Refuge land base will be small and the opportunities for onsite outdoor classroom locations may be limited. However, each of the Refuge alternatives envisions a connecting corridor between core Refuge units and/or existing conservation lands. The establishment of recreational trails along these corridors could be an ideal method to get students out into the environment.

The construction of a full-scale visitor or environmental education center may warrant consideration in the future as the Refuge grows. Another possibility is a smaller classroom/shelter to be placed on one or more of the Refuge units or development of facilities in conjunction with other conservation partners. Construction and operation costs can be substantial for any type of public building. Therefore, the need for any new facilities will have to be based on careful study of the market for environmental education destinations.

If a refuge is established, a Visitor Services Plan will be written to help guide the growth of an environmental education and outreach program.

Alternative D – Partnership Initiative

This alternative would have an outcome similar to Alternative A. The McHenry County Conservation District's Lost Valley Visitor Center located in Glacial Park would continue to be a focal point for onsite environmental education. However, the presence of some Refuge lands, and the connecting corridors, would open the possibility of some Refuge-connected education and outreach programs.