

Draft Compatibility Determination

Use: Wildlife Observation, Photography, and Auto Tours

Refuge Name: Port Louisa National Wildlife Refuge

Establishing and Acquisition Authority(ies):

The Mark Twain National Wildlife Refuge (NWR), including the land area now managed as Port Louisa NWR, was established under the provisions of a Secretarial Order signed on August 1, 1958. Individual divisions of the Mark Twain NWR were designated as separate National Wildlife Refuges in a reorganization change as part of the Comprehensive Conservation Plan (CCP) in 2004. Much of the refuge consists of lands acquired in fee title by the U.S. Army Corps of Engineers that are managed as part of the refuge under a Cooperative Agreement between the Department of the Army and the Department of the Interior.

Establishing Authorities:

Refuge Recreation Act (16 U.S.C. 460k-1)

Migratory Bird Conservation Act (16 U.S.C. 715d)

Fish and Wildlife Coordination Act (16 U.S.C. -664)

Emergency Wetland Resources Act of 1986 (16 U.S.C. -3901(b) 100 Stat. 3583)

1985 Food Security Act

Refuge Purpose(s):

- "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. -715d (Migratory Bird Conservation Act)
- "...shall be administered by (Secretary of the Interior) directly or in accordance with cooperative agreements...and in accordance with such rules and regulations for the conservation, maintenance, and management of wildlife, resources thereof, and its habitat thereon,..." 16 U.S.C. -664 (Fish and Wildlife Coordination Act)
- "...suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species..." 16 U.S.C. 460k-1 (Refuge Recreation Act)
- "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. -3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)
- "... for conservation purposes", (1985 Food Security Act in conjunction with the transfer of Farm Service Agency, formerly Farmers Home Administration, property)

National Wildlife Refuge System Mission:

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

What is the use? Wildlife observation and photography, and auto tours. General public access to observe and/or photograph wildlife and refuge habitats including the means of access such as automobile, hiking, bicycling, canoeing, boating, snowshoeing and cross-country skiing. The auto tour is a means of access for wildlife observation and photography, but requires additional compatibility evaluation and is therefore included as a use. This compatibility determination (CD) replaces one that was done for these uses as part of the refuge CCP in 2004.

Where is the use conducted? Wildlife observation and photography may occur on any of the refuge divisions, but primarily on the Louisa (2609 acres) and Horseshoe Bend (2606 acres) Divisions where trails and roads occur. Most wildlife observation and photography will be limited to the below facilities.

The Louisa Division has a 3 mile round trip hiking trail, a 0.8 mile gravel entrance road, and a 5.5 mile gravel auto tour road. The hiking trail is on the eastern side of the division and runs from the top of the bluff near the office through upland hardwood forest to bottomland hardwoods ending along Muscatine slough. The trail winds through these habitats and receives most use during spring and summer. A section of the trail is located within a part of the refuge that is closed to all public access in the fall, and is closed during that time period.

The main refuge access is along the 0.8 mile Port road in the Louisa Division where the public can access an observation deck, trailhead, boat ramp, fishing pier and bank fishing locations. People also drive the road to observe wildlife and look at the Mississippi River. This road and associated facilities are open to the public all year, but adjacent areas off of the road are part of the closed area during the fall.

The Louisa Division auto tour is open for walking and biking from January 1 until September 15 and has been closed to vehicle use by the public except for occasional special events and group tours. The auto tour route runs through a 900 acre portion of the Louisa Division that is primarily managed as moist soil to produce food for migrating waterfowl. Wetlands are drawn down in the summer, when conditions allow, and reflooded in the fall. Habitat types include wetland, grassland, and forest. The majority of habitat directly adjacent to the road is wetlands and grassland. There is one observation deck midway through the route where cars can park. The deck overlooks Fox Pond, one of the larger wetlands on the area. Typically, up to 50,000 ducks and geese stage and feed on the moist soil units in the fall and spring. Birds are present from September to December, or until freeze up, and then for a shorter time period in the spring. The Louisa closed area is directly adjacent to the 4200 acre Odessa wildlife management area, managed by the Iowa Department of Natural Resources (DNR), where hunting is allowed.

Two additional observation platforms are available on the Louisa Division: one at the refuge headquarters and one at the Muscatine slough trailhead at the entrance to the Division. There is a designated canoe trail on the Louisa Division that connects to the adjacent DNR wildlife management area. Motorboats are allowed within the refuge.

Horseshoe Bend Division has about 4.5 miles of mowed service roads that serve as seasonal trails and their availability varies with river levels. Keithsburg Division has a mowed service road and levee that may serve as a seasonal trail. Access to Big Timber Division is primarily by boat and there are no trails or roads. The only facility at Big Timber is a boat ramp with a parking lot. Visitors may also walk anywhere off of refuge trails outside of seasonal closed areas.

When is the use conducted? The uses occur during daylight hours (sunrise to sunset) throughout the year. There may be some exception to hours of use under Special Use Permits to allow entry or exit in darkness so as not to disturb wildlife. The auto tour route may be open 1 to 5 days a week from January 1 until September 15. The days the auto tour will be open will vary by time of year and special events and will typically be 1 or 2 days per week during the open period.

Closed periods to provide sanctuary for migrating waterfowl are as follows: Big Timber Division – no closed period; Keithsburg Division and Louisa Divisions – September 15 to January 1; Horseshoe Bend Division – September 15 to December 1. The auto tour may have limited use during the closed period with the stipulations outlined below.

How is the use conducted? Wildlife observation and photography occur on all hiking trails. The Louisa auto tour may be opened for vehicle access outside of the fall closed period up to five days per week. There is a gate with signage to limit vehicle use when it is not open. The route will have speed limits, directional signs, and interpretive information. Limited special event tours and vehicle access during the closed period will be allowed with stipulations (outlined below). Limited staff guided walking or van tours may also be allowed at the Horseshoe Bend Division during the closed period with stipulations. Special Use Permits (SUPs) will be required for individual vehicle access for wildlife observation and photography outside of regularly scheduled auto tour days, or for vehicle access during the closed period.

Entry on all, or portions of designated routes, may be temporarily suspended by posting upon occasions of unusual or critical conditions affecting land, water, vegetation, wildlife populations, or public safety. For example, flooding sometimes causes refuge roads to be closed.

Why is the use being proposed? Wildlife observation and photography are priority public uses on National Wildlife Refuge System Lands as identified in the Refuge System Improvement Act of 1997. Access to the Refuge for wildlife observation and photography will meet the goals of the refuge and the refuge system. This use meets objectives in the refuge CCP for enhancing visitor experiences and education and interpretive programs. A specific strategy given under the CCP objectives is to conduct refuge-sponsored events that provide opportunities for interpretive bus or auto tours. This CD primarily expands vehicle access of the auto tour route on the Louisa Division for wildlife observation and photography. This expanded use is being proposed to meet CCP objectives, increase public understanding of refuge management and allow more

opportunities for observation of wildlife and their habitats. There is a history of controversy surrounding water level management on the Louisa Division and adjacent DNR managed land. Outreach and tours may help to further educate the public about the reasons for water level management.

Availability of Resources:

Maintaining public use facilities is part of routine refuge management duties, and staff and funding are available. No new facilities are currently planned, although some facilities may need upgrading and maintenance. The auto tour road is already maintained for refuge management access and is suitable for increased traffic. The road is generally not plowed of snow in the winter and would not be open during periods of excessive snow cover. Roads and trails have been inspected by the USFWS regional roads coordinator and the public is informed of what conditions to expect. Improvements may be made to the road as funds allow, but the existing road is adequate. Additional signage is needed, but will be a minor expense. The refuge does not have a law enforcement officer on staff to enforce stipulations or refuge regulations and will rely on the refuge zone officer located at Neil Smith NWR, the Iowa DNR conservation officer, and the Louisa County sheriff. The DNR officer and county sheriff are located nearby and can respond quickly, but will not do routine patrol unless requested. Administrative costs for administering Special Use Permits for individual access will be minimal due to the few permits that will be allowed.

Anticipated Impacts of Use:

The primary impact from wildlife observation and photography, and the auto tour, is disturbance to wildlife. This use must be managed to minimize disturbance to wildlife or habitat. Cline et al. (2007) view human-wildlife disturbances as direct or indirect and present a classification of potential visitor impacts. Direct impacts are activities that affect animal physiology, behavior, or cause death. Indirect impacts are typically from activities that degrade habitats. There can be short term or long term effects and the vulnerability of wildlife varies greatly. Impacts from wildlife observation and photography at Port Louisa NWR could fall into the classes of indirect mortality, stress, reduced use of preferred habitat, or reduced use of the refuge. Cline et al. (2007) suggest evaluating the amount of use, type and behavior of use, timing of use, resistance and resilience of the environment, and spatial distribution of use in determining recreation impacts. These factors were considered in the below assessment and stipulations are designed with these factors in mind.

Short-term impacts:

Low impact access by the public such as walking, biking, and canoeing are expected to provide minimal and short term disturbance to wildlife. These means of access have been occurring on the refuge for years and are controlled by directing most users to facilities (trails, observation decks, etc.) such that disturbance is temporary and localized. Use at these facilities leaves the majority of the refuge undisturbed. Based on anecdotal information from refuge staff, these uses have not resulted in excessive wildlife disturbance. The refuge currently receives relatively low numbers of users for these activities and they are not expected to increase substantially; however, organized group events may draw larger numbers of people. Group events may be controlled

through guided tours by refuge staff, or through Special Use Permits with time and area restrictions to minimize disturbance. Motorboats may be more disturbing to wildlife, but use on the refuge is at slow speeds due to the shallow water and small water bodies. Experience by refuge staff also shows this use to be minimally disturbing on the refuge. Most boat use occurs on the adjacent state wildlife management area and the refuge is closed to boat entry during the fall closed period. Motorboat use is not expected to increase.

Vehicle use on the auto tour route on the Louisa Division has the potential to cause the most short-term disturbance. Regular vehicle use by the public would be from January 1 until September 15, outside of the fall closed period. Vehicle use on days when the auto tour is open would be sporadic, and disturbance from vehicles is not likely to be continual or excessive. Wading birds and large numbers of shorebirds can be present on mudflats during the summer months when they are beginning to migrate, but these birds are generally farther from the road due to low water levels and are not generally disturbed by passing vehicles. Some resident wildlife such as deer, turkeys, and coyotes may be periodically disturbed. Turtles and snakes are often on the road during spring and early summer and could be hit by cars or disturbed. Signage will alert drivers to watch for and avoid reptiles and amphibians on the road. Public and school group tours would be with vans or buses to minimize number of vehicles. Stipulations on any public auto tour access are outlined below, but will be limited by time of day and number of days open.

The primary concern for short term impacts to wildlife would be to spring and fall migrating waterfowl on the Louisa auto tour. Peak bird numbers vary, but can be up to 50,000 ducks and geese, or more, in the moist soil units in the fall. Bird numbers begin to increase in September and usually peak in late November. Birds will stay until freeze-up, usually in early December. Spring numbers can also be high, but birds typically stay for a duration of only 2 to 3 weeks in early March. Migrating waterfowl are trying to conserve energy and maximize time spent feeding; therefore, the purpose of the refuge closed area is to provide foraging and resting habitat with minimal disturbance. This area has been a closed area since refuge inception and, combined with closed areas on other river refuges, makes a complex of stopover sites for migrating birds.

Waterfowl are naturally wary and susceptible to disturbance. Korschgen and Dahlgren (1992) outline some of the results of human disturbance to waterfowl which can cause birds to change feeding habits and patterns, and ultimately lose weight. A bibliography of literature on human disturbance to waterfowl also cites causes and results of disturbance, but primarily cites disturbance from boats and foot traffic with limited information on vehicle traffic (Dahlgren and Korschgen 1992). However, researchers often found that disturbance to waterfowl from various causes did modify birds' behavior and cause significant energetic consequences. DeLong (2002) cites studies that show pintails and waterbirds moved farther from auto tours as traffic increased, and migrant wildlife were more sensitive than resident wildlife. Sensitivity of species varies, but some studies show that geese, and some duck species, can become accustomed to vehicle traffic. Diving ducks may be more susceptible than dabbling ducks and large flocks of waterfowl are more susceptible than small flocks (Korschgen and Dahlgren 1992). Repeated disturbances likely cause more disruption to feeding and prolonged disturbances can cause birds to migrate elsewhere. Korschgen and Dahlgren (1992) ranked types of disturbances and found that activities

along shorelines, including traffic, were the least disturbing compared to approaching wildlife on foot (Cline et al. 2007).

Fredrickson and Reid (1988) suggest that subtle disturbance from researchers, management activities, and bird watchers can be as detrimental as more intrusive boating and hunting disturbance. Disturbance is more problematic if birds have to fly a distance to find food elsewhere, if food resources are not plentiful, or if other factors also contribute to their energetic costs. In most years when vegetation on the moist soil units is abundant, birds on the Louisa Division do not have to fly far to find foraging habitat. Ducks and geese do tend to flush easily, however, as observed during waterfowl surveys or other management activities. Refuge staff have observed that when birds are flushed due to a management activity they do not fly very far and tend to stay within the refuge moist soil management area. This trend is likely due to the adjacent open hunting area.

Korschgen and Dahlgren (1992) suggest management alternatives that can be used to minimize the effects of disturbance such as increasing food sources to compensate for energetic costs, establishing screened buffer areas, creating sanctuaries, and reducing noise and rapid movement of vehicles and machines. Most vehicle traffic on the Louisa auto tour will be outside of migratory periods. Limited vehicle use by the public during the fall with stipulations on time of day, number and type of vehicle, spacing of trips, and number of trips will greatly limit disturbance. If tours occur during the closed period, buses/vans would stop only at the Fox Pond overlook. Trips may be cancelled if weather is severe, if waterfowl food supplies are less than ideal, or other disturbances are occurring.

In summary, there is a great deal of literature on impacts of disturbance to wildlife that shows that disturbance can alter behavior (e.g. foraging time), population structure, and distribution patterns of wildlife, particularly for large congregations of waterfowl and waterbirds. It is probable that wildlife observation and photography could cause some or all of these effects to some degree on refuge wildlife. However, much of the refuge is not affected because wildlife observation and photography tend to be concentrated along roads and trails and at observation facilities, and most use is outside of migratory periods. Impacts are likely to be short term and minimal. Damage to habitat by walking is minimal and temporary. Large groups typically use established foot trails or the local roads with little or no impact on vegetation. The Horseshoe Bend Division contains significant grassland area that is not adjacent to water bodies where waterfowl congregate. Therefore, wildlife observation and photography, and other activities, could occur here without disturbance to large groups of waterfowl. There is some temporary disturbance to wildlife due to boating and human activities on trails, primarily mammals, songbirds, and wading birds. These disturbances are generally localized and would not adversely impact overall populations.

Long-term impacts:

Most impacts will be seasonal, but repeated disturbance of migrating birds could cause avoidance of the refuge over time. Limits on uses during the closed period will avoid repeated disturbances and this use will be monitored. Increased vehicle use may cause more mortality to reptiles and amphibians which could impact populations over time. Limiting vehicle use during

sensitive times, signage to avoid animals on the road, and monitoring will reduce impacts. Vehicles can cause more noise and pollution over time; however, the number of vehicles may not be large enough to be significant in this regard and the use of buses/vans for larger groups will limit the number of vehicles. More maintenance of roads may be required over time if increased traffic leads to more wear on refuge roads.

Cumulative impacts:

Other public uses in addition to wildlife observation and photography may add to wildlife disturbance. However, the majority of other uses are limited to specific areas. Other uses on the refuge are fishing from shore and from boats, vehicle access to boat ramps, hunting, and environmental education. The main refuge access on the Port road in the Louisa Division receives the most traffic from people using it to access specific facilities such as the fishing pier. The Port road is a gravel, two way access that goes past wetland, grassland, and forested habitats that is open all year. Increased traffic for the auto tour will also increase traffic on this road. Wetlands here are separated from the road by a small dike and the potential for disturbance to wetland wildlife from vehicles is minimal. There are not typically large congregations of birds or other wildlife here, although Canada geese sometimes feed in flocks in adjacent fields. Vehicles travelling the road do not appear to disturb waterfowl, but people stopping and making noise, or getting out of vehicles may disturb flocks. Most wildlife observation and photography occurs at other locations such as the hiking trail and along the auto tour route, so that fishing use does not necessarily cause cumulative impacts to wildlife observation and photography.

Environmental education programs occur up to 10 times per year, using the trail, overlooks, and auto tour. These are guided hikes or programs with classroom size groups. These are usually spring and fall programs. Any use of the auto tour in the fall would be limited by number of trips and time of day, but could add to other activities as given below.

The most potential for cumulative impacts is on the auto tour road. The road is currently used by refuge staff for management purposes with 1 to 10 trips per day, 5 to 7 days per week. Peak staff use is typically in the summer months when wetlands have been drained and moist soil manipulation is taking place. Equipment such as tractors and pumps operate in the area seasonally and occasionally. U.S. Army Corps of Engineers foresters occasionally conduct forest inventory and management activities, and other special research or monitoring occurs occasionally. Staff vehicle trips during the fall closed period are kept to a minimum for maintaining pumps and conducting waterfowl surveys. Disturbance to birds is avoided early in the morning to prevent flushing of large numbers of birds into the adjacent hunting area. There is no hunting of any species allowed on the Louisa Division.

Hunting also occurs on the Horseshoe Bend Division after December 1 and is the primary public use of the area. Hiking and fishing also occur at Horseshoe Bend, but are in low numbers due to the more primitive nature of facilities and do not generally occur at the same time as hunting. Fishing by boat and from shore is the primary public use at the Keithsburg Division. Most wildlife observation and photography is by canoe and this use is not expected to add to cumulative impacts at either of these divisions. No cumulative impacts are expected at the Big Timber Division where most use is fishing and hunting.

Thus far, wildlife observation and photography have shown no obvious environmental impacts to the refuge, its habitats, or wildlife species. Access is typically by individuals or small groups and visitation for wildlife observation and photography is estimated at 3000 - 4000 visits per year. Vehicles on the auto tour are expected to be sporadic and not in large numbers. The most likely impact would be during spring and fall migration, but the expected sporadic and limited use with stipulations should not create unreasonable impacts. Winter activities pose no impacts to waterfowl and little impact to vegetation. The winter disturbance to resident wildlife is temporary and minor.

The cumulative disturbance caused by wildlife observation and photography and all other public uses occurring on the Refuge is not expected to adversely affect fish and wildlife populations or their habitats. A number of factors including suitable site conditions, presence of facilities, access limitations, and seasonal restrictions or other regulations tend to concentrate uses. At any one time, much of the Refuge is unaffected by these uses and is free of disturbance.

Public Review and Comment:

Wildlife observation, photography, and auto tours were previously determined compatible as part of the refuge's CCP in 2004. This Compatibility Determination is similar, but expands the use of the auto tour on the Louisa Division.

A draft of this Compatibility Determination is available for public review and comment for 14 days at the Refuge Office in August, 2012. The document is also available for public review on the Refuge's webpage, through local media outlets, and notices posted at libraries and post offices.

Determination:

_____ Use is Not Compatible

_____ Use is Compatible with Following Stipulations:

Stipulations Necessary to Ensure Compatibility:

To ensure compatibility with the National Wildlife Refuge System mission and Port Louisa National Wildlife Refuge purposes, goals and objectives, the activity can only occur with the following stipulations:

General wildlife observation and photography:

1. Bicycles and vehicles are limited to designated refuge roads, public roads, and parking lots.
2. Controlled access with signs and notices will be posted providing seasonal uses and stipulations.

3. Trail and road maintenance will be completed, as necessary, to provide a safe and enjoyable experience. Trails and roads may be closed for extended periods due to flooding and associated cleanup and repairs.
4. Use will primarily be directed to public use facilities which are not in or near sensitive areas.
5. Personal portable photo or viewing blinds must be removed each day.
6. Observation decks will continue to provide wildlife viewing scopes to enhance viewing from a distance which reduces disturbance.
7. Trail layout and design will continue to ensure adequate adjacent cover for wildlife and avoid sensitive wildlife areas or habitat.
8. Interpretive presentations and products will include messages on minimizing disturbance to wildlife.
9. Auto tours will be for specified time periods daily and seasonally. The auto tour will only be open during daylight hours with occasional exceptions for entry and exit in the dark to avoid disturbing wildlife.
10. Special Use Permits for vehicle access for wildlife observation and photography will be issued on a first come, first serve basis with time and place restrictions dependent on current wildlife concentrations or other potential conflicts. Use of portable photo blinds will be encouraged.

Use of auto tour road during fall closed period and spring migration:

1. Uses on the auto tour will be conducted so as to avoid peak waterfowl concentrations in a particular season, which is typically in November.
2. Requests for foot or vehicle access for photography during the closed period will be on a first come, first served basis and will be regulated by Special Use Permit. The number of permits allowed will be minimal and limited by the refuge manager's judgment based on current waterfowl activity and potential for disturbance. Access will be limited to specific areas of the auto tour and not through the entire route. Permittees must enter in the dark before sunrise, or in the midafternoon for evening photography. They must exit after dark or between 10 am and 3 pm. Photo blinds will be encouraged.
3. Group tours during the closed period on the Louisa Division are limited to 4 total trips for the season and they must be at least 5 days apart. The number of vehicles will be limited by use of buses/vans. Any tours during the closed period must be between the hours of 10 am and 3 pm. Refuge staff will be on the bus/van. Participants must not exit the bus except at the Fox Pond overlook or areas where refuge staff directs them to. Group tours on the Horseshoe Bend Division during the closed period will be limited to 4 total trips and will primarily use trails/areas that are not adjacent to wetlands with waterfowl congregations.

4. If auto tour use during spring waterfowl migration occurs, it will be limited to buses/vans for a limited number of trips and monitored to limit disturbance. The refuge manager will limit trip number, timing, and location based on current migration activity.

5. Managers will monitor public use patterns and densities and make adjustments in timing, location, and duration as needed to limit disturbance. Uses during the closed period may be eliminated if there are additional seasonal stresses on birds such as poor food availability or severe weather.

Literature Cited

Cline, R., Sexton, N., and Stewart, S.C., 2007, A human-dimensions review of human-wildlife disturbance: a literature review of impacts, frameworks, and management solutions: U.S. Geological Survey, Open-File Report 2007-1111, 88 p.

Dahlgren, Robert B., and Carl E. Korschgen. 1992. Human disturbances of waterfowl: an annotated bibliography. U.S. Fish and Wildlife Service Resource Publication 188. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/literatr/disturb/index.htm> (Version 16JUL1997).

DeLong, A.K., 2002, Managing visitor use and disturbance of waterbirds—A literature review of impacts and mitigation measures *in* Stillwater National Wildlife Refuge Complex final environmental impact statement for the comprehensive conservation plan and boundary revision, v. 2: Portland, Oreg., prepared for Stillwater National Wildlife Refuge, U.S. Department of the Interior, Fish and Wildlife Service, Region 1, Appendix L, 114 p.

Fredrickson, L. H., and F. A. Reid. 1988. Waterfowl use of wetland complexes. Pages 1-6 in *Managing waterfowl habitats: breeding, migrating, wintering*. Gaylord Memorial Laboratory, University of Missouri, Puxico, Missouri/U.S. Department of Interior, Fish and Wildlife Service, Office of Information Transfer, 1025 Pennock Place, Suite 212, Fort Collins, Colo. 80524.

Korschgen, C.E. and R.B. Dahlgren. 1992. Human disturbances of waterfowl: causes, effects, and management. Fish and Wildlife Leaflet 13.2.15.

Mathews, G. V. T. 1982. The control of recreational disturbance. Chap. 42, pages 325-330 in D. A. Scott, ed. *Managing wetlands and their birds, a manual of wetland and waterfowl management*. Proceedings 3rd Technical Meeting on Western Palearctic Migratory Bird Management, Biologische Station Rieselfelder Münster, Federal Republic of Germany, 12-15 October 1982.

Justification:

Most uses will occur, or be directed to, existing facilities in strategic locations providing quality wildlife observation and photography opportunities while limiting wildlife and habitat disturbance. Stipulations limit frequency of disturbance and limit activity to times of day, and

times of year, that are less disturbing. Disturbance to wildlife is also limited by the size and remote nature of other parts of the Refuge. Disturbance is also generally short-term and only temporarily displaces wildlife, and adequate adjacent habitat is usually available for wildlife. Vehicle use of the auto tour will be monitored.

Wildlife observation and photography are priority public uses listed in the National Wildlife Refuge System Improvement Act. By facilitating these uses on the refuge, we will increase visitors' knowledge and appreciation of fish and wildlife, which will lead to increased public stewardship of fish and wildlife and their habitats on the refuge and in general. Increased public stewardship will support and complement the Service's actions in achieving the refuge's purposes and the mission of the National Wildlife Refuge System.

Refuge Manager: _____
Catherine J. Henry Date

Concurrence: _____
Kevin Foerster, Refuge Supervisor Date

Regional Chief: _____
Rick Schultz, Refuge Chief Date

Mandatory 10 or 15 year Re-evaluation Date: 2022