

**ENVIRONMENTAL ASSESSMENT**  
**MARAIS DES CYGNES NWR HUNT PLAN**

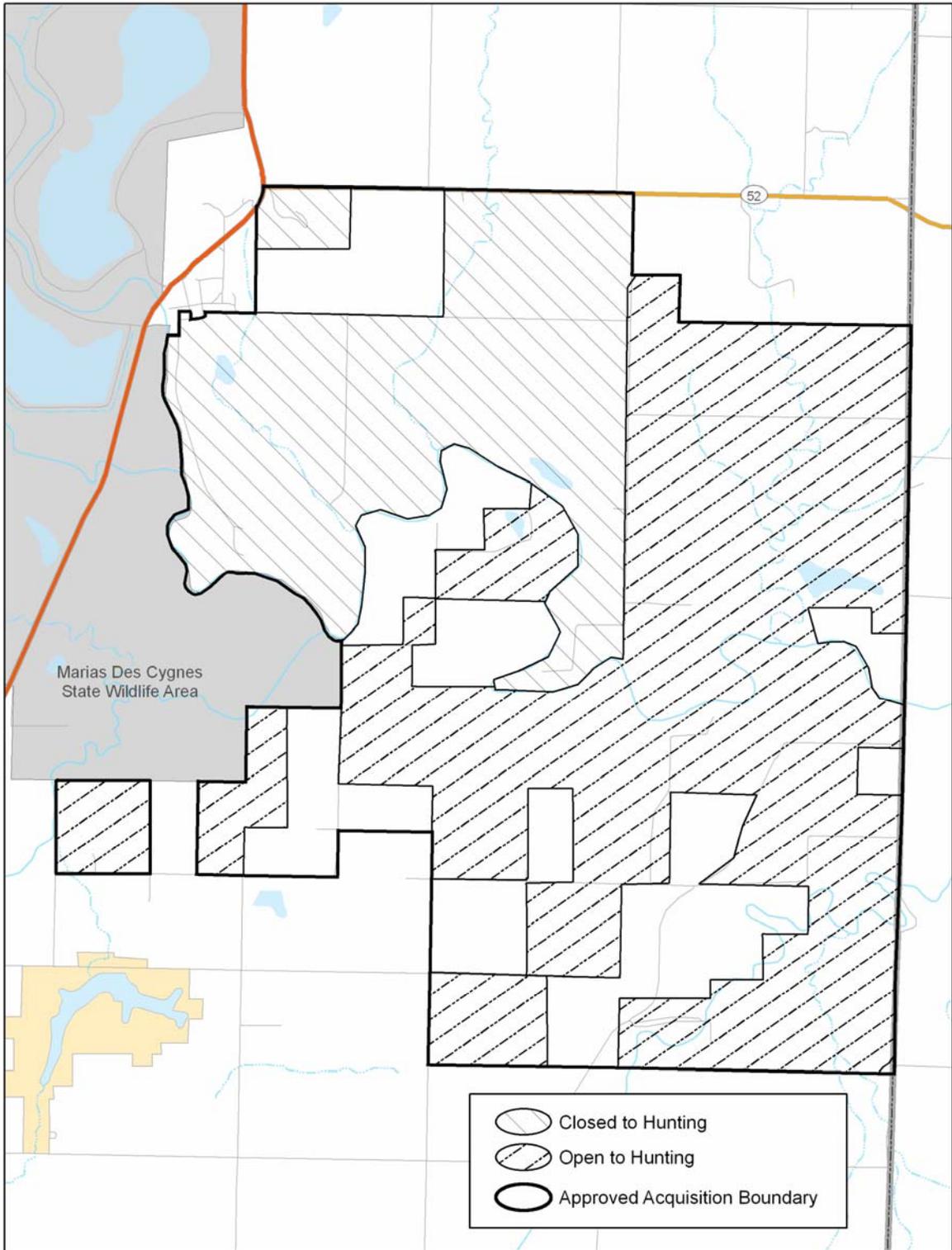
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February, 2007

**TABLE OF CONTENTS**

- I. Purpose and Need for Action..... 4
- II. Alternatives Including the Proposed Action ..... 4
- III. Affected Environment ..... 6
- IV. Environmental Consequences..... 8
- V. Consultation and Coordination with Others ..... 20
- VI. Literature References ..... 21

**Marais des Cygnes National Wildlife Refuge  
Linn County, Kansas**



## **I. PURPOSE AND NEED FOR ACTION**

In response to a 2003 lawsuit filed by the Fund for Animals, the U.S. Fish and Wildlife Service (Service) will amend or rewrite environmental assessments that describe hunting programs at four National Wildlife Refuges located in the Mountain-Prairie Region. The new environmental assessments will address the cumulative impacts of hunting at all refuges which were named in or otherwise affected by the lawsuit. This document addresses the hunting programs at Marais des Cygnes National Wildlife Refuge in Linn County, Kansas.

The proposed action is to implement a hunting program on Marais des Cygnes National Wildlife Refuge (MDC Refuge) to manage wildlife populations at optimum levels and provide recreational opportunities. The proposed hunting program will be in accordance with the current hunting plan. Implementation of the proposed action will be consistent and compatible with the Refuge Recreation Act, Refuge Administration Act, the Environmental Assessment for the Proposed Establishment of Marais des Cygnes NWR (EA), and the Marais des Cygnes NWR Comprehensive Conservation Plan (CCP).

One of the primary purposes for establishing MDC Refuge is for the restoration and protection of bottomland hardwood forests. Accomplishment of this goal will entail, in part, adequate control of the white-tailed deer population. The population currently has no significant natural predators and will rapidly become overpopulated without hunting. This would cause severe overbrowsing of many plant species and could lead to total failure of reforestation efforts as well as area crop depredation.

The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.) provides authority for the Service to manage the Refuge and its wildlife populations. In addition it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System that are to receive priority consideration in planning and management. There are six wildlife-dependent public uses: hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. It directs managers to increase recreational opportunities including hunting on National Wildlife Refuges when compatible with the purposes for which the Refuge was established and the mission of the National Wildlife Refuge System.

## **II. ALTERNATIVES INCULDING THE PROPOSED ACTION**

This section discusses the alternatives for hunting on MDC Refuge. These alternatives are the 1) Proposed Action which would allow hunting as indicated in the current MDC Refuge Sport Hunting Plan; 2) unrestricted hunting; 3)no action.

Criteria for evaluation of alternatives include:

- 1) Compatibility with: establishing legislation, NWRS Improvement Act of 1997, EA, and the CCP.
- 2) Adequate funds to administer a hunting program.
- 3) Appropriate availability of recreational hunting opportunities.

**A. Proposed Action (preferred alternative)**

The proposed action will allow the public the potential to hunt resident and migratory game species on approximately three-quarters of the existing refuge acreage. A sanctuary, or closed area, will be established on the remaining acreage. The sanctuary was chosen on the basis of potential of water management capabilities, habitat for species most likely to be impacted by disturbance and hunting, well defined boundaries, and ability to control human disturbance. The sanctuary will be closed to all public entry except on designated auto tour route or for occasional restricted deer hunts. Intensive management for waterfowl and threatened and endangered species will occur primarily in the sanctuary. During portions of the year, the sanctuary may be made available for environmental education and research projects.

The remaining portions of the Refuge will be open to hunting in accordance with statewide regulations established by the Kansas Department of Wildlife and Parks with the addition of the following special refuge regulations for MDC Refuge. Those regulations in bold below were not included in the original EA.

- Hunters must remove boats, decoys, portable blinds, and other personal property daily
- Outboard motor use is restricted to the westernmost 5 ½ miles of the Marais des Cygnes River. Only non-motorized boats and electric trolling motors are allowed on remaining waters.
- Discharge of firearms within 150 yards of any residence or other occupied building is prohibited.
- **Rimfire rifles and pistols are prohibited.**
- Centerfire rifles and pistols are prohibited.
- Only bow and arrow or shotguns smaller than 10 gauge may be possessed while hunting upland game.
- **Deer and spring turkey hunters must possess a refuge access permit.**
- Hunting over or placement of any feed salt or mineral is prohibited.
- **Portable tree stands are permitted. Tree stands left on the refuge overnight must be labeled with the hunters name and phone number visible from the ground.**
- **Tree stands may be installed no sooner than September 15 and must be removed by January 15 of each year.**
- Non-toxic shot is required for all game including turkey.

Specific objectives for the refuge are identified in both the EA and the CCP. These objectives are summarized as follows:

- Preserve and restore the bottomland hardwood forest community and preserve cultural resources.
- Provide environmental and cultural education/interpretation opportunities.
- Provide consumptive and non-consumptive wildlife-dependant recreation opportunities.

#### **B. Unrestricted Hunting**

No Sanctuaries or regulations specific to MDC Refuge would be established. This alternative would allow all of the refuge to be hunted in accordance with statewide regulations.

#### **C. No Action**

MDC Refuge would remain closed to all public use including hunting.

### **III. AFFECTED ENVIRONMENT**

MDC Refuge was established in 1992 with the initial purchase of 5,887 acres from the Pittsburg and Midway Mining Company. The Refuge is located approximately 50 miles south of Kansas City along the Marais des Cygnes River. Immediately west and adjacent to the Refuge is the 7,235 acre Marais des Cygnes Wildlife Area (MDC State Area) which is administered by the Kansas Department of Wildlife and Parks.

The Refuge acquisition boundary encompasses 9,300 acres. Several purchases of tracts, varying in size from 10 to 289 acres, have been purchased since 1993. Presently 7,343 acres are currently owned in fee title. Within the current Refuge boundary, the predominant habitat types are hardwood forest (42%), shrublands (20%), grasslands (17%), croplands (13%), and wetlands (8%).

A Comprehensive Conservation Plan (CCP) was completed for the Refuge in 1998. This plan identifies current habitat types and recommends a future landscape goal. Implementation of this plan has resulted in a reduction in the amount of cropland and conversion of cropland to native grasses and forbs. Additionally, the plan calls for an increase in the acreage of bottomland hardwood forest.

The vegetation immediately adjacent to the Marais des Cygnes River channel is primarily bottomland hardwoods. Uplands surrounding the drainage systems within the area were historically prairie grasslands with very little woody vegetation. Stands of hardwood include pecan, oak, mulberry, osage orange, hickory and maple. The hardwood bottoms are seasonally flooded by the Marais des Cygnes River and by rainfall. When flooded, the bottoms provide an important habitat type for waterfowl, especially for mallards and wood ducks. When the bottomlands are not totally

flooded, they provide habitat for deer, quail, squirrel, turkey and many other species of wildlife.

Wetlands in the area are, for the most part, the flooded timbered areas along the river. The original wetland sites were predominantly covered by hardwoods with a few open marsh sites along old oxbows where water depths prohibited woody growth. Most former seasonal wetland areas have been eliminated by conversion of bottomland hardwood wetlands to agriculture. Many of these former wetlands have been re-created by using existing levees and building other dikes to control water levels.

The Marais des Cygnes River and tributaries provide habitat for species of fish that include minnows, catfish, and sunfish. These species make up the biggest part of the fish population found in the river. The Flat Floater Mussel, formerly called the Heel-splitter Mussel, is a state-listed threatened mollusk located within and adjacent to MDC Refuge.

MDC Refuge provides habitat for a diversity of reptiles and amphibians. A total of 58 herpetological species have been recorded from either Linn or Miami counties. Even though detailed site inventories have not been completed, all of these species probably inhabit the refuge or the land adjacent to it. At least seven species of amphibians and reptiles currently on the Kansas Endangered or Threatened Species list are found at or very near MDC Refuge. These are: Central Newt, Northern Spring Peeper, Northern Green Frog, Broadhead Skink, Eastern Hognose Snake, Western Earth Snake, and Northern Redbelly Snake.

The adjacent MDC State Area typically sees 60,000 ducks and 20,000 geese a year and the extreme seasonal population has been approximately 130,000 ducks and 40,000 geese. Enhanced management within MDC Refuge would complement and add additional habitat to populations using the MDC State Area.

Bird species occurring within the area include many passerine species and neotropical migrants. Many of the birds are seasonal migrants that use the area as a resting stop. Over 300 species of birds use the area at various times of the year with at least 113 species reported as nesting.

Several federally-listed threatened and endangered bird species have been observed on or near MDC Refuge. The bald eagle is the most numerous with peak numbers between 10 and 30 between the MDC Refuge and State Area. Mead's milkweed is a threatened plant found on MDC Refuge. Two populations have been found on the Refuge. Piping plovers and least terns have been documented on the MDC State Area.

The majority of recreational uses of the area are oriented toward river recreation or hunting activities. Prior to acquisition by Pittsburg and Midway, several duck clubs were present in the area. Some clubs continue to lease land from other private owners for hunting. Several tracts are owned by individuals solely for hunting

recreation and are managed as such. Several seasonal and year-round residences, used as a base for boating, fishing, and other river-related activities, can be found around the refuge.

A variety of clubs whose theme is outdoor-oriented recreation visit the nearby MDC State Area each year for opportunities to observe waterfowl, general birding, hiking in the natural areas, or viewing wildflowers and other plant species. These clubs travel from throughout the State of Kansas and the Midwest region to enjoy the naturalness and diversity of the area.

#### **IV. ENVIRONMENTAL CONSEQUENCES**

##### **A. Proposed Action (preferred alternative)**

###### **Adverse Impacts**

- Incidental disturbance and killing of nonhunted wildlife and damage to refuge property through routine use, as with roads, or through vandalism.
- Increased disturbance and safety concerns of adjacent private landowners.
- Additional funding required for hunting program.

Incidental disturbance and killing of nonhunted species is not expected to be a significant factor. The planned hunting program and associated sanctuary are designed to minimize disturbance to migratory and wintering waterfowl, other wetland birds such as wading birds and shorebirds, and threatened and endangered species including the bald eagle. Small game hunting seasons open prior to the arrival of large concentrations of wintering waterfowl. In addition, the heaviest hunting pressure occurs at the beginning of the season.

Disturbance and safety concerns will be minimized by prohibiting the discharge of firearms within 150 yards of any dwelling and all center-fire and rim-fire rifles and pistols.

The refuge is currently open to a variety of public uses including wildlife observation, photography, and hunting. Law enforcement is therefore already necessary to enforce refuge regulations. Additional law enforcement necessary to maintain a hunting program will not require significant increases in staff time and funding. The area is currently served by two refuge officers as well as state law enforcement officers.

A brochure has been developed, in coordination with the MDC State Area, which has incorporated all pertinent aspects of the hunting/fishing program and other visitor opportunities at the refuge.

## **Beneficial Impacts**

- Both hunting and non-hunting persons are allowed to enjoy and participate in the refuge environment.
- Deer herd managed at acceptable levels.

This alternative allows much of the refuge to be used and enjoyed by the public but also provides habitat for disturbance sensitive species. It is compatible with establishing legislation, the EA, and the CCP. There is also adequate funding to administer a hunting program as proposed.

## **B. Unrestricted Hunting**

### **Adverse Impacts**

- Incidental disturbance and killing of nonhunted wildlife and damage to refuge property through routine use, as with roads, or through vandalism.
- Increased disturbance and safety concerns of adjacent private landowners.
- Additional funding required for hunting program.
- No portion of the Refuge would be available for disturbance sensitive species, or for wildlife watching, environmental education, and research without the potential for disruption by hunting.

This alternative has similar negative impacts as with the preferred alternative except that no sanctuaries or regulations specific to MDC Refuge would be established.

The absence of refuge specific regulations would result in no undisturbed roosting areas for wintering bald eagles and migrating/wintering waterfowl or undisturbed feeding areas for nesting wading birds. It would also eliminate an area where wildlife viewing, environmental education and research projects could occur without possible disturbance by hunters.

The absence of Refuge specific regulations would allow the use of center-fire and rim-fire rifles and pistols and use of lead shot for small game, as well as other items. Absence of these regulations would lessen safety in the area, allowing harvesting of wildlife at levels which may have detrimental impacts on federal and state threatened species which are unique to the area, and increase the presence of lead in the environment.

While this alternative allows for a maximization of hunting opportunities, it also compromises other objectives for which the Refuge was established and is therefore not compatible with the EA or CCP.

## **Beneficial Impacts**

- Both hunting and non-hunting persons are allowed to enjoy and participate in the refuge environment.
- Deer herd managed at acceptable levels.

## **C. No Action**

### **Adverse Impacts**

- Neither hunting nor non-hunting persons are allowed to enjoy and participate in the refuge environment.
- Deer herd not managed at acceptable levels.

### **Beneficial Impacts**

- No additional funding required for hunting program.
- No incidental disturbance and killing of nonhunted wildlife and damage to Refuge property through routine use, as with roads, or through vandalism.

MDC Refuge would be closed to all public use including hunting. The public would not be allowed to enjoy and interact with the environment and the wildlife which are a part of it. The deer population would also rise dramatically, likely resulting in crop depredation problems as well as failed attempts at bottomland hardwood reforestation.

This alternative would compromise the objective of providing consumptive wildlife-dependant recreation and is not compatible with the EA or CCP.

## **D. Cumulative Impacts Analysis**

### **Anticipated Direct and Indirect Impacts of Proposed Action on Wildlife Species.**

#### **Migratory Birds**

The U.S. Fish and Wildlife Service annually prescribe frameworks, or outer limits, for dates and times when hunting may occur and the number of birds that may be taken and possessed. These frameworks are necessary to allow State selections of season and limits for recreation and sustenance; aid Federal, State, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which States may select season dates, bag

limits, shooting hours, and other options for the each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

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

The process for adopting migratory game bird hunting regulations, located in 50 CFR part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rule making process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on "early" and "late" hunting season regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the Virgin Islands; migratory game birds other than waterfowl (e.g. dove, woodcock, etc.); and special early waterfowl seasons, such as teal or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl season not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties (USFWS 2006).

Because the Service is required to take abundance of migratory birds and other factors in to consideration, the Service undertakes a number of surveys

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

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

### Waterfowl

Waterfowl hunting is a popular activity in Kansas, particularly around MDC Refuge. The MDC State Area is one of the most popular waterfowl hunting areas in the state with annual average harvest estimates of 4,800 ducks and 200 geese (KDWP pers comm). The MDC State Area has developed wetlands for waterfowl migration, feeding, and hunting and they are intensively managed for this purpose. MDC Refuge has restored and developed some wetlands within the sanctuary area for the purpose of providing waterfowl with an undisturbed place

to rest and forage. The remaining habitat on the MDC Refuge is not as attractive to large numbers of waterfowl and therefore the number of hunters pursuing waterfowl is significantly less than on the MDC State Area. Annual Waterfowl harvest on MDC Refuge is estimated to be fewer than 100 ducks and 50 Canada geese. The average total Kansas statewide harvest from 1999 through 2005 is 199,429 ducks and 90,775 Canada geese (Kruse 2006). MDC Refuge harvest makes up 0.0005% of the duck harvest and 0.0006% of the Canada goose harvest.

### Mourning Dove

Kansas Department of Wildlife and Parks estimates statewide mourning dove harvest at 1,352,000 individuals for 2004. Harvest estimates are 4.45 doves per hunter per day (Rodgers 2006). Law enforcement officers typically check fewer than 5 dove hunters on the Refuge per year. If 5 hunters each participate for one day the total annual harvest of doves is estimated to be approximately 22 individuals on MDC Refuge.

### Coot, Rail, and Woodcock

Through discussions with law enforcement officers, working on and around MDC Refuge, it has been determined that no coot, rail, or woodcock hunters have been encountered on the Refuge since the hunting program was established in 1998. While there may be harvest of these species the Refuge is unaware of any harvest would be considered minimal (less than 5 of each species annually).

## **Resident Big Game**

### Deer

Deer hunting does not have regional population impacts due to restricted home ranges. Only local impacts to deer occur. Under the preferred alternative, hunting for deer is limited to the Kansas archery season and extended whitetail antlerless season. Centerfire rifles and pistols are prohibited. The number of deer hunters during each of these seasons would be regulated by issuing access permits to a limited number of individual hunters.

Using data collected from hunter surveys from 1998 through 2003 total average deer harvest on MDC Refuge is estimated at 23 deer per year. This estimate may be high under current management as the January antlerless deer season permittees have dropped significantly since 2003.

The Kansas Department of Wildlife and Parks has conducted a survey of archery deer hunters issued permits to hunt on MDC State Area since 1998. Archery deer hunters are required to obtain an access permit from the MDC State Area prior to hunting. These permits are unlimited and free. Since 1998 an average

of 53 permits per year, have been issued to archery deer hunters. Only 66% of the permits issued are actually used, on average, in any given year. The average hunter success is 18% resulting in an average of 6 deer harvested per year. Archery hunting is considered to be an insignificant impact on the deer population on the MDC State Area (Karrow 2006).

The Kansas Department of Wildlife and Parks estimates the total deer harvest in Deer Management Unit (DMU) 11 at 13,085 (KDWP pers comm). The percentage of deer harvested on MDC Refuge compared to total DMU harvest is 0.0018 % of the harvest.

Based on deer vehicle accident data the number of deer in Linn County has been increasing since 1981. The total number of deer car accidents from 1981 through 1985 was 61 or an average of 12.2 accidents per year. The total number of accidents from 2001 through 2005 was 553 for an average of 110.6 accidents per year (KDWP pers comm). Harvest data from throughout the state follows this same increase indicating an increasing deer population over this same time period.

### Turkey

Turkeys are non-migratory and therefore hunting only impacts the local population. Proposed turkey hunting on the Refuge would be limited to individuals possessing an access permit during the spring season but would be open in accordance with state regulations during the fall season.

Refuge estimates using hunter survey data from 1999 through 2003 has determined that, on average, 21 turkeys are harvested during the spring turkey season on MDC Refuge. Hunter success in 1999 was 36% compared to the 64% estimated success in 2006 statewide.

Kansas Department of Wildlife and Parks has determined that turkey populations are generally increasing in the southeast region over the last 10 year period. However, populations appear to be stabilizing (Pitman 2007). Harvest estimates during the 2005 and 2006 spring turkey seasons for the southeast region are 8,293 (68% hunter success) and 8,197 (64% hunter success) respectively. The estimates for the number of turkeys harvested on private land during 2005 and 2006 in the southeast region are 7,521 (91% of harvest) and 7,546 (92% of harvest) (Pitman 2007).

During the fall turkey season KDWP estimated the harvest to be 2,297 (47% hunter success) in 2004 and 1,674 (48% hunter success) for the southeast region. Estimates of harvest on private land in the southeast region during 2004 and 2005 are 1,441 (63% of harvest) and 1,052 (63% of harvest) respectively. This can be compared to 164 (7.1%) turkeys in 2004 and 79 (4.7%) in 2005 harvested during the fall season on all public land within the Southeast Region

(Pitman 2006). Fall turkey hunting on MDC Refuge, while increasing, is still not a very popular activity. The Refuge estimates 20 individuals hunting turkey during the fall season. Using statewide harvest data 10 turkeys are harvested on the MDC Refuge during the fall season annually.

## **Resident Small Game**

Due to small home ranges of all small game species only local impacts will be assessed. Ten year trends for rabbit and squirrel show stable or increasing populations in the southeast region while quail estimates are stable to declining (Pitman 2007).

### Rabbit

The Kansas Department of Wildlife and Parks estimate the rabbit population in the southeast region to be stable over the past 10 years (Pitman 2007). While the rabbit season is open year around the most popular time to hunt is during the fall and winter months. Statewide harvest estimates for rabbits are 1.68 per hunter per day with a total harvest of 149,000 (Rodgers 2006).

Refuge estimates, based on inquiries and law enforcement compliance checks, of numbers of rabbit hunters on MDC Refuge to be between 5 and 10 per year. KDWP estimates the annual harvest per hunter per season to be 6.4 rabbits in 2004 (Rodgers 2006). Therefore the harvest estimate for rabbits harvested on MDC Refuge is between 32 and 64. This would constitute 0.0002% - 0.0004% of the statewide harvest of rabbits.

### Squirrel

The Kansas Department of Wildlife and Parks estimate the population of squirrels to be significantly increasing over the past 10 year period. The annual increase in the southeast region between 2005 and 2006 was 94.6%, the highest increase in the state (Pitman 2007). Harvest is estimated at 6.92 squirrels per hunter per year with a total of 115,000 squirrels harvested statewide (Rodgers 2006). Refuge estimates of hunters pursuing squirrels, based on inquiries and law enforcement compliance checks, is 10. This would mean a maximum of 70 squirrels per year harvested of MDC Refuge. This estimate is less than 0.001 of the total statewide squirrel harvest.

Hunting pressure for squirrels is low on the Refuge. This may be due to refuge regulations prohibiting rimfire rifles and pistols on the Refuge. Several individuals have commented that they won't hunt squirrels with a shotgun. The refuge also plans on reforesting over 700 acres of hardwood forest. This reforestation may result in more habitat being available for squirrels and thus and increase in population.

## Quail

Quail populations throughout eastern Kansas have shown a stable to declining trend in eastern Kansas over the past 10 years. This decline can probably be attributed to the expansion of forest habitat (as seen in turkey and squirrel increases) less preferred by bobwhites. The total statewide harvest estimate for quail in 2005 was 629,000. This is estimated at 6.78 birds per hunter per season (Rodgers 2006). Using this data, quail harvest on MDC Refuge is estimated at 68 quail per season. This estimate is probably high because during law enforcement compliance checks very few quail are seen harvested. Even using this estimate the 68 quail harvested from MDC Refuge per season account for less than 0.0001% of the total statewide harvest.

## **Non-hunted Wildlife**

Non-hunted wildlife includes all species that could be found on MDC Refuge but are not listed above. These species range from herons and egrets to reptiles to furbearing mammals. For the majority of these species ranges are limited and any impacts would be on a local level.

Disturbance to non-hunted migratory birds could have local, regional, and flyway effects. Disturbance to non-hunted migratory birds should not have cumulative negative impacts for the following reasons. While the hunting season for rabbit and spring turkey coincide with the nesting season of many of these species hunting pressure is low. The Refuge limits the number of spring turkey hunters and rabbit hunting is not a popular activity this time of year. Disturbance to migratory and wintering activities may occur. However, approximately 25 percent of the Refuge would remain closed to all activities. Disturbance to non-hunted species is not expected to be greater than with other non-consumptive uses. Disturbance to non-hunted wildlife would be the most likely negative cumulative impact. However, disturbance would be minimized by limiting the number of hunters during the most popular hunting seasons (spring turkey, archery and extended antlerless deer) and having approximately 25 percent of the refuge closed to all public uses. The refuge has estimated peak use of the refuge to be 35 users on one day. This means there would be 1 user per 142 acres. This estimate includes both hunters and non-consumptive users. These peaks are typically during the first two weeks of the spring turkey season and then again in the month of November. Vehicles are restricted to roads and parking lots and the harassment or taking of any wildlife other than game species open on the Refuge is prohibited.

## **Endangered Species**

The prominent endangered and threatened species that can be found on the refuge are Mead's milkweed and bald eagle. While piping plover and least terns have been documented on the MDC State Area these sightings are rare. Mead's

milkweed can be found occasionally in two populations on MDC Refuge. Hunting is not anticipated to have any negligible impacts on Mead's milkweed.

Bald eagles use the Refuge during migration and wintering. Peak numbers usually occur in January. It is not uncommon to see roosting bald eagles along the Marais des Cygnes River during the winter months. While the hunting season is still open during a portion of this time period, numbers of hunters are low and are not anticipated to have negative impacts on the bald eagle.

Hunters encountering least tern and piping plover would be rare. The most desirable habitat for these species is found in the sanctuary area.

Refer to the Section 7 Evaluation for the Sport Hunting Plan on MDC Refuge for more information.

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

#### **Wildlife-Dependent Recreation**

Public use for all wildlife-dependent recreation can be expected to increase over time. As these uses increase, programs will need to be adjusted to minimize or prevent conflict between different user groups. The Refuge currently restricts the number of hunters for the most popular hunting seasons to limit negative interactions between user groups and non-hunted wildlife.

Hunting is the most popular public use on MDC Refuge. Hunting is used to keep deer and other resident wildlife within the habitat's carrying capacity to prevent overutilization of Refuge habitats. Impacts to Refuge habitat would be positive.

By establishing the sanctuary area disturbance to wildlife within the area would be minimized. This area will serve as a place for wintering waterfowl, migrating bald eagles and other wildlife to rest and feed without disturbance.

#### **Refuge Facilities**

Impacts to Refuge facilities due to hunting are expected to be minimal. The facilities utilized most by hunters are parking lots. These parking lots may experience some minimal short term damage under wet conditions. Similar damage would occur without hunting as these parking lots are also used for other public use activities.

Vehicle traffic will not be allowed on interior refuge roads. Access along these routes will be by foot traffic only. No damage to refuge roads is anticipated.

MDC Refuge has one seasonal refuge bunkhouse and barn located within the area open to public hunting. A small area surrounding these facilities has been closed to all hunting activities as a safety zone and deterrent for vandalism. All other buildings are located within the sanctuary area and will not be affected.

### **Cultural Resources**

The body of federal historic preservation laws has grown dramatically since the enactment of the Antiquities Act of 1906. Several themes recur in these laws, their promulgating regulations, and more recent Executive Orders. They include: 1) each agency is to systematically inventory the historic properties on their holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; 2) federal agencies are to consider the impacts to cultural resources during the agencies management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes, in addressing how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The U.S. Fish and Wildlife Service, like other federal agencies, are legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in 614 FW 1-5 and 126 FW 1-3. In the FWS's Mountain-Prairie Region, the cultural resource review and compliance process is initiated by contacting the Regional Historic Preservation Officer/Regional Archaeologist (RHPO). The RHPO will determine whether the proposed undertaking has the potential to impact cultural resources, identify the "area of potential effect," determine the appropriate level of scientific investigation necessary to ensure legal compliance, and initiates consultation with the pertinent State Historic Preservation Office (SHPO) and federally recognized Tribes.

Twenty-two buildings on MDC Refuge have been submitted to the State Historical Preservation Officer to check on eligibility for inclusion on the National Historic Register. None of these buildings have met the criteria for inclusion on the Register.

### **Anticipated Impacts of Proposed Hunt on Refuge Environment and Community.**

MDC Refuge lies entirely within Linn County, Kansas. Linn County is a rural county with a 2005 population estimate of 9,914. This is a 3.6% increase since 2000. According to the 2000 census the employment rate is 58.3%. The average per capita income was \$17,009 in 1999 (US Census Bureau 2007).

A study looking at impacts of National Wildlife Refuges impact on local economies was conducted in 2004. Sequoyah NWR, located south of MDC Refuge in Oklahoma, and Squaw Creek NWR, located north of MDC Refuge in Missouri, were part of the study. The study showed that big and small game hunting had a positive local economic impact in the area surrounding the Refuges (USFWS 2005).

When the hunt plan was written in 1997 the public did have concerns about trespass and personal safety on private lands adjacent to MDC Refuge. The Refuge addressed trespass concerns by posting the Refuge boundary and developing a brochure showing Refuge and private lands. Both State and Federal law enforcement officers patrol the refuge throughout the year and make frequent contacts with visitors.

Safety was and is still a concern to adjacent private landowners and the visiting public. By restricting the number of hunters during the most popular hunting seasons and the type of firearms being used the Refuge has mitigated most of these concerns. Also, Refuge special regulations prohibit the discharge of firearms within 150 yards of any occupied building or structure and three small areas have been closed to hunting because of their proximity to private and government residences.

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

Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, viewed as a whole, become substantial over time. The existing hunt plan has been designed so as to be sustainable through time given relatively stable conditions. Changes in refuge conditions, such as sizeable increases in refuge acreage or public use, are likely to change the anticipated impacts of the current plan and would trigger a new hunt planning and assessment process.

MDC Refuge has been open to hunting, in accordance with the Refuge's Sport Hunting Plan, and all other public uses since 1998. Small changes have been made in the Refuge specific regulations since that time to minimize impacts to wildlife and the refuge environment and increase public safety both on and off refuge lands.

The Refuge does not anticipate any significant changes to the hunting program in the future. However, there are currently over 2,000 acres of inholdings within the refuge acquisition boundary. Many of these inholdings are within the public use area of the refuge and may, as appropriate, be opened to hunting in accordance

with the Sport Hunting Plan as they are acquired. Those inholdings that lie within the sanctuary area will be closed to all public uses. Acquisition of these inholdings is not anticipated to increase harvest, or hunting pressure on MDC Refuge.

### **Anticipated Impacts if Individual Hunts are Allowed to Accumulate**

National Wildlife Refuges, including MDC Refuge, conduct hunting programs within the framework of State and Federal regulations. By either limiting the number of hunters and types of equipment allowed, MDC Refuge is more restrictive than the state during many of the hunting seasons. Season dates and bag limits follow state regulations. By maintaining hunting regulations that are as, or more, restrictive than the State, individual refuges ensure that they are maintaining seasons which are supportive of management on a regional basis.

## **V. Consultation and Coordination with Others**

When the Sport Hunting Plan for Marais des Cygnes Refuge was developed the Refuge worked closely with KDWP and the MDC Wildlife Area. When the Sport Hunting Plan was developed in 1998, KDWP supported the plan. The refuge continues to work closely with the MDC Wildlife Area to complement management of each area. KDWP also provided much of the harvest and population estimates for this document.

## VI. Literature References

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