

**U.S. Department of the Interior  
Fish and Wildlife Service  
Environmental Assessment  
for  
Cypress Creek National Wildlife Refuge  
2015 Furbearer Management Plan**

**Regional Director  
Region 3, U. S. Fish and Wildlife Service  
5600 American Blvd West, Suite 990  
Bloomington, MN 55437-1458  
Phone: 612-713-5360**

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**Abstract:** The U.S. Fish and Wildlife Service (Service) proposes to implement a Furbearer Management Plan on Cypress Creek National Wildlife Refuge (Refuge) that is compatible with the purpose of the Refuge. This Environmental Assessment (EA) evaluates three alternatives for trapping resident game on the Refuge.

This environmental assessment presents three possible alternatives: (A) Maintain existing Refuge Furbearer Management Program by limiting trapping to the issuance of nuisance Special Use Permits (SUPs) only (No Action). (B) Open the Refuge for recreational trapping that follows state regulations and season dates. (C) Open the Refuge to trapping of select species for management purposes only during the state trapping season (Preferred Alternative).

Alternative (C) is the preferred alternative based on known furbearer population management needs required to meet wildlife management and facility maintenance goals on the Refuge. Alternative C would result in maintaining target species' populations at lower levels through a furbearer management program which will help to minimize damage to Refuge habitat and decrease flooding related issues. Alternative C would also provide Refuge staff the capability to actively manage raccoon populations and in turn, offset impacts on migratory bird populations using the Refuge.

The National Wildlife Refuge System Improvement Act and the Fish and Wildlife Service's policy recognize trapping as a legitimate, traditional use of renewable natural resources; and permit trapping on a national wildlife refuge when it is compatible with the purposes for which the refuge was established and is permitted. The general broad objectives of the trapping program are:

- A. Safeguard Refuge infrastructure critical to habitat for fish and wildlife by reducing populations of beaver, muskrat, and raccoon
- B. Provide a traditional recreational use of Refuge resources while meeting the purposes of the Refuge and mission of the Refuge System.
- C. Provide quality trapping opportunities that minimize conflict with other public use activities.

For further information about the environmental assessment, please contact:  
Mike Brown, Refuge Manager, Cypress Creek National Wildlife Refuge  
137 Rustic Campus Road  
Ullin, IL 62992  
618-634-2231

*Responsible Agency and Official:*

Thomas O. Melius, Regional Director, U.S. Fish & Wildlife Service  
5600 American Blvd. West, Suite 990  
Bloomington, MN 55437

## TABLE OF CONTENTS

Chapter 1 PURPOSE AND NEED FOR ACTION .....	4
Chapter 2 PROPOSED ACTION AND THE ALTERNATIVES.....	7
Chapter 3 AFFECTED ENVIRONMENT.....	10
Chapter 4 ENVIRONMENTAL CONSEQUENCES.....	17
Chapter 5 REGULATORY COMPLIANCE.....	27
Chapter 6 LIST OF PREPARERS.....	27
Chapter 7 APPROVALS.....	28
Chapter 8 CONSULTATION AND COORDINATION WITH OTHERS.....	29
Chapter 9 PUBLIC COMMENT ON DRAFT DOCUMENTS.....	29
Chapter 10 REFERENCES CITED.....	30
APPENDIX A: Boundaries of Refuge and Joint Venture Partners.....	33
APPENDIX B: Wildlife Management Units and Furbearer Management Zones.....	34
APPENDIX C: Section 7.....	35

### LIST OF TABLES

TABLE 1: Alternatives Action Table .....	9
TABLE 2: Land Cover Acres within Cypress Creek NWR Management Units (Refuge Ownership) .....	11
TABLE 3: Furbearing Mammals found on Cypress Creek NWR .....	15
TABLE 4: Summary of Environmental Consequences .....	25

# CHAPTER 1: PURPOSE AND NEED FOR ACTION

## 1.1 PURPOSE

This Environmental Assessment (EA) for a Furbearer Management Plan for Cypress Creek National Wildlife Refuge evaluates three possible alternatives for opening and administering a trapping program on the Refuge. The Plan will guide management of furbearer populations and trapping regulations for the next ten years. A review will be completed after 5 years.

## 1.2 NEED

Furbearer trapping has been a traditional use throughout southern Illinois and is an important element of wildlife management programs within the Illinois Department of Natural Resources (IDNR) as well as the National Wildlife Refuge system. Today more than half of all wildlife refuges allow trapping for reasons that include habitat management, facility protection or for recreational, commercial or subsistence opportunities (USFWS, 1997).

The Refuge currently allows the take of nuisance animals throughout the year in an effort to protect Refuge infrastructure and adjoining private property; this action is supported in the establishing EA for the Refuge through the following statement:

*Protection, restoration, and management activities on the proposed Refuge could not legally contribute to flooding on private property where the Service has not acquired the appropriate interest (DOI, 1990).*

The Refuge's position to maintain drainage and not impede flow has been dealt with on a case by case basis when a problem arises. Through an active furbearer management program, a preventative approach would replace the reactive efforts used to deal with resource or private property issues.

In the past, removal methods of nuisance animals (primarily beaver and muskrat) have included trapping completed by Refuge staff and partner resource agency staff. Furbearer trapping on the Refuge is considered an important management tool in meeting refuge goals and objectives. Wetland habitats, dike, levee and water control structure maintenance, as well as migratory bird management are influenced by furbearer management. The furbearer management program conducted on the Refuge is designed to reduce flooding caused by beaver dams, damage to dikes and levees caused by beavers and muskrats and predation of migratory bird nests caused by raccoons, as well as offer a recreation opportunity during the state's trapping season dates.

### **1.3 DECISIONS THAT NEED TO BE MADE**

This Environmental Assessment is prepared to evaluate the environmental consequences of administering a trapping program on Cypress Creek National Wildlife Refuge. Three alternatives are presented in this document:

(A) Maintain the existing Refuge Furbearer Management Program by limiting trapping of beaver only by Refuge staff, United States Department of Agriculture (USDA) Staff, and very limited SUP's (No Action).

(B) Open the Refuge for recreational trapping that follows state regulations and season dates.

(C) Open the Refuge to trapping select species (beaver, muskrat, raccoon) for management purposes only during the state trapping season (Preferred Alternative).

The Service's Regional Director is the official responsible for determining the action to be taken in the proposal by choosing an alternative. The Regional Director will also determine whether this EA is adequate to support a Finding of No Significant Impact decision, or whether the preparation of an Environmental Impact Statement is needed.

### **1.4 BACKGROUND**

The Refuge was established on June 26, 1990 under the Emergency Wetlands Resources Act of 1986 (16 U.S.C. 3901 b, 100Stat.3583, PL 99 645). The Refuge is located in southern Illinois approximately 7 miles north of the confluence of the Ohio and Mississippi Rivers. It is situated along forty miles of the Cache River and its tributaries in Alexander, Johnson, Pulaski and Union counties.

The Refuge is also part of a larger boundary delineated by the Cache River Wetlands Joint Venture Project; this includes 60,000 acres shared by the Refuge, IDNR (at Cache River State Natural Area and Horseshoe Lake Fish & Wildlife Area), and The Nature Conservancy (Appendix A). The Refuge acquisition boundary encompasses 35,529 acres along the Cache River from Highway 37 then west and south to Mound City, IL. This area is primarily rural and most of the land that is not forested is used for agriculture. Land for inclusion in the Refuge is acquired from willing sellers on a continual basis. Approximately 16,000 acres within the acquisition boundary have been purchased.

Cypress Creek National Wildlife Refuge's purpose and importance to migratory birds, particularly waterfowl, was further described in the U.S. Department of the Interior's Environmental Assessment for the proposed establishment of the Refuge (DOI, 1990):

*1) To protect, restore and manage wetlands and bottomland forest habitats in support of the North American Waterfowl Management Plan; 2) to provide resting, nesting, feeding and wintering habitat for waterfowl and other migratory birds; 3) to protect endangered and threatened species and their habitats; 4) to provide for biodiversity; 5) to protect a National Natural Landmark, 6) and to increase public opportunities for compatible recreation and environmental education.*

The Furbearer Management program directly supports the protection, restoration and management of native habitats for waterfowl and associated wildlife species; biological diversity and resource infrastructure; as well as providing a compatible recreation opportunity.

The Refuge was also established as a component of the New Madrid Wetland project which is part of the North American Waterfowl Management Plan. The Refuge provides important habitat for not only waterfowl, but also for a variety of wetland dependent shorebirds, wading birds and other wildlife. The Cache River basin has traditionally been a waterfowl breeding, wintering and migration stop-over area in the Mississippi flyway. The Cache River – Cypress Creek Wetlands were designated as “wetlands of international importance – especially as waterfowl habitat” in 1996 under terms of the Ramsar Convention on wetlands by UNESCO (United Nations Educational, Scientific, and Cultural Organization).

The area includes a diversity of habitats from floodplain and upland forests, to deep water swamps and shallow wetlands, to agricultural lands. These areas support a diversity of resident and migratory wildlife including 47 species of mammals. A few of the resident species attracted to river habitats include mink, muskrat, raccoon, river otter, opossums, coyotes, bobcats and beaver; some of which are the object of the furbearer management program. The Refuge is proposing a furbearer management program that is planned and operated with the Refuge's primary goals as the guiding principles; and directly supports the protection, restoration and management of native habitats for waterfowl and associated wildlife species; biological diversity and resource infrastructure while providing a compatible recreational opportunity.

## **CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES**

The Service evaluated three possible alternatives: (A) Maintain the existing Refuge Furbearer Management Program by limiting trapping to the issuance of nuisance SUPs only (No Action) (B) Open the Refuge for recreational trapping that follows state regulations and season dates (C) Open the Refuge to trapping select species (beaver, muskrat, raccoon) for management purposes only during the state trapping season (Preferred Alternative).

### **2.1 ALTERNATIVES CONSIDERED BUT NOT DEVELOPED**

**2.1.1** There was no further analysis conducted for the following alternative.

#### **2.1.2 Alternative B - Open the Refuge for recreational trapping that follows state regulations and season dates**

This alternative would allow trapping of all of the 13 furbearing mammals found within the Refuge boundary. This alternative was not carried forward for further analysis for the following reason: Service policy permits trapping of furbearing animals on Refuges where it contributes to, or is compatible with the management objectives of the Refuge (7 RM 15.13). Unlike the harvest of raccoons, a predatory species linked to the well-being of migratory and/or ground nesting birds, or the harvest of herbivores (i.e. muskrat or beaver) to meet habitat objectives and protect infrastructure, there is no pressing biological or management need for a larger harvest of furbearing mammals on the Refuge.

### **2.2 ALTERNATIVE DEVELOPED FOR DETAILED ANALYSIS**

Two alternatives were carried forward for detailed analysis.

#### **2.2.1 Alternative A - Maintain the existing Refuge Furbearer Management Program by limiting trapping to the issuance of nuisance SUPs only (No Action).**

This alternative would maintain the existing Refuge trapping program by limiting trapping to the take of nuisance beavers through the issuance of a Special Use Permit in order to protect Refuge infrastructure and adjoining private lands. Under this alternative, there would be no change to current regulations or management strategies employed on the Refuge.

### **2.2.2 Alternative C – Open the Refuge to trapping select species for management purposes only during the state trapping season (Preferred Alternative).**

This alternative would allow the Refuge to implement a Furbearer Management Plan, allowing the trapping only of beaver, muskrat, and raccoon, using recreational trappers, for resource management purposes. Trapping season dates, methods, and other regulations on the Refuge would generally follow regulations established for the state; however, this activity will require a Special Use Permit.

### **2.2.3 ALTERNATIVE ACTION TABLE**

Table 1 summarizes the actions that are anticipated under each alternative. Detailed discussion of the environmental impacts of each alternative can be found in Section 4.

**TABLE 1:** Alternatives Action Table

<b>Action</b>	<b>Alternative A (No Action)</b> Maintain existing Furbearer Management Program by limiting trapping to nuisance beavers only through the issuance of an SUP.	<b>Alternative C (Preferred Alternative)</b> Open the Refuge to trapping beaver, muskrat, and raccoon for management purposes only during the state trapping season through the issuance of an SUP.
Species that will be trapped	Beaver	Raccoon, beaver and muskrat
Compatible with Refuge goals and purpose	Yes. Provides limited furbearer management on a nuisance basis	Yes. Provides a broader scope of furbearer management to safeguard Refuge resources. Additionally, it provides a recreational opportunity for the public.
Will trapping be in conflict with other wildlife dependent recreational activities?	No. Conflicts possible, but deemed minimal. If conflicts exist, Refuge Manager would be able to cease trapping to alleviate public safety concerns.	No. Certain regulations are proposed to reduce conflicts (i.e. traps must be set at least 250 yards from a blind to avoid conflicts between hunters and trappers). Conflicts are still possible, but deemed minimal. If conflicts exist, Refuge manager would be able to cease trapping to alleviate public safety concerns.
Meeting needs identified by public	No. The current trapping program does not meet needs identified by the public for recreational interests.	Yes. Provides trapping opportunities that will address public needs by enabling a broader scope of furbearer management to safeguard the Refuge resources while providing a recreational opportunity to the public.

## **CHAPTER 3: AFFECTED ENVIRONMENT**

### **3.1 INTRODUCTION**

This chapter describes the physical, biological, cultural, and socioeconomic resources most likely affected by expanding the Refuge furbearer management program.

### **3.2 PHYSICAL CHARACTERISTICS**

The physical environment of the Refuge and associated Cache River watershed includes four physiographic regions (soils, topography, and climate) and explains much about the biological diversity of the region. This phenomenon is a result of a number of physical factors (elevation and convergence of two major rivers, diversity of soil and bedrock, geologic uplifts, faulting, glacial history and ancient Paleozoic periods of flooding) that created a diversity of natural communities (IDNR, 1997). The three major physiographic provinces within the Refuge include the Interior Low Plateau to the north, the Upper East Gulf Coastal Plain to the south, and the Mississippi River Alluvial Plain to the southwest. Cypress Creek National Wildlife Refuge is found primarily within the Gulf Coastal province and formerly included extensive stands of floodplain forest and cypress-tupelo swamps.

The elevations in the Cache River watershed range from 890 feet mean sea level (msl) at the northernmost portion of the watershed to a low of 280 feet msl at the Mississippi River. The northern portion of Refuge (portions of Johnson, Union, and Pulaski Counties) includes bluffs and hills that reach 510 feet msl overlooking the Cache River floodplain. The topography can be rugged with steep ravines and some exposed rock. The Refuge is bounded on the west (Union and Alexander counties) by the Ozark uplift characterized by loose gravel and cobble and drains quickly into the river valleys. The majority of Refuge is encompassed by the Coastal plain (Alexander and Pulaski counties); while mostly flat, some relief, small knolls and low gently rising ridges are not uncommon throughout the broad alluvial floodplain.

### **3.3 BIOLOGICAL ENVIRONMENT**

#### **3.3.1 Habitat**

The Refuge is located in southern Illinois approximately seven miles north of the confluence of the Ohio and Mississippi Rivers. It is situated along forty miles of the Cache River and its tributaries in Alexander, Johnson, Pulaski and Union counties. This area is primarily rural and most of the land that is not forested is used for agriculture.

Approximately 16,000 acres within the Refuge acquisition boundary have been purchased. The Refuge is divided into eight management units that differ in soils, hydrology, topography, land use and vegetative cover. The following table summarizes total acreage and land cover within each management unit in the acreage in Refuge ownership.

**TABLE 2:** Land Cover Acres within Cypress Creek National Wildlife Refuge Management Units

Management Unit	Urban	Forested	Wetlands	Water	Grass	Ag	Restored	TOTAL
Cypress Creek	2	863	208	12	353	450	1611	<b>3499</b>
Limekiln	0	142	42	10	163	351	992	<b>1700</b>
Cache River	2	148	168	72	37	27	751	<b>1205</b>
Butter Ridge	17	484	192	54	314	751	469	<b>2281</b>
Indian Creek	2	393	210	42	151	126	35	<b>959</b>
Sandy Creek	2	983	289	32	222	277	0	<b>1805</b>
Lake Creek	0	1650	185	72	378	531	264	<b>3080</b>
Old Channel	2	203	74	101	37	596	25	<b>1038</b>
<b>TOTAL</b>	<b>27</b>	<b>4866</b>	<b>1368</b>	<b>395</b>	<b>1655</b>	<b>3109</b>	<b>4147</b>	<b>15,567</b>

### 3.3.2 Threatened and Endangered Species

The Refuge follows recovery plan guidelines for the management of the following federally threatened and endangered species. These species may be present in the vicinity of the Refuge proposed for trapping and are listed below:

#### **Indiana Bat** (*Myotis sodalis*)

The range of the endangered Indiana bat includes most of the upper Midwestern United States from Oklahoma, Iowa, and Wisconsin east to Vermont and south to northwestern Florida. The distribution of this species is greatest in cave-rich areas where there is suitable forested habitat. During the summer, the Indiana bat disperses over their entire range selecting old growth bottomland hardwood forests and riparian areas for feeding and reproduction (Illinois Natural History Survey, 2004). Roosting bats and maternity colonies occur under loose bark of dead standing trees and also under large bark scales on live shagbark hickory (*Carya ovata*), kingnut hickory (*Carya laciniosa*) and water hickory (*Carya aquata*) trees, or other trees with loose, shaggy bark. Indiana Bats have been documented on the Refuge through mist net and acoustic surveys primarily between April and November.

**Gray Bat** (*Myotis grisecens*)

The gray bat is listed as endangered and occurs in Alexander, Johnson, Pope, and Pulaski counties where it inhabits caves both during summer and winter. This species forages over rivers and reservoirs adjacent to bottomland forested tracts (Illinois Natural History Survey, 2004).

**Northern Long-eared bat** (*Myotis septentrionalis*)

The Northern Long-eared bat has been listed as threatened and is known to occur in Union and Pulaski counties. The species has a broad range that expands from Maine to North Carolina on the Atlantic Coast, westward to eastern Oklahoma and north through the Dakotas, even reaching into eastern Montana and Wyoming. In Canada it is found from the Atlantic Coast westward to the southern Yukon Territory and eastern British Columbia. Northern long-eared bats spend winter hibernating in caves and abandoned mines. During summer, they roost alone or in small colonies underneath bark or in cavities or crevices of both live trees and snags. Northern Long-eared bats have been documented on the Refuge through mist net surveys and acoustic surveys

**Interior Least Tern** (*Sterna antillarum*)

The Interior Least Tern is listed as endangered. The historic breeding range includes the Mississippi River system (DOI 1990). Surveys of the Mississippi River have found the majority of breeding colonies occur south of Cairo, IL. However, breeding birds have been found in Scott and Mississippi counties. The characteristics required for suitable breeding grounds include “bare alluvial islands or sandbars”, food, and appropriate water regime. Least terns arrive at breeding grounds in late April and the breeding season is complete by early September (USFWS 2012). Least Terns are occasionally observed foraging on the Refuge.

**Pallid Sturgeon** (*Scaphirhynchus albus*)

The Pallid Sturgeon is listed as endangered. These fish are found in the Mississippi River downstream of its confluence with the Missouri River. Pallid Sturgeon forage for fish along the bottom of large rivers. Pallid Sturgeon are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River. Recent tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River. Pallid sturgeons have not been documented within the Refuge waters.

**Orange footed pimpleback pearl mussel** (*Plethobasis cooperianus*)

The orange footed pimpleback pearl mussel has been listed as endangered. This species prefers clean, fast-flowing water in silt-free rubble, gravel or sand of medium to

large rivers. It buries itself in sand or gravel in water as deep as 29 feet. Only the edge of its shell and its feeding siphons are exposed. This mussel has not been documented on the Refuge.

**Sheepnose mussel (*Plethobasus cyphus*)**

The Sheepnose mussel has been listed as endangered. This mussel lives in larger rivers and streams where they are usually found in shallow areas with moderate to swift currents that flow over coarse sand and gravel. However, they have also been found in areas of mud, cobble and boulders, and in large rivers they may be found in deep runs. This mussel has not been documented on the Refuge.

**Rabbitsfoot mussel (*Quadrula cylindrica*)** The Rabbitsfoot mussel has been listed as threatened. This mussel is a riverine mussel requiring clear streams with gravel substrate and moderate, stable currents. This mussel has not been documented on the Refuge.

### **3.3.3 Other Wildlife Species**

The Refuge and associated Cache River wetlands are known for diversity and outstanding wildlife values. Waterfowl, shorebirds, wading birds, raptors, songbirds, reptiles, amphibians, furbearers and other mammals use the area (Illinois Department of Natural Resources, 1997).

#### **Birds**

The Cypress Creek/Cache River basin which is cradled between the Ohio and Mississippi Rivers provides an important bird migration corridor within North America. In 1994 the area was designated a "Wetland of International Importance" by the Ramsar Convention and an "Important Bird Area" by Audubon. Nearly 250 species of resident and migratory bird species use the Refuge throughout the year. Migration counts number in the thousands and include ducks, geese, shorebirds, wading birds, and countless other avian species. Eight waterfowl species that are commonly observed on the Refuge that are USFWS Region 3 Conservation Priority species (USFWS 2002) include Wood Duck (*Aix sponsa*), Black Duck (*Anas rubripes*), Mallard (*Anas platyrhynchos*), Blue-Wing Teal (*Anas discors*), Northern Pintail (*Anas acuta*), Canvasback (*Aythya valisineria*), Lesser Scaup (*Aythya affinis*), and Canada Goose (*Branta canadensis*). Thousands of ducks and geese migrate through and winter in the area (September-March). The Refuge provides habitat for approximately 26 species of waterfowl throughout the migration and wintering portion of their annual cycle. The forested wetlands of the Refuge also provide valuable breeding habitat for cavity-nesting ducks such as Wood Ducks and Hooded Mergansers. Wide arrays of other avian species use the Refuge due to the diversity of habitats. The

Bald Eagle (*Haliaeetus leucocephalus*) is a fairly common migrant and winter resident along the Ohio, Mississippi and Cache Rivers, and 3 pairs of birds are currently nesting on the Refuge. Even though it is de-listed, the species is still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act (USFWS 2012). State listed endangered species which often use the Refuge include Northern Harrier (*Circus cyaneus*), Little Blue Heron (*Egretta caerulea*), and Barn Owl. (*Tyto alba*)

The Refuge and the surrounding watershed provide important breeding and migration habitat for approximately 150 forest song bird species. Forest breeding bird surveys and research on nest success conducted on the Refuge and the surrounding Cache River watershed since 1994 give invaluable insight into forest bird habitat suitability, and results of these studies have suggested that the Refuge and the surrounding forests of the Cache River Watershed may make significant contributions to regional populations of forest song birds (Hoover 1995, 2006, Marini et al. 1995). This area is an important migration stopover for shorebirds due to its strategic location between major shorebird flyways along the Ohio and Mississippi Rivers. The interior linear wetland systems of the Refuge and the surrounding Cache River wetlands have the potential to serve as a valuable link between southern non-breeding areas and northern breeding grounds of migrant populations of many Midwestern shorebird species (Hands, 1991, Skagen et al. 1999). The Refuge provides habitat for approximately 16 species of shorebirds throughout the fall (July-October) and spring (March-June) migration periods.

### **Amphibians and Reptiles**

Approximately 75% of the amphibians and reptiles found in the state of Illinois are known to occur within the Cache River Watershed. The Refuge and the surrounding wetlands contain 54 known species of reptiles and amphibians. Of the 20 species of frogs and toads in the state, 18 have been recorded on the Refuge or within the Cache River watershed. The state threatened Eastern Ribbon snake and Canebrake rattlesnake, a subspecies of the Timber Rattlesnake both utilize the Refuge and surrounding wetlands.

### **Mammals**

The 47 species of mammals that occur on the Refuge play an important role in the Cypress Creek/Cache River ecology. In Illinois, fourteen species are classified as furbearing mammals (IDNR hunting and Trapping, 2015). Based on their ranges, 12 species are likely to occur on the Refuge (Table 3). Resident species attracted to river habitats include mink, muskrat, raccoon, river otter, opossum, coyotes, bobcats, and beaver.

**TABLE 3:** Furbearing Mammals found on Cypress Creek NWR

Common Name	Scientific Name
Beaver	<i>Castor canadensis</i>
Bobcat	<i>Lynx rufus</i>
Coyote	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Mink	<i>Neovison vison</i>
Muskrat	<i>Ondatra zibethicus</i>
Opossum	<i>Didelphus virginiana</i>
Raccoon	<i>Procyon lotor</i>
River Otter	<i>Lontra canadensis</i>
Striped Skunk	<i>Mephitis mephitis</i>
Long tailed weasel	<i>Mustela nivalis</i>
Woodchuck	<i>Marmota monax</i>

The following mammals are the object of the furbearer management program on the Refuge.

*Raccoons:* Raccoons have been implicated as a nest predator and nest predation by raccoons is a primary cause of reproductive failure in birds (Hoover, 2006). It is estimated that there are more raccoons in Illinois today than when the first European settlers arrived. The Illinois Department of Natural Resources estimates the raccoon population to be between 9-45 raccoons per square mile. Densities of raccoons have increased in recent decades as a result of habitat fragmentation, the conversion of natural habitats to agriculture, and the suppression of top predators (Heske et al 1999). As a result of increasing densities, affinity to aquatic environments and continent-wide distribution, raccoons have negative consequences for populations of many different organisms over a large geographic area (Engleman et al. 2003). This includes bird communities within marsh, forest-field edge, grassland, bottomland and upland and prairie habitats throughout the United States (Hoffman and Heske, 2003).

In 2013, an estimated 3,812 raccoons were harvested by trappers within the Shawnee Hills Wildlife Management Unit. The entire Refuge is within this unit consisting of the southern 7 counties in Illinois (Appendix B). The estimate of raccoons harvested for the entire state was 151,367.

*Beavers:* Without laws to protect them, beavers were almost extirpated from the state by 1850. The reintroduction of beavers in Illinois began in 1929 through 1938. They have since made a strong comeback in the 20th century with reintroductions and regulations that control harvest (Woolf et al. 2003). Blomquist et al. (2012) estimated that there is approximately 1 beaver colony per 3.3 ha in southern Illinois wetlands. One colony typically consists of one breeding pair and 2-3 related individuals. Beavers are well known for their propensity to build dams across streams and small rivers. The dams hold back water, increasing its depth and surface area. This can sometimes cause issues with drainage of water on private land surrounding the Refuge. The number of beavers trapped in 2013 within the Shawnee Hills Wildlife Management Unit (Appendix B) was 902. The estimate for the entire state was 9,874.

*Muskrats:* This mammal declined throughout the state after a drought in 1989-90, but recovered with normal levels of precipitation. Muskrats reproduce prolifically and changes in their population generally reflect changes in habitat rather than the extent of harvest (Thommes 1994).

Muskrats can cause damage to Refuge infrastructure because they tend to burrow in levees and cause breaches. Trapping is the best way to solve specific problems caused by muskrats and has the potential to manage their numbers for ecological benefits. Trapping is allowed for only two to three months during the fall and winter so that no young or mothers with dependent young are taken. In 2013, an estimated 393 muskrats were trapped in the Shawnee Hills Wildlife Management Unit (Appendix B). An estimated 32,467 were trapped statewide.

### **3.4 CULTURAL RESOURCES**

A comprehensive cultural resource overview for the Refuge was completed in 1996 (Kullen, 1996). The survey entails a summary of known cultural resources found within the Refuge acquisition boundary including an additional five mile radius around it. Documented archeological sites on the Refuge represent all the Midwest United States cultural periods from the earliest Paleo-Indian through the 19<sup>th</sup> century. The last native tribal people in the Cache River Valley included the Trail of Tears movement of people from southern Appalachia to reservations in Oklahoma in 1838 (Heitmeyer, 2012). The most common archeological finds are isolated projectile points and small upland camp sites. Based on this report there are no significant historic sites, structures, or landmarks documented on the Refuge.

### 3.5 LOCAL SOCIOECONOMIC CONDITIONS

The Refuge and associated Cache River Watershed in southern Illinois is an attraction for hunters and outdoor enthusiasts. Refuge hunting opportunities provide benefits to the local economy through the sale of food, gas, supplies or lodging. According to research on economic effects, hunting on the Refuge resulted in significant expenditures (1.1million) for both travel-related goods and services and activity related equipment purchases (Caudill, 2003). There are no economic effects expected on the local economy as a result of opening the Refuge to trapping.

## Chapter 4: ENVIRONMENTAL CONSEQUENCES

### 4.1 INTRODUCTION

This chapter assesses the environmental impacts expected to occur from the implementation of alternatives A or C as described in Chapter 2. A detailed comparison between alternatives and their anticipated consequences is presented, describing “impacts” or “effects.” When detailed information is not available, those comparisons are based on the professional judgment and experience of Refuge staff.

#### **Alternative A: No trapping on the Refuge except for the purpose of removing nuisance animals by resource staff. (No Action)**

Under this alternative the Refuge would allow the take of nuisance animals through the issuance of a special use permit only. Removal methods of nuisance animals (primarily beaver and muskrat) have included trapping completed by Refuge staff and partner resource agency staff. Thus if the Refuge takes no action, management capabilities and efforts to deal with drainage issues will be limited and reactive rather than implementing a preventative approach to deal with resource or private property issues. Under alternative A, there will be no change to current regulations or management strategies employed on the Refuge.

#### **Alternative C: Open the Refuge to recreational trapping of three species (beaver, muskrat, raccoon) for management purposes only during the state trapping season (Preferred Alternative).**

Under this alternative the Refuge will implement a Furbearer Management Plan, allowing the trapping of beaver, muskrat, and raccoon, using recreational trappers, for resource management purposes. Trapping season dates, methods, and other regulations on the Refuge would generally follow regulations established for the state; however, this activity

will require a Special Use Permit and could be further restricted by special conditions of that permit.

#### **4.1.1 Impacts to Habitat-**

##### **Alternative A**

Current trapper impacts include temporary or localized trampling of vegetation, minimal removal of vegetation, and the potential for spread of invasive species; no additional impacts on vegetation are expected with this alternative. Recreational users would still be accessing most areas for other wildlife-dependent activities. Impacts to Refuge soil and vegetation by trappers are minimal. Access to trapping sites is conducted on foot or by boat, and current regulations limit the cutting or removal of vegetation to no more than what is deemed necessary for a trap set.

Under this alternative, because trapping is limited to nuisance permits only, rises in certain furbearer populations have the ability to create widespread damage to important Refuge habitats including prolonged inundation of bottomland hardwood stands. Beaver and muskrat populations cause damage to infrastructure, primarily roadways, culverts, and levees. Without management of furbearers in areas where management needs are identified, there is greater potential for increased flooding events on the Refuge or adjacent private lands.

##### **Alternative C**

Under Alternative C, trapping would not have significant adverse effects on the quality of wildlife habitat or the natural environment. Instead, increased trapping is expected to enhance habitat management. Beaver induced inundation of bottomland hardwood stands if prolonged, has the potential to create widespread damage to important Refuge habitats. Maintaining the beaver and muskrat populations at reasonable levels through a furbearer management program will help to minimize damage to Refuge habitat and decrease flooding related issues. Impacts on vegetation will be the same as alternative A; temporary and similar to that occurring from other visitors that are participating in wildlife observation, hiking, or other wildlife dependent recreational use on the Refuge.

#### **4.1.2 Impacts to Threatened and Endangered Species– Alternatives A and C**

There is no designated critical habitat for federally listed species on the Refuge. No effect is expected for both alternatives since listed species are either nocturnal or their life habits do not coincide with the trapping seasons (see Section 3.3.2 for additional information on listed species habitat requirements). A consultation pursuant to Section 7 of the Endangered Species Act has been completed as part of this EA and this Furbearer Management Plan. A finding of “No Effects” was determined (Appendix C)

### **4.1.3 Biological Impacts – Alternatives A and C**

Direct and indirect disturbance to non-furbearer wildlife under either alternative is minimal. Small mammals such as voles and mice are generally nocturnal or secretive. Both of these qualities make interactions between trappers and small mammals very rare. Hibernation or torpor of exothermic reptiles and amphibians also limits their activity during most of the trapping season when temperatures are low. Trappers would rarely encounter reptiles and amphibians during most of the trapping season. Some species of butterflies and moths are migratory and will not be present for most of the trapping season. Resident invertebrates are not active during cold weather and would have few interactions with trappers during the trapping season. Impacts to these species due to habitat disturbance related to trapping will be minimal.

### **4.1.4 Impacts to Historic Properties and Cultural Resources – Alternative A and C**

Neither alternative is expected to have any impacts to cultural resources. Additionally, no buildings or structures exist on-site that are listed on the National Register of Historic Places. Any ground disturbance caused by trappers will be negligible. Any activity that might cause an effect to a historic property would be subject to a case-by-case Section 106 review.

### **4.1.5 Cumulative Impact Analysis of Alternative A and C**

#### **4.1.5.A Anticipated Direct and Indirect Impacts on Wildlife Species**

##### **Non-furbearer Populations:**

Direct and indirect disturbance to non-furbearer wildlife under either alternative is minimal.

##### **Alternative A**

Impacts to migratory birds vary by Alternative. Under Alternative A, the existing Refuge Furbearer Management Program would be maintained by limiting trapping to the issuance of nuisance SUPs only. This alternative would have little to no effect on most wildlife populations, as the majority of nuisance SUPs issued are to address localized issues caused by a few individuals of a particular species, mainly beaver and muskrat.

The possible exception would be impacts to Refuge migratory bird populations. In recent years, surveys performed on an annual basis by Illinois Department of Natural Resources (IDNR) indicate that raccoon populations are abundant statewide (Gehrt et al. 2002). Multiple studies have shown raccoons to be an important nest predator of

migratory birds (Chalfoun et al. 2002, Schmidt 2003), with one study finding raccoons to be the second most frequently recorded nest predator, only surpassed by the brown-headed cowbird (Friesen et al. 2013). Nest predation is a limiting factor for many migratory birds, playing directly into the population viability of these species (Chalfoun et al. 2002). Results from a study specific to Illinois (Schmidt 2003) suggests that high raccoon densities, if left unchecked, have the potential to contribute to declines in not only the abundance but also the diversity of the State's songbird populations. The issuing of nuisance SUPs alone will not provide adequate management of Refuge raccoon populations to offset impacts caused to migratory bird populations.

### **Alternative C**

Under Alternative C, the Refuge will implement a Furbearer Management Plan, for resource management purposes, which permits individuals to trap raccoons. This alternative will provide resource staff the capability to actively manage raccoon populations on the Refuge which potentially could decrease impacts caused to Refuge migratory bird populations.

Under either alternative, Shorebirds and wading birds would not be impacted by trapping since, in most cases, they have already migrated through the area prior to the trapping season. Migratory birds of prey (eagles, hawks, etc.) and waterfowl are on the Refuge during trapping seasons however, disturbance is expected to be minimal. Disturbance to the daily wintering activities, such as feeding and resting, of residential birds might occur but are insignificant because such interactions are infrequent and of short duration when they do occur. Areas around eagle nests are closed to all refuge users, including trappers, resulting in negligible adverse impact.

### **Furbearer Populations:**

#### **Alternative A and C**

Under both alternatives, the trapping programs have been designed to encourage trapping techniques which are as selective, humane, and effective as is reasonable and practical, considering the target species and habitat conditions of the Refuge (7 RM 15.13). Permit provisions require the use of quick-kill or drowning sets for selected species; and as specified in the general trapping conditions, will require trap inspection every 24 hours. These trapping conditions include several trapping requirements intended to reduce animal suffering and reduce the taking of non-target species. Individual animals will be harvested and removed, in accordance with state regulations. IDNR carefully develops density figures when determining annual harvest needs to keep populations healthy. Harvest data from IDNR indicates furbearers (beavers, muskrats, raccoons and river

otters) are stable or increasing. Based on the information below, impacts to targeted species will be minimal.

Species that are targeted for trapping or may be incidentally taken while trapping on the Refuge are included below:

*Muskrats:* Muskrats are commonly found in every county in Illinois, and are legally trapped throughout Illinois. The results for the Illinois Fur Harvest Survey showed 32,467 pelts sold in 2013. In favorable conditions muskrat populations can exceed eight muskrats per acre, and rebound rapidly after a poor year. With the rapid population recovery there should be a minimal effect on the regional populations.

*Raccoons:* According to IDNR, raccoon populations are consistently high with estimations of 9 to 45 raccoons per square mile. In the 2012-2013 Illinois Fur Harvest Survey the results showed 139,879 pelts being sold compared to 138,705 in 2011-2012. With such high populations of raccoons it is likely that trapping will have minimal impacts.

*Beavers:* Beavers are found commonly in Illinois and persist in every county. According to the Illinois Fur Harvest Survey 9,708 pelts were sold compared to the 5,817 pelts from 2011-2012. Beavers in Union County averaged approximately 31.1 beavers per square kilometer (Nelson and Nielsen 2011). It is likely that trapping will have minimal effect on the population density of beavers.

*River Otter:* river otters are not a targeted species within the Furbearer management plan however, they may be trapped incidentally. In 2009 IDNR estimated there to be 11,000 otters occurring throughout Illinois with increasing numbers. In 2012-2013 Illinois Fur Harvest Survey, 2,002 pelts were harvested and accounted for approximately 13% of the population. Incidental take of river otters on the Refuge will have minimal effect on population densities

#### **4.1.5.B Anticipated Direct and Indirect Impact of Proposed Trapping on Refuge Programs, Facilities, and Cultural Resources – Alternative A and C**

##### **Other Refuge Wildlife: Dependent Recreation**

Most visitations occur from February through December for hunting, fishing, and bird/wildlife observation. Since refuge establishment in 1990, a variety of public uses have taken place on the refuge. There have been very few conflicts between uses (including hunting, fishing, wildlife observation, school programs or special events). This alternative (which is compatible with the Refuge purpose) will provide an additional opportunity to enjoy the Refuge.

### **Refuges Facilities: Alternative A**

Under this alternative, the current Furbearer Management Program will be maintained; trappers and non-trapping users will continue to utilize the existing roads, parking areas, boat ramps, and trails. There would be no additional impacts to Refuge facilities (roads, parking areas, boat ramps, trails). However, under this alternative, Refuge infrastructure (dikes, levees, water control structures) critical to providing habitat for fish and wildlife, will be at an increased risk for damage. Beavers and muskrats cause damage to Refuge infrastructure, including damage to levees and damage to water control structures. The maintenance and repair of these structures requires the use of Service resources, which has become costly. Managing these populations through nuisance SUPs alone has proven insufficient for protecting Refuge infrastructure and resources.

### **Refuge Facilities: Alternative C**

Impact to Refuge facilities (roads, parking lots, boat ramps, and trails) will be minimal with this alternative. Currently Refuge staff maintains existing roads and parking areas for maintenance access and boat ramps are maintained for public use; these facilities will receive an increase in use with the addition of trapper use but impacts will be minimal and short-term due to the limited number of SUPs issued. Under this alternative, damage to Refuge infrastructure, including damage of levees and damage to water control structures will be limited. Maintaining target species populations (i.e. beaver and muskrat) at reasonable levels through a furbearer management program will help to minimize flooding related issues, damage to habitat, and damage to infrastructure, as well as the amount of resources spent on repairs and maintenance.

### **Cultural Resources:**

This alternative will not have any impacts to cultural resources. No buildings or structures exist on-site that are listed on the National Register of Historic Places. Trapping is not expected to cause ground disturbance. Any activity that might cause an effect to a historic property would be subject to a case-by-case Section 106 review.

### **4.1.5.C Anticipated Direct and Indirect Impact of Proposed Trapping on Refuge Environment and Community**

No measureable impacts are expected by this proposed action on the Refuge environment which includes soils, vegetation, air quality, and water quality. Some disturbance to surface soils and vegetation may occur, however this disturbance would be minimal and temporary. Motorized access will be limited to parking areas only.

In 2002, the Refuge accounted for 53, 870 visitor days; waterfowl hunting accounted for 29 percent, small game hunting for 13.3 percent, and deer hunting for 5.8 percent. According to research on economic effects, hunting on the Refuge resulted in significant expenditures (1.1million) for both travel-related goods and services and activity related equipment purchases (Caudill, 2003). The impacts occurred within the four county area surrounding the Refuge. The proposal to provide trapping on the Refuge should have minimal impact on the amount of visitor expenditures. Trapping has a long tradition in the area and has provided many hours of recreation to many citizens. Relative to trapping, Service policy for Appropriate Refuge Uses 603 FW 1 (Chapter 1.3 B) is:

*“Take of fish and wildlife under State regulations. States have regulations concerning take of wildlife that include hunting, fishing, and trapping. We consider take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on the Refuge.*

Refuge trapping programs have been designed to encourage trapping techniques which are as selective, humane, and effective as is reasonably and practical, considering the target species and habitat conditions of the Refuge (7 RM 15.13). Opening the Refuge to trapping selected species will provide a more efficient and measurable process for removing nuisance animals before they create an issue or cause impacts or damage to the Refuge or adjoining private property.

#### **4.1.5.D Other Past, Present, Proposed, and Reasonably Foreseeable Trapping Opportunities and Anticipated Impacts – Alternative A and C**

Southernmost Illinois has a long history of hunting, fishing, and trapping. The majority of the land acquired by the Refuge was previously used for these recreational opportunities. If public use levels expand in the future, unanticipated conflicts between user groups may occur. Service experience has proven that time and space zoning can be an effective tool to eliminate conflicts between user groups. The Project Leader will determine if such a tool is necessary to limit conflicts on a case by case basis.

#### **4.1.5.E Anticipated Impacts if Trapping Opportunities are Allowed to Accumulate**

The Refuge will conduct a program in coordination with Illinois Department of Natural Resources guidelines. Illinois DNR harvest data indicates furbearer populations (beavers, muskrats, raccoons and river otters) are stable or increasing throughout the state. Trapping of beavers, muskrats, and raccoons on the Refuge will have minimal impacts to local, regional, or state populations. Refuge staff expect and witness that most users (hunters and trappers) respect spacing needs and will essentially regulate themselves.

User conflicts are not expected but will be monitored and dealt with on a case-by-case basis.

#### **4.1.6 Environmental Justice – Alternatives A and C**

Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities’ access to public information and participation in matters relating to human health or the environment. This assessment has not identified any adverse or beneficial effects for either alternative unique to minority or low-income populations in the affected area. Neither alternative will disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations.

**TABLE 4:** Summary of Environmental Consequences

Action:	Alternative A Maintain existing Furbearer Management Program by limiting trapping to nuisance beavers only through the issuance of an SUP (No Action)	Alternative C (Preferred Alternative) Open the Refuge to trapping beaver, muskrat, and raccoon for management purposes only during the state trapping season through the issuance of an SUP.
Habitat	Rises in certain Refuge furbearer populations could lead to increases in localized flooding events which, when prolonged, can result in habitat alteration and tree death.	Maintaining target species' populations at lower levels through a furbearer management program will help to minimize damage to Refuge habitat and decrease flooding related issues.
Vegetation	Impacts are temporary and similar to that occurring from other visitors that are participating in wildlife observation, hiking, or other wildlife dependent recreational use on the Refuge.	Impacts are temporary and similar to that occurring from other visitors that are participating in wildlife observation, hiking, or other wildlife dependent recreational use on the Refuge.
Target Species	Minimal effect	Minimal local effect
T & E Species	No effect	No effect
Migratory Birds	Without the potential to manage Raccoon populations, impacts to Refuge migratory bird populations are expected.	Provides Refuge staff the capability to actively manage raccoon populations and in turn, offset impacts on migratory bird populations using the Refuge.
Cumulative Impacts	Current management of nuisance SUPs alone has proven insufficient for protecting Refuge infrastructure and resources. The no action alternative will result in increased impacts to Refuge infrastructure and resources.	Impacts to Refuge infrastructure, including levees failure and damage to water control structures will be limited. Maintaining target species populations (i.e. beaver and muskrat) at reasonable levels through a furbearer management program will help to minimize flooding- related issues, damage to habitat, and damage to infrastructure, as well as the amount of resources spent on repairs and maintenance.
Historic & Cultural Resources	No effect	No effect
Socioeconomic Impacts	Limits trapping opportunities in the local area.	Provides increased opportunities of a traditional recreational use, while meeting specific management needs.
Environmental Justice	No effect	No effect

## **Chapter 5: REGULATORY COMPLIANCE**

The following acts authorize the U.S. Fish and Wildlife Service to administer trapping on National Wildlife Refuges. The Refuge Recreation Act of 1962 (16U.S.C 460K) authorizes the Secretary of the Interior to administer National Wildlife Refuges for public recreation as an appropriate incidental or secondary use 1) to the extent that is practicable and consistent with the primary objectives of the Refuge, and 2) Provided that funds are available for the development, operation, and maintenance of permitted recreation.

The National Wildlife Refuge System Administration Act of 1966 (16U.S. 688dd-ee) authorizes the use of any area within the NWR System for any purpose, including but not limited to hunting, fishing, and public recreation whenever those uses are determined to be compatible with the purpose for which the area was established. The Refuge Improvement Act of 1997 is the latest amendment to the NWRS Administration Act which outlines that the first consideration in any decision making would be wildlife including plants, animals, and their habitats. The second consideration would be effect of the activity on the six top priority public uses established by the Act that included hunting, fishing, wildlife observation, wildlife photography, environmental education, and environmental interpretation. The third consideration is impact on all other compatible uses.

The Service determined that trapping is compatible with the purpose of the Refuge and the mission of the National Wildlife Refuge System. Carefully controlled trapping is considered a management tool, and contributes to the habitat and wildlife management goals of the Refuge. The activity will be carefully regulated through the use of SUPs.

## **Chapter 6: LIST OF PREPARERS**

The following individuals cooperated in the preparation of this document:

Elizabeth Jones, Wildlife Refuge Specialist, U.S. Fish and Wildlife Service, Cypress Creek National Wildlife Refuge, Ullin, Illinois

Karen Mangan, Wildlife Biologist, U.S. Fish and Wildlife Service, Cypress Creek National Wildlife Refuge, Ullin, Illinois

Mike Brown, Refuge Manager, U.S. Fish and Wildlife Service, Cypress Creek National Wildlife Refuge, Ullin, Illinois

## Chapter 7: APPROVALS

Submitted by:

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**Mike Brown, Wildlife Refuge Manager**

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**Date**

Concur:

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**Refuge Supervisor Area 2**

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**Date**

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**Charlie Blair, Regional Chief  
National Wildlife Refuge System**

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**Date**

Approved:

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**Thomas Melius, Regional Director  
Region 3, U.S. Fish and Wildlife S**

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**Date**

## **Chapter 8: CONSULTATION AND COORDINATION WITH OTHERS**

The Furbearer Management Plan for Cypress Creek National Wildlife Refuge was coordinated with the Illinois Department of Natural Resources and reviewed by Bob Bluett, Regional Wildlife Biologist, IDNR, Springfield, IL.

Following the adoption of the Furbearer Management Plan, the Refuge will consult and coordinate with Illinois Department of Natural Resources (IDNR) to address annual implementation of trapping activities. Trapping opportunities on the Refuge are primarily developed to be consistent with Illinois DNR state seasons and regulations with the exception of more restrictive special conditions and species targeted for the furbearer management program.

## **Chapter 9: PUBLIC COMMENTS ON DRAFT DOCUMENTS**

This Environmental Assessment was released for public comment from November 9, 2015 through December 7, 2015. The EA was available to all interested parties through the Refuge website and in hard copy form by contacting the Refuge Office in Ullin, Illinois. News releases were sent out to area newspapers announcing the public comment period for the EA.

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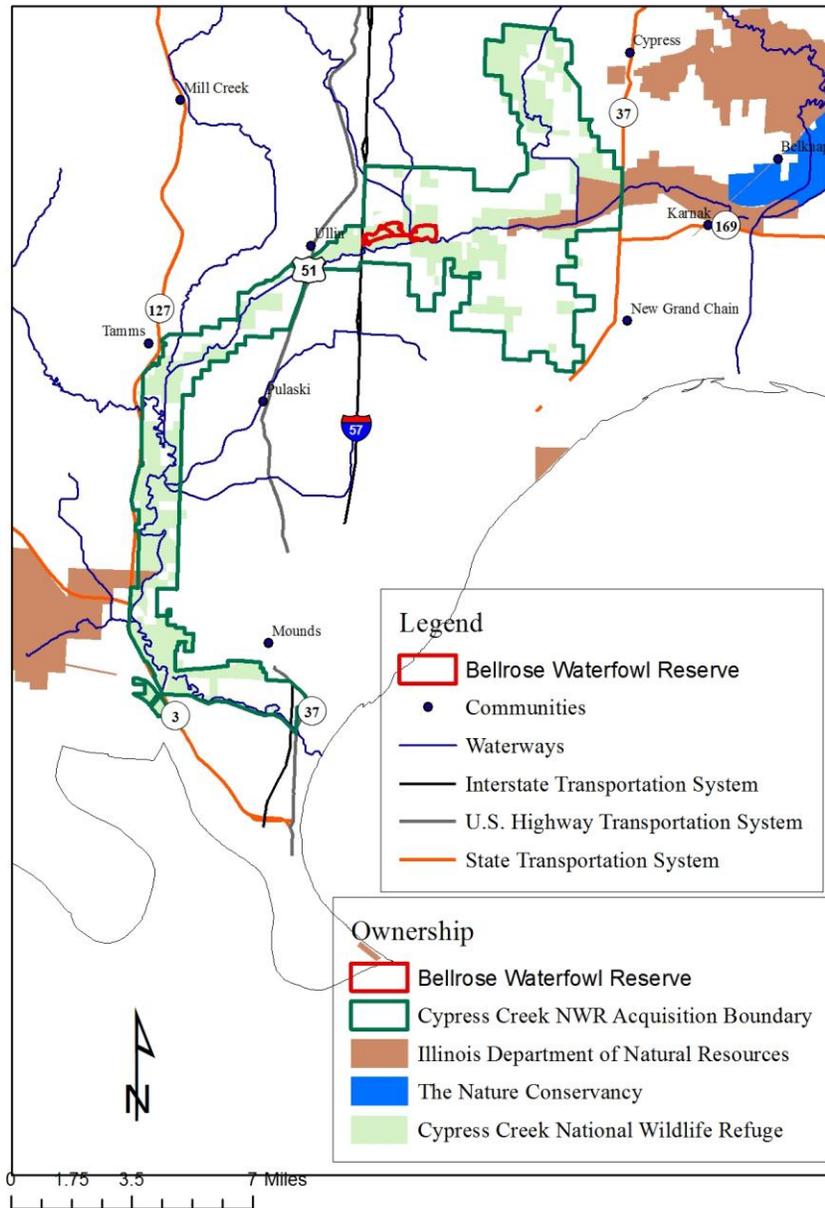
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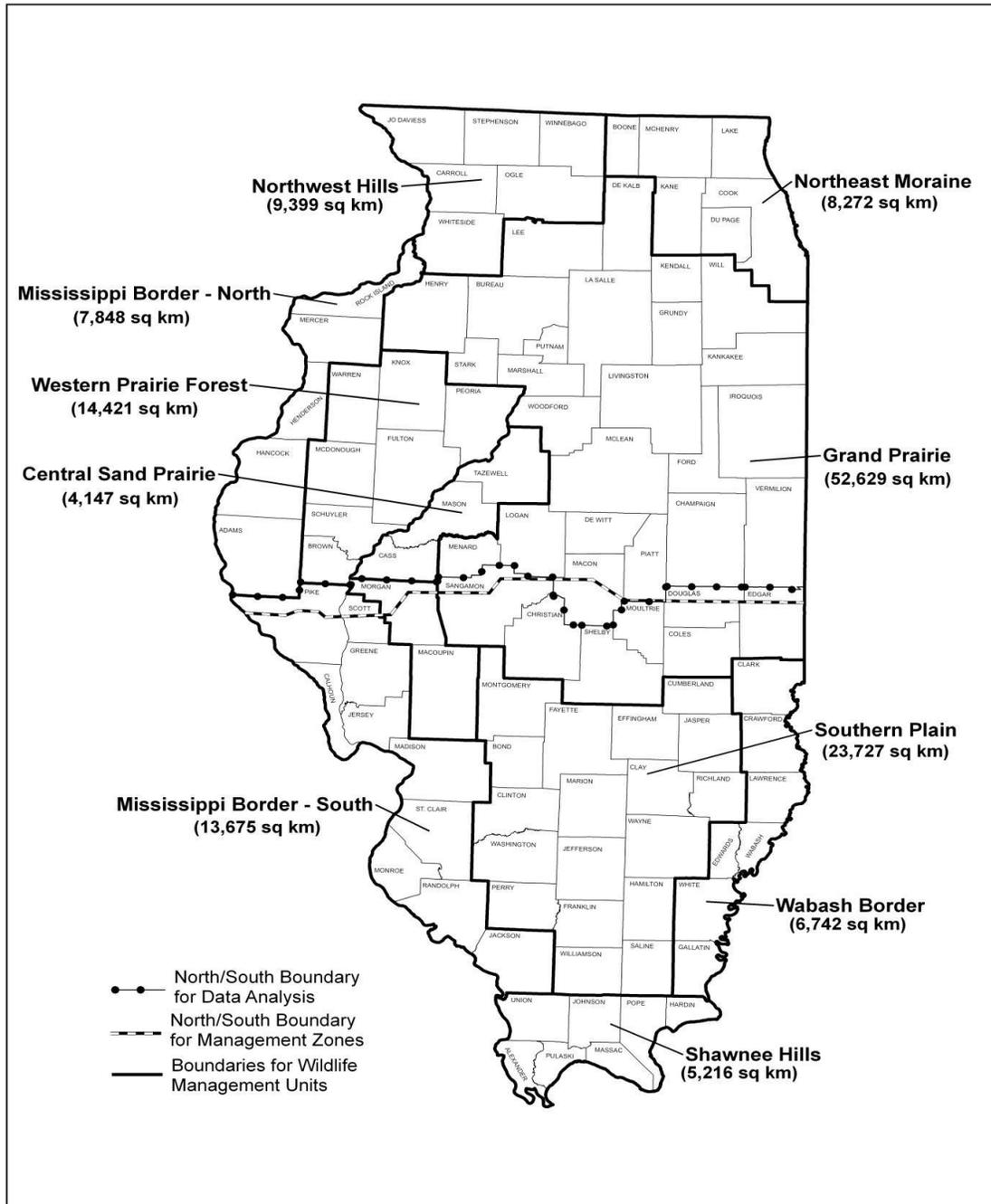
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**APPENDIX A: Cypress Creek National Wildlife Refuge Boundary and Joint Venture Partners**



Map Date: November 17, 2010

**APPENDIX B: Wildlife Management Units and Furbearer Management Zones in Illinois**



**APPENDIX C: Section 7**

**Intra-Service Section 7 Biological Evaluation Form  
Region 3**

Originating Person Karen Mangan Tele. Number: 618-634-2231  
Date Submitted: July 7, 2015

For assistance with section 7 reviews, go to Region 3's Section 7 Technical Assistance website: <http://www.fws.gov/midwest/endangered/section7/s7process/>

**I. Service Program and Geographic Area or Station Name:**

Cypress Creek National Wildlife Refuge

**II. Location: Location of the project including County, State and TSR (township, section & range):**

The Refuge is located in southern Illinois in Alexander, Johnson, Pulaski and Union counties.

**III. Species/Critical Habitat:** List federally-listed, proposed, and candidate species or designated or proposed critical habitat that occur within the action area:

A. Listed Species:

**Gray Bat (*Myotis grisecens*)** is listed as endangered and occurs in several Illinois counties where it inhabits caves both during summer and winter. This species forages over rivers and reservoirs adjacent to bottomland forested tracts. There are no caves on the Refuge at the present time, though this may change with subsequent acquisitions

**Indiana Bat (*Myotis sodalis*)** is listed as endangered. It forages on flying insects typically along the shorelines of rivers and lakes, in the canopy of trees in floodplains, and in upland forests. In summer, habitat consists of wooded or semi-wooded areas, mainly along streams. Females bear their offspring in hollow trees or under loose bark of living or dead trees. Trees standing in sunny openings are attractive because of warmer air spaces and crevices under the bark. Maternity sites have been reported in riparian areas, floodplain forests, and upland habitats. Limestone caves with pools are preferred for hibernacula during winter.

The Refuge is used by three, large maternity colonies of the Indiana bat. The forested wetlands also provide high quality foraging habitat for the bats. Additionally, the area is located within 5-miles of the large Indiana bat winter hibernacula at Magazine Mine

**Northern Long-Eared Bat (*Myotis septentrionalis*)** is listed as threatened. At this time, no critical habitat has been proposed for the Northern Long-eared bat. The Northern Long eared bat has been documented on the Refuge and the entire state of Illinois is within its known range. During the summer, Northern Long eared bats typically roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and/or snags (typically  $\geq 3$  inches dbh). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on presence of cavities or crevices or presence of peeling bark. It has also been occasionally found roosting in structures like barns and sheds (when suitable tree roosts are unavailable). They forage for insects in upland and lowland woodlots and tree lined corridors. During the winter, Northern Long-eared bats predominately hibernate in caves and abandoned mine portals.

**Interior Least Tern (*Sterna antillarum*)** is listed as endangered. Its historic breeding range includes the Mississippi River system (USFWS 1990). Surveys of the Mississippi River have found the majority of breeding colonies occur south of Cairo, IL. However, breeding birds have been found in Scott and Mississippi counties. The characteristics required for suitable breeding grounds include “bare alluvial islands or sandbars”, food, and appropriate water regime. Least terns arrive at breeding grounds in late April and the breeding season is complete by early September (USFWS 1990).

**Pallid Sturgeon (*Scaphirhynchus albus*)** is listed as endangered. It is found in the Mississippi River downstream of its confluence with the Missouri River. Pallid Sturgeon forage for fish along the bottom of large rivers. Pallid Sturgeon are most frequently caught over a sand bottom, which is the predominant bottom substrate within the species' range on the Mississippi River. Recent tag returns have shown that the species may be using a range of habitats in off-channel areas and tributaries of the Mississippi River.

**Orange footed pimpleback pearlymussel (*Plethobasis cooperianus*)** is listed as Endangered. It prefers clean, fast-flowing water in silt-free rubble, gravel or sand of medium to large rivers. It buries itself in sand or gravel in water as deep as 29 feet. Only the edge of its shell and its feeding siphons are exposed.

**Sheepnose (*Plethobasus cyphus*)** is listed as Endangered. These mussels live in larger rivers and streams where they are usually found in shallow areas with moderate to swift currents that flow over coarse sand and gravel. However, they have also been found in areas of mud, cobble and boulders, and in large rivers they may be found in deep runs.

**Rabbitsfoot (*Quadrula cylindrica*)** is listed as Threatened. It is a riverine mussel requiring clear streams with gravel substrate and moderate, stable currents. It is listed as threatened and occurs in the Embarrass, Vermillion River, Salt Fork Vermillion River, Middle Fork Vermillion River, North Fork Vermillion, Middle Branch North Fork Vermillion River, Wabash, and Ohio Rivers within several Illinois counties.

**Price's Potato Bean (*Apios priceana*)** is listed as threatened. It prefers lightly

disturbed areas such as forest openings, wood edges and where bluffs descend to streams. It has also been known to grow along highways. Never a very common species due to its exacting habitat requirements, only 13 populations of the plant are known to exist today. These are threatened by cattle which graze and trample on the plant. Timber clearcutting destroys its habitat and herbicides applied to highway rights-of-way kill individual populations of the plant. Almost half the known populations have disappeared in recent years. None are now found within the Refuge.

B. Proposed species and / or proposed critical habitat within the action area: none

C. Candidate species within the action area: none

#### **IV. Project Description:**

Cypress Creek National Wildlife Refuge was established in 1990 for the following purposes:

...the conservation of 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., Sec. 3901 (b) (Emergency Wetlands Resources Act of 1986)

Cypress Creek National Wildlife Refuge's purpose and importance to migratory birds, particularly waterfowl, were further described in the Service's Environmental Assessment for the proposed establishment of CCNWR (1990) and Approval Memorandum for refuge establishment:

to protect, restore and manage wetlands and bottomland forest habitats in support of the North American Waterfowl Management Plan; 2) to provide resting, nesting, feeding and wintering habitat for waterfowl and other migratory birds; 3) to protect endangered and threatened species and their habitats; 4) to provide for biodiversity; 5) to protect a National Natural Landmark, 6) and to increase public opportunities for compatible recreation and environmental education.

The U.S. Fish and Wildlife Service proposes to implement a Furbearer Management Plan on Cypress Creek National Wildlife Refuge that is compatible with the purpose of the Refuge. This plan evaluates the option to open the Refuge to trapping of select species (Raccoon, beaver and muskrat) for management purposes only during the state trapping season.

## V. Determination of Effects

**A. Description of Effects** Describe how the action(s) will affect the species and critical habitats listed in item III. Your rationale for the Section 7 determinations made below (in VB.) should be fully described here.

There is no designated critical habitat for federally listed species on the Refuge. No effect is expected on any of the listed species. All the listed species are either nocturnal or their life habits do not coincide with the trapping seasons.

**Gray Bat (*Myotis grisecans*)** This species has been documented through acoustic surveys only, but there are currently no breeding activity/maternity roosts documented on the Refuge at this time. No direct impacts to gray bat habitat are anticipated.

### **Indiana Bat (*Myotis sodalis*) & Northern Long-eared Bat (*Myotis septentrionalis*)**

The Refuge is used by three large maternity colonies of the Indiana bat. The forested wetlands also provide high quality foraging habitat for the bats. Additionally, the area is located within 5-miles of a large Indiana bat winter hibernacula.

Indiana bats are usually present on the Refuge between April and October, and therefore would not be likely to be present on the Refuge during the trapping season (November through March). No direct impacts to Indiana Bats are anticipated.

**Northern Long-Eared Bat (*Myotis septentrionalis*)** Northern Long Eared bats have been documented on the Refuge through mist net and acoustic surveys. These bats are most likely present on the Refuge between April and October, and therefore would not be likely to be present on the Refuge during the trapping season (November through March). No direct impacts to Northern Long Eared Bats are anticipated.

**Interior least Tern (*Sterna antillarum*):** Least terns have been known to forage over wetlands, however, suitable breeding habitat for this species does not occur on the Refuge, and they would be using the Refuge outside of the trapping season therefore no effects are anticipated on the least tern.

**Pallid Sturgeon (*Scaphirhynchus albus*):** This species is not known to occur on the Refuge therefore no direct impacts to the sturgeon or its habitat is anticipated.

**Orange-footed pimpleback pearlymussel (*Plethobasis cooperianus*):** This species is not known to occur on the Refuge therefore no direct impacts to this mussel or its habitat is anticipated.

**Rabbitsfoot (*Quadrula cylindrica cylindrica*):** Suitable habitat for this species does not occur on the Refuge therefore no direct impacts to this mussel or its habitat is anticipated.

**Sheepnose mussel (*Plethobasus cyphus*):** This species is not known to occur on the Refuge therefore no direct impacts to this mussel or its habitat is anticipated

**Price's Potato Bean (*Apios priceana*)**This species is not known to occur on the Refuge therefore no direct impacts to the sturgeon or its habitat is anticipated.

**B. Determination:** Determine the anticipated effects of the proposed project on species and critical habitats listed in item III. Check all applicable boxes and list the species (or attach a list) associated with each determination. **For assistance with making appropriate Section 7 determinations, go to Region 3's Section 7 Technical Assistance website:**

<http://www.fws.gov/midwest/endangered/section7/s7process/>

**Mark all that apply**

*No Effect:* This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) individuals of listed/proposed/candidate species or designated/proposed critical habitat of such species. No concurrence from ESFO required. X

List species/critical habitat: Indiana bat, Gray bat, Northern long-eared bat, Interior least tern Pallid Sturgeon; Orange footed pimpleback, Pearlymussel; Sheepnose; Rabbitsfoot, Price's Potato bean

*May Affect but Not Likely to Adversely Affect:* This determination is appropriate when the proposed project is likely to cause insignificant, discountable, or wholly beneficial effects to individuals and designated critical habitat. Concurrence from ESFO required.

List species/critical habitat:

*May Affect and Likely to Adversely Affect:* This determination is appropriate when the proposed project is likely to adversely impact individuals of listed species or designated critical habitat of such species. Concurrence from ESFO required.

List species/critical habitat:

*Not Likely to Jeopardize candidate or proposed species/critical habitat:* This determination is appropriate when the proposed project is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. Concurrence from ESFO required.

List species/critical habitat:

*Likely to Jeopardize candidate or proposed species/critical habitat:* This determination is appropriate when the proposed project is



