

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
DRAFT ENVIRONMENTAL ASSESSMENT

for

**The 2014 Fishing Plan for Patoka River National Wildlife
Refuge and Management Area**

**Regional Director
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Abstract:

The United States Fish and Wildlife Service (Service) proposes to provide compatible fishing opportunities for game fish species on units of the Patoka River National Wildlife Refuge & Management Area located within Pike and Gibson Counties in Southwest Indiana. This environmental assessment evaluates three possible alternatives for the fishing opportunities. The proposed action alternative will establish compatible fishing opportunities while providing other visitors with other priority public use opportunities (i.e. wildlife observation, wildlife photography, environmental education and interpretation) on lands described in the 2014 Fishing Plan. The approved acquisition boundary includes conservation easements, which will stay in private ownership and be managed by the U.S. Fish and Wildlife Service, and lands purchased in fee title. The proposed fishing opportunities will involve both conservation easements and fee title land. The general broad objectives of the fishing program are:

- Provide the public with safe and enjoyable fishing that are compatible with the Refuge purposes.
- Provide quality fishing opportunities that minimize conflict with other public use activities.
- To encourage additional use of the Patoka River's fisheries resources by providing increased/improved access to the river and its oxbows.
- Provide opportunities to fish for species consistent with laws and regulations of the state of Indiana, that don't adversely affect localized wildlife populations, and are consistent with the 1997 National Wildlife Refuge Improvement Act.
- Promote a better understanding and appreciation of Refuge habitats and their associated fish and wildlife resources.

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Contents

CHAPTER 1. PURPOSE AND NEED FOR ACTION	5
CHAPTER 2. PROPOSED ACTION AND THE ALTERNATIVES	8
CHAPTER 3. AFFECTED ENVIRONMENT	11
CHAPTER 4. ENVIRONMENTAL CONSEQUENCES	18
CHAPTER 5. REGULATORY COMPLIANCE	32
CHAPTER 6. CONSULTATION AND COORDINATION WITH OTHERS.....	33
CHAPTER 7. PUBLIC COMMENT ON DRAFT EA AND RESPONSE	33
CHAPTER 8. REFERENECES	33

CHAPTER 1. PURPOSE AND NEED FOR ACTION

SECTION 1.1 Purpose

This Environmental Assessment (EA) is an update to the EA for Opening Portions of Patoka River National Wildlife Refuge and Management Area (Refuge) for Hunting and Fishing as Proposed in the 1996 Hunting and Fishing Plan. This EA is a step down plan of the Final Environmental Impact Statement for the establishment of the Patoka River National Wetlands Project (EIS) which was used to fulfill NEPA compliance to open the Patoka River National Wildlife Refuge and Management Area National to fishing.

The Purpose of this Environmental Assessment is to evaluate alternatives for opening and administering a fishing program on the fee title and easement lands described in the 2014 Fishing Plan.

SECTION 1.2 Need

Providing compatible wildlife-dependent recreation and education activities on units of the National Wildlife Refuge System is a Service priority. The National Wildlife Refuge System Administration Act of 1966 (Act) 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. The Act directs managers to facilitate 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.

Fishing on Patoka River National Wildlife Refuge and Management Area will allow Refuge staff to manage wildlife populations at acceptable levels, provide wildlife-dependent recreational opportunities for the public, and promote a better understanding and appreciation of bottomland hardwood forest habitats and their associated fish and wildlife resources. Implementation of the proposed actions will be consistent and compatible with the Refuge Recreation Act, Refuge Administration Act, and the EIS for the establishment of the Patoka River National Wetlands Project.

SECTION 1.3 Decisions That Need To Be Made

This EA is prepared to evaluate the environmental consequences of opening newly acquired fee title and easement lands described in the 2014 Fishing Plan to fishing. Three alternatives are presented in this document:

- A. All recently acquired lands described in the 2014 Fishing Plan (1,334 acres) would remain closed to fishing. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (No Action Alternative)
- B. As described in the 2014 Fishing Plan, allow fishing on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement (1,043 acres) in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (Preferred Alternative)
- C. Allow fishing only for special events, such as for youth or anglers with disabilities on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged.

The Regional Director, U. S. Fish and Wildlife Service, Twin Cities, Minnesota, 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 Environmental Assessment (EA) is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether there is a significant impact on the quality of the human environment, thus requiring the preparation of an Environmental Impact Statement (EIS).

SECTION 1.4 Background

The Patoka River National Wetlands Project encompasses 22, 472 acres in Gibson and Pike counties in southwestern Indiana (see Figure 1). Lands purchased as conservation easements or in fee title are administered by the US Fish and Wildlife Service (Service) and become units of the Patoka River National Wildlife Refuge and Management Area (Refuge) under the authority of the Fish and Wildlife Act of 1956 "... for the development, advancement, management, conservation, and protection of fish and wildlife resources..." [16 U.S.C. 742f(a)(4)] "...for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude..." [16 U.S.C. 742f(b)(1).]

Patoka River NWR & MA was established in 1994. It was created under authority of the Emergency Wetlands Resources Act in part to protect one of two remaining intact floodplain forest systems within Indiana. The authorized boundary, which delineates where the Service can acquire property from willing sellers, encompasses 22,472 acres of wetlands, floodplain forest, grasslands, shrublands, and upland forest along 20 miles of the Patoka River corridor. Management objectives are identical for the National Wildlife Refuge (NWR), authorized at

7,005.5 acres, and the Management Area (MA), authorized for the remaining 15,466.5 acres. The separate designations avoid legal conflicts with the Surface Mining Control and Reclamation Act (SMCRA) of 1977. It has no implications for the management of these areas.

The staff of Patoka River NWR & MA administers three units in addition to the main body of the Refuge. The Cane Ridge Wildlife Management Area (488 acres, fee title, closed to all public access except non-consumptive uses in designated areas), White River Bottoms Unit (219 acres, fee title), and Columbia Mine (1,043 acres, conservation easement) are all considered part of the National Wildlife Refuge.

The Refuge provides fishing opportunities for species such as bass, bluegill, crappie, catfish, and carp.

The purposes for which the Refuge was established, as contained in the EIS and approved in the Record of Decision in 1994, include:

1. To restore, protect, and manage a bottomland hardwood forest for the many values associated with wetlands
2. To restore, protect, and manage uplands that compliment and/or protect wetlands
3. To restore, protect, and manage migratory bird habitat
4. To restore, protect, and manage habitat for endangered and threatened species of plants and animals
5. To increase public opportunities for outdoor recreation and environmental education
6. To provide wildlife extension services and restore habitat in southwestern Indiana according to guidelines of the Service's Partners for Fish and Wildlife Program
7. To improve water quality in the Patoka River watershed to reduce adverse impacts on human health and wildlife productivity, enhance the fishery resource, and increase the attractiveness of the water resources for wildlife-oriented public recreation

Specific objectives of the fishing program include:

1. Provide the public with safe and enjoyable fishing that are compatible with the Refuge purposes.
2. Provide quality fishing opportunities that minimize conflict with other public use activities.
3. To encourage additional use of the Patoka River's fisheries resources by providing

increased/improved access to the river and its oxbows.

4. Provide opportunities to fish for species consistent with laws and regulations of the state of Indiana, that don't adversely affect localized wildlife populations, and are consistent with the 1997 National Wildlife Refuge Improvement Act.
5. Promote a better understanding and appreciation of Refuge habitats and their associated fish and wildlife resources.

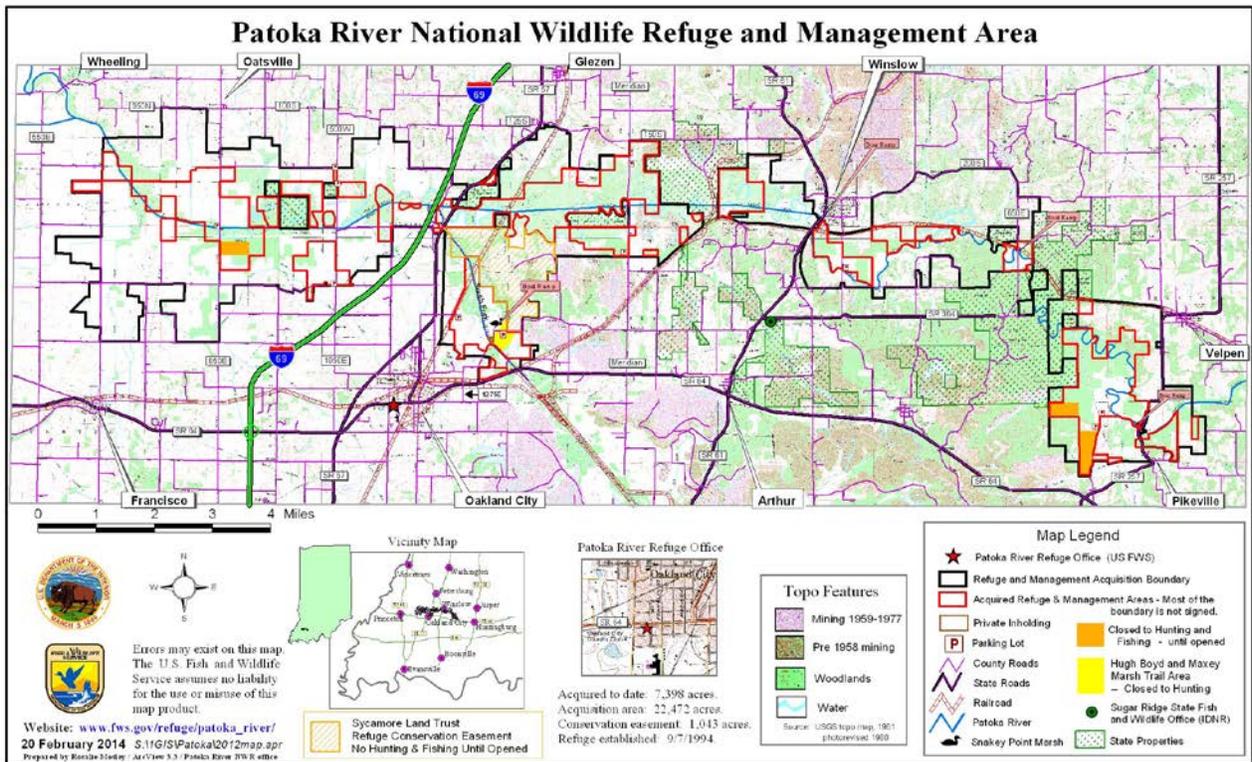


Figure 1. Patoka River National Wildlife Refuge and Management Area, Southwestern Indiana

CHAPTER 2. PROPOSED ACTION AND THE ALTERNATIVES

SECTION 2.1 Alternatives Eliminated From Detailed Study

No alternative was eliminated from detailed study.

SECTION 2.2 Alternatives Carried Forward for Detailed Analysis

This Environmental Assessment is prepared to evaluate the environmental consequences of opening fee title and conservation easement lands within the Refuge to fishing. Three alternatives are presented in this document:

2.2.1 Alternative A: All recently acquired lands described in the 2014 Fishing Plan (1,334 acres) would remain closed to fishing. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (No Action Alternative)

Under this alternative, 1,334 acres of recently acquired Refuge land (fee title and conservation easement) would continue to serve as habitat for wildlife and provide for five of the compatible wildlife dependent public uses – hunting, wildlife observation, photography, environmental education, and interpretation. Under this alternative, the public would also not be able to participate in one of the compatible wildlife-dependent public uses on these recently acquired lands.

Public use opportunities on 7,110 acres acquired prior to 2013-2014 would not change and continue be managed as described in previous plans.

Under the No Action alternative, the Service would continue to purchase conservation easements and fee title properties. Planning, managing, and implementing habitat restoration activities would continue to enhance these Refuge lands for wildlife. These actions would be carried out in cooperation with volunteers and partners.

2.2.2 Alternative B: As described in the 2014 Fishing Plan, allow fishing on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement (1,043 acres) in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (Preferred Alternative)

This alternative would allow fishing on recently acquired tracts (fee title and conservation easement) described in the 2014 Fishing Plan within the Refuge in accordance with federal regulations, Refuge specific regulations, the Columbia Mine Public Use Plan, and the seasons and regulations set by the State of Indiana, after the following determinations are made for each unit:

- 1) The unit is large enough to support the anticipated quantity, frequency, and duration of fishing use;
- 2) Public access to the unit does not require travel across private lands or closed government lands;
- 3) Sites are available for users to park their vehicles legally and in a manner that will not adversely affect the habitat in the unit or existing public travel routes;

4) Public fishing will not have adverse effects on any federally listed or proposed species of concern; and

5) Fishing can be conducted without jeopardizing public safety.

The Refuge Manager may establish specific regulations for an individual unit to ensure the above requirements are met. Certain units or portions of units may remain closed or be periodically closed to fishing if the Refuge Manager determines that there are specific habitat, wildlife protection, and/or public safety needs that require establishing sanctuary areas. Fishing would be conducted in accordance with all applicable state, Refuge, and federal regulations. Coordination with Indiana DNR biologists will promote continuity and understanding of Service and state resource goals and objectives, and will help assure that the decision-making process takes into account all interests.

2.2.3 Alternative C: Allow fishing only for special events, such as for youth or anglers with disabilities on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged.

This alternative would only allow fishing on recently acquired properties as described in the 2014 Fishing Plan through special events for underserved populations on the Refuge in accordance with the fishing seasons and regulations set by the State of Indiana.

Under alternative C, the Service would continue to purchase conservation easements and fee title properties. Planning for and implementing habitat restoration activities would continue to enhance these areas. Management of existing habitats for wetlands and wildlife would continue. These actions would be carried out in cooperation with volunteers and partners.

Public use opportunities on 7,110 acres acquired prior to 2013-2014 would not change and continue to be managed as described in previous plans.

SECTION 2.3 Alternatives Action Table

Table 1 below summarizes the actions that are anticipated under each alternative and how they affect recently acquired lands. Detailed discussion of the environmental impacts of each alternative can be found in Section 4. Some of the issues carried into the impact assessment are described in more detail in Section 4.

Table 1: Alternative Action Table

Action	Alternative A (No Action Alternative)	Alternative B (Preferred Alternative) Allow Fishing Recently Acquired Lands	Alternative C Reduced Fishing
Species that will be fished	None on recently acquired lands	All game species as determined by IN DNR	All game species as determined by IN DNR
Compatible with Refuge Goals and Purpose	No. Fishing was identified as a goal in acquisition EA and management plans	Yes. Provides for priority public uses and maintain healthy wildlife populations to benefit the Refuge ecosystem	Yes. Provides for priority public uses and maintain healthy wildlife populations to benefit the Refuge ecosystem
Provides for Priority Public Uses	Yes. Provides for 5 of 6 priority public uses.	Yes. Provides for all priority uses	Partially. Provides for limited fishing opportunities.
Fishing and non-fishing activities segregated	On recently acquired. Does not allow fishing and therefore no conflict exists with non-fishing activities on recently acquired	No. Doesn't separate uses, conflicts possible, but deemed minimal. If conflicts exist, unit manager would be able to close an area or unit to alleviate conflicts.	No. Doesn't separate uses, conflicts possible, but deemed minimal. If conflicts exist, unit manager would be able to close an area or unit to alleviate conflicts.
Meets needs identified by public and partners	No. Does not maximize fishing opportunities as identified by most public and partners	Yes. Maximizes fishing opportunities as identified by most public and partners, while encouraging public safety	Yes. Creates fishing opportunities, but fewer than identified by most public and partners.

CHAPTER 3. AFFECTED ENVIRONMENT

SECTION 3.1 Physical Characteristics

The Patoka River NWR & MA is located within the Ohio River Valley Ecosystem (ORVE). This ecosystem drains a total area of approximately 141,000 square miles and includes portions of 10 states.

The rich flora and fauna of the ORVE reflect its diverse physiography and unique geologic past. Numerous trust species occur in the ecosystem, including many federally listed threatened or endangered plants, mussels, fishes, birds and mammals. The unusually rich and diverse fauna found in the ecosystem is the product of a multitude of biotic and abiotic factors which have evolved over time. Throughout geologic time, changes in such factors as topography, climate,

and geomorphology have formed, modified, and eliminated habitats and consequently have had a profound effect upon the distribution of the faunal assemblages in the ecosystem. Due to the ecosystem's central geographical location in the eastern United States, some species with northern affinities and others with southern affinities occur in the ecosystem in addition to those common to the central region of the country.

Over the past few centuries of Euro-American settlement and industrialization, the Ohio River Valley ecosystem has been subjected to many environmental stresses which have diminished the bounty of its living resources. Much of the region's economic activity – agriculture, lumbering, mining, energy production, manufacturing, and recreation – is based on the watershed's natural resources. Sustaining most of these activities requires maintenance of a healthy ecosystem.

Historically, the Refuge was a part of the expansive, contiguous hardwood forest that covered most of the southwest Indiana. The Refuge strives to maintain a diverse mosaic of natural vegetation to benefit a diversity of wildlife and plants.

SECTION 3.2 Biological Environment

3.2.1 Habitat

Flowing 162 miles through four counties in southwestern Indiana, the Patoka River represents a classic meandering midwestern stream. The Patoka River floodplain contains some of the finest examples of bottomland forested wetland remaining in the state. Although somewhat degraded by past drainage and land development efforts, the array of wetlands, forests, grasslands and other habitat types found within the Refuge boundary continue to support a rich diversity of fish and wildlife species.

Forests

Bottomland Hardwood Forests

Wetland management at Patoka River NWR & MA consists primarily of restoring bottomland forests. There are nearly 13,000 acres of existing bottomland hardwood forests or sites that could be restored to bottomland hardwoods within the refuge acquisition boundary. With the aim of maximizing forest species diversity, the refuge plants 500 tree seedlings per acre on newly acquired sites (i.e. bottomland agricultural fields) where the objective is to restore a forested corridor along the Patoka River.

Ultimately, over the long term (100 years) the bottomland hardwood forests will be managed to maintain a mosaic of age and structural classes. Lower elevations are dominated by black willow, sweetgum, silver maple, and river birch. Pin oak, Shumard oak, swamp chestnut oak, swamp white oak, red maple, green ash, sycamore, and cottonwood dominate the mid-elevations, while upper elevations are typically comprised of cherrybark oak, hickory, and pecan.

Upland Forests

The total acreage of the upland forest within the refuge's acquisition boundary is 2,704 acres. Over the long term (100 years), the Refuge will maintain a mosaic of hardwood stands of different age and structural classes distributed on upland areas. These forests are dominated by white oaks, black oaks, hickory, and blackgum on drier sites, and by red oaks, yellow poplar, beech, sugar maple, walnut, hickory, and cherry on wetter sites.

Wetlands

Emergent Wetlands

The total acreage of emergent wetlands in the acquisition boundary is 775 acres. The current objective is to maintain presently owned emergent wetlands (approximately 500 acres) in a mixture of vegetation such as cattail, bulrush, sedges, spatterdock, water lily and smartweeds.

Lakes and Ponds

The total acreage of lakes and ponds within the refuge's acquisition boundary is 885 acres.

Patoka River, Oxbows, and Patoka Tributaries

The total acreage of the Patoka River, its oxbows and tributaries within the refuge acquisition boundary is 534 acres.

Water Quality

The Refuge's current objective is to improve water quality within the Patoka River and its tributaries to move towards compliance with Indiana Department of Environmental Management standards. The long-term goal is removal of the streams from the list of impaired waters.

Moist Soil Units and Scrapes

The Refuge currently manages over 300 acres of actively managed moist soil units.

The Refuge has restored small wetland scrapes covering approximately 30 acres. Some of these small wetlands have water control structures. Water is stored in shallow pools to encourage waterfowl, shorebird and marsh/waterbird use. Some wetlands are referred to as macrotopography wetlands which are shallow scrapes ranging from three inches to two feet deep and depend on flooding and/or rain events for their water supply. Bottomland hardwood trees have been planted all around these wetlands. They are set up for passive management to resemble old river oxbows.

Cane Ridge has four moist soil units that total 193 acres. These are managed to achieve shallow

fall flooding, and are slowly drained in the spring. They are intended to benefit waterfowl and shorebirds and are allowed to vegetate and grow in the summer with moist soil plants. The four units can be managed independently enabling staff to maximize diversity.

At Dillin Bottoms, Ducks Unlimited designed and supervised construction of two moist soil units covering 62 acres. These units are designed to be flooded by reverse flow flap gates during high water or with a permanent station auger pump operated by a portable diesel engine and PTO shaft.

Over the medium term future, the Refuge will maintain existing moist soil areas and convert up to a total of 700 acres of bottomland farmland to moist soil management that provides a diversity of native herbaceous plant foods such as wild millet (*Echinochloa* spp.), panic grass (*Panicum* spp.), sedges (*Cyperus* spp. and *Carex* spp.), and beggarticks (*Bidens* spp.).

Grasslands/Shrublands

The Refuge has the opportunity to restore around 4,500 acres of grassland/shrubland/savanna within the acquisition boundary. Grassland types include reclaimed coal-mined land, restored prairie, and old field habitat. Reclaimed surface-mined land typically has been planted with non-native plants like sericea lespedeza and fescue to hold the soil in place and left to grow up in brush. Where conditions are appropriate, the refuge has restored native grasses and forbs on reclaimed mine land as well as agricultural fields. Very few fields have been allowed to naturally revegetate because of the threat of takeover by non-native plants present in the seedbank.

The 1,043 acres Columbia Mine, managed by the Refuge under a conservation easement, is comprised of nearly 700 acres of grassland, shrubland, and savanna.

Cropland

Within the acquisition boundary lies about 4,500 acres of bottomland farmland. For the most part, land acquired as cropland is being maintained as such until funds are secured to convert the land to moist soil units or bottomland forests. When fully acquired, the Refuge will choose to keep nearly 2,000 acres open through farming or created moist soil units to ensure attractive habitat is provided for shorebirds, wading birds, and waterfowl. Continued farming is done in a partnership with the original farmer or a tenant farmer through an annual cooperative farming agreement.

3.2.2 Wildlife

The diverse habitats found within the Patoka River watershed support equally diverse wildlife populations, with more than 380 species of mammals, birds, reptiles, amphibians, fishes and mollusks known or expected to occur on the Refuge.

Birds

The Patoka River and surrounding wetland and upland areas provide an array of habitat types which fulfill the necessary breeding, feeding, migration and wintering requirements for a variety of avian species. Scientific surveys, organized bird counts and casual observations have recorded over 230 species of waterfowl, wading and shore birds, songbirds, game birds and others within the Refuge.

Mammals

Indiana is home to 54 species of mammals, of which 41 species occur on the Patoka River NWR & MA. These include an array of game, non-game and furbearing mammals.

Amphibians and Reptiles

The Patoka River valley is within the range of at least 60 species of herptiles, that is, snakes, turtles, lizards, skinks, salamanders, newts, sirens, toads and frogs (Conant, 1958). A diverse assortment of reptiles and amphibians occur on the Refuge and fill many important niches in the ecosystem's natural food chain. Because the majority of these species require moist woodlands, ponds, streams, marshes, swamps or quiet backwaters, Patoka River NWR & MA provides excellent herptilian habitat.

A comprehensive herpetofauna survey was conducted on the Refuge from February 2009 to October 2010. From a possible 62 species with ranges within the Refuge boundaries, 42 species were found and documented, including 17 new county records.

Insects

The exact number of insect species found in the Refuge is not known.

A comprehensive survey of dragonflies and damselflies (Odonata) was conducted in 2009. A total of 30 dragonfly species and 13 damselfly species were identified on the Refuge, including 13 species considered rare or imperiled for the state of Indiana (Batema and Landowski 2010).

Molluscs

Historically, the Patoka River supported a rich diversity of freshwater mussels that were utilized by Native Americans and wildlife alike. A survey of freshwater mussels conducted in 2000 along the entire length of the Patoka River and portions of its tributaries found 28 mussel species (Ecological Specialists, Inc. 2001). This is fewer than the 33 species reported in historic records. The segment of the Patoka River flowing through the Refuge contained 17 mussel species. No species were found in the channelized portion of the river probably because the habitat in this stretch has been altered so as to render it unsuitable.

Fish

Most of the Refuge's fishery resources are associated with the Patoka River and its wetlands. Two fisheries surveys of the Patoka River and many of its tributaries in the late 1980s and early 1990s revealed that fish populations were surprisingly diverse and abundant, especially considering the environmental abuses this river has endured over the past 70 years (Stefanavage, 1993; U.S. Fish and Wildlife Service, 1989). A total of 66 species of fish representing 15 families were found to inhabit these waters. Although not usually considered prime fish habitat, overall species diversity in the Patoka River in 1991 compared favorably with other southwest Indiana streams (Stefanavage, 1993).

3.2.3 Threatened, Endangered and Candidate Species

Federally listed Threatened and Endangered Species that occur within the boundaries of the Refuge include the Indiana bat (*Myotis sodalis*), least tern (interior population) (*Sterna antillarum*), and whooping crane (*Grus Americana* – experimental population).

In 2001, the U.S. Fish and Wildlife Service initiated a reintroduction of a Nonessential Experimental Population of whooping cranes in the Eastern United States. The intent was to establish a migratory flock that would summer and breed in Wisconsin and winter in west-central Florida which was historical habitat. Since the migration route is a learned rather than an innate behavior, captive-reared Whooping Cranes released in Wisconsin were led by ultralight aircraft to establish their historical flight path to suitable wintering areas in Florida. Annual stop overs on the Refuge have been documented in the spring, fall, and winter since 2001 during migration.

The Indiana bat was listed as federally endangered in 1967 under the Endangered Species Conservation Act, a precursor to the Endangered Species Act of 1973. Primarily the bats declined in number because of loss or disturbance of caves or other hibernacula. The bats hibernate communally in large numbers. Disruption or destruction of a single site can dramatically affect the population. It occurs in several locations across Indiana. A maternity colony containing more than 100 adults in a large dead tree was first documented on the Refuge in 2005.

The historic breeding range of the federally listed endangered Least Tern extended from Texas to Montana and from eastern Colorado and New Mexico to southern Indiana. It included large rivers of the Red, Missouri, Arkansas, Mississippi, Ohio, and Rio Grande River systems. It nests on sand and gravel bars and protected beach areas of large rivers, and winters in coastal Central and South America. The species is endangered because human disturbance and alteration of river systems have rendered much of its nesting habitat unusable.

The 488-acre Cane Ridge Wildlife Management Area lies 24 miles west of the Refuge headquarters includes 193 acres of moist soil wetlands in four management units, 180 acres of reforested bottomland hardwoods, and a 59-acre deep water impoundment with nesting islands that provide habitat for the Least Tern. The terns have used the nesting islands for that purpose fledging an average of 40 young per year since 2005.

SECTION 3.3 Land Use

Within the 22, 472 acre Refuge acquisition boundary there are approximately 15,700 acres of bottomlands and 6,700 acres of uplands, as determined by soil type. Within the bottomlands, over 9,000 acres are bottomland hardwood forest and associated wetlands, with the majority of the remaining 6,600 acres in farmland. The uplands are characterized by over 3,200 acres of farmland, 2,700 acres of forest, and the remaining acreage in other various cover types.

Farming is the main use within the Refuge boundary (approximately 12,000 acres), with corn, soybeans, and wheat being the primary cash crops.

SECTION 3.4 Historical Properties and Cultural Resources

There are no known historical properties and cultural resources on the Refuge.

SECTION 3.5 Local Socio-Economic Conditions

The Refuge is located in Pike and Gibson Counties, Indiana. Compared to the State of Indiana as a whole this two-county area has a smaller population growth rate and is less racially and ethnically diverse. On average, the area's population has a lower median income, and less high school and college education than the state's population.

Population

The total population of the two counties was estimated to be 46,295 in 2013 by the U.S. Census Bureau. The two-county population was 97 percent white in 2013; the State population was 86.3 percent white.

Employment

In 2000 there were a total of 21,744 full- and part-time jobs in Pike and Gibson counties. Farm/forestry/fishing employment accounted for about five percent of the jobs across the area. The manufacturing and education/health/social services industries were and are the largest economic and employment sectors in these counties (USCB, 2000a; USCB, 2000b).

Income and Education

Average per-capita income in the two-county area was \$22,343 in 2012; in Indiana it was \$24,558. The median household income in the two-county area was \$44,642 in 2012; in the state it was \$48,374 (USCB, 2014).

In the two-county area, 12.1 percent of persons over 25 years of age hold a bachelor's degree or higher. The comparable figure in the state is 23 percent. This discrepancy is typical of the difference between largely rural areas like these seven counties and entire state populations which include large numbers of more urban residents who are professionals and have higher educational attainment on average (USCB, 2014).

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

This chapter describes the foreseeable environmental consequences of implementing the three management alternatives in Chapter 2. When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences is presented, which is described as “impacts” or “effects.” When detailed information is not available, those comparisons are based on the professional judgment and experience of Refuge staff and Service and State biologists.

SECTION 4.1 Alternative A: All recently acquired lands described in the 2014 Fishing Plan (1,334 acres) would remain closed to fishing. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (No Action Alternative)

Without a fishing program on recently acquired land, these lands would essentially represent a sanctuary unavailable to the public for the harvest of wildlife resources. Under this Alternative, the Refuge would not fully meet one of its priority objectives, increasing public opportunities for outdoor recreation and environmental education, and would be contrary to the President's Executive Order (Management and General Public Use of the National Wildlife Refuge System) directing the Service to provide expanded opportunities on Refuges for compatible wildlife-dependent recreational activities, including fishing.

4.1.1 Habitat Impacts

No additional public use impacts on vegetation are expected with this alternative. Non-consumptive users would still be accessing the areas for other wildlife dependent activities.

4.1.2 Biological Impacts

This alternative will result in few, if any, biological impacts given that there are other adjacent lands where fishing would occur. Potential damage to habitat may occur without the population control provided by fishing, particularly from invasive fish like carp. However, some fishing would still occur on the Patoka River as the state owns the land under the water and the public could access the river from off refuge sites.

4.1.3 Listed Species

No effect is expected for any of the threatened and endangered species found within the boundaries of the Refuge as a result of this alternative. A consultation pursuant to Section 7 of the Endangered Species Act was conducted as part of this EA and the Fishing Plan. A finding of “No Effect” was determined. No impacts are anticipated for state listed species.

4.1.4 Historic Properties and Cultural Resources

There are no historical properties documented on current Refuge lands.

4.1.5 Cumulative Impact Analysis of the No Action Alternative

4.1.5.A Anticipated Direct and Indirect Impact on Wildlife Species

This alternative would have little to no effect on most fish and wildlife. Disturbance to Refuge wildlife would continue as is presently caused by hunters and non-consumptive users.

4.1.5.B Anticipated Direct and Indirect Impact on Refuge Programs, Facilities, and Cultural Resources

Other Refuge Wildlife-Dependent Recreation

According to the 2014 RAPP Report, approximately 24,500 visitors used the Refuge units in 2014. Many of these visits were for fishing (4,800 visits). Non-consumptive visits totaled approximately 9,800.

Under this alternative, the public would not have the opportunity to participate in fishing land described in the 2014 Fishing Plan, which is one of the priority public uses, and compatible with the purposes for which the Refuge was established. Fishing is also a way for the public to gain an increased awareness of Patoka River NWR and the National Wildlife Refuge System. By not allowing fishing, the Service would not be meeting a public use demand and public relations would not be enhanced with the local community.

While not open to fishing, all units specified in the 2014 Fishing Plan would be open to other priority uses including fishing, nature observation, photography, education, and interpretation.

Refuge Facilities

No additional impacts to Refuge facilities (roads, parking lots, trails) will occur with this alternative. Under this alternative, 7,110 acres would be open to fishing (those approved through previous Fishing Plan and EA), while lands in the 2014 Fishing Plan would be closed to fishing, and wouldn't experience potential impacts to facilities by anglers.

Maintenance or improvement of existing roads and parking areas will cause minimal short term impacts to localized soils and may cause some temporary wildlife disturbance.

Cultural Resources

This alternative will not have any additional impacts to cultural resources.

4.1.5.C Anticipated Direct and Indirect Impact on Refuge Environment and Community

The No Action alternative will have little if any impact on soils, air quality, water quality or solitude.

This alternative may have impacts on fishing opportunities in the local area. Over the last 15 years it has become increasingly difficult for anglers to acquire access to fish on private land throughout southwest Indiana. More and more landowners are either leasing their land for an entire season, charging users a daily fee, or selling their land for recreational use. This change in land use has increased the importance of public land to anglers. Not opening these units to fishing will result in the continued decrease of lands open to fishing.

Refuge lands closed to fishing would make regulations and enforcement confusing for the public since adjacent state lands would remain open to fishing. These lands are intermingled so that the public would need to sort out federal from state lands to determine what is opened and what is closed.

4.1.5.D Other Past, Present, Proposed, and Reasonably Foreseeable Fishing Programs and Anticipated Impacts

Fishing was allowed on most of these lands when they were in private ownership before they became part of the Refuge. This alternative may affect fishing on adjacent state or private lands. There would be more fishing pressure on adjacent state lands. However, fish populations may increase slightly from reduced fishing in the area. An increase in some species, such as carp, could result in habitat damage if they become overabundant and could result in impacts to other species.

4.1.5.E Anticipated Impacts If Individual Fishing Programs are Allowed to Accumulate

This alternative would not allow fishing on lands detailed in the 2014 Fishing Plan and therefore there would be no anticipated impacts.

4.1.6 Environmental Justice

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.

This alternative will not disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low income populations.

Fishing opportunities proposed on Patoka River NWR & MA already exist on state, federal and other public lands in the area where the Refuge units are located. Maintaining the “Closed to Fishing” status on Refuge fee title lands does not provide for all the priority public uses identified as goals of the Refuge or the National Wildlife Refuge System. The Refuge Recreation Act of 1962 (16 U.S.C. 460K) and the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668-ddee) provide authorization for fishing on National Wildlife Refuges. The effects of fishing on Refuges have been examined in several environmental review documents, including the Final Environmental Impact Statement on the Operation of the National Wildlife Refuge System (1976), Recommendations on the Management of the National Wildlife Refuge

System (1978), and the Draft Environmental Impact Statement on the Management of the National Wildlife Refuges (1988). Nothing in the establishing authority for the Refuge precludes fishing on the Refuge.

SECTION 4.2 Alternative B: As described in the 2014 Fishing Plan, allow fishing on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement (1,043 acres) in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged. (Preferred Alternative)

Under this alternative, the fee title tracts detailed in the 2014 Fishing Plan would be opened to the same specifications allowed for fishing on the 7,110 acres administered by the Refuge prior to 2014 as allowed by federal regulations, Refuge-specific regulations, and the laws of the State of Indiana.

The 1,043 acre Columbia Mine Unit is private property owned by Sycamore Land Trust, Inc., and managed as part of the larger Refuge complex by the Refuge through a Conservation Easement. Because the Columbia Mine Unit is private property, it is subject to a Public Use Plan with fishing opportunities described and agreed upon by all conservation partners. Fishing opportunities on this tract are outlined in the 2014 Fishing Plan.

In total 8,444 acres would be open to fishing.

4.2.1 Habitat Impacts

Fishing access, in most cases, will be by foot access only. Parking will be restricted to designated parking lots. Impacts on vegetation should be temporary and similar to that occurring from non-consumptive users. Anglers with disabilities will utilize existing gravel roads and trails and be accommodated by permit on a case by case basis. Habitat impacts would be similar to those already occurring on the 7,110 acres already open to fishing.

4.2.2 Biological Impacts

The harvest of fish species will be in accordance with Federal regulations and limits set by the state of Indiana. The IN DNR regulates fishing on inland rivers and has determined that the Patoka River has a typical assemblage of fish species and habitat that supports fishing as outlined in Indiana fishing regulations.

Other fish or wildlife not being harvested may be disturbed by anglers accessing fishing locations. They may flush or move wildlife as the animals try to avoid human contact. This disturbance will be similar to the disturbance animals experience on adjacent state Fish and Wildlife Management Areas and will be minimal and temporary in nature.

4.2.3 Listed Species

No effect is expected for any federally listed threatened or endangered species or their critical habitat. A consultation pursuant to Section 7 of the Endangered Species Act was conducted as

part of this EA and the updated Fishing Plan. A finding of “No Effects” was determined. No impacts are anticipated for state listed species.

4.2.4 Historic Properties and Cultural Resources

There are no historical properties documented on current Refuge lands. Fishing is not expected to cause ground disturbance or disturbance to standing structures and will have no effect on any historic properties located on lands acquired in the future. The addition of facilities associated with hunting and fishing would undergo individual cultural resources reviews by the Service.

4.2.5 Cumulative Impact Analysis of the Proposed Action

4.2.5.A Anticipated Direct and Indirect Impact of Proposed Fishing programs on Wildlife Species

The Service has allowed and administered a public fishing program on the Refuge since the 1996. Recent estimates show that the Refuge received approximately 4,800 fishing visits in 2014. During its history, the Service has not noted any significant adverse effects of these programs on the administration of the Refuge, and has determined that this use is compatible with the purposes of the Refuge and the NWR System’s mission statement.

Fishing accounts for about 20% of the visits to the Refuge per year. The allowance of fishing on newly acquired Refuge lands will expose one of the largest user groups to the Refuge habitats and facilitate a better appreciation and understanding of the local ecosystem, which was a purpose given in the EA for land acquisition (U.S. Fish and Wildlife Service 1994). Increased public understanding will increase the success of floodplain preservation and restoration efforts.

Game Fish

In 2013, IN DNR sold 484,918 fishing licenses. Some of these anglers likely fish on the Refuge lands. Fish populations are actively managed by the IN DNR. Through surveys and monitoring, the state develops length limits and bag limits to keep populations healthy and provide for various age classes of fish. Habitat changes and weather may affect population numbers more than harvest. The number of anglers is not expected to change with this alternative.

Non-game fish

Non-game fish are typically not desirable to anglers and if caught incidentally, are often put back into the water. Most non-game fish are impacted more by habitat changes than by angling.

Other aquatic species

Other aquatic species such as frogs, toads, turtles, mussels, aquatic invertebrates, birds, and mammals may be temporarily disturbed by fishing or the means of access to fish such as motorboats or wading. This disturbance is minor and there are no known impacts to these populations from fishing in this area. No impacts to the habitat of other aquatic species are expected from public fishing other than occasional bank disturbance.

4.2.5.B Anticipated Direct and Indirect Impact on Refuge Programs, Facilities, and

Cultural Resources

Other Refuge Wildlife-Dependent Recreation

According to the 2014 RAPP Report, approximately 24,500 visitors used the Refuge units in 2014. Many of these visits were for fishing (4,800 visits). Hunting visits totaled 9,900 while non-consumptive visits totaled approximately 9,800.

Most other recreational visits occur from April into December for the purpose of hunting, bird watching and other wildlife observation. Most hunting occurs in the fall with spring turkey hunting also popular. Environmental education and interpretation also occur on these units, but to a lesser degree than wildlife observation. The majority of the environmental education and interpretation activities occur in the spring, summer and early fall. This is also when most fishing occurs, but since fishing occurs in specific habitats, the uses are typically separated spatially. Conflicts with fishing are expected to be minimal. Varied public uses have taken place in the Refuge for many years and the Service has experienced few conflicts between anglers and non-anglers engaging in wildlife observation, environmental education and interpretation.

This alternative will give the public the opportunity to participate in another wildlife-oriented activity that is compatible with the purposes for which the refuge was established and develop an increased awareness of the Refuge and the National Wildlife Refuge System. The Service will be meeting public use demand and public relations will be enhanced with the local communities

Refuge Facilities

Fishing may occur by boat or from the bank. Current Refuge facilities are gravel parking lots, access roads, and one boat ramp at Snakey Point Marsh. There are boat ramps on adjacent state and county lands that provide some access to Refuge as well. Few, if any, additional impacts to refuge facilities (roads, parking lots, and trails) will occur with this alternative. Refuge facilities would receive the slightly more users, but impacts are still deemed minimal. Annual maintenance of facilities is a routine part of management. Any maintenance or improvement of existing roads and parking areas will cause minimal short term impacts to localized soils and may cause some temporary wildlife disturbance.

Physical developments to accommodate the public's use and enjoyment of these refuge lands will generally be limited to small parking areas, informational and educational signs, and access roads. On some units, short hiking trails and wildlife observation areas may be developed.

Disturbance by vehicles will be limited to existing parking areas.

Cultural Resources

This alternative will not have any additional impacts to cultural resources. Fishing activities will result in no ground disturbance or disturbance to standing structures and would have no effect on any historic properties.

4.2.5.C Anticipated Direct and Indirect Impact on Refuge Environment and Community

Refuge personnel expect no measurable adverse impacts by this proposed action on the Refuge environment which includes soils, vegetation, air quality, water quality and solitude. Some disturbance to surface soils and vegetation would occur in some areas, however these disturbances would be minimal.

The Service owns and administers numerous National Wildlife Refuges that are distributed throughout the country. All Refuge lands are part of the NWR System and the Service's primary purpose for these lands is to ensure the preservation of migratory birds, threatened and endangered species, and resident wildlife. An additional primary purpose established by the Service for these lands is to provide opportunities for the public to hunt, fish, observe and photograph wildlife, and increase public understanding and appreciation of the different ecosystems.

As a result of this alternative, expenditures by visitors for meals, lodging and transportation would increase in the communities where these Refuge lands are located. According to the 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, hunting and fishing expenditures in Indiana totaled \$1.02 billion. Also in 2011, \$752 million was spent on non-consumptive recreational activities in Indiana. Municipalities and community organizations could bring additional tourism revenues into their economies by establishing partnerships with the Service to develop and promote the recreational opportunities that are available on the Refuge lands surrounding their communities.

Impacts of this alternative on the refuge physical environment would have minimal to negligible effects. Some disturbance to surface soils, topography, and vegetation would occur in areas open to fishing, and is expected to be minimal. Refuge regulations do not permit the use of vehicles off of designated refuge roads. Vehicle access by permit for anglers with disabilities would be confined to existing roads and parking lots.

Impacts to the natural hydrology would be negligible. Refuge staff expects impacts to air and water quality to be minimal and only due to refuge visitor's use of automobiles on adjacent township and county public roads. The effect of these refuge-related activities on overall air and water quality in the region are anticipated to be negligible. Impacts associated with solitude are expected to be minimal given the limited time, season, and space management techniques used to avoid conflicts among user groups.

Public fishing has not resulted in any significant adverse effects on the soils, vegetation, air and water quality, solitude, or Service management activities associated with Refuge lands. The Preferred Alternative would have similar minimal to negligible effects on human health and safety.

There is a potential to have some minimal disturbance on the general public, nearby residents, and refuge visitors. The disturbance factor is considered minimal, as the refuge already has fishing taking place on thousands of acres of federal and state properties, and on thousands of acres of private property.

4.2.5.D Other Past, Present, Proposed, and Reasonably Foreseeable Fishing Programs and Anticipated

Impacts

Fishing has been allowed on Patoka River NWR & MA since the first Hunting and Fishing Plan was approved and registered in the Code of Federal Regulations in 1996. 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 in eliminating conflicts between user groups. On a case by case basis, the Refuge Manager will determine if such a tool is necessary to limit conflicts.

4.2.5.E Anticipated Impacts If Individual Fishing Programs are Allowed to Accumulate

Fishing opportunities are basically constituted by individual anglers visiting the refuge lands. These events are sporadic and numbers fluctuate depending on season, river levels, and weather. These events should not provide any impacts beyond what has been discussed elsewhere in the analysis. National Wildlife Refuges conduct or will conduct fishing programs within the framework of State and Federal regulations. The Preferred Alternative is at least as restrictive as the State of Indiana and in some cases, may be more restrictive. By maintaining fishing regulations that are as, or more, restrictive than the State's, individual refuges ensure that they are maintaining seasons which are supportive of management on a regional basis..

Fishing in the Refuge will have minimal impacts to fish populations on the Patoka River or in Indiana. The majority of these lands were open to fishing before being acquired by the Service. There may be a slight increase in the number of fish taken on refuge lands from when these lands were in private ownership simply because they are open to more people. However, the large amount of acreage spreads the use out.

Refuge personnel expect and witness that most anglers respect spacing needs and will essentially regulate themselves. User conflicts might occur between non-consumptive users and anglers. This is not expected, since the uses are typically spatially separated.

4.2.6 Environmental Justice

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. This alternative will not disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations.

The Refuge Recreation Act of 1962 (16 U. S. C. 460K) and the National Wildlife Refuge System Administration Act of 1966 (16 U. S. C. 668-ddee) provide authorization for hunting and fishing on National Wildlife Refuges. The effects of hunting and fishing on refuges have been examined in several environmental review documents, including the Final Environmental Impact Statement on the Operation of the National Wildlife Refuge System (1976), Recommendations on the Management of the National Wildlife Refuge System (1978), and the Draft Environmental Impact Statement on the Management of the National Wildlife Refuges (1988). Nothing in the establishing authority for the Refuge [Emergency Wetland Resources Act of 1986] precludes fishing on the refuge.

In the 1994 Refuge Final Environmental Assessment developed for the acquisition of these lands, the selected alternative stated one of the acquisition objectives for the expressed purposes of increasing public opportunities for outdoor recreation, such as hunting or fishing, and environmental education compatible with the other refuge purposes listed (see chapter 1).

Fishing accounts for many of the visits to the Refuge. The continued allowance of fishing on the refuge will expose public user groups to floodplain habitats and facilitate a better appreciation and understanding of this ecosystem. This will increase the success of floodplain preservation and restoration efforts.

As stated, public fishing has been allowed on Refuge lands and adjacent IDNR lands since acquisition. During this period, public fishing has not resulted in any significant adverse effects on Service management activities. Potential public use conflicts will be minimized by seeking a balance between the consumptive and non-consumptive uses and/or by closing areas where conflict cannot be avoided by other means. Maintaining current fishing opportunities will reduce confusion between the patchworks of different lands in and around the Refuge boundary.

SECTION 4.3 Alternative C: Allow fishing only for special events, such as for youth or anglers with disabilities on recently acquired fee title lands (291 acres) and the Columbia Mine Conservation Easement (1,043 acres) in accordance with federal regulations, Refuge-specific regulations, the Columbia Mine Public Use Plan, and the laws of the State of Indiana. Public use on 7,110 acres acquired prior to 2013-2014 will remain unchanged.

4.3.1 Habitat Impacts

Fishing access, in most cases, will be by foot access only. This alternative may reduce habitat impacts from current, since there would be fewer overall anglers. However, special events would concentrate users and managers would need to plan to use areas where habitat impacts would be

minimal. Parking will be restricted to designated parking lots. Impacts on vegetation should be temporary and similar to that occurring from non-consumptive users. Anglers with disabilities will utilize existing gravel roads and trails and be accommodated by permit on a case by case basis.

4.3.2 Biological Impacts

The harvest of fish species will be in accordance with Federal regulations and limits set by the state of Indiana. Harvest under this alternative would be more concentrated to specific events so that harvest may be higher at a particular time, but overall would likely be reduced from current harvest. The IN DNR regulates fishing and has determined that the Patoka River has a typical assemblage of fish species and habitat that supports fishing as outlined in Indiana fishing regulations.

Other fish or wildlife not being harvested may be disturbed by anglers accessing fishing locations. They may flush or move wildlife as the animals try to avoid human contact. This disturbance will be similar to the disturbance animals experience on state Fish and Wildlife Areas and will be minimal and temporary in nature.

4.3.3 Listed Species

No effect is expected for any federally listed threatened or endangered species or their critical habitat. A consultation pursuant to Section 7 of the Endangered Species Act was conducted as part of this EA and the updated Fishing Plan. A finding of “No Effects” was determined. No impacts are anticipated for state listed species.

4.3.4 Historic Properties and Cultural Resources

There are no historical properties documented on current Refuge lands. Fishing is not expected to cause ground disturbance or disturbance to standing structures and will have no effect on any historic properties located on lands acquired in the future. The addition of facilities associated with fishing would have individual cultural resources review.

4.3.5 Cumulative Impact Analysis of the Proposed Action

4.3.5.A Anticipated Direct and Indirect Impact of Proposed Fishing on Wildlife Species

The Service has allowed public fishing since acquisition of refuge lands began in 1994. The Service has determined that this use is compatible with the purposes of the NWRS mission statement. During the acquisition period through today, the Service and IN DNR have not noted any significant adverse effects of fishing on regulated populations.

The allowance of fishing events for underserved populations will increase appreciation and understanding of Refuge habitats and the floodplain ecosystem for this user group, but will reduce the overall exposure of the public to Refuge lands. This increase in exposure and understanding of the ecosystem was a purpose given in the EA for land acquisition (U.S. Fish and Wildlife Service 1994). Increased public understanding will increase the success of floodplain preservation and restoration efforts and this benefit may be reduced under this

alternative.

Game Fish

In 2013, IN DNR sold 484,918 fishing licenses. Some of these anglers likely fish on the Refuge lands. Fish populations are actively managed by the IN DNR. Through surveys and monitoring, the state develops length limits and bag limits to keep populations healthy and provide for various age classes of fish. Habitat changes and weather may affect population numbers more than harvest. The number of anglers would decrease with this alternative.

Non-game fish

Non-game fish are typically not desirable to anglers and if caught incidentally, are often put back into the water. Most non-game fish are impacted more by habitat changes than by angling.

Other aquatic species

Other aquatic species such as frogs, toads, turtles, mussels, aquatic invertebrates, birds, and mammals may be temporarily disturbed by fishing or the means of access to fish such as motorboats or wading. This disturbance is minor and there are no known impacts to these populations from fishing in this area. No impacts to the habitat of other aquatic species are expected from public fishing other than occasional bank disturbance.

4.3.5.B Anticipated Direct and Indirect Impact on Refuge Programs, Facilities, and Cultural Resources

Other Refuge Wildlife-Dependent Recreation

According to the 2014 RAPP Report, approximately 24,500 visitors used the Refuge units in 2014. Many of these visits were for fishing (4,800 visits). Hunting visits totaled 9,900 while non-consumptive visits totaled approximately 9,800.

Most other recreational visits occur from April into December for the purpose of hunting, bird watching and other wildlife observation. Most hunting occurs in the fall with spring turkey hunting also popular. Environmental education and interpretation also occur on these units, but to a lesser degree than wildlife observation. The majority of the environmental education and interpretation activities occur in the spring, summer and early fall. This is also when most fishing occurs, but since fishing occurs in specific habitats, the uses are typically separated spatially. Conflicts with fishing are expected to be minimal. Varied public uses have taken place in the Refuge for many years and the Service has experienced few conflicts between anglers and non-anglers engaging in wildlife observation, environmental education and interpretation.

This alternative will give the public the opportunity to participate in another wildlife-oriented activity that is compatible with the purposes for which the refuge was established and develop an increased awareness of the Refuge and the National Wildlife Refuge System. The Service will be meeting some public use demand, but not all.

A reduced fishing program on refuge lands would likely cause confusion among the public since

this would be different than adjacent state lands. It would also make law enforcement more difficult to have some areas open and some only partially open.

Refuge Facilities

Fishing may occur by boat or from the bank. Current Refuge facilities are gravel parking lots, access roads, and one boat ramp at Snakey Point Marsh. There are boat ramps on adjacent state and county lands that provide some access to Refuge as well. Few, if any, additional impacts to refuge facilities (roads, parking lots, and trails) will occur with this alternative. Refuge facilities would receive the slightly more users, but impacts are still deemed minimal. Annual maintenance of facilities is a routine part of management. Any maintenance or improvement of existing roads and parking areas will cause minimal short term impacts to localized soils and may cause some temporary wildlife disturbance.

Physical developments to accommodate the public's use and enjoyment of these refuge lands will generally be limited to small parking areas, informational and educational signs, and access roads. On some units, short hiking trails and wildlife observation areas may be developed.

Disturbance by vehicles will be limited to existing parking areas.

Cultural Resources

This alternative will not have any additional impacts to cultural resources. Fishing activities will result in no ground disturbance or disturbance to standing structures and would have no effect on any historic properties. Any new facilities constructed to facilitate this alternative would have individual cultural resources review.

4.3.5.C Anticipated Direct and Indirect Impact on Refuge Environment and Community

Refuge personnel expect no measurable adverse impacts by this proposed action on the Refuge environment which includes soils, vegetation, air quality, water quality and solitude. Some disturbance to surface soils and vegetation would occur in some areas, however these disturbances would be minimal.

The Service owns and administers numerous National Wildlife Refuges that are distributed throughout the country. All Refuge lands are part of the NWR System and the Service's primary purpose for these lands is to ensure the preservation of migratory birds, threatened and endangered species, and resident wildlife. An additional primary purpose established by the Service for these lands is to provide opportunities for the public to hunt, fish, observe and photograph wildlife, and increase public understanding and appreciation of the different ecosystems.

As a result of this alternative, expenditures by visitors for meals, lodging and transportation would decrease in the communities where these Refuge lands are located. According to the 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation, hunting and fishing expenditures in Indiana totaled \$1.02 billion. Also in 2011, \$752 million was spent on non-consumptive recreational activities in Indiana. Municipalities and community organizations

could bring additional tourism revenues into their economies by establishing partnerships with the Service to develop and promote the recreational opportunities that are available on the Refuge lands surrounding their communities.

Impacts of this alternative on the refuge physical environment would have minimal to negligible effects. Some disturbance to surface soils, topography, and vegetation would occur in areas open to fishing, and is expected to be minimal. Refuge regulations do not permit the use of vehicles off of designated refuge roads. Vehicle access by permit for anglers with disabilities would be confined to existing roads and parking lots.

Impacts to the natural hydrology would be negligible. Refuge staff expects impacts to air and water quality to be minimal and only due to refuge visitor's use of automobiles on adjacent township and county public roads. The effect of these refuge-related activities on overall air and water quality in the region are anticipated to be negligible. Impacts associated with solitude are expected to be minimal given the limited time, season, and space management techniques used to avoid conflicts among user groups.

Public fishing has not resulted in any significant adverse effects on the soils, vegetation, air and water quality, solitude, or Service management activities associated with Refuge lands. Since fishing has already been occurring for the general public, this alternative could reduce spending in the local area. However, special events for fishing would bring more people to the communities at those times when events are held. This Alternative would have minimal to negligible effects on human health and safety.

There is a potential to have some minimal disturbance on the general public, nearby residents, and refuge visitors. The disturbance factor is considered minimal, as the refuge already has fishing taking place on thousands of acres of federal and state properties, and on thousands of acres of private property.

4.3.5.D Other Past, Present, Proposed, and Reasonably Foreseeable Fishing Programs and Anticipated

Impacts

Fishing has been allowed on Patoka River NWR & MA since the first Hunting and Fishing Plan was approved and registered in the Code of Federal Regulations in 1996. 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 in eliminating conflicts between user groups. On a case by case basis, the Refuge Manager will determine if such a tool is necessary to limit conflicts.

4.3.5.E Anticipated Impacts If Individual Fishing Programs are Allowed to Accumulate

Fishing events under this alternative would occur several times per year and would be controlled to place and time. These events should not provide any impacts beyond what has been discussed elsewhere in the analysis. National Wildlife Refuges conduct or will conduct fishing programs

within the framework of state and federal regulations. This alternative is at least as restrictive as the State of Indiana and in some cases, may be more restrictive. By maintaining fishing regulations that are as, or more, restrictive than the state's, individual refuges ensure that they are maintaining seasons which are supportive of management on a regional basis.

Fishing in the Refuge will have minimal impacts to fish populations on the Patoka River or in Indiana. The majority of these lands were open to fishing before being acquired by the Service. There may be a slight increase in the number of fish taken on refuge lands from when these lands were in private ownership simply because they are open to more people. However, the large amount of acreage spreads the use out.

Refuge personnel expect and witness that most anglers respect spacing needs and will essentially regulate themselves. User conflicts might occur between non-consumptive users and anglers. This is not expected, since the uses are typically spatially separated.

4.3.6 Environmental Justice

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. This alternative will not disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations.

The Refuge Recreation Act of 1962 (16 U. S. C. 460K) and the National Wildlife Refuge System Administration Act of 1966 (16 U. S. C. 668-ddee) provide authorization for hunting and fishing on National Wildlife Refuges. The effects of hunting and fishing on refuges have been examined in several environmental review documents, including the Final Environmental Impact Statement on the Operation of the National Wildlife Refuge System (1976), Recommendations on the Management of the National Wildlife Refuge System (1978), and the Draft Environmental Impact Statement on the Management of the National Wildlife Refuges (1988). Nothing in the establishing authority for the Refuge [Emergency Wetland Resources Act of 1986] precludes fishing on the refuge.

In the 1994 Refuge Final Environmental Assessment developed for the acquisition of these lands, the selected alternative stated one of the acquisition objectives for the expressed purposes

of increasing public opportunities for outdoor recreation, such as hunting or fishing, and environmental education compatible with the other refuge purposes listed (see chapter 1).

Fishing accounts for many of the visits to the Refuge. The continued allowance of fishing on the refuge will expose public user groups to floodplain habitats and facilitate a better appreciation and understanding of this ecosystem, but this outreach benefit will be reduced from the current level and from the preferred alternative. Reducing fishing to only special events may allow local fish populations to increase to unhealthy levels.

As stated, public fishing has been allowed on Refuge lands and adjacent IDNR lands since acquisition. During this period, public fishing has not resulted in any significant adverse effects on Service management activities. Potential public use conflicts will be minimized by seeking a balance between the consumptive and non-consumptive uses and/or by closing areas where conflict cannot be avoided by other means.

CHAPTER 5. REGULATORY COMPLIANCE

The Refuge Recreation Act of 1962 (16 U.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 for which an area was established, 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 (16 U.S.C. 688dd-ee) authorizes the Secretary of the Interior to permit 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 purposes for which the area was established. The Improvement Act of 1997 is the latest amendment to the NWR System Administration Act. It supports the NWR System Administration Act's language concerning the authorization of fishing and other recreational uses on Refuge lands. The NWR Improvement Act substantiates the need for the NWR System to focus first and foremost on the conservation of fish, wildlife, and plant resources and their habitats and states that other uses will only be authorized if they are determined to be compatible with this mission statement and the purposes for which the Refuge was established.

Patoka River NWR & MA was established under the authority of the Emergency Wetlands Resources Act of 1986 and its purpose is to provide for the development, advancement, management, conservation, and protection of fish and wildlife resources. The 1994 Final EIS developed for the establishment of the Refuge identified providing compatible wildlife-dependent recreational public uses, such as hunting, fishing, wildlife observation and photography, environmental education and interpretation as being a primary goal for the Refuge. This EIS states that fishing will be permitted on most Units of the Refuge in accordance with federal regulations, refuge regulations, and state seasons. Additionally, fishing was identified in the 2008 Interim Comprehensive Conservation Plan (CCP) that was developed for the Refuge as being a priority public uses that would be authorized on most Units of the Refuge. The Service has determined (i.e., Compatibility Determination included with the 2008 CCP) that these uses

are compatible with the purpose of the Refuge and the mission statement of the NWR System. Annual changes to the fishing program will be included in the Fishing Plan and updated in the Code of Federal Regulations.

CHAPTER 6. CONSULTATION AND COORDINATION WITH OTHERS

The Indiana Department of Natural Resources Division of Fish and Wildlife was contacted and wrote a letter of concurrence regarding the 2014 Fishing Plan. The Fish and Wildlife Service also provided an in-depth review by the Regional Office personnel and staff biologists. Numerous contacts were made throughout the area of the refuge soliciting comments, views, and ideas into the development of the accompanying Fishing Plan.

CHAPTER 7. PUBLIC COMMENT ON DRAFT EA AND RESPONSE

No responses or comments were received during the comment period.

CHAPTER 8. REFERNECES

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