

**U.S. Fish and Wildlife Service**  
**Spatial Habitat Management Plans – Supplemental Document For:**  
**Overflow National Wildlife Refuge**

*June 2022*

**Mississippi Basin and South Atlantic-Gulf Interior Regions**

# **U.S. Fish and Wildlife Service**

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### **Overflow National Wildlife Refuge**

Mississippi Basin and South Atlantic-Gulf Interior Regions

*June 2022*

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# Chapter 1. Introduction

## Scope and Rationale

The U.S. Fish and Wildlife Service (Service or We) prepared this Spatial Habitat Management Plan (SHMP), which consists of this Supplemental Document and accompanying individual Overflow National Wildlife Refuge (NWR or refuge) Map-Sheets to serve as the Habitat Management Plan (HMP) for the Overflow NWR.

Overflow NWR is located in Ashley County, Arkansas, about five miles west of Wilmot, Arkansas, or fifteen miles southeast of Hamburg, Arkansas. Overflow NWR is one of four refuges forming an administrative complex, which also includes Felsenthal National Wildlife Refuge to the west, Pond Creek National Wildlife Refuge to the northwest, and the Oakwood Unit National Wildlife Refuge to the north (See Overview Map-Sheet).

Overflow NWR occupies the lands adjacent to Overflow Creek extending south from Arkansas state highway 8E, to the Louisiana state line. Overflow Creek and its tributaries form a complex network of waterways within the refuge that fuel its bottomland hardwood forest. Historically, periodic flooding of the "bottoms" (bottomland hardwoods) during winter and spring provided excellent wintering waterfowl habitat. These wetlands support a wide diversity of native plants and animals, providing habitat for migrant and resident waterfowl, marsh and water birds, and neotropical migratory birds (See Overview Map-Sheet).

The Refuge Comprehensive Conservation Plan (CCP) and this SHMP are the primary tools used to guide refuge staff in achieving refuge objectives and the mission of the National Wildlife Refuge System (Refuge System). The CCP and associated National Environmental Policy Act (NEPA) Environmental Assessment (EA) for Overflow NWR was finalized in 2010 (U.S. Fish and Wildlife Service [USFWS] 2010a, 2010b). We have used the most recent refuge biological information and data, scientific literature, and ecological principles in developing this HMP to conserve and protect functional communities of native fish, wildlife, and plants. We view the highest measure of biological integrity, diversity, and environmental health (BIDEH) as those natural habitats and associated wildlife populations that existed under historic conditions before humans altered the landscape. We have considered a range of habitat management strategies to meet our specific habitat goals and objectives and conducted a survey of current refuge habitat conditions using scientific reports, conservation partners' professional opinions, and Service wildlife management expertise. We will provide for or maintain all appropriate native habitats and species.

This SHMP is a dynamic working document with a long-term vision that provides guidance for the management of refuge habitats on an annual basis. The plan will provide direction for the next 15 years (2022 – 2037), with subsequent reviews every 5 years, and use of adaptive management principles to assess and modify management activities as required.

We also have considered and incorporated the role of refuge habitats in international, national, regional, state, and local ecosystem plans. To the extent practicable, we craft our goals and objectives to be consistent with these plans, to assist in attaining the goals and objectives of

conservation partners and the larger conservation community, in addition to achieving refuge objectives.

This SHMP outlines a comprehensive habitat management program including refuge overview, resources of concern, habitat management goals and objectives, and habitat management strategies.

## **Legal Mandates**

The U.S. Fish and Wildlife Service administers the National Wildlife Refuge System (Refuge System). The Service is an agency under the Department of the Interior and its purpose is to conserve the nature of America.

The Service's commitment to safeguard the nation's fish, wildlife and their habitats is reflected in its vision statement: "We will continue to be a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals, and commitment to public service. The Service's mission is: "Working with others, to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

The Service is the primary Federal agency responsible for conserving, protecting and enhancing America's fish and wildlife populations and their habitats. These trust resources include migratory birds, federally listed endangered or threatened species, interjurisdictional fish, wetlands, certain marine mammals, and national wildlife refuges. The Service oversees the enforcement of Federal wildlife laws and international treaties on importing and exporting wildlife, management and protection of migratory bird populations, restoration of national fisheries, administration of the Endangered Species Act, and restoration of native plant habitats. The Service also assists states with their fish and wildlife programs and helps other countries develop conservation programs.

The statutory authority for conducting habitat management planning on National Wildlife Refuges is derived from the National Wildlife Refuge System Administration Act of 1966 (Refuge Administration Act), as amended by the National Wildlife Refuge Improvement Act of 1997 (Refuge System Improvement Act), 16 U.S.C. 668dd - 668ee. Section 4(a)(3) of the Refuge System Improvement Act states:

"With respect to the System, it is the policy of the United States that each refuge shall be managed to fulfill the mission of the System, as well as the specific purposes for which that refuge was established ..." and Section 4(a)(4) states: "In administering the System, the Secretary shall monitor the status and trends of fish, wildlife, and plants in each refuge." The Refuge Improvement Act provides the Service the authority to establish policies, regulations, and guidelines governing habitat management planning within the System (Service Manual 620 FW 1).

NEPA mandates our consideration of the impacts of our habitat management on environmental and cultural resources in planning federal actions. This process ensures compliance with NEPA

and serves as the basis for development of the SHMP. In conjunction with the preparation of a Categorical Exclusion to an Environmental Assessment under the requirements of NEPA, the SHMP process includes intra-Service Section 7 Consultation (Appendix B) to fulfill the requirements of the Endangered Species Act (ESA). The ESA provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found.

Federal laws also require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. NEPA mandates our consideration of cultural resources in planning Federal actions. The National Historic Preservation Act (Pub. L. 102–575; 16 U.S.C. 470) requires Federal agencies to locate and protect historic resources—archaeological sites and historic structures eligible for listing or listed in the National Register of Historic Places and museum property—on their land or on land affected by their activities. It also requires agencies to establish a program for those activities and carry them out in consultation with state historic preservation offices (SHPOs). We must also comply with the Archaeological Resources Protection Act (pub. L. 96–95, 16 U.S.C. 470aa-mm) which requires that we protect our archaeological sites from vandalism or looting and issue permits for site excavation.

The Service must also comply with the Appropriate Use and Compatibility policy (603 FW 2, <http://www.fws.gov/policy/603fw2.html>). The refuge manager must first determine that a use is appropriate before undertaking a compatibility review of that use. If the proposed use is not appropriate, the refuge manager will not allow the use and will not prepare a compatibility determination. A compatible use is one “that will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge.” The refuge manager may allow or deny any use, even one that is compatible, based on other considerations such as public safety, policy, or available funding. Refuge management economic activities such as commercial timber harvest, cooperative farming, and invasive species management are subject to compatibility. The CDs are included in the CCPs are incorporated by reference and others will be updated through this HMP process (USFWS 2010a).

SHMPs comply with all applicable laws, regulations, and policies governing the management of National Wildlife Refuge System. The Service incorporates by reference a complete listing of all relevant legal mandates, regulations, and policies that apply to this SHMP located in Chapter 1 and the Appendices of the Refuge CCP (USFWS 2010a).

### **Refuge Purposes**

See Overflow NWR Overview Map-Sheet

### **Refuge Vision**

See Overflow NWR Overview Map-Sheet

### **Relationship to Other Plans**

The Service incorporates by reference a complete listing of all relevant International, national, and regional conservation plans from other federal and state agencies, non-governmental organizations, and tribes that apply to Overflow NWR covered by this stepped-down SHMP which are located in the refuge CCP Chapter I: Background and Chapter II: Overview of the Refuge CCP (USFWS 2010a). Each of the individual Habitat type Map-Sheets also have incorporated appropriate conservation plans into Overflow NWR step-down habitat objectives.

## **Chapter II. Background, Inventory, and Description of Habitat**

The Service incorporates by reference the complete and thorough overview of Overflow NWR in Chapter II of Overflow NWR CCP (USFWS 2010a). Overflow NWR also has a corresponding Overview Map-Sheet that depicts refuge location, physical and geographic setting including climate, topography, hydrology, soils, management unit descriptions, habitat and habitat changes to current conditions (where appropriate), important habitats present but not managed, and changes associated with global climate change (See Overflow NWR Overview Map-Sheet as well as individual refuge habitat-specific map-sheets).

## **Chapter III. Resources of Concern**

Resources of concern (ROC) include species, species groups, and/or communities that support refuge purposes as well as FWS trust resource responsibilities (including threatened and endangered species and migratory birds). Resources of concern are also native species and natural, functional communities such as those found under historic conditions that are to be maintained and, where appropriate, restored on a refuge (601 FW 3.10B[1]).

Resources of concern for Overflow NWR were selected after considering the conservation needs identified within international, national, regional, or ecosystem goals/plans; state fish and wildlife conservation plans; recovery plans for threatened and endangered species; and previously approved refuge resource management plans as identified in the Comprehensive Conservation Planning Process policy [602 FW 3.4 C[1][e)] as well as Chapter I of this HMP, such as:

- BCR 26 Bird Species List
- PIF - Area 05 Bird Species List
- National and Regional Bird Conservation Plans for waterfowl, landbirds, shorebirds, and waterbirds
- USFWS Birds of Conservation Concern
- Federally Threatened and Endangered Species Listings
- State Threatened and Endangered Species Listings
- Refuge Purpose/Service Trust Resources
- Arkansas Natural Heritage Program Data
- Arkansas Wildlife Action Plan

The ROC occur on the refuge and objectives for each are identified on refuge habitat specific map sheets. The species/communities selected as resources of concern from these plans support the following NWRS mandates:

- Support refuge purposes and the NWRS mission;
- Conserve biological integrity, diversity, and environmental health (giving special consideration to rare, declining, or unique natural communities, species, and ecological processes within the refuge boundary); and
- Fulfill FWS trust resource responsibilities (see Chapter I)

Resources of concern identified include:

- Migrating and wintering dabbling ducks
- Forest breeding birds, bats
- Waterbirds, shorebirds (late summer and early fall), and colonial nesting and wading birds
- Aquatic species

Based on habitat types identified on the refuge, we developed a table of resources of concern with their associated habitat types (Table 1.). This table also summarizes the habitat structure required by each resource of concern.

Table 1. Habitat type, resources of concern, and general habitat structure on Overflow NWR

| Primary Habitat Types                                                               | Resource of Concern                            | General Habitat Structure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shallow Water Management: Moist-soil, flooded unharvested cropland, mudflats</b> | <b>Wintering and Migrating Waterfowl</b>       | A combination of annuals and perennials. 70-80 percent moist-soil cover such as, sprangletop ( <i>Leptochloa</i> spp.), yellow nutsedge, Walter's millet ( <i>Echinochloa walteri</i> ), barnyard millet ( <i>E. frumentacea</i> ), tooth-cup ( <i>Ammannia coccinea</i> ), redroot flatsedge ( <i>Cyperus erythrorhizos</i> ), bidens ( <i>Bidens</i> spp.), smartweed, and keep non-desirables (e.g., sesbania, parrotfeather, purple loosestrife, alligatorweed, aster, woody vegetation, and cocklebur) to less than 20%. Water depth 15 – 30 cm. Feeds on moist-soil seeds, tubers, macroinvertebrates, unharvested crop, and leafy vegetation (See Literature References below). |
|                                                                                     | Mallard<br>( <i>Anas Platyrhynchos</i> )       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | Canvasback<br>( <i>Aythya valisineria</i> )    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | Greater Scaup<br>( <i>Aythya marila</i> )      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | Lesser Scaup<br>( <i>Aythya affinis</i> )      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | Northern Pintail<br>( <i>Anas acuta</i> )      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | American Wigeon<br>( <i>Mareca americana</i> ) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                                                                     | Redhead<br>( <i>Aythya americana</i> )         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Primary Habitat Types                       | Resource of Concern                                           | General Habitat Structure                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | Ring-necked Duck<br>( <i>Aythya collaris</i> )                | Shallowly flooded (<10 cm) and moist mudflats with <25% vegetative cover. Primary diet consists of aquatic macroinvertebrates, but also feeds on moist-soil seeds (Helmers 1992; Skagen and Omen 1996). U.S. Shorebird Conservation Plan Mississippi Alluvial Valley Bird Priority List                                                                                                                                                                |
|                                             | <b>Shorebirds</b>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Buff-breasted Sandpiper<br>( <i>Tryngites subruficollis</i> ) |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Dunlin<br>( <i>Calidris alpina</i> )                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Lesser Yellowlegs<br>( <i>Tringa flavipes</i> )               |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Marbled Godwit<br>( <i>Limosa fedoa</i> )                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Piping Plover<br>( <i>Charadrius melodus</i> )                |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Red Knot<br>( <i>Calidris canutus</i> )                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Semipalmated Sandpiper<br>( <i>Calidris pusilla</i> )         |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Short-billed Dowitcher<br>( <i>Limnodromus griseus</i> )      |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Solitary Sandpiper<br>( <i>Tringa solitaria</i> )             |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Dense emergent vegetation/open water</b> | <b>Waterbirds – Wading and Marsh Birds</b>                    | Tall, dense emergent vegetation, such as cattail ( <i>Typha spp.</i> ), bur reed ( <i>Sparganium spp.</i> ), and bulrush ( <i>Schoenoplectus spp.</i> ), with water depth < 4 in. and a vegetation - open water ratio of 70:30. Inhabits wetlands <2.5 to 62.5 acres, but is more abundant in larger wetlands. Feeds on insects, amphibians, small fish, mammals, and crayfish in vegetation fringes and shorelines (See Literature References Below). |
|                                             | Little Blue Heron<br>( <i>Egretta caerulea</i> )              |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Black-crowned Night Heron<br>( <i>Nycticorax nycticorax</i> ) |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Snowy Egret<br>( <i>Egretta thula</i> )                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | American Bittern<br>( <i>Botaurus lentiginosus</i> )          |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | King Rail<br>( <i>Rallus elegans</i> )                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                             | Least Bittern<br>( <i>Ixobrychus exilis</i> )                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Primary Habitat Types                                   | Resource of Concern                                                                                                                                         | General Habitat Structure                                                                                                                                                      |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                         | Yellow Rail<br>( <i>Coturnicops noveboracensis</i> )<br>Least Tern<br>( <i>Sternula antillarum</i> )<br>Pied-billed Grebe<br>( <i>Podilymbus podiceps</i> ) |                                                                                                                                                                                |
| <b>Bottomland Hardwood Forest, Greentree Reservoirs</b> | <b>Forest Breeding Birds</b>                                                                                                                                | Structurally diverse stands of hardwood forests with diverse structure and species composition of understory. (LMVJV 2007 and Forest Management Map-Sheet Table 3.)            |
|                                                         | Wood Duck<br>( <i>Aix sponsa</i> )                                                                                                                          |                                                                                                                                                                                |
|                                                         | Kentucky Warbler<br>( <i>Geothlypis formosa</i> )                                                                                                           |                                                                                                                                                                                |
|                                                         | Painted Bunting<br>( <i>Passerina ciris</i> )                                                                                                               |                                                                                                                                                                                |
|                                                         | Cerulean Warbler<br>( <i>Setophaga cerulea</i> )                                                                                                            |                                                                                                                                                                                |
|                                                         | American Wood Thrush<br>( <i>Hylocichla mustelina</i> )                                                                                                     |                                                                                                                                                                                |
|                                                         | Rusty Blackbird<br>( <i>Euphagus carolinus</i> )                                                                                                            |                                                                                                                                                                                |
|                                                         | Prothonotary Warbler<br>( <i>Protonotaria citrea</i> )                                                                                                      |                                                                                                                                                                                |
|                                                         | Swainson's Warbler<br>( <i>Limnothlypis swainsonii</i> )                                                                                                    |                                                                                                                                                                                |
|                                                         | Yellow-billed Cuckoo<br>( <i>Coccyzus americanus</i> )                                                                                                      |                                                                                                                                                                                |
|                                                         | Orchard Oriole<br>( <i>Icterus spurius</i> )                                                                                                                |                                                                                                                                                                                |
|                                                         | Bald Eagle<br>( <i>Haliaeetus leucocephalus</i> )                                                                                                           |                                                                                                                                                                                |
|                                                         | Swallow-tailed Kite<br>( <i>Elanoides forficatus</i> )                                                                                                      |                                                                                                                                                                                |
| <b>Riverine</b>                                         | <b>Aquatic Species</b>                                                                                                                                      | Siltation and other water quality issues are identified as possible causes of the decline of this species and afforestation should contribute to the recovery of this species. |
|                                                         | Alligator Snapping Turtle<br>( <i>Macrochelys temminckii</i> )                                                                                              |                                                                                                                                                                                |

## **Wintering and Migratory Waterfowl**

### *Significance and Habitat Requirements*

The MAV and particularly Overflow NWR have historically supported one of the largest concentrations of mallards and other wintering waterfowl in the United States. Due to the area's high quality forested wetlands and significant numbers of wintering waterfowl, the refuge was designated as an Important Bird Area.

North American waterfowl have seasonally dynamic life-cycle needs that are fulfilled by use of a diversity of habitats and foods throughout their annual range, which, for most species, is continental in scale in contrast to resident wildlife. Indeed, habitat (both its quantity and quality) is the primary template for ecological strategies of waterfowl (and all wildlife) and a critical determinant of their survival and productivity. Hence, sustaining viable and harvestable populations of waterfowl depends on conservation and management of habitats throughout the Flyways of North America. Concerning migration and wintering habitat, dabbling ducks need a diversity of wetlands including the following:

- (1) Flooded Cropland (Baldassarre and Bolen 1984, Delnicki and Reinecke 1986, Combs and Fredrickson 1996, Petrie et al. 1998, Reinecke et al. 1989, Sherfy 1999, Checkett et al. 2002, Kaminski et al. 2003, Heitmeyer 2006, Kross et al. 2008, Foster 2009, Foster et al. 2010, and Foster et al. 2011);
- (2) Natural Wetlands: Bottomland Hardwood Forest and GTRs (Fredrickson and Batema 1992, Dugger and Fredrickson 2001, Fredrickson and Heitmeyer 1988, Reinecke et al. 1989); and moist-soil (Low and Bellrose 1944, Fredrickson and Taylor 1982, Fredrickson and Reid 1988, Fredrickson 1996, Reinecke et al. 1989, Gray et al. 1999, Sherfy 1999); and
- (3) Refuge (i.e., Sanctuary) (Henry 1980, Paulus 1982, Heitmeyer and Raveling 1988, Reinecke et al. 1989, Kahl 1991, Strickland and Tullos 2009, and Devers and Collins 2011).

### *Potential Refuge Contribution to Habitat Needs*

See refuge specific maps-sheets related to waterfowl for contributions to North American Waterfowl Management Plan, Lower Mississippi River Valley Joint Venture Step-down Plan habitat and population level Objectives. The Overflow NWR Impoundment and Sanctuary Mapsheet has specific duck energy days (DEDs) and habitat acreage objectives.

## **Shorebirds**

### *Significance and Habitat Requirements*

Shorebirds have adapted to exploit various habitat types within coastal and interior wetlands. During migration, shorebirds primarily use shallowly flooded coastal or freshwater habitats, with

water depths of <10 cm (Helmert 1992). Shorebirds forage in impoundments which are managed primarily for waterfowl. Freshly dewatered mudflats are rich in invertebrate prey, which sustains migrating and wintering shorebirds, while some species use the areas when they are flooded, depending on foraging guilds. Table 2. summarizes shorebird foraging guilds and habitats used by shorebirds. Individual Refuges provides varying acreage of shorebird habitat, with water levels within -0.5 and 0.5 ft. of marsh sediment elevation.

Shorebirds require stopover sites along migration routes that contain high densities of energy-rich organisms (Skagen and Knopf 1993). Invertebrates are the primary forage for shorebirds, with midges (Chironomidae) being very important in freshwater inland habitats (Helmert 1992; Eldridge 1992; Wirwa 2009). It is estimated that an average-sized shorebird requires at least 8 grams of aquatic invertebrates per day to maintain body mass and build sufficient lipid reserves to continue migration (Loesch et al. 2000). Thus, the availability of high-quality stopover sites is critical for shorebird population sustainability (Skagen and Knopf 1993, Helmert 1992). Availability of invertebrate foods is an important determinant of habitat quality or migrant shorebirds (Sherfy 1999).

During migration shorebirds utilize a wide range of habitats ranging from coastal to inland wetlands to upland habitats (Helmert 1992). Habitats within the interior United States for most species of shorebirds are typically bare mudflats or very sparsely vegetated wetlands. However, specific habitat requirements vary greatly between shorebird species, due to the wide range of foraging techniques (i.e., gleaning by plovers vs. probing by sandpipers). Adaptations in body size, bill length, and leg length allow the species to partition the habitats, limiting interspecific competition for food resources.

A variety of mudflat habitats that support high concentrations of invertebrates are necessary to meet the habitat requirements of the shorebirds migrating through the MAV. Mudflat availability will be needed from July through November to cover the critical fall migration period. Specific attention should be given to providing mudflat habitat during July and August when mudflats are typically unavailable and in greatest need by priority shorebird species. Water levels should range from dry to 12 cm in depth to cover the needs of plovers and yellowlegs (Helmert 1992).

#### *Potential Refuge Contribution to Habitat Needs*

Through impoundment management, Overflow NWR can provide diverse wetland habitat conditions used by shorebirds. Each refuge map-sheet has specific habitat characteristics and acreage objectives for shorebird species. See refuge specific map-sheets for contributions to U.S. Shorebird Conservation Plan (Brown et al. 2001) within the Lower Mississippi, Western Gulf Coast Shorebird Planning Region, Waterbird Conservation Plan, and the Overflow NWR Impoundment and Sanctuary Management Map-Sheet has specific habitat characteristics and acreage objectives for shorebird, waterbird, and secretive marsh bird species.

### **Waterbirds – Wading and Marsh Birds**

#### *Significance and Habitat Requirements*

Threats to waterbird populations include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and industries, disturbance, and conflicts arising from abundant species. Wading birds have habitat needs that are similar to those of other Resources of Concern species and are expected to benefit from management actions described in this plan and on the refuge specific map sheets. Wood Storks (*Mycteria americana*) are considered wading birds. One population breeds in Florida, Georgia, and South Carolina, and is federally protected (threatened). The other population breeds from Mexico to northern Argentina and is not federally protected. Wood storks from each of these populations occur seasonally in Mississippi during the non-breeding season (May-October) and are not distinguishable from one another. The major threat to this species is a reduction in food base (primarily small fish) due to habitat loss, modification, and fragmentation. Typical foraging sites include freshwater marshes, swales, ponds, hardwood and cypress swamps, narrow tidal creeks or shallow tidal pools, and artificial wetlands (such as stock ponds; shallow, seasonally flooded roadside or agricultural ditches; and impoundments).

As with many other groups of birds, the variables that control habitat selection and quality are many and complex for secretive marsh birds. At small scales, food availability, cover, nest material, protection from predators and weather, presence of open water, water depth, and type, height and density of vegetation, all influence habitat selection and use by these birds (Osnas 2003; Lor and Malecki 2006; Johnson and Dinsmore 1986). On landscape scales, the area and distribution of suitable habitat patches is an important determinant in use by certain marsh birds, while others appear not to be affected by these variables (Brown and Dinsmore 1986; Benoit and Askins 2002; Fairbairn and Dinsmore 2001). A general understanding of these variables and how they influence habitat quality and avian species richness on the refuge is important for management decisions. Two habitat requirements are shared by most or all of the species which use Overflow NWR: the presence of emergent marsh vegetation and the presence of open water in various proportions to the marsh cover. Overflow NWR can provide open water habitat used by secretive marsh birds and their allies.

#### *Potential Refuge Contribution to Habitat Needs*

Through impoundment management, Overflow NWR can provide diverse wetland habitat conditions used by waterbirds. Each refuge map-sheet has specific habitat characteristics and acreage objectives for waterbird species. See refuge specific map-sheets for contributions to U.S. Shorebird Conservation Plan (Brown et al. 2001) within the Lower Mississippi, Western Gulf Coast Shorebird Planning Region, Waterbird Conservation Plan, and the Overflow NWR Impoundment and Sanctuary Management map-sheet has specific habitat characteristics and acreage objectives for shorebird, waterbird, and secretive marsh bird species.

### **Forest Breeding Birds**

#### *Significance and Habitat Requirements*

Migratory land birds are declining at alarming rates, and much of the decline has been attributed to habitat fragmentation and loss. Conservation of large contiguous blocks of habitat will be necessary to slow and reverse negative trends in migratory bird populations in the Mississippi

Flyway (Rich et al., 2004). Overflow NWR plays an important role in providing bottomland hardwood habitat for forest interior songbirds. The LMVJV considers forest interior songbirds that utilize bottomland hardwood forests a priority resource, especially for Kentucky Warbler (*Geothlypis formosa*), Swainson's Warbler (*Limnothlypis swainsonii*), and Cerulean Warbler (*Setophaga cerulea*) (LMVJV Forest Resource Conservation Working Group 2007).

Although conservation of large, unfragmented blocks of forest is cited as the most important need of forest interior breeding songbirds (Rich et al., 2004), there is some diversity of habitat requirements among species within this group. Certain species require very specific habitat conditions or elements that may not be captured by landscape-scale conservation efforts, or which may cause conflicts among habitat needs of different bird species on managed lands. Habitat elements and management practices known or thought to be either beneficial or detrimental to specific bird species listed in Table 1. (above), are presented in Table 2.

Table 2. Habitat characteristics required by or correlated with occurrence of forest interior-breeding birds known or presumed to breed on Overflow NWR.

| Common Name                                            | Habitat Element, Characteristic, or Management Practice                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red-shouldered Hawk<br>( <i>Buteo lineatus</i> )       | Prefers mature hardwood forest with open understory (Dykstra et al., 2008)                                                                                                                                                                                                                                                                                                                                                      |
| Swallow-tailed Kite<br>( <i>Elanoides forficatus</i> ) | Although considered a forest edge species (Zimmerman, 2004), swallow-tailed kites require large areas for breeding—100,000 acres (40,000 ha) for 80 breeding pairs (Cely & Sorrow, 1990)                                                                                                                                                                                                                                        |
| Yellow-billed Cuckoo<br>( <i>Coccyzus americanus</i> ) | Avoids heavy forest; prefers open woodland, low dense shrubs, and water nearby (Hughes, 1999); density reduced in stands subjected to group selection and shelterwood cuts (Norris et al., 2009)                                                                                                                                                                                                                                |
| Wood Thrush<br>( <i>Hylocichla mustelina</i> )         | Patch clearcut, 1 acre [possible positive effect] (Germaine et al., 1997);                                                                                                                                                                                                                                                                                                                                                      |
| Cerulean Warbler<br>( <i>Setophaga cerulea</i> )       | Prefers mature bottomland hardwoods for breeding (Hamel, 2000); Area sensitive breeder, may require tracts of 8,000 ha (20,000 acres) for sustainable breeding (i.e. source) populations in the MA Cerulean Warbler (Mueller et al., 1999); Breeding habitat requirements: closed canopy with scattered, very tall super-emergent trees, well-defined canopy, midstory, shrub, and herbaceous understory present (Lynch, 1981). |
| Prothonotary Warbler<br>( <i>Protonotaria citrea</i> ) | “Scour channels” (sloughs) , snags (Pashley & Barrow, 1993); “Selective timber harvest” negative effect compared with closed-canopy “reference” stand (>30 years since harvest) (Heltzel & Leberg, 2006);                                                                                                                                                                                                                       |

| Common Name                                              | Habitat Element, Characteristic, or Management Practice                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Swainson's Warbler<br>( <i>Limnothlypis swainsonii</i> ) | Switchcane "brakes", palmetto ( <i>Sabal minor</i> ) thickets, Individual tree selection cutting (Pashley & Barrow, 1993); Switchcane "brakes", individual tree selection or "small" patch clearcuts, dense understory, heavy leaf litter (Bednarz et al., 2005); Understory density of 30,000-50,000 stems/ha, switchcane not an essential element of habitat, early successional forest or disturbance gaps, moist soil but no flooding during breeding season (Graves, 2002); "Older Selective harvests" (12-18 years) beneficial effect compared with "reference" stand (>30 years since harvest) (Heltzel & Leberg, 2006); Relatively dense understory, no flooding during growing season, canopy gaps (Somershoe et al., 2003). Switchcane "brakes", palmetto ( <i>Sabal minor</i> ), shaded and fairly dense understory, abundant leaf litter, little herbaceous ground cover (Brown & Dickson, 1994) |
| Kentucky Warbler<br>( <i>Geothlypis formosa</i> )        | Switchcane "brakes", lianas, Individual tree selection cutting (Pashley & Barrow, 1993); "Older Selective harvests" (12-18 years) beneficial effect compared with "reference" stand (>30 years since harvest) (Heltzel & Leberg, 2006); increased detections in thinned BLH on Tensas River NWR compared to untreated stands (Twedt & Somershoe, 2009); 50% higher density after group selection than in untreated BLH (Norris et al., 2009).                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

Priority species such as Swainson's and Kentucky warblers require dense understory growth (Rich et al., 2004), that is often associated with tree fall gaps (Pashley & Barrow, 1993), in forests with large block sizes (>5,200 acres) in a largely forested landscape (>60%) (LMVJV Forest Resource Conservation Working Group 2007). Timber thinning can increase canopy gaps, thereby increasing understory and midstory growth (Robinson and Robinson, 1999). (Thatcher, 2007) found that most Partners in Flight priority species had higher densities in thinned hardwood forest than unthinned. Heltzel and Leberg also found that Swainson's and Kentucky warblers increased by 200% in bottomland hardwood forest where selective timber harvest had occurred (Heltzel and Leberg, 2006). However, this study also showed that prothonotary warbler declined in abundance in harvested stands. Timber harvest can have negative effects on canopy dwelling and forest interior songbirds (Pashley & Barrow, 1993) when forests are fragmented. Nest parasitism by brown-headed cowbirds and predation can occur at higher rates in fragmented forests (Brittingham & Temple, 1983). Norris et al., found that individual selection and group selection harvests benefitted most avian species in a bottomland hardwood forest in Louisiana (Norris et al., 2009).

The management challenge is to provide the correct balance of closed canopy forest and harvested stands that allow for denser understory growth. Fortunately, the LMVJV has already incorporated the different needs of forest interior songbirds along with other priority wildlife species (i.e., bears, waterfowl) into the desired forest guidelines for bottomland hardwood forests (LMVJV Forest Resource Conservation Working Group 2007). These guidelines recommend reduction in canopy cover, retention of snags and den trees and increase in understory vegetation.

### *Potential Refuge Contribution to Habitat Needs*

See refuge specific map-sheets for contributions to Partners in Flight (PIF) Landbird Conservation Plan (Rich et al. 2004) habitat and population levels. By protecting and managing bottomland hardwood forest habitat, the refuge addresses the threat of forest habitat fragmentation and loss, identified in the PIF Landbird Conservation Plan for the Mississippi Alluvial Valley (Twedt et al. 1999). The Overflow NWR Forest Management Map-Sheet has specific habitat characteristics and acreage objectives for Forest Interior Songbirds.

### **Other Species with Complementary Needs**

Habitat management objectives and strategies in this plan are focused on the habitat needs of the priority resources of concern. However, an ecosystem management approach to habitat management will result in overall improvement in the health and function of the ecosystem on the refuge (i.e., BIDEH—Biological Integrity, Diversity, and Environmental Health), benefitting many other species, including those for which the Service has legal responsibility under Federal law.

#### Northern Long-Eared Bat (*Myotis septentrionalis*)

##### *Significance and Habitat Requirements*

The northern long-eared bat has recently been federally listed as “threatened,” and could possibly occur at Overflow NWR. Northern long-eared bats spend the winter hibernating in caves and mines. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. 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 suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds. Northern long-eared bats emerge at dusk to forage in upland and lowland woodlots and tree-lined corridors, feeding on insects, which they catch while in flight using echolocation. This species also feeds by gleaning insects from vegetation and water surfaces.

Suitable summer habitat for northern long-eared bat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags 3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 feet of another forested/wooded habitat. Northern long-eared bats also have been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses. Northern long-eared bats typically occupy their

summer habitat from mid-May through mid-August each year and the species may arrive or leave some time before or after this period (in the Southeast Region the range of dates are from mid-March to late November to include spring staging and fall swarming).

Northern long-eared bat maternity habitat is defined as suitable summer habitat used by juveniles and reproductive (pregnant, lactating, or post-lactating) females. Northern long-eared bat home ranges, consisting of maternity, foraging, roosting, and commuting habitat, typically occur within three miles of a documented capture record or a positive identification of northern long-eared bat from properly deployed acoustic devices, or within 1.5 miles of a known suitable roost tree.

Suitable northern long-eared bat roosts are trees (live, dying, dead, or snag) with a diameter at breast height (dbh) of three inches or greater that exhibits any of the following characteristics: exfoliating bark, crevices, cavity, or cracks. Isolated trees are considered suitable habitat when they exhibit the characteristics of a suitable roost tree and are less than 1000 feet from the next nearest suitable roost tree within a woodlot, or wooded fencerow.

#### *Potential Refuge Contribution to Habitat Needs*

Overflow NWR provides nearly 8,625 acres of diverse bottomland hardwood habitat to meet the needs of the chosen resources of concern and many other wildlife species. The diversity among resources of concern reflects the diversity and importance of bottomland hardwood habitat. Application of the LMJV Forest Working Group forest management recommendations will guide the management of the refuges bottomland hardwood habitat and will conserve prime habitat for the stated resources of concern and many other wildlife species.

#### Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*)

##### *Significance and Habitat Requirements*

The Rafinesque's big-eared bat is one of the least studied bats in the eastern United States and is federally designated as a species of special management concern. This bat is associated with bottomland hardwoods, and because this habitat has decreased, many biologists are concerned about this bat's status. Many states consider the Rafinesque's big-eared bat to be either threatened or endangered. Rafinesque's big-eared bat has a somewhat sporadic distribution across much of the southeastern United States (Bayless and Clark 2009) and is designated as a federal species of concern (Martin et al. 2002). This species has demonstrated preferences for specific features that do not occur evenly across the landscape and may account for its sporadic distribution (Carver and Ashley 2008; Gooding and Langford 2004; Trousdale 2011). In southern Arkansas, bottomland hardwood systems, like those found at Overflow NWR, seem to be important to Rafinesque's big-eared bat as both roosting and foraging habitat (Clark 1990; Clark et al. 1998; Cochran 1999).

Due to the loss of approximately 80% of the bottomland hardwoods in the Lower Mississippi River Alluvial Valley (Tiner 1984), this species has probably been negatively affected. Rafinesque's big-eared bats populations might be declining in Arkansas (Cochran 1999).

An opportunity exists for Overflow NWR with its extensive bottomland hardwood forest to provide important habitat for this species of bat. Furthermore, known roost locations have been found on Upper Ouachita NWR for this species (Rice 2009). Rice conducted research on both Rafinesque's big-eared bat and southeastern bat on Upper Ouachita NWR (Rice 2009). All but two of the 33 roost trees of both bat species on the refuge were found in water tupelo (*Nyssa aquatica*) (Rice 2009). Water tupelos apparently are important roost trees for these species (Mirowsky and Horner 1997, Clark et al. 1998; Cochran 1999, Hoffman 1999; Hofmann et al. 1999, Gooding and Langford 2004, Rice 2009), although they have been found to utilize other tree species such as black gum (*N. sylvatica*) (Mirowsky and Horner 1997), swamp tupelo (*N. nigra*) (Hobson 1998), bald cypress (*Taxodium distichum*) (Clark 1990), water hickory (*Carya aquatica*) (Hoffman 1999), American beech (*Fagus grandifolia*) (Mirowsky and Horner 1997), sycamore (*Platanus occidentalis*) (Clark 1990), and others.

Large diameter trees with large interior cavities within mature bottomland hardwood forests have been found to be important for this bat species (Gooding and Langford 2004, Rice 2009). Management should be directed towards retention of large snags, promotion and regeneration of bald cypress/tupelo stands, and management for mature bottomland hardwood forests (LMJVJ 2007). It should be noted most cypress/tupelo stands are passively managed.

#### *Potential Refuge Contribution to Habitat Needs*

Overflow NWR provides nearly 8,625 acres of diverse bottomland hardwood habitat to meet the needs of the chosen resources of concern and many other wildlife species. The diversity among resources of concern reflects the diversity and importance of bottomland hardwood habitat. Application of the LMJV Forest Working Group forest management recommendations will guide the management of the refuges bottomland hardwood habitat and will conserve prime habitat for the stated resources of concern and many other wildlife species.

#### American Black Bear (*Ursus Americanus*)

##### *Significance and Habitat Requirements*

From 2000 to 2007, refuge staff in cooperation with Arkansas Game and Fish Commission (AGFC), released 55 adult female black bears and 116 cubs at Felsenthal NWR for the purpose of re-establishing a self-sustaining bear population to southern Arkansas. As a result of Overflow NWR's close proximity to Felsenthal NWR, and bear that were released through other efforts, bear commonly occur at Overflow NWR. Anecdotal evidence such as sightings by the staff and the public suggest a healthy and growing bear population. Various size and age classes of bears are seen in and around the refuge. Sightings of female bears with cubs are common. Refuge managers continue to work with AGFC to secure funding for black bear population surveys that will determine bear population growth rate.

American black bear require space because they are a large mammal with landscape-level needs of food and cover. In the southern United States, preferred black bear habitat is characterized by a mosaic of diverse forest habitats on a landscape scale with limited human intrusion. Sanctuary areas are important for this species and can function to stabilize the population by protecting a

nucleus of reproducing females. Black bear need escape cover in the form of thick, impenetrable understory vegetation. Winter denning habitat is also very important to black bears, particularly for pregnant females. Bear are flexible in their choice of den sites and can den on the ground; however, they often choose the cover provided by root masses, logs, or stumps of large downed trees. The optimal den site of southern black bears is the cavity of a large tree. These elevated den sites are critical in areas with significant winter and spring flooding. Black bear need secure corridors to facilitate dispersal between populations, to make seasonal movements for food, for dispersal of younger animals, and for movements of males during the breeding season. In the South, black bear survival and reproduction are highly influenced by oak mast in the fall. Therefore, forest management that promotes the perpetuation of a diverse and mature oak forest will greatly benefit bear.

Overflow NWR provides all necessary habitat requirements for black bears. The refuges bottomland hardwoods, riparian areas, and swamplands supply year-round food, escape cover, sanctuary, and a variety of den sites including mature cavity trees. Furthermore, Overflow NWR plays an important role in broader regional bear management issues by facilitating genetic interchange and dispersal among the regions separated and isolated bear populations. Overflow NWR is situated between Arkansas' native black bear population at White River NWR to the north and the formally, federally-threatened Louisiana black bear to the south and east. Genetic analyses and radio telemetry have revealed that White River NWR and Felsenthal NWR bears have dispersed to Louisiana and Mississippi. Genetic interchange has likely already occurred between White River, Felsenthal, Overflow and Louisiana bears, which could possibly reduce the consequences of genetic drift or inbreeding in the small and fragmented populations there (J. Clark, USGS, unpublished data). Thus, bears from southern Arkansas may play a role in the long-term genetic and perhaps demographic health of the formally threatened Louisiana black bear and bears throughout the Region. For these reasons, the American black bear has been chosen as a resource of concern.

#### *Potential Refuge Contribution to Habitat Needs*

Overflow NWR provides nearly 8,625 acres of diverse bottomland hardwood habitat to meet the needs of the chosen resources of concern and many other wildlife species. The diversity among resources of concern reflects the diversity and importance of bottomland hardwood habitat. Application of the LMJV Forest Working Group forest management recommendations will guide the management of the refuges bottomland hardwood habitat and will conserve prime habitat for the stated resources of concern and many other wildlife species.

#### Aquatic Species

##### *Significance and Habitat Requirements*

Species with complementary habitat requirements which are expected to benefit from the habitat management strategies outlined in this plan include freshwater fish and other aquatic species found in the creeks and the backwater sloughs; however, fishery habitat is very limited on the refuge. Fish populations consist mostly of rough fish, which can withstand hot, murky water with low oxygen content, including long-nosed gar (*Lepisosteus osseus*), buffalo (*Ictiobus* spp.), carp

(Cypriniformes), and bowfin (*Amia calva*). Sport fish species include white crappie (*Pomoxis annularis*), largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), flathead catfish (*Pylodictis olivaris*), and blue catfish (*Ictalurus furcatus*). Many non-game and commercial fishes are also found in the various habitats of the refuge. There are limited data regarding adult and larval fishes within the refuge. However, it is likely that many species occur in refuge waters as larvae, juveniles, and adults. Between 75 and 100 species of fish in the lower Mississippi River basin complete one or more of their life stages in bottomland hardwood wetlands (Killgore and Miller 1995). Freshwater mussels are found throughout the refuge's creeks and backwater sloughs; however, specific information on the abundance, species richness, and distribution of mussels within the refuge is limited.

### *Potential Refuge Contribution to Habitat Needs*

Siltation, other water quality issues and habitat destruction are identified as possible causes of the decline of these species. Afforestation and implementing best management practices associated with forestry management and agricultural practices will benefit all aquatic species. However, since the hydrology of the refuges have been altered these benefits will be localized.

### Large Game

#### *Significance and Habitat Requirements*

Deer are commonly observed on the refuge and generally appear to be abundant. Both refuges provide habitat and hunting programs for white-tailed deer (*Odocoileus virginianus*). Similarly, reforesting landscapes and habitat management activities implemented for trust species, particularly forest management activities, will coincidentally increase the quality and quantity of deer habitat.

The eastern wild turkey (*Meleagris gallopavo*) is the primary resident game bird in the ecosystem, as well as one of special public interest. Being most associated with mature hardwood forests, turkeys were once distributed throughout the ecosystem. However, today, due to habitat destruction and conversion of forests to agriculture, turkeys are generally restricted to the remaining larger blocks of forests, as well as adjacent afforestation and open fields. Despite quality habitat management, turkey populations can fluctuate widely due to a combination of factors other than habitat suitability itself. However, the primary limitation on Eastern Wild Turkey populations in the MAV Region is the limited acreage of forested lands with limited flooding. Although turkeys will readily roost over water, they require dry land for feeding on acorns and other hard-mast during the winter and early spring when flooding is most common. Flooding during the nesting season adversely impacts recruitment by destroying nests, and by directly affecting survival of young poults. Turkey populations in the area have demonstrated the ability to grow relatively rapid with several successive years of favorable water conditions but are observed to decline as a result of late spring and summer flooding, particularly if it occurs in successive years. Turkeys are not a priority species for forest management on these refuges, and as such, their numbers may not be consistently maintained at optimum levels. However, many of the management activities implemented for priority wildlife, such as forest interior and early successional forest birds, will provide collateral benefits to turkeys.

### *Potential Refuge Contribution to Habitat Needs*

Turkey and white-tailed deer are not priority species for management on the refuge; however, many of the management activities implemented for priority wildlife, such as forest interior and early successional forest birds, will provide collateral benefits to turkey and white-tailed deer. Similarly, reforesting landscapes and habitat management activities implemented for trust species, particularly forest management activities, will coincidentally increase the quality and quantity of deer habitat.

### Small and Upland Game

#### *Significance and Habitat Requirements*

Gray and fox squirrels (*Sciurus carolinensis* and *S. niger*) are abundant on the refuge where suitable, mast-producing forested habitat is available. Although they share habitats to some degree, gray squirrels are most common in deep woods, whereas fox squirrels prefer small woodlots and the edges of larger forested tracts. Their high recruitment rates (controlled largely by levels of available hard mast), high natural mortality rates, and other population processes indicate that no significant long-term changes in squirrel population densities are expected to occur in available habitat. Squirrel hunting is popular during the fall and winter and harvests are probably fairly high, but given the reproductive ability of this species, the harvest does not appear to negatively affect the population. Forest management activities enhance habitat quality for most species of small mammals, including squirrels.

Cottontail and swamp rabbits (*Sylvilagus floridanus* and *S. aquaticus*) are relatively common and are hunted in late winter. Their numbers are largely controlled by habitat availability. The rabbit population is usually higher in and around afforestation sites. Similar to squirrels, the reproductive potential of rabbits is much higher than potential harvest and thus hunting is believed to be compensatory to other causes of mortality.

American woodcock (*Scolopax minor*) are migratory game birds that occur throughout the forested portions of the eastern United States. Woodcock will use reforested and wetland areas on both refuges during wintering periods. Woodcock populations in this region have declined 19 percent since 1968, probably due to land use changes associated with land conversion and the maturing of forest habitats.

The American Woodcock Management Plan (U.S. Fish and Wildlife Service) was completed in 1990 and included an objective to protect and enhance wintering and migrating habitat on public lands to increase woodcock carrying capacity. Other objectives established in the plan included inventorying and monitoring woodcock habitat and developing management demonstration areas.

Woodcocks are dependent on specific habitat conditions including availability of earthworms, their major food source (Krementz and Jackson 1999). Wintering habitat for woodcock includes moist bottomland hardwood forests with brush and understory, especially when found in close

association (within about 0.5-mile) with agricultural fields and “old field” succession. These sites are typically thickets with spongy wet soil, a high density of vertical plant stems, but with sparse ground cover below. Typical cover includes privet, cane, and briars that result from openings in the canopy. The scrub-shrub and dense bottomland hardwood habitats created to benefit priority forest interior nesting birds (Swainson’s warbler and cerulean warbler) will also provide good daytime cover for woodcock.

At dusk, most woodcocks move to open or brushy fields to forage and conduct courtship activities throughout the night. These habitats include agricultural fields that were not fall disked and sparse grasslands that may have received a cool fall burn to create patchy openings of exposed soil interspersed between grass clumps 1-3 feet in height. The grassland and some field crop areas of the refuge provide this specific habitat preferred by woodcocks, as well as other priority species (e.g., Northern Bobwhite (*Colinus virginianus*), Dickcissel (*Spiza americana*), and other grassland birds).

#### *Potential Refuge Contribution to Habitat Needs*

As previously mentioned, habitat management at Overflow NWR that focuses on ROC, also enhance habitat quality for most species of small mammals, including squirrel, rabbit and American woodcock.

#### **Reconciling Conflicting Needs**

Multiple Resources of Concern are likely to have competing needs or other refuge programs may conflict with habitat needs of Resources of Concern. Recognize when and how these occur, and how they will be resolved. This may require prioritizing species needs. Prioritization should be resolved by considering refuge purpose(s), NWRS mission, applicable laws, and plans.

### **Chapter IV. Habitat Goals and Objectives**

For habitats that require active management, goals and objectives were developed in the Refuge CCP, which are directly stepped-down to specific, measurable, achievable, results-oriented, and time-fixed (SMART) SHMP objectives that fulfill the refuges purposes. The CCP habitat management goals are broad, qualitative statements derived from the established purposes and visions for the refuges and remain unchanged to guide the SHMP. SHMP objectives are directly stepped-down, linked, and SMARTened CCP objectives. CCP goals and SHMP objectives pertain to resources of concern identified in Chapter III and can be found on corresponding habitat management map-sheets. Each of the individual refuge habitat map-sheets contain a specific habitat type and include:

- Refuge Specific CCP Habitat Management Goal(s);
- SMART SHMP objectives (with reference to the CCP objectives they are directly stepped-down, linked, and SMARTened from);
- Rationale for selecting the SMART criteria;
- ROCs the Objectives pertain to; and
- Adaptive Management Monitoring Elements including:

- Primary Habitat Response Variables; and
- Associated Assessment Methods.

## **Chapter V. Habitat Management Strategies**

Habitat management strategies are the specific actions, tools, or techniques used to meet specific habitat objectives. Strategies are practices that applied on the ground, will achieve the SMART criteria of the habitat management objective. Habitat management strategies for each specific habitat type can be found on each of the corresponding habitat management map-sheets. Each of the habitat-specific map sheets contain habitat management strategies including:

- Potential Strategies;
- Selected Management Strategies and Unit Prescriptions.

### **Adaptive Management**

USFWS advocates improving habitat management through adaptive management (<http://www.fws.gov/policy/620fw1.html>). The Service defines adaptive management as “the rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from refuge research, monitoring, and evaluation of management actions to support or modify objectives and strategies at all planning levels.” As such, it is imperative that the impact of forest and open land management decisions be evaluated with regard to habitat conditions and wildlife response.

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## Appendix B. Intra-service Section 7 Consultation



United States Department of the Interior  
FISH AND WILDLIFE SERVICE  
Arkansas Ecological Services Field Office  
110 South Amity Suite 300  
Conway, AR 72032-8975  
Phone: (501) 513-4470 Fax: (501) 513-4480  
<http://www.fws.gov/arkansas-es>



In Reply Refer To:

April 11, 2022

Project code: 2022-0030204

Project Name: Overflow NWR - Spatial Habitat Management Plan

Subject: Concurrence verification letter for 'Overflow NWR - Spatial Habitat Management Plan' for specified federally threatened and endangered species and designated critical habitat that may occur in your proposed project area consistent with the Arkansas Determination Key for project review and guidance for federally listed species (Arkansas Dkey).

Dear William Whited:

The U.S. Fish and Wildlife Service (Service) received on April 11, 2022 your effect determination(s) for the 'Overflow NWR - Spatial Habitat Management Plan' (the Action) using the Arkansas DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers, and the assistance in the Service's Arkansas DKey, you made the following effect determination(s) for the proposed Action, including species protective measures that you confirmed will be implemented.

| Species                                                                      | Listing Status | Determination |
|------------------------------------------------------------------------------|----------------|---------------|
| Eastern Black Rail ( <i>Laterallus jamaicensis</i> ssp. <i>jamaicensis</i> ) | Threatened     | NLAA          |
| Pink Mucket (pearly mussel) ( <i>Lampsilis abrupta</i> )                     | Endangered     | NLAA          |
| Piping Plover ( <i>Charadrius melodus</i> )                                  | Threatened     | NLAA          |
| Pondberry ( <i>Lindera melissifolia</i> )                                    | Endangered     | No effect     |
| Red Knot ( <i>Calidris canutus rufa</i> )                                    | Threatened     | NLAA          |
| Red-cockaded Woodpecker ( <i>Picoides borealis</i> )                         | Endangered     | No effect     |

Whooping Crane (*Grus americana*)

Experimental      No effect  
Population, Non-  
Essential

## Status

The Service concurs with the NLAA determination(s) for the species listed above. No further consultation for this project is required for these species. Your agency has met consultation requirements by informing the Service of your "No Effect" determinations. No consultation for this project is required for species that you determined will not be affected by this action.

This concurrence verification letter confirms you may rely on effect determinations you reached by considering the Arkansas DKey to satisfy agency consultation requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.; ESA). No further consultation for this project is required for species that you determined will not be affected by this action.

The Service recommends that your agency contact the Arkansas Ecological Services Field Office or re-evaluate this key in IPaC if: 1) the scope, timing, duration, or location of the proposed project changes; 2) new information reveals the action may affect listed species or designated critical habitat; 4) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the Arkansas Ecological Services Field Office should take place before project changes are final or resources committed.

Bald and Golden Eagle Protection Act: The following resources are provided to project proponents and consulting agencies as additional information. Bald and golden eagles are not included in this section 7(a)(2) consultation and this information does not constitute a determination of effects by the Service.

The Service developed the National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with Bald Eagles when and under what circumstances the protective provisions of the BGEPA may apply to their activities. The guidelines should be consulted prior to conducting new or intermittent activity near an eagle nest. This document may be downloaded from the following site:

<https://www.fws.gov/southeast/ourservices/permits/eagles/>

To determine if your proposed activity is likely to take or disturb Bald Eagles, complete our stepby-step online self-certification process, which is located at

<https://www.fws.gov/southeast/ourservices/eagle-technical-assistance/>.

If the recommendations detailed in the National Bald Eagle Management Guidelines cannot be followed, you may apply for a permit to authorize removal or relocation of an eagle nest in certain instances. The application form is located at <http://www.fws.gov/forms/3-200-72.pdf>.

## Action Description

You provided to IPaC the following name and description for the subject Action.

### 1. Name

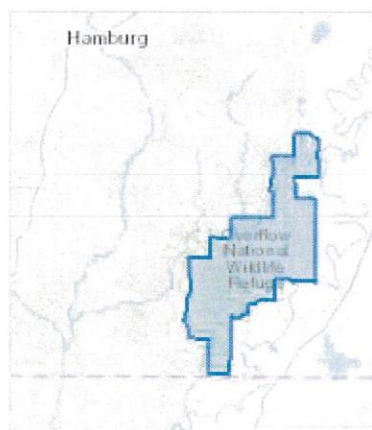
Overflow NWR - Spatial Habitat Management Plan

### 2. Description

The following description was provided for the project 'Overflow NWR - Spatial Habitat Management Plan':

This action(s) implements the U.S. Fish and Wildlife Service, Overflow National Wildlife Refuge - Spatial Habitat Management Plan (SHMP). The accompanying, individual map sheets and supplemental documents will serve as the Habitat Management Plan (HMP) for Overflow National Wildlife Refuge. The Service has developed the SHMP, stepped directly down from the Refuges' Comprehensive Conservation Plan (CCP). The Refuge's CCP and this SHMP are the primary tools used to guide refuge staff in achieving refuge goals and objectives, and thus, implementing the mission of the National Wildlife Refuge System (Refuge System). This updated, guiding document reinstates and better defines the management actions identified and described in the CCP, and only minor changes from the CCP are planned in the SHMP.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@33.092547999999994,-91.63826597382133,14z>





**Re: section 7 consultation: Overflow NWR habitat management plan**

Phillips, Jason &lt;jason\_phillips@fws.gov&gt;

Mon 4/11/2022 12:13 PM

To: White, William &lt;William.White@fws.gov&gt;

Cc: Peak, Rebecca G &lt;rebecca\_peak@fws.gov&gt;

Alan,

I haven't seen the plan, so I don't know what the time frame is for implementation. Being a habitat management plan, I presume it will cover a span of years? Rebecca is correct that all you have to do immediately is consider whether or not the proposed action will jeopardize the species proposed for listing (AST). If it doesn't, you can put a memo to the file to that effect and keep it with the other Sec. 7 ESA documentation. If the action would be complete prior to the final listing decision, that is all you need to do. If the action will proceed beyond the listing decision date (and the species is actually listed), then at that time you will need to evaluate the effects of the action on AST using IPaC or if needed directly with our office. If you reach a "may affect, not likely to adversely affect (NLAA)" determination, you would be able to finish consultation informally in IPaC or by seeking our office's direct concurrence (depending on whether it is ready to go in IPaC at that time). In the case of a "may affect, likely to adversely affect (LAA)" determination, you would request formal consultation and develop a Biological Assessment. If I were you, I would assume the species will be listed (I don't have a date, but a decision should come within the year). Then evaluate your action to determine if you think it will be a "no effect (NE)", NLAA, or LAA determination. If you think it will be anything but a NE, you might want to talk to us further to discuss the best route forward.

Jason W. Phillips  
Fish and Wildlife Biologist  
U.S. Fish and Wildlife Service  
Arkansas Field Office, Delta Sub-office  
26320 Hwy. 33 South  
Augusta, Arkansas 72006  
870-503-1101

NOTE: THIS EMAIL WILL BE  
CONSIDERED AS THE  
REFERENCED "MEMO TO  
THE FILE," CONCERNING  
ALLIGATOR SNAPPING TURTLE.

Alan  
White  
4/12/22

From: White, William &lt;William.White@fws.gov&gt;

Sent: Monday, April 11, 2022 10:37 AM

To: Phillips, Jason &lt;jason\_phillips@fws.gov&gt;

Cc: Peak, Rebecca G &lt;rebecca\_peak@fws.gov&gt;

Subject: Fw: section 7 consultation: Overflow NWR habitat management plan

Jason,

I just wanted to follow-up with you on the (below) correspondence that I had with Rebecca. We are developing/implementing a habitat management plan for Overflow NWR, and I wanted to make sure that we fulfilled our consultation obligation for all pertinent species, including alligator snapping turtle. The implementation of the Overflow National Wildlife Refuge - Special Habitat Management Plan will not jeopardize the alligator snapping turtle or have a negative affect on potential alligator snapping turtle habitat. Is there any additional consultation that we must do? Thanks and have a great day.

Alan White  
U.S. Fish and Wildlife Service  
South Arkansas Refuge Complex  
Overflow National Wildlife Refuge  
3858 Highway 8 E

## **Appendix C. Environmental Action Statement**

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the following proposed action is categorically excluded from NEPA documentation requirements consistent with 40 CFR 1508.4, 516 DM 2.3A, 516 DM 2 Appendix 1, and 516 DM 6 Appendix 1.4.

### **PROPOSED ACTION AND ALTERNATIVES.**

The proposed action is the approval and implementation of the Spatial Habitat Management Plan (SHMP) for Overflow NWR. This SHMP is a step-down management plan from the CCP for Felsenthal and Overflow NWRs, finalized in 2010 (USFWS 2010a), providing the refuge with specific guidance for implementing habitat management goals, objectives, and strategies identified.

In the Refuge's CCP, the action was the preferred alternative considered in each of the Environmental Assessments (EAs).

In the CCP, the proposed actions were to manage the refuges based on sound science for the conservation of a structurally and species diverse bottomland hardwood and open wetland habitat for migratory birds and resident native wildlife. A focused effort will be placed on reducing invasive species, which are threatening the biological integrity of the refuge. Baseline inventories and monitoring of management actions will be completed to gain information on a variety of species, from reptiles and amphibians to invertebrates and several species of concern. When compatible, the wildlife-dependent recreational opportunities for hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation will be provided and enhanced, while achieving the refuge purpose and remaining consistent with existing laws, Service policies, and sound biological principles

The CCP has defined goals, objectives, and strategies to achieve the stated action. The CCP also has approved Appropriate Use Forms (AUFs) and Compatibility Determinations (CDs). The actions further detailed in this SHMP have been identified, addressed, and authorized by the CCP and accompanying Environmental Assessments (USFWS 2010a, USFWS 2010b). This SHMP expands upon and clarifies the intent of the Refuge's CCP objectives and strategies by ensuring the objectives are specific, measurable, achievable, realistic, and timely (SMART objectives). Each of the map sheets identify, in parentheses, the corresponding CCP objective next to each SHMP objective. These new SHMP objectives are located on habitat specific map sheets. The strategies that the refuges will utilize to achieve the objectives are included in each map sheet.

### **CATEGORICAL EXCLUSION(S).**

Categorical Exclusion Department Manual 516 DM 6, Appendix 1 Section 1.4 B (10), which states "the issuance of new or revised site, unit, or activity-specific management plans for public

use, land use, or other management activities when only minor changes are planned. Examples could include an amended public use plan or fire management plan.”, is applicable to implementation to the proposed action.

Consistent with Categorical Exclusion (516 DM 6, Appendix 1 Section 1.4 B (10)) the SHMP is a stepped-down management plan which provides guidance for implementation of the general goals, objectives, and strategies established in the CCP and is analyzed in the associated EAs, serving to further refine those components of the CPP specific to habitat management. These SHMPs do not trigger an Exception to the Categorical Exclusions listed in 516 DM 2 Appendix 2.

Minor changes or refinements to the CCP in this activity-specific management plan include:

- Habitat management objectives are further refined by providing numerical parameter values that more clearly define the originating objective statement.
- Habitat management objectives are restated so as to combine appropriate objectives or split complicated objectives to provide improved clarity in the context of the HMP.
- Specific habitat management guidance, strategies, and implementation schedules to meet the CCP goals and objectives are included (e.g. location, timing, frequency, and intensity of application).

All details are consistent with the CCPs and the analysis in each of the accompanying EAs and serve to provide the further detail necessary to guide the refuge in application of the intended strategies for the purpose of meeting the habitat objectives.

## PERMITS/APPROVALS

Endangered Species Act, Intra-Service Section 7 Consultation was conducted and signed on April 11, 2022, during the refuge’s SHMP process. The determination was a concurrence that the implementation of the SHMP may affect but is not likely to adversely affect the listed species.

Endangered Species Act, Intra-Service Section 7 Consultation was conducted and signed on September 8, 2009, during the refuge’s CCP process. The determination was a concurrence that the CCPs preferred alternative may affect but is not likely to adversely affect the listed species.

Draft Comprehensive Conservation Plan and Environmental Assessment for:  
Felsenthal and Overflow NWRs CCP (USFWS 2010b)

Approved Appropriate Use Forms and Compatibility Determinations:  
Felsenthal and Overflow NWRs CCP (USFWS 2010a)

## PUBLIC INVOLVEMENT/INTERAGENCY COORDINATION.

The proposed SHMP is a step-down plan of the approved CCP for Overflow NWR. The development and approval of the CCP included appropriate NEPA documentation and public involvement. An Environmental Assessment was developed for each of the refuge's which proposed and addressed management alternatives and environmental consequences (USFWS 2010b). Public involvement included public notification to prepare a CCP for the refuge were published through a notice of intent in the Federal Register and made available for public review for 30 days. Public comments were summarized and included in the appendices of each CCP. Refer to each CCP for a complete summary of the public involvement and interagency coordination and review.

#### SUPPORTING DOCUMENTS.

Supporting documents for this determination include relevant office file material and the following key references:

U.S. Fish and Wildlife Service. 2010a. Felsenthal and Overflow National Wildlife Refuges, Comprehensive Conservation Plan.

U.S. Fish and Wildlife Service. 2010b. Felsenthal and Overflow National Wildlife Refuges, Draft Comprehensive Conservation Plan and Environmental Assessment.

#### **Appendix D. Categorical Exclusion for NEPA Compliance**