

Conservation Plan for the Pallid Sturgeon, Interior Least Tern, Northern Great Plains Piping Plover, Gray Bat, Indiana Bat, and Northern Long-Eared Bat in the Missouri River Mainstem and Associated Tributary Projects

(Endangered Species Act, Section 7(a)(1))

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1.0 Introduction

This Conservation Plan (Plan) is prepared pursuant to Section 7(a)(1) of the Endangered Species Act (ESA), as amended, which requires all federal agencies to use their authority to carry out programs for the conservation of endangered and threatened species. The purpose of the Plan is to describe how the U.S. Army Corps of Engineers (USACE) Kansas City and Omaha Districts can use their Missouri River authorities and those on associated tributary projects to conserve pallid sturgeon (*Scaphirhynchus albus*), interior least tern (*Sternula antillarum*), piping plover (*Charadrius melodus*), gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*) within the Missouri River basin. Specific conservation measures are recommended to meet the purpose of the Plan, but are contingent upon opportunity and annual appropriations, and other authority and budgetary constraints.

The specific USACE authorities considered in preparation of this Plan include the following:

- **Missouri River Mainstem Reservoir System (System)** – USACE operates the System consisting of six dams and reservoirs with a capacity to store 72.4 million acre-feet of water. The 1944 Flood Control Act (FCA) authorized the construction and operation of five large dams on the Missouri River mainstem. The projects authorized by the FCA, along with their reservoirs, are Garrison Dam/Lake Sakakawea in North Dakota; and Oahe Dam/Lake Oahe, Big Bend Dam/Lake Sharpe, Fort Randall Dam/Lake Francis Case, and Gavins Point Dam/Lewis and Clark Lake in South Dakota. The construction of Fort Peck Dam/Fort Peck Lake in Montana was authorized in the Rivers and Harbors Act of 1935; however, the 1944 FCA incorporated the Fort Peck Dam along with the other five dams and reservoirs to form the System. Today, the System is operated by USACE as an integrated system for eight congressionally authorized purposes, which include flood control, navigation, irrigation, hydropower, water supply, water quality, recreation, and fish and wildlife. USACE operates the System in accordance with the policies and procedures prescribed in the *Missouri River Mainstem Reservoir System Master Water Control Manual* (Master Manual) (USACE 2006).
- **Missouri River Bank Stabilization and Navigation Project (BSNP)** –Beginning in 1912, Congress passed the first of several laws (Rivers and Harbors Acts of 1912, 1925, 1927, 1935, and 1945) to fund work by USACE to construct the BSNP on the lower Missouri River. The BSNP consists mainly of rock pile structures and revetments along the outsides of bends and transverse dikes along the insides of bends to force the river into a channel alignment that is self-maintaining or self-scouring. Training structures permit an open condition for the entire length of the project with no dredging required under normal flow conditions. As authorized, the BSNP provides a 2.7-meter-deep (9-foot-deep) channel with a minimum width of 91.4 meters (300 feet) during the navigation season from April 1 to November 30 between Sioux City, Iowa, and the mouth near St. Louis, Missouri.
- **Missouri River BSNP Fish and Wildlife Mitigation Project** – Congress authorized the Missouri River BSNP Fish and Wildlife Mitigation Project in the Water Resources Development Act (WRDA) of 1986, Section 610(a) for a total of 48,100 acres of fish and wildlife habitat. Beginning in 1992, Congress appropriated funds for project construction through the Energy and Water Appropriations Act to mitigate for adverse impacts caused by the BSNP. Section 334 of WRDA 1999 increased the acreage of habitat to be mitigated for the Mitigation Project by 118,650 bringing the total acres to be mitigated to

166,750 acres. The BSNP Mitigation Project authority was further amended in Section 3176(a) of WRDA 2007 allowing funds made available for recovery or mitigation activities in the lower basin of the Missouri River to be used in the upper basin of the Missouri River, including the states of Montana, Nebraska, North Dakota, and South Dakota.

- **Kansas River Projects** – USACE constructed, operates, and maintains reservoirs on the Kansas River that support Missouri River operations. Clinton, Perry, Tuttle Creek, Milford, Wilson, and Kanopolis are the primary downstream flood control dams in the Kansas River basin. Each is located on one of the major tributaries. USACE Kansas River projects were authorized by various acts of Congress. The 1938 FCA contained a general comprehensive plan for flood control in the Missouri River basin and authorized the construction of Tuttle Creek and Kanopolis lakes. The 1944 FCA authorized Wilson Lake and most of the upstream projects. The 1954 FCA added Milford and Perry lakes as units of the comprehensive plan for flood control in the Missouri River basin. Clinton Lake was authorized by the 1962 FCA. The USACE Kansas River projects are authorized for flood control, water supply and water quality, recreation, and fish and wildlife, either through initial authorization or through succeeding acts of Congress. Milford, Tuttle Creek, and Perry are also authorized to support navigation flows on the Missouri River.
- **Lake Projects** – In addition to the six Missouri River mainstem reservoirs and the Kansas River projects described previously, USACE Kansas City District operates and maintains several other reservoirs within their boundaries that were authorized by various acts of Congress. These include:
 - Iowa: Rathbun
 - Kansas: Hillsdale, Melvern, Pomona
 - Missouri: Blue Springs, Truman, Long Branch, Longview, Pomme de Terre, Smithville, Stockton
 - Nebraska: Harlan County

2.0 Conservation Strategies and Measures

2.1 Missouri River Mainstem System Operations

Conservation Strategy 1: Identify opportunities to operate the System to benefit listed species.

Operational flexibility is generally limited by the technical criteria outlined in the Master Manual, however, on occasion there are opportunities to make adjustments that are not constrained by the technical criteria.

Example actions that may be considered:

- Moving water between the reservoirs to facilitate nesting in one or more reservoirs. For example, moving water into Fort Randall from Oahe to have Oahe's elevation peak earlier in the nesting season. This can reduce flooding of nests and have shoreline available early in the nesting season.
- Setting Garrison Dam releases lower in July and August rather than May and June to provide freeboard for nests.

- Not meeting navigation targets in reaches where commercial navigation is not present to provide freeboard and additional nesting sandbars.
- Reservoir unbalancing when reservoirs are in their conservation pools if it facilitates nesting success.
- Other situations where short term adjustments can be made to facilitate successful nesting.

Conservation Strategy 2: Support the Pallid Sturgeon Propagation and Augmentation Program in addition to the Biological Assessment Proposed Action.

The 2003 Amended BiOp includes several requirements of the USACE relative to the Propagation and Augmentation Program. The Proposed Action in the Biological Assessment includes continuation of these activities. USACE regularly supports the Propagation and Augmentation Program in addition to those activities stipulated by the BiOp. USACE would continue to support such activities as funding is available and they remain consistent with any revised Pallid Sturgeon Propagation Plan.

Actions:

- Secure funding for hatchery infrastructure and improvements.
- Secure funding support for annual pallid sturgeon broodstock collection effort.
- Support propagation and augmentation program funding in excess of the average annual shortfall up to 2,973 fish. The BiOp included a goal for the propagation and augmentation program to produce 4,700 juvenile to 1-year old pallid sturgeon for subsequent stocking. The USACE responsibility has been the average annual shortfall of 2,973 fish.
- Support refinement of genetic technology valuable to implementation of the Propagation and Augmentation Program and monitoring actions.
- Monitor pallid sturgeon in Fort Randall reach every five years to provide information for evaluating stocking in this reach.

2.2 BSNP Maintenance

Since completion of the BSNP, maintenance of the project has consisted of repairing all existing structures and occasionally constructing a new structure or extending an existing structure. No structure or portion of structure has been placed in a deferred maintenance category. The structure repair heights, referenced to the Construction Reference Plane (CRP), are contained in the document entitled Structure Height Criteria (SHC) which was published in 1973 (USACE 1973). Construction and maintenance of the BSNP has been shown to have an adverse impact on the amount and quality of the aquatic habitat in the river. Starting in approximately 1975, USACE implemented the “Riverine Habitat and Floodway Restoration Program” with the intent to arrest further loss of water area due to structures (BSNP Final ES, 1.08.8) and the maintenance engineering and design programs have an objective to modify structure design and adopt maintenance procedures that will preserve and possibly enhance environmental values of the river and determine structure design that will avoid further increases of flood stages of the river (BSNP Final ES, 1.10.4).

Current maintenance practices, with the exceptions mentioned above, require maintenance of the entire length of all structures within the open river to the heights specified in the SHC. No structures have been placed in a deferred maintenance category nor have the heights in the SHC been re-evaluated to determine if alternative structure heights could maintain the same navigation channel reliability at less annual cost and provide greater benefit to the aquatic environment. Preliminary analysis has shown that some structure heights are below design due to changes in the distribution of daily flows that have occurred since the 1973 SHC was developed. It is also known that some structures are spaced closer than the design of the project requires and portions of structures or entire structures could be placed in a deferred maintenance status and no longer maintained or maintained to heights lower than shown in the SHC. In addition, historical documents and experience have shown that some heights in the SHC are higher than required to maintain authorized purposes.

Conservation Strategy 3: Identify opportunities to maintain the BSNP in a manner that could contribute beneficially to aquatic habitat.

Actions relevant for consideration include:

- Structures are maintained at a height lower than the SHC. This practice reduces the impact of the structure on the aquatic habitat in the river by allowing flow to overtop the structure more frequently thereby restoring more flows to aquatic areas between the structures.
- Structures along public property, where the landowner has agreed to tolerate erosion of the high bank, are repaired to heights below those shown in the SHC. This practice also restores flow to the aquatic areas between the structures. In some cases, if the new heights are low enough, the high bank will erode and increase the acres of open river.
- The crowns of the structures are lowered if the CRP elevation drops a significant amount due to degradation of the river bed. Some areas of the river are experiencing bed degradation where the bed of the river is eroding and the average bed height is decreasing. The degrading bed results in a drop in the water surface which represents the CRP (which corresponds to a decrease in the SHC). If natural weathering of the stone fill in the structures does not lower the crowns of the structures at the same rate as the drop in the CRP water surface, the structure heights may become higher than specified in the SHC. This condition will result in over-confinement of flows and accretion of sediment between the structures. This issue has been most acute in the Kansas City reach between river miles 340 and 400 and the reach from Sioux City to Blair, river miles 735 to 648.
- New notches are constructed as opportunities arise. In most cases the new notch is a notch constructed by not repairing a specified portion of a structure as the structure is repaired. Approximately 10 to 20 new notches are constructed annually.
- Existing shallow habitat projects are evaluated and modified as funding allows. Modifications include lowering entrance structures at chutes, and moving existing notches landward at locations where notches were constructed next to the bank for the purpose of eroding the high bank but the notch is now located away from the new bank location. The notch is moved by excavating a new notch in the structure next to the new bank location and filling or partially filling the old notch.
- The Kansas City and Omaha Districts intend to complete a study within the next two years to evaluate alternative maintenance practices with the goals of maintaining or improving channel reliability, improving the aquatic habitat of the river, and reduction in

annual maintenance costs. This study could result in new height criteria for some of the structures or portions of structures being placed in a deferred maintenance category. The results of this study will be used to formulate a conservation plan for future BSNP maintenance actions.

2.3 BSNP Fish and Wildlife Mitigation Program

Conservation Strategy 4: Prioritize lands for acquisition that contribute to meeting pallid sturgeon habitat requirements when consistent with BSNP Fish and Wildlife Mitigation Program authority.

Action: Continue to implement the BSNP Mitigation Program as funding becomes available.

The BSNP Mitigation Program is the most comprehensive tool within USACE authorities to address habitat mitigation along the lower Missouri River. The acres for the Mitigation Project are obtained through acquisition of private land in fee title or easement from willing sellers, and development of public land through donated easements. USACE has acquired approximately 66,333 acres of the authorized 166,750 acres, or approximately 40%. To complete mitigation of the habitat lost due to construction of the BSNP approximately 100,417 acres remain to be acquired and returned to native fish and wildlife habitat. The 2003 Record of Decision for the Supplemental Environmental Impact Statement anticipated that implementation of the Mitigation Program would be in excess of 30 years. Restored habitat types include wetlands, bottomland forest, native prairie, chutes and side channels, shallow water habitat, backwater areas, and slack water habitats. USACE would prioritize acquisition and development of lands that would provide necessary habitat for the pallid sturgeon while also accomplishing the BSNP mitigation requirement. Table 1 summarizes land acquisition to date as well as the target acres for each state.

Table 1. Mitigation Authority Acquired Lands and Targets

State	Total Habitat Lost by the Construction and Operation of the BSNP (Acres)	Mitigation Project Target (Acres)	Lands Acquired by USACE in Fee (Acres)	Lands Acquired by USACE from Donated Public Easement (Acres)	Total Mitigation Land Acquired by USACE (Acres)	Percentage of Project Target Achieved
Missouri	304,900	104,741	27,048.98	7,336.90	34,385.88	33
Kansas	55,100	11,632	6,079.87	-	6,079.87	52
Iowa	65,400	23,725	11,230.66	4,047.49	15,278.15	64
Nebraska	96,600	26,652	10,125.93	463.04	10,588.97	40
Total:	522,000	166,750	54,485.44	11,847.43	66,332.87	40

Source: USACE 2017

Conservation Strategy 5: Consider Indiana bat and northern long-eared bat habitat needs in planning of site-specific habitat development for Mitigation Program lands.

Actions:

- Evaluate potential for development of bottomland forest habitat on existing and future Mitigation Program lands.

- Continue to provide operations and maintenance (O&M) funding for access control at Rocheport Cave.

Conservation Strategy 6: Evaluate potential for levee modifications at existing and future mitigation sites.

Although the Effects Analysis did not produce evidence linking floodplain connectivity to increased recruitment of pallid sturgeon, past Fish and Wildlife Coordination Act input from USFWS has indicated that additional floodplain connectivity would be anticipated to provide general ecosystem benefits.

Actions:

- Evaluate levee modification measures (e.g. levee setbacks) in the site-specific planning process for applicable mitigation sites.

2.4 Kansas River Operations

Conservation Strategy 7: Determine if there is potential to operate the Kansas River projects in a manner that would increase benefits to native species.

USACE in partnership with The Nature Conservancy plan to conduct a study of ecologically sustainable flows for the Kansas River system. This study would be separate from any requirements of the 2003 Amended BiOp. The study would be implemented under the Sustainable Rivers Program. The study team would conduct a literature review and develop information needed to characterize ecological resources and ecological flow needs on the Kansas River. The information needed to characterize operational constraints and historic operational conditions, including floods, releases for support of navigation, etc., would be developed. The study would result in a full report and recommendations.

Action:

- Conduct the Kansas River Environmental Flows Study.
- Monitor Kansas River as part of five-year international piping plover census.

2.5 Lake Projects

USACE Kansas City District Operations Division (NWK-OD) is currently developing a list of measures that would be used during the operation and maintenance of NWK-OD projects. While all O&M activities are carefully evaluated for potential effects on listed bat species and the need to consult with USFWS in accordance with ESA requirements, general measures have been identified by NWK to ensure that O&M activities avoid or minimize any adverse impacts to the listed bat species and in coordination with the Federal and state natural resource management agencies, and where possible improve habitat and our knowledge of these species. In general, these guidelines are adapted from measures in place for the Missouri Department of Conservation and the Natural Resource Conservation Service – Missouri State Office.

Table 2 provides a list of the NWK-OD projects along with the listed bat species that are present and if there are known hibernacula or maternity roost trees.

Table 2. Listed bat species occurrence at Kansas City District projects.

State	Project	GB	GB Hibernacula/ Maternity Cave	IB	IB Hibernacula	IB Maternity Roost Trees	NLEB	NLEB Hibernacula	NLEB Maternity Roost Trees
MO	OF-SM	X		X			X		
	OF-SM-LO/BS	X		X			X		
	OF-LB	X		X			X		
	OF-HT	X	X	X	X		X	X	
	OF-ST	X		X			X		
	OF-PT	X		X			X		
	FO-M0	X	X	X	X		X	X	
KS	OF-CL						X		
	OF-HI						X		
	OF-PE						X		
	OF-PO						X		
	OF-ME						X		
	OF-MI						X		
	OF-TC						X	X*	
	OF-WI						X		
	OF-KA						X		
	FO-MO						X		
IA	OF-RA			X			X		
NE	OF-HC						X		

*located immediately adjacent to USACE property at Blue Rapids, Kansas

GB = gray bat; IB = Indiana bat; NLEB = northern long-eared bat

Conservation Strategy 8: Avoid adverse impacts to gray bat, Indiana bat, and northern long-eared bat while maintaining District projects.

Actions:

Woodland Management

- Conduct firewood cutting of standing trees from November 1 through March 31.
- Avoid disturbance of maternity roost trees/caves or hibernacula.
- Maintain suitable roosts trees and manage for long-term snag creation and retention.
- Manage forest/woodland habitat to provide suitable habitat for bats over the long term (leave or create snags, leave large diameter trees, and try to maintain/create connectivity of overstory).

Grassland Management

- Avoid burning during the pup season.
- Avoid smoke impacts to known hibernacula or maternity roost trees.
- Implement measures to preserve suitable roost trees.

Cave exploration/mapping/management

- Maintain existing cave gating and signage.
- Survey existing caves for bat usage.
- Ensure that cave surveys are implemented in strict accordance with measures to avoid the introduction of white-nose syndrome or to disturb maternity colonies or hibernating bats.
- Coordinate with USFWS and state fish and game agencies to determine need for restrictive gating or signage.
- Educate the public concerning white-nose syndrome and the importance of not disturbing maternity colonies or hibernating bats in caves.
- Protect the integrity of the cave recharge area and sinkholes.

2.6 Partnerships and Information Sharing

Conservation Strategy 9: Coordinate, communicate, and cooperate among entities responsible for conserving pallid sturgeon, least tern, and piping plover.

Actions:

- Support USACE representation on the pallid sturgeon and piping plover recovery teams.
- Hold annual meeting with USACE Mississippi Valley Division to coordinate pallid sturgeon ESA compliance activities and science findings.
- Continue MRRP communication and outreach activities (e.g., MRRP bulletins, web site, attendance at outreach events).
- Conduct annual NWK/NWO 7(a)(1) awareness training.

3.0 References and Literature Cited

USACE 1973. Revised 1994. Missouri River Navigation Project (Sioux City to the Mouth) Design Criteria. Missouri River Division, Omaha, Nebraska.

USACE 2006. Missouri River Mainstem Reservoir System - Master Water Control Manual. Missouri River Basin. Reservoir Control Center. U.S. Army Corps of Engineers, Northwestern Division – Missouri River Basin. Omaha, Nebraska. Retrieved from <http://www.nwdmr.usace.army.mil/rcc/reports/mmanual/MasterManual.pdf>.

USACE 2017. Final Draft Biennial Report to Congress on the Status of the Missouri River Bank Stabilization and Navigation Fish and Wildlife Mitigation Project, KS, MO, IA, NE.