



**CITY OF
WEST
MEMPHIS**
PUBLIC WORKS - CITY ENGINEER

Floodplain Species Assessment and Plan

CID: 050055

2022

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Introduction

The Endangered Species Act of 1973 (16 U.S.C. § 1531-1544) exemplified the importance of taking inventory and preservation of the United State's animals and plant species from becoming extinct. The new law put two federal agencies in charge of identifying endangered species and coming up with strategies to help the habitats recover the once vast population:

- The Department of Interior's U.S. Fish and Wildlife Service (FWS): who has primary responsibility for terrestrial and freshwater organisms, and
- The Department of Commerce's National Marines Fisheries Service (NMFS) is responsible for marine wildlife, such as whales, and anadromous fish, such as salmon.

Both agencies are referred to as "the Services" in this document. Other terms used in this document are defined on the next page.

An assessment of floodplain species and a plan of action based on that assessment are credited under the Community Rating System (CRS) of the National Flood Insurance Program (NFIP) to encourage and recognize community actions to protect species listed pursuant to the Endangered Species Act, protect their critical habitat and habitat in general, and help those species recover. The "floodplain species assessment" is the first step. It starts the process of learning which species that are listed or proposed for listing by the Services and which associated critical habitats may be present within the community.

The second step is the "floodplain species plan." For the plan, further research is conducted on selected species identified in the floodplain species assessment and a more detailed plan is developed with input and assistance from subject-matter experts. The plan identifies actions the community will pursue to support conservation and recovery of those species.

CRS credit is provided for both the floodplain species assessment (element FSA) and the floodplain species plan (element FSP) under Activity 510 (Floodplain Management Planning), found in Section 512.c, Natural Functions Plan, of the 2021 Addendum to the CRS Coordinator's Manual, 2017 Edition. Both credits are optional, but a floodplain species assessment credited in element FSA is a prerequisite for element FSP credit. The relevant parts of Section 512.c are included in this guide.

This document provides guidance on the credit criteria in Section 512.c, and refers to three examples that also may be helpful and are available on the CRS Resources website. The three floodplain species assessments and floodplain species plans were prepared by the City of West Memphis. However, they provide formats and language for documents describing floodplain species assessments and floodplain species plans that would qualify for the CRS credit. Adoption of this document through the West Memphis City Council will commence after a 2 month public review period, ending in September of 2022.

Terms Used in this Document

Endangered—A species that is in danger of extinction throughout all or a significant portion of its range.

Threatened—A species that is likely to become endangered within the foreseeable future.

Listed species—A species that has gone through a formal process of being identified for protection under the Endangered Species Act based on the best scientific information available. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. A species may also be proposed for listing. In this document, species proposed for listing and species actually listed are all treated as “listed.”

Proposed species—Any species of fish, wildlife, or plant that is proposed in the Federal Register to be listed pursuant to Section 4 of the Endangered Species Act (16 U.S.C. §1533). In this document, species proposed for listing and species actually listed are all treated as “listed.”

Range—The general geographical area within which a species can be found at the time either the U.S. Fish & Wildlife Service or the National Marine Fisheries Service makes a status determination. The range includes those areas used throughout all or part of the species’ life cycle.

Habitat—The natural components of an ecosystem that are essential for a species’ survival, including food, cover, and water. As used in this guidance, “habitat” is used to mean all such areas needed by species in general.

Critical habitat—Specific geographic areas that contain features essential to the conservation of a listed species and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery.

Recover—The ultimate goal is for a species to “recover” so that it no longer needs protection under the Endangered Species Act or similar state or local laws. Recovery plans describe the steps needed to restore a species to ecological health.

Two other references should be used with this guidance document: • The CRS Coordinator’s Manual has the credit criteria for element FSA and element FSP and explains the other activities and elements mentioned here. It can be downloaded from the CRS Resources website. • The FRESH User’s Guide provides instructions on how to obtain the data and maps needed for the floodplain species assessment from the Flood Risk and Endangered Species Habitat (FRESH) mapping tool. The mapping tool can be accessed at the FEMA website. The FRESH User’s Guide can be downloaded from the CRS Resources website. It is recommended that you check with other offices in your community that may have expertise in threatened and endangered species and their habitat. Often, parks and stormwater management offices have such personnel. They may have additional references as well as contacts with the organizations that need to be listed in step 4.2, below. They could even help prepare your assessment and plan. Questions about credit for element FSA, element FSP, and other aspects of the

CRS should be submitted to your ISO/CRS Specialist (a list can be found on the CRS Resources website. He or she then can forward questions and concerns to the CRS technical reviewer as needed.

Background

The City of West Memphis, located in Crittenden County, Arkansas, was once considered a floodway for the Mississippi River. Farmers from Crittenden, Cross, Lee, Mississippi, Phillips, Poinsett and St. Francis Counties created what is now known as the St. Francis River Valley Levee District and is overseen by the Army Corps of Engineers. After the levee was constructed, many citizens have had to deal with intermittent flooding due to the flattened topography of land behind the levee, especially the City of West Memphis. There is a main outfall within the city, the Ten Mile Bayou, which collects the open and closed drainage throughout the city and moves it to the southwest area of the city via five stormwater lift stations controlled by gates and some gravity flow until it splits, where part of the water flows through gates under a lift station and onto the St. Francis River or it gravitationally flows towards a stormwater detention pond and then pumped over the levee, into the Mississippi River. When the Fifteen Mile Bayou, which is south of the Ten Mile Bayou, backs up and has water flowing northeast back into the city, the last lift station gates close and the pumps are then turned on to prevent flooding. If too many high frequency and high year events occur, the pumps at both the detention pond (which pumps into the Mississippi River) and the last lift station (which goes toward the Fifteen Mile Bayou and then onto the St. Francis River) are to utilized.

The stormwater system has worked for some time now, but the lack of maintenance has shown that the capacity and the ability to drain water from the Ten Mile Bayou has been impossible. The Environmental Protection Agency (EPA), along with ADEQ have deemed the waterway to be impaired because of dissolved oxygen, due to the degradation of the bank slopes.

The City of West Memphis' Threatened or Endangered Species

Below is a table of threatened or endangered species from the City of West Memphis.

DISTANCE	COMNAME	SCINAME	STATUS_ABB 2
90.1 Miles (approximate)	Fat pocketbook	Potamilus capax	Endangered
184.28 Miles (approximate)	Piping Plover	Charadrius melodus	Endangered
191.38 Miles (approximate)	Eastern Black rail	Laterallus jamaicensis ssp. jamaicensis	Proposed Threatened
242.05 Miles (approximate)	Barrens topminnow	Fundulus julisia	Endangered
290.5 Miles (approximate)	Trispot darter	Etheostoma trisella	Threatened
326.62 Miles (approximate)	Pondberry	Lindera melissifolia	Endangered
372.77 Miles (approximate)	Eastern Black rail	Laterallus jamaicensis ssp. jamaicensis	Proposed Threatened
434.14 Miles (approximate)	Northern Long-Eared Bat	Myotis septentrionalis	Threatened
442.96 Miles (approximate)	Indiana bat	Myotis sodalis	Endangered
453.62 Miles (approximate)	Least turn	Sterna antillarum	Endangered
626.42 Miles (approximate)	Pallid sturgeon	Scaphirhynchus albus	Endangered

This data was downloaded from the Flood Risk and Endangered Species Habitat (FRESH) mapping tool

Below is the map, showing the USFWS Critical Habitat, and Special Flood Hazard Areas for the City of West Memphis, AR.



The next set of documents is the City of West Memphis' request for updated information on all species that are endangered within the SFHA.

Fat Pocket Book

Found all throughout the United States, this freshwater mussel with almost 300 species worldwide is one of the most imperiled animal groups. While mainly buried in sediment, they play a major role in keeping streams clean. When this population declines like it has, the whole freshwater ecosystem is in peril. Land use change, such as building dams and levees have put this mussel at high risk for extinction. They have a inhalant aperture, also called a siphon that allows them to filter bacterial and pathogens and algae out of the water. They have also been noted to clean pharmaceuticals, personal care products and herbicides. Pollutants can bioaccumulate in their tissues, harming functions, such as reproduction. Adult mussels can clean more than 10 gallons of water per day and reduce the amount of algae in freshwater.



Conservation Efforts:

The city has placed a Request for Proposals for a Master Storm Water Plan, which includes restabilizing the slopes and reestablishing the grade of the Ten Mile bayou, this will increase the dissolved oxygen in the freshwater stream, hopefully allowing this mollusk to thrive once more. Once this is complete, the city, along with state and federal agencies plan to outreach for a conservancy group to aid the city in reestablishing this dwindling population.

Piping Plover

Where birds thrive, people prosper. The presence of birds is an important indicator of the health of our environment. Coastal areas are among our unique ecosystems that are highly important for many species of birds, offering breeding sites as well as rich sources of food for migratory stopovers. Unfortunately booming coastal development and recreational use of beaches are rapidly eroding vital habitat for birds and other wildlife. Among the species that are at greatest risk is the Piping Plover (*Charadrius melodus*).

This federally and state threatened bird lays 3-4 eggs in a small depression in dry sand and cobble, and incubates them for about a month. The chicks grow quickly and are able to fly in only four weeks. There are only approximately 4,000 breeding pairs of Piping Plovers left worldwide.



Conservation Efforts

Many activities affect the Piping Plover population. Development or invasive plants can reduce the amount of available nesting habitat. People get too close to nests or dogs that chase adults can cause birds to abandon their nests. Predators stress both young and adult birds and will eat chicks or eggs. Beach erosion and tides can also impede their nesting success.

1. Report Sighting Immediately
2. Stay away from nest enclosures and posted Piping Plover breeding areas.
3. Always keep dogs leashed.
4. Leave stones and loose wood along the Ten Mile Bayou through public awareness
5. Report people or pets disturbing Piping Plovers or their nests
6. Become informed.

Eastern Black Rail

The eastern black rail is a widely distributed, secretive marsh bird with little known about its population structure and dynamics. Based on the available data, subpopulations occur across the landscape as small (single pairs) to relatively large (multiple pairs) population centers in a clumped distribution. Birds from northern latitudes migrate south and winter in warmer climates among year-round resident subpopulations. However, we do not understand how these subpopulations may be different, the proportion of migrants versus residents, if there is any separation between migrant and resident populations geographically, or how dispersal among population centers might occur or how often. We also recognize across the range of the subspecies, factors affecting these subpopulations may differ based on geography, land use practices, etc. Since clear differentiation between populations across the range is difficult for the subspecies, environmental and occurrence point data from across the range were used to develop analysis units (AUs) to inform our assessment of current and future conditions. Five AUs (Central Lowlands, Great Plains, Mid-Atlantic Coastal Plain, Southeast Coastal Plain, and Southwest Coastal Plain) exist for eastern black rails. Historical data and a few current records indicated the Appalachians and New England encompassed part of the range of the eastern black rail; therefore, we identified two additional units (Appalachians and New England) for a total of seven AUs. However, three of the AUs (New England, Appalachians, and Central Lowlands) are extirpated.



Conservation Efforts:

Conservation agreements and funding opportunities will be promoted through the Service's various voluntary programs such as Fish and Wildlife Programs to encourage partnerships in habitat conservation and 9 enhancement efforts, improving our knowledge and understanding of the subspecies, and refining best management practices (BMPs) to support the recovery of the species. We will work with partners to assess habitat and threats to determine the recovery potential in geographic areas of the historic range. We will also support community-based watershed stewardship planning and action, as well as land acquisition and protection to benefit the subspecies. An effective recovery strategy for eastern black rail is contingent upon natural resource management that promotes population stability and growth, while minimizing threats and causes of decline.

Action Plan: Recovery Actions (not in priority order) include the following:

Science and Monitoring Actions

- Support inventory and monitoring efforts to improve our understanding of the distribution and abundance of existing eastern black rail populations.
- Improve eastern black rail survey techniques.
- Support research on the relationship between land management practices and its effects on survival, recruitment, and reproduction.
- Develop more efficient and effective approaches to habitat assessment (e.g., the use of advanced spatial technologies to develop improved techniques in the identification of wetland types or characteristics preferred by the subspecies at a regional or landscape scale).

- Support research that improves our understanding of the dispersal, migration, distribution, occupancy, and behavior of subpopulations.
- Continue research into regional phenology of breeding and molt periods.
 - Study factors that affect abundance of sub-populations to develop strategies and actions to ameliorate the negative effects. Habitat Management Strategies and Actions
- Encourage and work with public and private land managers including non-profit organizations and landowners to protect, restore, enhance, and manage habitat to maintain and expand suitable habitat for the eastern black rail, particularly within and adjacent to occupied areas.
- Create or restore eastern black rail habitat in palustrine and estuarine environments to bolster



Impoundment apparently caused habitat changes that resulted in extirpation of one population (Rakes 1996). Drought-caused dewatering of streams probably has been exacerbated by stream diversions and irrigation withdrawals associated with agriculture. Water quality is vulnerable to degradation by runoff and groundwater inflow contaminated with silt, petroleum products, and pesticides; habitat is vulnerable to destruction and degradation by livestock, draining, bulldozing, dredging, removal of aquatic vegetation, and successional changes that cause excessive shading; these factors appear to be at least partially responsible for recent population declines and extirpations. Before being removed, Muscovy ducks nearly extirpated a population through direct predation.

Conservation Efforts:

Better information is needed on trends in groundwater levels (Rakes 1996). Frequent monitoring of populations is essential (extirpations can occur quickly, even in sites with landowner conservation agreements) (Rakes 1996). Highland Rim area should be surveyed for undiscovered populations. Surveys

for good reintroduction sites are needed. All known occurrences warrant protection. Landowners should be educated about topminnows and their habitat requirements and threats (Rakes 1996). Creation and protection of refuges on publicly owned and protected property may be helpful (Rakes 1996).

Trispot Dotter

The trispot darter is unique from other darters because it acts like a tiny salmon, migrating upstream annually from the larger river habitat where it spends most of its life to small tributaries and seeps to spawn. Culverts, dams and other modifications can block its passage.

The trispot darter is threatened by urban sprawl, since stormwater runoff from development degrades the water quality it needs to survive. It is also threatened by runoff from logging and agriculture, and by dams and drought. The fish's habitat becomes unsuitable when silt and sediment fills in the spaces between rocks, burying the spaces they need for shelter and egg-laying.

The trispot darter grows to about 1.5 inches long and eats midge-fly larvae. It is eaten, in turn, by black bass and other large fish prized by anglers.

Freshwater species are being lost to extinction at 1,000 times the natural background extinction rate because of dams, pollution, climate change and the ever-increasing use of water to meet the demands of human population growth.

The Southeast is home to more kinds of freshwater animals than anywhere else in the country, but the region has recently lost more than 50 freshwater animals to extinction.



Conservation Efforts:

Better BMP's:

1. Maintain the property's forest through best management practices outlined in a 10-year forestry management plan to be approved by the land trust.
2. Offer the value of stored carbon for potential cap and trade credits.
3. Improve the riparian buffer along a creek on the property to improve the watershed into the Middle Coosa River.
4. Protect the property's relatively natural habitat of fish, wildlife and plants.
5. Provide for recreational use of the property through hunting leases in which hunters pay for the privilege to responsibly hunt the land.

North Long-Eared Bat

The northern long-eared bat is a wide-ranging, federally threatened bat species, found in 37 states and eight provinces in North America. The species typically overwinters in caves or mines and spends the remainder of the year in forested habitats. As its name suggests, the northern long-eared bat is distinguished by its long ears, particularly as compared to other bats in the genus *Myotis*.

Although there are many threats to the species, the predominant threat by far is white-nose syndrome. If this disease had not emerged, it is unlikely the northern long-eared bat would be experiencing such a dramatic population decline. White-nose syndrome was the main reason for listing the species as threatened under the Endangered Species Act in 2015. Since symptoms were first observed in New York in 2006, white-nose syndrome has spread rapidly throughout the species' range in the United States. Numbers of northern long-eared bats, gathered from hibernacula counts, have declined by 97 to 100% across the species' range.

Other sources of mortality: Although no significant population declines have been observed due to the sources of mortality listed below alone, they are now important factors affecting this bat's viability until we find ways to address white-nose syndrome.

- **Wind energy-related mortality:** Wind turbines can kill bats by direct collision with turbine blades. Mortality has been documented for northern long-eared bats, although a small number have been found to date. However, there are many wind farms operating within a large portion of the species' range, and many more projects are planned in the future.
- **Summer habitat loss:** Highway construction, commercial development, surface mining and wind facility construction permanently remove habitat and are activities prevalent in many areas of this bat's range. Summer habitat loss may result in longer flights between suitable roosting and foraging habitat, fragmentation of maternity colonies and direct injury or mortality.
- **Winter habitat loss and disturbance:** Gates or other structures intended to exclude people from caves and mines, but do not consider bat needs, may not only restrict bat flight and movement, but also change airflow and internal cave and mine microclimates. A change of even a few degrees can make a cave unsuitable for hibernating bats. Also, cave-dwelling bats are vulnerable to human disturbance while hibernating. Arousal during hibernation causes bats to use up their already reduced energy stores, which may lead to individuals not surviving the winter.
- **Climate change:** Changes in temperature and precipitation may influence the species' available suitable roosting and foraging habitat and prey availability.



Conservation Efforts:

- **Disease management:** Actions have been taken to try to reduce or slow the spread of white-nose syndrome through human transmission of the fungus into caves and mines, including cave and mine closures and advisories and national decontamination protocols. A national plan was prepared by the U.S. Fish and Wildlife Service and other state and federal agencies that details actions needed to investigate and manage white-nose syndrome. Many state and federal agencies, universities and non-governmental organizations are researching this disease to try to control its spread and address its effect.
- **Addressing wind turbine mortality:** The U.S. Fish and Wildlife Service and others are working to minimize bat mortality from wind turbines on several fronts. The agency funds and conducts research to determine why bats are susceptible to turbines, how to operate turbines to minimize mortality and where important bird and bat migration routes are located. The agency

has and continues to work with many wind energy project proponents in developing habitat conservation plans that provide wind farms a mechanism to continue operating legally while minimizing and mitigating mortality of federally endangered or threatened bats.

- **Hibernacula protection:** Many federal and state natural resource agencies and conservation organizations have protected caves and mines that are important hibernacula for cave-dwelling bats.

U.S. Fish and Wildlife Service (USFWS). 2015. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule; Final Rule and Interim Rule. Federal Register 80(63): 17974–18033

Indiana Bat

Indiana Bats hibernate in large, densely packed clusters of about 300 bats per square foot in caves or mines that have stable winter temperatures below 50 F, with the preferred temperature being 39 to 46 F. Specific roost sites that provide this climate are selected and used from year to year. Usually the majority of bats will be found just beyond the twilight zone of the hibernation cave, but this varies with time of season and configuration of the cave. Only a small percentage of the available caves provide for the Indiana Bat's specialized requirements. For example, only 24 of Missouri's more than 4,700 known caves ever have contained hibernating colonies larger than 100 Indiana Bats.

Recent studies indicate that Indiana Bat maternity colonies are formed mostly in riparian and floodplain forest near small to medium-sized streams, although bats also have been found along tree-lined drainage ditches and in upland sites. It may be that this apparent pattern is more a function of habitat availability than of the species' actual preference. Clearing for agriculture has restricted forest habitats largely to riparian zones in their summer range. To date, few maternity roosts have been studied. Of these, three have been in riparian habitat and one was in an open, pastured woodlot. Roosts also have been found in the hollow of a tree and behind loose, exfoliating bark of both dead and living trees. Optimum summer habitat must include mature trees, both to provide roost sites and because Indiana Bats forage around the crowns of large trees. Preferred stream habitat appears to consist of streams lined on both banks with mature trees that overhang the water by at least ten feet. Streams without riparian vegetation do not appear to be suitable. Upland forest with a well-developed canopy but poorly developed sub-canopy layer also appears to provide summer habitat.



Conservation Efforts:

An Indiana Bat/Gray Bat Recovery Team was assembled in the 1970's. The Recovery Team's responsibilities include advising the U.S. Fish and Wildlife Service (USFWS) of actions deemed necessary to preserve these endangered bats. Among these are monitoring the populations, cave protection, public education, and others. Actions for the Indiana Bat to date have centered on the hibernation caves.

The Team separated caves known to harbor Indiana Bats into several classes based on population sizes. The most important (Priority 1) caves, of which there are eight, recorded populations of 30,000 or more bats each. The second category (Priority 2) contained populations above 1,000 but less than 30,000. All of the Priority 1 caves are or soon will be in public ownership, and of these six are gated or fenced and the other two will be protected in the near future. Many of the Priority 2 caves are protected as well.

Since 1983, I have censused seven of the eight Priority 1 caves on behalf of the USFWS (one is an extremely dangerous abandoned mine that cannot be censused). We elected to have only one person census these caves in order to reduce observer bias, thus attempting to ensure that population trends noted in the census were real. Regular censusing did not begin until the 1980's and was not standardized until 1983. Over that time span, the Indiana Bat has declined by 55% in these caves. The situation in the Priority 2 caves in several states is similar, with notable exceptions in Indiana and Kentucky. Despite efforts to protect this species during hibernation, the population has continued to decline.

Least Tern



The Least Tern has two big problems. It prefers sandy beaches for nesting—the same kinds of places that people love to visit. And, because it nests on the ground, it's vulnerable to attacks by [cats](#), dogs, and other predators, which can destroy a significant portion of a colony's eggs and chicks.

As its name implies, the Least Tern is the smallest of the terns of the Americas; species like the [Inca Tern](#) are strikingly different. The birds breed in many areas of the United States and winter mainly along the coast of northern South America, including the coasts of Brazil to Colombia.

Groups of Least Terns can often be seen hovering close to the water's surface with quick, flickering wingbeats as they catch small fish and invertebrates. Like other terns, they also plunge-dive, making an impressive sight as they hover above their prey before suddenly dropping into the water to make their catch.

Nests are a shallow scrape in sand, soil, or pebbles. The birds often breed at the same colony sites each year, but fortunately can respond quickly in response to the emergence of new suitable habitat or the disappearance of old. Least Terns sometimes nest on flat gravel rooftops, usually near beaches, a habit which has its own hazards; hot tar can become stuck in the chick's down or burn the feet of chicks.

Conservation Efforts:

Many activities affect the Piping Plover population. Development or invasive plants can reduce the amount of available nesting habitat. People get too close to nests or dogs that chase adults can cause

birds to abandon their nests. Predators stress both young and adult birds and will eat chicks or eggs. Beach erosion and tides can also impede their nesting success.

1. Report Sighting Immediately
2. Stay away from nest enclosures and posted Piping Plover breeding areas.
3. Always keep dogs leashed.
4. Leave stones and loose wood along the Ten Mile Bayou through public awareness
5. Report people or pets disturbing Piping Plovers or their nests
6. Become informed.

Pallid Sturgeon

HISTORICAL STATUS: Pallid sturgeon were not identified as a separate species until 1905. Because of that, the historic data is sparse. However, catch records indicate that pallid sturgeon were somewhat common as late as the 1950's and 1960's. Observation data from the Missouri River and its tributaries in the Dakotas and Montana reflects the downward trend of the population. In the 1960's there were an average of 50 observations per year, and in the 1980's there were an average of only 6 observations per year.

PRESENT STATUS: Pallid sturgeon are found in the Mississippi and Missouri Rivers and in their larger tributaries. Total length of the historic range is approximately 3,550 river miles; however, only portions of this range are presently suitable pallid sturgeon habitat. In Montana, fishermen on the Missouri and Yellowstone rivers occasionally catch pallid sturgeon.

HABITAT: Pallid sturgeon are adapted for living close to the bottom of large, silty rivers with swift currents. The preferred habitat is comprised of sand flats and gravel bars.

LIFE HISTORY: Pallid sturgeon do not appear to be sexually mature until they reach at least 3 to 4 years of age. In North Dakota, pallid sturgeon spawning occurs in May or June over gravel or other hard surfaces. The eggs take 5 to 8 days to hatch. Both male and female sturgeon may go 3 to 10 years between spawning. Pallid sturgeon are long lived, with individuals reaching perhaps 50 years of age. Pallid sturgeon feed on aquatic insects, mollusks, and small fishes.

AID TO IDENTIFICATION: Pallid sturgeon are armored with lengthwise rows of bony plates and have a "shark-like" appearance. The range of the pallid sturgeon in Montana overlaps with the range of the shovelnose sturgeon. Pallid sturgeon can weigh up to 80 pounds, while shovelnose sturgeon reach a maximum weight of 5 pounds and average 2 pounds. The back and sides of the pallid sturgeon are grayish white versus the brown color of the shovelnose albus sturgeon. The length of the inner barbels

(4 whisker like appendages in front of the mouth) on a pallid are only about 1/2 as long as the outer barbels, while on the shovelnose all barbels are the same length. Pallid sturgeons are known to hybridize with the smaller shovelnose sturgeon.

REASONS FOR DECLINE: Of the 3,550 river miles the pallid sturgeon inhabits, all have been significantly affected by man. Approximately 28 percent of the affected area has been impounded, which has created unsuitable lake-like habitat, 51 percent of the area has been channelized into deep, clear channels, and the remaining 21 percent of the historic habitat is below dams. In the later 21 percent, the water released from dams has reduced silt loads, different runoff patterns, and colder temperatures, all of which are believed to be detrimental to pallid sturgeon.



Conservation Efforts:

Many activities affect the Piping Plover population. Development or invasive plants can reduce the amount of available nesting habitat. People get too close to nests or dogs that chase adults can cause birds to abandon their nests. Predators stress both young and adult birds and will eat chicks or eggs. Beach erosion and tides can also impede their nesting success.

1. Report Sighting Immediately
2. Stay away from nest enclosures and posted Piping Plover breeding areas.
3. Always keep dogs leashed.
4. Leave stones and loose wood along the Ten Mile Bayou through public awareness

5. Report people or pets disturbing Piping Plovers or their nests
6. Become informed.

Going Forward in 2022-2023

The City of West Memphis (City) has sought competitive proposals from consulting firms to update the Stormwater Management Plan (SMP) for the City of West Memphis and affected surrounding areas. The successful Consultant will (1) review and gain an understanding of work previously completed by the City, including a general understanding of applicable codes and general plans provided by the City, (2) develop a Stormwater Management Plan with the sections detailing the program management, capital improvement program, operations and maintenance, public outreach and education, construction site best management plan program (to include one Industrial Stormwater Permit (AR000000) from the Arkansas Department of Environmental Quality (ADEQ) along with a Stormwater pollution Prevention Plan (SWPPP), given proper investigation and pricing for one city-owned property campus (The City Shop at 511 E. Jackson Ave., West Memphis, AR 72301), update the City's NFIP approval process to include endangered species and habitats, and steps/priorities for the SMP strategy and implementation (Specifications for Construction, bidding and construction management)), (3) identify, define, and prepare a list of projects to implement in the Capital Improvement Projects (CIP) section of the Stormwater Management Plan by creating a two dimensional hydraulic model and prepare reporting for areas of severity given different year rain events, (4) identify property boundaries and ownership and compute the impervious area of properties by delineating whether the property is residential, commercial or city owned (5) create a budget to supplement the repairs needed in the city by proposing the utilization of a stormwater utility fee based on residential or commercial ownership and pervious versus impervious areas that can be utilized to repair and maintain the city's drainage infrastructure, and (6) prepare all reports updating the Project Manager of the Plan's progression and final completion.

The Stormwater Management Plan focuses its study within the City of West Memphis Municipal Boundary and those areas immediately adjacent to the City Boundary that may be affected. Previous reports regarding the stormwater system include some existing as-built drawings, the Ten Mile Bayou Slope Stabilization Study and flood reporting for various periods of time. These include a detailed analysis of erosion, storm drain infrastructure and flooding areas for selected areas. These reports, coupled with the GIS data describe the then-existing stormwater system condition and need for improvements. The updated Stormwater Management Plan will utilize this data to develop the following sections:

1. **Program Management:** This section provides an executive summary of the stormwater system, the capital improvement program, operations and maintenance, public outreach and education, Construction Site Best Management Plan (BMP) program, the responsibilities of the City of West Memphis, private or public property owners and calculating the impervious areas properties, and identifying stormwater infrastructure failure through hydraulic modeling.
2. **Capital Improvement Program:** This section identifies and prioritizes a budget that will consist of construction of replacement infrastructure, rehabilitation of existing infrastructure, and recommendations on how new infrastructure should be determined for future city growth. This also includes the project descriptions, scope of work, phasing, implementation costs, creation of

a stormwater utility fee, and life cycle. Grant proposals for initial immediate repairs will also be a priority for selection of proposals.

3. **Implement and Evaluate the Floodplain Species and Habitats of Surrounding Special Flood Plan Hazard Areas:** Carry out the action items, measure their success, and revise as needed. Implementation should proceed by the offices and according to the timetable specified in the action plan. The credit criteria in Section 512.a of the Coordinator’s Manual state, “The community must also prepare and submit an annual evaluation report that meets the credit criteria of a floodplain management plan in Section 512.a, Step 10.” The relevant portions of Step 10 in Section 512.a are included in this guide, beginning on the next page. An evaluation of progress and a report of this evaluation is required every year. The report needs to include the status of each action item and, if it is behind schedule, the reason(s) why. Corrections and changes should be made as a result of the evaluation, at the community’s discretion. For example, an outreach project could be revised by the staff, but some actions, such as amending the plan document, may need to be approved by the governing body. The evaluation report needs to be submitted with the community’s annual CRS recertification package. It needs to be made available to the media and the public. It should also be submitted to the governing body that adopted the floodplain species plan, but no official action needs to be taken on it. How the report is distributed needs to be described in the recertification documentation.
4. **Operation and Maintenance:** The section will develop an Annual Maintenance Program focused on scheduled, preventive, and corrective maintenance. The Operations and Maintenance Plan provides the parameters and limits, maintenance procedures and schedules, and documents the methods necessary to demonstrate appropriate operation and maintenance of the stormwater system. The Maintenance plan will (1) analyze the City of West Memphis’ existing stormwater data and field studies; (2) detail applicable standards or codes subject to the Plan; (3) describe the type of activities or remedies to be performed to maintain compliance with applicable standards; (4) summarize procedures for data collection and field reviews including the frequency for each monitoring activity and evaluation of its effectiveness; (5) describe all tasks associated with operation and maintenance activities including a schedule, maintenance and replacement of equipment, and description of prescribed treatments; (6) detail possible operation and maintenance problems with a means to detect problems (such as periodic inspections) and possible repair methods; (7) Create a maintenance schedule (8) describe all records to be kept and required information for each document. The Plan will also include a GIS component with a comprehensive maintenance of the City’s stormwater infrastructure to be attached as an Appendix.
5. **Public Outreach and Education:** This section details how information will be provided to the public and how the public will be asked to report stormwater system issues to the City. The reporting procedures, response times, proposed to-be-implemented City’s policies, and reporting formats will be included. Consultants must comply with the Continuing Planning Process (CPP) and Antidegradation Implementation Methodology Public Participation Process as required by the Arkansas Department of Environmental Quality (ADEQ).
6. **Construction Site Best Management Plan (BMP) Program:** This section will describe how to use and implement the Arkansas Department of Environmental Quality (ADEQ) National Pollutant Discharge Elimination System (NPDES). Considerations for the Program should include a general site evaluation and assessment, floodplain administration considerations, erosion and sediment

control BMPs (i.e. stabilize slopes, protect storm drain inlets), grounds keeping BMPs (i.e. material handling and waste management, proper staging areas, designated washout areas, spill prevention), postconstruction BMPs (i.e. infiltration basins, slope protection), inspection protocols, record keeping and final stabilization/project completion tasks.