

FINAL PERFORMANCE REPORT



Federal Aid Grant Number F13AP00779 (E-76-R-2)

Surveys of Listed and Candidate Aquatic Species in Oklahoma

Oklahoma Department of Wildlife Conservation

October 1, 2013 through September 30, 2014

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State: Oklahoma

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Grant Program: Endangered Species Act Section 6

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Grant Period: October 1, 2013 – September 30, 2014

Principle Investigator: Curtis Tackett, Oklahoma Department of Wildlife Conservation

I. Need:

The purpose of this grant is to provide assistance to the Tulsa Field Office of the U.S. Fish and Wildlife Service in the monitoring of specific federally listed and candidate species for which there are established monitoring programs (e.g. Arkansas River Shiner, Leopard Darter, Neosho Madtom). Additionally, this grant provides financial support to pursue several opportunities for the Oklahoma Department of Wildlife Conservation to conduct surveys for or monitor known populations of candidate and listed species on state-owned wildlife management areas. The ODWC owns wildlife management areas that encompass habitat for the federally listed Arkansas River Shiner and the Interior Least Tern on Packsaddle, Cimarron Bluff and Cimarron Hills WMAs. Additionally, the Cimarron Hills and Cimarron Bluff WMAs support potential habitat for the Arkansas Darter, which is a federal candidate species.

The Canadian and Cimarron Rivers in central and western Oklahoma support breeding populations of the federally endangered Interior Least Tern (*Sterna antillarum*), the threatened Arkansas River Shiner (*Notropis girardi*), and the federal candidate Arkansas Darter (*Etheostoma cragini*). The Arkansas Darter is restricted to the Cimarron River watershed in northwestern Oklahoma where it is found in heavily vegetated side channels, sloughs and in tributary streams near vegetated seeps and springs. The Least Tern and the Arkansas River Shiner are found, or potentially present, in both the Cimarron and the Canadian Rivers where they require similar riverine habitat conditions that are maintained by periodic flooding events - long reaches of shallow, braided river channel with numerous barren sandbars and islands. This habitat also is used by the Snowy Plover (*Charadrius alexandrinus*), a rare migratory shorebird that nests on some of the larger sandbars that are used by nesting colonies of Least Terns. The riverine habitat used by all of these species has declined in quality as a result of the alteration of the historic flooding cycles in both river systems by human manipulations to the rivers, and their tributaries, such as reservoir construction, dredging, channel straightening and dewatering. These changes have resulted in a reduction in the frequency and magnitude of flooding events that scour the vegetation within the flood plain and redistribute sediments to form sandbars. As an additional consequence, several invasive species, especially the exotic saltcedar (*Tamarix* spp.), have encroached upon these river systems and further altered the habitat structure.

The Little River system in southeastern Oklahoma and southwestern Arkansas supports all of the known populations of the federally threatened Leopard Darter (*Percina pantherina*). Throughout

its range, the Leopard Darter has never been common, but its status has declined in recent decades as a result of habitat loss and habitat fragmentation due to the construction of reservoirs. These reservoirs prevent the movement of Leopard Darters between the populations in each of the major tributaries of the Little River (e.g. Glover River and Mountain Fork River) and therefore isolate these populations and further endanger the species. Critical Habitat is designated for this species in portions of the Little River, Glover Creek, and the Mountain Fork River within McCurtain and Pushmataha counties, OK, and in Polk County, AR (50 CFR 17.95(e)). Among the priority tasks identified in the Leopard Darter Recovery Plan are the identification of important Leopard Darter habitat and monitoring of the remaining populations. The U.S. Fish and Wildlife Service's Tulsa Field Office has monitored Leopard Darters for more than 20 years at traditional locations. It is important to continue this effort and to conduct surveys at other sites that potentially support this species. This grant provided funding to ODWC to assist that U.S. Fish and Wildlife Service in monitoring Leopard Darter populations and assessing their current distribution.

II. Project Objective:

To monitor populations of aquatic species that are federal candidate species, federally listed as endangered or threatened, or under evaluation by the U.S. Fish and Wildlife Service for potential federal listing. Species that will be specifically addressed will be the Leopard Darter, Arkansas River Shiner, Interior Least Tern, Arkansas Darter and Prairie Speckled Chub in the Cimarron, Canadian, Red and Little river watersheds.

III. Approach:

1) Arkansas River Shiner: Assist the personnel of the U.S. Fish and Wildlife Service's Tulsa Field Office with their annual monitoring survey of the Arkansas River Shiner in the Cimarron and Canadian rivers. All fish collections within these rivers will be made in coordination with the Tulsa Field Office and no shiner collections will be made independently from their staff to eliminate unnecessary take.

2) Arkansas Darter: As the opportunities arise, fish surveys will be conducted in the Cimarron River and its tributaries where potentially suitable habitat exists - vegetated seeps, springs and runs, especially those that support water cress. These surveys will be conducted primarily by means of hand nets and seines with the intention of releasing the fish alive back at the survey location. The primary area of emphasis will be the state-owned Cimarron Bluff and Cimarron Hills wildlife management areas, but neighboring private lands may be surveyed if landowner permission can be obtained.

3) Leopard Darter: Assist the personnel of the U.S. Fish and Wildlife Service's Tulsa Field Office with their annual summer monitoring of the Leopard Darter populations in the Little River and its major tributaries. These surveys are primarily visual surveys conducted with the use of snorkeling equipment. All surveys will be conducted in conjunction with U.S. Fish and Wildlife Service personnel to eliminate unnecessary disturbance or take of Leopard Darters.

4) Least Tern: Periodically conduct surveys for Least Terns on the Canadian River at Packsaddle WMA and the Cimarron River at Cimarron Hills and Cimarron Bluffs WMAs. Tern surveys will be conducted each year, although all three WMAs may not be surveyed each year. These surveys will be visual and will consist of searching suitable nesting habitat for tern colonies, and counting or estimating the number of pairs, nests and/or chicks. Notes will be taken if Snowy Plovers or other shorebird species are located during the course of the tern surveys.

5) Prairie Speckled Chub: The USFWS Tulsa Ecological Services Office did not conduct surveys nor request ODWC's assistance for conducting surveys or field activities for the prairie speckled chub (*Macrhybopsis australis*). This species was petitioned for federal listing in 2010 and surveys by ODWC, USFWS, and ODEQ were conducted in 2012-2013 along the upper Red River and its tributaries per the USFWS's request. Fish collections were sorted and enumerated by ODWC staff and all chubs are awaiting DNA analysis to differentiate between *M. australis* and the shoal chub *M. hyostoma*. Additional *M. australis* surveys will most likely be planned for the 2015 field season to monitor population persistence in the upper Red River.

IV. Results:

During the fall of 2013 and the summer of 2014, the Oklahoma Department of Wildlife Conservation staff from the Wildlife Diversity, Streams Management Program, and Southeast Fisheries Region assisted the US Fish and Wildlife Service Ecological Service Office in Tulsa with surveys and monitoring for three fish species across the State.

ODWC assisted with surveys for Arkansas River Shiners (*Notropis girardi*) during October of 2013 and June of 2014 for the annual two- week survey and status monitoring trips in the Canadian River in western Oklahoma.

Sampling during the fall of 2013 took place in October and was conducted at most of the accessible bridge crossings over the Canadian River between the Texas state line east to the bridge on interstate 75 near Calvin. The sampling which was conducted during October 2013 is a continued effort to attempt to collect young of year *N. girardi* that may have been too small during June to accurately sample. Samples were collected and sent to the Oklahoma State University Cooperative Fish and Wildlife Unit for identification and enumeration.

Sampling during the summer of 2014 took place during the second week of June. We assisted with seine-haul sampling at ten sites located along the Canadian River between the Texas state line and the interstate 75 bridge at Calvin, Oklahoma. As in previous years, Arkansas River Shiners were captured at most locations except for the upper-most and lower-most sites; however they were not the numerically dominant species at any site. Other species captured in conjunction with Arkansas River Shiners included Red Shiner (*Cyprinella lutrensis*), Sand Shiner (*Notropis stramineus*), Plains Killifish (*Fundulus zebrinus*), Red River Pupfish (*Cyprinodon rubrofluvatilis*), Bullhead Minnow (*Pimephales vigilax*) and Emerald Shiner (*Notropis atherinoides*). Captured in smaller numbers were Plains Minnow (*Hybognathus placitus*), Brook Silverside (*Labidesthes sicculus*) River Carpsucker (*Carpiodes carpio*), Green Sunfish (*Lepomis cyanellus*), Orange-spotted Sunfish (*Lepomis humilis*) and Largemouth Bass (*Micropterus salmoides*). As was the case with the fall 2013 samples, the fish samples were left

with the staff of the Tulsa Field Office of the U.S. Fish and Wildlife Service who later deposited them with the Oklahoma Cooperative Fish and Wildlife Research Unit for identification, enumeration and archiving within the Oklahoma State University Vertebrate Collection.

On March 27, 2014, we conducted a survey for the Arkansas Darter (*Etheostoma cragini*) in West Anderson Creek on the Cimarron Hills Wildlife Management Area (WMA). West Anderson Creek is a small tributary to the Cimarron River that flows through a watershed that is comprised primarily of stabilized sand dunes. Much of the stream's flow is subsurface in nature, but a long series of perennial pools occur along most of the stream's channel. These pools are connected by periodic surface flow during rainfall events and by subsurface movement of water downstream. We used dip nets to search four pools along the West Anderson Creek channel in Sections 4 & 5 of Township 28 North, Range 20 West, Woods County. Seven Arkansas Darters were netted and released in three pools; two were photographed as shown in Figure 1. An additional seven darters were observed but not captured in these pools and a seepage channel connecting two pools at the surface. The continued persistence of Arkansas Darters in West Anderson Creek this year is especially encouraging in light of the long and persistent drought conditions in western Oklahoma. The period between 2011 and 2013 has been the driest three-year period since records have been kept dating back into the 1920s, and was drier than any three-year period during the well-known "Dust Bowl" period of the 1930s.

Due to time limitations, we did not attempt to monitor Least Tern (*Sternula antillarum*) nests on the salt flat that occurs on Cimarron Hills Wildlife Management Area. Cimarron Hills WMA occurs on the east side of the Cimarron River in Woods County, Oklahoma and encompasses approximately the southern half of a large salt flat known as the Little Salt Plain. Because of its bare, sandy terrain and its proximity to the Cimarron River, this salt flat has been a traditional nesting area for Interior Least Terns and for Snowy Plovers (*Charadrius alexandrinus*); however no Least Terns and few Snowy Plovers nested on the salt flat in 2011, 2012 or 2013 as a result of the on-going drought. During the three-year drought, no surface flow occurred in the Cimarron River during the summer months when Least Terns normally would be nesting. Drought conditions persisted in the region through the winter and spring of 2014 (January through May), but a period of increased rainfall occurred between June and August that returned surface flow to the Cimarron River. Surface water conditions, and presumably the local food supply, would not have been adequate for rearing chicks in the early weeks of the Least Tern nesting season in 2014. However, with increased rainfall and surface flow, it is possible that Least Terns attempted to nest on the salt flat after a three-year absence.

ODWC staff assisted USFWS and the US Forest Service staff with the annual surveys during the summer of 2014 in August for the Leopard Darter (*Percina pantherina*) in McCurtain, Le Flore, and Pushmataha counties in southeastern Oklahoma. ODWC staff assisted with depletion surveys at the fixed sites that are sampled every year as well as status surveys at several additional rotational sites which are surveyed on average every 3 years. These sites are located on the Little River, Glover River, and the upper Mountain Fork River shown in Figure 2. High water levels and low visibility due to turbidity levels limited the number of sites that were sampled during the rotational period.

Figure 1. Two of the Arkansas Darters (*Etheostoma cragini*) captured and released at West Anderson Creek on Cimarron Hills Wildlife Management Area, March 27, 2014.

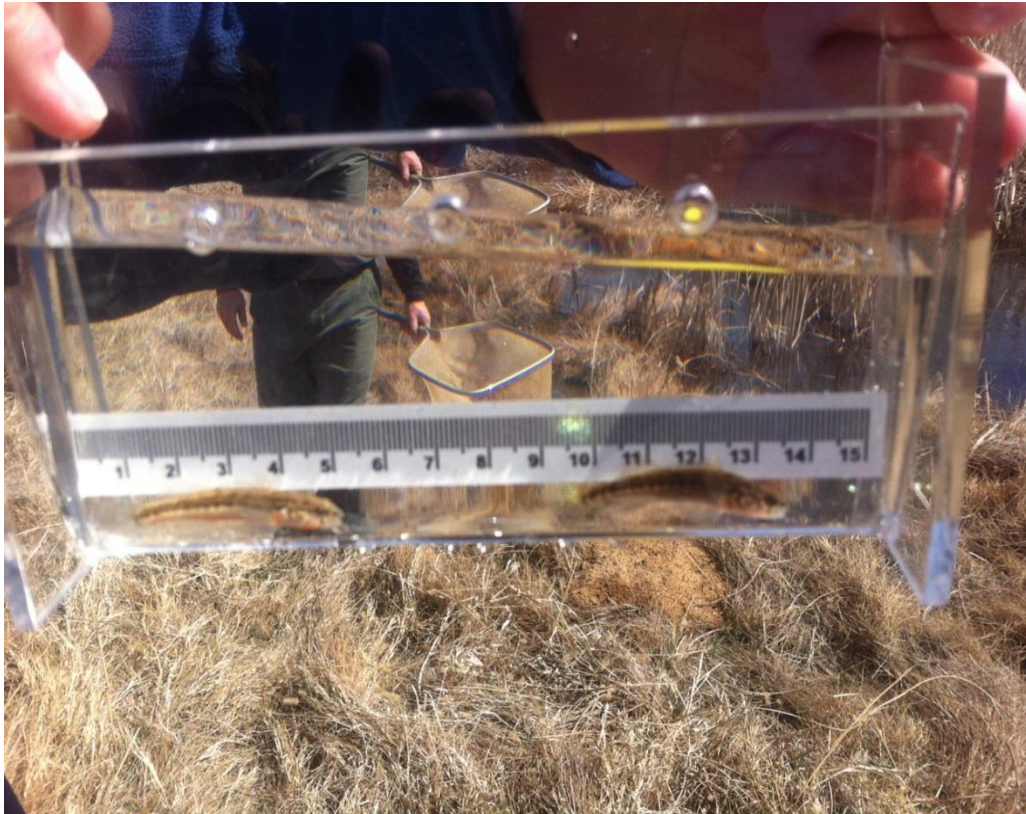
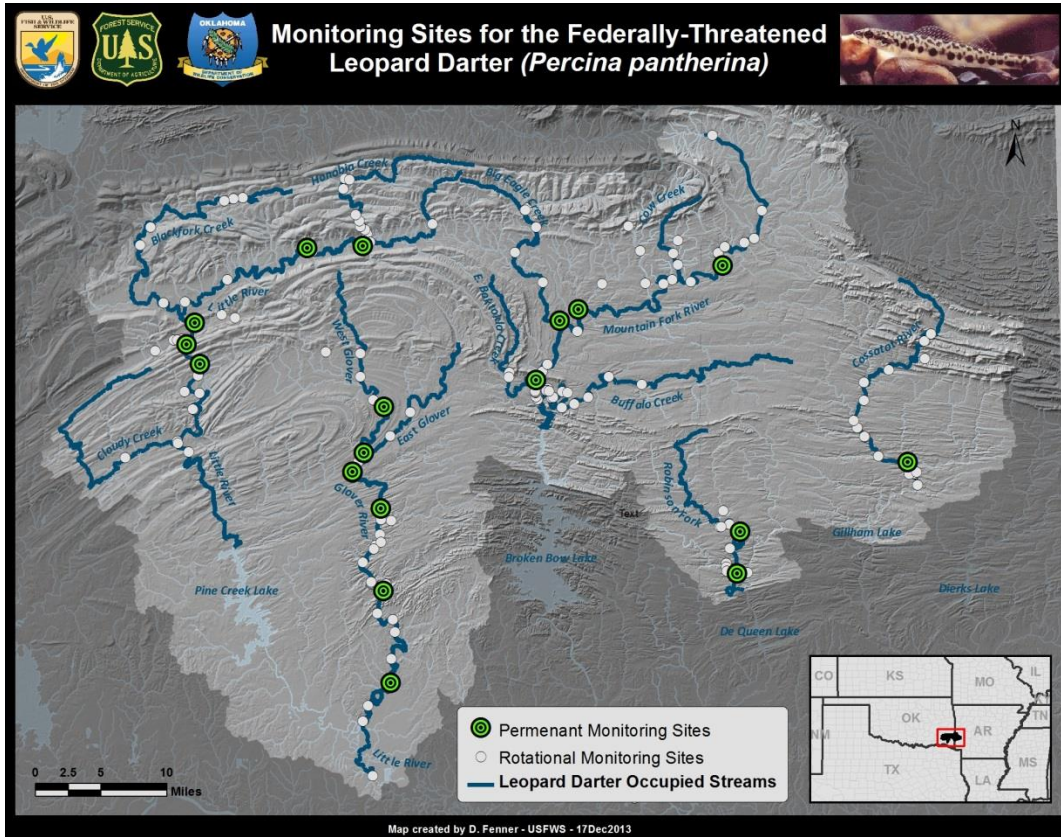


Figure 2. Monitoring Sites for the Leopard Darter in Southeast Oklahoma and Southwest Arkansas



V. Significant Deviations: None.

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Approved by: _____

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