

FINAL PERFORMANCE REPORT



Federal Aid Grant No. F16AP00154 (E-73-R-3)

**Least Tern Monitoring in the Canadian River
Landowner Conservation Cooperative**

Oklahoma Department of Wildlife Conservation

April 1, 2016 – March 31, 2017

FINAL REPORT

State: Oklahoma

Grant Number: F16AP00154 (E-73-R-3)

Grant Program: Endangered Species Act Traditional Section 6

Grant Title: Least Tern Monitoring in the Canadian River Landowner Conservation Cooperative

Reporting Period: April 1, 2016 through March 31, 2017

Principle Investigator: Priscilla H. C. Crawford, Oklahoma Biological Survey, University of Oklahoma

A. Abstract:

Recovery efforts for the federally-endangered Interior Least Tern (*Sternula antillarum*) along the Canadian River in central Oklahoma were initiated in the mid-1990s by Victoria Byre, who closely monitored and protected the species from human disturbance during its breeding season. After her death in 2000, monitoring efforts ceased. Priscilla Crawford, the current P.I., renewed the Least Tern monitoring program in 2007. Beginning in 2010, The P.I. partnered with the Oklahoma Department of Wildlife Conservation to receive financial assistance for the project through the Cooperative Endangered Species Conservation Fund provided by Section 6 of the Endangered Species Act. The current grant was proposed in order to both improve the status and facilitate species recovery (e.g. number of birds and their reproductive success) of the Interior Least Tern within this portion of its breeding range. A significant component of this grant has involved outreach to landowners that own or maintain property along this segment of the Canadian River. Through this project, we made contacts with landowners in order to educate them about the presence and ecological importance of the Interior Least Tern. We located and monitored tern nesting colonies in order to quantify the size of the population, the locations of nesting colonies, and the reproductive success of terns at each location. Protection of the nesting colonies themselves is two-fold; effort is made to educate people who recreate on the river through both presentations and the distribution of free informational material (e.g. brochures and posters). Secondly, temporary psychological barriers were constructed around nesting colonies to increase the awareness of tern presence and potentially reduce the risk of destruction or disturbance of Interior Least Tern nests and chicks.

B. Background:

The Canadian River is one of four rivers in Oklahoma that supports breeding populations of the federally endangered Interior Least Tern (*Sterna antillarum*). For successful nesting, the Interior population of the Least Tern requires riverine habitat conditions that are maintained by periodic flooding events - long reaches of shallow, braided river channel containing numerous barren sandbars and islands. Over the past seven decades, the Interior Least Tern's nesting habitat has been reduced as a result of the alteration of the natural flooding cycles on most major rivers, which in turn has been caused by manipulations to these rivers and their tributaries such as damming, dredging, channel straightening and dewatering. These changes have resulted in a reduction in the frequency and magnitude of flooding events that are necessary to scour vegetation within the flood plain and to redistribute the sediments that form sandbars. As a

consequence of reduced flooding, invasive species such as the exotic salt cedar (*Tamarix* spp.) have encroached upon the river and further altered habitat structure. Both the decline in sandbar habitat and the alteration of the river ecosystem by invasive species are outlined as important conservation issues in the Least Tern Recovery Plan (USFWS 1990) and the Oklahoma Comprehensive Wildlife Conservation Strategy (ODWC 2015).

Additionally, the remaining suitable habitat along inland rivers can be locally affected by heavy human recreational activity (Hill 1993; Byre 2000). Recreational activities, such as the driving of off-road vehicles in the river channel, can disturb colonies of nesting terns that may lead to the abandonment of nests, eggs and chicks, or the direct destruction of eggs and chicks by these vehicles. Although this potential impact to Least Tern nesting colonies is unintentional, it hinders the recovery potential for this species (Hill 1993; Byre 2000 & 2004). To reduce the recreational traffic in areas with nesting birds, the colonies need to be posted and psychological fencing (e.g. flagging or caution tape) erected to deter and educate people. Developing strategies to successfully manage recreational activity in the riverbed may be the greatest step in the protection of the Interior Least Tern in high human-use areas such as the Canadian River in central Oklahoma. The USFWS Recovery Plan for the Interior Least Tern indicates a need for educational outreach and law enforcement actions in areas of high public use (USFWS 1990).

The USFWS Recovery Plan also cites the need to develop and implement public awareness and outreach programs about the Interior Least Tern (USFWS 1990). Reaching out to people who both live along and recreate in the Canadian River can be a significant part of the recreational activity management program. Outreach activities can be informal “chats” with people accessing the river or more structured activities for school groups, scout troops and civic groups, such as local chapters of the Audubon Society. There is a substantial base of voluntary land conservation and private landowner interest in habitat protection along the Canadian River near the city of Norman, Oklahoma. Currently, 16 private landowners representing over 4,500 acres in the central Oklahoma Canadian River corridor have become participants in the Canadian River Landowner Conservation Cooperative (CRLCC), a subset of properties enrolled within the state-wide Oklahoma Natural Areas Registry (ONAR) program. The ONAR is a voluntary landowner-recognition program conceived by the Oklahoma Biological Survey. As enrollees in the CRLCC, landowners have agreed to a variety of measures that aid in protection and recovery efforts for the Interior Least Tern; these include allowing property access for biologists and law enforcement and implementation of habitat management recommendations provided by ONAR staff for the benefit of the Interior Least Tern.

C. Objective:

The purpose of this grant is increase the nesting success of Interior Least Tern colonies along a ~40 mile stretch of the Canadian River south of Norman, OK through a combination of periodic nest monitoring and psychological barriers for protection from human disturbance. An additional component of this project is to increase awareness of the presence of the Interior Least Tern on the Canadian River through outreach and educational materials made available to landowners and the general public.

D. Procedures:

1. Meet with landowners who are current or past members of the Oklahoma Natural Areas Registry about their continued involvement or reinvestment in the program, and identify

those who are interested in greater habitat protection.

2. Inform additional landowners in the river corridor about the Oklahoma Natural Areas Registry and Canadian River Landowner Conservation Cooperative. Add interested landowners to Registry Program and Conservation Cooperative. Identify those interested in greater habitat protection.
3. Conduct educational programs and using previously developed educational materials for school and adult groups on the plight of the Interior Least Tern and prairie river ecosystems.
4. Continue the monitoring program for Interior Least Tern colonies and compare data to previously published data on the Canadian River to determine the long-term population trend. Track habitat quality in the areas used by terns for their nesting colonies.
5. Find breeding bird colonies, flag areas, and use temporary psychological fencing to deter human disturbance near nesting birds.
6. Evaluate the success of deterring human disturbance and bird reproduction; provide written reports to ODWC and USFWS regarding the results.

E. Results and Discussion:

Beginning spring of 2016, we contacted landowners who are members of the Oklahoma Natural Areas Registry within the Canadian River Landowner Cooperative. We distributed and posted “Oklahoma Natural Areas Registry - No Trespassing” signs to those landowners requesting them. No landowner was interested in assistance with habitat improvement or purchasing of new gates, fencing, or other trespassing deterrents. We also contacted additional landowners in the river corridor about the Oklahoma Natural Areas Registry and Canadian River Landowner Conservation Cooperative. Several new landowners were cooperative with the project, but declined to become official members of the Oklahoma Natural Areas Registry.

We conducted educational programs in the community and distributed the “Life on a Prairie River” poster and Interior Least Tern pamphlet. During the last year, we made contact with approximately 1000 people at various local events (Norman’s Earth Day Festival, Science in Action Day at the SNOMNH, Spring Break Escape at the SNOMNH, and other community outreach programs). We acted in an advisory capacity to the Norman Area Land Conservancy regarding river habitat protection. We worked with the Canadian River Conservancy to promote the protection of an Interior Least Tern colony site within the Norman city limits.

We continued the monitoring program for Interior Least Tern colonies in the project area.

2016 Breeding Season – A total of 17 adult pairs were observed in the project area (3 Indian Hills Colony; 1 Lindsey Colony; 5 Green Valley Colony; 0 Oxbow; 4 North Lexington; 7 West Lexington). No nests were initiated at our regular colonies. The North Lexington and West Lexington Colonies were discovered during our annual boat survey of our focus reach of the river. These new colony sites were the only suitable habitat found along this river reach and were the only known nesting sites for this year. A total of 8 nests were established with 13 chicks hatched which all matured to flying juveniles. The reproductive success of the known nests

(fledglings/pair) was 1.857, but the overall reproductive success of the total observed pairs was 0.765. This is greater success than we observed in 2015, with no chicks reaching maturity, but still well below the reproductive success observed by V. Byre in the 1990s (Byre 2000). We established that the colony size and reproductive success are both declining. We are currently writing up a more detailed comparative analysis for publication.

Monthly Summaries for 2016 Field Season

➤ **MAY**

Monitoring the Interior Least Tern (LETE) colonies during this breeding season has been limited again this year due to rainfall and thunderstorms along the Canadian River. Our usual schedule is to visit colony sites at least once a week, and more often if possible and warranted due to frequent human disturbance. Because of the unsafe field conditions we have not maintained our typical monitoring frequency. We began site visits 12 May 2016 and made it to each colony site 3 times in May. The LETE population along the Canadian this spring has been very low, which may have been caused by the cool, wet spring and relatively high water of the Canadian River. At the Lindsey Colony site, we have found no nesting activity this season, and only observed a single tern on one occasion as it flew past the site. At Green Valley, we observed 9 adult LETEs on 16 May. The Indian Hills site had 5 adult LETEs on 31 May. Jenkins, which has not been an active colony site for years, continues to be unsuitable for nesting terns due to the lowering of the sandbar as a result of sand mining.

If weather and water levels are conducive, we will attempt a kayak survey of river between the Indian Hills and Green Valley sites. We hope to find that the local LETE population has shifted to nearby sandbars that have better habitat this year.

➤ **JUNE**

By 7 June, no terns were occupying the Indian Hills site, and no terns were observed occupying the Indian Hills, Lindsey, Jenkins, or Green Valley colony sites by June 10th. We did not see any sign that terns initiated nests at any of these sites. Nesting habitat for the LETE is poor at these historically occupied sandbars. Last year's flooding and high water events did little to scour vegetation from the sandbars and the plant cover continues to increase at these sites. Remaining sandbars are narrowed and not far from the river level.

At the beginning of June, the number Least Terns observed at the regular colony sites was low. During the first week of June, we observed 4 at Green Valley, 0 at Indian Hills, and 0 at Lindsey. By 20 June, none of the regular colony sites had any nesting birds. We surveyed our entire river segment from south Oklahoma City to south of Lexington during two kayak trips on 20 June and 22 June. On 20 June, we traveled from the Indian Hills Colony to the South Jenkins site, approximately 20 river miles during a 6.5 hour trip. Along this entire reach, we only observed 2 least terns flying and fishing. I noted no high quality least tern nesting habitat along this stretch of river. Two days later on 22 June, we traveled from South Jenkins to the Green Valley Colony site, approximately 22 river miles during a 7.5 hour trip. We found two nesting colonies just north of the Hwy 77 bridge across the Canadian River at Lexington. I have named these North Lexington and West Lexington. The North Lexington site had 8 adult Least Terns with one nest on 22 June. Habitat was good quality, nests were on dry sand several feet above the water level, and no ATV tracks observed on site. The West Lexington site had 8 adult Least Terns and 3 nests on 22 June. It also had high quality habitat with nests at an elevation

that is unlikely to be affected by typical rain events. However, it is on the northern boundary of the Sundog Trails ATV park and consequently has numerous ATV tracks across the entire sandbar.

Both colony sites were formed in the flooding of 2015, but this is the first year terns have occupied the site. I was unable to kayak this stretch of river in 2015; however, Randy Soto, highway biologist with the Oklahoma Department of Transportation and the Oklahoma Biological Survey, has been monitoring this section of the river for the past few years due to the proximity to the Hwy 77 Bridge. The Hwy 77 Bridge has been under construction and is undergoing environmental evaluation for future bridge work. He noted the sandbar formation, but did not see Least Terns in the area in 2015.

Landowners, lessees, and ATV park operators were contacted on 23 June to notify them of the Least Tern colonies and to obtain permission to access the West Lexington site and erect signs and psychological fencing. Permission was granted. Greg Snow, owner and operator of the ATV park agreed to post a notice on his webpage and Facebook page and give out flyers to his customers.

On 24 June, we posted the West Lexington Colony with signs and put up psychological fencing around the entire colony (approximately 4000 ft perimeter). We were generous in our colony site to be sure to include any area that might be the site of future nests and include area for roaming chicks once they hatch. On 24 June, we observed approximately 10 adult Least Terns with 5 nests.

On 28 June, we monitored the West Lexington Colony and found 7 nests with at least 14 adults. We walked the boundary that we established on 24 June. Several fence posts had been moved and a few knocked down by ATV riders. There were several new ATV tracks through the area. Fortunately, all nests were still intact. USFWS law enforcement and State Game Wardens were asked to patrol the area and make contact with people using the area for recreation over the Independence Day holiday weekend.

By the end of the month, Least Terns were only using the North and West Lexington colonies.

➤ **JULY**

With the exception of the West Lexington Colony site, we discontinued surveys at all sites due to a lack of LETE activity at the typical nesting areas.

During July we observed 6 nests tended by at least 6 pairs of adults. Occasionally throughout the month we observed up to 7 pairs of adults at the site and we suspected there was a 7th nest, but were unable to confirm.

By 6 July, chicks were hatching. We estimated that at least 16 chicks hatched by 22 July. By the end of the month, 4 young were flying.

We had two significant human disturbances during the month. On the weekend of 9 July, people broke through the fencing and rode a motorcycle and ATV through the area. State Game Wardens who were monitoring the area that weekend caught the intruders and are working with the USFWS Special Agent on the case.

On the weekend of 16 July, we had multiple tracks through the colony, including a “monster” truck and several ATVs. We inspected the tracks and found one dead adult and several chicks in nests that were very close to the tracks. State Game Wardens and USFWS Special Agent were contacted and are investigating the incident.

➤ **AUGUST**

During the month of August, we had flooding occur at the West Lexington LETE colony site. No nests were lost, but fencing was down for one weekend, which increased vehicle traffic within the colony. Fortunately, there was no evidence of any harm to young during this time and all appeared to survive. By 12 August, both LETE adults and juveniles were observed flying around the colony site. We estimated that the total number of successful fledglings (hatched birds that made it to flying) was 13. With a total of 7 known nests, we calculated the reproductive success to be 1.85 (young per pair) for the West Lexington colony for 2016.

Colony Protection

We flagged colonies and used temporary psychological fencing to deter human disturbance near nesting birds at West Lexington. This was successful in protecting the nests from a majority of the human visitors to the site. However, there continued to be regular vandalism in spite of our efforts. The West Lexington colony is adjacent to an ATV riding park and regular trespassing occurs from this business. We worked with local State Game Wardens and Federal FWS Special Agents to educate and deter trespassing and vandalism. No tern nests were destroyed or chicks harmed by trespassing ATVs, but there were multiple incidents of close calls.

Outreach

During the grant period, we reprinted 5,000 copies of the “Life Along a Prairie River” poster to continue with our outreach effort to both local landowners and the general public (see Appendix II).

F. Significant Deviations:

None.

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Date: 12 May 2017

Approved by: _____
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Wildlife Division Administration
Oklahoma Department of Wildlife Conservation

Appendix I

COLONY LOCATIONS

Green Valley: 34.981049° -97.345266°

Indian Hills: 35.287021° -97.566153°

Jenkins: 35.150130° -97.438088° (historic colony site, but not active in 2009-16)

Lindsey: 35.201269° -97.496188° (historic colony site, but not active in 2015-16)

Noble: 35.138064° -97.408380° (historic colony site, but not active in 2012-16)

Oxbow: 35.209982° -97.528497° (active in 2015)

North Lexington: 35.035977° -97.349955°

West Lexington: 35.022962° -97.352460°

Appendix II

“Life Along a Prairie River” poster featuring the Canadian River ecosystem

