

POPULATION SURVEY OF THE INTERIOR LEAST TERN
ON THE MISSISSIPPI RIVER
FROM
CAPE GIRARDEAU, MISSOURI
TO
BATON ROUGE, LOUISIANA

2011

By

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On and between July 24 and August 7, 2011, a survey crew, lead by Kenneth H. Jones, Associate Professor of Biology at Dyersburg State Community College, under contract with Choctaw Transportation Company, conducted a survey of interior Least Tern (*Sternula antillarum athalassos*) nesting colonies along the Mississippi River. This annual survey is performed for the Memphis District Army Corps of Engineers and assists the U.S. Fish and Wildlife Service with its census in determining population size and distribution of the Interior Least Tern. This survey was the 27th consecutive annual count since the surveys were initiated in 1985 by the Army Corps of Engineers. The survey area extends 777 miles from Cape Girardeau, Missouri (Upper River Mile 53) to Baton Rouge, Louisiana (River Mile 230) (Figure 1). In prior years three types of surveys were performed: towboat, aerial and small boat (Table 4, Figure 2). The towboat surveys were discontinued in 1995 as were the aerial surveys in 1997 when it became obvious that of the three, the small boat survey yielded the highest and most accurate counts. Past years' surveys terminated about 7 miles downstream of Vicksburg, Mississippi because early aerial surveys in 1986 indicated a scarcity of sandbars and relatively few terns downstream of Vicksburg. Beginning in 2004 the survey was extended to Baton Rouge, Louisiana in order to more thoroughly access the entire range of the Least Tern population on the Lower Mississippi River.

From 1985 through 1996, Least Tern surveys were conducted by John Rumancik, fishery and wildlife biologist from the Memphis District Army Corps of Engineers. Since 1997 the surveys have all been conducted by Kenneth Jones, Associate Professor of Biology, Dyersburg State Community College. Observers and crew members of this year's survey included John Rumancik, retired biologist with the Memphis District Corps of Engineers, Jimmy and Leila Boyd, Mark Campen, Dennis and Regina Davin, Zack Fowlkes and Kenneth and Wanda Jones.

This year's survey yielded a total count of 12,247 Least Terns and 45 nesting colonies, more colonies than last year's survey, which was 22, but less in total numbers. However, due to the very late survey dates in 2010, much of that count included juveniles hatched earlier in the season. This year very few juveniles were observed and most of the total count were adults. Twenty-nine colonies were identified based on the presence of eggs and/or chicks (Tables 1 and 2). Sixteen colonies were identified based on the presence of a large number of nest scrapes, adult behavior and other indicators of likely reproductive effort such as wetting breast feathers, sitting inland, carrying fish or intense mobbing of intruders. The largest colony was located at Nebraska Point Dikes (RM 807.7) with 888 adult terns counted. Other large colonies included

St. Frances Bend (RM 672.0) with 874 birds, Oldtown Dikes (RM 646.0) with 728, and Island 84 Dikes (RM 533.0) and Ajax Bar Dikes Lower (RM 481.0), both with 650 Least Terns. The smallest colonies were at Ajax Bar Dikes Upper (RM 482.0), and Seven Oaks Dikes (RM 523.5), with just 8 and 12 birds.

The timing of this year's survey was similar to last year's survey due to the late, higher than normal, summer river stages. In previous years, the survey was begun within 2 weeks of the river stage at Memphis, Tn falling to 14 feet or less. Last year, the river stage at Memphis did not fall below 14 feet until August 12, 2010. This year the Memphis gage fell to 14 feet on July 26, 2011. The survey was initiated July 24 in anticipation of the falling stages.

Numbers of adult and juvenile Least Terns were recorded on data sheets developed by the Corps and based on the Cornell University Bird Registry Form. One data sheet was used for each observation with the following noted: date, time, river mile, latitude/longitude (decimal degrees determined from GPS), number of adult terns, presence of juveniles, chicks and eggs, number of nests observed and eggs or chicks in each, locations of sandbars, substrate, distance from vegetation and type, weather conditions, nearest river gage readings, and other notes on bird behavior, signs of predation or other disturbance. Nest counts were determined both by direct observation of scrapes containing eggs (empty scrapes were not counted) or observations of terns sitting inland during waterline drift counts. Foraged fingerling fish dropped within the colony were identified and/or collected. Colony locations were marked on 2007 Flood Control and Navigation Maps of the Mississippi River, 62nd edition, USACE. Data sheets and colony locations are found in Appendix A.

The average number of adult terns per colony was 237, with colony sizes ranging from as little as 8 adults to as many as 888. The numbers of eggs per nest ranged from 1 to 3 and many nests were associated with debris wrack lines or in close proximity to small, random pieces of drift. Many adults were observed utilizing other habitats often miles away from the nearest colony locations. These habitats included both still and running water of all depths in the channel, behind dikes, in back chutes, tributary mouths, and fast current against revetted banks on the outside of river bends.

The boat survey was initiated July 24, 2011, with the river stage at Memphis, Tennessee at 14.8 and falling (Table 3). For the entire duration of the survey, the river stages were falling, with daily changes of eight-tenths of a foot or less, or stable. The survey proceeded downstream during daylight hours from Cairo, Ill., to above Baton Rouge, La., (RM 300) at an average pace of 82 miles per day.

Upon spotting a likely colony site, the boat would head for the greatest concentration of terns, then approach the bar as close as shallow water levels would allow, cut power, and motor slowly with the current along the perimeter of the bar. Two or more observers would count birds using 7x35 or 8x40 binoculars. One observer counted terns resting along the waterline, while another observer counted birds in the air or sitting inland, presumably on nests. Usually after this preliminary count, and depending upon the sand bar configuration, the boat would go back and beach near the greatest concentration of terns and one or more observers would then walk toward the perceived center of the colony to find evidence of nesting activity, while others would

fan out in different directions to traverse more of the colony area. This technique, counting as the boat proceeds downstream (hereafter referred to as a “drift count”), usually produced higher counts than just walking on the sand bar to the colony’s center to induce mobbing (hereafter referred to as a “flush count”). It was particularly effective at colonies where terns were dispersed for several miles along the waterline and the sand bar was low enough that the observers could see across it. However, at many sites, especially those with back chutes with shores not visible from the boat on the channel side, it should be construed that many terns were not seen and the counts were conservative. All individual counts were recorded privately so as not to influence other crew members’ observations, then compared and counts discussed. All individual observer counts were recorded on data sheets. In most cases all observers were within 10% or less of the recorded high count.

The presence of eggs, or chicks was considered confirmation of nesting activity. Intense mobbing, wetting of breast feathers, the presence of fresh scrapes or fledged juveniles were also considered to indicate an active nest colony at the 16 sites where no eggs or chicks were observed. Once a colony was located, several counts were made, both by observers stationed at the boat and those penetrating the colony. Not all colonies were walked by members of the survey party, especially if the colony was widely dispersed and easily observed from the boat. In those instances, even though no eggs were observed, terns seen sitting higher up on the sand bar, away from the waterline, were counted as indicative of number of nests.

As with previous surveys, observations within the colony were performed as quickly as possible (< 15 minutes) to minimize the disturbance time and limit the exposure of any chicks and eggs to the intense summer heat. Though mobbing behavior was often intense upon the observers first entering the colony, it ceased almost immediately as soon as the observers retreated. The highest counts usually occurred during the initial waterline count or upon the first few minutes of mobbing when most, if not all, of the adults in the colony would join in to dissuade the intrusion. Nesting adults, nest scrapes, and numbers of nests with eggs and chicks were recorded as well as other features of the habitat. Twelve thousand two hundred forty-seven (12,247) Least Terns were recorded at 71 locations (Table 1, Figure 1). Of these, 45 sites were identified as nesting colonies with 10,680 adults, 26 sites as resting bars only with 1,567 adults, and 53 observations of 312 birds that could not be associated with colonies, either flying over feeding areas or in transit along the river. These random observations were not associated with colonies or considered in the total count.

As with previous years, the typical tern nest colony was located on an unattached (surrounded by water) sand and/or gravel bar usually associated with a dike field. Those colonies that were attached were located on very large, remote point bars, ½ to 1 mile in width, and often 2 to 4 miles in length. Isolation and remoteness appeared to be the main selection criteria. Also it was noted that many former colony sites were not occupied, possibly because of the extremely high record flood stages in spring and early summer, and the modification of sand bars in both height, surface area and location. The larger colonies were hundreds of acres in size, while some of the smallest were just a few acres or less.

The locations of the colonies as indicated on the 2007 Navigation Maps (Appendix A-I) should be viewed as only approximations based on river mile markers visible from or nearby the sites. Since many sand and gravel bars do move or change shape often, such features on the

maps do not necessarily correspond to the actual conditions at the time of the survey (hence the occasional colony indicated in open water). For exact colony locations the GPS latitude/longitude coordinates (decimal degrees) are the most accurate and should be referenced as occurring at the water's edge on the channel side of the colony (except when specified otherwise on the data sheets). Most colonies were located on the high centers or distributed evenly across the bars showing no preference for river vs. chute sides, though there were some exceptions.

The colonies' proximities to the nearest water (least distance from any nest with eggs to the waterline) varied from 20 to 1000 feet and averaged ~222 feet. Though some colonies were densely populated, with scrapes occurring within a few feet of each other, many more colonies were extremely dispersed with nests occurring hundreds of feet apart and the colony extending as far as a mile or more across the larger sandbars. Major vegetation was absent or far removed (>300 feet) from 14 colony sites, but 21 did have sparse stands of sapling Cottonwoods (*Populus deltoids*), Black Willows (*Salix nigra*), and various forbs and grasses within 300 feet of active nests. Most open water within 2 miles of active colonies appeared to be utilized by foraging terns. These sites included swift current on revetted outside bends, slack water between dikes, chutes, mouths of tributaries and even mid-channel currents.

No evidence of predation on tern eggs was observed, but at 3 colony sites, coyote or dog tracks were present. Another colony had Bobcat tracks and another spent shotgun shell casings, but no tern mortality could be confirmed. One chick mortality was noted at one site, but no evidence as to the cause. Of 45 colonies, 7 had evidence of recent intrusion by humans on foot, by boats or ATVs, and 5 had abandoned eggs.

Besides Coyotes (*Canis latrans*) or dogs, other potential predators, or their sign, seen near colonies during this year's survey included American Crows (*Corvus brachyrhynchos*), Bald Eagles (*Haliaeetus leucocephalus*), Bobcats (*Lynx rufus*), Egrets (*Casmerodius*, *Egretta*, *Bubulcus*), Great Blue and Great White Herons (*Ardea herodias*), Mississippi Kites (*Ictinia mississippiensis*), Turkey Vultures (*Cathartes aura*), Black Vultures (*Coragyps atratus*), and Wood Storks (*Mycteria americana*).

Other noteworthy bird species observed on the sand bars or in close proximity to Least Tern colonies included American Avocets (*Recurvirostra americana*), Anhingas (*Anhinga anhinga*), Bank Swallows (*Riparia riparia*), Barn Swallows (*Hirundo rustica*), Black Terns (*Chlidonias niger*), Canada Geese (*Branta canadensis*), Caspian Terns (*Sterna caspia*), Cattle Egrets (*Bubulcus ibis*), Cliff Swallows (*Petrochelidon pyrrhonota*), Double-Crested Cormorants (*Phalacrocorax auritus*), Crows (*Corvus brachyrhynchos*), Forster's Terns (*Sterna forsteri*), Grackles (*Quiscalus quiscula*), Great Egrets (*Casmerodius albus*), Golden Plovers (*Pluvialis dominica*), Killdeers (*Charadrius vociferous*), Mallards (*Anas platyrhynchos*), Mourning Doves (*Zenaida macroura*), Purple Martins (*Progne subis*), Ring-billed Gulls (*Larus delawarensis*), Rough-winged Swallows (*Stelgidopteryx serripennis*), Sandpipers (*Calidris sp.*), Snowy Egrets (*Egretta thula*), Spotted Sandpipers (*Actitis macularia*), White Ibises (*Eudocimus albus*), and White Pelicans (*Pelecanus erythrorhynchos*).

Fingerling-size carps (*Cyprinidae*), Bighead Carp (*Hypophthalmichthys nobilis*), Silver Carp (*Hypophthalmichthys molitrix*), Silverside (*Notropis sp.*), shad (*Dorosoma*), Gizzard Shad (*Dorosoma cepedianum*), and Smallmouth Buffalo (*Ictiobus bubalus*) were found in colonies and are presumed to have been dropped by foraging adults. This year's survey yielded a total count (12,247) that was down from the 2010 count (18,343) by roughly 33%, however many of last year's 2010 count included fledged juveniles whose numbers could not be separated from the total count.

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APPENDIX A

APPENDIX A – I

LEAST TERN SURVEY - 2011

**Mississippi River
Cape Girardeau, MO to Baton Rouge, LA**

NEST COLONY LOCATIONS

Memphis District, Corps of Engineers

Maps

Appendix A – II

LEAST TERN SURVEY - 2011

**Mississippi River
Cape Girardeau, MO to Baton Rouge, LA**

SMALL BOAT SURVEY July 24 – August 7, 2011

Memphis District, Corps of Engineers

Data Sheets

