Survey of Interior Least Tern nesting populations

An inventory of the known population of
Sterna albifrons athalassos

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INTRODUCTION

ALTHOUGH THE CALIFORNIA Least Tern (*Sterna albifrons browni*) and the eastern subspecies (*S. a. antillarum*) have received considerable attention recently, no formal study of the Interior Least Tern (*S. a. athalassos*) has been made since Hardy (Michigan State University Biol. Series 1(1):60 pp. 1957) reviewed past records and studied behavior in a colony on the Ohio River in 1953. Least Tern populations appear to be declining in many parts of the world; thus an appraisal of the status of the interior subspecies seemed needed.

In 1974 an effort was made to locate, through correspondence, as many colonies as possible and to visit each of these by car. Letters to each of the Regional Editors of *American Birds* and a review of 12 years of their published nesting season reports did not produce reports of any colonies. Only three active colonies totaling 45 pairs were identified and visited; all were located on National Wildlife Refuges. Data on an additional colony of 70 pairs in the Mississippi River at Tiptonville, Tennessee, were obtained through late summer correspondence with Michael Bierly. It was obvious from the small number of colonies located in 1974 that greater effort, including an aerial survey, was needed to determine the status of this population.

Before beginning the survey, I studied the excellent review of past Least Tern distributions and nesting by Hardy (1957). I wrote the presidents of each plains-state bird club and the Regional Editors for *American Birds,* asking for help in locating nesting colonies. All the National Wildlife Refuges in three U.S. Fish and Wildlife Service regions and two conservation departments in states where colonies were known were also notified of our survey and asked to participate. No previously unreported colonies were located through these efforts, but we did obtain a review of all past recorded nestings in Oklahoma from George M. Sutton and some additional data on a 1973 colony in Texas from Karl Haller.

THE SURVEY

MY WIFE PAT AND I then conducted a 15-day ground and aerial survey in late June 1975 along major streams and on salt flats from Texas to Nebraska to Tennessee. The survey was limited by the time and resources available, so we concentrated on those rivers which appeared most suitable for nesting, generally avoiding those with narrow, tree-lined channels and those portions below major reservoirs where large sandbars were not expected. The survey primarily involved aerial counts at 200 feet or lower along approximately 2000 miles of rivers. Ground checks of many areas were also made to determine nesting progress and to provide a basis for judging the accuracy and completeness of the aerial surveys. Rough, subjective estimates of population size in each watershed were based on numbers seen, visibility conditions during each flight, and how much of the apparently suitable habitat was seen during the flights. Estimates by watershed are as follows:

Rio Grande River - Pecos River

Estimated 50 birds based on 27 seen in 1974.

We did not include this watershed in our 1975 survey and must assume that the colony of 27 (including 7 juveniles) seen by refuge personnel in 1974 on a salt flat at Bitter Lake National Wildlife Refuge is the major colony in the watershed. This colony apparently is not stable and only five adults (no nests due to high water) were reported in *American Birds'* 1975 regional reports. This population may be discrete because it is the only known population of Interior Least Terns outside the Mississippi River watershed.

Brazos River

No birds.

Only one colony (at Waco, Texas, in 1967) has been reported on the Brazos River in *American Birds* in the last 13 years. We did not survey the river, but checked most of the salt flats on its headwaters and saw no Least Terns These salt areas occur in such arid country that there probably is no dependable source of water or food nearby. Until proven otherwise, I will assume that the Brazos River is not normally used for nesting by this species.

Red River

Estimated 25 birds, based on 15 actually seen.

Only 100 of the 300 miles which we surveyed have enough water to provide food in dry years. Most of this habitat consists of mainland-connected sandbars of less than 5 acres. The only colony we saw was one of five pairs near Spanish Fort, Texas. Three birds at Hagerman National Wildlife Refuge and two at Burkburnett, Texas, appeared to be nonbreeders. Six pairs nested

Least Tern chick. Photo/R. P. Allen, PR from N.A.S.

unsuccessfully at Hagerman National Wildlife Refuge in 1973 (Haller, pers. comm.). No birds were seen on salt flats in the headwaters of the Wichita, Pease, and Red Rivers, possibly because these dry up periodically and do not provide a dependable source of food.

Canadian River

Estimated 25 birds, based on 2 seen.

Our sampling of this river was inadequate, encompassing only 130 miles between New Castle and Taloga, Oklahoma. Much suitable habitat probably occurs above and below this segment. This habitat is entirely mainland-connected sandbars of 5-10 acres. Some sandbars are becoming vegetated due to the flood protection of upstream reservoirs, but the habitat presently seems more suitable than the sighting of two Least Terns in 130 miles would suggest. I suspect that the river may dry up regularly in summer west of Oklahoma City. The North Canadian River does not have suitable habitat at Oklahoma City, but may improve above Canton Reservoir.

Cimarron River, including Edith Salt Plains

Estimated 100 birds based on 40 seen.

The Cimarron River is one of the best rivers for Least Terns we observed. However, most sandbars are connected to the mainland, making them accessible to predators. The planned diversion of fresh water around Edith Salt Plains may decrease the intensity of floods, thus allowing many of these bars to become vegetated. Flooding the salt plain will also eliminate a small, traditional colony, the only one on the river which apparently escaped the early June floods. Most of the 40 birds we saw were not nesting, probably as a result of this flood. Jim Lewis, Assistant Leader of the Oklahoma Cooperative Wildlife Research Unit, made an additional flight in mid-July to ascertain whether or not these terns renested. He saw fewer terns on the river but more terns on Edith Salt Plains, suggesting a return there for nesting.

Arkansas River, including Great Salt Plains National Wildlife Refuge and Quivira National Wildlife Refuge

Estimated 50 birds, based on 32 seen.

Our small sample of the Arkansas River revealed only three terns and few sandbars; these were usually only 1-2 acres in size. Jim Lewis flew part of the Arkansas in Oklahoma but saw no terns. Thus, the two salt areas, Great Salt Plains National Wildlife Refuge and Quivira National Wildlife Refuge, appear to be the primary Least Tern habitats within this watershed. These populations may be lost if planned but presently inactive chloride control measures are instituted without providing replacement habitat. Our total of 16 birds at Great Salt Plains was far below the 60 to 100 reported in 1948. Nest predation by coyotes (*Canis latrans*) was evident in 1974 and may be a problem of long standing. Coyote predation was also evident in 1977 and 1978 but the population had increased to 80 and 135 pairs, respectively (Grover, P. B., 1979. M.S. Thesis, Okla. State Univ. 38 pp.). Four pairs nested successfully in July 1975 at Cheyenne Bottoms and efforts are being made to improve this habitat (Bartels, pers. comm.).

Republican River

No birds.

The Republican River appears to be too narrow and tree-lined to be acceptable tern habitat. Kirwin National Wildlife Refuge on the Solomon River, a tributary of the Republican River, has a few migrants each year, but we saw no nesting habitat.

Platte River

Estimated 150 birds, based on 80 seen.

Impoundments on the Platte River have reduced flooding to the extent that it is no longer "an inch deep and a mile wide." Each of its many sandbars of 20-40 years ago is now a virtual forest of 30-foot-high cottonwoods. The 80 birds we saw may be the remnants of a previously larger population, clinging by tradition to the few small bars that are left. A sand and gravel industry has created additional nesting and feeding habitat. Motorcycles and dune buggies frequently use the seasonally dry bed of the Platte and we saw vehicle tracks on almost every bar that remained above water. Least Terns were widely scattered due to flooding at the time of our visit. We saw no birds on the North Platte River, and habitat on the South Platte does not appear suitable. The several branches of the Loup River that we crossed (did not fly) looked promising and may have supported additional birds.

Niobrara River

Estimated 150 birds, based on 85 actually seen.

The Niobrara has experienced little tampering by man, but because of a natural narrowing of the channel in the upper reaches, only the lower 100 miles appear to be suitable tern habitat. Niobrara sandbars are mostly of the mid-channel variety, usually surrounded by several acres of shallow water where

small fish can be caught easily Several instances were observed where landowners were pushing tree trunks into the river. In each instance, the channel was being narrowed and deepened and no sandbars were noted at the point of this activity. We observed at least six colonies on the Niobrara.

Missouri River

Estimated 100 birds, based on 35 actually seen.

The Missouri was at a semi-flood stage during our visit and we surveyed only from Yankton, South Dakota to Sioux City, Iowa. If the Missouri has been stabilized and channelized everywhere to the extent that it has in the Sioux City - Omaha area, there is little opportunity for Least Terns to nest. The only terns we saw were 35 (5 small colonies) in the 50 miles below Yankton. The river then becomes squeezed into a narrow channel by riprapped shores, jetties, and other "improvements." The 50-mile stretch below Yankton is also reportedly scheduled for this type of stabilization in the near future. Four of the above five colonies will disappear soon anyway because the low "weeds" growing on the mud bars are actually seedling cottonwoods which will not stay small very long. The many reservoirs on the upper reaches of the Missouri will not allow intensive enough flooding to scarify these bars if the cottonwoods become established. Cultivation and/or chemical control of vegetation may be needed, especially on the two high, gravelly bars within the town of Yankton.

Although Hardy (*op. cit.*) failed to find reference to Least Tern nesting in South Dakota beyond the three southeastern most counties, a recent study of mercury contamination of fish-eating birds (Hesse, 1975. *J. Wildl. Manage.* 39(2):299-304) included a sample of seven Least Terns collected in July 1972 from a group of 25 in the Cheyenne River, a tributary of the Missouri in western South Dakota. There was also a 1972 report in *American Birds* of a colony of five pairs at Bismarck, North Dakota. A more extensive survey of the Missouri River system is obviously needed, especially since new energy developments will be dictating additional water-use changes.

Mississippi River

Estimated 600 birds, based on 300 seen.

The greatest concentration of Least Terns (we saw 300 in 11 colonies from the air) was on the Mississippi River in the 150 miles between Osceola, Arkansas, and Cairo, Illinois. Above and below these points we saw no terns in the next 30-50 miles sampled. Traditional colonies at Rosedale, Mississippi, and at St. Louis were small when last reported several years ago.

It is difficult to know what effect man's "improvements" are having on the Mississippi River birds. I believe that the materials deposited below Cairo are accumulations which have been carried many hundreds of miles downstream by the faster-moving Missouri and upper Mississippi. These waters move faster owing to restrictions man has put on the width of the channel. The Mississippi River is allowed to widen below Cairo, Illinois, and much sand deposition occurs there. Further "improvements" in the navigation channel of the lower Mississippi have been planned which will deepen this channel by 3 feet. If this is accompanied by further restrictions on channel width, this habitat, which supports almost half the total population, may be lost.

Ohio River

No birds.

No tern nesting on the Ohio has been reported since 1961 and we also saw none, even though several potential sandbars were available. We surveyed all of the Ohio River which borders Illinois.

STATUS AND RECOMMENDATIONS

The Missouri River and Platte River Least Terns probably are remnants of previously larger populations, since there are presently more birds than the habitat seems capable of supporting. Almost complete loss of these populations may occur in a few years unless some of the larger, higher sandbars and gravel pits along these rivers are maintained free of vegetation and protected from human beings and other predators.

The Red, Canadian, and Cimarron rivers had fewer birds than the habitat seemed capable of supporting, but this may be because their mainland-connected sandbars invite predation. I do not know if midstream bars were ever common in these rivers, but I do know that thousands of farm ponds and several major irrigation and municipal reservoirs have been constructed on these watersheds in the last 50 years which undoubtedly reduced the frequency and severity of flooding. Since these changes took place long ago, this population may have been low for some time In contrast, changes in the Platte and Missouri rivers are more recent and the numbers of this long-lived bird have not yet become "balanced" with the habitat

Efforts to safeguard the few Least Terns which remain in the Red, Canadian, and Cimarron rivers should include an effort to locate, protect, and manage existing colonies. The bypass channel planned for Edith Salt Plains should be constructed large enough to accommodate flood waters without restriction so that sandbars on the Cimarron below it will be maintained. Replacement habitat is needed at Edith Salt Plain, Great Salt Plains National Wildlife Refuge, and Quivira National Wildlife Refuge if chloride control projects are initiated there.

The Mississippi River population is presently flourishing, at least in the 150 miles below Cairo, Illinois. However, channel deepening and maintenance activities could change this situation drastically, depending on whether the dredged material is placed in midstream or tied into the shore. The Interior Least Tern may have to be "listed" by the Office of Endangered Species before the importance of maintaining habitat by altering dredging plans is fully appreciated by the managing agencies.

The only river we visited where tern habitat is not being seriously threatened is the Niobrara. This portion of the beautiful Niobrara deserves to be included in the National Wild and Scenic Rivers System.

To compare with the 1250 birds estimated from this survey, additional surveys should be made periodically, perhaps every 3-5 years, and should include longer sections of each river.

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