

STATUS: ENDANGERED

Listed as Endangered by Federal and State Agencies

Least Tern

Sterna antillarum

Introduction

The Least Tern is the smallest tern in North America. It is often seen flying low over the water, with quick deep wing beats and shrill cries. This species originally nested on sandbars and beaches found on major interior rivers in Iowa and the Central U.S., and on widespread coastal beaches.

Although widespread during the breeding season, populations have been seriously diminished by recreational, industrial, and residential developments within its nesting habitats at both interior and coastal breeding areas. Research indicates that Least Terns appear to be most productive at breeding colony sites that have endured for a number of years. Thus it is essential that known breeding populations and the habitats they use, are sustained for as long as possible.

Once substantially reduced by killing for feathers to adorn women's hats, Least Tern populations seem to be currently in trouble throughout their range. In Iowa, significantly altered river flows at breeding areas since the 1950s, especially on the Missouri River, has led to declining populations of Least Terns. Listed as endangered both federally and within the State of Iowa, no other wide-ranging North American tern has that unfortunate distinction.

Field observation data that document confirmed or probable breeding of Least Terns at a specific habitat for at least 2 of the previous 6 years (the years being considered roll forward annually) are needed for Iowa's IBA Technical Committee to recognize that site as one of Iowa's Important Bird Areas (IBAs).

LINK TO IOWA IBA: LEAST TERN

To date, two small, privately owned properties in Iowa that are each known to support breeding Least Terns (as well as the even more endangered Piping Plover), have been officially recognized with IBA status. At each of these IBAs the terns and plovers are using fly-ash deposits for nesting sites – a poor, but essential substitute for the natural open sandy beaches, sandbars and unvegetated islands that nature provided for these species at the nearby Missouri River. Only a small number of nesting pairs are using each of these critical IBA habitats.

Despite widespread research, the population dynamics of this species are poorly understood, and the association between various endangered breeding populations and the wintering areas they use remain uncertain.

This dainty Least Tern is pugnacious when defending nest and young. Its well-known zwreep call of alarm identifies this species long before it comes into view.

Habitat Preferences

As with Piping Plovers, Least Terns have specialized habitat needs, and prefer to nest on low-lying and relatively open beaches, sandbars and islands kept free of vegetation by historically well-timed natural scouring action of the Missouri River.

However, a major problem at these preferred habitats in recent decades has been the choice to increase river flows from upstream reservoirs at irregular intervals to favor very infrequent and minimal barge traffic in western Iowa. The timing of artificially raised water levels during the breeding season for these two endangered species destroys nesting colonies and forces the birds to seek alternative and marginal nesting sites.

When observations of breeding were made in recent years, Least Terns were found to be nesting (in colonies with Piping Plover) on artificial fly-ash deposits at only two sites, and both of these were power plants.

The two nesting colonies are two of Iowa's smallest but most vital IBAs. Each of these is extremely critical to the continued existence of Least Terns and Piping Plovers within our state. Because they nest together so frequently, the long-term fate of these two endangered species in Iowa is closely linked.

Least Terns winter on marine coastlines in Central and South America. It is hoped that populations will rebound, and additional nesting sites will be located in Iowa and then given the strong protection they deserve.

Human-caused habitat changes have forced this species to occupy new areas, but negative factors such as excessive heat and domestic pets can markedly reduce productivity, and the addition of a very few new habitats is minimal compared to the amount of natural habitat lost to human activities. Habitats capable of supporting successful nesting require adequate supply of accessible prey species nearby. Prey accessibility may be limited by turbidity in silt-laden rivers and streams or by choppy water caused by frequent boat or jet-ski operations.

Feeding Habits

Least Terns feed primarily on small fish and small crustaceans and insects, and also some small mollusks and worms. Their diets vary with seasonal changes and location.

Foraging occurs in a variety of shallow-water habitats, including rivers, streams, sloughs, fields, marshes, ponds, sand pits, and reservoirs. Individual birds tend to be most successful when foraging in water less than one meter in depth.

Least Terns search for prey while flying or hovering 1–10 meters above the water, then quickly plunging to the surface; but not

becoming fully submerged. Plunge-dives lead to grasping prey with open mandibles. The bird then rises well above the water with captured prey to manipulate and swallow the food in flight. Frequently there are a series of short dives and hovering, as if unsure of prey location.

Studies have shown that up to 35% of plunge-dives were successful, but success rates differ among habitats. Occasionally flying insects are captured over land and water, or the water surface is skimmed to capture swimming insects and tadpoles. At times Least Terns capture crustaceans while standing in shallow water. Foraging is done throughout the daylight hours.

Breeding Biology

Least Terns arrive back in Iowa in mid to late May. Open areas that are mostly free of vegetation, above high water levels, and safe from ground predators are used for nesting. Thus islands are commonly favored where available. Courtship involves elaborate rituals of aerial and ground displays and distinctive calling by males, after which the male offers fish to the female.

Egg-laying typically begins by early June and most eggs are laid by mid June. This species nests in a simple scrape in sand, fine gravel or other fragmentary material throughout their breeding range. Gravel rooftops and a variety of deposited materials have been used in other parts of the nation with varied success.

A typical clutch consists of 2 or 3 eggs; both adults incubate during the 20-25 day incubation period. The young are semi-precocial but stay in the nest for four or five days and are fed by both parents. The first flight occurs at about three weeks of age, and parents continue to feed young for several weeks after fledging. Least Terns are single-brooded, but will re-nest if the first nest is lost early in the breeding cycle.

Concerns and Limiting Factors

Least Tern populations declined rapidly in the late 1800s and early 1900s because of exploitation to provide feathers for ladies hats, and egg collection. Numbers may have rebounded slightly following passage of the Migratory Bird Treaty Act of 1916 and with changing attitudes toward conservation. But populations declined in many breeding areas during 1950s–1970s, most likely due to the use of various biocides and disturbance of breeding habitats by humans.

Distribution of breeding populations in the Midwest have fragmented further since the 1940s as nesting habitats have been destroyed by untimely release of water from dams, channelization and other human activities. Importantly, by the late 1970s more than 99% of the sandbar nesting habitat along the Missouri River that was available in the late 1800s had been lost to channelization and other human actions.

A more recent problem has been choosing to artificially increase river flows from upstream reservoirs at irregular intervals in the Missouri River in an attempt to maintain higher than normal water levels for a very limited number of barges that use the middle stretches of this river.

Nesting is often underway on sandbars and shorelines during the normal low-flow periods and artificially raised river levels have had a very serious negative impact on both Least Terns and Piping Plovers – both of which are endangered species in the nation and in Iowa. If these species lose their nest sites, eggs or broods adjacent to the Missouri River floodplain, and are forced to use breeding sites away from the river that may be marginally suitable, the survival of Least Terns in Iowa may well depend on their ability to survive at two small existing habitats that are now IBAs.

Therefore, the future of Least Terns in Iowa is probably linked to the future of Piping

Plovers, as these species frequently nest together in a colony. Disturbance during nesting is the major limiting factor in most areas, and this is especially true when this species is only known to presently breed at two IBAs within Iowa. Human presence may inhibit courtship, incubation, and brooding. Human disturbance near nesting sites has reduced reproductive success at various locations across the nation, and habitat alteration and destruction is always a concern.

In certain areas of the Midwest, lowering of the overall water table due to irrigation projects and strip mines has been an additional concern. Natural encroachment onto lake shorelines, riverbanks and sandbars by woody vegetation may also lead to serious habitat losses. Invasive plant species are also a concern in the limited habitats that are still available for Piping Plovers to utilize.

Early population estimates were often low because of inadequate survey of available habitat, thus increasing numbers do not necessarily indicate growing populations. Furthermore, because Least Terns are relatively long-lived, numbers show delayed response to reproductive problems in the population. Thus it is imperative to monitor not just numbers, but also reproductive success at breeding colonies.

Because the Least Tern diet consists primarily of fish, the accumulation of biocides and heavy metals has potential for reducing populations. These impacts are not well understood or quantified, however. Oil pollution is a threat in coastal as well as inland habitats, on breeding and wintering areas, and along migration routes. In more arid portions of the Midwest, diversion of river water and withdrawal of water from aquifers for irrigation has lowered water tables such that some former rivers that supported Least Terns are now dry.

Habitat Management Recommendations

Range-wide conservation status is difficult to assess because Least Terns are highly mobile, and recognized subspecies are almost indistinguishable and some mix extensively. Standardized surveys are difficult, and leg-banding produces few recoveries and re-sightings. Undoubtedly the Midwest population of Least Terns will require continued attention to maintain water flows that promote natural nesting substrates wherever possible. Production of young appears to be seriously restricted in many areas, and the rate of post-fledging survival is unknown. Ultimately, comprehensive management plans are needed that integrate breeding, migration, and wintering habitat in context with potential mixing of the various recognized populations.

Efforts to protect and manage Least Terns are almost always directed at nesting areas and include signs and symbolic fencing. Generally, conservation measures have been directed at altering vegetation succession, reducing predation, or controlling human activities. In riverine habitat, attempts to restore or mimic natural flooding should take precedence over manual control of vegetation.

At the local level, at Iowa's IBAs or at any other sites where Least Terns might be found, the key to the continued existence of this endangered species in Iowa lies in providing or sustaining breeding and adjacent feeding habitat, and protecting those areas from any form of disturbance during nesting and brood rearing.

Probably the most important single management recommendation for Iowa is gaining full implementation of wildlife-friendly water level regulation policies and flow regimes within the Missouri River. When flows once again follow natural spring and summer fluctuations, few, if any

nests will be destroyed by flooding. The river and its floodplain may then return to being conducive to the continued survival of both Least Terns and Piping Plovers.

Local conservation efforts should also close off, during spring and early summer, significant portions of sandy areas or beaches that surround sites that Least Terns (and Piping Plovers) use for nesting and the rearing of young. Recreation vehicles, pets and continuous human disturbance have caused many nest failures within the range of these closely linked species; and these negative impacts should always be eliminated or minimized.

Other management recommendations include: using fences (sometimes electric) to prevent entrance by humans and mammal predators; using a variety of techniques to control vegetation encroachment at nesting and feeding sites; possible addition of sand and gravel to create artificial nesting sites; and in some cases, nest relocation to prevent flooding or other major threats.

Generally, intensive management at breeding sites is not ideal in that methods are temporary, and the success of some methods is uncertain and controversial. Nonetheless, management techniques are being assessed and refined and in some cases, activities aimed at increasing nest success have been achieved in other parts of the nation.

Continuous annual survey work by volunteer birders as citizen-scientists is needed to watch for Least Tern population fluctuations. Data that are collected should be submitted the Iowa Important Bird Areas (IBA) Program. The Wildlife Diversity Program of the Iowa Department of Natural Resources also plays a vital role in future conservation activities for Least Terns and the closely associated Piping Plovers.