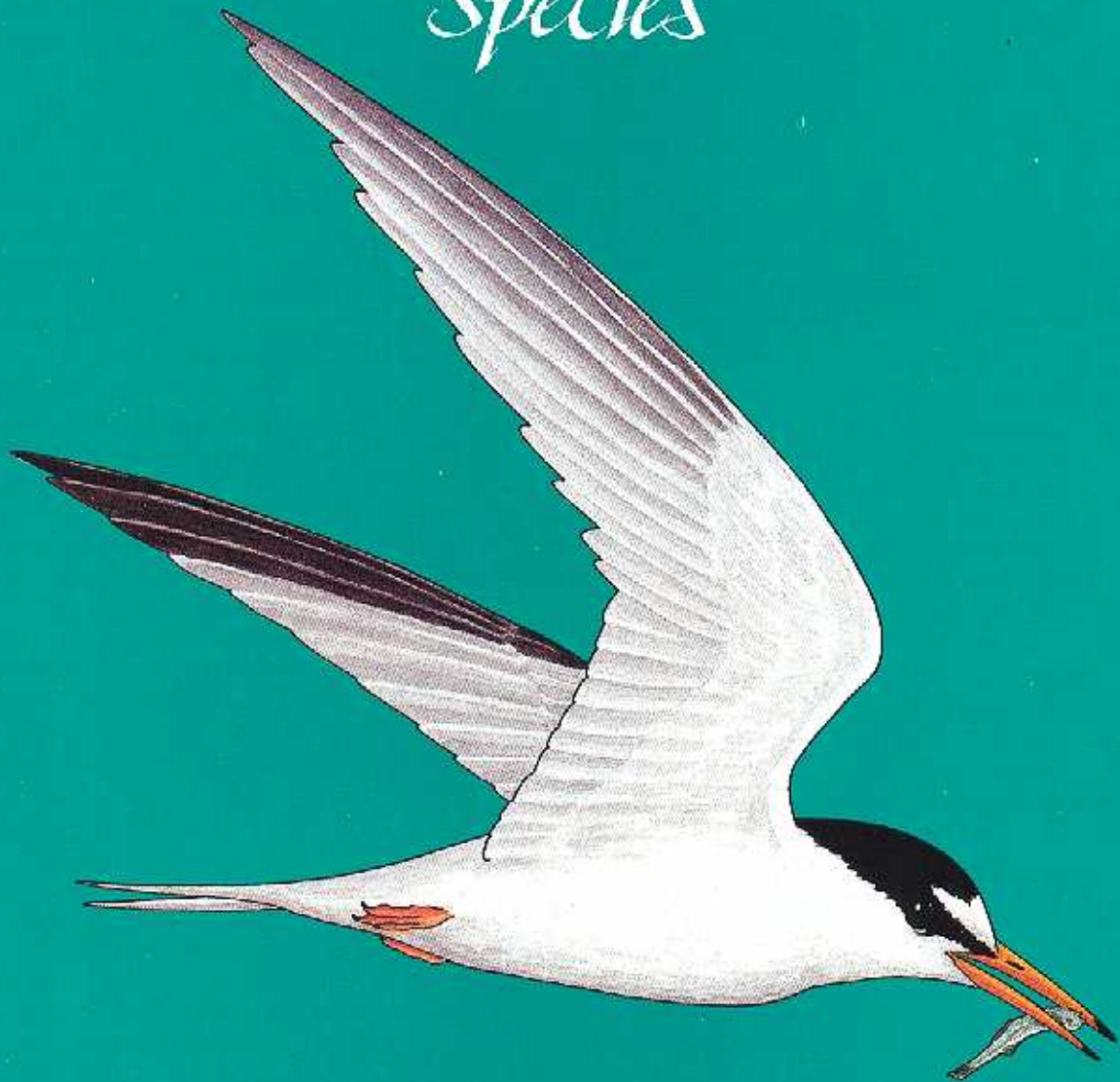


# NEBRASKA'S

## *Threatened and Endangered Species*



*Interior Least Tern*

NEBRASKA GAME AND PARKS COMMISSION

# Interior Least Tern – A threatened species

## Status

The least tern (*Sterna antillarum*), the smallest member of the tern family, is represented by three distinct subspecies. The coastal least tern (*Sterna a. antillarum*) breeds along the U.S. coast from the southern tip of Texas north to southern Maine; the California least tern (*Sterna a. brownii*) breeds from southern Baja California and Mexico, north to San Francisco Bay; the interior least tern (*Sterna a. athalassos*) breeds locally along the major tributaries of the Mississippi River drainage basin from eastern Montana south to Texas and east to western Illinois, Missouri, Arkansas and Louisiana.

All subspecies of the least tern apparently were abundant through the late 1880s, but were nearly extirpated as changing fashions popularized bird feathers and skins on hats. In the late 1800s it was reported that as many as 1,200 adult least terns were killed for their delicate plumage in one day, and as many as 100,000 were killed in one season.

After the signing of the 1918 Migratory Bird Treaty Act, which prohibited the sale, purchase, taking or

possession of any wild migratory bird, commercial harvesting became illegal and the species began to increase through the 1940s. However, human development and use of tern nesting beaches for housing and recreation subsequently lead to another rapid population decline. In the interior United States, river channelization, irrigation diversions and the construction of dams contributed to the destruction of much of the terns' sandbar nesting habitat. By the mid-1970s, least tern populations had decreased by more than 80 percent from the 1940s.

State and federal wildlife agencies, along with a concerned public, believed protective measures were appropriate. The California and interior populations of the least tern were federally listed as endangered in 1970 and 1985, respectively. The coastal least tern (more than 75 percent of the total least tern population) was not federally listed, but is protected by state laws as a threatened or endangered species.

The first historical observation of the least tern in Nebraska was recorded along the Missouri River by the Lewis and Clark expedition of 1804. Notes

of Lewis and Clark refer to the least tern as "a frequently observed bird." In addition to the Missouri River, the historic breeding range of the least tern in Nebraska included the Platte River from its mouth west to the confluence of the North and South Platte rivers, including reaches of the North and South Platte rivers, the Loup River and about 100 miles of the lower Niobrara River.

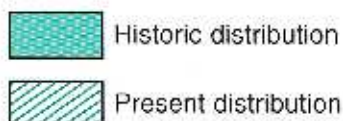
Beginning in the 1930s, the wide braided channels of the Missouri River were slowly narrowed to a single navigation channel. Between Sioux City, Iowa, and St. Louis, Missouri, almost all Missouri River sandbar nesting habitat was lost.

Records show that from 1890 to 1976, sandbar habitat was reduced from 35,273 acres to 57 acres along the Iowa-Nebraska border. Along the Platte River system, reservoirs and irrigation diversions have severely reduced river flows and curtailed the scouring effects of ice and spring floods. Those reductions accelerated the encroachment of vegetation onto river sandbars, an effect most pronounced in the central and upper Platte River reaches. Diversion of water along the Loup River also limits least tern nesting distribution.

The extraction of sand and gravel for commercial use is another change that occurred as rivers were developed. Sand and gravel mines created open sandpit lakes and bare sandpiles on the river floodplain. As riverine nesting habitat became increasingly limited, least terns began to nest on the bare spoil piles at sandpits.

The current breeding distribution of the interior least tern is now restricted to localized sites and river reaches throughout its historic range. In Nebraska, least terns currently breed along the Platte River from its mouth, west to North Platte, at one or two isolated sites along the South Platte, along the lower reaches of the Niobrara River, along reaches of the Loup and Elkhorn rivers and on the unchannelized section of the Missouri

Nesting Distribution of the Interior Least Tern



River below the Fort Randall and Gavins Point dams. A few least terns nest on the shoreline of Lake McConaughy on the North Platte River, usually in years when low lake levels expose wide, sandy beaches.

The total population of interior least terns has been estimated at 4,700 to 5,000 adults. Recent population information for least terns in Nebraska, including stretches of the Missouri River shared with South Dakota, suggests a total of 1,200 to 1,400 birds. If the interior least tern is to be down-listed from endangered to threatened status, the total interior population will have to increase to 7,000 adults, including 1,520 adults in Nebraska. Those population levels will have to remain stable for at least 10 years, and critical habitat will have to be secured and maintained.

## Description

The interior least tern is a feisty, swallow-like bird eight to nine inches long with a wing span of 20 inches. It was once called "sea swallow" for its delicate, graceful and buoyant flight. In breeding plumage, it is distinguishable from other terns by its glossy black crown, white forehead and undersurface, pale gray back and wings, and the black-tipped yellow-orange bill. The short legs and webbed feet of the male are orange, those of the female pale yellow. The long, black outermost wing feathers and the short, deeply forked tail are conspicuous in flight.

The plumage of immature terns is darker gray than the adults. Immature birds have a dark bill, a dark gray eye stripe, a white forehead and a dusky brown cap. Young birds acquire adult plumage characteristics during their second year. Wintering birds are paler than breeding birds and are identifiable by their brownish-black bill, dark gray eye stripe and white and black feathers on the head. The orange legs and feet become a pale yellow.

## Habits

Interior least terns usually arrive on their breeding grounds in early to mid-May and begin to establish feeding and nesting territories. During the breeding season, the terns' home range is generally limited to a two-mile stretch of river associated with the nesting colony. Least terns nesting at sandpits along rivers use the adjoining river as well as the sandpit lake itself for foraging.

Least terns are semi-colonial nesters, meaning they nest in close proximity to each other, and they benefit from the anti-predator behavior exhibited by the entire colony when the nesting territory is invaded. If a predator or some other disturbance disrupts the colony, adult least terns dive-bomb, defecate on and shriek at intruders in a mobbing fashion to persuade the invader to leave. During this behavior terns issue loud, guttural calls at the lowest point of an attack dive.

The piping plover, a state and federally threatened shorebird species, is often found nesting in the midst of least tern colonies in Nebraska. Presumably the piping plover benefits from the defensive group behavior of the nesting terns. A typical tern nesting colony in Nebraska is comprised of three to 30 pairs of terns and one to three pairs of piping plovers.

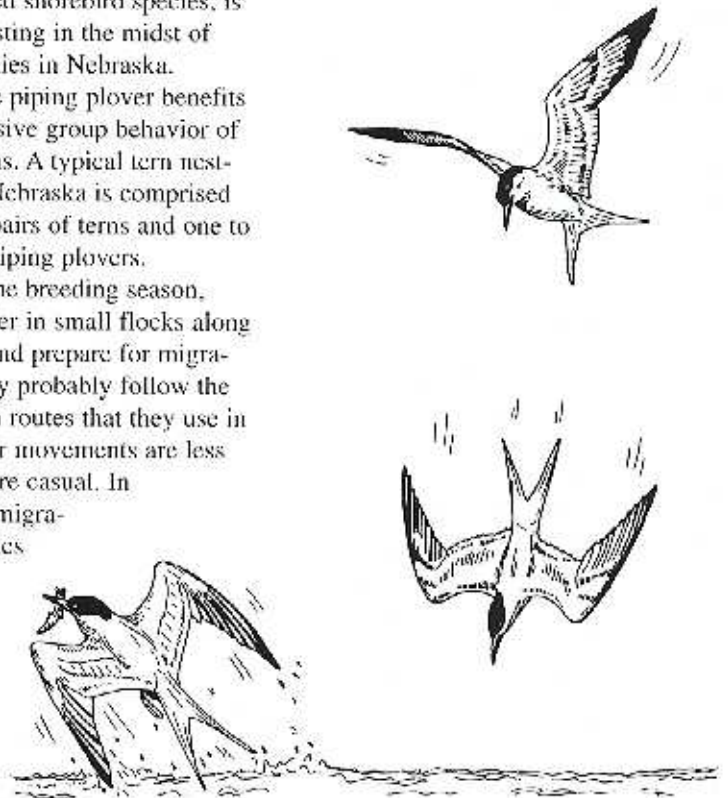
Following the breeding season, least terns gather in small flocks along rivers to feed and prepare for migration. In fall they probably follow the same migration routes that they use in spring, but their movements are less regular and more casual. In Nebraska, fall migration usually takes place

from mid- or late July to early September.

The interior least tern has distinct breeding and wintering areas. Most breeding occurs on interior rivers. They are thought to winter on beaches along the Central American coast and along the northern coast of South America from Venezuela to northeastern Brazil. Wintering least terns have been reported in Guyana, El Salvador and Guatemala.

## Reproduction

Upon arrival in Nebraska, least terns begin to engage in aerial courtship displays. One such display, "the fish flight," is initiated by a male carrying a small fish and calling as he flies. One or two other least terns, presumably female, join him in a fast, high-flying spectacle. During the ground phase of courtship, male terns offer small fish to females to help secure the pair bond. Courtship feed-



ing is one of the most significant parts of the courtship process and is continued through the incubation period.

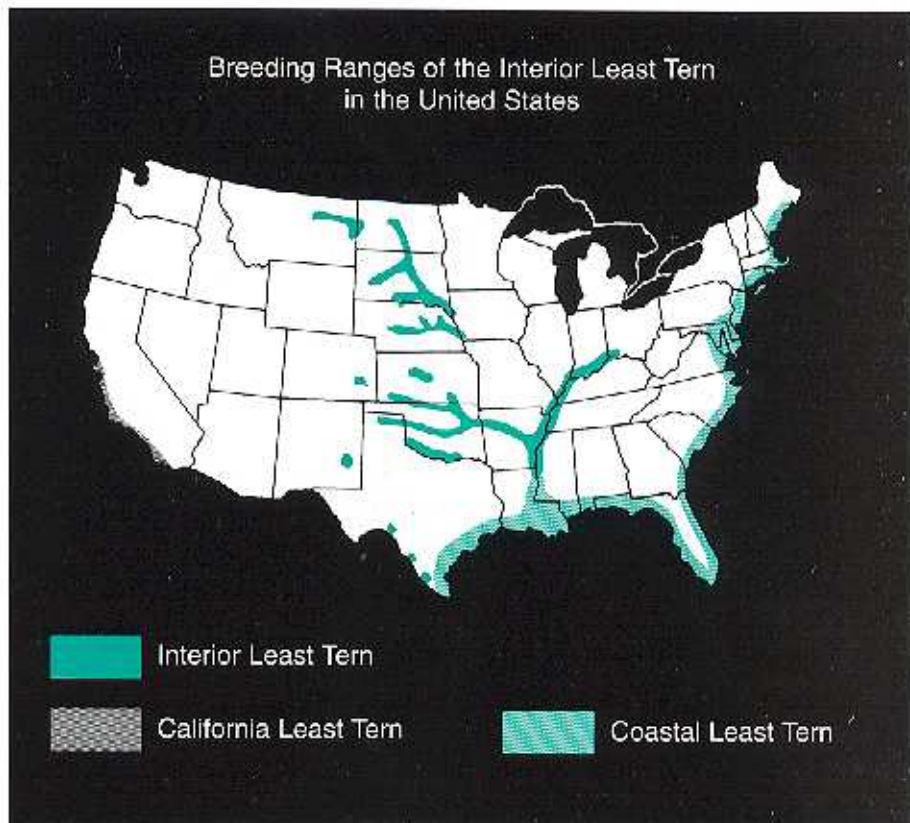
Soon after pair formation, both sexes participate in making many shallow nest scrapes dispersed in open, gravelly or sandy areas. Although several scrapes might be built by each pair, only one is used for nesting. Nest scrapes are sometimes located near small pieces of wood or debris or near clusters of small stones. After the female selects a suitable scrape, two or three eggs are laid on consecutive days.

Both adults begin to alternate incubation duties after the first egg is laid. The pale to olive-buff eggs are speckled with streaks or splotches of dark purplish-brown, chocolate or blue-grey. If a first clutch of eggs is lost, least terns will renest up to two times, each renesting attempt taking place at a new site.

Incubation lasts about 21 days, after which the eggs begin to hatch on consecutive days. The newly hatched young are weak and helpless and are continuously brooded by the adults during the first day. Chick coloration varies from a grayish-brown to nearly reddish or sandy-brown with white underparts. Tiny black spots on the head and back complement the sand-colored camouflage plumage of the chicks.

A day or two after hatching, the chicks begin to wander from the nest scrape and become increasingly mobile, but are periodically brooded by the adults until they can regulate their own body temperature. Both adults catch small fish, which are fed to the chicks. About three weeks after hatching, young terns are able to fly. Their parents continue to feed them long after they have fledged. Fledglings often can be seen "practicing" their fishing technique, but they rarely catch fish on their own. The nesting season ends by early August, and departure from breeding areas usually is complete by early September.

Least terns are generally a long



lived species and according to banding studies, natural longevity can exceed 20 years.

## Food

Interior least terns consume small fish captured in the shallow water of rivers and lakes. They hunt by hovering, searching and then diving from a height of a few feet to 30 feet above the surface to snatch small fish in their bill. The most common fish species taken in Nebraska include several shiner species (*Notropis sp.*) and plains killifish (*Fundulus kansae*), but they will eat almost any fish species of appropriate size.

Least terns nesting at sandpits and other off-river sites often fly up to two miles to forage at river sites. Least terns nesting on riverine sandbars usually forage close to the nesting colony. Fish of one to three inches long are consumed by adults. Young chicks are consistently brought non-

spiny fish within the size range of one-half to two inches long. Adults and young birds swallow the fish whole, head first and usually in one gulp.

## Habitat

The occurrence of breeding least terns is localized and is highly dependent on the presence of dry, exposed sandbars and favorable river flows that support a forage fish supply and isolate the sandbars from the riverbanks. Characteristic riverine nesting sites are dry, flat, sparsely vegetated sand- and gravel bars within a wide, unobstructed, water-filled river channel.

Nests are initiated only after spring and early summer flows recede and dry areas on sandbars are exposed, usually on higher elevations away from the water's edge. Artificially created nesting sites, such as sand and gravel pits, dredge islands, reservoir shorelines and power plant ash disposal areas, also are used.

## Limiting Factors

The lower Platte River from Columbus to the mouth, parts of the Loup River, the lower Niobrara River and a few stretches of the Missouri River below Ft. Randall and Gavins Point dams are the only river segments in Nebraska that still contain naturally occurring sandbar nesting habitat for least terns. Riverine nesting habitat has been so severely reduced in the central and upper Platte River that sand- and gravel pits adjacent to the river now provide the only nesting habitat. Least terns nesting at sand- and gravel pits have low reproductive success because of predation and human disturbance.

The availability of habitat and the reproductive success of least terns using the Missouri River depend entirely on the discharge of water from the mainstem dams. Untimely discharges for hydroelectric power and navigation continue to inundate interior least tern colonies.

Least tern reproductive success also can be limited by human-related disturbances, such as foot traffic, unleashed pets, swimmers, canoeists and off-road vehicles. Least tern eggs and young are extremely vulnerable. When least tern colonies are disturbed, adults leave eggs or chicks unprotected, increasing their vulnerability to predators and severe weather. Prolonged disturbances can lead to destruction or abandonment of the colony. Predation by avian and mammalian predators, such as American crows, American kestrels, great horned owls, raccoons, coyotes, minks and feral dogs and cats, has been documented at nesting colonies.

Studies along the Platte valley have shown that selenium and mercury concentrations were elevated above background levels, and selenium in particular might be affecting the reproductive success of least terns in the Platte valley study area.

Agricultural chemical runoff into rivers and tributaries can affect the



Least terns nest in shallow scrapes in open gravelly or sandy areas.

quality of least tern nesting and foraging habitat. More important, the effects of contaminants combined with the physical degradation of habitat and the increase in human disturbance could further accelerate population declines.

## Management and Outlook

Nebraska supports one of the largest populations of least terns in the interior United States, and annual surveys to monitor least tern population status in Nebraska began in 1980.

Intensive research on habitat selection and availability, reproduction, foraging habits and limiting factors has been conducted in Nebraska, and comprehensive river management is underway, particularly along the Missouri and Platte rivers, where development pressure is most threatening. Biologists are assisting with the development of river flow management plans, which include securing adequate instream flows to maintain suitable nesting and foraging habitat. Efforts to restore, create and protect habitat are being implemented

and involve state and federal agencies, private conservation organizations and public utility groups. A federal program that provides guidelines for the application of restricted-use pesticides near least tern nesting areas is in place.

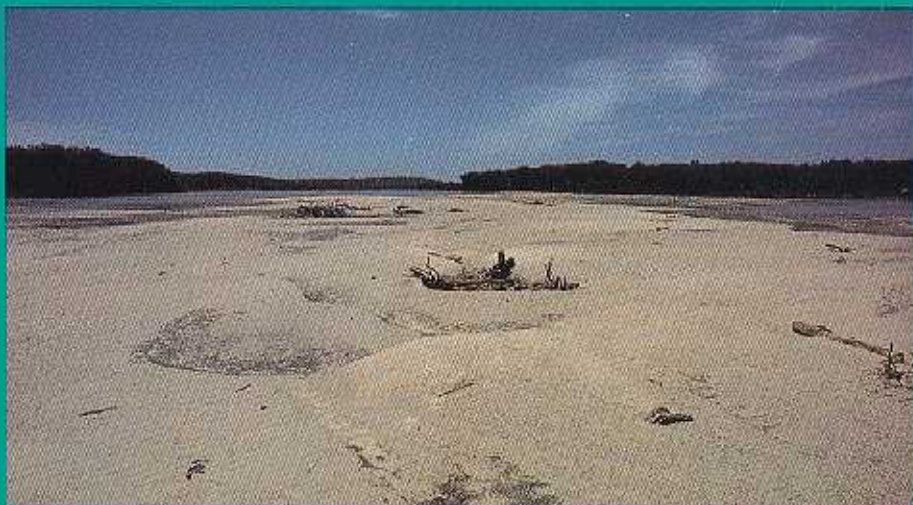
As interaction between humans and nesting least terns increases, efforts to heighten public awareness and minimize human disturbance also increase. Common management procedures and protective measures can include posting and delineating colonies with signs, distributing brochures, placing informational signs at river access points, media coverage and monitoring of colonies by volunteer "tern wardens."

Experimental efforts to reduce predation at selected sites have been initiated. Electric fences to exclude terrestrial predators from least tern colonies have been used recently with some success. Predator removal is time consuming and often ineffective. Removing abundant vertebrate predators treats only the symptoms of ecosystem degradation, accentuating the need for more emphasis on broad-scale habitat restoration.

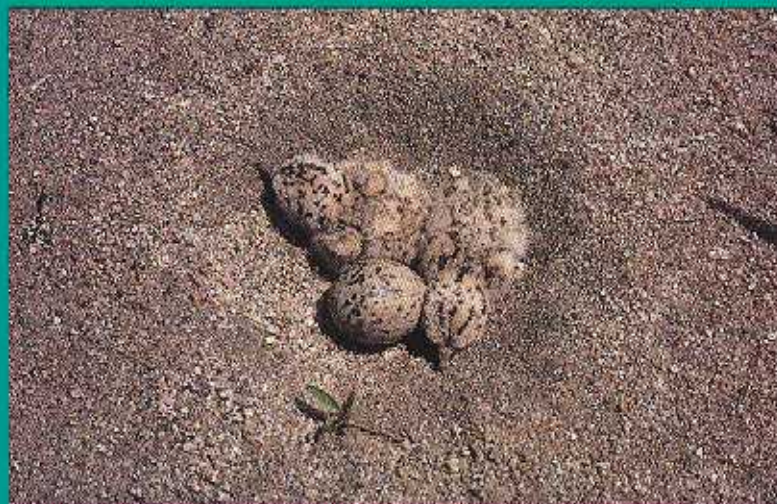
The recovery plan for the interior least tern calls for the maintenance of the distribution and range of the

species and protection of essential habitat. In addition, Nebraska law requires state agencies to consult with the Nebraska Game and Parks Commission on any proposed action they authorize, fund or carry out. The process ensures that proposed actions do not jeopardize threatened or endangered species or result in the destruction or modification of habitat.

Setting species population goals, enforcing regulations that protect threatened and endangered species, and collecting and analyzing biological data are vital to the recovery of listed species, but the most effective way to reverse the disappearance of individual species is to restore degraded ecosystems. The least tern, as well as other species that depend on functional riverine ecosystems, would benefit from this broader approach to conservation.



Fully functioning riverine ecosystems create large, bare sandbars that provide ideal habitat for nesting least terns.



Highly vulnerable to predators and to human disturbances, newly hatched least tern chicks are weak and helpless.

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Note: New data on the occurrence and distribution of this species are being collected constantly, and some of the information in this publication may be outdated. It should be used for a general understanding of the status of this species in Nebraska and not as the sole source of locational information for any report, project, regional/local planning or environmental impact assessment. For current information on this or other threatened and endangered species, or for additional copies of this publication, contact the Wildlife Division, Nebraska Game and Parks Commission, P.O. Box 30370, Lincoln, NE 68503.



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