SUMMARY: The Service determines endangered status for the interior population of the least tern (Sterna antillarum), a small bird. Formerly well distributed in the Mississippi basin, the tern has been eliminated from most stretches of the Mississippi River and its tributaries. Many nesting islands in rivers have been permanently inundated or destroyed by reservoirs and channelization projects. Alteration of natural river dynamics has caused unfavorable vegetational succession on many remaining islands, curtailing their use as nesting sites by terns. Recreational use of sandbars is a major threat to the reproductive success of the tern. The annual spring floods of the watershed are often delayed past the onset of normal breeding, and many islands are not exposed as suitable sites in time for nesting. This final rule will provide the protection of the Endangered Species Act to this species. The Service will initiate recovery efforts for the interior least tern population.

DATE: The effective date of this rule is June 27, 1985.

ADDRESS: The complete file for this rule is available for inspection, by appointment, during business hours (7:00 a.m.—4:30 p.m.) at the Endangered Species Division, U.S. Fish and Wildlife Service, Federal Building, Fort Snelling, Twin Cities, Minnesota 55111 (612/725-3276 or FTS 725-3276).

FOR FURTHER INFORMATION CONTACT: Mr. James M. Engel, Endangered Species Division (see ADDRESSES section), (612/725-3276 or FTS 725-3276).

SUPPLEMENTARY INFORMATION:

Background

The interior population of the least tern was first described as a race (Sterna albrifrons) of the Old World little tern (Sterna albrifrons) [Burleigh and Lowery, 1942]. Two other described New World races were the eastern or coastal least tern (Sterna albrifrons antillarum) and the California least tern (Sterna albrifrons browni). As a result of recent studies on vocalizations and behavior of the terns in the Old and New Worlds, the American Ornithologists’ Union (1983) now treats the New World least tern population as distinct species, Sterna antillarum. The Old World species is called the little tern, Sterna albrifrons. Subspecies of New World least terns recognized by the American Ornithologists’ Union (1957) were the interior least tern (now Sterna antillarum othalesos), the eastern or coastal least tern (now Sterna antillarum antillarum), and the California least tern (now Sterna antillarum browni).

Massey (1976) reported no consistent morphological, behavioral, or vocal differences between S. antillarum antillarum and S. antillarum browni. In Texas where S. antillarum antillarum and S. antillarum othalesos are sympatric, the differentiation of specimens of the two subspecies is not possible and the present taxonomy is probably tentative (Thompson, 1981). Because of the taxonomic uncertainty of least tern subspecies in eastern North America, the Service decides not to specify the subspecies in this final rule. Instead the Service designates as endangered the population of least terns (hereinafter referred to as interior least tern) occurring in the interior of the United States. This designation is reflected in the rule promulgation at the end of this document.

The interior least tern historically bred along the Colorado (in Texas), Red, Rio Grande, Arkansas, Missouri, Ohio, and Mississippi Rivers systems from Montana southward through South Dakota, Nebraska, eastern Colorado, Iowa, Kansas, Missouri, Illinois, Indiana, and Kentucky to eastern New Mexico, Oklahoma, Arkansas, Tennessee, central Texas, central Louisiana, and central Mississippi (American Ornithologists’ Union, 1957). The actual wintering area for this population is unknown. However, least terns of unknown populations or subspecies are found during the winter along the Central American coast and the northern coast of South America from Venezuela to northeastern Brazil. The eastern least tern breeds along the Atlantic coast from Massachusetts to Florida, along the Gulf coast from Florida to Texas, and in the Bahamas and Caribbean islands. The California least tern, which has been listed as an endangered species since 1970 (32 FR 16047), breeds along the Pacific coast from central California to Baja California.

Least terns are the smallest members of the subfamily Sterneinae, measuring 20–22 cm long with a 50 cm wingspread. Sexes are alike, characterized in the breeding plumage by a black crown, white forehead, grayish back and dorsal wing surfaces, snowy white undersurfaces, orange legs, and a black-tipped yellow bill. Immature birds have darker plumage, a dark bill, and dark eye stripes on their white heads.

Hardy (1957) presents the results of the first substantial field study of the interior least tern. His observations were mostly made on the lower Ohio River. Other research has been conducted in Nebraska, Kansas, Oklahoma, and Illinois (Grove and Knopf, 1982; Anderson, 1983; Faanes, 1983; Schulenberg and Pitecek, 1994). Drey (1981) provided a brief but comprehensive summary of available published and unpublished information on the interior least tern. The tern exhibits a localized pattern of distribution, and its breeding biology generally centers around three ecological factors.

These include: (1) The presence of bare or nearly bare alluvial islands or sandbars, (2) the existence of favorable water levels during the nesting seasons, and (3) the availability of food.

Under natural river conditions, islands are created and destroyed by the river’s erosion and deposition processes. Periodic inundation maintains some islands in the barren or sparsely vegetated condition required by terns for nesting. Although most nesting is in rivers, the interior least tern also nests on the barrens of salinized lakes and ponds such as on the Salt Plains National Wildlife Refuge, Oklahoma.

The nest is a simple unlined scrape usually containing three brown spotted buffy eggs. Breeding colonies or terneries are usually small (up to 20 nests) with nests spaced far apart. However, colonies of 75 nests have been reported on the Mississippi River. Egg-laying and incubation occur from late May to early August, depending on the geographical location and availability of habitat. After a 20-day incubation period the chicks hatch and will fledge in another 20 days. Little is known about the tern’s specific food preferences, but small fish such as minnows constitute its prey.

The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), as amended, requires determination of whether species of wildlife and plants are endangered or threatened, based on the best available scientific and commercial data. The Service was originally petitioned in 1975 by the Oklahoma Ornithological Society to list the interior least tern as an endangered species. The Service indicated at that time its general
intent to propose the species for listing, once sufficient data were available. On December 30, 1982, the Service published a notice of review in the Federal Register (47 FR 58454) identifying vertebrate taxa, native to the U.S. being considered for addition to the List of Endangered and Threatened Wildlife. The notice included the interior least tern as a category 2 species (i.e., a species still needing some data before a proposal could be made). Since December 30, 1982, the Service has reviewed further data on the status of the tern in Illinois, Iowa, Kansas, Nebraska, North Dakota, and Oklahoma.

On May 29, 1984, the Service published a proposed rule in the Federal Register (49 FR 22444) advising that sufficient information was now on file to support a determination that the interior least tern is an endangered species pursuant to the Endangered Species Act of 1973, as amended. The proposal solicited comments from any interested parties concerning threats to this species, its distribution and range, whether or not critical habitat should be designated, and activities which might impact the species.

**Summary of Comments and Recommendations**

In the May 29, 1984, proposal all interested parties were requested to submit information on the status of the interior least tern that might contribute to the development of a final rule. Subsequently, letters were sent to appropriate state resource agencies in the tern’s historic range of Arkansas, Colorado, Iowa, Illinois, Indiana, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Tennessee, and Texas, and to the U.S. Army Corps of Engineers, other appropriate Federal agencies, county governments and other interested parties notifying them of the proposal and soliciting their comments and suggestions. Newspaper notices inviting general public comment were published in 17 newspapers within the tern’s breeding range of the interior least tern.

Seventy-two comments were received by mail during the public comment period, which was extended until September 25, 1984, in order to accommodate a public hearing. Cook and Kopf, P.C., of Lexington, Nebraska, representing the Central Platte Natural Resources District, requested a public hearing, "...to supply and solicit information regarding the designation of the interior least tern as endangered relative to the alleged use by the interior least tern of the Central Platte Region of the Platte River." Notice of public hearing and reopening of the comment period was published in the Federal Register on August 22, 1984 (49 FR 33296). A correction to the location of that hearing was published on September 5, 1984 (49 FR 35031).

The public hearing was held on September 11, 1984, at the Peter Kiewit Conference Center, Omaha, Nebraska. Forty-five people attended the hearing. Twelve people presented oral comments, six of whom also submitted written comments. The hearing centered largely on the decline and numbers of the interior least tern and on the ecology, status, and management of the tern in Nebraska, especially on the Platte River. The 12 public hearing comments and the 72 comments received by mail are summarized below. Most comments supported Federal listing of the interior least tern, with the exception of those from the Central Platte Natural Resources District, Nebraska Water Resources Association, other Nebraska water organizations, Denver Water Department, and Denver Metropolitan Water Providers, although some comments could be rated "neutral" in respect to support of the proposal.

The wildlife or related resource agencies of Arkansas, Iowa, Illinois, Kentucky, Mississippi, Missouri, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Tennessee, and Texas endorsed Federal listing of the interior least tern. Senator Nancy Landon Kassebaum of Kansas wrote that the Kansas Fish and Game Commission would not oppose the listing. Remaining States in the tern’s historic range did not respond.

The Central Platte Natural Resources District, Denver Water Department, and Nebraska Water Resources Association criticized the adequacy of the data on the numbers and decline of the interior least tern. They viewed the 1975 survey of the tern by Downing (1980) as inadequate and cursory and urged the Service to monitor population trends on a regular basis. They suggested that there has been no decline of terns and that the population may be increasing. The Denver Water Department examined the public comments received by the Service in response to the proposed rule, and commented that there are over 1,700 terns instead of the 1,250 reported by Downing (1980) and referenced by the Service in the proposed rule.

**Service response:** The Service references Downing’s 1975 survey (published in 1980) in the May 29, 1984, proposed rule because it is a concise report presenting the still valid fact that numbers of interior least terns are very low. The 1975 survey was the basis of the Oklahoma Ornithological Society’s 1975 petition to list the interior least tern as endangered. The Service, however, did not immediately propose listing of the tern, deciding instead to further evaluate the status of the tern. Since 1975, many States and individuals have conducted a variety of surveys throughout the tern’s breeding range. These studies and surveys (some of the results submitted in response to the proposed rule), while indicating a similar tern population in the areas surveyed by Downing in 1975 but a higher population (1,400-1,800 terns) throughout the entire tern’s breeding range, support Downing’s conclusion of low numbers of terns and continued threats to the bird’s habitat and breeding success.

The Service recognizes the difficulty in assigning the exact population status of species with widely scattered individuals, such as terns (Thompson, 1982). Moreover, as stated in the May 29, 1984, proposed rule, historical trends of the interior least tern population are poorly known. Reliable estimates of original numbers are generally not available. However, historical records indicate that the interior least tern once bred over a much larger area and in far greater densities of colonies than it does today (Ducey, 1981; Hardy, 1957). The best available information indicates that the interior least tern population is low. Reproductive success is low in many areas, and the tern’s remnant breeding habitat is threatened with modification, destruction, or curtailment. The Service is obligated by the Endangered Species Act to make listing decisions solely on the basis of the best scientific and commercial data available on the species in question.

By way of comparison, the California least tern was listed as endangered in 1970 when its population stood at 600 pairs (more than 1,500 individuals when non-breeding birds are included). That subspecies now numbers over 2,400 individuals but is still threatened with the loss of habitat.

In Louisiana, the interior least tern was a common breeding bird throughout the Mississippi and Red River valleys. It is now absent from the State. In Arkansas, the interior least tern no longer breeds on the Ouachita and White Rivers and is nearly absent on the Arkansas River, where only 30 terns have been recently censused (Arkansas Natural Heritage Commission, unpub. data, 1984). In Mississippi, the tern commonly bred on the Mississippi River.
but is now absent. Ganier (1930) believed the tern to have colonies every 10-15 miles along the Mississippi River. Today, there are about 350-450 terns, concentrated at only a few sites from Osceola, Arkansas, to Cairo, Illinois (Arkansas Natural Heritage Commission, Missouri and Tennessee Departments of Conservation, Kentucky Department of Fish and Wildlife Resources, U.S. Army Corps of Engineers, unpublished data, 1984).

The interior least tern formerly bred along the Ohio River from its confluence with the Mississippi River to along the Indiana-Kentucky boundary. In 1983 about 10 terns frequented the lower Ohio River; none were present between Indiana and Kentucky (Illinois Department of Conservation, unpublished data, 1994).

The interior least tern was formerly common on the Mississippi River from Cairo, Illinois, to Iowa. It bred on the Des Moines River and at many locations in central and eastern Iowa. The tern now occurs only near the southern tip of Illinois, where about 30 birds were recently censused (Illinois Department of Conservation, unpublished data, 1984).


The interior least tern was formerly a common breeder on the Missouri River and many of its tributaries from St. Louis, Missouri, to Montana. Lewis and Clark frequently observed the tern along the length of the Missouri River and described the species in detail (Burroughs, 1967). Near the mouth of the Platte River they remarked that the tern is "a native of this country and probably a constant resident." The interior least tern is now entirely absent as a breeding bird on the Missouri River from St. Louis to Sioux City, Iowa. It disappeared along the Iowa-Nevada boundary (Missouri River) over the past 35 years (Ducey, 1981; Hardy, 1967). On the Missouri River north of Sioux City, Iowa, the tern is a rare breeder. Population numbers 100-200 birds between Yankton, South Dakota, and Ponca, Nebraska (Nebraska Game and Parks Commission, unpublished data, 1980-1984).

Because the remainder of the Missouri River in North and South Dakota is largely a reservoir where nesting habitat has almost completely disappeared since 1950, the tern is now a rare breeding bird. However, on the remaining 90-mile natural segment of the Missouri River in North Dakota, from Garrison Dam to the headwaters of the Oahe Reservoir, 90-130 terns have bred on sandbars in recent years (North Dakota Parks and Recreation Department, unpublished data, 1984). The Cheyenne River, a tributary of the Missouri River in South Dakota, harbors about 30-70 terns (Ducey, 1981; A. Cheppelle, pers. comm., 1994). Small numbers of terns may be scattered along the Oahe Reservoir. The tern is absent from Montana, although it historically occurred there (Coues, 1874).

On the Platte River, Nebraska, the interior least tern numbers about 160-240 birds (Nebraska Game and Parks Commission, unpublished data, 1980-1984). Their distribution on the Platte formerly included western Nebraska. Today, the tern is found only in the Central and Lower Platte River regions. Changes in nesting sites and loss of historic nesting sites on the Platte River are detailed by the Nebraska Game and Parks Commission (1984, 1985). About 100 terns occur on the Niobrara River, Nebraska (Wingfield, 1982).

In Kansas, recent research on the interior least tern indicated low numbers (100 birds), low reproductive success, and continued threats to the tern's breeding habitat (Schulenberg and Ptacek, 1984; Roger L. Boyd, pers. comm., 1984). The tern no longer breeds along the river systems in the northern part of the State. It is currently found only on the Cimarron River, in Cheyenne Bottoms Wildlife Management Area, and in the Quivira National Wildlife Refuge.

In Oklahoma, 100-300 interior least terns occur on the Salt Plains National Wildlife Refuge (Grover and Knopf, 1982; L. Hill, pers. comm., 1984). Another 100 terns breed on the Cimarron River and Lake Optima in the Oklahoma panhandle (Okahoma Department of Wildlife Conservation, unpublished data, 1984; Roger L. Boyd, pers. comm., 1984). The tern is absent from several former breeding sites along the Red River between Texas and Oklahoma.

In Texas, the interior least tern is rare, numbering about 80 birds on segments of the Canadian and Red Rivers in the Texas panhandle and 50 birds on the Rio Grande River (Texas Parks and Wildlife Dept., unpublished data, 1984). In New Mexico, 20 interior least terns breed on the Bitter Lake National Wildlife Refuge.

Colorado is on the periphery of the interior least tern's breeding range. The tern breeds rarely in the southwestern part of the State near the Arkansas River.

In summary, the current breeding distribution of the interior least tern is a remnant of a more widespread range in the interior of the U.S. This change in the breeding range has taken place over a period of many decades, concurrent with man's development and modification of river systems. In the case of the Missouri River, only areas where the species breeds are the few stretches of river that are not channelized or inundated by reservoirs. The current breeding distribution of the interior least tern is also restricted to segments of the Niobrara, Platte Arkansas, Mississippi, Ohio, Red, Rio Grande, Canadian, and Red Rivers; and the Cheyenne Bottoms Wildlife Management Area and Quivira National Wildlife Refuge, Kansas; Lake Optima, Salt Plains National Wildlife Refuge, and Edith Salt Plains, Oklahoma; and the Bitter Lake National Wildlife Refuge, Nebraska.

The low numbers of the interior least tern and the continued loss and curtailment of its habitat has led to considerable concern for the species. Since 1975, the States have recognized the plight of the interior least tern. The interior least tern is officially listed as endangered in South Dakota, Iowa, Illinois, Missouri, Texas and New Mexico and officially listed as threatened in Kansas and Nebraska. Indiana officially lists the interior least tern as extirpated. State Natural Heritage Programs unofficially list the interior least tern as endangered in Tennessee and threatened in Kentucky and North Dakota.

The Central Platte Natural Resources District (CPNRD) stated that the Service is relying on hydrologic and biological data relative to vegetative encroachment and flows in the Platte River that are outdated and misunderstood by the Service. The CPNRD commented that the Platte River is in a transition from continuously unvegetated, to intermittently unvegetated (transitional), to annually vegetated. The CPNRD contends that it is not the lack of scouring by the river or spring flooding that has caused vegetation encroachment on the Platte River. Rather, the causative factor behind the development of the woody floodplain vegetation is the presence of water in the river on a year-round basis. The CPNRD submitted two reports by Ecological Analysts (1983) and Hemmingson, Durham & Richardson (1983) and several testimonies on the matter before the Nebraska State Department of Water Resources, which detail CPNRD's contention.

Service response: While the precise cause may be of consequence to future section 7 consultations, the fact of reduced habitat remains and is of direct relevance to this final rule. Both the CPNRD (Ecological Analysts, 1983) and the Service recognize that water development projects on the Platte River have resulted in vegetational changes. In
the present judgment of the Service, the dewatering and regulation of the Platte River over the past 50 years has been a causative agent in the reduction of available wetlands and sandbars for the least tern and many other forms of wildlife. The Nebraska Game and Parks Commission (1984, 1985) notes that loss or modification of tern nesting habitat has occurred along the Platte River because of vegetation encroachment caused by modifications in the flow regime.

The Service conducted a 3-year investigation (1978-1980) of the Platte River (U.S. Fish and Wildlife Service, 1981) "to define habitat-use patterns and habitat requirements of migratory bird populations nesting along the North Platte and Platte River valleys and to assess factors influencing woody vegetation establishment along these rivers." The report stated:

With approximately 70 percent of the Platte's annual flows diverted for various consumptive uses upstream in Colorado, Wyoming, and western Nebraska, channel width in many areas has been reduced to 10-20 percent of former size. Habitat conditions within the existing channel have also changed as a result of reduced scouring of sandbars and shifting of alluvial sediments. A broad band of mature deciduous woodland now occupies tens of thousands of acres that formerly were part of the river and numerous islands overgrown with woody vegetation exist within the channel.

A concurrent study by the U.S. Geological Survey (1983) substantiates the results of the Service's conclusion on vegetation encroachment. Williams (1978) provides photographs and other documentation on the altered nature of the Platte River. Currier (1982) describes in detail many aspects of the Platte's plant ecology, including plant succession. The Service's report concluded that "species that nest on the open sandbars of the Platte River have been affected adversely by the encroachment of woody vegetation. The most profound impact has been on the distribution and abundance of the least tern and piping plover. Both species require broad expanses of unvegetated river channel and sparsely vegetated sandbars." Faanes (1983) further details the nesting ecology of the interior least tern and the present modification and curtailment of the bare sandbar habitat on the Platte River.

While endorsing Federal listing of the interior least tern, the Nebraska Game and Parks Commission commented that there had been significant loss and modification of the tern's breeding habitat and that its range in Nebraska had been reduced. The Commission further commented that much of the existing breeding habitat remains threatened because of man's manipulation of river flows and disturbances and that, due to severe encroachment of woody vegetation, many of the historic nesting areas on the Platte are now unsuitable for terns. The Commission noted that encroachment of vegetation has been encouraged through significant modifications of the river flow regime, particularly by the loss of annual scouring flows.

The Nebraska Water Resources Association (NWRA) commented that the habitat needs of three endangered species, the whooping crane (Grus americana), bald eagle (Haliaeetus leucocephalus), and interior least tern, are contradictory and that the species cannot co-exist in the same habitat or areas on the Platte River. The CPNRD submitted a report by Ecological Analysts (1983) discussing the incompatible river flow and habitat conditions required by the three birds on the Platte River.

Service response: Bald eagles primarily use mature trees of riparian woodlands for communal roosts during the winter. Whooping cranes roost on unvegetated sandbars during their migration in April and October (Lingle et al., 1984). Critical habitat has been designated for the whooping crane along the Platte River.

Service response: Whooping Crane Habitat Maintenance 

The Service views existing laws now protecting this tern as inadequate to protect its habitat when compared to the Endangered Species Act protection now being given under this rule. The CPNRD commented that the Service "does not know the winter range of the interior least tern and does not know whether the winter range of the interior least tern impacts upon the species."

Service response: Although there may be factors affecting the tern on the winter range, based on the best available information the Service believes that the major threats to the interior least tern are on the breeding range. Although the winter range is unknown, it is likely the same as that of the more numerous coastal least tern. The Service notes that the migration routes and winter distribution of the endangered California least tern also remain unknown, although recovery of the species is proceeding well with protection of breeding areas. The Service's recovery plan for the interior least tern will investigate migration and winter distribution, and possible threats during these periods. Moreover, the relevant criterion for listing is the degree of species endangerment, not the delineation of each and every possible cause. The possibility of additional threats to the species is not a basis to refuse listing if known threats are themselves sufficient to show danger of extinction.

The Nebraska Ornithologists' Union, Platte River Whooping Crane Habitat Maintenance Trust, Iowa Conservation Commission, U.S. Army Corps of Engineers, and others commented on the value of dredge and other spoil as
breeding sites for interior least terns. The NWRA stated that the Service did not consider the fact that "the development and operation and maintenance of water projects and related sand and gravel facilities in Nebraska has contributed to the establishment of new habitat for the interior least tern. Nebraska and our neighboring States are dotted with thousands of sandpits and gravel pits. The operations of our numerous public power and irrigation project diversions and canals create river sandbars and dredge banks that provide habitat for the least terns."

Service response: The Service has long recognized that least terns readily accept man-created bare ground areas as nesting sites. Creating or restoring such habitat is one facet of the California least tern recovery plan (U.S. Fish and Wildlife Service, 1980a) and coastal least terns readily use dredge spoils (Mackenzie, 1980). However, not all sand and gravel pits are used by terns. In Nebraska, for example, terns do not breed at the numerous sand and gravel pits located away from the Platte River. The terns are restricted to the immediate environs of the Platte River. They appear to prefer natural islands or sandbars but will nest on man-made sites in the floodplains. Such sites, however, are usually connected to the shore and are accessible to predators and human disturbance. Studies of tern colonies on sand and gravel pits adjacent to the Platte River indicated very poor productivity in 1984. High mortality of eggs and young and desertion of nest sites caused by predators and human disturbances was noted (Nebraska Game and Parks Commission, 1986). The Service will examine the suitability of man-made nesting sites as they relate to the recovery of the interior least tern.

The Platte River Whooping Crane Habitat Maintenance Trust provided census data on the interior least tern from Shoemaker and Mormon Islands in the Platte River. The Trust commented that rapid willow establishment and growth is a problem for the tern and endorsed the listing. The Trust indicated that in light of proposed water projects, the tern's habitat will continue to deteriorate. The Trust also reported their success in mechanically removing vegetation from an island and attracting nesting terns to the island. They indicated that former nesting habitat can be restored; however, such habitat will require continued and intensive management and maintenance.

One comment provided a list compiled by the Nebraska Department of Water Resources giving the number of proposed water diversion projects on the Platte and South Platte Rivers. The comments indicated that if all the projects are constructed, the loss of water would impact the fishery habitat necessary for the tern and allow further vegetation encroachment.

Service response: The Service and the Nebraska Game and Parks Commission recognize the conflict on the Platte River between water development and wildlife conservation. Through its State consultation process, the Commission has endeavored to protect water flows on the Platte River which will ensure the needs of wildlife (Nebraska Game and Parks Commission, 1984, 1986). However, the final decision is up to the Nebraska Water Resources Department with respect to State or local water projects that are without Federal involvement such as section 404 permits.

The NWRA and the Public Service Company of Colorado expressed concern about the impact that the listing of the interior least tern would have on Federal water projects. The NWRA objected to the proposed rule because of the delays and costs that would be involved in assessing the impacts of Federal activities on the interior least tern. The NWRA also questioned the effectiveness and benefit of a recovery plan and how worthwhile it would be in terms of costs. The NWRA indicated that listing may deter projects of benefit to other wildlife species and human needs.

Service response: The outcome of a recovery effort or future costs for a species or affected projects may not be considered in deciding whether to list a species under the Endangered Species Act. The Service emphasizes that listing a species, as required under the Act, is to be based solely on biological considerations.

The Endangered Species Act prohibits considerations of economic or other nonbiological factors from affecting decisions regarding the determination of endangered or threatened status. The Service indicated in the proposed rule a number of activities that may require consultation between the Service and Federal agencies under section 7(a)(4) of the Act. Although there are provisions in the Act to exempt Federal activities from the section 7 consultation requirements in the event of a jeopardy opinion on a given activity, these provisions are completely independent of the identification and listing of species that are unlikely to survive without the protection of the Act.

The Lower Mississippi Valley Division (LMVD) of the U.S. Army Corps of Engineers conservatively estimates sandbar habitat available for nesting interior least terns above river mile 315 on the Mississippi River at 190 acres per river mile during low water. Suitable nesting habitat is abundant; however, the problem is availability of habitat when the tern is ready to nest. River stage determines location and abundance of habitat. In wet years, river fall may not occur until late July, which would effectively eliminate most of the nesting activity on the river. (The tern would be searching in May for nest sites.) The LMVD stated that channel improvement and dredging activities would have minimal or no impact on the interior least tern. Channel improvement and dredging could continue to provide additional nesting habitat, particularly in the area between Osceola, Arkansas, and Cairo, Illinois, where a large proportion of the remaining terns is known. The LMVD alluded to its existing, successful program of creating nesting sites for the coastal least tern, and indicated its support to prevent damage to and enhance the habitat of the interior least tern.

The Corps' Missouri River Division (MRD) stated its intention of protecting selected sandbars from Gavins Point Dam, South Dakota, to Ponca State Park, Nebraska, by limiting recreational use to help ensure the continued reproductive success of the tern. The MRD stated that listing the interior least tern would complicate the annual review of the operation of Missouri River main stem dams. MRD added that balancing the various project purposes such as navigation and hydropower production may make it impossible to consistently operate in a manner that would maximize interior least tern reproduction.

The Southwestern Division of the Corps acknowledged that a variety of projects in Oklahoma, Kansas, and Texas would have to take the interior least tern's well-being into consideration.

The U.S. Department of Energy (Western Area Power Administration); Basin Electric Power Cooperative, Bismarck, North Dakota; and the U.S. Army Corps of Engineers commented that listing the interior least tern may have adverse impacts on electric power generation at dams on the Missouri River Main Stem System. Modifications of water releases from dams to benefit tern habitat could jeopardize, for example, Western's ability to meet firm electric power contractual commitments that extend through the year 2000. There could also be impacts on revenues and...
additional expenses for purchased electric power.

Service response: Listing the interior least tern as endangered will not automatically impose water release restrictions on main stem dams. Main stem dam operations are only one activity that may be found to be subject to the consultation requirement to the extent Federal licensing, activity, or funding is involved. Release schedules have, in the past, imposed problems for nesting terns when the average daily discharge had been increased during the nesting season. Last year, for example, during the initiation of nesting the average daily discharge from Garrison Dam on the Missouri River was approximately 13,000 cubic feet per second [cfs], but before the young were fledged the average daily discharge had been increased to nearly 30,000 cfs. At least three tern colonies were known to have been completely inundated. It is these unnatural seasonal fluctuations of the average daily discharge that are, at times, of concern. not the repeated short-term fluctuations attributable to daily hydropower generation. If a jeopardized opinion on a given action or activity is determined, the Service would be required to suggest those reasonable and prudent alternatives that could be taken and still not violate section 7 of the Endangered Species Act.

The National Audubon Society and The Nature Conservancy (TNC) endorsed the listing. Citing the decline of small populations of coastal least terns on the northeast coast of the U.S., TNC stressed the role of predation in limiting small populations of interior least terns. TNC and others, including CPNRD (Ecological Analysts, 1983) emphasized the deleterious impact of humans, dogs, and vehicles on nesting terns. The general public is unknowingly using the habitat of tern colonies for picnics, parties, sandbar golf, camping, and other activities. One comment indicated that cooperative efforts have begun in North Dakota to inform the public of the presence of terns on the Missouri River.

The Texas Parks and Wildlife Department commented that due to the sympathy of the coastal least tern and interior least tern and the questionable distinction between the subspecies (either morphometrically or biochemically) a clear dividing line needs to be established between the two subspecies. Two other comments also suggested that the Service clarify those areas of Louisiana, Mississippi, and Texas that are not included in the interior least tern’s range, so that any least tern occurring in those areas would not be subject to the Endangered Species Act.

Service response: In the proposed rule the Service exempted the Gulf Coastal Plain in Louisiana, Mississippi, and Texas from the historical range of the interior least tern in order to separate the coastal least tern from the interior least tern. However, the Service agrees that the term “Gulf Coastal Plain is not sufficiently definitive to separate the interior least tern population. Therefore, the Service will consider the historic range of the interior least tern in Louisiana to only include the Mississippi River and tributaries commencing north of Baton Rouge; in Mississippi the historic range only includes the Mississippi River; and in Texas the interior least tern’s historic range includes the entire State except the Texas coast and a 50-mile zone inland from the coast. These changes are reflected in the rule promulgation at the end of this rule. All least terns occurring within these areas will be protected by the Endangered Species Act.

Ten comments disagreed with the Service’s reasons for not proposing critical habitat. They maintained that there are permanent sites, such as Salt Plains National Wildlife Refuge, Oklahoma; Bitter Lake National Wildlife Refuge, New Mexico; and Quivira National Wildlife Refuge, Kansas, where interior least terns have consistently bred for over 20 years. The Illinois Department of Conservation stated that many islands of the Mississippi are not ephemeral but stable, although becoming over-vegetated, due to current channel maintenance procedures. Thus, certain interior least tern nesting islands could be identified as critical habitat. The Nebraska Ornithologists’ Union and others commented that general localities, specifically certain river reaches, can be designated as critical habitat. For example, the lower 100 miles of the Niobrara River, Nebraska, 200 miles of the Central and Lower Platte River reaches, and 90 miles of the Missouri River in North Dakota from Garrison Dam to the headwaters of the Osage Reservoir are definable locations that are consistently used by terns, even though the exact island or sandbar may vary from year to year. The same can be said of other river reaches in the current range of the interior least tern.

Service response: The Service maintains that at this time the designation of critical habitat would not provide an overall benefit to the tern and, therefore, is not prudent. Affected National Wildlife Refuge managers and other involved parties have been and will be notified of the term’s management requirements. A fragmented critical habitat approach would not recognize all areas important to the species. See also discussion in the Critical Habitat section below.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the interior least tern should be classified as an endangered species because the tern is in danger of extinction throughout a significant portion of its range. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 et seq.) and regulations promulgated to implement the listing provisions of the Act (codified at 50 CFR Part 424; revision published October 1, 1984; 49 FR 36900-36912) were followed. A species may be determined to be endangered or threatened due to one or more of the five factors described in section 4(a)(1).

These factors and their application to the interior least tern are as follows:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The construction of reservoirs and pools along rivers has permanently eliminated some islands and prevents the formation of others. Such reservoirs and pools exist along hundreds of miles of rivers of the Mississippi Basin. Stretches of river below dams are regulated so that a river’s natural erosion and deposition processes, which are responsible for creating, destroying, and maintaining nesting islands, no longer occur. The controls on the river have reduced the spring floods, which would normally scour vegetation from islands, and have limited the amount of alluvium for island formation. Consequently, on most of the remaining islands, herbaceous vegetation is followed by shrub and tree species, which ultimately form the permanent vegetation of the island, a condition unsuitable for nesting interior least terns.

Johnson et al., (1976) reported that in North Dakota, a lack of new alluvial deposits is leading to a floodplain forest of advanced successional stage along the Missouri River below Garrison Dam. Plant succession is believed to be the cause of the loss of the interior least tern colony at DeSoto Bend National Wildlife Refuge in Iowa. The braided nature of the Platte River in most of Nebraska has been largely eliminated. Its historic flow has been reduced 60 to 80 percent by irrigation withdrawals. As a result, the width of the river has been reduced, and
most of the islands are heavily vegetated (U.S. Fish and Wildlife Service, 1981). Plant succession on islands and riverbanks is occurring on other midwest rivers. Even dredge islands develop late seral stages of vegetation within a few years and have been subsequently avoided by terns. The vegetative character on natural and manmade islands in regulated rivers will continue to change to a point of unsuitability for nesting terns as observed by Wycoff (1960) during a period of 17 years on the Platte River. Along the Niobrara River in Nebraska, vegetation encroachment is not presently a problem as there are no major control structures on that river.

A series of locks, dams and channel maintenance activities on the Mississippi River and its major tributaries (Ohio and Missouri) have resulted in a river flow state that inundates islands, shrinks the river width, and restricts the amount of alluvium for island formation. Construction under the Missouri River Bank Stabilization and Navigation Act during the last 50 years has apparently eliminated nearly all the sandbar and sandbarbeach habitat. For example, one section of the Missouri River (Nebraska-Iowa border) was estimated to have had 25,000 acres of potential nesting habitat at the turn of this century. Approximately 99 percent of this habitat has now been lost. Where sandbars still occur along the Nebraska-South Dakota boundary, 7,000 acres of sandbar habitat have been lost between 1936 and 1975, including losses within the Missouri National Recreation River. Sandbars along Nebraska’s entire Missouri River boundary have been virtually eliminated with the exception of the remaining 2,200 acres of exposed sandbars inventoried in 1960 along the 50-mile Missouri National Recreation River (Schmulbach et al., 1981).

In summary, bare sand islands and other bare areas will continue to decline and many of those islands that do survive will undergo plant succession unfavorable to the interior least tern. Moreover, human use of river islands has been increasing and may hinder reproductive success (Anderson, 1983). Vehicular and other recreational activities are widespread along the Platte, Missouri, and Mississippi Rivers and occur largely on the barren islands favored by terns. Terns nesting on Salt Plains National Wildlife Refuge and Edith Salt Plain in Oklahoma are threatened by chloride control projects, which will either flood their habitat or reduce their food resources and may fail to provide replacement habitat.

B. Overutilization for commercial, recreational, scientific, or educational purposes. Not applicable for the species.

C. Disease or predation. Disease has not been a problem known to occur in this species. Coyotes and foxes prey on interior least tern eggs, and evidence exists that such predation can have a serious impact on nest success. Dogs and other domestic animals accompanying human use of sandbars can disrupt tern nesting through disturbance or predation. Dogs and cats were blamed for disrupting some colonies of the endangered California least tern (U.S. Fish and Wildlife Service, 1980).

D. The inadequacy of existing regulatory mechanisms. The interior least tern is listed as threatened or endangered by the States of South Dakota, Nebraska, Iowa, Illinois, Missouri, Kansas, New Mexico, and Texas. As a general rule, however, such listings do not result in State protection of the habitat of this species. The Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) protects the bird and its parts, nests, and eggs from taking and trade. However, this Act does not protect against habitat loss, which is the main threat to the tern, and, by itself, will not be adequate to prevent the species further decline. The Endangered Species Act would offer additional protection for the species, largely through the recovery and consultation processes.

E. Other natural or manmade factors affecting its continued existence. None is known.

The Service has carefully assessed the best scientific and commercial information available regarding past, present, and future threats faced by this species in determining to make this rule final. Endangered status is appropriate because of the low numbers and scattered distribution of the tern and the continued threat to the bird’s breeding habitat. None of the comments received by the Service recommended threatened status. Although many States already list the species, their laws do not provide the high degree of protection afforded by the Endangered Species Act. Not to list this bird would be contrary to the evidence gathered to date.

Critical Habitat

Section 4(a)(3) of the Endangered Species Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary shall specify any habitat of a species which is considered to be critical at the time the species is determined to be endangered or threatened. For this particular situation, however, the Service generally has concluded that there is no demonstrable overall benefit to the tern in designating critical habitat and that such an action is not prudent. Affected land management agencies and other involved parties are aware or will be notified of the location of areas needing special management to accommodate the needs of the tern. No additional notification benefits would accrue from a critical habitat designation beyond those from the listing. The interior least tern is a wide ranging species whose occupied habitat would be difficult to delineate and may vary over time. Service recovery actions will continuously update and add the tern’s habitat management needs.

Possible increased vandalism and taking could occur due to designating critical habitat. The Service feels there is no net benefit from designating critical habitat at this time. Should the Service receive additional information on this subject, which would warrant reconsideration of this decision, the Service could propose critical habitat in the future.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed in part below.

The Migratory Bird Treaty Act makes it illegal to take, possess, sell, deliver, carry, transport, or ship interior least terns, their parts, eggs, nests, and young. However, it affords no protection to their habitat. Section 7(a) of the Endangered Species Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed, endangered or threatened. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402 and are now under revision (see proposal at 48 FR 23990; June 29, 1983). Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species. If a Federal action may
Federal agency must enter into formal consultation with the Service.

Some activities which, based upon modification, the following represent would require consultation and possible requirement to the extent Federal licensing, activity, or funding is involved:

- Desalination or chloride control projects on the Arkansas River and the Red River Basin;
- Channelization, stabilization, and flood control projects on the Missouri River;
- Construction, maintenance, and operation of navigation channels on the Mississippi and lower Missouri Rivers, particularly those which prevent formation or maintenance of bare sandbars;
- Operation of locks, dams, and energy diversions in the Mississippi Basin;
- Construction and operation of the bypass channel for Edith Salt Plains, Oklahoma; and
- Water release operations from the Gavins Point Dam and the Lewis and Clark Reservoir and the Garrison and Oahe Dams, particularly during the tern nesting season, when releases may inundate nests.

This does not indicate that all such actions will, in fact, be found to require consultation and still fewer consultations would require the termination of any such project. Modification of the Federal actions rather than termination has been the experience of the Service. Affirmative conservation plans may be implemented to avoid causing jeopardy to the tern.

The Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered species. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import, export, ship in interstate commerce in the course of a commercial activity, or sell or offer for sale in interstate or foreign commerce any listed species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that had been taken illegally. Certain exceptions apply to agent of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities.

The final rule brings sections 5 and 6 of the Endangered Species Act into effect with respect to the interior least tern. Section 5 authorizes the acquisition of lands for the purpose of conserving endangered species. Pursuant to section 5, the Service will be able to grant funds, when available, to affected States for management actions aiding the protection and recovery actions for the interior least tern.

The development of a recovery plan for this bird will begin and bring together State and Federal efforts for the conservation of the tern. The plan will establish an administrative framework, sanctioned by the Act, for agencies to coordinate activities and cooperate with each other in conservation efforts. The plan will set recovery priorities and estimate the cost of the various tasks necessary to accomplish them. It will designate appropriate functions to each agency and a time frame within which to complete them. If the recovery plan action has the desired effect, then the threats to the tern might become lessened such that the bird could be considered for threatened status or for removal from the List of Endangered and Threatened Wildlife, with the latter action being one of the principal goals of the Service.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the Federal Register on October 25, 1983 (48 FR 49244).

Literature Cited


Henningsen, Durham & Richardson, Inc. 1983. Quantitative analysis of morphologic changes in the Platte River and miscellaneous water resource aspects of the proposed Prairie Bend-Twin Valley Project Omaha, Nebraska. Unpub. ms. 97pp.


U.S. Army Corps of Engineers. Omaha. 15 pp.
Thompson, B.C. 1981. Subspecific taxonomy of the least tern with emphasis on Texas specimens. Unpub. ms. 11 pp.
Author
The primary author of this final rule is Mr. John G. Sidle, Endangered Species Division (see ADDRESSES section).

List of Subjects in 50 CFR Part 17
Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

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**Species**

<table>
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<th>Common name</th>
<th>Scientific name</th>
<th>Historic range</th>
<th>Vertebrate population where endangered or threatened</th>
<th>Status</th>
<th>When listed</th>
<th>Critical habitat</th>
<th>Special rules</th>
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<td>Birds:</td>
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<tr>
<td>Tern, least</td>
<td>Sterna antillarum</td>
<td>U.S.A. (Atlantic and Gulf coasts, Mississippi River Basin, and CA); Greater Antilles, Bahamas, Mexico; winters Central America or northern South America</td>
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J. Craig Potter,
Acting Assistant Secretary for Fish and Wildlife and Parks.

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