

BEFORE THE SECRETARY OF THE INTERIOR

**PETITION TO LIST
THE WESTERN GULL-BILLED TERN
GELOCHELIDON NILOTICA VANROSSEMI
AS THREATENED OR ENDANGERED
UNDER THE ENDANGERED SPECIES ACT**



Gelochelidon nilotica vanrossemi © Kathy Molina



CENTER for BIOLOGICAL DIVERSITY

Because life is good.



June 3, 2009

TO: Mr. Ken Salazar
Secretary of the Interior
18th and "C" Street, N.W.
Washington, D.C. 20240

CC: Mr. Ren Lohofener
FWS Pacific Southwest Regional Director
2800 Cottage Way, W-2606
Sacramento, CA 95825

Dear Mr. Salazar:

Pursuant to Section 4(b) of the Endangered Species Act ("ESA"), 16 U.S.C. §1533(b), Section 553(3) of the Administrative Procedures Act, 5 U.S.C. § 553(e), and 50 C.F.R. §424.14(a), The Center for Biological Diversity, Brendan Cummings, and Tierra Curry hereby formally petition the Secretary of the Interior, through the United States Fish and Wildlife Service ("FWS", "the Service"), to list the Western Gull-billed Tern, *Gelochelidon nilotica vanrossemit*, (alternately *Sterna nilotica vanrossemit*), also known as Van Rossem's Gull-billed Tern, as a Threatened or Endangered subspecies and to designate critical habitat concurrent with listing.

U.S. Fish and Wildlife Service has jurisdiction over this petition. This petition sets in motion a specific process, placing definite response requirements on FWS. Specifically, FWS must issue an initial finding as to whether the petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted." 16 U.S.C. §1533(b)(3)(A). FWS must make this initial finding "[t]o the maximum extent practicable, within 90 days after receiving the petition." *Id.* Petitioners need not demonstrate that listing *is* warranted, rather, petitioners must only present information demonstrating that such listing *may* be warranted. While petitioners believe that the best available science demonstrates that listing Van Rossem's Gull-billed Tern as endangered *is* in fact warranted, there can be no reasonable dispute that the available information indicates that listing the species as either threatened or endangered *may* be warranted. As such, FWS must promptly make an initial finding on the petition and commence a status review as required by 16 U.S.C. § 1533(b)(3)(B).

PETITIONER:

The Center for Biological Diversity is a nonprofit conservation organization with 220,000 members and online activists dedicated to the protection of endangered species and wild places. <http://www.biologicaldiversity.org>

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I. EXECUTIVE SUMMARY

The Western Gull-billed Tern (*Gelochelidon nilotica vanrossemei*) (“Van Rossem’s Gull-billed Tern,” “the Tern,” “GBTE,” “GBT”) is a seabird with an extremely small population size and restricted distribution that faces a variety of threats to its continued existence. Range-wide there are only 495-1042 breeding pairs of this subspecies, only 154-263 pairs of which breed in the United States (FWS 2009). This bird has only two U.S. breeding sites and 12 breeding sites in Mexico (Palacios and Mellink 2007, González-Medina and Guevara-Medina 2008, FWS 2009). *Gelochelidon nilotica vanrossemei* is ranked as a Critically Imperiled subspecies by NatureServe (2009), meaning it is at very high risk of extinction. U.S. Fish and Wildlife Service (“FWS”, “the Service”) (2008) classify the Tern as a Bird of Conservation Concern based on small population size, limited distribution, declining population trends, and threats.

The Endangered Species Act states that a species shall be determined to be endangered or threatened based on any one of five factors (16 U.S.C. § 1533 (a)(1)). *Gelochelidon nilotica vanrossemei* is threatened by four of these factors and thus warrants listing as a threatened or endangered subspecies because it is imminently threatened with extinction due to loss and curtailment of habitat or range, predation, numerous other natural and human-caused factors, and inadequacy of existing regulatory mechanisms.

II. INTRODUCTION

The Western Gull-billed Tern (*Gelochelidon nilotica vanrossemei*) breeds on the Pacific Coast and in the lower Colorado River delta region of southern California and Mexico with only fourteen known breeding sites range-wide and a total global population size of only 495-1042 breeding pairs (Molina and Erwin 2006, FWS 2009). Molina et al. (2009) estimate total population size at 600-800 breeding pairs.

This Petition summarizes the natural history of the Western Gull-billed Tern, its population status, and the threats to this subspecies and its habitat. The Petition then clearly demonstrates that, in the context of the ESA’s five statutory listing factors, the U.S. Fish and Wildlife Service should list *Gelochelidon nilotica vanrossem* as Threatened or Endangered.

III. NATURAL HISTORY AND ECOLOGY

A. Taxonomy

The Gull-billed Tern, *Sterna* (alternately *Gelochelidon*; see Bent 1921) *nilotica*, of the family Laridae (gulls and terns), is divided into as many as six subspecies based on variation in size and plumage coloration (Parnell et al. 1995). Two subspecies are recognized in North America – *Gelochelidon nilotica aranea* (eastern subspecies) and *G. n. vanrossemei* (western subspecies). Of focus in this petition is *G. n. vanrossemei* (common name: Van Rossem’s Gull-billed Tern or Western Gull-billed Tern), described by Bancroft (1929) with a specimen obtained from Salton Sea, California in 1927. *G. n. vanrossemei* is the larger of the two North American subspecies, with larger eggs (Parnell et al. 1995). Its appearance is similar to that of *G. n. nilotica*, a subspecies of Gull-billed Tern that breeds locally throughout Europe, Africa, and Asia, but it has

a shorter tail and larger gonydeal angle (Parnell et al. 1995). *G. n. vanrossemei* breeds in limited, isolated parts of the eastern Pacific, with two known colonies located in southern California, and twelve in Mexico. The validity of its subspecific status has never been called into question and remains widely recognized.

B. Description

The Gull-billed Tern is a medium-sized (33-38 cm long), heavy-billed, black-capped seabird with wide wings that are pale gray above. It appears stocky and its body is white with a short, slightly forked tail. While standing its relatively long black legs are noticeable. Depending on plumage and age, coloration and markings may vary (i.e. adults in alternate plumage have a black cap, while basic-plumaged and immature birds lack a black cap but have a dark smudge behind the eye). The stout, all-black bill is distinctive (Parnell et al. 1995). This bird flies with graceful wing beats, and the most common call is a two-noted, slightly upslurred *kay-wek*, given singly or in series, with calls generally given in flight as the birds move between nesting and foraging areas or arrive at nests (Parnell et al. 1995). Gull-billed Terns walk, fly, and swim, and prey are usually pursued by flight. Terns usually alight 6-10 meters from their ground destination (i.e., nest, mate, or young), and then approach on foot.

Gull-billed Tern eggs are oval and are well-rounded at the smaller end with a smooth texture and no to slight gloss. The color is generally light buff and eggs usually lack heavily marked spots (Parnell et al. 1995).

C. Distribution

The Western Gull-billed Tern occurs in Southern California and in Western Mexico. There are only 14 known breeding sites for this subspecies. In the United States, *Gelochelidon nilotica vanrossemei* breeds at only two sites—San Diego Bay and the Salton Sea. In western Mexico this subspecies breeds in the Colorado River Delta in northeastern Baja California, and in coastal Sinaloa, Nayarit and Colima (Palacios and Mellink 2007). In Baja California on the Pacific coast, *G. n. vanrossemei* has infrequently bred at the Guerrero Negro saltworks in extreme northern Baja California Sur (Danemann and Carmona 2000, Palacios and Mellink 2007).

For wintering habitat the Tern generally migrates from California, though a few mid-winter records exist for the Salton Sea, the Mexicali Valley, and southern Baja California Sur in Ensenada de La Paz (in Molina et al. 2009). The Tern generally winters along the eastern Gulf of California from the Colorado River Delta south to Sinaloa, and southward along the Pacific Coast of Mexico to Nayarit, Colima, and Oaxaca (Howell and Webb 1995, Molina et al. 2009).

D. Habitat

Gull-billed Terns on the coast of North America generally nest on barrier islands or islands of dredged-material, on isolated levees or constructed islets in salt-extraction, wildlife, and/or aquacultural impoundments, or on islands and shell bars in abandoned causeways, in open marshes, on natural islets in shallow tidal and brackish lagoons, and in river deltas on sand and

shellbars (Parnell et al. 1995). They utilize a variety of nesting substrates including gravel, bare sand, silty clay soil, and crushed shells. Nesting locations usually lack vegetation or have low, sparse vegetation. In western Mexico they nest on mud flats with salt marsh vegetation or on low islands with cactus or mangrove (Molina et al. 2009). At inland sites, Terns nest in freshwater and saline lakes on constructed and natural islands, on impoundments, and on abandoned oil and gas causeways (Parnell et al. 1995, Molina and Garrett 2001, Molina 2004). At the Salton Sea, the Tern nests on eroded earthen levees and gravel and barnacle islets. At the Colorado River delta, *S. n. vanrossemi* nests on mudflats sparsely vegetated with salt grass (*Distichlis palmeri*). At the Guerrero Negro Saltworks, the birds were observed nesting in shallow hollows in the sand, on a sandy islet near a pump station (Danemann and Carmona 2000).

Colony sites are generally located near optimal foraging habitats, including shallow edges of marshes, bays, rivers, and exposed mudflats, the tidal edges of sandy beaches, agricultural fields and drains, impoundments (aquacultural, wildlife, and/or salt-extraction), sandy lake shores, and open shrublands (Molina et al. 2009).

During the non-breeding season, Gull-billed Terns use bays and estuaries, freshwater and salt marshes, canals, ponds, agricultural fields, drains, and salt and aquacultural impoundments (Molina et al. 2009).

E. Foraging

Gull-billed Terns are opportunistic foragers that feed on a wide variety of prey including insects, crabs, lizards, fish, small chicks, and other prey taken from the ground, air, and/or vegetation (Howell and Webb 1995, Terp and Pavelka 1999, FWS 2009, Molina et al. 2009). At the Salton Sea, Van Rossem's Gull-billed Terns forage along agricultural drains, alfalfa fields, recently burned fields, commercial fish ponds, shallow freshwater impoundments, mudflats, and over desert scrub (Parnell et al. 1995).

F. Breeding

Gull-billed Terns nest in small- to medium-sized, loosely aggregated colonies of generally less than 50 pairs (Parnell et al. 1995). They generally nest in association with other bird species, including black skimmers (*Rynchops niger niger*) and Caspian terns (*S. caspia*) (Parnell et al. 1995, Peresbarbosa and Mellink 2001). At the Salton Sea, Western Gull-billed Terns frequently form subcolonies of 10 to 30 pairs in freshwater impoundments on multiple individual islets (Molina et al. 2009). Gull-billed Tern nests are generally unlined small shallow scrapes with nest rims made up of bits of beach debris which can include vegetation, small fish bones, plastic pieces, pebbles, and feathers. Both the male and female construct and maintain the nest scrape and rim (Cramp 1985, Parnell et al. 1995). The distance between nests ranges from 0.3 m to 20 m (Gochfeld and Burger 1996). The minimum distance between post-breeding individuals may be less than 0.25 m, and fledglings may aggregate in loose creches 10-40 m from the nearest adult (Parnell et al. 1995).

Western Gull-billed Terns arrive in California in March and April and generally begin egg-laying by mid-April to early May (Molina and Garrett 2001). At the Salton Sea, nesting may occur as late as mid-July through early August and likely involves re-nesting attempts. Both the

male and female are active in incubation, which takes from 21-23 days from the laying of the first egg. Parental behavior during incubation is influenced by temperature (Parnell et al. 1995). The earliest hatching for Western Gull-billed Terns occurs in early May. Once the eggs have hatched, growth and mass and body dimensions are roughly linear between ages four days to 20 days, with asymptote reached between days 20 and 25. Although body mass appears similar between sexes, linear dimensions suggest males are slightly larger (Parnell et al. 1995). Young are fed by both parents, but most food is provided by the female. Soon after hatching, chicks may move away from the nest based on the presence of vegetation and disturbance levels around the nest site. Chicks younger than five days often leave the nest but remain nearby and are fed by the parents. Young terns are adept swimmers, and may swim away from disturbances for safety (Parnell et al. 1995). When temperatures are high, adults lead young broods to the water's edge. *S. n. vanrossemi* chicks require sources of water when temperatures exceed 39 degrees Celsius (Parnell et al. 1995).

Gull-billed Tern chicks take their first flights at 28-35 days of age. Both parents provision young for at least four weeks post-fledging (Molina et al. 2009). Young may remain dependent on parents into migration, as juveniles may not reach full feeding efficiency for some months after fledging (Parnell et al. 2005). By the middle of July, adults and young start leaving California colonies. Terns are scarce in California by the middle of August, and by early September most have migrated. A few records exist of one or two birds remaining at the Salton Sea into October (Patten et al. 2003) and at San Diego into November (McCaskie and Garrett 2005) (Molina et al. 2009).

G. Demography

Gull-billed Terns are monogamous and form long-term pair bonds, with pairs often migrating together. Average Gull-billed Tern clutch size ranges from two to three eggs, with four eggs considered exceptional (Bent 1921). In 1993 in California, mean clutch size was 2.2 eggs ($n = 140$) (Parnell et al. 1995). At San Diego Bay from 1999-2008, average clutch size ranged from 1.77 to 2.34 with only one nest being detected with four eggs (FWS 2009).

In Europe, Terns establish non-nesting territories at four years of age, with first breeding reported at a minimum of five years (Moller 1975). At the Salton Sea, a few birds are known to have bred at three years of age (Molina et al. 2009). It is unknown whether this is typical, as there are no available data on average age of first breeding in the United States. In terms of productivity, in California in 2000 and 2001, at the Salton Sea, there were 0.57 and 0.31 fledglings per pair, and at San Diego there were 1.23 and 0.95 fledglings per pair, respectively (Molina et al. 2009). Gull-billed Terns rear only one brood per season, but may re-nest if the first attempt fails (Parnell et al. 1995). Little information is available on life-time reproductive success. Overall, low annual reproductive success has been reported (Parnell et al. 1995, Molina et al. 2009). Likewise, little is known about longevity. Records exist for banded birds being re-detected at six years and ten years of age, with an exceptional longevity record in Europe of 15 years (Clapp et al. 1982, Rydzewski 1978, Molina et al. 2009).

IV. STATUS AND TRENDS

A. Population Status

There are no historical range-wide abundance estimates for Western Gull-billed Terns. The first range-wide abundance estimates, from 2003 and 2005, estimate 600-800 total pairs of Western Gull-billed Terns in North America (Molina et al. 2009). FWS (2009) reports 495-1042 range-wide pairs, with a narrower range-wide estimate of 530-810 pairs, 154-263 of which are in the United States, and 341-555 of which are in Mexico. From 1992 to 2005, the mean number of pairs in California was 144 ± 40 (SD, range 82-240 pairs) (Molina and Erwin 2006). In 2003 the first comprehensive surveys for *G. n. vanrossemei* in Western Mexico reported 376 nesting pairs distributed among seven colonies (Molina et al. 2009). In 2005, 526 breeding pairs were reported for Western Mexico (Palacios and Mellink 2007).

Range-wide trend information is unavailable, as there are no data on long-term trends in Mexico. The Tern declined at the Salton Sea from the late 1930s through the late 1970s, but has remained stable since the early 1990s (Molina et al. 2009). Gull-billed Terns colonized South San Diego Bay in 1986, and the San Diego population increased from 11-20 pairs in 1999 to 54 pairs in 2008. The San Diego population appears to have been stable at roughly 50 pairs since 2005 (FWS 2009). FWS (2009) reports “suspected population declines” for Western Gull-billed Terns, presumably in Mexico (p. 20).

B. Conservation Status

Gelochelidon nilotica vanrossemei is ranked as a Critically Imperiled subspecies (T1) by NatureServe (2009), meaning it is at very high risk of extinction. The State of California classifies the Western Gull-billed Tern as a Bird Species of Special Concern (Shuford and Gardali 2008). FWS (2008) classifies the Tern as a Bird of Conservation Concern based on small population size, limited distribution, declining population trends, and threats.

The Western Gull-billed Tern has very low population size, both range-wide and in the United States, and an “extremely small” breeding range (FWS 2009), with only two breeding sites in the United States, and 12 sites in Mexico (Palacios and Mellink 2007, González-Medina and Guevara-Medina 2008).

V. THE WESTERN GULL-BILLED TERN WARRANTS LISTING UNDER THE ESA

Under the ESA, 16 U.S.C. § 1533(a)(1), USFWS is required to list an organism for protection if it is in danger of extinction or threatened by possible extinction in all or a significant portion of its range. In making such a determination, USFWS must analyze the Tern’s status in light of five statutory listing factors:

- (A) the present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) overutilization for commercial, recreational, scientific, or educational purposes;
- (C) disease or predation;
- (D) the inadequacy of existing regulatory mechanisms;

(E) other natural or manmade factors affecting its continued existence.
16 U.S.C. § 1533(a)(1)(A)-(E); 50 C.F.R. § 424.11(c)(1) - (5).

Four of these factors threaten *Gelochelidon nilotica vanrossemei*. The Tern is threatened by habitat destruction and modification, predation, the inadequacy of existing regulatory mechanisms, and several other natural and anthropogenic factors including small population size, restricted breeding range, human disturbance, a population control project at one of only two U.S. breeding sites, military take, take for aquaculture, interspecific competition, poor water quality and contaminants, flooding, global climate change, and poor ocean conditions. Threats to the Tern in light of each of these factors are discussed in detail below. Due to its small population size, restricted range, and imminent threats, the Western Gull-billed Tern clearly warrants protection under the Endangered Species Act.

VI. THREATS

A. THE PRESENT OR THREATENED DESTRUCTION, MODIFICATION, OR CURTAILMENT OF HABITAT OR RANGE

The Western Gull-billed Tern is threatened by the destruction, modification, and curtailment of its habitat. Because the range of this subspecies is very restricted, consisting of only two sites in the United States and 12 sites in Mexico, the Tern is very vulnerable to habitat loss and degradation. The Tern is threatened by the loss of both nesting and foraging habitat.

The only coastal breeding location for Western Gull-billed Terns in the United States is San Diego Bay. The vast majority of breeding habitats for waterbirds along the southern California coast, including salt marshes, sandy beaches, and barrier islands, have either been lost to urban and recreational development or are highly disturbed (FWS 2006, FWS 2009). Coastal wetland habitats in San Diego Bay have been greatly reduced over time with 87 percent of intertidal salt marshes and 84 percent of intertidal and mudflats having been lost to development by 1990 (Macdonald 1990). Tern nesting and foraging habitat is extremely restricted in San Diego Bay. Little salt marsh and intertidal area remain in the northern portion of the Bay (Terp and Pavelka 1999). The Bay is surrounded to the north, east, and south by highly urbanized areas including San Diego, National City, Chula Vista, and Imperial Beach. Between the Bay and the ocean to the west there are residential and commercial developments in the City of Coronado and several Naval facilities (FWS 2009). The salt pond levees in San Diego Bay National Wildlife Refuge provide the only coastal Gull-billed Tern nesting habitat in the United States. Because this habitat occurs on a National Wildlife Refuge, it is mostly protected from development, though the Western Salt Company holds leases to continue salt processing at certain sites within the Refuge, which poses a potential threat to the Tern (FWS 2004a).

Gull-billed Tern foraging habitat in San Diego Bay includes Tijuana Slough National Wildlife Refuge, Border Field State Park, Silver Strand State Beach, and Naval Amphibious Base Coronado (Molina and Marschalek 2003). Foraging habitat at the State Park and State Beach are threatened by recreation (FWS 2004a). Habitats at the Naval base and to some extent at Tijuana Slough National Wildlife Refuge are threatened by military training activities (FWS 2004a).

The only other location in the United States which supports Western Gull-billed Tern breeding is the Salton Sea where the birds nest on artificial nesting areas and in a few natural isolated habitats (Molina 2007). Gull-billed Tern breeding habitat at the Salton Sea is threatened by declining lake levels due to diminishing freshwater and agricultural inflows and water transfers to urban areas (Molina 2004, Molina and Erwin 2006, Schwabe et al. 2008, Molina et al. 2009). As part of a mandate to adhere to its Colorado River water entitlement of 4.4 million acre-feet, the state of California must reduce its usage of Colorado River water by 0.8 million acre-feet, and agricultural cutbacks form a large part of this reduction (Schwabe et al. 2008). Nearly 85% of inflow into the Salton Sea results from agricultural drainage (Ibid.). Less applied irrigation water results in less inflow into the Salton Sea, which reduces habitat for Gull-billed Terns, exposes previously isolated islands of habitat to land predators, and increases wind-blown dust (Schwabe et al. 2008, Molina et al. 2009). Tern habitat is also threatened by water transfers. The Imperial Irrigation District has agreed to transfer 200,000 acre-feet of water to San Diego as part of the Quantification Settlement Agreement signed in 2003 (Cohen and Hyun 2006). In addition, Gull-billed Tern foraging habitat at the Salton Sea is threatened by degraded water quality and by reduced acreage of irrigated farmlands which provide important foraging areas (Shuford and Gardali 2008, FWS 2009). Prey populations that occupy the extensive drain network of the Salton Sea will be negatively affected by decreases in area of irrigated farmland. Tern nesting habitat at the Salton Sea is also threatened by the encroachment of invasive plants such as salt cedar (*Tamarisk* spp.) and common reed (*Arundo* and *Phragmites* spp.) (Molina et al. 2009).

Tern breeding habitat outside the United States is also very limited, consisting of 12 known sites in Mexico, which face a variety of threats including commercial aquacultural development, tourism-related development, construction of saltworks, and flooding (Molina and Erwin 2006, Palacios and Mellink 2007, González-Medina and Guevara-Medina 2008, FWS 2009). Palacios and Mellink (2007) state:

“The nesting population of this subspecies in Mexico is very small (less than 600 pairs), and its nesting habitat is threatened by coastal development. Only three out of the 14 known nesting sites are within Biosphere Reserves, and, therefore, officially protected. The two largest colonies, Cerro Prieto and Laguna Pericos, which concentrate 60% of the total breeding population are not protected, and lack management plans.”

Coastal development not only directly threatens Western Gull-billed Tern breeding habitat, but also reduces the availability of foraging habitat. Because Gull-billed Terns are opportunistic foragers that utilize a variety of prey, they are threatened by loss of foraging habitat in both wetland and upland areas. Molina and Erwin (2006) list the development or modification of upland foraging habitats near breeding areas as one of the main threats to Gull-billed Terns in North America.

Large areas of wetlands, mudflats, and natural estuarine habitats in northwestern Mexico have recently been converted to commercial aquacultural operations, which reduces and degrades Tern foraging habitat (Molina et al. 2009). In Sonora, wetland conversion to aquaculture has increased by 3000 percent in the last 20 years, and wetland loss for aquaculture is also increasing in Sinaloa (Instituto Tecnológico de Sonora 2004, Molina et al. 2009).

Estuarine habitat in Mexico is also being lost to development for tourism, such as the construction of marinas (Molina et al. 2009). In Colima, large-scale tourist development in and around Manzanillo potentially threatens the ecological integrity of Tern habitat at Laguna Cuyutlan (Molina et al. 2009). Tern habitat in Mexico is also threatened by development for saltworks (Ibid.).

Tern breeding habitat is also threatened by beach erosion, disruptions to estuarine functions, flooding, and fluctuating water levels due to impoundments (Molina and Erwin 2006, Molina et al. 2009). In Baja California, upstream dams and diversions have altered the sediment load reaching Isla Montague, which has increased erosion and negatively affected Tern habitat (Alvarez-Borrego 2001). At Cerro Prieto in Baja California, large variations in the water levels from impoundments negatively impact Tern breeding success due to flooding or exposure of previously isolated islands to land predators (Molina et al. 2009). At Isla Montague, non-storm related tidal inundations regularly cause nest or complete colony failure (Peresbarbosa and Mellink 2001, Molina and Erwin 2006). In Sinaloa, nesting success on Isla El Rancho is generally low due to tidal inundation (X. Vega, pers. comm. in Molina et al. 2009).

Global climate change also threatens Western Gull-billed Tern habitat. Sea-level rise is expected to reduce coastal nesting habitats for waterbirds such as the Tern and to increase flooding and storm-related habitat loss and modification (Erwin et al. 2006, Field et al. 2007). The fourth assessment report of the Intergovernmental Panel on Climate Change states with “very high confidence” that coastal habitats will be increasingly stressed by climate change impacts including progressive inundation, storm-surge flooding, shoreline erosion, and change in vegetation, with increasingly severe impacts (Field et al. 2007).

In sum, Western Gull-billed Tern breeding and foraging habitat is threatened by development, diminishing water levels, decreased water quality, the encroachment of invasive vegetation, global climate change, and altered hydrologic regimes and estuarine function.

B. PREDATION AND DISEASE

Predation is a threat to the Western Gull-billed Tern throughout its range. Molina and Erwin (2006) list predation as one of the main threats to Gull-billed Terns in North America. Many Western Gull-billed Tern colonies are small, and smaller colonies may be less resistant or resilient to predation (Sears 1979, Wittenberger and Hunt 1985). Predation can have population-level impacts on Gull-billed Terns, as has been documented on the Atlantic Coast (Erwin et al. 2001, 2003). Terp and Pavelka (1999) state that predation has the potential to devastate colonies, and that a single predation event can have multi-year population-level effects.

Gull-billed Terns have many predators in North America, including raccoons (*Procyon lotor*), coyotes (*Canis latrans*), feral dogs (*Canis sp.*) and cats (*Felis sp.*), rats (*Rattus sp.*), Peregrine Falcons (*Falco peregrinus*), Laughing (*Larus atricilla*), California (*L. californicus*), Herring (*L. argentatus*) and Great Black-backed (*L. marinus*) gulls, Burrowing (*Athene cunicularia*) and Great Horned Owls (*Bubo virginianus*), and ghost crabs (*Ocypode quadrata*) (Blus and Stafford 1980, Parnell et al. 1995, Eyley et al. 1999, O’Connell and Beck 2003). Potential predators of eggs or chicks include red foxes (*Vulpes vulpes*), skunks (*Spilogale putorius* and *Mephitis*

mephitis), ground squirrels (*Spermophilus* spp.), Western (*L. occidentalis*), Yellow-footed (*L. livens*) and Heermann's (*L. heermanni*) gulls, large herons (Ardeidae), American Kestrels (*Falco sparverius*), Common Ravens (*Corvus corax*), and American Crows (*Corvus brachyrhynchos*) (Parnell et al. 1995, Gonzalez-Bernal et al. 2003, in Molina et al. 2009).

Parnell et al. (1995) list predators of Western Gull-billed Terns as raccoons, coyotes, skunks, red foxes, feral dogs and cats, herons, egrets, gulls, and falcons, stating that predation can cause complete colony desertion.

At the Salton Sea, California Gulls (*Larus californicus*) and Laughing Gulls (*L. atricilla*) have negatively affected Tern reproductive success. California Gull occupation has been documented to cause Terns to stop using certain nest sites (Molina 2004). Molina (1998) states that predation by and competition from gulls poses a significant threat to the viability of Tern colonies at the Salton Sea. Predation threats at the Salton Sea are magnified by decreasing water levels due to water transfers and decreased water input from agricultural runoff, which exposes nesting islands to land predators such as raccoons and coyotes (Molina et al. 2009). Receding lake levels and increased accessibility to mammalian predators led to complete breeding failure at the Morton Bay colony in the Salton Sea in 2004 and 2005 (Molina et al. 2009).

At San Diego Bay National Wildlife Refuge, Terns nest on easily accessible earthen levees, and face a variety of predators including feral dogs and cats and invasive rats (Molina et al. 2009). Black Skimmers have damaged Gull-billed Tern nests in San Diego and are suspected of having inflicting lethal lacerations to Gull-billed Tern chicks (R. Patton pers. comm. in Molina et al. 2009). In 2004, Tern nests at the Refuge were documented to have been damaged by Double-crested Cormorants, Elegant Terns, Black Skimmers, and gulls, and chicks were killed by Peregrine Falcons, Caspian Terns, and potentially owls (FWS 2004b).

FWS (2009) states that predation from coyotes, Northern Harriers, and Peregrine Falcons is one of the primary population limiting factors for Terns at San Diego Bay. The Wildlife Refuge engages in active predator control, without which Tern reproduction could be entirely precluded due to the high level of impact predation can have on reproductive success. For example, in terms of coyote predation, a biologist at the refuge states:

“Coyote predation pressure has been intense making it necessary to remove several that were actively hunting the dikes. It is my strong conviction that we could have witnessed a near complete failure of the nesting Elegants, Caspians, Gull-billed, and Skimmers had we not been monitoring predation closely . . . We lost maybe 1000 elegant, royal, gull-billed, Caspian, and skimmer nests over what we think was probably only a two night period to coyotes. One coyote that was removed from the colony was necropsied and had over 35 tern chicks in its stomach” (Collins July 1, 1999).

Similarly, avian predators can have large effects on reproductive success. For instance, a single kestrel was documented taking 57 California Least Tern and Western Snowy Plover chicks in a six day period (Collins June 28, 2002). Other predators which have been removed from San Diego Bay National Wildlife Refuge include Norway rats, opossums, ravens, Western Gulls, cats, crows, and ground squirrels (Bonesteel 2004).

Predation threatens Gull-billed Terns throughout their range. Active predator management at San Diego mitigates the threat of predation to Terns at this site. If, however, predator control efforts were to be discontinued due to funding cuts or management decisions, then Tern reproduction could fail at this site.

At Isla Montague and Cerro Prieto, Terns are threatened from predation by mammals, such as coyotes and raccoons, and threats are magnified by fluctuating water levels which increase access of land predators to nesting islands (Palacios and Mellink 2007). At Isla El Rancho, Bahía Santa María, Terns are threatened by Laughing Gull predation (Palacios and Mellink 2007). At Estero Teacapán, Terns are threatened by dogs (Ibid.). In Sinaloa, Terns are threatened by predation from Peregrine Falcons (Gonzalez-Medina and Guevara-Medina 2008).

In addition to predation, Terns are threatened by nest trampling. At the Salton Sea, trampling by Brown (*Pelecanus occidentalis*) and American White (*P. erythrorhynchos*) Pelicans have caused high rates of nest loss and colony abandonment (Molina et al. 2009) In Colima, Palacios and Mellink (2007) observed squashed Tern eggs and embryos near crocodile (*Crocodrilus acutus*) tracks.

Terns are also threatened by humans collecting eggs and/or chicks. Palacios and Mellink (2007) report that bird eggs were formerly collected at Isla Montague and that this activity could resume, even though it is illegal. In Sinaloa, the eggs of waterbird species on Isla El Rancho have been collected for human consumption, and the chicks of some species have been taken for use in crab traps as bait (Gonzalez-Bernal et al. 2003, Munoz del Viejo et al. 2004, Molina et al. 2009).

Other threats magnify the risk Terns face from predation. Site disturbance from research and other activities can increase predation risk (Palacios and Mellink 2007, Molina et al. 2009). Loss of coastal habitat due to global climate change will force terns and waterbirds into smaller nesting areas, which has the potential to increase predation effects (Erwin et al. 2006).

DISEASE

There is little to no existing literature on the prevalence of disease in Western Gull-billed Terns. Emerging diseases such as West Nile Virus potentially threaten the Tern. Global climate change will exacerbate the potential threat posed by disease by shifting the range of disease carrying organisms, and by forcing waterbirds into smaller patches of habitat as shoreline is lost, which increases the risk of disease transmission due to crowding (Erwin et al. 2006).

Pesticides and contaminants have been detected in Tern eggs at both California sites (discussed below), which could potentially increase susceptibility to disease. Thousands of dead birds were encountered at the Salton Sea from 1996-1998, the cause of mortality of which is unknown, but could possibly be related to environmental contamination (FWS 2004a). In 2004, thousands of dead and ill birds of many species were detected in coastal Southern California, the mortality of which is thought to be linked to altered prey base, shifting climate, and/or toxic algal and dinoflagellate blooms (Collins July 14, 2004).

C. OTHER NATURAL OR ANTHROPOGENIC FACTORS

The Western Gull-billed Tern is threatened by several other natural or anthropogenic factors including small population size, disturbance, intentional killing, population control efforts, interspecific competition, pesticides and contaminants, poor ocean and environmental conditions, flooding, global climate change, and introduced species.

1. SMALL POPULATION SIZE

The Western Gull-billed Tern is particularly vulnerable to extinction because of its low population size. There are only 154-263 pairs of this subspecies in the United States, and there only 495-1042 pairs globally (FWS 2009). Molina and Erwin (2006) state:

“[E]ven in the absence of recent precipitous declines or imminent population threats, the conservation of North American Gull-billed Terns warrants concern by virtue of their low population size. *Vanrossemi* is, in fact, one of the least numerous larid taxa in the world (Gochfeld and Burger 1996)” (p. 285).

Small population size and low numbers and sizes of breeding colonies magnifies the vulnerability of the Tern to other threats including catastrophic habitat change, human disturbances, flooding events, predation, and other natural and anthropogenic threats (Molina et al. 2009).

2. DISTURBANCE

The Western Gull-billed Tern is threatened by disturbance throughout its range (Molina et al. 2009). Molina and Erwin (2006) identify colony disturbance as one of the primary threats to Gull-billed Tern populations in North America, and Parnell et al. (1995) list disturbance as a primary conservation concern. Gull-billed Terns appear to be less tolerant of disturbance than other larids (Molina 1993; Parnell et al. 1995). Western Gull-billed Terns occur primarily in small colonies, and smaller colonies may be less resistant or resilient to human disturbances (Sears 1979, Wittenberger and Hunt 1985, Molina et al. 2009). Parnell et al. (1995) report that disturbance may one of the primary causes of nesting mortality, and that it can cause entire colony sites to be shifted. Terp and Pavelka (1999) state that survival and recruitment of individuals into the breeding population can be negatively affected by a single disturbance event, which could impact the population for years to come, and that chronic disturbance may completely preclude breeding.

Disturbance to nesting colonies by humans or other animals magnifies the risk of mortality for Tern eggs and chicks by exposing them to opportunistic predators, particularly gulls, and to lethal temperatures (Palacios and Mellink 2007, Molina et al. 2009). Because Tern chicks are highly precocial, if disturbed they may move away from the nest where they may be more exposed to predators and weather (Parnell et al. 1995), or could potentially drown or get stuck in muddy substrate (Molina et al. 2009). Eggs and chicks can also be directly crushed underfoot by humans or livestock.

Public and Unauthorized Users

The Western Gull-billed Tern is threatened throughout its range by intrusion of public and unauthorized users into its nesting and foraging habitat.

FWS (2009) states that human disturbance by recreationists, researchers, and others poses a threat to both California colonies of Gull-billed Tern. At the Salton Sea, lake level declines threaten to expose previously isolated patches of island habitat to human disturbance (Molina 2004). In San Diego Bay, Terns are exposed to a variety of disturbances. For example, Terns forage at Tijuana Slough, where disturbances have been attributed to illegal immigrants, bikers, overnight parties, and a “cross border concert for peace” (Collins June 28, 2002).

The Tern also faces a variety of disturbance pressures in Mexico. In Sinaloa, Gull-billed Tern breeding attempts have been disturbed by “inappropriately timed educational tours” (Molina et al. 2009). At Estero Teacapán, tourists have disturbed nesting colonies (Palacios and Mellink 2007). At Isla Montague, disturbance had been reported due to researchers and drug smugglers (Palacios and Mellink 2007).

Military and INS Activities

The San Diego population of Gull-billed Terns is potentially threatened by disturbance from military and Immigration and Naturalization Service activities. Communications between National Wildlife Refuge staff report that several California Least Tern nests were nearly stepped on by INS agents or illegal immigrants (Collins June 28, 2002). If military training activities are conducted at Tijuana Slough NWR (FWS 2004a), then foraging Gull-billed Terns could be disturbed. Terns are also known to forage at Naval Base Coronado, where extensive training activities occur.

Research

While research is essential for the study and protection of seabird colonies, research activities threaten the Gull-billed Tern. FWS (2009) states that disturbance due to research threatens Tern colonies in California. Palacios and Mellink (2007) list disturbance from researchers as a threat to Tern colonies at Isla Montague, and report that disturbance from researchers apparently caused the Tern colony at Laguna Ojo de Liebre in Baja California Sur to be deserted and relocated in 1996 (Danemann and Carmona 2000). Research can also result in unintended mortality. For example, in 2004 a staff member at San Diego Bay NWR accidentally stepped on two California Least Tern eggs during monitoring activities at Tijuana Slough (Collins July 8, 2004).

Livestock and Dogs

Gull-billed Terns are threatened by disturbance from livestock. Palacios and Mellink (2007) report cattle tracks at the Tern colony in Estero Teacapán. San Diego Refuge staff report disturbance from dogs at Tijuana Slough, and report having found a trampled Snowy Plover chick in a horse track (Collins June 28, 2002). Gonzalez-Medina and Guevara-Medina (2008)

report that cattle cross the saltflat where Terns breed in Central Sinaloa, which often disturbs nesting birds. Palacios and Mellink (2007) report dog tracks at the Tern colony at Estero Teacapán.

Fishing

Gull-billed Tern habitat in Mexico is threatened by disturbance from fishing. Estero Teacapán in Nayarit receives high levels of human disturbance from fishing activities (Molina et al. 2009). This colony site is used as a fish cleaning site, and has a constructed shade area (Palacios and Mellink 2007). Palacios and Mellink (2007) report that disturbance is also a problem at Laguna Las Garzas which is used as a fishing camp, and at Isla Montague, where clams are gathered intensively on mudflats near nesting areas (Palacios and Mellink 2007).

3. INTENTIONAL KILLING OF ADULTS AND POPULATION CONTROL MEASURES

In the United States, the Western Gull-billed Tern is threatened by the intentional killing of adults by the U.S. military in San Diego Bay to prevent aircraft collisions (Molina and Erwin 2006, Molina et al. 2009). The Tern is also threatened by the potential future killing of adults by the U.S. Navy and/or by FWS as part of a perceived need by some biologists to attempt to reduce predation of Gull-billed Terns on California Least Terns and Western Snowy Plovers in San Diego Bay. In Mexico, the Tern is threatened by intentional killing of adults at aquacultural operations (Molina and Erwin 2006, Molina et al. 2009).

U.S. Navy's Bird Airstrike Hazard (BASH) Program

In San Diego Bay, the Gull-billed Tern is threatened by intentional killing by the U.S. Navy to prevent collisions with aircraft at the Naval Base Coronado in San Diego Bay and Naval Outlying Landing Field in Imperial Beach. In 2004 two foraging adult Gull-billed Terns were shot at Coronado because they were believed to pose a threat to naval aircraft (Molina and Erwin 2006). In 2007, an adult was shot at the Naval Outlying Landing Field (Molina et al. 2009).

Because the Navy holds a depredation permit for the BASH program under the Migratory Bird Treaty Act, Terns are completely vulnerable to being shot, and the decision to kill them is at the discretion of Navy personnel. Personal communications from a Navy biologist to FWS staff following the shooting in 2004 state:

“Nothing in the Navy’s depredation permit prohibits us from removing Gull-billed Terns that are a threat to naval aviators and/or aircraft. This was confirmed by Ms. Tami Tate-Hall of the USFWS Migratory Bird Office prior to the removal of the individuals. We also confirmed this interpretation with USFWS Law Enforcement, Mr. John Brooks” (T. Conkle May 12, 2004 email to S. Buck et al.).

and:

“Although there is serious concern about the status of gull-billed tern, there is nothing that prohibits the removal of this species as defined in our depredation permit for the Navy’s BASH program” (T. Conkle May 12, 2004 email to R. Patton et al.).

Both FWS and the California Dept. of Fish and Game have expressed concern about the Navy’s lethal removal of Terns, noting that the BASH program places the entire San Diego Gull-billed Tern population at risk. The FWS biologist at San Diego NWR stated:

“If the recent removal of foraging adult GBTEs (Gull-billed Terns) as part of a DOD (Dept. of Defense) BASH program on North Island Naval Air Station is viewed as a precedent setting event, and if the rest of the GBTEs who forage in the vicinity of that and other DOD facilities in the area are allowed to be removed as part of the BASH program, then in my opinion the entire nesting population of the GBTE in the San Diego Coastal Refuges (and therefore in Coastal Southern California) will be at risk because at one time or another during the nesting season, probably every volant individual in the population will likely be present on or near one of the airfields. This is especially the case for the naval air field near Tijuana Estuary (OLFIB) (Outlying Landing Field Imperial Beach) which is used primarily for helicopter training” (Collins May 12, 2004).

The California Dept. of Fish and Game questioned the science behind the determination that the Gull-billed Terns which were shot in 2004 were actually problematic, as they were unbanded, and expressed concerns about the resultant loss of productivity for Terns in San Diego Bay, stating:

“The two Western Gull-billed Terns that were taken were unmarked, unbanded, and otherwise indistinguishable from other members of the South San Diego Bay core population. We wonder how the Navy determined that these two individuals were the same that had visited the North Island NAS during the previous week and were perceived as “problem” individuals. That these birds could have been members of two different breeding pairs is quite possible. Therefore, this action may result in the failure of two nesting efforts, with resultant significant loss of productivity” (L. Comrack May 14, 2004).

Because the San Diego Bay Gull-billed Tern population is very small, consisting of only 54 breeding pairs, the killing of even a few adults could negatively impact the population, and contribute to the eradication of an already critically imperiled subspecies.

Lethal Federal Predator Control Plans

In San Diego Bay both the Navy and FWS have considered killing adult Gull-billed Terns in an effort to reduce predation pressures on Endangered California Least Terns (*Sterna antillarum browni*) and Western Snowy Plovers (*Charadrius alexandrinus nivosus*). From 1992-1995 at least seven Western Gull-billed Terns were killed by USDA Animal Damage Control personnel in an effort to protect California Least Terns (R. Patton , pers. comm., June 9, 2004, cited in FWS 2004a).

In 2005, for Naval Base Coronado, the Navy requested “the ability to *lethally remove any gull-billed tern that is seen loafing* on our tern (California Least) colony for a three year period or until a comprehensive management strategy is developed and implemented by the USFWS” (Conkle February 9, 2005, emphasis added).

FWS denied the Navy’s request to lethally remove Terns, citing the following reasons:

“The Gull-billed Tern currently appears on the U.S. Fish and Wildlife Service Birds of Conservation Concern list at the National, Regional, and local scales. . . the western population of the Gull-billed Tern is significantly less abundant than either the Snowy Plover or California Least Tern, numbering fewer than 600 pairs. The San Diego colony (approximately 40 pairs) is one of only two known nesting sites located in the United States and represents approximately 7% of all western Gull-billed Terns” (FWS March 14, 2005).

Although FWS denied the Navy’s request to lethally remove Terns, there is no guarantee that future requests would be denied. Moreover, FWS has itself repeatedly discussed the possibility of killing adult Terns at San Diego Bay as a predator management strategy.

Without Endangered Species Act protection, the fate of the Gull-billed Terns in San Diego Bay lies in the hands of Refuge staff, who have considered Tern eradication and control methods for the past decade. In an internal communication from 1999, the Refuge Manager states, “I need to consider whether we should allow gull-billed terns to continue to nest at the Salt Works” (D. Rundle, August 1, 1999). In 2002, the Deputy Project Leader at the Refuge stated that the decision to remove Terns is at the discretion of Refuge staff: “We do have the authority to direct the removal of GBT if we choose” (S. Buck, July 1, 2002.).

As such, the possibility of lethal population control measures is an ongoing threat to the Tern, as some FWS staff in Southern California appear to be biased against Gull-billed Terns, and have blatantly expressed a desire to not have Terns nesting in San Diego Bay. In a 2002 email, the Refuge biologist wrote:

“I’m reminded of something Clark Winchell (FWS staff at Ecological Services Carlsbad Field Office) told me several years ago when the GBT/CLT (Gull-billed Tern/California Least Tern) discussion was first coming to light, he said to ‘get rid of those F*#@rs now’ and that we were making a big mistake letting the GBT nest in the bay” (Collins June 15, 2004).

Similarly, in a 2004 email, the Refuge biologist stated:

“I am damn tired of watching GBTEs eat nearly all of the tern and plover chicks . . . I think that we should have an active predator control plan that kills every GBTE that enters San Diego Bay” (Collins June 15, 2004, emphasis added).

These statements from the FWS staff charged with protecting Gull-billed Terns in San Diego Bay indicate that the potential of lethal control efforts remains a looming threat for the Tern.

Other Population Control Efforts

The Western Gull-billed Tern is imminently threatened by population control efforts at San Diego Bay National Wildlife Refuge. On April 22, 2009, the San Diego National Wildlife Refuge Complex released a Draft Environmental Assessment for a Western Gull-billed Tern population management project that would addle 43% of the Gull-billed Tern egg clutches laid in San Diego Bay in 2009 in an effort to reduce predation pressures on Endangered California Least Tern and Snowy Plover chicks. The public comment period for this proposal closed on May 22, 2009 and a Final Agency Action could be issued at any time.

The decision to intentionally reduce the Gull-Billed Tern population at San Diego Bay appears to be rooted in the expressed bias of some refuge staff against Gull-billed Terns (see quotations in above section), and also appears to have been issued against scientific consensus, which holds that Gull-billed Terns do not pose a significant range-wide threat to California Least Terns or Snowy Plovers, and that Gull-billed Terns themselves merit protection.

Concerning the imperiled status of the Gull-billed Tern, FWS (2005) acknowledges that the Gull-billed Tern is more imperiled than the Least Tern or Snowy Plover, stating, “Biologically, the gull-bill tern appears to be the most in peril” (FWS Feb. 22 and Feb. 24, 2005).

Concerning the impact of Gull-billed Terns on the other listed avian species, Molina and Marschalek (2003) state:

“While gull-billed terns prey on chicks occasionally, and on eggs less frequently, our data suggest that the impact of their predation on populations of least terns and snowy plovers is likely minimal, as they are probably capable of preying on only the youngest age classes for which the probability of survival is least.”

An internal Service communication from 2002 states that scientific consensus is that available data do not indicate that Gull-billed Terns pose a significant range-wide threat to California Least Terns:

“There was a conference call on Tuesday between us (San Diego Refuge staff), ES (Ecological Services), and Region (FWS Region 1 and Migratory Birds) . . . After reviewing the ‘data’ on population status of CLT (California Least Tern) and GBT (Gull-billed Tern) the consensus was that the CLT population can withstand take by GBT” (S. Buck, July 1, 2002).

Concerning scientific consensus on the need to protect Western Gull-billed Terns, an internal Service communication from 2004 states:

“There is a large group of biologists, Federal, State, and private, involved in the decision to not take GBT (Gull-billed Terns) . . . there seems to be a majority agreement to make every effort to protect GBT just as much as WSP (Western Snowy Plovers) and CLT (California Least Terns)” (Stewart June 24, 2004).

Similarly, a communication from 2005 reiterates the need to protect Gull-billed Terns:

“Because of the rarity of GBTE, and the potential for the subspecies to be listed due to limited and declining populations, the Service is reluctant to allow depredation permits to be granted to prevent natural predation on western snowy plovers and California least terns . . . Biologically, not enough information is known to make an informed decision. With the population in a declining and/or small population paradigm, treating the GBTEs as a listed entity is biologically supported . . . At this time we are unable to provide managers with a preferred alternative” . . . Alternative 2 (including the taking of GBTE eggs) would “induce mortality of GBTE when biologists are concerned with the low global population” (FWS, Feb. 22, 2005).

The decision to intentionally preclude the reproduction of 43 percent of egg clutches at one of only two U.S. breeding sites for Western Gull-billed Tern obviously poses an unacceptable threat to this critically imperiled subspecies and substantiates the need for Endangered Species Act protection.

For more discussion of the threat this proposal poses to Gull-billed Terns, see Appendix A: Comments Submitted by The Center for Biological Diversity on the Draft Environmental Assessment for the 2009 Western Gull-billed Tern (*Gelochelidon nilotica vanrossemi*) Population Management Project in San Diego Bay (San Diego County, California).

Aquacultural Operations in Mexico

In Mexico, Gull-billed Terns forage at commercial aquacultural facilities including shrimp production sites. The lethal control of depredating birds is prohibited under Mexican law, but the practice of killing depredating birds “appears to be widespread during impoundment draw-down and shrimp harvesting phases” (Molina and Erwin 2006). The killing of adult Terns at shrimp facilities may have adverse affects on Gull-billed Tern populations (Molina et al. 2009). In Sinaloa, where Gull-billed Terns are relatively abundant at shrimp facilities near Mazatlan, the lethal control of predatory birds, including Terns, “occurs widely, ” and could have “significant population-level ramifications” (Molina et al. 2009). Lethal removal of Terns may also be practiced at commercial aquacultural facilities in Nayarit and in Sonora (Molina et al. 2009). Lethal control of Gull-billed Terns at a shrimp farm near El Golfo de Santa was observed by K. Molina in 2002 (in Molina et al. 2009).

4. INTERSPECIFIC COMPETITION

Gull-billed Tern reproductive success is potentially limited by interspecific competition with other waterbirds. Tern nesting success is known to have been reduced by competition with Caspian Terns (*Hydroprogne caspia*), Black Skimmers, and American White and California Brown Pelicans (Molina 2007, Molina et al. 2009).

Habitat loss and degradation will magnify interspecific competition between nesting waterbirds. As climate change erodes coastal nesting habitats (Field et al. 2007), waterbirds will be forced into smaller habitat patches (Erwin et al. 2006) which will intensify the effects of interspecific competition.

5. PESTICIDES AND CONTAMINANTS

The Western Gull-billed Tern is threatened by exposure to pesticides, heavy metals, and other contaminants because it forages in flooded agricultural habitats and coastal wetlands. Studies on contaminant levels in Terns are limited, but indicate that DDE, DDT, and selenium contamination are of concern. Pesticides and contaminants have been detected at both Tern sites in California (Molina and Erwin 2006) and are suspected in Mexico (Gonzalez-Bernal 2003, Palacios and Mellink 2007).

Six Tern eggs collected at the Salton Sea in 1991 revealed a mean concentration of p, p'-DDE of 1.32 ppm (wet wt., range = 0.54 to 2.8 ppm) and mean selenium concentration of 4.10 ppm (dry wt., range = 3.4 to 5.3) (Audet et al. 1997), which is below the threshold impairment level known for some species, but above the threshold level of concern (Setmire et al. 1993, Molina and Erwin 2006).

One Tern egg collected in San Diego Bay revealed elevated DDT concentration of 2.9 ppm (wet wt.), which is approaching the levels for severe effects in sensitive species (Blus 1984), but is below the threshold associated with reproductive impairment in other species (FWS 1995). PCBs (1.8 ppm wet wt.), arsenic, cadmium, chromium, copper, mercury, nickel, and zinc were also detected in the San Diego egg, but below threshold levels (Molina et al. 2009).

Palacios and Mellink (2007) report that pesticides are a potential threat to Terns at Isla Montague, which receives pesticide-laden agricultural runoff from the Colorado River. Pesticides are also a concern in Sinaloa, where agricultural wastewater enters the Bahia Santa Maria system (Gonzalez-Bernal 2003).

Thousands of dead birds, including three Western Gull-billed Terns, were encountered at the Salton Sea from 1996-1998, the cause of mortality of which is unknown, but could possibly be related to environmental contamination (FWS 2004a).

6. POOR OCEAN AND ENVIRONMENTAL CONDITIONS

Western Gull-billed Terns are threatened by poor ocean and environmental conditions including fluctuations in prey base due to natural or anthropogenically-induced climate shifts and toxic blooms. Terp and Pavelka (1999) report that Terns are potentially at risk from shifts in population abundance of prey species due to changes in regional climate conditions. Erwin et al. (2006) report that global climate change will negatively affect estuarine productivity and reduce food availability for waterbirds.

In 2004 Southern California experienced a widespread wildlife mortality event in which numerous dead and ill birds were encountered at various locations, the cause of which is uncertain, but could include toxic blooms or altered prey base due to climate shifts:

“We are seeing what seem to be unusually high numbers of sick birds from a variety of foraging guilds. . . the fish available at different tern nesting sites seem to be more variable from site to site than may be typical . . . we are likely seeing algal or

dinoflagellate blooms . . . Also, water temps have been unusually warm here” (Collins July 14, 2004).

Illness and mortality during the event included “hundreds and hundreds” of dead California Least Tern chicks at the Santa Margarita River, some with leg deformities, apparent neurological problems, and/or low birth weights, “lots of” dead Black Skimmer chicks in south San Diego Bay, “lots of ‘paralyzed’ or dead” Western Gulls, “an alarming number” of sick or dying Western Snowy Plovers, dead and emaciated Brown Pelicans, and dead Western Sandpipers (Collins July 14, 2004).

7. FLOODING

Western Gull-billed Terns are threatened by natural flooding, flooding caused by altered hydrologic regimes, and flooding due to increased frequency of storm events due to global climate change (Erwin et al. 2006, Molina and Erwin 2006, Palacios and Mellink 2007, Gonzalez-Medina and Guevara-Medina 2008, Molina et al. 2009).

In western Mexico the Tern nests primarily on low-lying coastal islands where reproductive success is frequently low due to tidal or storm-related flooding (Molina and Erwin 2006). In the northern Gulf of California at Isla Montague and at the Isla El Rancho colony in Sinaloa, no Terns were fledged in 2004 or 2005 due to tidal flooding. Pallacios and Mellink (2007) report that inundation of nests occurs regularly at Isla Montague, and that at Isla Rancho, the greatest impact to Terns is tidal flooding. Upstream dams and diversions in Baja California have altered the sediment load reaching Isla Montague, which has increased the negative effects of flooding on Tern habitat due to erosion (Alvarez-Borrego 2001). Gonzalez-Medina and Guevara-Medina (2008) report that the Tern colony at Bahia Ceuta is flooded both by high spring tides and by irrigation spillage from nearby agricultural fields. At Cerro Prieto in Baja California, large variations in the water levels from impoundments have negatively impacted Tern breeding success (Molina et al. 2009). Erwin et al. (2006) report that flooding of coastal waterbird habitat is expected to increase due to accelerating sea-level rise and increased storm frequency resulting from global climate change.

8. GLOBAL CLIMATE CHANGE

Global climate change threatens Western Gull-billed Terns due to habitat loss and resultant crowding effects, increased storm frequency, and decreased prey availability. Rising sea levels will decrease the availability of coastal habitats for wildlife such as waterbirds (Field et al. 2007). As birds are forced into smaller areas, the negative effects of predation, disease, and interspecific competition will be magnified (Erwin et al. 2006). Climate change will also increase the frequency and intensity of storms and floods (Field et al. 2007). Fluctuating ocean conditions and temperatures will negatively affect the prey base which forms part of the Gull-billed Tern’s diet (Erwin et al. 2006, Field et al. 2007).

9. INTRODUCED SPECIES

Introduced species threaten the Gull-billed Tern due to predation and habitat encroachment (Molina et al. 2009). Several non-native mammal species prey on Tern eggs and hatchlings including invasive rats (Ibid.). At the Salton Sea, Tern habitat is threat by encroachment of non-native plants such as salt cedar (*Tamarisk* spp.) and common reed (*Arundo* and *Phragmites* spp.) (Molina et al. 2009).

D. THE INADEQUACY OF EXISTING REGULATORY MECHANISMS

There are no existing regulatory mechanisms that adequately protect the Western Gull-billed Tern in the United States or in Mexico.

United States

Migratory Bird Treaty Act

The Gull-billed Tern is federally protected by the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755). The MBTA is the primary federal law which implements international treaties mandating the conservation of migratory birds jointly with Russia, Great Britain, Japan, and Mexico (16 U.S.C. 703-712, as amended).

The MBTA is not adequate to protect the Gull-billed Tern because of the issuance of depredation permits. The U.S. Navy is authorized to kill Gull-billed Terns under a depredation permit issued for the Bird Aircraft Strike Hazard (BASH) Program. The Navy shot two adult Western Gull-billed Terns in 2004, and one Tern in 2007 (Molina et al. 2009). Under the BASH depredation permit, the decision to lethally remove Terns is at the discretion of Navy personnel. Following the lethal removal of two Terns in 2004, the Navy biologist stated:

“Although there is serious concern about the status of gull-billed tern, there is nothing that prohibits the removal of this species as defined in our depredation permit for the Navy’s BASH program” (T. Conkle May 12, 2004 email to R. Patton et al.).

Depredation permits have also been issued in an effort to protect California Least Terns from predation by Gull-billed Terns. From 1992-1995 at least seven Western Gull-billed Terns were killed by USDA Animal Damage Control personnel in an effort to protect California Least Terns (R. Patton , pers. comm., June 9, 2004, cited in FWS 2004a). In 2005 the Navy applied for a depredation permit to kill any Gull-billed Tern that was “seen loafing” at the California Least Tern colony for a period of three years (Conkle February 9, 2005). That permit was denied (FWS March 14, 2005), but the future approval of depredation permits to kill Gull-billed Terns poses an ongoing threat to the subspecies.

FWS has repeatedly discussed the option of lethally removing Gull-billed Terns at the San Diego Bay National Wildlife Refuge for the protection of California Least Terns and Western Snowy Plovers, and the MBTA is not adequate to prevent this from occurring. The Deputy Project

Leader at the San Diego National Wildlife Refuge Complex stated in an internal communication, “We do have the authority to direct the removal of GBT if we choose” (Buck July 1, 2002). Lethal removal of adults by FWS has, to date, not been implemented. However, the San Diego Bay NWR has currently applied for an MBTA permit to addle 43 percent of Gull-billed Tern nests in the 2009 breeding season (FWS 2009), intentionally reducing Tern reproductive success at one of only two U.S. breeding colonies, and substantiating the need for Endangered Species Act protection for this critically imperiled subspecies. While the MBTA does provide the Tern with regulatory protection, this protection is not adequate to protect the Tern from military take, predator control initiatives, and population management projects.

Birds of Conservation Concern

The Western Gull-billed Tern is a federally-designated Bird of Conservation Concern. The Fish and Wildlife Conservation Act (1988 Amendment) requires the Service to identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act, and these birds are designated as Birds of Conservation Concern (BCC). Under Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, Federal agencies are to avoid and/or minimize adverse impacts on birds, and BCC species in particular, but the BCC designation does not confer any regulatory protection, requiring only that conservation priorities and actions be identified.

In addition, the State of California classifies the Western Gull-billed Tern as a Bird Species of Special Concern (Shuford and Gardali 2008), but this designation does not confer any regulatory protection. Even though the Tern is designated as a bird of Special Concern and Conservation Concern at the state and national levels, respectively, the San Diego Bay National Wildlife Refuge has issued a proposed action to addle 43 percent of nests at one of only two U.S. breeding sites for this rare subspecies (FWS 2009), which undermines Tern conservation and threatens the long-time persistence of the Tern in San Diego Bay.

Conservation Initiatives

Federal agencies have implemented several management actions to protect Gull-billed Terns including predator exclusion and control, signage and restricted public access, controlled hydrologic regimes, vegetation management, and creation of artificial nesting habitat (Molina et al. 2009). At San Diego Bay NWR, predator control to benefit California Least Terns and Western Snowy Plovers incidentally benefits Gull-billed Terns. While certainly beneficial for the Tern, these initiatives are not adequate to ensure its survival. Moreover, because Gull-billed Terns also prey on Least Terns and Plovers, they are themselves now the target of a population reduction effort in San Diego (FWS 2009).

Mexico

The Western Gull-billed Tern does not have any special legal status in Mexico. It is theoretically protected from direct killing under the 1936 Convention between the U.S. and Mexico for the Protection of Migratory Birds and Game Mammals (SEMARNAT 2002, Molina et al. 2009), but

is commonly killed at commercial aquacultural operations (Molina and Erwin 2006, Molina et al. 2009).

The Tern colony at Isla Montague is within the Rio Colorado Delta Biosphere Reserve, but this provides limited protection due to lack of management (Molina et al. 2009). The Isla El Rancho colony, in Bahia Santa Maria is in the Gulf of California Island Park System and the Santa Maria Bay Ecosystem Management Program, but management for Terns is also lacking at this site (Molina et al. 2009). Palacios and Mellink (2007) state the Western Gull-billed Tern should be listed as endangered by the Mexican government.

In light of the inadequacy of existing regulatory mechanism to protect the Western Gull-billed Tern, and the multiple threats this critically imperiled subspecies faces from habitat loss and degradation, predation, disease, small population size and limited distribution, intentional killing, interspecific competition, global climate change, flooding, poor ocean conditions, and pesticides and contaminants, there is no question that the Tern warrants protection under the Endangered Species Act.

E. CONSERVATION RECOMMENDATIONS

The Western Gull-billed Tern should be expeditiously listed as a Threatened or Endangered species, and critical habitat should be designated concurrent with listing. Funding should be designated to continue predator management activities at San Diego Bay NWR and at the Salton Sea, to protect Plovers, Least Terns, and Gull-billed Terns. For additional conservation recommendations, please refer to Molina et al. (2009).

F. CRITICAL HABITAT

The ESA mandates that, when the USFWS lists a species as endangered or threatened, the agency generally must also concurrently designate critical habitat for that species. Section 4(a)(3)(A)(i) of the ESA states that, “to the maximum extent prudent and determinable,” the USFWS: shall, concurrently with making a determination . . . that a species is an endangered species or threatened species, designate any habitat of such species which is then considered to be critical habitat 16 U.S.C. § 1533(a)(3)(A)(i); *see also id.* at § 1533(b)(6)(C). The ESA defines the term “critical habitat” to mean:

- i. the specific areas within the geographical area occupied by the species, at the time it is listed . . . , on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and
- ii. specific areas outside the geographical area occupied by the species at the time it is listed . . . , upon a determination by the Secretary that such areas are essential for the conservation of the species.*Id.* at § 1532(5)(A).

The Center for Biological Diversity expects that FWS will comply with this unambiguous mandate and designate critical habitat concurrently with the listing of the Western Gull-billed Tern.

G. CONCLUSION

The Western Gull-billed Tern is in danger of extinction or likely to become so in the foreseeable future throughout its range. FWS has repeatedly acknowledged that the Tern is imperiled and in need of protection (FWS 2004a, 2005, 2006, 2008, 2009). In 2004, FWS drafted a Species Assessment and Listing Priority Assignment Form for the Western Gull-billed Tern as a new candidate, stating “Due to the magnitude, imminence, and variety of threats facing this taxon, emergency listing is warranted” (FWS 2004a). The California Department of Fish and Game has stated that they consider the Tern to meet the California Environmental Quality Act definition of a threatened or endangered species, and that “listing the Western Gull-billed Tern as a Threatened or Endangered Species under the auspices of the State and/or Federal Endangered Species Act may be the most effective mechanism by which we can ensure conservation of the species . . .” (L. Comrack, May 14, 2004). Given the Western Gull-billed Tern’s extremely small population size, limited range, and the variety and magnitude of threats to its continued survival, it is clearly in need of Endangered Species Act protection.

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I. ACKNOWLEDGEMENTS

Western Gull-billed Tern photograph provided courtesy of Kathy Molina. Provision of the photograph does not represent an endorsement of this petition.

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Appendix A: CBD Comments on the Draft Environmental Assessment (EA) for the 2009 Western Gull-billed Tern (*Gelochelidon nilotica vanrossemi*) Population Management Project in San Diego Bay (San Diego County, California).



CENTER for BIOLOGICAL DIVERSITY

Because life is good.

May 19, 2009

TO: Andrew Yuen
Project Leader
U.S. Fish and Wildlife Service
San Diego National Wildlife Refuge Complex
6010 Hidden Valley Road, Suite 101
Carlsbad, California 92011

Submitted via email to: Andy.Yuen@fws.gov

Return receipt requested

RE: **THE CENTER FOR BIOLOGICAL DIVERSITY OPPOSES THE WESTERN GULL-BILLED TERN POPULATION MANAGEMENT PROJECT**

Greetings:

Please accept these comments from The Center for Biological Diversity on the Draft Environmental Assessment (EA) for the 2009 Western Gull-billed Tern (*Gelochelidon nilotica vanrossemi*) Population Management Project in San Diego Bay (San Diego County, California). The Center for Biological Diversity is a non-profit conservation organization with 220,000 members and online activists dedicated to the protection of endangered species and wild places.

We are writing to oppose the Western Gull-billed Tern (“the Gull-billed Tern”, “the Tern,” “GBTE”) Population Management Project, and to urge Fish and Wildlife Service (“FWS,” “the Service”) to protect this sub-species for the following reasons:

1) The Western Gull-billed Tern is critically imperiled; **2)** Based on the Tern’s status, FWS should be acting to protect the Gull-billed Tern, the Service has acknowledged this, and the proposed action is arbitrary in relation to the Service’s stated goal of proactive conservation and management; **3)** FWS is obligated to protect the Gull-billed Tern under the Migratory Bird Treaty Act, and without a take permit, the proposed project is illegal; **4)** Gull-billed Terns do not pose a range-wide threat to California Least Terns (*Sternula antillarum browni*) or Western Snowy Plovers (*Charadrius alexandrinus nivosus*), and both of these species are more abundant than Western Gull-billed Terns; **5)** The negative effect the proposed action would have on Gull-billed Terns is proportionately greater than the effect Gull-billed Terns have on the two listed species; **6)** The EA provides no data to support the assumption that the proposed action will not

significantly adversely affect the Gull-billed Tern; **7)** The proposed action poses an unacceptable threat to Gull-billed Terns, especially given the magnitude and immediacy of other threats to the subspecies; **8)** The EA does not present sufficient data on Gull-billed Tern predation to justify this proposal; **9)** Gull-billed Tern predation is not the only threat to California Least Terns and Western Snowy Plovers in San Diego Bay; **10)** This proposal might not benefit California Least Terns or Western Snowy Plovers; moreover, it could harm these species; **11)** The draft EA does not provide all of the information necessary to fully evaluate the proposed action; **12)** The timing of the release of the Notice of Availability of the Draft Environmental Assessment and the public comment period directly overlaps with the nesting season.

1) The Western Gull-billed Tern is critically imperiled.

Gelochelidon nilotica vanrossemei is ranked as a Critically Imperiled subspecies by NatureServe (2009), meaning it is at very high risk of extinction. The State of California classifies the Western Gull-billed Tern as a Bird Species of Special Concern (Shuford and Gardali 2008). FWS (2008) classifies the Tern as a Bird of Conservation Concern based on small population size, limited distribution, declining population trends, and threats.

The Western Gull-billed Tern has very low population size, both range-wide and in the United States. In the United States, there are only 154-263 Tern breeding pairs, 54 of which nest at San Diego Bay (FWS 2009, Patton 2008). Range-wide there are only 495-1042 breeding pairs (FWS 2009). The Draft EA (FWS 2009) reports two different estimates for global population size: 530-810 pairs (p. 20, from Molina and Erwin 2006) and 495-1042 pairs (p. 23).

The Tern has an “extremely small” breeding range (FWS 2009), with only two breeding sites in the United States, and 12 sites in Mexico (Palacios and Mellink 2007, González-Medina and Guevara-Medina 2008).

2) Based on the Tern’s status, FWS should be acting to protect the Gull-billed Tern, the Service has acknowledged this, and the proposed action is arbitrary in relation to the Service’s stated goal of proactive conservation and management.

As a migratory bird and as a Bird of Conservation Concern, it is the duty of FWS to protect the Gull-billed Tern. FWS has repeatedly acknowledged the need to protect this subspecies (e.g., FWS 2006a, FWS 2008, FWS 2009). The Final Comprehensive Conservation Plan/Environmental Impact Statement for the San Diego Bay National Wildlife Refuge states that it is desired to maintain/enhance the number of breeding Gull-billed Terns in Southern California (FWS 2006a).

By definition, a Bird of Conservation Concern is one that without additional conservation actions is likely to become a candidate for listing under the Endangered Species Act (FWS 2008). Beyond listed species, Birds of Conservation Concern represent the “highest conservation priorities” and the goal is to implement “proactive management and conservation actions” to protect Birds of Conservation Concern (FWS 2008).

Intentionally depredate 43 percent of the Gull-billed Tern nests at San Diego NWR is the direct opposite of a conservation action. Moreover, the management objective of the proposed action, “to avoid significant adverse effects to the range-wide population of Gull-billed Terns over time” (FWS 2009, p. 4), is arbitrary in relation to FWS’s stated goal of implementing conservation actions for this subspecies (FWS 2008). “Avoiding significant adverse effects” is a lower standard of protection than implementing “proactive management and conservation actions.” Furthermore, the EA does not provide any data to demonstrate that the proposed action will not have long-term significant adverse effects for the Tern.

3) FWS is obligated to protect the Gull-billed Tern under the Migratory Bird Treaty Act, and without a take permit, the proposed project is illegal.

Section 2 of the Migratory Bird Treaty Act of 1918, as amended, provides that “it shall be unlawful at any time, by any means or in any manner,” to, among many other prohibited actions, “pursue, hunt, take, capture, [or] kill” any migratory bird included in the terms of the treaties. 16 U.S.C. § 703 (emphasis added). The term “take” is defined as to “pursue, hunt, shoot, wound, kill, trap, capture, or collect.” 50 C.F.R. § 10.12 (1997). The MBTA imposes strict liability for killing migratory birds, without regard to whether the harm was intended. Its scope extends to harm occurring “by any means or in any manner,” and is not limited to, for example, poaching. See e.g., *U.S. v. Moon Lake Electric association*, 45 F. Supp. 2d 1070 (1999) and cases cited therein. Indeed, the federal government itself has successfully prosecuted under the MBTA’s criminal provisions those who have unintentionally killed migratory birds. E.g., *U.S. v. Corbin Farm Service*, 444 F. Supp. 510, 532-534 (E. D. Cal.), affirmed, 578 F.2d 259 (9th Cir. 1978); *U.S. v. FMC Corp.*, 572 F.2d 902 (2nd Cir. 1978).

The MBTA applies to federal agencies such as FWS as well as private persons. See *Humane Society v. Glickman*, No. 98-1510, 1999 U.S. Dist. LEXIS 19759 (D.D.C. July 6, 1999), affirmed, *Humane Society v. Glickman*, 217 F.3d 882, 885 (D.C. Cir. 2000) (“There is no exemption in § 703 for farmers, or golf course superintendents, or ornithologists, or airport officials, or state officers, or federal agencies.”). Following *Glickman*, FWS issued Director’s Order No. 131, confirming that it is FWS’s position that the MBTA applies equally to federal and non-federal entities, and that “take of migratory birds by Federal agencies is prohibited unless authorized pursuant to regulations promulgated under the MBTA.” MBTA Section 3 authorizes the Secretary of the Interior to “determine when, to what extent, if at all, and by what means, it is compatible with the terms of the conventions to allow hunting, take, capture, [or] killing . . . of any such bird.” 16 U.S.C. § 704. FWS may issue a permit allowing the take of migratory birds if consistent with the treaties, statute and FWS regulations. Until and unless FWS issues such a permit, the proposed activity would be unlawful under the MBTA.

4) Gull-billed Terns do not pose a range-wide threat to California Least Terns (*Sternula antillarum browni*) or Western Snowy Plovers (*Charadrius alexandrinus nivosus*), and both of these species are more abundant than Western Gull-billed Terns.

Western Gull-billed Terns do not pose a range-wide threat to Western Snowy Plovers or California Least Terns because the breeding ranges of these birds overlap minimally, and both Least Terns and Plovers have many more breeding sites than Gull-billed Terns (Table 1). The

breeding range of the Pacific Coast Population of the Western Snowy Plover extends from Washington to Baja California, with four extant sites in Washington, seven in Oregon, four on the Pacific Coast of Baja California, an unspecified number on the Gulf of California Coast in Baja, and from 67 to 133 in California (67 sites with breeding from 2000-2005; 133 “breeding and wintering” sites identified in 2007 Recovery Plan), totaling at least 82 sites (FWS 2007, Appendices A, B, and L). The breeding range of the California Least Tern extends from San Francisco Bay to Baja California, with 47 U.S. breeding “clusters” and eight locations in Mexico with 1-6 sites at each location (FWS 2006b). In contrast, the Western Gull-Billed Tern has only two breeding sites in the United States-- San Diego Bay and the Salton Sea, and only 14 sites range-wide (FWS 2009).

Table 1. Number of Extant Breeding Sites (FWS 2006b, 2007, 2009)

	U.S.	Range-Wide
Western Gull-billed Tern	2	14
Western Snowy Plover	78	82
California Least Tern	47	55+

Both Western Snowy Plovers and California Least Terns are more abundant than Western Gull-billed Terns (Table 2). There are only 154-263 breeding pairs of Gull-billed Terns in the United States, and only 530-1,042 pairs globally. In contrast, there are 1,239 U.S. breeding pairs of the Pacific Coast Population of Western Snowy Plovers, and an estimated 2,478 pairs in the U.S. and Mexico (FWS 2006b, p. 32). In 2004 there were an estimated 6,354 breeding pairs of California Least Terns in the U.S., and an estimated 7,100 pairs range-wide in 2006 (FWS 2006b).

Table 2. Adult Population Size (FWS 2006b, 2007, 2009)

	U.S.	Range-Wide
Western Gull-billed Tern	308-526	1,060-2,084
Western Snowy Plover	2,478	4,956
California Least Tern	12,708	14,200

5) The negative effect the proposed action would have on Gull-billed Terns is proportionately greater than the effect Gull-billed Terns have on the two listed species.

As enumerated above, both Plovers and Least Terns are more numerous than Gull-billed Terns and have more breeding sites than Gull-billed Terns with minimal range overlap between Gull-billed Terns and these two listed species. The maximum proportion of Least Tern and Plover nests that could be depredated by Gull-billed Terns is far less than the proportion of Gull-billed Tern nests that the Service is proposing to depredate.

In 2008, there were three Western Snowy Plover nests on the salt pond levees in south San Diego Bay, accounting for only one percent of the total nests observed in San Diego County (FWS 2009, p. 34). (For historical context, there was one Plover nest at the salt levees in 1994, five in 1997, and three in 1998, so 2008 was not an anomalous year). Given that there are an estimated 1,239 breeding pairs of Snowy Plovers in the U.S., and that three nests were detected at the salt works in 2008, the San Diego Gull-billed Terns only have the potential to depredate 0.24% of Western Snowy Plover nests (assuming one nest per breeding pair, 3 nests / 1,239 breeding pairs

= 0.00242). Six Snowy Plover chicks were documented as lost to Gull-billed Tern predation in the San Diego Bay area in 2008 (FWS 2009). This is only a tiny proportion of annual Snowy Plover recruitment.

In 2008, there were 102 California Least Tern nests at the salt works. Using the 2004 population estimate of 6,354 U.S. breeding pairs of Least Terns and assuming one nest per pair, the maximum proportion of nests that could be depredated by Gull-billed Terns in San Diego is 1.6% (102 nests / 6,354 pairs = 0.0161). 137 Least Tern chicks were documented as lost to gull-billed tern predation in the San Diego Bay area in 2008, again representing a tiny proportion of annual recruitment.

FWS has proposed to depredate 43% of the Gull-billed Tern nests at the salt works. There were 65 GBTE nests at the salt works in 2008, so the proposal would eliminate 28 clutches ($0.43 \times 65 = 28$). (The EA misrepresents the number of clutches that would be added, stating on p. 41 that 43% take would add 23 clutches, not 28 clutches. Adding 23 clutches, however, would result in 35% take: $23/65 = 35\%$). Given that there are only 154-263 breeding pairs of Gull-billed Terns in the U.S., this proposal would preclude 11-18% of GBTE recruitment ($28/263 = 0.106$; $28/154 = 0.182$), and due to disturbance effects could entirely preclude recruitment in San Diego (FWS 2009, p. 42). Precluding from 11-18% of U.S. Gull-billed Tern recruitment to *potentially* benefit 0.2% of Snowy Plover recruitment and 1.6% of Least Tern recruitment is scientifically unjustifiable.

Range-wide, Gull-billed Tern predation in San Diego Bay could maximally impact 0.12% of Snowy Plover nests (3/2478) and 1.4% (102/7,100) of Least Tern nests, yet the Service is proposing to impact 2.7-5.3% of Gull-billed Tern nests (28/530-1,042). The EA states that from 3.2-7.4% of the range-wide GBTE population would be affected (p. 42), but that this does not constitute a significant adverse effect. The EA states:

“This adverse effect would not constitute a significant adverse effect on the overall population of western gull-billed terns as the percentage of the overall population to be affected would be low (approximately 3.2 percent) and the adult gull-billed terns whose eggs were added would have future opportunities to nest and produce young over the course of their lifetimes” (FWS 2009, p. 45).

Using these criteria, the effects of Gull-billed Terns on Snowy Plovers and Least Terns is also not significant, because the percentage of the overall affected populations is even lower, and because Least Terns and Plovers also have future nesting opportunities over the course of their lifetimes. The Service is arbitrarily violating its own reasoning by stating that affecting 3-7% of Gull-billed Tern reproduction is not a significant adverse effect while simultaneously assuming that the effect of Gull-billed Terns on Plovers (0.12% maximum range-wide impact) and Least Terns (1.4% maximum range-wide impact) is significant.

6) The EA provides no data to support the assumption that the proposed action will not significantly adversely affect the Gull-billed Tern.

The EA states that this project does not constitute a significant adverse effect for the Gull-billed Tern, but provides no data to support this assumption, stating only that the percentage of the overall population that would be affected is low, and that Gull-billed Terns will have future breeding opportunities (p. 45). The EA acknowledges that the loss of 43% of clutches in the 2009 breeding season could not be reversed or compensated for in subsequent nesting seasons, that the opportunity to fledge at least 16 chicks would be permanently lost (p. 45), that the project could result in complete colony abandonment in 2009 (p. 42), and that up to 7.4% of the range-wide GBTE population could be affected (p. 42). The EA provides no data or discussion on the arbitrary determination that negatively impacting 7.4% of a critically imperiled subspecies does not constitute a significant adverse effect.

7) The proposed action poses an unacceptable threat to Gull-billed Terns, especially given the magnitude and immediacy of other threats to the subspecies.

Given the low population size and limited range of Gull-billed Terns, the minimal range-wide effect they have on Plovers and Least Terns, and the uncertain population-level effects of this project, the proposed action poses an unacceptable threat to Gull-billed Terns, especially in conjunction with other threats.

The long-term population-level consequences of adding 43% of Tern nests at one of only two U.S. breeding sites for this subspecies are unknown, are likely detrimental, and are downplayed in the EA. The EA does not adequately assess how this proposal will affect the U.S. Gull-billed Tern breeding population. FWS acknowledges that it cannot assess whether this project will adversely affect population status in subsequent years. The EA does not present sufficient information to conclude that the effects of the proposed action will not significantly impact the U.S. or global Western Gull-billed Tern population.

This proposal could have unintended deleterious genetic effects for the Tern. The taxonomic status of the Gull-billed Tern is not completely understood and is currently being evaluated by the U.S. Geologic Survey. Given that there are only two U.S. populations of Gull-billed Tern, it is possible that the San Diego population harbors unique alleles. The genetic consequences of reducing or eliminating a year of recruitment are unknown.

The proposed action could have a greater than intended effect on Gull-billed Terns and other nesting species due to human disturbance. The EA acknowledges that the project will increase disturbance levels and that disturbance could cause complete colony abandonment during the nesting season (p. 42-43).

This project places an additional threat onto a subspecies that is already imminently threatened, both in the U.S. and in Mexico. The Western Gull-billed Tern is threatened by human disturbance, inter-specific competition, receding water levels, reduced foraging opportunities, fluctuating ocean conditions, development including the Chula Vista Bayfront Master Plan, predation from coyotes, northern harriers, peregrine falcons, and other species, and mortality from the Navy's Bird Aircraft Strike Hazard (BASH) Program (Molina 2007, Palacios and Mellink 2007, Shuford and Gardali 2008, FWS 2009). The proposed action is unnecessary, unacceptable, and magnifies the risk of extinction for this subspecies.

8) The EA does not present sufficient data on Gull-billed Tern predation to justify this proposal.

The EA does not provide data to demonstrate that Gull-billed Terns are impacting Least Terns or Snowy Plovers at the population level. Much of the information on predation by Gull-billed Terns on Least Terns and Plovers at San Diego Bay NWR appears to be anecdotal. The statement in the EA that the impacts of GBTE predation on nesting site productivity are “not insignificant” is based not on scientific literature, but on a personal communication from Brian Collins:

“Based on the data, the impacts that gullbilled terns have had on the productivity of nesting sites throughout San Diego Bay and the Tijuana Estuary are not insignificant (*Brian Collins pers. comm.*)” (FWS 2009, p. 25).

The available scientific literature in which predation was measured in an objective and rigorous way do not demonstrate population-level effects of GBTE predation on Least Terns or Snowy Plovers.

9) Gull-billed Tern predation is not the only threat to California Least Terns and Western Snowy Plovers in San Diego Bay.

The EA acknowledges that Gull-billed Tern predation is only one of many factors that negatively affect the Least Tern and Plover (FWS 2009, p. 4-5), and that poor reproductive success is only partially attributable to predation, from all species, not just Gull-billed Terns (p. 27).

Snowy Plovers and Least Terns at San Diego Bay are threatened by human disturbance, inclement weather, urban development, poor ocean conditions, inadequate access to foraging areas, and other factors (FWS 2009). In addition to the Gull-billed Tern, many other species prey on Plovers and Least Terns including: foxes (*Urocyon* and *Vulpes* sp.), striped skunks (*Mephitis mephitis*), spotted skunks (*Spilogale putorius*), raccoons, California ground squirrels (*Citellus beecheyi*), long-tailed weasels (*Mustela frenata*), Norway rats (*Rattus norvegicus*), Virginia opossums (*Didelphis marsupialis*), domestic and feral dogs (*Canis familiaris*), and cats (*Felis domesticus*), American crows, common ravens (*Corvus corax*), ring-billed gulls (*Larus delawarensis*), California gulls (*Larus californicus*), western gulls (*Larus occidentalis*), glaucous-winged gulls (*Larus glaucescens*), American kestrels (*Falco sparverius*), peregrine falcons (*Falco peregrinus*), northern harriers (*Circus cyaneus*), loggerhead shrikes, merlins (*Falco columbarius*), great horned owls (*Bubo virginianus*), burrowing owls (*Speotyto cunicularia*), great blue herons (*Ardea herodias*) (FWS 2006b, FWS 2007).

10) This proposal might not benefit California Least Terns or Western Snowy Plovers; moreover, it could harm these species.

While undoubtedly harmful to Gull-billed Tern productivity, the proposed action is of uncertain benefit to the listed species it is intended to protect. The EA acknowledges that the proposal does not formally study or statistically evaluate the intended positive affects for Least Terns and

Plovers (p. 7), acknowledges that it is unknown whether the intended positive effects on productivity will be detectable (FWS 2009, p. 43), and acknowledges that it might not even be possible to measure any reduced depredation pressures from field observations (p. 7).

In addition to being of dubious benefit to Plovers and Least Terns, the project could actually be harmful for these species. This project will increase human disturbance and could negatively affect non-target species (FWS 2009, p. 42-43). Human activity could cause adults to disperse from nests, which would give predators more opportunities to take eggs and hatchlings. Adult Gull-billed Terns will still need to forage, whether or not they are raising offspring. Even if the project were to reduce GBTE predation on Least Terns and Plovers, other predators would still take these species.

11) The draft EA does not provide all of the information necessary to fully evaluate the proposed action.

The EA states the proposed level of take (43 percent) was selected in an effort to avoid causing long-term population decline, but does not provide sufficient information on the life-history data on which this calculation is based to evaluate this assertion. The take calculation does not provide references to peer-reviewed scientific literature, citing instead a draft status assessment which is unavailable for public review, and a personal communication within the unavailable assessment (FWS 2009, p. 9). Without access to the actual life-history data on which the take calculation is based, it is impossible to evaluate the accuracy of the assumptions in the EA, for example, that GBTEs breed at 2 years of age, live for ten years, etc. The take model presented in the EA is thus inadequate, unsubstantiated, and presents no data to validate the assumption that the proposed project will not contribute to long-term population decline.

12) The timing of the release of the Notice of Availability of the Draft Environmental Assessment and the public comment period directly overlaps with the nesting season.

The release of the Notice of Availability of the Draft Environmental Assessment coincides with the beginning of the Gull-billed Tern nesting season at San Diego Bay NWR (FWS 2009, p. 21). Gull-billed Terns are currently nesting. For the proposed action to be executed during the 2009 breeding season, managers would have to be adding eggs at this time. The proposal states that one out of every two first-nesting attempts would be added (p. 41). From 1999-2008, the date the first GBTE nest was observed has ranged from April 21-May 19, which overlaps with the release of the EA and the public comment period. It would therefore be impossible to take public comment into consideration before executing the proposed action, as it is written, during the 2009 breeding season. If FWS were to execute this project during the 2009 breeding season without taking public comment into consideration, it would be an illegal action.

CONCLUSION

The Service is obligated to protect the Western Gull-billed Tern under the Migratory Bird Treaty Act of 1918, as amended, and to provide proactive management and conservation actions for this subspecies as a Bird of Conservation Concern. The proposed action magnifies the risk of extinction for this critically imperiled subspecies, and is arbitrary in relation to the Service's

stated goal of conserving this subspecies. The best available scientific data do not support the need for this action. Western Gull-billed Terns do not pose a range-wide threat to Snowy Plovers or Least Terns, and the No Action alternative is the only acceptable course of action.

Thank you for considering our comments.

Sincerely,



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