

**Petition to Designate Critical Habitat for the Kemp's  
Ridley Sea Turtle (*Lepidochelys kempii*)**



Photo: National Park Service

**Petition Submitted to the U.S. Secretary of Interior, Acting through the U.S. Fish  
and Wildlife Service & the U.S. Secretary of Commerce, Acting Through the  
National Oceanic and Atmospheric Administration Fisheries Service**

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## Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

Introduction

WildEarth Guardians seeks the designation of critical habitat for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) under the Endangered Species Act (ESA). The Kemp's Ridley Sea Turtle ("Turtle" or "Kemp's Ridley") is considered by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) in 1992 to be the most seriously endangered of all sea turtles.<sup>1</sup> Its population declined precipitously since 1947, when a film documented over 40,000 females nesting at one time on the Mexican coast.<sup>2</sup> The species reached a low in 1978-1991, when only 200 Kemp's Ridley nested annually, but has since been rebounding, with approximately 12,000 nests recorded in 2006.<sup>3</sup> Critical habitat can help ensure its recovery.

The decline of the species was historically caused by the direct harvest of adults and eggs on land and killing of turtles at sea by through incidental capture by commercial fishing operations. Kemp's Ridleys that occur in the United States currently face threats both on nesting beaches and in the marine environment. These include off-road vehicles, dogs, non-native vegetation, and beach armoring on their nesting habitat; artificial lights and development on our adjacent to their nesting areas; fishing gear and operations, marine debris and pollution, and other threats in their ocean habitat. Within the Texas Gulf Coast area where they are starting to nest again, human populations are rapidly increasing, which will increase the magnitude of the threats this species faces.

The Turtle was listed as a federally endangered species on December 2, 1970 but it has yet to receive protection of its critical habitat. While the Turtle's 1992 Recovery Plan stipulates that, "identification and protection of essential habitat must be vigorously undertaken,"<sup>4</sup> critical habitat has never been designated for this species. This is despite the fact that species are twice as likely to recover if provided with critical habitat, partly due to the protection of unoccupied areas essential to the recovery of a listed species.<sup>5</sup>

Protecting critical habitat is vital to successful implementation of the ESA, which was enacted to protect endangered species and the ecosystems upon which they depend.<sup>6</sup> Critical habitat is defined as the area most essential for the survival and recovery of the species that may require special management considerations. Federal agencies must ensure that any action authorized, carried out, or funded by them will not destroy or adversely modify critical habitat, in addition to ensuring that any action authorized,

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<sup>1</sup>U. S. Fish and Wildlife Service & National Marine Fisheries Service. 1992. Recovery Plan for the Kemp's Ridley Sea Turtle. National Marine Fisheries Service, St. Petersburg, Florida. See also National Park Service (2010) at: <http://www.nps.gov/pais/naturescience/kridley.htm> [Accessed February 2010]. Attachment 1.

<sup>2</sup>U.S. Fish and Wildlife Service & National Marine Fisheries Service. 2007. Five-Year Review: Summary and Evaluation for the Kemp's Ridley Sea Turtle (*Lepidochelys Kempii*). Attachment 2.

<sup>3</sup>National Marine Fisheries Service. 2010. Webpage for Kemp's Ridley Turtle. Online at: <http://www.nmfs.noaa.gov/pr/species/turtles/kempsridley.htm> [Accessed February 2010].

<sup>4</sup>USFWS (2007) at 16.

<sup>5</sup>Taylor, M.F.J., Suckling, K.F., and J.J. Rachlinski. 2005. The Effectiveness of the Endangered Species Act: a Quantitative Analysis. *BioScience* 55(4): 360-367. Attachment 3.

<sup>6</sup>16. U.S.C. §1531(b).

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

carried out, or funded will not jeopardize the continued existence of the species.<sup>7</sup> In the case of the Kemp's Ridley, the designation of nesting beaches along the Texas coast and marine habitats in the Gulf of Mexico and Atlantic Ocean as critical habitat is imperative to insure recovery of this species.

The protection of the Texas Gulf Coast is especially important because it is one of only two areas in the world where Kemp's Ridleys are known to nest. Most Kemp's Ridleys nest on the coastal beaches of the Mexican states of Tamaulipas and Veracruz, but increasing numbers of the turtle are nesting along the Texas coast, exceeding 100 nests per year in 2006 and 2007.<sup>8</sup> In 1978, the U.S. and Mexican governments joined together to re-establish a nesting colony at Padre Island National Seashore (PAIS), in part because the Texas coast was a historical nesting site of the Kemp's Ridley.<sup>9</sup> This effort was called the "head-start" program, which aimed to increase the Turtle's survival rate by releasing hatchlings when they were too large for most predators to eat.<sup>10</sup> The program also intended that the females released would return to the area to nest.

Key to the species' recovery is that there be more than one active nesting colony. Approximately 60% of all Kemp's Ridley nesting occurs along an approximately 40-km stretch of beach near Rancho Nuevo, Tamaulipas, Mexico.<sup>11</sup> Although under the protection of the Mexican government, this relatively small area of land is still highly vulnerable to large-scale storms and human-caused degradation. Moreover, the United States cannot predict the permanence or enforcement of foreign protective measures for this species. It is therefore vital that there be a healthy and expanding nesting colony in the United States that is protected as critical habitat under the ESA.

In order to recover the Kemp's Ridley, it is also crucial to protect its marine habitat. This sea turtle spends nearly all its life at sea, with only brief but critical experiences on land. Fishing gear and activities, oil and gas development, and pollution are just a few of the problems that pose a serious threat to the Kemp's Ridley at sea. Although the implementation of regulations requiring Turtle Excluder Devices (TEDs) has reduced the number of fatalities associated with commercial shrimp trawls, longline and gillnet fishing continue to result in an unacceptable number of Kemp's Ridley deaths. Also, uncontrolled development of coastal and marine habitats in certain key areas threatens to destroy the Turtle's supporting ecosystems. Direct impacts from construction activities, such as trawling and dredging, and indirect impacts such as runoff, degrade the Kemp's Ridley's offshore foraging grounds. Beach armoring and non-native plants degrade its nesting habitat. Artificial lighting can deter females from nesting and disorient hatchlings as they trek to the sea. Critical habitat protection of nesting and marine habitats is key to the recovery of the species.

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<sup>7</sup>16 U.S.C. §1536(a)(1) and (2).

<sup>8</sup>USFWS (2007) at 21.

<sup>9</sup>See National Park Service (2010) <http://www.nps.gov/pais/naturescience/kridley.htm> [Accessed February 2010].

<sup>10</sup>USFWS (1992) at 14.

<sup>11</sup>USFWS (2007) at 8.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

WildEarth Guardians hereby petitions the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for critical habitat under the ESA for the Kemp's Ridley Sea Turtle's current and potential nesting sites and marine habitat in United States waters. The designation of critical habitat will require federal agencies to consult with FWS and the NMFS to consider whether development and anthropogenic activities will adversely modify that habitat. Adversely modifying critical habitat includes impairing the value of that habitat for the survival or recovery of the species. At a time when the Kemp's Ridley is slowly re-establishing a nesting colony in the United States, the added protection to the species and its habitat provided by the designation is of paramount importance.

Legal Basis for Petition

WildEarth Guardians submits this petition under the ESA's provision to petition for the revision of a critical habitat designation (16 U.S.C. § 1533). The ESA requires the Secretary of Interior, acting through the FWS, and the Secretary of Commerce, acting through the NMFS, within 90 days of its receipt of this petition, to issue a finding "as to whether the petition presents substantial scientific information indicating that the revision may be warranted." *Id.* at 1533(b)(3)(D)(i). If the 90-day finding is substantial, the ESA requires a finding within 12 months, in which "the Secretary shall determine how he intends to proceed with the requested revision." *Id.* at (ii).

In addition, WildEarth Guardians submits this petition pursuant to section 553 of the APA. We request that FWS and NMFS designate critical habitat for the Kemp's Ridley Sea Turtle. Section 553 of the APA provides that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." 5 U.S.C. § 553(e). The APA defines a rule as the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements of an agency. 5 U.S.C. § 551(4). As such, critical habitat clearly meets the definition of a rule under the APA.

WildEarth Guardians requests critical habitat designation revision or designation for the Kemp's Ridley Sea Turtle because habitat loss is currently a primary threat to this species. While the ESA generally provides that critical habitat should be designated for listed animals and plants, the importance of critical habitat is especially apparent in the case of the Kemp's Ridley Sea Turtle. Its listing in 1970 was a crucial step in safeguarding this sea turtle. However, critical habitat is imperative for not only preventing the extinction, but effecting the recovery of this exceedingly rare species.

Critical habitat designation is necessary to *conserve* this species. The very purpose of the ESA is to conserve species and the ecosystems on which they depend:

The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

species and threatened species... 16 U.S.C. § 1531(b).

Under the ESA, "conserve" is defined as:

...to use and the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. 16 U.S.C. § 1532(3).

In other words, "conserve" means "recover" under the ESA. Critical habitat designation is essential to recover this species. In a subsequent section, we discuss the value of critical habitat designation for the Kemp's Ridley Sea Turtle and how FWS and NMFS should determine its critical habitat. Moreover, critical habitat designation can ensure that actions by federal agencies in potential Kemp's Ridley Sea Turtle habitat (occupied or unoccupied) better promote the best interests of this sea turtle.

#### Description of Petitioner

WildEarth Guardians is a non-profit environmental organization whose mission is to restore wildlife, wild places, and wild rivers in the American West. WildEarth Guardians has over 4,500 members. The organization has an active endangered species protection campaign, with a geographic focus on the western United States (although the organization has a national scope). As part of this campaign, Guardians works to obtain or upgrade ESA protection for a wide variety of imperiled wildlife and plants and the ecosystems on which they depend.

#### Species Description

##### *Physical Description*

The Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) was first described in 1880 by Samuel Garman. The species was named for Richard M. Kemp, a fisherman from Key West, Florida who first submitted the species for identification in 1906.<sup>12</sup> Considered the smallest marine turtle, adult Kemp's Ridleys reach about two feet in length and weigh on average around 100 pounds.<sup>13</sup> Their carapace (top shell) is circular in shape, being almost as wide as it is long. The Kemp's Ridley's coloration changes during development from the grey-black color they exhibit as hatchlings to the lighter grey-olive carapace and yellowish plastron (bottom shell) seen in adults. This turtle has a triangular

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<sup>12</sup>USFWS (1992) at 1.

<sup>13</sup>See NMFS Supra Note 3.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

shaped head and somewhat hooked beak with large crushing surfaces.<sup>14</sup>

*Distribution and Movement*

The Kemp's Ridley was historically distributed throughout the Gulf of Mexico and the U.S. Atlantic seaboard, from Florida to New England. This species, along with the Australian Flatback sea turtle, has the most geographically restricted distribution of any sea turtle.<sup>15</sup> Adult Kemp's Ridleys are typically confined to neritic zones within the Gulf of Mexico. Neritic habitats typically consist of muddy or sandy bottoms where prey can be found.<sup>16</sup>

Newly emerged hatchlings require a different environment than adult turtles. After emerging from the nest, hatchlings enter the water and must swim quickly to escape near shore predators. There is strong evidence that they develop in the open ocean because encounters with healthy, neonate sea turtles are extremely rare in near shore waters. Some hatchlings remain in currents within the Gulf of Mexico while others may be swept out of the Gulf, around Florida, and into the Atlantic Ocean by the Gulf Stream.<sup>17</sup>

Juveniles have been known to utilize floating sargassum seaweed as an area of refuge, rest, and/or food. This developmental drifting phase is thought to last about two years or until the turtles reach a carapace length of about 8 inches. Subsequently, these sub-adult turtles return to neritic zones of the Gulf of Mexico or the northwestern Atlantic Ocean to feed and develop until they reach adulthood.<sup>18</sup>

Key foraging areas in the Gulf of Mexico include Sabine Pass, Texas; Caillou Bay and Calcasieu Pass, Louisiana; Big Gulley, Alabama; Cedar Key, Florida; and Ten Thousand Islands, Florida. Foraging areas studied along the Atlantic coast include Pamlico Sound, Chesapeake Bay, Long Island Sound, Charleston Harbor, and Delaware Bay.<sup>19</sup> Data indicate that these developmental habitats can occur in many coastal areas throughout their range, and that these habitats may shift depending upon resource availability. Optimal environments tend to provide rich food sources of crabs and other invertebrates. They are typically coastal areas sheltered from high winds and waves such as embayments, estuaries, and near shore temperate waters that are shallower than 50 meters.<sup>20</sup>

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<sup>14</sup>*Id.*

<sup>15</sup>USFWS (1992) at 3.

<sup>16</sup>*Id.*

<sup>17</sup>*Id.*

<sup>18</sup>*Id.*

<sup>19</sup>USFWS (2007) at 20.

<sup>20</sup>USFWS (2007) at 19-20. For additional information on habitat parameters or this species, see Schmid, J.R., Bolten, A.B., Bjorndal, K.A., Lindberg, W.J., Percival, F. and P.D. Zwick. 2003. Home Range and Habitat Use by Kemp's Ridley Turtles in West-Central Florida. The Journal of Wildlife Management, Vol. 67 (1): 196-206. Attachment 4.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

*Feeding*

Adult Kemp's Ridleys are shallow water benthic feeders with a diet consisting primarily of swimming crabs, but also may include fish, jellyfish, and an array of mollusks. Neonatal Kemp's Ridleys feed on available sargassum and other free-floating algae species found in the Gulf of Mexico.<sup>21</sup>

*Reproduction*

Kemp's Ridleys display one of the most unique synchronized nesting habits in the natural world. Large groups of females gather off the nesting beach and then swim ashore in waves. Scientists have speculated that this "arribada" (Spanish for "arrival") phenomenon may be advantageous to the species in terms of mate finding and survival of eggs and hatchlings due to predator swamping. The biological or physical features that cause an arribada are not clear, but scientists have suggested that they may be attributed to strong onshore wind, lunar cycles, social facilitation, or olfactory signals. The period between arribadas is typically about 25 days. Some Turtles may nest outside arribadas as solitary nesters and exhibit a shorter nesting interval.<sup>22</sup> The success of this strategy, however, is threatened by the species' population decline.<sup>23</sup>

Kemp's Ridleys nest from May to July, laying two to three clutches of approximately 100 eggs, which incubate for 50-60 days, depending on temperatures. Interannual nesting among the Kemp's Ridley has also been studied. Approximately 20% of adult females nest every year, 60% nest every 2 years, 15% nest every 3 years, and 5% nest every 4 years.<sup>24</sup> Kemp's Ridley eggs are 34-45 mm in diameter and weigh 24-40 grams.<sup>25</sup>

Approximately 60% of nesting occurs along an approximately 40-km stretch of beach near Rancho Nuevo, Tamaulipas, Mexico.<sup>26</sup> Scattered nests have been found to the north and south of the primary nesting beach with several hundred nests laid during the 2006 season to the south near Tampico. A growing number of the turtles are returning to nest along the Texas coast, with the majority of nests laid at PAIS. Over 100 nests were laid during both the 2006 and 2007 seasons. In 2008, 195 nests were laid along the Texas seashore. As of August 4, 2009, 197 nests had been found along the Texas coast.<sup>27</sup>

Until recently, most of all nests laid were moved to artificial hatcheries to protect eggs from predators, beach erosion, humans, and potential disturbance from other nesting

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<sup>21</sup>USFWS (1992) at 2. For additional information on this sea turtle's diet, see Witzell, W.W. and J.R. Schmid. 2005. Diet of immature Kemp's Ridley Turtles from Gullivan Bay, Ten Thousand Islands, southwest Florida. Bulletin of Marine Science 77(2): 191-199. Attachment 5.

<sup>22</sup>USFWS (2007) at 8.

<sup>23</sup>NatureServe, <http://www.natureserve.org/explorer/> [Accessed June 2009]. Attachment 6.

<sup>24</sup>USFWS (2007) at 9.

<sup>25</sup>NMFS (2010).

<sup>26</sup>USFWS (2007) at 8.

<sup>27</sup>See National Park Service (2010) Current Sea Turtle Nesting Season, <http://www.nps.gov/pais/naturescience/current-season.htm> [Accessed February 2010].



WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

females.<sup>28</sup> The main hatchery is located at Rancho Nuevo.<sup>29</sup> Although both males and females are produced in the hatcheries, females tend to predominate. Like all sea turtles, Kemp's Ridelys have temperature-dependent sex determination, in which the temperature during incubation of the egg determines the sex of the hatchling. Typically the higher the temperature, the more likely it is that the hatchling will be female. The pivotal temperature, for a 1:1 sex ratio, is 30.2°C. Preliminary findings from a study of natural nests suggest that although temperatures tend to be cooler in natural nests than they do in the hatcheries, they are high enough to produce an overall female bias, though not as strong as the female bias in hatcheries.<sup>30</sup>

The production of a female-biased population of Kemp's Ridelys could have an impact on conservation efforts. Since males can inseminate multiple females, this sex-ratio bias could potentially contribute to the short-term recovery of the species. Long-term impacts of a limited number of males, including low fertility and loss of genetic diversity, have been raised by scientists as concerns.<sup>31</sup>

Although scientists are still researching sea turtle longevity, the Kemp's Ridley is considered to reach sexual maturity at 10-17 years.<sup>32</sup>

During the reproductive cycle, females migrate between foraging grounds and the nesting beach. These migratory corridors are typically less than 50 m deep and run to the north and south of the nesting beach. Data tracking adult females nesting along the Mexican coast revealed that Turtles traveling north and east reached waters as far as southwest Florida and those that headed south and east traveled as far as the Yucatan Peninsula, Mexico. They typically remain in these feeding grounds for several months.<sup>33</sup>

Generally, females begin migrating toward the nesting beach in the winter in order to arrive by early spring. Turtles will mate near the nesting beach approximately 3 to 4 weeks before the first nesting, usually from late March through mid-April. After successful mating, the female stores the male's sperm in her oviduct, which enables her to fertilize her eggs after each ovulation throughout the nesting season. The female will ovulate a few days after a successful mating and will lay her clutch 2-4 weeks later. If a turtle nests more than once a season, subsequent ovulations will occur within 48 hours of each nesting.<sup>34</sup>

Little is known about the migratory patterns of adult male turtles since they spend their entire lives at sea. It is possible that they follow a pattern similar to females and migrate to the mating grounds in winter and early spring. Their movements outside of the

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<sup>28</sup>USFWS (2007) at 12.

<sup>29</sup>*Id.*

<sup>30</sup>*Id.*

<sup>31</sup>USFWS (2007) at 15.

<sup>32</sup>USFWS (2007).

<sup>33</sup>USFWS (2007) at 9.

<sup>34</sup>USFWS (2007) at 10.



WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

reproductive cycle, however, are largely unknown.<sup>35</sup>

Population Status

The Kemp's Ridley has experienced a historical, dramatic decrease in population. Less than fifty years ago, the Kemp's Ridley was an abundant sea turtle in the Gulf of Mexico. An amateur video from 1947 documented an extraordinary synchronized reproductive effort, called an "arribada," near Rancho Nuevo, Mexico. An estimated 40,000 females nested on a single day. Such an event could only have been produced by a very large adult population.<sup>36</sup> Since that time, the species has experienced one of the most dramatic population declines recorded for an animal.<sup>37</sup> Because nearly all adult females nest at a single locality, it is possible to estimate the female reproductive population by counting the nests laid at that site. From 1978-1992, an arribada rarely reached 200 females, less than one-half of one percent of the one-day's nesting in 1947.<sup>38</sup>

Today, the Kemp's Ridley appears to be in the early stages of recovery. Due to conservation efforts by the United States and Mexico, nesting has increased steadily over the past decade. During the 2000 season, an estimated 2,000 females nested at Rancho Nuevo. In 2001 a single arribada of 1,000 turtles was recorded. In 2006, a record number of nests were recorded since monitoring began in 1978: 12,143 nests were documented in Mexico, with 7,866 of those at Rancho Nuevo.<sup>39</sup> On the Texas coast, 251 Kemp's Ridley nests were recorded between 2002 and 2006. 127 nests were recorded in Texas in 2007 alone, with 73 of the nests documented at PAIS.<sup>40</sup> 195 nests were recorded on the Texas Coast in 2008 and 197 in 2009.<sup>41</sup> As petitioners demonstrate below, a panoply of factors endanger this animal and threaten these positive trends toward recovery.

Threats to Survival and Recovery

ESA Section 4 (16 U.S.C. § 1533(a)(1)) sets forth listing factors under which a species can qualify for ESA protection (see also 50 C.F.R. § 424.11(c)):

- A. **The present or threatened destruction, modification, or curtailment of habitat or range;**
- B. Overutilization for commercial, recreational, scientific, or educational purposes;
- C. **Disease or predation;**
- D. **The inadequacy of existing regulatory mechanisms; and**

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<sup>35</sup>*Id.*

<sup>36</sup>USFWS (1992) at vi.

<sup>37</sup>USFWS (1992) at 5.

<sup>38</sup>*Id.*

<sup>39</sup>USFWS (2007) at 16.

<sup>40</sup>See NPS (2010) Supra Note 9.

<sup>41</sup>See NPS (2010) Supra Note 27.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

**E. Other natural or manmade factors affecting its continued existence.**

To recover, a listed species must no longer face threats under these listing factors. The factors that continue to threaten the Kemp's Ridley are bolded above. Critical habitat would help alleviate these threats and usher this species to recovery.

*ESA Listing Factor A: Habitat Loss and Degradation*

Habitat loss and degradation remains an important threat to this species. Small numbers of Kemp's Ridley are returning to their historic nesting grounds along the Texas coast. Because the species has only one primary nesting beach, Rancho Nuevo, the species is particularly susceptible to habitat destruction through natural and human caused events. Rapidly increasing human populations will increase the magnitude of threats to habitat. Census data show that, collectively, the counties in which Kemp's Ridley turtles nest are rapidly growing as more people move to the coast.<sup>42</sup> The protection of current nesting habitat and expansion of additional nesting habitat along the Texas coast is vitally important to this sea turtle.

*Beach Armoring.* In potential nesting habitat along the Gulf Coast, beach armoring, including bulkheads, seawalls, soil retaining walls, rock revetments, sandbags, and geotextile tubes, can all impede a turtle's access to upper regions of the beach/dune system, thereby limiting the amount of available nesting habitat.<sup>43</sup> Impacts also can occur as structures are installed during the nesting season. For example, unmarked nests can be crushed or uncovered by heavy equipment, nesting turtles and hatchlings can get caught in construction debris or excavations, and hatchlings can get trapped in holes or crevices of exposed riprap and geotextile tubes. The effects of global warming are likely to increase beach armoring as storms grow more intense and more frequent. Counties will likely undertake more beach armoring as human populations grow in order to protect these residents from the harmful effects of storms and erosion.

*Sand Mining.* Sand mining (removal of beach sand for upland construction) seriously degrades and destroys nesting habitat. Although beach nourishment, or placing sand on beaches, may provide more sand, the quality of that sand, and hence the nesting beach, may be less suitable than pre-existing natural beaches. Sub-optimal nesting habitat may cause decreased nesting success, place an increased energy burden on nesting females, result in abnormal nest construction, and reduce the survivorship of eggs and hatchlings.<sup>44</sup> Sand mining may become a more serious threat as development increases along coastal areas suitable for turtle nesting.

*Non-native Plants.* Non-native vegetation has invaded many coastal areas and often out-competes native species. Non-native vegetation can lead to increased erosion and

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<sup>42</sup>U.S. Census Bureau, 2008 Population Estimates, Census 2000, 1990 Census. Online at (<http://factfinder.census.gov>; then follow "Population Finder" hyperlink).

<sup>43</sup>See NMFS Supra Note 3.

<sup>44</sup>See NMFS Supra Note 3.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

degradation of suitable nesting habitat. Exotic vegetation may also form impenetrable root mats that can prevent proper nest cavity excavation, invade and desiccate eggs, or trap hatchlings.<sup>45</sup> The presence of non-native vegetation is a problem in both PAIS and outside the Park.

*Artificial Lighting.* Artificial lighting on or near the beach adversely affects both nesting and hatchling sea turtles. Specifically, artificial lighting may deter adult female turtles from emerging from the ocean to nest and can disorient or misorient emerging hatchlings away from the ocean. Hatchlings have a tendency to orient toward the brightest direction, which on natural, undeveloped beaches is commonly toward the moonlight reflecting on the sea. However, on developed beaches, the brightest direction is often away from the ocean and toward lighted structures. Hatchlings unable to find the ocean, or delayed in reaching it, are likely to incur high mortality from dehydration, exhaustion, or predation. Hatchlings lured into lighted parking lots or toward streetlights can get crushed by passing vehicles.<sup>46</sup> While PAIS is largely undeveloped, adjacent coastal areas that provide potential habitat to the Kemp's Ridley have developments with artificial lighting that can cause problems to this species.

*Oil and Gas Development.* The Gulf is an area of high-density offshore oil extraction with chronic, low-level spills and occasional massive spills (such as the Ixtoc I oil well blowout and fire in the Bay of Campeche in 1979 and the explosion and destruction of a loaded supertanker, the Mega Borg, near Galveston in 1990). The two primary feeding grounds for adult Kemp's Ridleys in the northern and southern Gulf of Mexico are both near major areas of near-shore and off-shore oil exploration and production. The primary nesting beach at Rancho Nuevo is also vulnerable and was severely impacted by the Ixtoc I oil spill in 1979. The spill reached the nesting beach after the nesting season when adults had returned or were returning to their feeding grounds but it is possible that high hatchling mortality occurred that year in the open Gulf of Mexico as a result of the floating oil. The physiological impacts of oil on the turtles include skin alteration, decreased blood glucose and increased white blood cell counts.<sup>47</sup>

Oil and gas development also affects the marine environment of the Kemp's Ridley. Exposure to floating oil may lead to immunosuppression and other chronic health issues. In addition, coastal power plants are known to entrain small numbers of Kemp's Ridleys in the intake channels of their cooling systems.<sup>48</sup>

*Beach Vehicle Traffic.* All beaches in Texas are considered public highways. Even in PAIS, driving is permitted on 60 of the 70 miles of shoreline the park protects.<sup>49</sup> Vehicles are permitted on the beach year round. This means that nesting adult female Kemp's Ridleys, hatchlings and eggs are all endangered by vehicular traffic on the beach.

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<sup>45</sup>*Id.*

<sup>46</sup>*Id.*

<sup>47</sup>USFWS (1992) at 9.

<sup>48</sup>*Id.*

<sup>49</sup>National Park Service, "Traveling Down Island,"

<http://www.nps.gov/pais/planyourvisit/upload/Traveling%20Down%20Island.pdf> [Accessed June 2009].

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

Since the Kemp's Ridley is the only sea turtle known to come ashore to nest during the day, they are particularly vulnerable to vehicles. In addition, the noise and activity of people on the beach associated with beach-driving may cause females to return to the sea instead of nesting. Night-time driving can disturb nesting females, disorient emerging hatchlings, and crush hatchlings attempting to reach the ocean. Tire ruts left by vehicles can extend the time it takes a hatchling to reach the ocean and therefore, increase their chance of being caught by a predator.<sup>50</sup> Finally, vehicular traffic can cause sand compaction above nests, resulting in lower nest success. Sand compaction may also make it harder for females to dig out nests in the first place. PAIS' website instructs drivers to "be alert for nesting sea turtles crawling across the beach" and to "direct passing motorists around the nesting turtle or emerging hatchlings" during the sea turtle nesting season but these warnings are unlikely to have a serious affect on drivers.<sup>51</sup> These measures also do not prevent the harmful effects of tire tracks and sand compaction.

*Watercraft Traffic.* An increase in the number of docks built in suitable habitat may also increase the level of boat and vessel traffic. Turtles swimming at or just below the surface of the water are particularly vulnerable to boat and vessel strikes, which can result in serious propeller injuries and death.<sup>52</sup> These types of injuries are more frequent in areas with a high level of recreational boating, such as southern Florida. Moreover, fueling facilities at marinas can sometimes discharge oil, gas and sewage into sensitive estuarine and coastal habitats.

South Padre Island's popularity as a vacation destination for students heightens these risks. Each spring, thousands of tourists descend upon the South Padre Island beaches. Numerous activities and events are promoted on the water to draw in the tourists, including beach buggy rentals, horseback riding on the beach, banana boats, jet skis, and wave runners.<sup>53</sup> These activities put Kemp's Ridley Turtles in danger.

*Dredging.* Fishing dredges are extremely heavy metal frames that are towed along the bottom of the sea by a fishing vessel in order to collect targeted bottom-dwelling species. Fishing dredges can crush and entrap turtles, causing death or serious injury.<sup>54</sup> Dredging additionally harms productive marine habitats.<sup>55</sup> It has especially severe affects on the seagrass beds that are important for sea turtle foraging.<sup>56</sup>

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<sup>50</sup>Caribbean Conservation Corp., Sea Turtle Threats: Beach Activities, [http://www.cccturtle.org/seaturtleinformation.php?page=beach\\_activities](http://www.cccturtle.org/seaturtleinformation.php?page=beach_activities) [Accessed June 2009].

<sup>51</sup>*Id.*

<sup>52</sup>See NMFS Supra Note 3.

<sup>53</sup>South Padre Island, Spring Break, Online at: <http://springbreak.sopadre.com/main/index.php> [Accessed June 2009].

<sup>54</sup>See NMFS Supra Note 3.

<sup>55</sup>Koenig, C.C., Coleman, F.C., Grimes, C.B., Fitzhugh, G.R., Scanlon, K.M., Gledhill, C.T., and M. Grace. 2000. Protection of fish spawning habitat for the conservation of warm-temperature reef-fish fisheries of shelf-edge reefs of Florida. *Bulletin of Marine Science* 66(3): 593-616. Attachment 7.

<sup>56</sup>Erfteimeijer, P.L.A. and R.R.R. Lewis III. 2006. Environmental impacts of dredging on seagrasses: a review. *Marine Pollution Bulletin* 52: 1553-1572. Attachment 8.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

*Channelization.* Periodic dredging of sediments from navigational channels is conducted to provide for the passage of large commercial and military vessels. Channelization of inshore and near shore habitat and the subsequent disposal of dredged material in the marine environment can degrade foraging habitats through spoil dumping, degraded water quality/clarity, and altered current flow.<sup>57</sup> After incidental take of Kemp's Ridelys by dredges was identified as a problem in the late 1970s, the U.S. Army Corps of Engineers funded development of a plow-like deflector designed to push or move turtles out of the way of the dredges' suction mechanism. Shrimp trawlers have also been employed to capture and move turtles prior to or during dredging projects.<sup>58</sup> However, trawlers also harm productive marine habitats.<sup>59</sup>

*Trawling.* Trawling involves the dragging of heavy fishing gear along the bottom of shallow waters, essentially destroying or disturbing everything in its path. Because the Kemp's Ridley is a shallow water inhabitant, it is frequently caught in shrimp trawl nets that may drown or exhaust the turtle. The NMFS estimated that, prior to the 1990 law requiring TEDs, about 12,000 sea turtles drowned in shrimp trawl nets each year.<sup>60</sup> The mid-Atlantic trawl fishery for summer flounder has also contributed to the decline of immature Kemp's Ridelys that forage in the mid-Atlantic.<sup>61</sup> As a result, the industry is required to use TEDs south of Cape Charles, Virginia.<sup>62</sup> As discussed below, however, even with the use of TEDs, trawling still has adverse effects on the Turtle.

*ESA Listing Factor B: Overutilization*

As previously discussed, this no longer appears to be a significant threat to the Turtle. Human activity on nesting beaches was a major historical factor in the decline of the Kemp's Ridley Sea Turtle nesting population. Kemp's Ridley eggs were harvested for their meat and alleged aphrodisiac effect. Between the 1940s and 1960s, truckloads of the eggs were removed from the nesting grounds near Rancho Nuevo and sold in the cities and towns of Mexico and Texas.<sup>63</sup> Human consumption of turtle eggs and meat has declined with the implementation of national and international protections. However, because PAIS and all the beaches on which Kemp's Ridelys are known to nest are public access beaches, the human harvest of eggs remains a threat and must be prevented. Moreover, the United States has no authority over the species' nesting beaches in Mexico.

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<sup>57</sup>USFWS (2007) at 22.

<sup>58</sup>*Id.* at 29.

<sup>59</sup>Koenig et al. 2000.

<sup>60</sup>Texas Parks and Wildlife Department. Kemp's Ridley Sea Turtle, [http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd\\_bk\\_w7000\\_0013\\_kemps\\_ridley\\_sea\\_turtle.pdf](http://www.tpwd.state.tx.us/publications/pwdpubs/media/pwd_bk_w7000_0013_kemps_ridley_sea_turtle.pdf) [Accessed June 2009]. Attachment 9.

<sup>61</sup>See, e.g., Epperly, S.P., Braun, J., Chester, A.J., Cross, F.A., Merriner, J.V., Tester, P.A. and J.H. Churchill. 1996. Beach strandings as an indicator of at-sea mortality of sea turtles. *Bulletin of Marine Science* 59(2): 289-297. Attachment 10.

<sup>62</sup>USFWS (2007) at 28.

<sup>63</sup>USFWS (1992) at 7.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

*ESA Listing Factor C: Disease or Predation*

Fibropapillomatosis has been reported in a few Kemp's Ridleys. It is a disease characterized by the presence of internal and/or external tumors that may grow large enough to hamper swimming, vision and feeding. This disease has been reported in all sea turtle species but the frequency of the disease in Kemp's Ridleys is low and is not presently a major source of concern for the species.<sup>64</sup> However, fibropapilloma is known to be infectious between sea turtles, so a species like the Kemp's Ridley with only one major nesting area is especially vulnerable to an outbreak.

Adult sea turtles have few predators in the marine environment, mostly large sharks. Tiger sharks, especially, are known for eating sea turtles. The story is different on land: eggs and hatchlings are preyed on by fish, dogs, seabirds, raccoons, ghost crabs, coyotes and other predators that occur on nesting beaches and near shore marine habitats.<sup>65</sup>

Domestic dogs pose a threat to nests and hatchlings. Pets are permitted throughout the park at PAIS as long as they are kept on a leash.<sup>66</sup> It is very common, however, for owners to unleash their pets in open areas, especially on beaches. If not physically restrained, dogs especially can seriously injure or kill land-bound turtles or hatchlings.

Currently, all nests that are timely discovered on the beach at PAIS and northward along the Texas coast are transported to an incubation facility for protected care and monitoring. Eggs from nests found at the southern end of PAIS are incubated in a screen enclosure called a corral, located at the base camp near the National Seashore's 40-mile marker. Each year, a few nests that are not found at egg laying incubate at the nest site (*in situ*) for their entire incubation period on the Texas coast. All nests left *in situ* are threatened by predation, primarily by coyotes, raccoons, and birds. Coyotes are the largest native mammal at PAIS and are quite common throughout the park. If the recovery trajectory of this population continues, an increasing number of nests will be left in their natural locations on the beach and will be vulnerable to such predation.

Human activity can increase the number of natural predators around nesting beaches. Campgrounds, for instance, can produce unusually high concentrations of turtle predators such as coyotes, raccoons and sea birds when their natural food sources are subsidized with food from improperly stored garbage, table scraps or intentional feedings.<sup>67</sup>

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<sup>64</sup>USFWS (2007) at 23.

<sup>65</sup>See NMFS Supra Note 3.

<sup>66</sup>National Park Service: Pets, <http://www.nps.gov/pais/planyourvisit/pets.htm> [Accessed June 2009].

<sup>67</sup>Cornell Lab of Ornithology, "The Thrush Still Sings,"

[www.birds.cornell.edu/Publications/Birdscope/Spring2002/thrush.html](http://www.birds.cornell.edu/Publications/Birdscope/Spring2002/thrush.html) [Accessed February 2010].

Attachment 11. Subsidized predators are a problem for desert tortoises: see WildEarth Guardians and Western Watersheds Project. 2008. Petition to List the Sonoran Desert Tortoise Under the Endangered Species Act. Submitted to the U.S. Fish and Wildlife Service on October 9, 2008. Online at:

[http://wildearthguardians.org/Portals/0/legal/petition\\_Sonoran\\_Desert\\_Tortoise.pdf](http://wildearthguardians.org/Portals/0/legal/petition_Sonoran_Desert_Tortoise.pdf) [Accessed February 2010].

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

*ESA Listing Factor D: Inadequacy of Regulatory Mechanisms*

The Kemp's Ridley was first listed under the Endangered Species Conservation Act of 1969 on December 2, 1970, and subsequently under the Endangered Species Act (ESA) of 1973. 35 Fed. Reg. 18319. This species is listed as "endangered" under the ESA, meaning that it is in danger of extinction throughout all or a significant portion of its range. 16 U.S.C.A. §1532(6). Its listing makes it illegal to "take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things) this species. 16 U.S.C.A. §1532(6).

NMFS and FWS have joint jurisdiction for marine turtles, with NMFS having the lead in the marine environment and the USFWS having the lead on the nesting beaches. Both federal agencies, and a number of state agencies, have promulgated regulations to manage threats to sea turtles. In the Atlantic and the Gulf of Mexico, NMFS has required measures (e.g., gear modifications, changes to fishing practices, and time/area closures) to reduce sea turtle bycatch in mid-Atlantic gillnet, Chesapeake Bay pound net, and southeast shrimp and flounder trawl fisheries.

The development of TEDs has made the most dramatic effect on reducing the mortality of sea turtles caught in trawl nets. The TED is a small, metal grip trapdoor inside a trawling net that allows shrimp to pass to the back while turtles escape to safety. Since 1989, federal law requires that this device be installed on the nets of all U.S. fishing trawlers working in areas populated by sea turtles.<sup>68</sup> Also since 1989, the U.S. has embargoed shrimp harvested in a manner that adversely affects sea turtles. The U.S. Department of State is the principal implementing agency of this law, which requires nations that seek to import shrimp into the U.S. to be certified on an annual basis. Approximately 40 countries are currently certified to export shrimp to the U.S.<sup>69</sup>

However, Lewison et al. (2003) indicate the dangers to sea turtles from lack of compliance with TED regulations; adverse affects from repeated TED encounters; and inadequate TED openings.<sup>70</sup> Shaver and Caillouet (1998) also note problems with TEDs:

Despite Federal regulations requiring turtle excluder devices (TEDs) in shrimp trawls, and repeated assurances by NMFS, the US Coast Guard, and the shrimping industry that compliance with TED regulations is very high, sea turtle strandings on Texas beaches adjacent to the Gulf of Mexico continue to be associated with shrimp fishing in the Gulf along the Texas coast...During 1997 alone, there were 90% fewer sea turtle strandings on Gulfside beaches of Texas during the 8-week Texas Closure (when State and Federal waters of the Gulf along the Texas coast were

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<sup>68</sup>See NMFS Supra Note 3.

<sup>69</sup>NOAA Fisheries Office of Protected Resources, Shrimp Embargo Legislation for Marine Turtle Conservation, <http://www.nmfs.noaa.gov/pr/species/turtles/shrimp.htm> [Accessed June 2009].

<sup>70</sup>Lewison, R.L, Crowder, L.B., and D.J. Shaver. 2003. The Impact of Turtle Excluder Devices and Fisheries Closures on Loggerhead and Kemp's Ridley Strandings in the Western Gulf of Mexico. Conservation Biology 17(4):1089–1097. Attachment 12.



## WildEarth Guardians

## Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

closed to shrimping) than the 8 week periods preceding and following the closure...During the last 1.5 years, more adult Kemp's ridleys (i.e., those 60 cm in straight-line carapace length or larger) were documented stranded in Texas than in any other state in the USA or Mexico...<sup>71</sup>

In the Gulf of Mexico, TEDs reduce sea turtle mortality by just 20-40%.<sup>72</sup> The threat to sea turtles from trawling, although reduced, still remains significant.

*International Agreements*

Kemp's Ridley Sea Turtles are migratory and occur in several nations, primarily in the United States and in Mexico. Conservation efforts, then, in one country may be jeopardized by activities or events in another. A number of international regulatory schemes have been implemented in an effort to coordinate and facilitate conservation efforts in the nations where Kemp's Ridelys occur. The "Five-Year Review" describes several of these regulatory mechanisms as inadequate:

Although several international agreements provide legal protection for sea turtles, additional multilateral efforts are needed to ensure they are sufficiently implemented and/or strengthened and enforced, and key non-signatory parties need to be encouraged to accede.<sup>73</sup>

A summary of key regulatory instruments that relate to Kemp's Ridley conservation efforts is provided below.

a. Magnuson-Stevens Fishery Conservation and Management Act (MSA)

NMFS implements measures to reduce sea turtle interactions in fisheries by regulations and permits under the ESA and Magnuson-Stevens Fishery Conservation and Management Act. The MSA mandates environmentally responsible fishing practices within U.S. fisheries. In particular, it urges management plans, to the extent practicable, to minimize bycatch or, to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.<sup>74</sup> The MSA, however, does not by itself require specific measures. Few U.S. fishery management plans account for sea turtle bycatch or include measures to reduce interactions with sea turtles to reduce interactions with sea turtles.<sup>75</sup>

<sup>71</sup>Shaver, D.J. and C.W. Caillouet, Jr. 1998. More Kemp's Ridley Turtles return to south Texas to nest. Marine Turtle Newsletter 82: 1-5. Attachment 13.

<sup>72</sup>Lewison et al. (2003); Cox, T.M., Lewison, R.L., Zydelski, R., Crowder, L.B., Safina, C. and A.J. Read. 2007. Comparing Effectiveness of Experimental and Implemented Bycatch Reduction Measures: the Ideal and the Real. Conservation Biology Volume 21, No. 5, 1155-1164. Attachment 14; and Moore, J.E., Wallace, B.P., Lewison, R.L., Zydelski, R., Cox, T.M., and L.B. Crowder. 2009. A review of marine mammal, sea turtle and seabird bycatch in USA fisheries and the role of policy in shaping management. Marine Policy 33: 435-451. Attachment 15.

<sup>73</sup>USFWS (1992) at 24.

<sup>74</sup>*Id.*

<sup>75</sup>Oceana, Principal Current Sea Turtle Legislation, <http://oceana.org/sea-turtles/sea-turtle-legislation> [Accessed June 2009].

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

b. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

Kemp's Ridelys are listed in Appendix I of CITES, which means that international trade of this species is prohibited. Although CITES has been effective at minimizing the international trade of sea turtle products, it does not limit the harvest of sea turtles or sea turtle eggs within countries, or intra-county commerce of those products.<sup>76</sup> CITES is therefore not adequate protection, as historically, the harvest and sale of eggs by humans has been primarily on a local scale. This treaty also does not address modern threats to the species, such as bycatch and habitat destruction.

c. International Convention for the Prevention of Pollution from Ships (MARPOL)

This treaty restricts the discharge of plastics and other garbage into the marine environment. A large portion of the debris founds at the nesting beach and floating in near shore waters is garbage dumped from ships and oil platforms. MARPOL prohibits all vessels and offshore platforms from disposing their refuse in certain areas.<sup>77</sup>

One problem with the MARPOL treaty is that it is difficult to enforce. Each participating country conducts its own examination to verify a visiting vessel's compliance with the international standards set by MARPOL. In the United States, inspections are scheduled weeks in advance by the U.S. Coast Guard so the element of surprise is missing. There is also limited time for inspections, as ships are usually in port for just a few hours and other safety issues must be addressed at the same time. Due to limited staff resources and time restrictions, detailed inspections are rarely conducted on vessels.<sup>78</sup> Also, when incidents occur outside a country's jurisdiction, the country in which the violation is found refers the case to the "flagged" state, i.e. where the ship is registered. A 2000 GAO report found that even when referrals are made to flagged states, the response rate is poor.<sup>79</sup>

A study undertaken by NOAA evaluated the impact MARPOL has had on the frequency or amount of marine debris ingested by sea turtles. The study found that the proportion of turtles that contained ingested debris and the mass and weight of debris items were not significantly different pre- and post-MARPOL. Of the turtles analyzed, more than 50% had ingested debris both before and after the implementation of MARPOL regulations.<sup>80</sup>

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<sup>76</sup>*Id.*

<sup>77</sup>USFWS (1992) at 13.

<sup>78</sup>U.S. General Accounting Office. 2000. "Marine Pollution: Progress Made to Reduce Pollution by Cruise Ships, but Important Issues Remain." Online at: <http://www.gao.gov/new.items/rc00048.pdf> [Accessed February 2010]. Attachment 16.

<sup>79</sup>*Id.*

<sup>80</sup>National Oceanic & Atmospheric Administration. 2006. "Proceedings of the Sixteenth Annual Symposium on Sea Turtle Biology and Conservation." Online at: <http://www.cerc.usgs.gov/pubs/center/pdfDocs/90962.pdf> [Accessed February 2010]. Attachment 17.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

*United States-Mexico Conservation Efforts*

a. Rancho Nuevo

The Mexican government has played a vital role in the conservation of the Kemp's Ridley. The Kemp's Ridley has benefited from legal protection by Mexico since the 1960s. In 1977, a refuge was established at the Rancho Nuevo nesting beach as part of a system of reserves for sea turtles. On May 28, 1990, a complete ban on taking any species of sea turtle was implemented by the Mexican government. In 2002, the beach at Rancho Nuevo was designated as a Natural Protected Area under the category of Sanctuary.<sup>81</sup>

Protective measures taken at Rancho Nuevo include motorized beach patrols and the presence of armed guards. As a result of these measures, poaching of adult turtles at Rancho Nuevo has not been documented since 1980, and only occasionally is a clutch of eggs taken by humans.<sup>82</sup>

At Rancho Nuevo, nearly all nests laid on the beach are moved the same day to fenced and guarded corrals near the camps. The few missed nests that are discovered a day or more after being laid and are too old for safe transport to a corral are protected with plastic mesh *in situ* and monitored for hatching. Alternatively, if those older nests cannot be protected *in situ*, they are carefully transferred to a sand-packed Styrofoam box for incubation at one of the camps. Under these programs, from 1966-1977, an average of 23,000 hatchlings were released annually. From 1978 to the present, under a cooperative beach patrol effort involving both the FWS and Mexico's Instituto Nacional de Pesca (INP), the number of released hatchlings has been increased to a yearly average of 54,676 individuals.<sup>83</sup>

There are, however, adverse effects to the widespread use of protective hatcheries. Though considered a necessary management measure, USFWS (2007) warned that,

...this relocation and concentration of eggs into limited areas is of concern since it makes the eggs more susceptible to reduced viability due to movement-induced mortality; adverse impacts on incubation temperature, gas exchange, and hydric environment; catastrophic events like hurricanes; and predation from both land and marine predators.<sup>84</sup>

In addition, if relocated into nests with sands deficient in oxygen or moisture, hatchlings can suffer mortality or reduced behavioral competence.<sup>85</sup>

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<sup>81</sup>See NMFS Supra Note 3.

<sup>82</sup>USFWS (1992) at 11.

<sup>83</sup>*Id.*

<sup>84</sup>USFWS (2007) at 26.

<sup>85</sup>*Id.*

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

b. Head-Start

The “head-start” program relocated approximately 2,000 Kemp's Ridley eggs from Rancho Nuevo to PAIS between 1978 and 1988. The program aimed to retain hatchlings in captivity at PAIS until they had outgrown threats from avian and most non-avian predators.<sup>86</sup> The experiment was developed as a last ditch effort in the face of alarming declines in turtles nesting at Rancho Nuevo. In 1977, when the project was conceived, protection of the beach lacked manpower and funds, and whether protection would continue was unclear. Additionally, the major cause of mortality from human activity, shrimp trawling, was only then being identified and there were no TEDs to alleviate the problem.

The head-start program is considered an experiment rather than a recovery measure. Although encouraging results have been reported, there is no evidence that the program is contributing significantly to the recovery of the Kemp's Ridley population. The program has provided important information regarding how to rear hatchling turtles in captivity, turtle growth-rates, diet, and in veterinary research.<sup>87</sup> Though the head-start experiment is no longer in operation, turtle eggs laid along the Texas seashore are still collected and released within 24 hours from their hatching time so as to facilitate the natural memory “imprinting” process.<sup>88</sup>

Scientists have long voiced concerns about the head-start program, with a fundamental issue being,

...headstarted turtles may survive to maturity but may neither return to their natural nesting beach nor respond to artificial imprinting to a transplant location.<sup>89</sup>

As a result, “headstarting as a conservation tool for marine turtles has been largely discredited”.<sup>90</sup>

*ESA Listing Factor E: Other Natural or Manmade Factors*

The greatest threat to the more reproductively valuable, larger juveniles and adult Kemp's Ridelys is incidental capture in fishing gear, primarily in shrimp trawls, but also in gill nets, longlines, traps and pots, and dredges in the Gulf of Mexico and North Atlantic. Dredging and trawling cause significant mortality and have been discussed under previous listing factors. Fishing bycatch remains an enormous problem. Indeed,

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<sup>86</sup>USFWS (1992) at 14.

<sup>87</sup>*Id.*

<sup>88</sup>See NPS (2010) Supra Note 9.

<sup>89</sup>Bowen, B.W., Conant, T.A. and S.R. Hopkins-Murphy. Where are they now? The Kemp's Ridley Headstart Program. *Conservation Biology* 8(3): 853-856. See p. 854. Attachment 18.

<sup>90</sup>See NPS (2010) Supra Note 9.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

scientists estimate that 40.4% of global marine catch is bycatch.<sup>91</sup>

*Gill Nets.* Gill nets generally drift with the vessel or may be set as anchored nets in long rows at or near the bottom of the sea. In commercial sea fisheries, gill nets are sometimes operated in large sets, thousands of meters long. Sea turtles can drown or suffer serious injuries when they become entangled in gill nets.<sup>92</sup>

*Longline Fishing.* Lewison and Crowder (2007) provide an in-depth look at the effects from longline fishing to sea turtles.<sup>93</sup> They note that even if longlines are not the leading single cause of fishery mortality, longline mortality is especially troublesome as it affects reproductively valuable age classes of turtles. They remark that “longline bycatch is certainly high enough to warrant management action in all fleets that encounter vulnerable turtles.”<sup>94</sup> Longlines consist of fishing line up to 60 miles long baited with as many as 3,000 hooks that may remain in the water for up to 16 hours.<sup>95</sup> Longline fishing poses a threat to sea turtles because it is non-selective; it captures anything that bites the bait or becomes entangled in the lines. When turtles are entangled, they may drown or suffer serious injuries to their flippers from constriction by the lines or ropes. Longline gear can also hook turtles in the jaw, esophagus, or flippers, ultimately causing death.<sup>96</sup> Longline fishing and its incidental taking of turtles has increased since the international ban on high seas drift netting. It is estimated that 40,000 sea turtles get caught in longlines each year.<sup>97</sup> Although Kemp's Ridelys have not been as affected by longlines as other sea turtle species, the increased use of longlines will result in more Kemp's Ridley deaths.

In May 2009, NMFS ordered a six-month emergency closure of the bottom longline fishery in the Gulf of Mexico after a coalition of conservation groups sued to compel protective action by the agency. In 2005, NMFS issued a Biological Opinion stating that 114 sea turtles (of multiple species, including a take of 2 individuals allowed of the Kemp's Ridley) could be captured during a three-year period without violating the ESA. Data released in early 2009 showed that fishing vessels had captured nearly 1,000 turtles between July 2006 and December 2008, more than 8 times the number authorized. There is evidence of 3 Kemp's Ridley deaths during the three-year period; the fact that only 2 Kemp's Ridley takings were authorized demonstrates the value of each and every Turtle

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<sup>91</sup>Davies, R.W.D, Cripps, S.J., Nickson, A. and G. Porter. 2009. Defining and estimating global marine fisheries bycatch. *Marine Policy* 33: 661-672. Attachment 19. See also Moore et al. 2009.

<sup>92</sup>See NPS (2010) Supra Note 9.

<sup>93</sup>Lewison, R.L. and L.B. Crowder. 2007. Putting Longline Bycatch of Sea Turtles into Perspective. *Conservation Biology* 21(1): 79-86. Attachment 20.

<sup>94</sup>*Id.* at p. 83.

<sup>95</sup>Sea Turtle Restoration Project, Longlines and the Marine Environment, <http://www.seaturtles.org/article.php?id=983> [Accessed June 2009]. Additional information on nontarget take by longline fishing is Witzell (1984) at: [http://www.seaturtle.org/PDF/Witzell\\_1984\\_MarFishRev.pdf](http://www.seaturtle.org/PDF/Witzell_1984_MarFishRev.pdf) and Lewison et al. (2004) at: [http://web.gc.cuny.edu/eeb/academics/articles/lewison\\_et\\_al.pdf](http://web.gc.cuny.edu/eeb/academics/articles/lewison_et_al.pdf) [Accessed February 2010].

<sup>96</sup>*Id.*

<sup>97</sup>Sea Turtle Restoration Project, Longlines and the Marine Environment, <http://www.seaturtles.org/article.php?id=983> [Accessed June 2009].

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

to the survival of the species.<sup>98</sup> The area used by the fishery in the Gulf provides important year-round foraging habitat for sea turtles, including subadult and adult individuals, which have the highest reproductive value for the species. During the six-month closure, NMFS will evaluate whether the fishery can operate without jeopardizing the existence of sea turtles and other marine life.<sup>99</sup>

*Marine Debris.* Marine debris is a continuing problem for the Kemp's Ridley. The turtles frequently ingest or become entangled in marine debris (e.g. tar balls, plastic bags, plastic pellets, balloons, and fishing gear) as they feed along oceanographic fronts, where debris and the turtle's natural food sources converge.<sup>100</sup> Digestive tract impaction and toxic absorption are the two major risks to the turtle.<sup>101</sup> This is especially problematic for males and immature females that spend all or significant portions of their life cycle in the open ocean.

*Environmental Contamination.* Environmental contamination from coastal runoff, marine and dock construction, dredging and aquaculture can all seriously degrade the marine habitats used by the Kemp's Ridley. Coastal runoff, for example, can pollute the shallow waters utilized by this species. Sea turtles are known to bioaccumulate a variety of toxins including organochlorine compounds and heavy metals. Such exposure may lead to immunosuppression or other hormonal imbalances.<sup>102</sup>

*Natural Disasters & Climate Change.* Because the Kemp's Ridley has one primary nesting beach, this species is particularly susceptible to habitat destruction by natural events. Of particular importance to the sea turtle are the effects of tropical storms and hurricanes, which threaten their nesting beaches. Melting polar ice caps and rising sea levels brought about by global warming may lead to disappearing beaches suitable for turtle nesting. The direct impacts of sea level rise on sea turtles include loss of beaches, ecologically productive wetlands and barrier islands. Genetic studies suggest that sea turtles will not be able to adapt rapidly enough to these changing environments. These studies show that it may take 10,000 years for new turtles nesting sites to become established.<sup>103</sup>

<sup>98</sup>*Caribbean Conservation Corp. v. Locke* (N.D. Fla. filed Apr. 15, 2009).

<sup>99</sup>Sea Turtle Restoration Project. *Emergency Closure Stops Longline Fishing in the Gulf of Mexico*, Apr. 29, 2009, <http://www.seaturtles.org/article.php?id=1344> [Accessed June 2009].

<sup>100</sup>See NMFS Supra Note 3. See also Plotkin, P. and A.F. Amos. 1990. Effects of anthropogenic debris on sea turtles in the northwestern Gulf of Mexico. In R.S. Shomura and M.L. Godfrey (eds). *Proceedings of the Second International Conference on Marine Debris*, 2-7 April 1989. Honolulu, HI. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS, NOAA-TM-NMFS-SWFSC-154. Attachment 21.

<sup>101</sup>USFWS (1992) at 10.

<sup>102</sup>USFWS (2007) at 29.

<sup>103</sup>Sea Turtle Restoration Project. "Global Warming: A Triple Whammy for Sea Turtles," <http://www.seaturtles.org/article.php?id=988> [Accessed February 2010]. For information on climate change effects in the U.S., see Karl, T.R., Meehl, G.A., Miller, C.D., Hassol, S.J., Waple, A.M. and W. L. Murray (eds.). [CCSP]. 2008. *Weather and Climate Extremes in a Changing Climate. Regions of Focus: North America, Hawaii, Caribbean, and U.S. Pacific Islands. A Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research.* Department of Commerce, NOAA's National Climatic Data Center, Washington, D.C., USA, 164 pp. Online at: <http://www.climatechange.gov/Library/sap/sap3-3/final-report/sap3-3-final-all.pdf> [Accessed November

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

Climate change is also increasing water temperatures, changing ocean currents that are critical to migrating turtles, especially baby hatchlings that are mostly transported by the currents into the open ocean thousands of miles from their nesting sites. Warming ocean temperatures are also likely to negatively impact the food resources for sea turtles.<sup>104</sup>

Furthermore, global warming is likely to raise sand temperatures along with ocean temperatures. Since Kemp's Ridelys have temperature-dependant sex determination, increased sand temperatures could have serious consequences for the continued survival of the species. One study concluded that it is likely that southern populations of turtles in the U.S. will become "ultra-biased" toward female populations if the temperature increases by even 1°C.<sup>105</sup>

The Kemp's Ridley, like all sea turtles, is vulnerable to the effects of tropical storms and hurricanes, which threaten their nesting beaches, and climate change is resulting in more frequent and more intense storms.<sup>106</sup> Scientists estimate that more than half of the sea turtle nests on the coast of Florida were washed away by the four hurricanes that made landfall in 2004. In 2008, Hurricane Ike did not hit PAIS directly but the nesting beaches of the Kemp's Ridley were affected nonetheless. Debris from the storm littered the beaches, which wildlife officials worried could prevent turtles from digging their nests. Additionally, the storm left small pieces of debris floating in the ocean, which can be fatal for a turtle if mistaken for food and ingested.<sup>107</sup> Since a single storm can have a dramatic impact on a shoreline, it is vitally important that there be multiple nesting beaches that are healthy enough to support the species.

*Human Population Increase.* The Turtle occurs in an area of the U.S. that is experiencing rapid human population growth. In less than a decade, from 2000-2008, the human population in south Texas and the Texas Gulf Coast rose by over 10% (Table 1).

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2009]; and Karl, T.R., Melillo, J. M., and T.C. Peterson (eds). 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press, 2009. Online at <http://www.globalchange.gov/whats-new/286-new-assessment-climate-impacts-us> [Accessed November 2009].

<sup>104</sup>Sea Turtle Restoration Project. "Global Warming: A Triple Whammy for Sea Turtles," <http://www.seaturtles.org/article.php?id=988> [Accessed February 2010].

<sup>105</sup>Oceana. "Climate Change and Commercial Fishing: A One-two Punch for Sea Turtles", <http://oceana.org/sea-turtles/threats/climate-change/> [Accessed February 2010].

<sup>106</sup>See Karl et al. (2008, 2009).

<sup>107</sup>Lynn Brezosky, *Debris from Hurricane Ike Litters South Padre Island*, HOUS. CHRON., Oct. 3, 2008. Online at <http://www.chron.com/disp/story.mpl/hurricane/ike/6039405.html> [Accessed February 2010].

Attachment 22.



WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

**Table 1. U.S. Human Population Trends in South Texas.**

Source: US Census Bureau ([www.factfinder.census.gov](http://www.factfinder.census.gov)) [Accessed February 2010]

| County           | 2000      | 2008      |
|------------------|-----------|-----------|
| Galveston County | 250,158   | 283,361   |
| Brazoria County  | 241,767   | 292,613   |
| Matagorda County | 37,957    | 37,039    |
| Nueces County    | 313,645   | 320,652   |
| Cameron County   | 335,227   | 385,274   |
| Aransas County   | 22,497    | 24,615    |
| Total            | 1,201,251 | 1,343,554 |

In addition, Mexico's population growth is also very high, with the average number of children per adult female at 3.3, which is far in excess of a 2.0 replacement rate, and also above the rate of 2.5 for Latin America and the Caribbean.<sup>108</sup> As noted previously, this rapidly increasing human population is increasing the magnitude of threats this sea turtle faces, including development, artificial lighting, non-native vegetation, beach armoring, vehicle and watercraft use, disturbance of nesting females and hatchlings, along with a multitude of other adverse effects on this species.

*Cumulative Threats.* The International Union for the Conservation of Nature and Natural Resources (IUCN) ranks six of the seven sea turtles as at-risk species. They describe a combination of threats to sea turtles:

Their life history characteristics of being long-lived, late to mature and with a long juvenile stage, combined with the many threats from human activities in the sea and on land that affect at all stages of their life cycle are among the reasons for their high risk of extinction. In addition, global climate change is now considered to be a serious, if not entirely understood threat.<sup>109</sup>

The IUCN ranks Kemp's Ridley as critically endangered, and an updated status review is forthcoming.<sup>110</sup>

### Summary of Threats

The Kemp's Ridley is currently threatened by four of the five ESA listing factors, including destruction of its habitat; predation by a range of animals, including domestic dogs; inadequate regulatory mechanisms; and other natural or manmade threats. Some of

<sup>108</sup>United Nations (2007), online at: <http://www.un.org/esa/population/publications/worldfertility2007/worldfertility2007.htm> [Accessed February 2010].

<sup>109</sup>Polidoro, B.A., Livingstone, S.R., Carpenter, K.E., Hutchinson, B., Mast, R.B., Pilcher, N., Sadovy de Mitcheson, Y. and S. Valenti. 2009. Status of the world's marine species. Pp. 55-65. In Vié, J.-C., Hilton-Taylor, C. and Stuart, S.N. (eds.) (2009). *Wildlife in a Changing World – An Analysis of the 2008 IUCN Red List of Threatened Species*. Gland, Switzerland: IUCN. 180 pp. See p. 63. Attachment 23.

<sup>110</sup>*Id.*

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

these threats are especially severe and intersecting, and many are driven by human population rise. Given the threats the species faces in the U.S. portion of its range, Shaver and Caillouet (1998) recommend enhanced protection:

Continued loss of adult Kemp's ridleys in south Texas may cancel out a great deal of long term, costly efforts and may prohibit collection of valuable data needed to assess results of the experimental techniques used in this [head-start] project. Mexico has declared its primary nesting beach at Rancho Nuevo a refuge for nesting Kemp's ridleys, and has established a no-shrimping zone adjacent to this beach to protect the adults during breeding and nesting seasons (Eckert & Eckert 1993). It is time to give serious consideration to similar protection of the south Texas nesting assemblage of this endangered species, using the Rancho Nuevo refuge and adjacent protected waters as a model.

Because the Kemp's Ridley still faces an array of threats in its marine and terrestrial environment, despite being federally protected since 1970, it is incumbent on FWS and NMFS to provide upgraded protection by protecting nesting habitat in the U.S. portion of this sea turtle's range. Critical habitat has been shown to provide significant benefits to species, as we discuss below.

#### Benefits of Critical Habitat

Critical habitat is defined by Section 3 of the ESA as:

- (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 1533 of this title, 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 in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species.<sup>111</sup>

The designation and protection of critical habitat is one of the primary ways to achieve the fundamental purpose of the ESA, "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved."<sup>112</sup>

Critical habitat provides additional protection for listed species through Section 7 of the ESA. The Section 7 consultation requirements provide that no action authorized, funded, or carried out by any federal agency will "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse

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<sup>111</sup>16 U.S.C. §1532(5).

<sup>112</sup>16 U.S.C. §1531(b).

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

modification of [critical habitat].”<sup>113</sup> “Destruction or adverse modification” is further defined in the implementing regulations as an “alteration [of habitat] that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species.”<sup>114</sup> This prohibition is separate and in addition to the prohibition against actions that jeopardize the continued existence of a species, which is defined as “to reduce appreciably the likelihood of both the survival and recovery of a species by reducing the reproduction, numbers, or distribution of that species.”<sup>115</sup>

Critical habitat designation offers an added layer of protection to ensure that a listed species' habitat will not be degraded or destroyed. Without critical habitat designation, a listed species' protection under Section 7 of the ESA is effectively limited to avoiding jeopardy to the species in its occupied habitat, without separate consideration of the potential for “destruction or adverse modification” of occupied habitat or suitable unoccupied habitat that may be essential to the species' recovery. This distinction was summarized by the FWS in its designation of critical habitat for the northern spotted owl:

The Act's definition of critical habitat indicates that the purpose of critical habitat is to contribute to a species' conservation, which definition equates to recovery. Section 7 prohibitions against the destruction or adverse modification of critical habitat apply to actions that would impair survival and recovery of the listed species, thus providing a regulatory means of ensuring that Federal actions within critical habitat are considered in relation to the goals and recommendations of a recovery plan. As a result of the link between critical habitat and recovery, the prohibition against destruction or adverse modification of the critical habitat would provide for the protection of the critical habitat's ability to contribute fully to a species' recovery. *Thus, the adverse modification standard may be reached closer to the recovery end of the survival continuum, whereas, the jeopardy standard traditionally has been applied nearer to the extinction end of the continuum.*<sup>116</sup>

This added protection would be implemented through the issuance of a biological opinion under 16 U.S.C. §1536(b)(3)(A), which must suggest reasonable and prudent alternatives by which a finding of jeopardy or adverse modification may be avoided.

Critical habitat designation also protects species by helping to define the meaning of harm under Section 9 of the ESA, which prohibits unlawful take of listed species, including harming the species through habitat degradation. Although take through habitat degradation is not expressly limited to harm to critical habitat, it is practically much easier to demonstrate the significance of the impact to a species' habitat where that habitat has already been deemed essential, or critical, to the species' continued survival.<sup>117</sup>

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<sup>113</sup>16 U.S.C. §1536(a)(2).

<sup>114</sup>50 C.F.R. §402.2

<sup>115</sup>50 C.F.R. §402.02.

<sup>116</sup>57 Fed. Reg. 1796 at 1822 (emphasis added).

<sup>117</sup>See *Palila v. Hawaii Department of Land and Natural Resources*, 852 F. 2d 1106 (9th Circ. 1988).

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

Critical habitat also helps species by providing for agency accountability through the citizen suit provision of the ESA. The citizen suit provision permits members of the public to seek judicial review of the agency's compliance with its mandatory statutory duty to consider the habitat needs of imperiled species. Also, the designation of critical habitat provides valuable information for the development of recovery plans, which identify actions, including habitat protection, necessary for the recovery of the species. Finally, designation of critical habitat alerts other interested parties, such as states, developers, and others to the importance of the area.

Additional benefits of critical habitat were described by NMFS in its final rule designating critical habitat for the northern right whale:

A designation of critical habitat provides a clearer indication to Federal agencies as to when consultation under section 7 is required, particularly in cases where the action would not result in direct mortality or injury to individuals of a listed species.<sup>118</sup>

The critical habitat designation, describing the essential features of the habitat, also assists in determining which activities conducted outside the designated area are subject to section 7.... For example, disposal of waste material in water adjacent to a critical habitat area may affect an essential feature of the designated habitat (water quality) and would be subject to the provisions of section 7....<sup>119</sup>

NMFS goes on to state that critical habitat also assists federal agencies in planning future actions because critical habitat establishes in advance those areas that will be given special consideration in section 7 consultations. The idea is that conflicts between development and listed species can be identified and avoided early in the planning process. NMFS also states that critical habitat provides a benefit to species by focusing federal, state, and private conservation and management efforts in areas designated as critical habitat. Recovery efforts can then address special considerations needed in critical habitat areas, including conservation regulations to restrict private as well as federal activities.<sup>120</sup> Finally, NMFS points out that there may be other federal, state, or local laws that provide special protection for areas designated as critical habitat.<sup>121</sup>

The Kemp's Ridley Sea Turtle will benefit from the designation of critical habitat in all of these ways. To give this type of protection to a species through the protection of its habitat was the clearly articulated intent of Congress.

#### Description of Proposed Critical Habitat

The areas proposed for critical habitat designation, within the historic range of the

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<sup>118</sup>58 Fed. Reg. 29186 at 29187.

<sup>119</sup>*Id.*

<sup>120</sup>*Id.*

<sup>121</sup>*Id.*

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

species, include the known Kemp's Ridley nesting beaches along the Texas coast; key occupied or unoccupied potential nesting areas along the U.S. Gulf Coast and Atlantic Coast as necessary to recover the species; the known feeding grounds of juvenile Kemp's Ridelys in the Gulf of Mexico and Atlantic Ocean; and the near shore feeding grounds of adult females, to a water depth of 40 meters off the coast of all nesting grounds.

This area best fits the criteria specified at 50 CFR § 424.12 and is most essential to the survival and recovery of the species for these reasons: (1) the South Texas shoreline contains the only other nesting beaches outside of the approximately 40-km stretch of beach near Rancho Nuevo, Tamaulipas, Mexico; (2) important anthropogenic threats occur in the marine habitat and threaten reproductively valuable juvenile and adult female Kemp's Ridelys and their feeding grounds; and (3) the U.S. government does not have jurisdiction over critical habitat in Mexico but it can protect the Kemp's Ridley's habitat in the United States under the ESA through critical habitat designation.

The Turtle's Recovery Plan calls for "complete and active protection of the known nesting habitat and waters adjacent to the nesting beach."<sup>122</sup> Table 2 provides a list of beaches on which Kemp's Ridelys have nested during the last several years. These areas should all be included in a critical habitat designation for this species.

**Table 2. Kemp's Ridley Sea Turtle Nesting Locations in the United States.**

Source: NPS 2009 (Nesting data as of August 4, 2009).

| Location Found (north to south)       | Number of nests |
|---------------------------------------|-----------------|
| Bolivar Peninsula                     | 1               |
| Galveston Island                      | 3               |
| Brazoria County, N. of Surfside       | 3               |
| Surfside Beach                        | 0               |
| Quintana Beach                        | 2               |
| Bryan Beach                           | 2               |
| Brazoria County, N. of Sargent Beach  | 1               |
| Sargent Beach                         | 1               |
| Matagorda Peninsula                   | 3               |
| Matagorda Island                      | 8               |
| San Jose Island                       | 4               |
| Mustang Island                        | 2               |
| Corpus Christi Bay                    | 1               |
| North Padre Island, N. of PAIS        | 7               |
| Padre Island National Seashore (PAIS) | 117             |
| South Padre Island                    | 33              |
| Boca Chica Beach                      | 9               |
| *Total (as of August 4, 2009)         | <b>197</b>      |

The areas we nominate for critical habitat designation in the marine environment include key foraging areas in the Gulf of Mexico and Atlantic Ocean for juvenile Kemp's

<sup>122</sup>USFWS (1992) at vi.

WildEarth Guardians  
Petition to Designate Critical Habitat for the Kemp's Ridley Sea Turtle

Ridleys. Optimal environments which provide rich food sources for juveniles in their developmental stage include Sabine Pass, Texas; Caillou Bay and Calcasieu Pass, Louisiana; Big Gulley, Alabama; Cedar Key, Florida; and Ten Thousand Islands, Florida in the Gulf and Pamlico Sound, Chesapeake Bay, Long Island Sound, Charleston Harbor, and Delaware Bay along the Atlantic coast.<sup>123</sup>

Near-shore waters at depths of 37 meters or less provide the primary marine habitat for adults. These waters are typically rich in crabs and have a sandy or muddy bottom.<sup>124</sup> Adult female residency is established seasonally in these areas, as females go back and forth to the beaches to nest throughout the season. These areas should be included in a critical habitat designation for the Kemp's Ridley.

### **Request for Critical Habitat**

For all the reasons described above, WildEarth Guardians petitions the Secretary of Commerce and the Secretary of the Interior to designate critical habitat for the Kemp's Ridley Sea Turtle. Such designation will help reduce the threats this species faces in both its marine and terrestrial habitats and will eventually help it to recover.

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<sup>123</sup>USFWS (2007) at 21.

<sup>124</sup>*Id.*