

6/15/02 - 4:10 PM

Donna: Here's what we have put together for the BA

Find + replace all PAIS please

(DONNA - IF THERE IS THIS INFORMATION, PLEASE PROVIDE)

turtles. Please review this DRAFT and let me know of any changes, concerns, etc. you want made.

Also, I want to make sure you are comfortable about what is said and that what you write is still your expert opinion. Can you do this by Friday 4 PM? Let me know if not.

I am a too unsure about this to feel comfortable for stranded. For sure we have found dead turtles that had been run over after stranding, but did they strand live or dead?

NMFS and USFWS 1991a, 1991b; 1992; Ernest et al., 1998

if it had the ability to move quickly enough, of the

of vibrations to eggs

* four-wheel drive trucks associated with this project and

There has been vehicle traffic, both from visitors and heavy equipment operators, on the Gulf of Mexico shoreline for over twenty years with no documented case of a crushing of a ^{nesting} live sea turtle within the park. The risk to a sea turtle in the action area of this project is reduced when looking at past nesting activity. The average number of nests for the first 15 miles of south beach is 3 (rounded). In 2002, one of the highest nesting activity years since the beginning of the program (1986), there have been four nests found within the action area. Current nesting activity does not seem to indicate compaction from vehicles, either by the public or from the operator, is causing a negative affect. Future research in this area is called for to better understand the compaction, sand component, and vehicle threshold impacts.

found per year?

Break out by access road, drill pad, facilities for production, pipeline and the sight of vehicles moving

Vibrations and noise caused by vehicles on the beach could frighten nesting turtles, causing them to abandon their nesting attempt (false crawl). Vibrations could also harm incubating eggs. It is difficult to assess these areas as scientific data is lacking to fully understand the level of impact on sea turtles from traffic vibrations or noise. From observations of traffic and wildlife interactions, there is no question that if the two were to meet at the waters edge, vehicle traffic would push the sea turtle back into the water. This is an expected reaction of wildlife to man's presence. The effect of vibrations from people and from vehicles on the beach during a nesting event do not show a strong negative correlation to date. People driving on the beach often spot nesting sea turtles and can often approach them without disturbing the nesting activity, once she is laying the eggs. So the issue seems to be confined to a period of time from when the female sea turtle exits the water, and begins laying her eggs. Looking at nesting data collected over the past 20 years, and given that most ^{now possibly} nests are found and removed from the beach by USGS and NPS staff, the potential impact would appear to be minimal. Current nesting activity for 2002 seems to support the idea that ^{currently} current traffic levels do not have a large negative impact on the nesting sea turtles. ^{and relatively low false crawl rate}

Vehicle lights could also cause nesting turtles to false crawl and disorient hatchlings so that they crawl in the wrong direction rather than enter the sea, thereby becoming vulnerable to crushing, predation, and dehydration. Since oil and gas nighttime transportation of heavy equipment is not permitted during sea turtle nesting season, this issue is confined to the use of the beach by the general public. It is understood that there are over 500,000 trips down the action area of the beach each year by park visitors, many of which operate at night. Kemp's ridley will most likely not be affected as they are ^{primarily} daytime nesters, generally. So this leaves those species of sea turtle (Green, Loggerhead and Hawksbill) that would be most affected. The total number of these species of sea turtle, nesting at Padre Island NS within the action area of the project, would be less than three over a 15-year span. The risk of loss to those species of turtle is therefore very small. This would also apply to those hatchlings that emerge at night from the few nests missed by the daily patrols conducted by the USGS

(NMFS and USFWS 1991a, 1991b; Fletenmeyer, 1996)

that what you write is still your expert opinion. Can you do this by Friday 4 PM? Let me know if not.

and NPS staff. The chance that hatchlings could be killed by vehicle use at night along the stretch of beach within the action area of the project is minimal.

-Lights from

the operations behind the dunes could also cause false crawls and disorientation, if the lights are visible from the beach. Mitigation measures of night sky protection, use of directional and shielded lighting on the drilling rigs, prohibition of lighting on production facilities, and the required setback of 500 feet from the dunes and other light-sensitive areas is adequate to prevent this impact given current scientific data. (Mann, 1977; NMFS and USFWS, 1991a, 1991b, 1992, 1993; Ernst et al., 1998)

To reduce the direct impacts that could occur from crushing/covering nests or turtles, all vehicle operators will attend a training class held by the NPS/USGS. Monitors or observers will travel in front of large vehicles and vehicles moving equipment backwards, and drive at a reduced speed (10 to 15 mph max) to look for and help ensure that sea turtles and their tracks are protected not driven over. Observers will use ATVs during the sea turtle nesting and hatchling emergence season (April 1 through October 15) whenever possible,

since it is much easier to see faint Kemp's ridley tracks and other sea turtle tracks from ATVs than from enclosed vehicles. Vehicle speed will be limited in

order to increase the chance that sea turtles and their tracks will be seen and hence can be avoided. Vehicles will travel above the wet portion

of the beach, thereby reducing the chance of crushing stranded sea turtles. Also, beginning the project in mid-July will avoid the peak part of

the Kemp's ridley nesting season, when the potential to encounter nesting Kemp's ridley turtles or their tracks would be greatest. Vehicles will

travel in caravans when possible, to decrease the amount of time that vehicles are traversing the beach. This will further reduce the and potentially for

impacting nesting turtles or hatchlings through vibrations and noise, and lights. As a

beneficial effect to sea turtles, observers and vehicle operators from this project will provide additional observation and reporting opportunities and assist

with NPS and USGS efforts to detect, study, and protect nesting sea turtles, their nests, hatchlings, and any stranded turtles. if they

locate and report observations.

To reduce impacts from rutting, ruts will be flattened at least daily during the sea turtle nesting and hatchling emergence season. However, since

flattening of ruts could cause indirect additional impacts (including compaction of sand, and covering/crushing of sea turtle tracks), or direct impacts (including crushing of

nests, or and turtles), existing methods used to fill ruts will be reviewed and monitored on a periodic basis by the NPS, USGS, and USFWS.

specific methods to flatten ruts will be approved and impacts will be monitored.

To reduce indirect impacts from artificial lighting on to nesting turtles and hatchlings, of lights originating beyond the 500 foot setback from the beach

from the operations located behind the dunes, light wattage will be reduced to fewest possible to provide a safe operation, utilize energy saving and light reducing technology, be used at ~~to the~~ lowest level (height) necessary for safety, and all outdoor lights will be shielded and oriented in a downward direction so as to not unnecessarily illuminate the night sky or surrounding unused areas.

Describe how the project will affect the T/E species that occur in the project area.

Sea Turtles:

This project potentially may impact threatened and endangered sea turtles that occur at PAIS in the action area, but mitigation measures and monitoring of the action will be implemented to reduce the potential impact on these species, and help to ensure that the project is not likely to adversely affect ~~this~~ ^{these} species.

Currently the USGS and NPS remove all sea turtle eggs that are located from the beach and transfer them to the incubation facility at PAIS. Hatching success is elevated substantially for eggs that are transferred to this facility rather than left on the beach in-situ. The USGS and NPS also protect nesting turtles while they are on the beach and remove stranded turtles for rehabilitation or study. However, some nests missed by the patrol and monitoring effort may go undetected and unprotected from predation, insect infestation, and crushing. Additionally, some nesting and stranded turtles are not immediately found and protected by the USGS and NPS. Thus, there may be times when eggs, nesting turtles, hatchlings, and live stranded turtles could be vulnerable to activities within ~~from~~ the project action area.

Operation of all vehicles (including oil and gas heavy equipment) on the beach ^{can} ~~could~~ crush nesting turtles, live stranded turtles, hatchlings, and eggs, producing an immediate, lethal impact. Vehicles could also remove cover ^{mann, 1977; NMFS and USFWS 1991a, 1991b, 1992, 1993; Ernest et al., 1998}

sea turtle tracks, making it impossible for the USGS and NPS to find a nest for ~~study~~ ^{investigation} and protection.

Operation of vehicles on the beach ^{can} ~~could~~ cause impacts to the sand that adversely affect nesting and incubation habitat. Project vehicles will produce deeper ruts in the sand, which could impact movements of nesting females and hatchlings. Turtle hatchlings and smaller stranded sea turtles could become trapped in the ^{mann, 1977; NMFS and USFWS 1991a, 1991b, 1992, 1993; Ernest et al., 1998}

ruts for short or long periods of time, ^{causing them to weaken, invert, or} and succumb due to predation, ^{disorientation} crushing, or dehydration. According to Dr. Donna Shaver, sea turtle expert and Station Leader of the USGS Padre Island Field Research Station, the depth and slope of the ruts will influence the amount of impact.;

Deeper (can you put a max depth or range?) and more steeply sloped ruts will cause ^{Hosier et al. (1981) found that 10-15 cm deep tracks may serve as a significant impediment to loggerhead hatchlings} the most impact. ~~and~~ The

^{can} smaller the turtle the more that it will be impacted by ruts size. Vehicles ^{could} ~~could~~ also compact the sand, making it more difficult or impossible for ^{personal observation made by} nesting turtles to excavate a nest cavity and for hatchlings to emerge from an undetected nest. Data on the level of compaction necessary to inhibit or prevent nesting, or inhibit or prevent hatchling emergence is not available. There is no documented evidence that suggests what amount or level of traffic in a sandy environment, like Padre Island NS, is allowable before ~~can withstand~~ before the threshold of impacts are noticeable to the sea turtle.

¹⁹⁸¹ (Hosier et al., 1981; Fletemeyer, 1996; Ernest et al., 1998).

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Δ leading to increased false crawls and nests with shallow egg chambers (Fletemeyer, 1996).
Compaction could also make it more difficult

not status -
different
species
I think

noise levels are established. One known specimen was collected from the park in the mid-1980's but has not been seen since. As a result, the proposed drilling activities are not likely to adversely affect this species. A herpetological survey is currently underway to document species occurrence/presence in the park. Information from this inventory will be used to develop management actions and increase park knowledge of those species documented, and help to formulate future protection measures.

Kemp's ridley sea turtle:

The Kemp's ridley sea turtle (*Lepidochelys kempii*) is federally listed as an endangered species. It is the smallest of the sea turtles and adults reach maturity at about 10-15 years of age. Kemp's ridley turtles nest mostly during the daytime, often in groups called "arribadas". An individual Kemp's ridley may nest as many as three times a season (USFWS and NMFS, 1992), with an average of 2.5 clutches per season. Clutch size averages around 100 eggs. Hatchlings emerge after about 50 days of incubation and hatchling emergence occurs during the night or early morning. Kemp's ridleys are found in the Gulf of Mexico and Atlantic Ocean and some adjoining estuarine areas. Nesting occurs primarily in the vicinity of Rancho Nuevo, Tamaulipas, Mexico. Each year, some nests are also found at scattered locations between south Texas and Veracruz, Mexico. Very rarely, Kemp's ridleys nest at other locations in the U.S. outside of Texas and more Kemp's ridley nests are consistently found in south Texas, including at PAIS, than at any other location in the U.S. At PAIS, some Kemp's ridley turtles nest every year and many are found stranded (washed ashore, alive or dead) (Shaver, 1997, 1998a, 1998b, 1999a, 1999b; Shaver and Caillouet, 1998). Additionally, Kemp's ridley turtles sometimes inhabit nearshore Gulf of Mexico waters at PAIS for foraging or migration. What is historic nesting frequency and numbers in the park/Texas coast?

* Kemp's ridley is a native nester at PAIS (Hildebrand, 1963, 1981, 1983; Shaver, 1998a; Shaver and Caillouet, 1998). Additionally, since 1978, an international, experimental project involving the National Park Service at Padre Island National Seashore, USFWS, NMFS/NOAA, etc., has been on-going to establish a secondary nesting colony of Kemp's ridley turtles at Padre A Island NS. Eggs were collected in Mexico, transported to PAIS, and placed into an incubation facility there. Hatchlings were released on the beach, allowed to enter the surf and were recaptured. They were then shipped to the National Marine Fisheries Service Laboratory in Galveston, Texas for 9-11 months of rearing in captivity (head-starting) and the yearling turtles were subsequently released into the Gulf of Mexico. It was hoped that these procedures would cause the turtles to be imprinted to Padre Island NS and return there to nest when they were sexually mature. Since 1996, some turtles from this project have been documented returning to south Texas and Padre Island NS to lay eggs (Shaver, 1997, 1998a, 1999a, 1999b; Shaver and Caillouet, 1998).

In 1986, an NPS program was initiated to detect, ^{investigate} ~~monitor study~~, and protect sea turtle nests at Padre A Island NS and this on-going program has expanded since that time. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (U.S. Geological Survey [USGS] and ~~National Park Service [NPS]~~ ^{nesting sea turtles and} staff members and volunteers) use

* Historic nesting frequency of Kemp's ridley turtles on the south Texas coast is poorly known. Only six Kemp's ridley nests were documented there prior to 1979 (see Shaver and Caillouet, 1998).

Δ You already said NPS in the paragraph before and NPS is listed on the third line. The way it was changed to NPS is implied because we refer to PAIS →

ATVs to search PAIS for sea turtle tracks and nesting Kemp's ridley turtles. Each day, from at least April through mid early-July, they repeatedly patrol the entire Gulf beachfront of Padre A Island NS and adjacent State beach S during daylight hours. From 1979-2001, 45 Kemp's ridley nests were confirmed at PAIS, but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. The 45 Kemp's ridley nests were distributed along the entire Gulf beachfront length of Padre A Island NS.

The ~~dates~~ of ~~precise~~ nesting season ~~season varies~~ ^{dates vary} slightly each year. In Mexico, Kemp's ridley nests have been recorded as early as March and as late as August. The 45 nests documented at Padre A Island NS from 1979-2001 were found during the months of April, May, and June, the months that beach surveys were conducted most intensively. Nesting may also occur at the national seashore PAIS during other months, but this has not been confirmed. A dead Kemp's ridley turtle containing eggs was found washed ashore at PAIS during July and Kemp's ridley tracks have been documented ~~at~~ ^{there} PAIS during July. ^{the national seashore}

Loggerhead sea turtle:

The loggerhead sea turtle (*Caretta caretta*) is federally listed as a threatened species. It occurs in temperate and tropical waters of both hemispheres. The species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian oceans. At PAIS, loggerhead turtles sometimes inhabit nearshore Gulf of Mexico waters for foraging or migration. Additionally, a few occasionally nest at PAIS and many are found stranded there (Shaver, 1998b, 1999b). *

Adult loggerhead turtles reach maturity in 25 to 30 years. ^{clutches} Loggerheads are nocturnal nesters, although some daytime nesting occurs. They nest from one to seven times within a nesting season (average of approximately 4.1); clutch size averages 100-125 eggs along the southeastern U.S. coast (NMFS and USFWS, 1991b). Hatchling emergence typically occurs at night. In the Gulf of Mexico, there are distinct nesting populations on the coast of the Florida panhandle and the Yucatan Peninsula. Scattered nests can be found occasionally along other areas of the U.S. Gulf coast including the Chandeleur Islands, Louisiana in the north and to the U.S./Mexico border in the south.

In 1986, a program was initiated to detect, ^{investigate} ~~study~~, and protect ^{nesting sea turtles and} sea turtle nests at PAIS and this on-going program has expanded since that time. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (USGS and NPS staff members and volunteers) use ATVs to search PAIS for sea turtle tracks and nesting Kemp's ridley turtles. Each day, from ~~at least~~ ^{mid} April through early-July, they repeatedly patrol the entire Gulf beachfront of PAIS during daylight hours. The patrol season and procedures are designed primarily to detect nesting by Kemp's ridley turtles, but other sea turtle nests have also been documented as a result of the patrols and reports from the public. From 1979-2001, 19 loggerhead nests were documented at PAIS (at various locations scattered along the length of PAIS), but additional nests were likely missed, especially

* Historic nesting frequency by loggerhead turtles on the Texas coast is poorly known. Hildebrand (1981) suggested that nesting likely occurred within the last 300 years, but the earliest loggerhead nest that he was able to confirm for the Texas coast was one found in 1977.

when patrols were not conducted or were less comprehensive. Loggerhead nests were found on North Padre Island from mid-May through early August, although nesting has been documented in the southeastern U.S. from late-April through early September.

Green sea turtle:

The green sea turtle (*Chelonia mydas*) is federally listed as threatened in all of its range except the waters of Florida and the Pacific coast of Mexico, where it is endangered. It is circumglobal in tropical and sub-tropical waters. At PAIS, juvenile green sea turtles inhabit waters of the nearshore Gulf of Mexico, the Laguna Madre, and the Mansfield Channel. Additionally, a few green turtles occasionally nest at PAIS and many are found stranded there each year (Shaver, 1989, 1998b, 2000).*

Adult green turtles reach maturity at 30 to 50 years of age. Female green turtles nest at night. From one to seven clutches are deposited within a breeding season (the average number is usually two to three clutches) (NMFS and USFWS, 1991a). Average clutch size is usually 110-115 eggs. Hatchling emergence occurs at night. In this region, nesting sites include southern Florida and scattered locations in Mexico, although nesting occasionally occurs in south Texas.

In 1986, a program was initiated to detect, ^{investigate} study, and protect sea turtle nests at PAIS and this on-going program has expanded since that time. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (USGS and NPS staff members and volunteers) use ATVs to search PAIS for sea turtle tracks and nesting Kemp's ridley turtles. Each day, from ~~at least~~ ^{mid} April through ~~early~~ ^{nesting} July, they repeatedly patrol the entire Gulf beachfront of PAIS during daylight hours. The patrol season and procedures are designed primarily to detect nesting by Kemp's ridley turtles, but other sea turtle nests have also been documented as a result of the patrols and reports from the public. From 1979-2001, seven green turtle nests were documented at PAIS (all in roughly the southern half of the park) (Shaver, 1989, 2000), but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. The seven green turtle nests were found at PAIS during June and July, although nesting occurs from May through September in this region.

Hawksbill sea turtle:

The hawksbill (*Eretmochelys imbricata*) is federally listed as endangered. It occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans. Young hawksbills occur with some regularity in Texas waters, since northern currents carry them from nesting beaches in Mexico (Hildebrand, 1981). At PAIS, young hawksbills occasionally inhabit waters of the nearshore Gulf of Mexico and Mansfield Channel. Additionally, many are found stranded at PAIS each year, but nesting very rarely occurs there (Shaver, 1998b, 1999b). ^{and} ^{historic nesting by this species on the Texas coast is unknown,}

Female hawksbill turtles nest mostly during the night, but rare daytime nesting is known. They nest an average of 4.5 times per season (up to 12 clutches) clutch size averages approximately 140 eggs (NMFS and USFWS, 1993). Hatchling emergence occurs at

* A green turtle fishery, operating almost exclusively within inshore waters (bays, estuaries, and passes), began in Texas in the mid-1800s, but by 1900 the catch declined to such an extent that the turtle fishing and processing industry was virtually eliminated (Hildebrand, 1981). Although historic nesting by green turtles on the Texas coast is suspected, the first confirmed green turtle nest was not documented there until 1987 (see Shaver, 2000).

night. Hawksbills nest on scattered islands and beaches between 25 degrees North and South latitude including beaches in southeastern Florida and the states of Campeche and Yucatan in Mexico. Nesting does not regularly occur on the Texas coast.

In 1986, a program was initiated to detect, ^{investigate} study, and protect ^{nesting sea turtles and} sea turtle nests at PAIS and this on-going program has expanded since that time. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. Patrollers (USGS and NPS staff members and volunteers) use ATVs to search PAIS for sea turtle tracks and nesting Kemp's ridley turtles. Each day, from ~~at least~~ ^{mid} April through ~~early~~ July, they repeatedly patrol the entire Gulf beachfront of PAIS during daylight hours. The patrol season and procedures are designed primarily to detect nesting by Kemp's ridley turtles, but other sea turtle nests have also been documented as a result of the patrols and reports from the public. Only one hawksbill nest has been recorded on the Texas coast (Shaver, 1999b), although it is possible that additional nests were missed, especially when patrols were not conducted or were less comprehensive. The single confirmed nest was located at the southern end of PAIS in June 1998. The nesting season for hawksbills varies geographically and may extend from April through October in the Caribbean and Gulf coast of Mexico.

Leatherback sea turtle:

The leatherback sea turtle (*Dermochelys coriacea*) is federally listed as an endangered species. It ranges throughout the tropical waters of the Atlantic, Pacific, and Indian oceans, but has also been recorded from the North Atlantic, North Pacific, South Atlantic, and South Pacific. The leatherback is the largest and most pelagic sea turtle species and is normally found in the deeper waters of the Gulf of Mexico where it may undertake extensive migrations. Leatherbacks infrequently strand at PAIS (Shaver, 1998b).

Nesting occurs primarily at night and diurnal nesting occurs only occasionally. They nest five to seven times per year, with an average clutch size of 110-116 eggs (NMFS and USFWS, 1992). Hatchling emergence typically occurs at night. Leatherback nesting grounds are distributed circumglobally. Hildebrand (1963, 1981) reported leatherback nesting at Little Shell on Padre Island, including one documented nesting in 1928 and ~~some~~ ^{at least one} observed nesting in the mid-1930's. No leatherback nests have been confirmed on the Texas coast since that time.

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which is an NPS area and this is an NPS document. If you want to keep the NPS in there I suggest that you split the line as follows:

In 1986, a NPS program was initiated to detect, investigate, and protect nesting sea turtles and sea turtle nests at PAIS. This on-going program has expanded since that time and is in cooperation with the U.S. Geological Survey.