

First Kemp's Ridley Sea Turtle Nests at Dam Neck Annex

Productive Nest Generates 85 Eggs & 72 Hatchlings

A KEMP'S RIDLEY sea turtle that nested at Naval Air Station Oceana's (NASO) Dam Neck Annex was the northern-most nest of this species ever documented. It demonstrated the value of the installation's sea turtle protocols and added a new species to its list.

When two campers walking the beach at NASO Dam Neck Annex found a sea turtle nesting, they notified staff at the Sea Mist campground, where they were staying, who then notified staff at the Virginia Aquarium Stranding Team (VAST). The calls set into action the procedures for protecting endangered sea turtles, which brought together professionals from partnering agencies. After analyzing the campers' photos and marks left by the nesting turtle, they concluded they had a rare visitor—a Kemp's ridley sea turtle (*Lepidochelys kempii*). This was the farthest north the species had been known to nest. Protection of the nest and hatchlings helped 72 turtles make it to the ocean.

While most of the NASO shoreline is not ideal for sea turtle nesting, the roughly four-mile stretch at Dam Neck

Annex (DNA) does provide suitable habitat bordering the Atlantic Ocean. Five species of sea turtle are known to frequent these waters at some point during their development:

1. Green (*Chelonia mydas*)
2. Hawksbill (*Eretmochelys imbricata*)
3. Kemp's ridley (*Lepidochelys kempii*)
4. Leatherback (*Dermochelys coriacea*)
5. Loggerhead (*Caretta caretta*)

Until the Kemp's ridley sighting in 2012, only two of these species were

known to have nested successfully along the southeastern Virginia coastline—Loggerhead and Green.

While not the first Kemp's ridley to nest along the Atlantic coast, it was the first in Virginia and an unusual event for the species. Kemp's ridley sea turtles typically nest along beaches in the western Gulf of Mexico in a mass nesting event called an arribada, with many females coming ashore at the same time in the same area.

All sea turtle species are federally listed under the Endangered Species Act



An adult Kemp's ridley sea turtle making a nest and laying eggs. Obvious signs of old damage to the sea turtle's shell are likely due to shark bite.

Doug and Yvonne Gilbert

(ESA) as threatened or endangered. The Kemp's ridley was listed as endangered in 1970. As part of its responsibility to protect endangered species, NASO maintains Standard Operating Procedures (SOP) for sea turtles to address how to patrol for and respond to turtle crawls, nesting and/or strandings on installation beaches.

The NASO-DNA sea turtle program is managed in cooperation with the U.S. Fish and Wildlife Service's (USFWS) Back Bay National Wildlife Refuge (BBNWR). During sea turtle nesting season, NASO staff and authorized individuals conduct daily patrols to look for nests, signs of turtle crawls and stranded turtles. They patrol at both NASO-DNA and Virginia Army National Guard-Camp Pendleton. The trained patrollers begin their work at least 30 minutes

before sunrise, first scouting along the water's edge then proceeding to mid-beach to look for signs of turtles and turtles themselves.

In mid-June 2012, NASO's Natural Resources Manager Michael Wright had completed her morning patrol with no signs of nesting. Later that day, she was contacted because campers at the Sea Mist campground reported a nesting turtle. Wright and her colleagues from VAST, BBNWR and Virginia Department of Game & Inland Fisheries (VDGIF) initially were skeptical because the sea turtles that typically nest on the installation nest at night. After inspecting photos the campers had taken and distinctive crawl marks left by the turtle, the group deter-

mined that the nest was that of a Kemp's ridley, the only turtle known to nest during the day. According to the campers who saw the turtle nesting, she spent less than two hours on the beach from the time she left the water until she re-entered.



A Kemp's ridley sea turtle nest with nest predator guard cage installed and posted with signage (Sea Turtle General Information and National Wildlife Refuge/USFWS signage).

NASO Environmental Staff

The Basics About the Kemp's Ridley Sea Turtle

THE KEMP'S RIDLEY sea turtle has been on the endangered species list since 1970. A few of its unique characteristics include being the smallest of the sea turtles, typically nesting in mass nesting events and nesting during daylight. The relatively diminutive Kemp's ridley reaches only about two feet in length and about 100 pounds. Compare that to one of Virginia's more frequent nesters, the loggerhead turtle, which can average three feet long and weigh about 300 pounds.

Habitat information provided by the USFWS notes the following: Outside of nesting, the major habitat for Kemp's ridleys is the nearshore and inshore waters of the northern Gulf of Mexico. Adult and sub-adult Kemp's ridleys primarily occupy nearshore habitats that contain muddy or sandy bottoms where prey can be found. Kemp's ridley hatchlings and small juveniles inhabit a very different environment than adults. After emerging from the nest, hatchlings enter the water and quickly swim offshore to open ocean developmental habitat where they associate with floating Sargassum seaweed. They passively drift within the Sargassum, feeding on a wide variety of floating items. Some of these juvenile turtles remain within Gulf of Mexico currents while others are

swept out of the Gulf and into the Atlantic Ocean by the Gulf Stream. This developmental period is estimated to last approximately two years or until the turtles reach a carapace length of about eight inches, at which time these sub-adult turtles return to neritic zones of the Gulf of Mexico or northwestern Atlantic Ocean where they feed and continuing growing until they reach maturity.

Source: www.fws.gov/northflorida/seaturtles/turtle%20factsheets/kemps-ridley-sea-turtle.htm



When nests are located, NASO and USFWS biologists determine if the nest can remain in place or will need to be relocated. Factors considered include:

- Height on the beach (preferably close to the toe of the dunes)
- Location relative to average high tide line (regular inundation by water will result in embryonic mortality)
- Width of the beach
- Amount of public use
- Location relative to a military training area
- Susceptibility to erosion
- Proximity to a sloughing escarpment (susceptible to being buried too deep).

Nests at risk, as determined by the NASO Natural Resources Manager

and the USFWS biologist, are relocated to a safer location. Nest relocation follows exacting steps to protect the eggs.

In the case of the Kemp's ridley nest, it was safe to leave it in place. After USFWS personnel collected one egg for a genetic study, the team implemented nest protection steps, including:

- Installing a wire cage to keep out predators
- Placing informational signs, wire, flagging, and reflectors to educate the public, deter human disturbance and alert permittees driving on the beach
- Checking daily to ensure no unauthorized disturbance of the nest had been made, to determine if hatching had commenced, and to document any signs of predatory disturbance and plant or pest invasion.

(For more information on the genetic study, see the our sidebar "Tracking the Genetics of Nesting Turtles")

Having exact nesting time data helped the team know when to begin nest monitoring and sitting procedures, including two daytime checks and overnight "sitting." Regular presence is needed overnight because most nests hatch at night. It is important to have individuals present during hatching to protect the hatchlings from predators (including gulls, raccoons and foxes) and to help guide them to the water.

The Kemp's ridley nest hatched within one week of the time estimated by NASO and USFWS biologists. Individuals on hand during the hatch estimated that 71 hatchlings reached the ocean. Because hatchlings can continue to emerge for up to two weeks following the initial hatch, monitoring continues. When no addi-



Michael Wright (in the background) aiding a USFWS biologist in the excavation of the 2012 Kemp's ridley sea turtle nest located at NASO Dam Neck Annex. This was the first Kemp's ridley sea turtle to nest in Virginia and the most northern known location of a nesting Kemp's ridley sea turtle in North America. The nest was deemed successful with a total of 85 eggs, of which 72 hatched.
NASO Environmental Staff



Michael Wright holding an endangered Kemp's ridley sea turtle hatchling. The hatchling was found during the excavation of the nest after the nest had successfully hatched. Mrs. Wright and a number of volunteers, in coordination with the USFWS and the VDGIF, released the sea turtle later that evening and watched it successfully make its way into the Atlantic Ocean.

NASO Environmental Staff

tional hatchlings emerge, it is standard practice for the biologists to excavate the nest to study any remaining eggs or dead hatchlings. In this nest the biologists discovered 13 unhatched eggs, one live hatchling (released that night) and one dead hatchling. Ultimately the team determined a surprisingly high hatch success rate of 86 percent.

Despite multiple false crawls (a turtle coming onto the beach but not nesting), this was only the third confirmed sea turtle nest in the last 30 years at NASO-DNA. The two previous nests, in 1992 and 2002, were loggerhead sea turtles. Another Kemp's

ridley nest was confirmed in Virginia, south of NASO-DNA, in 2013.

Sea turtle experts are uncertain why these Kemp's ridley nesting events are occurring in such unexpected places. Possibilities proposed include some combination of effects of oil spills in the Gulf of Mexico, climate change, natural territory expansion, interspecies breeding between Kemp's ridleys and loggerheads, and releases of Kemp's ridley hatchlings along the Atlantic coast.

The sea turtle patrols at NASO-DNA will continue, now with a new turtle to watch out for.

NASO's sea turtle program, managed cooperatively with USFWS BBNWR personnel in Virginia, maintains SOPs that clarify the respective roles of all participants in the program and detail all activities related to sea turtle strandings, crawls, nests and nest hatches.

Annual training and refresher training is required of all program participants, including those who patrol and nest-sit. Environmental staff have the primary role in daily turtle patrols. The nest-sitting program is staffed largely by trained volunteers who have necessary installation access approval.



A Kemp's ridley sea turtle (*Lepidochelys kempii*).
Adrienne McCracken

Tracking the Genetics of Nesting Turtles

ONE PIECE OF endangered sea turtle recovery would benefit from understanding more about nesting habits including:

- How many individual females are nesting?
- How many nests does one female lay in a season?
- Do they return to the same spots to nest?
- Do their daughters return to those locations?
- What can be known about the nesting populations?

While tagging has been tried, its results can't answer all of these questions.

Scientists at the University of Georgia's (UGA) Warnell School of Forestry and Natural Resources have developed genetic testing tools that can analyze maternal DNA from viable turtle eggs. Working with USFWS personnel, researchers from UGA have been conducting analyses of loggerhead turtle eggs. Initially focused in three states of the species' Northern Recovery Unit (Georgia, South Carolina and North Carolina), the effort has expanded to Virginia.

To secure the maternal nuclear DNA, the scientists need material from between layers of the inner shell membrane, extracted within 24 hours of egg-laying. This allows them to identify the female that deposited the eggs, rather than her offspring.

While this effort is focused on loggerhead turtle nests, the more common turtle to nest in the study states, one egg was collected from the NASO-DNA Kemp's ridley nest and from a subsequent nest at False Cape, Virginia. Based on visual observations of the nesting turtles it is known that these two nests were from two different females. Additional information regarding whether the two females are related, however, might become available through the genetic testing.

For more information on the Northern Recovery Unit DNA Project, visit www.seaturtle.org/nestdb/genetics.shtml.

Training covers a wide range of topics that range from knowing what to look for to how to use and maintain the patrol equipment. Turtle-specific training includes:

- When, where and how to patrol
- What to do if there are signs of a turtle, signs of turtle crawl and/or signs of a nest
- Who to contact and the role each partner plays
- How to protect a nest
- How to monitor nests
- How to protect hatchlings on their way to the ocean.

The trainings use the current knowledge of standard practices and legal requirements.

In addition to training individuals, NASO widely distributes informational brochures about sea turtles and about the beaches and dunes of the Navy Mid-Atlantic Region, where sea turtles might nest. Sea turtle information is also published in the local Navy newspaper (the *Jet Observer*) and the installation's Officer In Charge provides notices during the weekly installation tenants meeting in advance of and during nesting season. The brochures include the USFWS's "You Can Help Protect Sea Turtles" and the VDGIF's "Where Sea Turtles Roam."

The specific information, comprehensive training and public information efforts are critical to supporting a successful nest and protection of an endangered species. 📌

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