

correlation of crawl widths and turtle widths revealed that the crawl width is not a reliable indicator of turtle size.

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### Kemp's Ridley (*Lepidochelys kempii*) Nesting in Florida, USA.

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The Kemp's ridley is one of the world's most endangered vertebrates. The primary nesting site of the species is Rancho Nuevo, Tamaulipas, Mexico, where the vast majority of nesting activity occurs. Secondary nesting beaches are located near Rancho Nuevo and isolated nesting events have occurred at a variety of other locations within the Gulf of Mexico, as well as on the eastern coast of the United States. We report the first confirmed nesting of a Kemp's ridley on the eastern coast of Florida (two nests in Volusia Co.) and an additional nesting event on Florida's west coast (Lee Co.). Genetic analysis of nuclear DNA showed that hatchlings from one of the Volusia Co. nests were pure *L.*

*kempii* and not hybrids. Including the nests reported here, five *L. kempii* nests, involving three individual turtles, have been confirmed on Florida's beaches thus far. There is no evidence that these individuals were part of the Kemp's ridley head-start program, although that possibility cannot be excluded. The manuscript from which this poster was derived has been accepted for publication in Florida Scientist 62(4) and should be published late in 1999. Correspondence and requests for reprints should be addressed to the first author at the Univ. of Florida. The 1999 Sea Turtle symposium is gratefully acknowledged for awarding SAJ a student travel grant.

### Summary of Hawksbill Turtles (*Eretmochelys Imbricata*) Nesting on Maui, Hawaii from 1991 to 1996

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This study documents the nesting of hawksbill sea turtles on Maui, Hawaii from 1991 to 1996. Hawksbill sea turtles are distributed circumtropically and are endangered throughout their range (NMFS 1998). The state of Hawaii's population of hawksbills is critically endangered, consisting of perhaps a total of 20 to 30 nesting age females (NMFS 1998).

Prior to 1991, only anecdotal reports existed regarding the sighting of nesting or foraging adult hawksbills or hatchlings on Maui, Hawaii. Since 1991, it has become evident that hawksbills still use Maui as nesting habitat.

Attention focused on hawksbill nesting on Maui in August of 1993 when a nesting female was struck and killed by a vehicle as she attempted to cross a coastal highway to nest. A hawksbill nest was also discovered in 1993. The nest contained an estimated 209 eggs of which 153 are thought to have hatched (estimated hatchling success 73%). On three separate occasions in 1994 hawksbills were discovered on shore. Two of these turtles were freed from entangling weeds and released. The third was tagged and transported to National Marine Fisheries Service, Honolulu. In 1995, a hawksbill nest from a previous year was exposed by eroding

sand dunes. Six eggs from this nest were retrieved. In 1996, a second nesting hawksbill was struck and killed (within a mile of the 1993 incident) by a vehicle while she tried to cross the highway. 134 eggs from this turtle were buried but did not hatch. Two other nests were monitored in 1996. These nests contained 148 and 191 eggs. 40 and 10 hatchlings are estimated to have emerged from these two nests, respectively (estimated hatchling success 27% and 5%, respectively). 20 hatchlings from an unidentified nest were also discovered in 1996. These hatchlings had been crushed by cars along the highway or died of dehydration after becoming entangled in non-native weeds along the roadside. One live hatchling was recovered and released.

Following the turtle fatalities in 1993 and 1996 a collaborative community and intergovernmental effort to stabilize the nesting environment, prevent turtles from reaching the highway, and monitor hawksbill nesting activity began. The backbone of this monitoring effort was a program of Dawn and Dusk Patrols. These patrols searched for signs of nesting hawksbills, monitored suspected nest sites and monitored hatchling emergence. Dawn and Dusk

Patrols have continued in subsequent years.

It became evident throughout the course of this project that a number of conservation issues existed which must be addressed in order to allow the nesting of hawksbills to continue on Maui. These problems include the presence of coastal light sources that may discourage female hawksbills from nesting in preferred habitat and may disorient hatchlings, non-native plants that could entangle hatchlings and adult hawksbills and habitat degradation as a result of

coastal development. Conservation measures to help keep turtles off the highway, to encourage nesting and to reduce human impacts have been implemented.

#### Works Cited

NMFS, National Marine Fisheries Service and U.S. Fish and Wildlife Service. 1998. Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle (*Eretmochelys imbricata*). National Marine Fisheries Service, Silver Spring, MD. 82pp

## Green Turtles (*Chelonia mydas*) and the U.S. National Park Service Inventory and Monitoring Program

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In an effort to protect and preserve its natural resources, the National Park Service established the Natural Resource Inventory and Monitoring (I & M) program in the early 1990's. Participating National Parks are grouped regionally, forming prototype ecological monitoring programs. Buck Island Reef National Monument (BUI NM) and Dry Tortugas National Park (DRTO) are part of the Virgin Islands-Southern Florida Cluster, Tropical-Subtropical Biome.

The Buck Island Sea Turtle Research Program is in its 11<sup>th</sup> year of nighttime research focusing primarily on the nesting activities of hawksbill sea turtles (*Eretmochelys imbricata*). Dry Tortugas Sea Turtle Monitoring Program is in its fourth year of comprehensive daytime monitoring of loggerhead (*Caretta caretta*) and green (*C. mydas*) sea

turtles, with loggerheads being the primary nesting turtle in the Dry Tortugas.

Buck Island and the Dry Tortugas share an important common tie: both parks have documented green turtle nesting activity over time, including a record level of green turtle activity during the 1998 nesting season. Small in size, Buck Island (with 1.5 km of nesting beach) and the Dry Tortugas (4-5 km of beach) both host a significant concentration of green turtle nesting activity within the Southeastern United States and U.S. Caribbean territories. The documentation of this activity combined with the standardization of monitoring protocol within the I & M program provides a valuable tool for the understanding and recovery of green turtle nesting populations within these regions.

## Loggerhead Turtle (*Caretta caretta*) Incubation Periods across the Florida Panhandle

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Substrate composition and geographical location interact in complex ways to influence the incubation environment for marine turtle nests. Cooler sediment temperatures can prolong the incubation period as well as influence the sex of the hatchlings (Ackerman, 1997). The geographic distribution of differences in incubation length, and implications for site-specific differences in gender due to temperature, is not well known. Such differences could be particularly important in determining hatchling survival and gender at the geographic limits of the nesting ranges of marine turtles. The loggerhead turtles (*C. caretta*) that nest in the Florida panhandle (Fig. 1) are a genetically distinct subpopulation (Encalada *et al.*, 1998) that may be affected by these differences.

Incubation length for loggerhead nests deposited in Panama City, Florida, (central panhandle) averaged 70 to 80 days (Watson, 1996) in contrast to the 53 to 55 day average previously reported for Florida (Davis and Whiting, 1977). Comparisons with unpublished data from neighboring beaches suggested that incubation lengths varied across the

panhandle. Formal comparisons were conducted to assess the incubation period for loggerhead nests across the panhandle, from St. George Island west to Perdido Key at the Florida-Alabama border (Fig. 1). In particular, we asked: do incubation lengths vary with location on a gradient across the Panhandle? If such incubation length patterns exist, further studies addressing substrate temperature and sex ratios of panhandle loggerhead nests would be appropriate.

#### Materials and Methods

In order to document incubation lengths for loggerhead nests deposited in panhandle beaches, nests were marked and the dates deposited were recorded. Nesting surveys were conducted by organizations permitted by the state to conduct marine turtle nest monitoring (Fig. 1). A total of 16 organizations surveying 24 different beaches participated in this study. Beaches were combined into nine distinct geographic regions with natural boundaries such as inlets (in most cases) as endpoints.



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