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## Introduction

A number of in-water tagging studies have been conducted to characterize aggregations of marine turtles in nearshore areas of western Florida; however, information gaps still exist along the extensive west coast. These gaps are of importance as this region represents developmental habitat that is critical to the viability of the Kemp's ridley turtle, *Lepidochelys kempii*, as well as western Atlantic subpopulations of loggerhead, *Caretta caretta*, and green turtles, *Chelonia mydas*. Long-term studies are needed to assess the status of immature turtles at key foraging areas and the Charlotte Harbor estuarine complex has been identified as a candidate index site for Florida's in-water monitoring program.

Mote Marine Laboratory collected extensive sighting data (250+ turtles) and conducted field surveys to study the in-water ecology of marine turtles in the Charlotte Harbor National Estuary. These surveys have documented habitat partitioning among the species and identified certain areas in Pine Island Sound as foraging habitat for Kemp's ridley turtles, but efforts have been hampered by the after effects of hurricanes and the ineffectiveness of set nets in capturing turtles. Conservancy of Southwest Florida and Mote Marine Laboratory are currently collaborating on in-water studies to characterize marine turtle aggregations inhabiting the Charlotte Harbor estuary using active fishing methods (i.e., strike netting).

## Materials and Methods

Charlotte Harbor is located on the southwest coast of Florida and sampling was conducted in the Pine Island Sound portion of the complex. Field operations were based from Mote's field station on Demere Key. The Conservancy's 7 m tunnel hull mullet skiff (RV McQueggie) was used for all research activities.



Surveys were performed by stopping the vessel at an area of aggregation and observing turtles that surfaced to breathe. Species were identified by size and color of the head and location was recorded via global positioning system. A 200 m strike net with 35.5

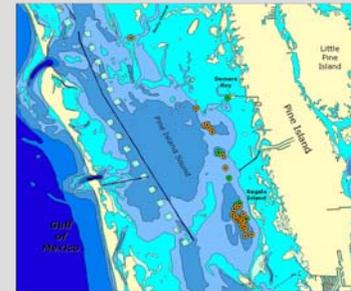
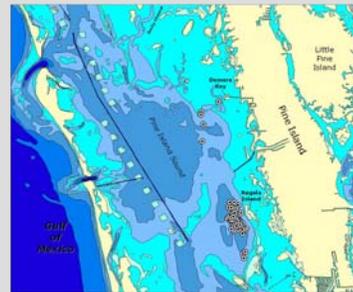
cm stretch-mesh nylon webbing was rapidly deployed to encircle a turtle and the net was hauled when a turtle became entangled or 20 min. elapsed. Captured turtles were measured, flipper and PIT tagged, and biopsy samples were collected for stable isotope analysis. A subset of Kemp's ridleys were held at the field station in shaded, plastic tanks for up to 48 hrs for fecal sample collection. Two Kemp's ridleys were instrumented with satellite transmitters and data were archived and evaluated in SEATURTLE.ORG's Satellite Telemetry Analysis Tool (STAT).

## Results

### Marine Turtle Sightings and Captures



Species	Sightings	Captures	Total
<i>Lepidochelys kempii</i>	48	37	85
<i>Caretta caretta</i>	29	4	33
<i>Chelonia mydas</i>	5	1	6



### Lengths (cm) for West Florida Marine Turtle Studies

	Kemp's ridley		Loggerhead		Green	
	mean	range	mean	range	mean	range
Charlotte Harbor (SCL <sub>min</sub> )	40.8	24.2 - 62.7	77.1	64.2 - 85.7	-	52.4
Gullivan Bay (SCL <sub>mp</sub> )	40.4	21.4 - 65.2	65.5	54.4 - 73.7	51.6	42.4 - 58.7
Waccasassa Bay (SCL <sub>u</sub> )	44.5	26.8 - 58.6	65	50.0 - 77.4	56.8	42.9 - 70.9

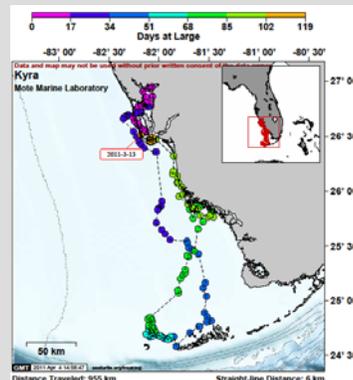
### Kemp's Ridley Diet

Cursory examination of 23 fecal samples indicated that all but one contained spider crab (*Libinia* sp.). Fragments of purse crab (*Persephona mediterranea*) have also been observed in a few samples, as well as blue crab (*Callinectes sapidus*) and calico crab (*Hepatus epheliticus*) in one sample each.

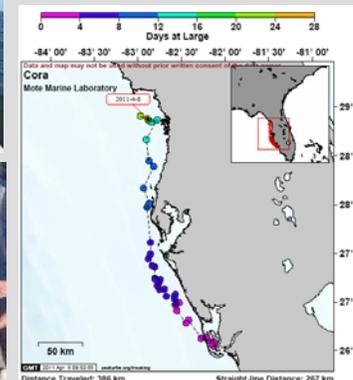


### Movements of Satellite Tracked Kemp's Ridley Turtles

"Kyra", a 51.1 cm Kemp's ridley, was tracked from 11/19/2010 to 3/13/2011.



"Cora", a 62.7 cm Kemp's ridley, was tracked from 3/17/2011 to present.



## Discussion

The relative abundance and demographics of the marine turtle species inhabiting the Charlotte Harbor estuary were similar to that of other in-water studies in western Florida. These nearshore aggregations are dominated by immature Kemp's ridley turtles.



An adult-size Kemp's ridley with tag scars (but no detectable PIT or living tags) was captured in Charlotte Harbor and a similarly enigmatic recapture was recorded in Gullivan Bay/Ten Thousand Islands. Immature and mature loggerheads have the second highest abundance and the Charlotte Harbor aggregation appeared to be dominated by adult-size turtles. Green turtles are the least abundant, perhaps due to more cryptic behavior and different habitat preferences, and were comprised of immature turtles.



Our sampling efforts were focused in a deepwater basin off Regala Island and the bottom type in this area appears to be soft sediments with scattered sponge beds (i.e., live bottom). Other studies in west Florida have documented a preference for live bottom as foraging

habitat for Kemp's ridleys. Spider crabs were the dominant food item for Kemp's ridleys in Charlotte Harbor. Future studies will include a comparison of the stable isotope composition of Kemp's ridleys with those of crab prey and habitat components.



Valuable information has been gained from the Kemp's ridley satellite tracking despite the limited sample size. "Kyra" exhibited seasonal migrations in response to changing water temperature and post-migration fidelity to Charlotte Harbor foraging areas which has also been documented for Kemp's ridleys in Waccasassa Bay/Cedar Keys. Furthermore, "Kyra" occupied seven different state and federal marine protected areas during the tracking period. "Cora", an atypical adult-size turtle occurring in nearshore waters, appeared to be a transient in Charlotte Harbor and has since moved northward to an area offshore Crystal River. Tracking efforts will be expanded in the following years to provide a better understanding of how Kemp's ridleys use Charlotte Harbor estuary and surrounding waters.

## Acknowledgments

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