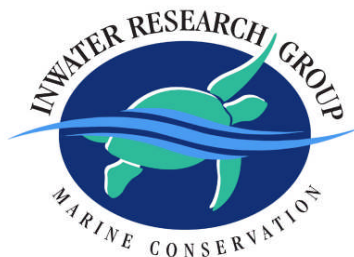


**KEY WEST NATIONAL WILDLIFE REFUGE SEA TURTLE  
PROJECT, 2005 ANNUAL REPORT  
Permit #1356**

**Submitted to : Chief, Permits  
Conservation and Education Division  
National Marine Fisheries Service  
1315 East-West Highway, Suite 13705  
Silver Spring, MD 20910**

**Submitted by : Inwater Research Group  
4160 NE Hyline Drive  
Jensen Beach, FL 34957  
[www.inwater.org](http://www.inwater.org)**



## INTRODUCTION

The Key West National Wildlife Refuge (KWNWR) was established in 1908 by an Executive Order signed by President Theodore Roosevelt. The refuge was created primarily to prevent the wholesale slaughter of wading birds that were taken for the lucrative feather trade in the early 1900's. The KWNWR is the oldest of four refuges that make up the Florida Keys National Wildlife Refuge System.

The refuge encompasses 521 square kilometers of open water and over 2000 acres of land, including the Marquesas and 13 other Keys. A portion of the United States' only continental coral reef tract resides in the KWNWR. The refuge also includes other important habitats such as mixed hardbottom/sponge areas and extensive sea grass beds. These protected areas provide important foraging habitat for endangered and threatened sea turtles.

Until recently, we knew little about the sea turtles found in the open water habitats of the refuge. Evidence for the importance of this area came from post-nesting green turtles that were satellite tracked from beaches in East-Central Florida (Schroeder et al. 1996), the Florida Panhandle (Nicholas, pers. Comm.) and the Yucatan (Garduño et al. 2000) to the Marquesas Keys. This suggested that the refuge held the first known foraging grounds for adult greens in the continental U.S. Informal reports from fishermen have supported this claim. However, outside of stranding reports, there were very few data on sea turtles in the KWNWR. This noticeable lack of data was the main reason for beginning our demographic study in 2002.

Since 2002, the sightings and captures of sea turtles in the KWNWR have begun to address our four main objectives designed to produce a comprehensive set of baseline data. These objectives include:

1. Obtain data on species abundance, size frequencies, locations and sex ratios.
2. Document the prevalence of fibropapillomatosis (FP).
3. Determine the genetic origin of sea turtles foraging in the refuge through mtDNA analysis.
4. Determine green turtle diet composition.

Inwater Research Group (IRG) conducted sampling trips in the Key West National Wildlife Refuge and surrounding waters on July 11 – 16, 2005 and on December 12 - 17, 2005. This project consists of visual surveys and rodeo capture of sea turtles found in the refuge. Captured turtles were measured, weighed and blood was taken for future DNA analysis and sex determination. Green turtles captured were also lavaged to identify diet composition. This project is expected to resume during the spring of 2006.

## METHODS

During sampling periods, we ran haphazard unmarked nonlinear transects (H.U.N.T.) through targeted habitat in search for sea turtles. During these searches the boat speed was kept at a minimum wake, usually less than 8 km/hr. We used GPS start and end waypoints to delineate our transect lengths and calculate a catch-per-unit-effort (CPUE). These CPUE measurements quantify sea turtle abundance within the refuge and are comparable to other study sites where this technique is employed. Turtles were sighted by at least two experienced researchers from the tower of a shallow draft Carolina Skiff. Sightings were recorded on transect sheets and, if feasible, turtles were pursued for capture (see rodeo method below). All sightings included a date, time, waypoint and species record. In some cases, turtles were sighted while traveling at higher speeds and not while on transect. These animals were recorded, but not pursued for capture.

Turtles were captured using the rodeo method described by Ehrhart and Ogren (1999). This method entails pursuing and capturing turtles from the bow of a boat. The method is effective in capturing turtles in relatively clear, shallow water and is relatively safe for the captured turtle. Effective rodeo involved good coordination between the observers in the tower, the driver and the jumper. Once captured by the jumper, the turtles were taken on board through a specially modified opening in the gunnels. During capture efforts, habitat types were noted to help determine if habitat partitioning exists between species.

We collected morphometric data for each captured turtle using calipers and a flexible tape as described by Pritchard et al. (1983). Turtles were also weighed and photographed before release. Tumors associated with FP were measured and recorded on a standardized tumor score sheet. The total tumor score was used to assign turtles to a severity category (Work and Balazs, 1999). Turtles were tagged with a National Band and Tag Inconel # 681 tag applied to the trailing edge of each front flipper and with a PIT tag in the right front flipper at a point above the second proximal trailing scale.

Blood samples from all turtles were taken for genetic, sex ratio and disease analysis. We drew blood from the cervical sinus using a sterile vacutainer with no additive (Owens and Ruiz 1980). A 22 gauge 1" needle was used on small juveniles, while a 1½" was used on subadults. We collected approximately 7 ml from each turtle and add a few drops to a lysis buffer in a 1:10 ratio, gently shook the mixture and stored it in a cool dark place. This blood will be used for later mtDNA haplotype analysis to determine the turtle's origin (Encalada et al. 1996). The remaining blood was placed in a sterile vacutainer with lithium heparin and spun for ten minutes in an Adams Physician centrifuge. Plasma was then pipetted into two 1.8 ml vials; one for testosterone radioimmunoassays to determine sex and the other for a study of fibropapillomatosis by collaborating researchers at the University of Florida.

Food items caught in the esophagus of green turtles were sampled using the lavage technique (Balazs, 1980). A clear flexible PVC tube was lubricated with vegetable oil and inserted down the length of the esophagus to the middle of the gular scute. The diameter of the tube was either 1/4 " or 3/8" depending on the size of the turtle. Sea water was pumped into the tube using a veterinarian's double action stomach pump and the tube was moved gently back and forth along the esophagus. Food items were collected from the backwash into a five gallon bucket. The collected food items were then placed in a four percent formalin-seawater solution for later analysis. After all measurements and samples were taken (about 35 minutes), turtles were released in the area where they were captured

### **KWNWR SEA TURTLE CAPTURES**

During sampling trips in 2005, 36 loggerheads (*Caretta caretta*), 24 green turtles (*Chelonia mydas*) and seven hawksbills (*Eretmochelys imbricata*) were rodeo captured by IRG in the KWNWR (Table 1). Loggerheads ranged in size from 54.9 – 94.6 cm straight carapace length (SCL) with a mean of 73.6 cm. Green turtles ranged from 27.0 cm – 59.1 cm SCL with a mean of 41.5 cm and hawksbills captured in the refuge ranged in size from 34.9 cm – 63.0 cm SCL with a mean of 50.1. Blood samples were taken from 30 loggerheads, 18 green turtles and seven hawksbills. Additionally, nine green turtles were lavaged for diet samples. Fibropapillomatosis (FP) was visually identified on one green turtle during this report period. Fibropapillomas found on this turtle were small and appeared to be regressing.

In 2005, 251.58 kilometers of visual transects were conducted using the H.U.N.T. method. During these transects 56 loggerheads, 100 green turtles, 15 hawksbills and two turtles unidentified to species were recorded (Table 2). Sightings per transect kilometer were calculated at 0.22 loggerheads, 0.40 green turtles and 0.06 hawksbills. At times turtles were also sighted off transect and locations were recorded by GPS (Table 2). These sightings included 31 loggerheads, 15 green turtles and two hawksbills.

Sampling trips in 2005 produced one recapture from the project and a capture of a loggerhead that had previously been tagged by other researchers. The recapture was a loggerhead that had originally been tagged on September 8, 2003 in the Baracouta Key region and was found in 2005 in the same area. Another loggerhead was captured that had originally been tagged at the St. Lucie Power Plant on Hutchinson Island on September 18, 2001.

In 2004, we had observed and captured green turtles of a size class rarely seen in Florida waters. The area west of the Marquesas Keys, where these turtles were found was difficult to get to in 2005 due to weather conditions. However, we did sight three subadult and three adult green turtles during limited visual transects conducted west of the Marquesas. In 2006, sampling effort will focus on capturing and documenting the presence of this aggregation of green turtles in an effort to understand the importance of this site.

## LITERATURE CITED

- Balazs, G.H. 1980. Field methods for sampling the dietary components of green turtles (*Chelonia mydas*). *Herpetological Review* 11(1):5-6.
- Enclada, S.E., P.N. Lahanas, K.A. Bjorndal, A.B. Bolten, M.M. Miyamoto and B.W. Bowen. 1996. Phylogeography and population structure of the Atlantic and Mediterranean green turtle (*Chelonia mydas*): a mitochondrial DNA control region sequence assessment. *Molecular Ecology* 1996(5):473-483.
- Ehrhart, L.M. and L.H. Ogren. 1999. Studies in foraging habitats: capturing and handling turtles. *In: Research and Management Techniques for the Conservation of Sea Turtles*. IUCN/SSC Marine Turtle Specialist Group Publication No. 4. p 61-64.
- Garduno, M, A, Maldonada, R, Marquez, B, Schroeder and G.H. Balazs. 2000. Satellite tracking of an adult male and female green turtle from Yucatan in the Gulf of Mexico. *In: Kalb, H. J. and T. Wibbels (Compilers), Proceedings of the nineteenth annual symposium on sea turtle biology and conservation*. NOAA Technical Memorandum, NMFS-SEFSC-443. p 158-159.
- Owens, D.W. and G.W. Ruiz. 1980. New methods of obtaining blood and cerebrospinal fluid from turtles. *Herpetologica* 36(1):17-20.
- Schroeder, B.A., L.M. Ehrhart and G.H. Balazs. 1996. Post nesting movements of Florida green turtles: preliminary results from satellite telemetry. *In: Keinath J.A., D.E. Barnard, J.A. Musick and B.A. Bell (Compilers). Proceedings of the fifteenth annual symposium on sea turtle biology and conservation*. NOAA Technical Memorandum NMFS-SEFSC-415. p 289.

**Table 1. Sea turtles captured in the Key West National Wildlife Refuge, Florida, 2005**

Species	Date	Tag Number	SSCL (cm)	SMCW (cm)	CSCL (cm)	CMCW (cm)	Weight (kg)	Comments
Caretta caretta	7/16/2005	RRC448/RRC449	54.9	47.2	59.4	60.1	27.3	Algae on carapace dominated by laurencia.
Caretta caretta	7/16/2005	RRC459/RRC460	54.9	45.8	59.9	58.1	28.5	
Caretta caretta	12/13/2005	TTK009/TTK010	59.3	49.5	64.9	60.7	30.6	Underweight, algae on carapace. Large barnacle divots on both sides of inframarginals.
Caretta caretta	7/16/2005	TTK112/TTK113	61.7	52.8	67.6	62.5	33.2	Missing 5% of RRF.
Caretta caretta	7/13/2005	TTK041/TTK042	63.8	53.5	68.5	62.5	32.3	Underweight and missing 60% of right front flipper. Small notch at distal tip of left front flipper. Heavy carapace fouling. Biopsy taken.
Caretta caretta	12/17/2005	TTK064/TTK065	64.1	52.3	69.6	63.7	38	
Caretta caretta	12/16/2005	TTK021/TTK022	64.6	53.4	69.3	64.5	34.6	Heavy algae coverage on carapace. Minor RRF damage.
Caretta caretta	12/12/2005	TTK005/TTK006	66.0	55.2	69.8	65.1	40.2	
Caretta caretta	7/12/2005	RRC426/RRC427	66.1	54.3	73.5	70.8	44.9	Well defined vertebral ridge present.
Caretta caretta	12/17/2005	TTK056/TTK057	66.6	55.4	72.2	69.1	34.9	Emaciated and lethargic
Caretta caretta	12/16/2005	TTK054/TTK055	68.4	55.8	74.1	69.7	45.4	90% of tail missing, healed.
Caretta caretta	12/12/2005	TTK003/TTK004	69.7	56.3	74.1	74.7	50.5	Missing 5% of RRF.
Caretta caretta	12/16/2005	RRE775/RRE840	70.0	58.1	74.9	70.5	49.4	RECAPTURE, from 9/8/003, at Baracouta Flat
Caretta caretta	12/16/2005	TTK051/TTK025	70.3	56.8	75.5	70.3	52.6	
Caretta caretta	7/13/2005	TTK043/TTK044	70.6	56.4	75.0	71.7	45.6	Underweight and excessive fouling on carapace. Biopsy taken.
Caretta caretta	7/16/2005	TTK122/TTK123	70.7	57.6	74.5	69.5	48.7	
Caretta caretta	7/12/2005	RRC450/RRC451	71.3	58.0	76.6	69.9	51.3	Vertebral ridge present on 5th vertebral
Caretta caretta	7/16/2005	TTK118/TTK119	71.9	58.2	76.8	71.0	48.1	Biopsy taken from LRF.
Caretta caretta	7/16/2005	RRC461/RRC462	72.4	56.1	79.6	74.3	53.5	Algae on carapace.
Caretta caretta	12/16/2005	TTK017/TTK018	72.5	58.9	78.5	73.5	59.0	Missing 5% of LRF.
Caretta caretta	7/16/2005	RRC452/RRC453	73.3	66.0	78.9	77.4	63.4	Notch missing from RFF - healed.

Species	Date	Tag Number	SSCL (cm)	SMCW (cm)	CSCL (cm)	CMCW (cm)	Weight (kg)	Comments
Caretta caretta	7/15/2005	XXS378/XXS379	74.1	57.7	80.5	77.6	57.2	STRANGE TAG, captured at the St. Lucie Power plant on Hutchinson Island on 9/18/01. SCL=74.4, weight=54.0. RFF injury present. RFF has well healed notch on distal trailing edge; almost completely severed.
Caretta caretta	12/12/2005	TTK001/TTK002	74.1	62.1	80.8	76.3	69	Tomium cracked on both sides of midline.
Caretta caretta	7/16/2005	TTK116/TTK117	75.0	60.2	81.3	80.1	56.1	Left pigal bone missing, notch above LRF. LRF missing 30%, RRF missing 20%.
Caretta caretta	7/16/2005	RRC457/RRC458	75.2	59.6	81.5	76.3	67	Algae on carapace.
Caretta caretta	12/16/2005	TTK019/TTK020	78.2	63.8	85.9	82.4	77.1	Old, healed, deep prop scar wounds to posterior carapace.
Caretta caretta	12/17/2005	TTK060/TTK061	79.6	65.0	85.7	80.9	79.5	
Caretta caretta	7/13/2005	TTK032/TTK036	81.1	65.2	85.9	80.4	85.7	
Caretta caretta	7/16/2005	RRC454/RRC456	83.6	64.5	89.5	80.3	71.3	Algae on carapace, v-shaped notch in tomium.
Caretta caretta	12/16/2005	TTK023/TTK024	84.5	68.1	87.9	87.5	98.1	Right pigal missing and healed.
Caretta caretta	12/12/2005	TTK124/TTK125	84.8	67.4	91.8	83.5	102.4	Missing 10% of RRF
Caretta caretta	7/11/2005	TTK101/TTK102	87.8	67.3	94.4	85.2	84.7	Missing 50% of right front flipper
Caretta caretta	7/12/2005	TTK028/TTK029	88.5	68.6	96.4	86.4	109.7	Missing 50% of right front flipper. Split rampotheca. Small injury under RRF- 2 puncture holes
Caretta caretta	7/11/2005	TTK103/TTK104	90.0	69.1	95.9	86.5	96.8	Old scar on base of left front flipper.
Caretta caretta	7/12/2005	TTK026/TTK027	94.5	70.4	100.1	87.7		Small U-shaped injury to right side of upper jaw.
Caretta caretta	12/17/2005	TTK062/TTK063	94.6	75.0	101.4	93.0	128	Extensive healing damage to lower right marginals, possible boat prop. Wound. Missing half of LFF. Damage to both sides of rampotheca which extends to right eye region.
Chelonia mydas	7/12/2005	RRC428	27.0	22.6	28.5	25.1	4.4	
Chelonia mydas	7/15/2005	TTK106/TTK107	29.4	24.6	31.0	27.7	3.6	Biopsy taken from RRF.
Chelonia mydas	12/13/2005	TTK011	31.0	25.1	32.2	27.6	4	Small misshapen bump on 4th vertebral. Small notch out RRF.
Chelonia mydas	12/14/2005	TTK014	32.5	26.1	33.5	29.0	4.1	Missing 5% of LFF and small notches in both RFFs
Chelonia mydas	12/14/2005	TTK015/TTK016	33.2	26.3	34.6	29.4	4.3	Biopsy taken.
Chelonia mydas	12/16/2005	TTK052/TTK053	33.3	27.4	34.5	30.2	4.2	
Chelonia mydas	7/13/2005	RRC429/RRC430	36.4	30.6	38.2	33.8	6.6	

Species	Date	Tag Number	SSCL (cm)	SMCW (cm)	CSCL (cm)	CMCW (cm)	Weight (kg)	Comments
Chelonia mydas	7/14/2005	TTK047/TTK049	36.8	29.6	38.8	33.4	6.1	Biopsy taken. 2 U-shaped notched on trailing edge of RRF.
Chelonia mydas	12/14/2005	TTK012/TTK013	38.0	31.7	40.4	37.1	7.6	Third and fourth vertebrae peeling.
Chelonia mydas	7/16/2005	TTK120/TTK121	39.4	33.7	45.7	38.8	8.1	Notch in LFF near axial of flipper.
Chelonia mydas	7/15/2005	RRC444/RRC445	40.1	32.7	41.5	36.8	7.8	
Chelonia mydas	12/12/2005	TTK007/TTK008	42.4	34.5	44.8	40.4	10.2	Biopsy taken. Some scalloping of rear flippers.
Chelonia mydas	7/13/2005	RRC435	42.7	33.8	45.4	39.5	9.8	Missing right front flipper.
Chelonia mydas	7/13/2005	TTK039/TTK040	43.5	37.3	46.2	42.6	10.4	Very clean.
Chelonia mydas	12/17/2005	TTK058/TTK059	43.8	35.7	46.3	41.0	11.1	5 left costal, pronounced hump at 1st vertebral.
Chelonia mydas	7/14/2005	TTK045/TTK046	44.2	35.6	46.5	40.2	10.5	
Chelonia mydas	12/17/2005	TTK066/TTK067	44.8	36.1	47.4	42.4	12.2	
Chelonia mydas	7/13/2005	TTK033/TTK038	47.6	39.5	50.6	46.1	15.6	
Chelonia mydas	7/15/2005	TTK108/TTK109	47.8	39.0	51.2	45.1	14.5	Biopsy taken from RRF.
Chelonia mydas	7/15/2005	TTK048/TTK105	49.7	41.6	53.0	46.1	15.8	
Chelonia mydas	7/14/2005	RRC438/RRC439	49.9	40.0	52.9	47.7	18.5	Small notch on 13th left marginal.
Chelonia mydas	7/16/2005	TTK114/TTK115	51.9	41.0	54.1	48.5	19.3	
Chelonia mydas	7/14/2005	RRC440/RRC441	52.2	41.7	54.9	46.9	16.7	
Chelonia mydas	7/16/2005	RRC463/RRC464	59.1	43.8	61.7	51.4	28.9	PAPILLOMAS, all regressed and barely visible. Healed injury to RFF.
Eretmochelys imbricata	7/13/2005	RRC433/RRC434	34.9	27.3	36.0	33.6	5.7	
Eretmochelys imbricata	7/12/2005	TTK034/TTK035	46.4	34.3	49.5	42.8	12.1	Unusual vertebral scute pattern.
Eretmochelys imbricata	7/12/2005	TTK030	47.3	34.1	50.2	43.6	9.7	Missing entire right front flipper.
Eretmochelys imbricata	7/13/2005	RRC431/RRC432	50.0	38.6	52.5	46.9	16.2	Missing small notch, between 7-9 right marginal.
Eretmochelys imbricata	7/15/2005	RRC446/RRC447	51.1	37.2	54.3	48.0		Very sharp marginals
Eretmochelys imbricata	7/14/2005	RRC442/RRC443	58.3	42.8	61.0	53.5	23.3	Soft tissue barnacles and red algae on carapace.
Eretmochelys imbricata	7/14/2005	RRC436/RRC437	63.0	46.1	66.9	57.8	30.3	Barnacles along imbrication of scutes

**Table 2 . Sea turtle sightings, Key West National Wildlife Refuge, 2005.**

<b>SPECIES</b>	<b>Life Stage</b>	<b>Date</b>	<b>Lat/Long</b>	<b>Transect/Non</b>
<i>Caretta caretta</i>	NR	07/11/05	N24.55176 W81.92489	N
<i>Caretta caretta</i>	NR	07/11/05	N24.55583 W81.92319	N
<i>Caretta caretta</i>	NR	07/11/05	N24.55657 W81.87281	N
<i>Caretta caretta</i>	Adult	07/12/05	N24.55406 W81.89343	N
<i>Caretta caretta</i>	NR	07/12/05	N24.55956 W81.91430	N
<i>Caretta caretta</i>	NR	07/12/05	N24.54268 W81.93236	N
<i>Caretta caretta</i>	NR	07/12/05	N24.55698 W81.87269	N
<i>Caretta caretta</i>	NR	07/12/05	N24.55608 W81.87801	N
<i>Caretta caretta</i>	NR	07/12/05	N24.55626 W82.08281	N
<i>Caretta caretta</i>	Subadult	07/13/05	N24.55265 W81.95003	N
<i>Caretta caretta</i>	NR	07/13/05	N24.54066 W81.93520	N
<i>Caretta caretta</i>	Adult	07/13/05	N24.55591 W81.89343	N
<i>Caretta caretta</i>	Subadult	07/13/05	N24.56426 W82.13505	N
<i>Caretta caretta</i>	Subadult	07/13/05	N24.56273 W82.13582	N
<i>Caretta caretta</i>	NR	07/13/05	N24.56415 W81.84797	N
<i>Caretta caretta</i>	NR	07/14/05	N24.56404 W82.13820	N
<i>Caretta caretta</i>	NR	07/14/05	N24.55236 W81.96314	N
<i>Caretta caretta</i>	NR	07/14/05	N24.55301 W81.96456	N
<i>Caretta caretta</i>	NR	07/14/05	N24.55323 W81.96562	N
<i>Caretta caretta</i>	NR	07/14/05	N24.55281 W81.92773	N
<i>Caretta caretta</i>	NR	07/15/05	N24.55645 W81.92958	N
<i>Caretta caretta</i>	NR	07/16/05	N24.53439 W81.93760	N
<i>Caretta caretta</i>	NR	07/16/05	N24.55603 W81.90290	N
<i>Caretta caretta</i>	NR	07/16/05	N24.55666 W81.90358	N
<i>Caretta caretta</i>	NR	07/16/05	N24.55413 W81.89184	N
<i>Caretta caretta</i>	NR	12/15/05	N24.54445 W81.93029	N
<i>Caretta caretta</i>	NR	12/16/05	N24.53534 W81.93968	N
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53716 W81.93306	N
<i>Caretta caretta</i>	NR	12/17/05	N24.54023 W82.03393	N
<i>Caretta caretta</i>	NR	12/17/05	N24.54626 W82.06917	N
<i>Caretta caretta</i>	NR	12/17/05	N24.55337 W82.10153	N
<i>Caretta caretta</i>	NR	07/11/05	N24.55506 W81.87337	T
<i>Caretta caretta</i>	Adult	07/11/05	N24.55371 W81.88561	T
<i>Caretta caretta</i>	Adult	07/11/05	N24.55427 W81.89625	T
<i>Caretta caretta</i>	Adult	07/12/05	N24.57204 W82.13121	T
<i>Caretta caretta</i>	NR	07/12/05	N24.54093 W81.93245	T
<i>Caretta caretta</i>	Subadult	07/12/05	N24.55592 W81.89763	T
<i>Caretta caretta</i>	Subadult	07/12/05	N24.53909 W81.93192	T
<i>Caretta caretta</i>	NR	07/13/05	N24.58643 W82.15026	T
<i>Caretta caretta</i>	Adult	07/13/05	N24.56778 W82.15427	T
<i>Caretta caretta</i>	NR	07/13/05	N24.54022 W81.93505	T
<i>Caretta caretta</i>	Subadult	07/13/05	N24.55455 W81.89285	T
<i>Caretta caretta</i>	NR	07/14/05	N24.53989 W81.93934	T
<i>Caretta caretta</i>	Subadult	07/15/05	N24.56278 W82.13603	T
<i>Caretta caretta</i>	Juvenile	07/16/05	N24.53398 W81.93555	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.53834 W81.94582	T

<b>SPECIES</b>	<b>Life Stage</b>	<b>Date</b>	<b>Lat/Long</b>	<b>Transect/Non</b>
<i>Caretta caretta</i>	Subadult	07/16/05	N24.55088 W81.92072	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54957 W81.91706	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54912 W81.90605	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54140 W81.93208	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.53767 W81.93826	T
<i>Caretta caretta</i>	NR	07/16/05	N24.54089 W81.94451	T
<i>Caretta caretta</i>	NR	07/16/05	N24.54078 W81.94374	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.53988 W81.94449	T
<i>Caretta caretta</i>	NR	07/16/05	N24.53975 W81.94294	T
<i>Caretta caretta</i>	NR	07/16/05	N24.54047 W81.93884	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54041 W81.93917	T
<i>Caretta caretta</i>	NR	07/16/05	N24.54414 W81.93542	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54454 W81.93539	T
<i>Caretta caretta</i>	Subadult	07/16/05	N24.54981 W81.91269	T
<i>Caretta caretta</i>	Subadult	12/12/05	N24.54083 W81.93224	T
<i>Caretta caretta</i>	NR	12/12/05	N24.54083 W81.93225	T
<i>Caretta caretta</i>	Subadult	12/12/05	N24.54148 W81.93300	T
<i>Caretta caretta</i>	NR	12/12/05	N24.54313 W81.93445	T
<i>Caretta caretta</i>	Subadult	12/12/05	N24.54343 W81.93306	T
<i>Caretta caretta</i>	Subadult	12/12/05	N24.54347 W81.93402	T
<i>Caretta caretta</i>	Subadult	12/13/05	N24.56226 W81.90124	T
<i>Caretta caretta</i>	NR	12/13/05	N24.55852 W81.90915	T
<i>Caretta caretta</i>	NR	12/14/05	N24.55888 W81.90254	T
<i>Caretta caretta</i>	Adult	12/14/05	N24.53974 W81.93209	T
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53898 W81.97093	T
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53871 W81.97151	T
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53467 W81.96648	T
<i>Caretta caretta</i>	NR	12/16/05	N24.53480 W81.95823	T
<i>Caretta caretta</i>	NR	12/16/05	N24.52037 W81.96189	T
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53718 W81.93846	T
<i>Caretta caretta</i>	Adult	12/16/05	N24.53496 W81.93949	T
<i>Caretta caretta</i>	Subadult	12/16/05	N24.53559 W81.94113	T
<i>Caretta caretta</i>	NR	12/17/05	N24.55936 W82.12484	T
<i>Caretta caretta</i>	Subadult	12/17/05	N24.56365 W82.13626	T
<i>Caretta caretta</i>	NR	12/17/05	N24.56684 W82.13469	T
<i>Caretta caretta</i>	NR	12/17/05	N24.56521 W82.13596	T
<i>Caretta caretta</i>	NR	12/17/05	N24.56521 W82.13597	T
<i>Caretta caretta</i>	Subadult	12/17/05	N24.56472 W82.13701	T
<i>Caretta caretta</i>	Adult	12/17/05	N24.55901 W82.13013	T
<i>Caretta caretta</i>	Subadult	12/17/05	N24.55608 W82.12858	T
<i>Chelonia mydas</i>	Juvenile	07/11/05	N24.54073 W81.93172	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.57476 W82.12964	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.57482 W82.12908	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.55530 W82.12151	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.57298 W82.12901	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.57555 W82.12904	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.57536 W82.12969	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.56021 W82.11789	T

<b>SPECIES</b>	<b>Life Stage</b>	<b>Date</b>	<b>Lat/Long</b>	<b>Transect/Non</b>
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.53736 W81.93409	T
<i>Chelonia mydas</i>	Juvenile	07/12/05	N24.53664 W81.93338	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56276 W82.11466	N
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56835 W82.12389	N
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57184 W82.12848	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57261 W82.12837	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57432 W82.12881	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57439 W82.12884	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57180 W82.13156	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.57241 W82.13144	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56808 W82.13153	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56667 W82.13066	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56061 W82.13249	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56039 W82.13151	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56137 W82.13303	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56352 W82.13835	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.55929 W82.13934	T
<i>Chelonia mydas</i>	Adult	07/13/05	N24.56440 W82.20963	T
<i>Chelonia mydas</i>	Adult	07/13/05	N24.56937 W82.20998	T
<i>Chelonia mydas</i>	Subadult	07/13/05	N24.56937 W82.20999	T
<i>Chelonia mydas</i>	Adult	07/13/05	N24.56793 W82.20916	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.54050 W81.93239	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56158 W82.13712	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56273 W82.13581	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.56778 W82.15426	T
<i>Chelonia mydas</i>	Subadult	07/13/05	N24.56778 W82.15427	T
<i>Chelonia mydas</i>	Subadult	07/13/05	N24.56648 W82.21187	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.53516 W81.93468	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.53512 W81.93446	T
<i>Chelonia mydas</i>	Juvenile	07/13/05	N24.54221 W81.93112	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56462 W82.14396	N
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.55308 W81.96471	N
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.55645 W82.12746	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.55974 W82.13170	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56266 W82.13710	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56033 W82.13508	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.55959 W82.13716	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56268 W82.13807	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56276 W82.14123	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56423 W82.14366	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56144 W82.13175	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56538 W82.14123	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56538 W82.14124	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56496 W82.14229	T
<i>Chelonia mydas</i>	Juvenile	07/14/05	N24.56432 W82.13949	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57222 W82.12882	N
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57059 W82.12903	N
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57100 W82.12898	N

<b>SPECIES</b>	<b>Life Stage</b>	<b>Date</b>	<b>Lat/Long</b>	<b>Transect/Non</b>
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57320 W82.12846	N
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57285 W82.12880	N
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56599 W82.12690	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56388 W82.12861	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56388 W82.12862	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56106 W82.12899	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56241 W82.12991	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56650 W82.13521	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.57425 W82.12865	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56241 W82.13561	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56057 W82.13599	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56531 W82.13476	T
<i>Chelonia mydas</i>	Juvenile	07/15/05	N24.56250 W82.13405	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.55602 W81.90291	N
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.53638 W81.94184	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.53843 W81.94113	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.53497 W81.94364	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.54075 W81.94872	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.54158 W81.94805	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.54763 W81.90484	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.54151 W81.93211	T
<i>Chelonia mydas</i>	Juvenile	07/16/05	N24.54204 W81.93153	T
<i>Chelonia mydas</i>	Juvenile	12/12/05	N24.56914 W81.90656	T
<i>Chelonia mydas</i>	Juvenile	12/12/05	N24.57362 W81.90824	T
<i>Chelonia mydas</i>	Juvenile	12/12/05	N24.57554 W81.90987	T
<i>Chelonia mydas</i>	Juvenile	12/12/05	N24.57037 W81.90996	T
<i>Chelonia mydas</i>	Juvenile	12/13/05	N24.55548 W81.88978	T
<i>Chelonia mydas</i>	Juvenile	12/13/05	N24.55507 W81.89032	T
<i>Chelonia mydas</i>	Juvenile	12/13/05	N24.55776 W81.88619	T
<i>Chelonia mydas</i>	Juvenile	12/13/05	N24.55661 W81.89015	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.53973 W81.93208	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.55638 W81.89057	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.55611 W81.89335	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.55949 W81.89611	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.55675 W81.88702	T
<i>Chelonia mydas</i>	Juvenile	12/14/05	N24.55670 W81.88710	T
<i>Chelonia mydas</i>	Juvenile	12/15/05	N24.55659 W81.88725	T
<i>Chelonia mydas</i>	Juvenile	12/15/05	N24.55597 W81.89192	T
<i>Chelonia mydas</i>	Juvenile	12/15/05	N24.53937 W81.92857	T
<i>Chelonia mydas</i>	Juvenile	12/15/05	N24.55644 W81.89124	T
<i>Chelonia mydas</i>	Juvenile	12/15/05	N24.55637 W81.89121	T
<i>Chelonia mydas</i>	Juvenile	12/16/05	N24.53716 W81.93844	N
<i>Chelonia mydas</i>	Juvenile	12/16/05	N24.53516 W81.93583	T
<i>Chelonia mydas</i>	Juvenile	12/16/05	N24.55536 W81.89001	T
<i>Chelonia mydas</i>	Juvenile	12/16/05	N24.55431 W81.88901	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56007 W82.12557	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56372 W82.13577	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56753 W82.13206	T

<b>SPECIES</b>	<b>Life Stage</b>	<b>Date</b>	<b>Lat/Long</b>	<b>Transect/Non</b>
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56703 W82.13050	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56521 W82.13595	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56616 W82.14031	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56572 W82.13224	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.56625 W82.13254	T
<i>Chelonia mydas</i>	Juvenile	12/17/05	N24.55631 W81.88739	T
<i>Eretmochelys imbricata</i>	Juvenile	07/12/05	N24.56636 W82.12346	T
<i>Eretmochelys imbricata</i>	Juvenile	07/12/05	N24.56615 W82.12333	T
<i>Eretmochelys imbricata</i>	Juvenile	07/13/05	N24.56358 W82.13443	T
<i>Eretmochelys imbricata</i>	Juvenile	07/13/05	N24.56456 W82.13339	T
<i>Eretmochelys imbricata</i>	Juvenile	07/13/05	N24.53612 W81.93706	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.56064 W82.12782	N
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.54893 W81.95216	N
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.56124 W82.13856	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.55978 W82.13792	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.56099 W82.13314	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.56180 W82.13753	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.56605 W82.13671	T
<i>Eretmochelys imbricata</i>	Juvenile	07/14/05	N24.54579 W81.95226	T
<i>Eretmochelys imbricata</i>	Juvenile	07/15/05	N24.55995 W82.12631	T
<i>Eretmochelys imbricata</i>	Juvenile	07/15/05	N24.56152 W82.12829	T
<i>Eretmochelys imbricata</i>	Juvenile	07/15/05	N24.56316 W82.13531	T
<i>Eretmochelys imbricata</i>	Juvenile	07/15/05	N24.56380 W82.13559	T
UNKNOWN	NR	07/14/05	N24.56078 W82.13347	T
UNKNOWN	NR	07/14/05	N24.56448 W82.14135	T