NESTING LOGGERHEAD SEA TURTLE ACTIVITY REPORT 2000
AND 1980-2000 NESTING SUMMARY

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ABSTRACT

This paper presents results from the 8th Annual Study (using Army Corp of Engineers funds) of nesting by the Atlantic Loggerhead sea turtle (Caretta caretta) along the Atlantic Ocean coastline in Virginia Beach, Virginia during 2000. All surveys were implemented by volunteers and staff of the Back Bay National Wildlife Refuge, Virginia Beach, Virginia, throughout the sea turtle nesting season. Two seasonal, full-time biological technicians were hired to search twenty-five miles of beach along the northern periphery of the nesting range of the Atlantic Loggerhead. Refuge biologists investigated two Loggerhead sea turtle crawls during the 2000 nesting season. The successful nesting attempt for the 2000 nesting season occurred July 11, 2000 on Back Bay NWR, 2.6 miles south of the Refuge beach ramp. It produced a nest of 112 eggs. Refuge employees captured the nesting Loggerhead female and Virginia Institute of Marine Science personnel applied flipper tags and a satellite transmitter. A second crawl, located at the southern end of False Cape State Park, provided no evidence of a nest. An employee at False Cape State Park sighted a third sea turtle crawl, however, tides obliterated it before the sighting could be confirmed. No nests or crawls were located along the oceanfronts of Sandbridge, the Virginia Beach Resort Area, or Fort Story. Night patrols were conducted from June 5-June 29 and July 26-August 4 by volunteers and Refuge employees, however no turtle was sighted or captured during this period. This report also includes an analysis of Loggerhead sea turtle nests and stranding data from 1980 to 2000.

II. INTRODUCTION

The Atlantic leatherback, the Atlantic loggerhead, the Atlantic green, and the Kemp's Ridley sea turtle are the four sea turtles regularly seen in Virginia waters (Keinath, Musick, and Byles 1987). All of these are federally listed as either threatened or endangered (50CFR1981). The loggerhead, *Caretta caretta* is the only recurrent sea turtle species nesting on beaches of the Atlantic Oceanfront in Virginia Beach. Pollution, exploitation, poor fishing practices, and habitat modifications have aided in the loggerhead decline. Since sea turtles come ashore only to lay eggs (Dodd 1988), nesting provides the most convenient opportunity for monitoring and research.

The twenty-five miles of beach searched for loggerhead sea turtle use this year, occurs along the northern extent of the established nesting range for this species in the United States. Loggerhead activity often occurs during the summer in and around the Chesapeake Bay. The Chesapeake Bay serves as a developmental feeding area for juvenile loggerheads (Lutcavage and Musick 1985; Keinath, Musick and Barnard 1989).

Loggerhead females generally nest on a 2 to 4 year cycle, and lay from one to six nests a season (Ehrhart 1979; Dodd 1988). The renesting interval varies from 12 to 16 days, with an average of 14 days (Frazer 1984; Dodd 1988). Sea turtles generally return to the same area to lay successive clutches of eggs, usually within a 5 km radius of the first nest (Dodd 1988).

For eight successive years, personnel of the Back Bay National Wildlife Refuge (BBNWR) have been patrolling the Virginia Beach Resort oceanfront in search of loggerhead sea turtle nests. This has been made possible by funding provided to the Refuge by the U.S. Army Corps of Engineers (the Corps/ACOE), in conjunction with their study of beach replenishment impacts to nesting sea turtles. During the summer of 1993, the first cooperative agreement was established between the Corps and the Refuge. Through this agreement, the Corps provided funding to the Refuge, to determine the extent of nesting sea turtle use along the Virginia Beach oceanfront. The Refuge then hired and trained seasonal biological technicians to patrol this oceanfront and detect sea turtle crawls and other nesting signs. Because the loggerhead sea turtle is a federally listed Threatened species, the Refuge has researched nesting activities and managed nesting populations since the early 1970's. The U.S. Fish and Wildlife Service employs protective measures and funds research projects that aid in the conservation of this federally threatened species, often in partnership with other federal and state agencies.

During 2000, the Corps provided the Refuge with $20,700 ($18,700 Labor for 2 Biological Technicians and $2,000 for Contingent Night-Patrols Labor) for the nesting sea turtle study. An additional $1,900 was added in May 1999, for expanding the survey route to include the remaining three miles of Fort Story's western beachfront that had not been patrolled in the past. Thirty-eight percent of the funding was absorbed by the USFWS Denver Finance Center for administrative costs, while the remaining sixty-two percent was dedicated to salaries of the two seasonal biological technicians hired to patrol the oceanfront and additional Refuge staff during night patrols. Additional miscellaneous equipment, materials, all-terrain-vehicle repairs and
maintenance, gas and oil, and additional support staff for turtle patrols were absorbed by the Refuge budget.

III. MATERIALS AND METHODS

Seasonal biological technicians and permanent Refuge staff logged approximately 850 hours managing and collecting information on sea turtle nesting for the 2000 sea turtle nesting season. As during past years, Refuge personnel conducted sea turtle crawl and stranding surveys, via all-terrain-vehicles (ATVs) on six segments of oceanfront beach. Those beach routes included (from north to south): (1) Fort Story; (2) the Virginia Beach Resort Strip; (3) Croatan Beach; (4) the Town of Sandbridge; (5) Back Bay National Wildlife Refuge; and (6) False Cape State Park. All routes were patrolled on a daily basis, seven days a week. Figure 1 illustrates areas these patrol routes.

Surveys were conducted by ATV every morning from May 23 through September 9, along beach routes #4-6, above. Patrols along the Fort Story to Rudee Inlet and Croatan Beach route (#1-3 above) were conducted every morning from June 3 through September 9, starting at 0530 hours; in order to search as much beach as possible before the City of Virginia Beach's "Beachscapers" groomed the Resort beaches and wiped out crawl signs. Patrols took place above the high tide line while traveling in one direction, and along the water's edge the other direction. Whether the high or low beach was patrolled first was decided by whether the tide was rising or falling.

In previous years, night patrols were scheduled to capture a nesting loggerhead laying its second clutch of the season for a period of ten days. VIMS recommended conducting night patrols the entire nesting season to ensure capture during the 2000 nesting season. Back Bay NWR conducted night patrols from June 5 through June 30. Night patrols were stopped after funding for vehicle repairs and manpower was exhausted. No crawls, turtle sightings, or captures occurred during this night patrol period. Night patrols resumed after the first nest on July 11, 2000 for ten days (July 26-August 4). No crawls, turtle sightings, or captures occurred during this second night patrol period.

The nesting female was restrained using a box container constructed by Biologist Sara Williams of exterior plywood and fastened together with hinges. This portable "restraining container" stands three feet high and safely and effectively restrains a turtle when fence posts are placed around the outside.
Figure 1. Areas patrolled daily from May 15 through September 10, 2000 for strandings and sea turtle crawls.
All sea turtle crawls were photographed and documented. Metric tape was used to measure crawl widths at three points where tracks were distinct. An average of the three measurements represented the crawl width of the nesting female. Each "body-pit" periphery was marked with wire flags and then carefully searched and excavated for the egg chamber/nest laid by the loggerhead. When eggs were discovered, they were carefully counted and removed. Depth measurements were taken of the top and bottom of the egg chamber. The eggs were then transported in coolers to a protected hatchery site within the sand dunes of Back Bay National Wildlife Refuge. At the hatchery site, all eggs were transferred to a predator-proof cage in the same sequence as the original nest and reburied at the same depth as the original nest. Refuge Employees checked the nest twice daily, starting two weeks prior to the expected hatch date for signs of hatching and to collect ground temperature readings. When a concave depression was detected on the surface of the nest, a refuge staff member was placed on duty from 2100 to 0300 hours to watch for the emergence of hatchlings. Hatchlings were released on the adjacent beach and into the surf within an hour after their emergence.

Photo 1. All nests are reburied in a "Nesting Container" (pictured above) to protect relocated nest and eggs from predators.
In addition to patrolling for turtle nests, Refuge personnel collected data on sea turtle strandings in the surveyed areas. Nearly all stranded animals were dead. Each stranding was measured, examined for trauma and cause of death, and tissue and/or humerus samples collected. Patrollers contacted the Virginia Marine Science Museum (VMSM) Stranding Team for additional data collection and carcass removals on all beaches except for Back Bay NWR and False Cape State Park. Completed “Sea Turtle Stranding and Salvage Network-Stranding Report(s)” were sent to the Virginia Institute of Marine Science (VIMS) where reports were entered into the National Marine Fisheries Service’s (NMFS) national stranding database. Copies of those reports are included in this report as Appendix 1. Section D of Part IV, Results and Discussion, provides a detailed narrative on this topic.

IV. RESULTS AND DISCUSSION

A. AREA COVERAGE

Over eight hundred hours of sea turtle patrol or other sea turtle duty hours were logged by trained Refuge personnel. Approximately 13 miles of oceanfront beach were covered from Fort Story to Croatan Beach; and 15 miles from the Dam Neck Naval Facility border in Sandbridge, to the North Carolina border. Area coverage along Sandbridge Beach and one or two portions of Fort Story, varied with high tides, since beach narrowness, bulkheads, beach erosion and high winds made portions of the beach inaccessible by ATV on some patrol days. On those occasions, Refuge staff would walk out to such areas from adjacent roads and view the missed area through binoculars.

Patrols of the Sandbridge-Back Bay Refuge-False Cape State Park oceanfront commenced on May 23, 2000. Due to ATV mechanical problems, the Fort Story to Rudee Inlet/ Croatan Beach patrols could not start until June 3, 2000. All patrols ended on September 9, 2000.

The possibility of undetected sea turtle nests exists along the Fort Story-Croatan Beach segment; since beach cleaning is conducted by City beach maintenance crews, every morning between 0230 to 0900 hours. This tractor maintenance smooths out Resort beaches, making crawl detection impossible. Although Refuge beach patrols start at 0530 hours, City workers often have already cleaned and smoothed some portions of the Resort beach. Refuge biological staff maintained contact with these City workers on the beach, and handed out information on sea turtle crawl recognition, nesting, and who to contact should they locate a crawl. Their responses have been positive. An organized informational program through the Waste Department will be pursued prior to the next nesting season.

The first series of night patrols occurred during June 5-30, 2000. No turtle was located; but several trespass vehicles were seen on the beach by non-law enforcement volunteers. The second series of night patrols took place during July 26 - August 4.

Turtles that nest in the Virginia Beach vicinity may also nest in the northern region of North Carolina. A ten mile stretch of beach from Corolla to the NC/VA border is patrolled daily during
the nesting season by Mackay National Wildlife Refuge.

B. NESTING ACTIVITIES AND CAPTURE RESULTS

Nesting sea turtle surveys of the Fort Story and Resort beaches yielded no sea turtle nests or crawls. One nest located on Back Bay NWR and one false crawl at False Cape State Park were discovered by Refuge Staff this year. Information regarding the nest and crawl were recorded on “Nest Relocation Data Sheets,” (Ref. Appendix 2).

Refuge permittee Ernie Bowden, discovered an emerging Loggerhead sea turtle at 2220 hours on July 11, 2000. He reported the sighting by telephone to Refuge Biologist Lamar Gore at his residence, who arrived at the scene at 2305 hours. Refuge Biologist Sara Williams, Biological Technician Michael Christine Farrell, Refuge SCEP Student Brighid Tewey, and Student Interns Andy Campomizzi and Eric Duran also responded and assisted in excavating Nest #1/Crawl #1. One hundred and fifteen (115) eggs were excavated at 0030 hours and removed from the nest cavity. Eggs were carefully moved to a safer, "nursery" location within the Back Bay National Wildlife Refuge, placed into predator-proof cages, and reburied.

A satellite transmitter was attached to the carapace and metal tags attached to flippers by VIMS employee Kate Mansfield, before releasing it into the ocean. All Refuge night-patrol vehicle headlights were covered with red tape to minimize light disturbance. Photographs were taken of the crawl, the nest-site, the excavation, and captured Loggerhead sea turtle with transmitter. Measurements of the crawl and the nest cavity were also taken. The following table summarizes the chronology of the July 11th nest:

<table>
<thead>
<tr>
<th>Nest #</th>
<th>Date of Nesting</th>
<th>Location</th>
<th>Total # of Eggs Laid</th>
<th>Expected Hatch Date</th>
<th>Actual Hatch Date</th>
<th>Length of Incubation (days)</th>
</tr>
</thead>
</table>

Table 1. 2000 Loggerhead Sea Turtle Nesting Chronology

Crawl number two was reported by False Cape State Park Staff on July 16, 2000 at 0840 hours. The crawl was located 150 meters north of the False Cape State Park/North Carolina beach barricade. Refuge employees and volunteers investigated the crawl at 1015 hours. The high tide obliterated some sections of the crawl, but tracks leading to a turn around point were identified on the upslope of the first foredune. Staff identified the false crawl after excavating the turn-around point which resembled a body pit. North Carolina residents reported a second crawl the morning of July 16 located on the northern beach of North Carolina near the Virginia state border. Ruth Boetcher, the Sea Turtle Project Coordinator for the NC Nongame and Endangered Wildlife Program, investigated the North Carolina crawl, discovered a nest, and placed a predator protection device on top of the nest.
Photo 2. Nest #1 - July 11, 2000 First crawl leading to first nest, marked by pink flags embedded in sand (above).

Photo 4. Nest #1 - (7/11/00) Application of a transmitter on sea turtle, closed in a “turtle-restraining” container, by Kate Mansfield of Virginia Institute Marine Science, Gloucester.

Photo 3. Nest #1 - (7/11/00) Close-up of Excavated Nest Entrance (above)

Photo 5. Crawl #2 - July 16, 2000 The second crawl, from shore to foredune, leads to a possible nest.
C. HATCH RESULTS

Refuge personnel excavated and relocated one loggerhead sea turtle nest during 2000. Nest success is detailed in Table 2. A total of one hundred fifteen loggerhead sea turtle eggs were excavated and 112 eggs re-buried in the Refuge nursery by Refuge staff. One egg was punctured during the nest search. Two eggs had fused shells but separate yolks and were slightly torn at point of fusion. Damaged eggs were not re-buried to protect the nest from bacteria and reduce predator attraction. Soil and air temperatures were taken at the nursery site during the twice daily checks of a nest, 10-14 days prior to the expected hatch date. Hatch success was low due to invasion of the nest by dune grass roots. A total of 56 live loggerhead hatchlings were released into the Atlantic Ocean from the Refuge beach. Refuge staff released the first group of 18 hatchlings from 2200 to 2345 hours on September 24 on an outgoing high tide. Four hatchlings were transferred to the Virginia Marine Science Museum in the care of Thomas Harder for scientific growth rate observations and public education. These turtles will be released into the Atlantic Ocean after one year, as during past years.

Four additional hatchlings emerged from the nest during September 25-27. Refuge Biologist Sara Williams examined the nest during an afternoon nest check on October 4, after noticing exposed grass roots around the nest cage. A matrix of roots infiltrated the entire nest and may have prevented hatchling emergence. Sixteen live hatchlings in poor condition and two dead hatchlings were found in the top four inches of the nest on October 4. The live hatchling were released immediately. Due the unusual circumstances and the possibility of trapped live hatchlings, the nest was re-excavated on October 5. A total of fourteen live hatchlings, 15 dead hatchlings, and 38 unhatched eggs were removed during the excavation. The live hatchlings were immediately released.
The four hatchlings donated to the Virginia Marine Science Museum (VMSM) in 1999 were released into the Gulf Stream by the U.S. Coast Guard on November 8, 2000. Short notice prevented Back Bay staff from accompanying a VMSM volunteer on the Coast Guard Cutter for the release of the one year old juveniles. A summary of hatchling growth and development was prepared by Mark Swingle, VMSM Curator of Stranding Program and Acquisitions and is included in Appendix 3.

Table 3 provides an egg analysis for the 2000 nest. The 2000 hatch rate was 63.5%. The percent of hatchlings that emerged and were released, i.e. nest success, was 45.2%. The 1999 hatch and nest success rates were 97% and 95%, respectively. Dead hatchlings that did not emerge may have been trapped by expanding grass roots, died shortly after hatching, or suffered from developmental problems. Dead eggs were frozen and examined at a later date. Results are in Table 3.

Vandalism of the nursery site in 1999 required a new nursery site in a more remote area for the 2000 nesting season. Footprints of various animals including horse, deer, raccoon and fox were seen around the nursery area. Human foot prints as well as bicycle tracks were also present, however, no apparent disturbance to the nest occurred. The presence of grass roots was not noticed nor predicted during the nest reburial on July 12, 2000 at 0345 hours. There were no problems with red ant infestations this year. A new nursery site will be established for the 2001 nesting season which will be in an open grassless area devoid of ant colonies and human disturbance.

<table>
<thead>
<tr>
<th>Nest #</th>
<th># Eggs Laid</th>
<th># Eggs Hatched</th>
<th># Live Hatchlings</th>
<th># Dead Hatchlings</th>
<th># Hatchlings Released</th>
<th># Unhatched Eggs</th>
<th>Nest Success (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>115**</td>
<td>73</td>
<td>56</td>
<td>17</td>
<td>52***</td>
<td>38</td>
<td>45.2</td>
</tr>
<tr>
<td>Totals</td>
<td>115</td>
<td>73</td>
<td>56</td>
<td>17</td>
<td>52</td>
<td>38</td>
<td>45</td>
</tr>
</tbody>
</table>

Comments: *Nest success refers to the number of hatchlings released. **3 damaged eggs were not reburied with nest. ***Virginia Marine Science Museum received four live hatchlings on 09/24/00 for growth research and public education.

Temporal distribution of hatching: 09/24=22 hatchlings emerged, 09/25=2 hatchlings emerged, 09/26=1 hatchling emerged, 09/27=1 hatchling emerged, 10/04=16 live hatchlings removed, 10/05=14 hatchlings.

Table 2. 2000 Loggerhead Sea Turtle Nest Success Summary

<table>
<thead>
<tr>
<th>Nest #</th>
<th># Eggs Laid</th>
<th># Eggs Hatched</th>
<th># Eggs Hatched</th>
<th># Eggs Infertile</th>
<th># Eggs Predated</th>
<th># Eggs Addled*</th>
<th># Eggs w/ Dead Embryos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>115</td>
<td>3</td>
<td>73</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td>Totals</td>
<td>115</td>
<td>3</td>
<td>73</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>23</td>
</tr>
</tbody>
</table>

Comments: Shells of hatched and unhatched eggs orange in color (possibly from vegetation roots). *Rotted eggs with no embryonic development.

Table 3. 2000 Loggerhead Sea Turtle Egg Analysis Summary
Figure 2. BBNWR Sea Turtle Strandings from 1980-2000.

Figure 3. BBNWR Sea Turtle Strandings per Month from 1994-2000.
V. 1980-2000 NESTING SUMMARY

A. BACKGROUND

Appendix 5 contains a general summary of BBNWR nesting activity from 1970 to 2000 as well as data tables used in the creation of all graphs in this report. The first documented record of nesting was in 1970, although nesting previous to this year is likely. Loggerhead turtles typically nest at two to three year intervals and exhibit nest site fidelity. Three nests occurred from 1970 to 1971, however no nests were reported from 1972 to 1978. It is not known whether the beaches were regularly patrolled from 1972 to 1978; whether the females which usually nest in Virginia Beach experienced mortality; nested farther south in North Carolina; or whether this seven period experienced a natural decline.

The Refuge participated in the “Loggerhead Egg Transplant Project” from 1972 until 1979 in coordination with Chincoteague, Pea Island, and Cape Romain National Wildlife Refuges. The Project’s objective was to reestablish the population of nesting Loggerhead sea turtles along Refuge beaches by relocating nests from Cape Romain NWR to Back Bay NWR. A total of 5,577 loggerhead hatchlings from 72 nests were incubated in predator proof cages on Back Bay NWR released into the Atlantic from the Refuge beach. The Southeastern Marine Recovery Team recommended terminating the program until more information regarding the effectiveness of nest transplanting and the influence of transplanting on sex ratios were available. The Recovery Team also recommended conducting daily sea turtle patrols during the nesting season to protect naturally occurring nests in this area.

Daily beach patrols were conducted on BBNWR from June until September of 1980. Daily patrols continues from June or July until August or September on BBNWR and FCSP during 1981 until 1985. From 1986 until the present, daily patrols are conducted on BBNWR, FCSP, and Sandbridge. Nesting activity for the years prior to 1980 were not analyzed due to inconsistent daily beach patrols. Data from 1980-2000 are analyzed with the assumption that all nests were detected and investigated by Refuge staff. A total of 54 nests and 15 false crawls were discovered from 1980-2000.

B. YEARLY NESTING TRENDS

Figure 4 demonstrates the annual trends for number of nests from 1980 to 2000. Based on the 21 years of gathered data, 80% of nests occurred during “odd” years; i.e. 1981, 1983, 1985, etc.
Figure 4. Loggerhead sea turtle nests and false crawls in Virginia Beach, VA from 1980-2000

C. NESTING POPULATION SIZE

A total of 54 nests were laid in Virginia Beach over the 21 year summary period (1980-2000). Using this information and the possibilities that nesting females may have laid: one or two nests every two years; one or two nests every three years; or some combination thereof, the nesting population in Virginia Beach may consist 2 to 8 females. This estimate was calculated using the following equation:

\[
\text{Number of nesting females} = \frac{(\text{Total # of nests})}{(P/I)*Q}
\]

Where P=Period; total number of years nests were laid
I=length of interval between nesting seasons in years
Q=number of nests per individual during a nesting season

This estimate assumes no immigration or emmigration of the population and a 0% mortality of nesting females. The estimates shown in Figure 5 are not statistically reliable and are presented for informational purposes only. Reliable estimates on the nesting population can be calculated only if night patrols are conducted each night of the nesting season and each nesting female is tagged. The total number of nesting loggerhead turtles in the vicinity of Virginia Beach cannot be calculated without additional data.

Females nesting on the northern beaches of North Carolina may also nest in Virginia Beach. Nesting population estimates for the vicinity of Virginia Beach may be larger if nests in northern North Carolina are included in calculations.
Table 4. Estimation of Number of Nesting Females 1980-2000.

D. NESTING CHRONOLOGY

Figure 5 details the number of turtle nests from 1980-2000. Fifty-seven percent of all nests occurred in July; while 26% occurred in June, 15% in August, and less than 2% in May.

Loggerhead turtles move north along the East Coast in the spring as ocean water temperatures increase (Coles and Musick 2000; Eperly et al 1995). Timing of nesting activity may correlate with ocean water temperatures; as ocean temperatures rise earlier in the nesting season, nests may be laid earlier. The National Oceanic and Atmospheric Administration (NOAA) produced a Coastal Water Temperature Guide (Table 3) and computed averages from records ranging from several years to several decades. Ocean temperatures for Cape Charles, Virginia, located on the Chesapeake Bay, fluctuate more drastically than Jacksonville, Florida, an area with the highest density of nesting loggerhead turtles in the U.S.
Figure 5. 1980-2000 Loggerhead Sea Turtle Nesting Chronology.

Table 5. National Oceanographic Data Center Coastal Water Temperature Guide for Cape Charles, Va and Jacksonville, FL
E. NEST DISTRIBUTIONS

Forty-four percent of the nests from 1980-2000 occurred on the beaches of Back Bay National Wildlife Refuge; 24% on False Cape State Park; 8% on Resort and Croatan beaches, and 9% on Sandbridge beaches which also include Dam Neck and Little Island City Park (Figure 6). Nests in the “N/A” category include records of eight nests with unrecorded locations during 1989, and one nest laid in 1992 at Dam Neck Naval Base. Figure 7 shows a map of the Virginia Beach area from Fort Story to the North to the North Carolina border to the South. Sixty-nine percent of the nests in Virginia Beach occurred on Back Bay NWR and False Cape State Park. These two beaches total approximately 12 miles in length, the longest contiguous tract of undeveloped shoreline in southeastern Virginia. More sea turtles may nest on Back Bay NWR because nests in other areas of Virginia Beach are relocated to Back Bay and all hatchlings released on Back Bay NWR beaches. Back Bay NWR and False Cape State Park may also be the extreme northern-most range of loggerhead nesting as well as the most suitable nesting site.

![Loggerhead Nests and False Crawls](Virginia Beach, VA 1980-2000)

Figure 6. 1980-2000 Loggerhead Turtle Nests and False Crawls in Virginia Beach, VA.
F. NEST SUCCESS

Nest success rates were determined by dividing the number of eggs in a nest by the number of hatchlings that emerged. Thirty-seven out of fifty-four nests (69%) during the 1980-2000 period had nest success rates of 81% or higher (Figure 8). Figure 9 demonstrates nest success rates from 1980-2000 for all 54 nests. Nest success rates ranged from 0% to 98%, and averaged 79%.

Figure 7. Map of Virginia Beach showing Loggerhead Sea Turtle Nest Locations from 1979-2000.

Figure 8. 1980-2000 BBNWR Total Nest Success Rates.
Nest success is dependent upon many factors. Available data on BBNWR nests also include length of incubation, top nest depth, and bottom nest depth. Nest success was compared with these data to help identify significant trends or correlations (Ref. Appendix 5).

Incubation period data are not available for nests prior to 1980, nor for nests laid June 5, 1989 and July 30, 1992. Nest success and length of incubation from 1980-2000 are illustrated in Figure 10. The average incubation period for nests is 71 days but ranged anywhere from 59 days (nest success=94.8%) to 112 days (nest success=94%). Nest incubation lengths with a success rate of 80% or higher (68% of nests) averaged 69 days; nests with nest success rates below 80%, (32% of nests) averaged 75 days. The “trend line” in Figure 10 (Microsoft Excel linear regression) does not demonstrate a significant relationship between the nest success rate with length of incubation in days.

Figures 11 and 12 respectively, compare 1991-2000 nest success rates with top and bottom nest depths. Top and bottom nest depth measurements are only available from 1991-2000. Only the depths of the original nest were recorded prior to 1997, though it can be assumed all relocated nests were buried as close as possible to the depths and width of the original nest. Top and bottom nest depths refer respectively to the distance in centimeters from the surface of the sand to the top of the nest and the bottom of the nest. Linear regressions created using Microsoft Excel for both figures do not demonstrate a significant relationship between top and bottom nest depths and nest success rates. It can be concluded that other factors such as nest fertility, weather, and physical site parameters play a more significant role on nest success.
Figure 9. 1980-2000 BBNWR Individual Nest Success Rates (above).

Figure 10. 1980-2000 Individual Nest Success Rates and Length of Incubation (above).
Figure 11. 1991-2000 Individual Nest Success Rates and Top Nest Depth

Figure 12. 1991-2000 Individual Nest Success Rates and Bottom Nest Depth
IV. CONCLUSIONS

Virginia Beach, Virginia provides crucial nesting habitat along the northern edge of the loggerhead sea turtle nesting range. Open beaches represent the only habitat available to nesting females in this area. Annual historical data presented in this report provide insights into this nesting sea turtle population. Loggerhead sea turtles have historically nested along the Virginia Beach shoreline, although most nests are concentrated along the twelve miles of Back Bay National Wildlife Refuge and False Cape State Park beaches. These beaches are undeveloped and have never been renourished. Nests have also occurred on beaches from Fort Story south to Sandbridge. All beaches should continue to be monitored and nests protected for the Virginia nesting population of loggerhead sea turtles to be effectively maintained, and as long as potential onshore and offshore impacts to threatened nesting Loggerhead populations continue.

During the year 2000 monitoring program, one Loggerhead sea turtle nest was discovered along the Back Bay NWR ocean-front. It was relocated to a remote nursery on Back Bay NWR. This nest yielded 56 Loggerhead hatchlings that were released shortly after emergence from the nest. The nesting female was captured, tagged, and tracked via satellite transmitter by VIMS.

Four, one-year-old Loggerheads from a Refuge nest in 1999, were also released into the Gulf Stream by US Coast Guard and Virginia Marine Science Museum staff, on November 8, 2000. Such introductions may boost the local breeding population. In addition, 37 stranded sea turtles were discovered during daily patrols. These data and collected tissue samples, should provide new and valuable information on sea turtle demographics, genetics, and population structure along the Eastern Seaboard.

Data from 1980 to 2000 reveal several interesting trends in the nesting patterns of loggerhead sea turtles in Virginia. Over a 21 year period, 54 nests occurred in Virginia Beach, 69% of which occurred on the beaches of Back Bay National Wildlife Refuge and False Cape State Park. The number of turtles nesting in Virginia Beach could vary anywhere from 2 to 8; individuals assuming there is no immigration or emmigration into or out of the population, that nesting females experience a 0% mortality, and that each nesting female nests 1-3 times every 2-3 years. The majority of turtles seem to nest on odd-numbered years (ie. 1981, 1983, etc.). The average success rate for relocated nests is 79%.

Satellite telemetry and tagging are good techniques for detecting changes in inter-nesting and post-nesting behavior. Due to the likelihood of flipper tags loss, PIT (Passive Integrated Transponder) tags are recommended. Data from nesting beaches only indicates a presence or absence of nesting, and not enough information to discriminate between mortality and/or behavioral changes of individuals.

The Historical Summary within this report (Ref. Appendices and text) should provide information useful in determining potential effects of beach replenishment projects on sea turtle nesting in this area.

Back Bay National Wildlife Refuge has been responsible for capturing nesting loggerhead turtles at night for the past eight years. We have made every effort possible to accomplish this task; but have found this responsibility puts a serious strain on Refuge volunteers, staff and equipment resources to an unacceptable level. Refuge four-wheel drive vehicles experience heavy wear-and-tear when regularly driven on patrolled beaches. Night patrols have resulted in inoperable vehicles for Refuge uses outside the sea turtle program. We do not currently have a vehicle.
capable of withstanding further night patrol duties. The money to purchase a new vehicle is not available, nor is the staff time required to conduct night patrols. Appendix 4 lists a detailed summary of expenses incurred by the Corps and BBNWR for the 2000 season, including night patrols. Night patrols could not have been conducted without the help of volunteers who alleviated the stress to Refuge staff of working odd, long hours, and reduced Refuge costs. The Refuge therefore requests relinquishment of all future responsibilities for managing night patrols; and requests transfer of future funds and responsibilities to the Virginia Institute of Marine Science.
V. LITERATURE CITED


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APPENDIX 1

SEA TURTLE STRANDING REPORTS
SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: [Redacted] M. I. Last: [Redacted]
Street: Back Bay National Wildlife Refuge (BBNWR)
City: Virginia Beach
State: Virginia
Zip Code: 23456
Area code/Phone number: (757) 721-2412

STRAND DATE:
Year: 2023
Month: 6
Day: 5
Turtle number by day: 3
Field #: [Redacted]

State coordinator must be notified within 48 hrs. this was done by [Redacted] phone (757)437-6159
email [Redacted] fax (757)437-4933

STRANING LOCATION:
State: Virginia
County: Virginia Beach
Descriptive location (be specific):
3/4 mile South of border of BBNWR and False Cape State Park

CONDITION: (check one)
- Alive
- Fresh dead
- Moderately decomposed
- Severely decomposed
- Dead carcass
- Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!
Flipper tags present? [Redacted] Yes/No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
- Straight length (NOTCH-TIP): [Redacted] cm/in
- Minimum length (NOTCH-NOTCH): [Redacted] cm/in
- Straight width (Widest Point): [Redacted] cm/in
Using non-metal measuring tape
- Curved length (NOTCH-TIP): [Redacted] cm
- Minimum length (NOTCH-NOTCH): [Redacted] cm
- Curved width (Widest Point): [Redacted] cm

Final Disposition: (check one)
- Left on beach where found, painted? [Redacted] Yes/No
- Buried: [Redacted] on beach / off beach
- Carcass painted before buried? [Redacted] Yes/No
- Carcass painted after painted? [Redacted] Yes/No
- Left floating, not recovered; painted? [Redacted] Yes/No
- Disposition unknown, explain
- If painted, what color? [Redacted] Orange

Mark wounds / abnormalities on diagrams at left and describe below (note: tar or oil; gear or jeans entanglement, proclerc damage, epibicts, capilulas, emaciation, etc.). Please note if no wounds / abnormalities are found.

Carcass covered with algae and barnacles
Scutes peeling from 1st lateral
Flesh connecting neck and carapace at nuchal
Notch has been separated (about 3 inches in diameter) outer layer of skin on sides of head / neck, tips of flippers
Barnacles removed for measurements
**SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT**

**Observer's Name / Address / Phone:**

<table>
<thead>
<tr>
<th>First</th>
<th>Middle</th>
<th>Last</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sara</td>
<td>M.I.</td>
<td>T Williams</td>
<td>4005 Sandpiper Rd., VA Beach, VA 23456</td>
<td>757-721-2412</td>
</tr>
</tbody>
</table>

**Stranding Date:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>

**State Coordinator must be notified within 48 hrs.**

*This was done by phone (757)437-8159, email, or fax (757)437-4933.*

**Stranding Date:** Year 2013 Month 1 Day 15

**Turtle number by call #2:**

**Field #:**

**Species:** (check one)
- CO: Loggerhead
- CM: Green
- DL: Leatherback
- EB: Hawksbill
- NU: Undetermined

**Check Unidentified if not positive. Do Not Guess.**

**Species verified by state coordinator:**
- CO: Loggerhead
- CM: Green
- DL: Leatherback
- EB: Hawksbill
- NU: Undetermined

**SEX:** (check one)
- M: Male
- F: Female

**How was sex determined?**
- Necropsy
- Tail length, adult only
- Not tail beyond carapace
- N/A

**STRANDING LOCATION:**

- **State:** Virginia
- **County:** Virginia Beach
- **Location:** 1/4 miles N of BBNWR Beach ramp on Back Bay NWR

**CARAPACE MEASUREMENTS:** (see drawing)

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>Straight length</td>
<td>cm</td>
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<tr>
<td>Minimum length</td>
<td>cm</td>
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<tr>
<td>Maximum length</td>
<td>cm</td>
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<tr>
<td>Curved length</td>
<td>cm</td>
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<tr>
<td>Minimum width</td>
<td>cm</td>
</tr>
<tr>
<td>Maximum width</td>
<td>cm</td>
</tr>
<tr>
<td>Weight</td>
<td>g</td>
</tr>
</tbody>
</table>

**FINAL DISPOSITION:** (check one)
- Left on beach where found
- Buried in sand
- Fed
- Released
- Taken to rehab facility
- Other: ____________

**Condition:** (check one)
- Dead
- Alive
- Moderate decomposition
- Severely decomposed
- Skeletal, bones only

**Condition of flipper(s):**
- Yes
- No

**Tags:** Contact state coordinator before disposing of any tagged animal!

**In case of any tagged animal!!**

**Check all 4 flippers, if found, record tag number(s) / tag location / return address**

**CARAPACE MEASUREMENTS:** (see drawing)

**Using calipers**

- Circle unit

**Using non-metal measuring tape**

- Circle unit

**CARAPACE MEASUREMENTS:**

- Weight: 37 kg

Mark wounds / abnormalities on diagrams at left and bottom below note for press or decors entanglement, propeller damage, epipactia, papillomas, amputation, etc. Please note if no wounds / abnormalities are found.

**Eyes, head and flippers appear to have moderate decomposition; fresh dead shell is cracked; front right flipper is missing. All others are missing (could possibly have been scavenged, since found above high tide line on beach).**
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Sara  M.I.  Last: Williams

10 Back Bay National Wildlife Refuge (BRBWR)
4005 Sandpiper Rd., VA Beach, VA 23456

Area code/Phone number: (757) 721-2412

STRANDING DATE:
Year 2001, Month 10, Day 15
Turtle number by day 31
Field #: 1
State coordinator must be notified within 48 hrs.
this was done by phone (757)437-6159
email fax (757)437-4993

SPECIES: (check one)
- CC = Loggerhead
- CM = Green
- OC = Leatherback
- HI = Hawksbill
- KM = Kemp's Ridley
- UN = Unidentified

Check Unidentified if not positive. Do Not Guess.

Photos taken? Yes No
Species verified by state coordinator? Yes No

SEX: (check one)
- Immature, undetermined
- Female
- Male

How was sex determined?

Neck x-ray
Tail length (adult only)

Condition:
1 = Alive
2 = Fresh dead
3 = Moderately decomposed
4 = Severely decomposed
5 = Skeleton bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!

Flippers present? Yes No
Check all 4 flippers. If found, record tag number(s) and location / return address

PI tag scan? Yes No
If found, record number and location

Coded wire tag scan? Yes No
If positive response, record location (flipper)

Check for wing tag? Yes No
If found, record location (acute number & side)

FINAL DISPOSITION: (check one)
1 = Left on beach where found, painted.
2 = Buried, left on beach
3 = Carcass painted before burial.
4 = Painted
5 = Alive, released
6 = Alive, taken to rehab. facility, where?
7 = Alive, taken to rehab. facility, where?
8 = Left floating, not recovered, painted? Yes No
9 = Disposition unknown, explain

"If painted, what color? __________

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length (NOTCH-TIP) Circle unit
Minimum length (NOTCH-NOTCH) cm
Straight width (Widest Point) cm

Using non-metal measuring tape
Curved length (NOTCH-TIP) cm
Minimum length (NOTCH-NOTCH) cm
Curved width (Widest Point) cm

Weight actual est.

Mark wounds / abnormalities on diagrams at left and describe below (note tar or oil, gear or debris entanglement, propeller damage, epibacteria, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

left front flipper muscle sample not taken

due to leather medication

No unusual injuries / abnormalities
SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER’S NAME / ADDRESS / PHONE:
First: Sara M. I. Last Williams
Address: Back Bay National Wildlife Refuge
Area code/Phone number: (757) 721-2412

STRANDING DATE:
Year 2018 Month 11 Day 14
Turtle number by day 11
Field #: 1
State coordinator must be notified within 48 hrs.
this was done by email phone 757-437-6159
fax 757-427-4343

STRANDING LOCATION:
State VA
County Virginia Beach
Descriptive location (be specific): VA rule north of Cape Charles

CONDITION: (check one)
- Alive
- Fresh dead
- Moderately decomposed
- Severely decomposed
- Shed carapace
- Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!
Flipper tags present? Yes No
Check all 4 flippers. If found, record tag number(s), tag location, return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length: 11.21 cm
Minimum length: 11.00 cm
Using non-metal measuring tape
Curved length: 11.21 cm
Minimum length: 11.00 cm
Weight: 1.00 lb

Mark wounds, abnormalities on diagrams at left and describe below, note if no year or gears entanglement, propeller damage, epibiotic, caustics, emaciation, etc. Please note if no wounds / abnormalities are found.

Not investigated until frozen
appears bloated
no unusual abnormalities
SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Michael M. Last: Farrell
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number: (757) 722-2412

STRANDING DATE:
Year 2000 Month: 10 Day: 23
Turtle number by field: 01
Field #: 1
State coordinator must be notified within 48 hrs:
this was done by phone (757) 437-6159

SPECIES: (check one)
[ ] DC = Loggerhead
[ ] CM = Green
[ ] PC = Leatherback
[ ] E = Hawkbill
[ ] L = Kemp's ridley
[ ] UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

SEX: (check one)
[ ] Male
[ ] Female
[ ] Undetermined

STRANDING LOCATION:
State: VA
County:
Descriptive location (be specific):
Back Bay Beach (North)
Latitude: 38°44'44"N
Longitude: 75°57'48"W

CONDITION: (check one)
[ ] Alive
[ ] Dead
[ ] Moderately decomposed
[ ] Severely decomposed
[ ] Skeleton bones only

TAGS: Contact state coordinator before disposing of any tagged animal!
Pigment tags present? Yes [ ] No [ ]
Check all flippers. If found, record tag numbers, tag location, return address

PIGMENT TAGS:
[ ] Front left
[ ] Front right
[ ] Back left
[ ] Back right

CARAPACE MEASUREMENTS: (see drawing)
Using calipers: Circle unit
Straight length: NICTCH–TIP: [ ] cm in " 
Minimum length: NICTCH–NICTCH:TIP [ ] cm in " 
Using non-metal measuring tape: Circle unit
Curved length: NICTCH–TIP [ ] cm in " 
Minimum length: NICTCH–NICTCH:TIP [ ] cm in " 
Curved width: (Widest Point): [ ] cm in "
Weight: actual [ ] est [ ] kg or lb

Mark wounds, abnormalities on diagrams at left and descibe below, indicator of sex, year or season entanglement, propeller damage, ectoparasite, papillomas, emaciation, etc. Please note if no wounds/abnormalities are found.

SCALES STARTING TO PEEL UP & OFF
EYES HAVE BEEN EATEN
BLEEDING & BLOATED

SIGNATURE: 
Date: 

**SEA TURTLE STRANDING AND SALVAGE NETWORK — STRANDING REPORT**

**OBSERVER'S NAME / ADDRESS / PHONE:**
First: Michael  
Last: Farrell
Affiliation: Back Bay National Wildlife Refuge  
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number: (757) 721-2412

**STRANDING DATE:**
Year 2021  
Month  
Day
Turtle number by day  
Field
State coordinator must be notified within 48 hrs:
this was done by  
(phone (757) 437-6159  
_email  
_fax (757) 437-4913

**SPECIES:** (check one)
- [ ] Loggerhead
- [ ] Green
- [ ] Leatherback
- [ ] Hawksbill
- [ ] Kemp's Ridley
- [ ] Undetermined

**SEX:** (check one)
- [ ] M – Male
- [ ] F – Female
- [ ] N – Undetermined

**STRANDING LOCATION:**
State: Virginia  
County
Description of location (be specific): Back Bay NWR Beach Ramp
3 miles South of Back Bay NWR Beach Ramp
N 36° 35.8" W 75° 43.9"  
Latitude  
Longitude

**CONDITION:** (check one)
- [ ] Live
- [ ] Fresh dead
- [ ] Moderately decomposed
- [ ] Severely decomposed
- [ ] Carcass
- [ ] Skeleton, bones only

**TAGS:** Contact state coordinator before dissecting any tagged animal.
- [ ] Flipper tags present? Yes  
No
- [ ] Check all 4 flippers. If found, record tag number(s), tag location / return address
- [ ] PIT tag scan? Yes  
No
- [ ] Found, record number / tag location
- [ ] Code wire tag scan? Yes  
No
- [ ] Positive response, record location (flipper)
- [ ] Check for living tag? Yes  
No
- [ ] Found, record location (scale number & side)

**FINAL DISPOSITION:** (check one)
- [ ] Released
- [ ] Buried
- [ ] Laid
- [ ] Carcass
- [ ] Disposed
- [ ] Disposition unknown. explain

**CARAPACE MEASUREMENTS:** (see drawing)
- [ ] Using calipers
- [ ] Using non-metal measuring tape

Mark wounds / abnormalities on diagrams at left and describe below. Include any oil, gas, or debris entanglement, propeller damage, epibiotic, bacteria, emaciation, etc. Please note if no wounds / abnormalities are found.

- Looks like it had been run over, scales missing
- Still has some fleshly substance
- Mid section of carapace missing
- Muscle is almost in a liquid form
- Collected tissue/skin sample
- Barnacles on flippers
SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

STRANDING DATE:
Year 2001 Month 03 Day 07
Turtle number by day 01
Field #

State coordinator must be notified within 48 hrs.
this was done by phone (757) 437-6159
email
fax (757) 437-4932

SPECIES: (check one;)
L = Loggerhead
G = Green
L = Leatherback
H = Hawksbill
K = Kemp's ridley
U = Undetermined
Check Unidentified if not positive. Do Not Guess.

SEX: (check one;)
F = Female
M = Male

COND: (check one;)
A = Alive
D = Dead
M = Moribund
R = Relocated
S = Severely Decomposed
F = Fresh dead

TAGS: Contact state coordinator before disposing of any tagged animal!
Flippers present? [Yes ☑ No]
Check all 4 flippers, if found, record tag number(s), tag location / return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers Circle unit

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length (NOTCH-TIP) ___ cm
Minimum length (NOTCH-NOTCH) ___ cm
Using non-metal measuring tape
Crest length (NOTCH-TIP) ___ cm
Minimum length (NOTCH-NOTCH) ___ cm
Weight ___ actual ___ est. ___ kg

Mark wounds / abnormalities on diagrams at left and describe below. Note torn or broken, gear or bazaar entanglement, propeller damage, epipactis, pathogens, emaciation, etc. Please note if no wounds / abnormalities are found.

Final Disposition: (check one)
1 = Left on beach where found, painted
2 = Buried on beach
3 = Buried, carapace painted, before buried
4 = Salvaged
5 = Moved to rehab center for medical care
6 = Alive, released
7 = Alive, taken to rehab facility where
8 = Alive, taken for tag scan
9 = Disposition unknown, explain

If painted, what color?

Fluorescent green

Carcass frozen

For living tag?

Carcass frozen

Weight ___ actual ___ est. ___ kg

Wounds: No visible wounds. Severe bleeding; scute on carapace is separating. Flesh is beginning to peel on top of head and rear flippers.

During currents with NE winds ~ 2 mph, cool

Attribute to recent increase in # of strandings
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

STRANDING DATE:
Year 2021 Month 2 Day 26
Turtle number by day 0.3

STRANDING LOCATION:
State VA County VA Beach
Descriptive location (be specific): False Cape State Park
2 miles north of Harbour Hill, near boarder between state park and False Bay NWR

CONDITION: (check one)
1 = Alive
2 = Fresh dead
3 = Moderately decomposed
4 = Severely decomposed
5 = Chest harness
6 = Skeleton bones only

TAGS: Contact state coordinator before disposing of any tagged animal!
Flippers tags present? Yes ☑ No
Check all 4 flippers. If found, record tag number(s), tag location (return address)

CARAPACE MEASUREMENTS: (see drawing)
Using calipers Circle unit
Straight length (NCTO - TIP) 79.3 cm
Minimum length (NCTO - NCTO) 73.2 cm
Using non-metal measuring tape Circle unit
Curved length (NCTO - TIP) 79.3 cm
Minimum length (NCTO - NCTO) 73.2 cm

Mark wounds / abnormalities on diagrams at left and describe below, note tar or oil, gear or eel�s entanglement, propeller damage, epibiotics, crackle, eviscerate etc. Please note if no wounds / abnormalities are found.

Left side of body missing; both flippers
50% of carapace missing, and 2 of scales on right side (x)
Most internal organs missing
Missing scales on top of head (x)
Mussels + barnacles of covering 15% of carapace
Collected right front flipper for sample.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Andrew M. I. Last: Campanozzi
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd, VA Beach, VA 23456
Area code: Phone number: 757-721-2242

STRANDING DATE:
Year: 2016 Month: 09 Day: 01 3
Turtle number by day: 01 3
Field #: ___
State coordinator must be notified within 48 hrs. this was done by: phone (757) 437-6159 email: fax (757) 437-4900

SPECIES: (check one)
- DC = Loggerhead
- SM = Green
- DC = Leatherback
- E = Hawksbill
- U = Kemp's ridley
- UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

STANDING LOCATION:
State: VA County: VA Beach
Descriptive location (be specific): Back Bay NWP
about 1 mile south of refuge beach ramp

FINAL DISPOSITION: (check one)
- 1 = Alive, released
- 2 = Alive, taken to facility where
- 3 = Salvaged, all, or part, died
- 4 = Pulled up or beached, name: ___ Yes ___ No
- 5 = Left on beach, name: ___ Yes ___ No
- 6 = Alive, released
- 7 = Alive, taken to facility where
- 8 = Left floating, not recovered, name: ___ Yes ___ No
- 9 = Disposition unknown, explain ___

TAGS: Contact state coordinator before disposing of any tagged animal!!
Flipper tags present: ___ Yes ___ No
Check all 4 flippers. If found, record tag number(s), tag location / return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
<table>
<thead>
<tr>
<th>Straight length (NOTCH-FP)</th>
<th>Circle unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum length (NOTCH-MC)</td>
<td>Circle unit</td>
</tr>
<tr>
<td>Straight width (Widest Point)</td>
<td>Circle unit</td>
</tr>
</tbody>
</table>
| Using non-metal measuring tape
| Curved length (NOTCH-FP) | Circle unit |
| Minimum length (NOTCH-MC)  | Circle unit |
| Curved width (Widest Point) | Circle unit |
| Weight | Circle unit |

Mark wounds / abnormalities on diagrams at left and describe below: rope or line, gear or debris entanglement, propeller damage, epibiotic, neoplasms, amputation, etc. Please note if no wounds / abnormalities are found.

Edge of carapace posterior or right front flipper broken.
60% of carapace covered with barnacles.
**SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT**

**OBSERVER'S NAME / ADDRESS / PHONE:**
First: Andrew  M.I.:  L. Last:  Companini
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 sandpiper Rd.  A Beach. VA 23456

**STRANDING DATE:**
Year: 20[___] Month: [___] Day: [___]
Turtle number by day: [____]
Field #: [___]
State coordinator must be notified within 48 hrs;
that was done by: phone (757)437-0159
email: __________ fax: (757)437-4933

<table>
<thead>
<tr>
<th>SPECIES: (check one)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC = Loggerhead</td>
</tr>
<tr>
<td>CM = Green</td>
</tr>
<tr>
<td>CK = Leatherback</td>
</tr>
<tr>
<td>CS = Hawksbill</td>
</tr>
<tr>
<td>CM = Kemp's ridley</td>
</tr>
<tr>
<td>N = Unidentified</td>
</tr>
</tbody>
</table>

Check Unidentified if not positive. Do Not Guess.

**STRANDING LOCATION:**
State: VA
County: VA
Back Bay National Wildlife Refuge
Location (be specific): Back Bay NWR, north beach

**CONDITION: (check one)**
- # = Alive
- # = Severe
decomposed
- # = Skeleton bones only

**FINAL DISPOSITION: (check one)**
- # = Left on beach
- # = Pulled up on beach
- # = Alive, released
- # = Alive, taken to rehab.
- # = Disposition unknown

**TAGS:** Contact state coordinator before disposing of any tagged animal!!
Flipper tags present: [___] Yes [___] No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

**CARAPACE MEASUREMENTS:** (see drawing)
Using calipers
Circle unit
- Straight length (NOTCH-TIP) cm
- Minimum length (NOTCH-NOTCH) cm
- Straight width (Widest Point) cm
Using non-metal measuring tape
Circle unit
- Curved length (NOTCH-TIP) cm
- Minimum length (NOTCH-NOTCH) cm
- Curved width (Widest Point) cm

Mark wounds / abnormalities on diagrams at left and describe below (note gear or debris entanglement, propeller damage, epibiot, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

**NO WOUND!**
Carapace broken & mostly missing, only about 1/3 remaining
on left side, unable to take carapace measurements
Plastron broken in 3 places

Latitude: __________
Longitude: __________
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatian Beach

Date: 9/6/00
Turtle #: By Day: 1
Observer's Full Name: Michael C. Ferrer
Location: York Neck Road, 6 miles north at 13 Public Beach Parking (behind sand dunes)
Species: C
Condition: 3
Remarks: Missing head, extremely decomposed
Care: Dead, broken shell No ID in tank
Condition most likely a smaller loggerhead

Curved Length (cm): 60.46
Curved Width (cm): 27.94

CODES:

SPECIES:
CC = Loggerhead
CM = Green
DC = Leatherback
EH = Hawksbill
KK = Kemp's ridley
UWI = Undetermined

CONDITION OF TURTLE:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report

Date 11/24/84
Turtle # By Day 1
Observer's Full Name Michael C. Turner
Location Seal Bridge, South end of Harbor
Percentage of Knob 3.2
Species CR
Condition 2
Remarks

Only small turtle (40 cm) still had some fleshly
remains; still on skull

Curved Length (cm) 60
Curved Width (cm) 52

Codes:

- CC = Loggerhead
- CM = Green
- DC = Leatherback
- HH = Hawksbill
- HK = Kemp's ridley
- DH = Undetermined

Condition of Turtle
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcas
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatan Beach

Date 8/30/00
Turtle ID By Day
Observer's Full Name Michael C. Farrell
Location 2 miles North of 63rd St. Beach
Species Loggerhead (CC)
Condition Severely Decomposed (3)
Remarks High Tide, Draggled Turtle up onto beach, scales missing

Curved Length (cm) 91.44
Curved Width (cm) 78.74

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Back Bay National Wildlife Refuge
Sea Turtle Stranding Report

Date 9/20/00
Turtle ID By Day
Observer's Full Name Eric Duncan
Location 3500 block of 63rd St., Cumberland Rd.
Species CM
Condition
Remarks Unable to move because of size, appears heavily sliced and cracked, prob. by boat propeller, found upside down, not plastron

Curved Length (cm) Unable to measure
Curved Width (cm) Unable to measure

---

CODES:

SPECIES:
CC = Loggerhead
CM = Green
DC = Leatherback
EL = Hawksbill
IK = Kemp's Ridley
UN = Unidentified

CONDITION OF TURTLE:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only

---

CODES:

SPECIES:
CC = Loggerhead
CM = Green
DC = Leatherback
EL = Hawksbill
IK = Kemp's Ridley
UN = Unidentified

CONDITION OF TURTLE:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report

Date: 8/20/00
Turtle # By Day: 1
Observer's Full Name: Eric Duran
Location: 3500 block of Sandbridge Beach

Species: CC
Condition: 1
Remarks: This was a LARGE turtle, probably over 90 cm in carapace length. It was upside down in the sand and I was unable to turn it over for measurement. It had no eyes. The carapace was missing the scales (only bone showed) and there appeared to be deep, long gashes in the shell probably caused by a boat propeller. The Stranding Team was called.

Unsinkable Tip —

Nuchal Notch

SPECIES:
CC = Loggerhead
CM = Green
DC = Leatherback
EI = Hawksbill
IK = Kemp's Ridley
UN = Unidentified

CONDITION OF TURTLE:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only

Curved Length (cm) = unable to determine
Curved Width (cm) = unable to determine
**SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT**

**Observer's Name / Address / Phone**
First: Christopher M.I. S. Last: Worker
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number: (757) 725-2412

**Stranding Date:**
Year: 20## Month: [ ] Day: [ ]
Turtle number by day: [ ]
Field #: [ ]
State coordinator must be notified within 48 hrs.
this was done by: [ ] phone (757) 437-6159 __ email __ fax (757) 437-4933

**Species:**
- [ ] Loggerhead
- [ ] Green
- [ ] Leatherback
- [ ] Kemp's Ridley
- [ ] Uncertain

**Check Unidentified if not positive. Do Not Guess.**
- [ ] Beck taken: [ ] Yes [ ] No
- [ ] Species verified by state coordinator: [ ] Yes [ ] No

**Sex:**
- [ ] Immature
- [ ] Maturity undetermined
- [ ] Female
- [ ] Male
- [ ] Sex determined: [ ] Yes [ ] No

**Length:**
- [ ] Tail length
- [ ] Carapace length

**Condition:**
- [ ] Alive
- [ ] Severely decomposed
- [ ] Moderately decomposed
- [ ] Green head
- [ ] Dead carcass
- [ ] Unidentified, bones only

**Tags:** Contact state coordinator before disposing of any tagged animal!
- [ ] Flipper tags present: [ ] Yes [ ] No
- [ ] Check all 4 flippers. Found, record tag number:
- [ ] Tag scan: [ ] Yes [ ] No
- [ ] Record location: return address

**Final Disposition:**
- [ ] Left on beach, not recovered: [ ] Yes [ ] No
- [ ] Buried in beach: [ ] Yes [ ] No
- [ ] Cremated: [ ] Yes [ ] No
- [ ] Given to other person: [ ] Yes [ ] No
- [ ] Pulled to an animal facility: [ ] Yes [ ] No
- [ ] Alive, released: [ ] Yes [ ] No
- [ ] Alive, taken to a rehab facility: [ ] Yes [ ] No
- [ ] Disposition unknown, explain: [ ]

**If painted, what color?** Orange

**Carapace Measurements:** (see drawing)
- [ ] Using calipers:
  - Minimum length (N O T C H - T I P): [ ] cm
  - Maximum length (W e s t P o i n t): [ ] cm
- [ ] Using non-metal measuring tape:
  - Minimum length (N O T C H - T I P): [ ] cm
  - Maximum length (W e s t P o i n t): [ ] cm

**Comments:**
Var. wounds / abnormalities on diagrams at left and describe below indicate torn or torn. Stab or tearing, entanglement, propeller damage, epibiotic organisms, emaciation, etc. Please note if no wounds / abnormalities are found.

Wreck is decomposed and deformed, with shell attached.
Scales of carapace are absent. Yo-yo of carapace are broken up, containing organs inside scales. Scales fall off as a result of wreck. Upper left and right foot flippers: bump on right foot. Right upper flipper: upper left and right flipper: arm is swollen and floating. Intestines out of body. Measurements inaccurate due to broken carapace.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

SERVER'S NAME/ADDRESS/PHONE:
First: Christopher  M.I.: S  Last: Wickov
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area Code/Phone number: (757) 721-2412

STRANDING DATE:
Year: 2010  Month: X  Day: 2
Turtle number by day:
Field #: 
State coordinator must be notified within 48 hrs.
this was done by phone (757)437-6159
email: 757-_37-939
fax: (757)437-4933

SPECIES: (check one)
CC = Loggerhead
CM = Green
OC = Leatherback
El = Hawk-bill
K = Kemps ridley
LN = Unidentified
Check Unidentified if not positive. Do Not Guess.

PHOTO TAKEN? ☑ Yes ☐ No
Species verified by state coordinator? ☑ Yes ☐ No

SEX: (check one)
Female ☑ Male ☐
How was sex determined? ☑ Yes ☐ No
tail length/sex only, length of tail beyond
skeleton, cm

STRANDING LOCATION:
State: Virginia
Descriptive location (be specific): Located at Back Bay NWR
County: VA Beach
Latitude: 37° 43' 47.3"
Longitude: 75° 20' 46.6"

CONDITION: (check one)
☐ Alive
☐ Fresh dead
☐ Moderately decomposed
☐ Severely decomposed
☐ Dried carcass
☐ Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!
Flipper tags present? ☑ Yes ☐ No
Check all 4 flippers. If found, record tag number(s) / tag location / return address

FINAL DISPOSITION: (check one)
1 = Left on beach where found: Painted? ☑ Yes ☐ No
2 = Buried on beach: Painted? ☑ Yes ☐ No
3 = Carcass on land: Painted? ☑ Yes ☐ No
4 = Painted, no carcass: Painted? ☑ Yes ☐ No
5 = Alive, released
6 = Alive, taken to rehab facility, where?
7 = Alive, taken to rehab facility, where?
8 = Left floating, not recovered: Painted? ☑ Yes ☐ No
9 = Disposition unknown, explain
10 = Painted, color?

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length: NOTCH-TRP: Circle unit
Minimum length (NOTCH-TRP): cm
Straight width (Widest Point): cm
Using non-metal measuring tape
Curved length, NOTCH-TRP: cm
Minimum length, NOTCH-TRP: cm
Curved width (Widest Point): cm

Weight: actual: g

Mark wounds / abnormalities on diagrams at left and describe below, including year / sex / cause of death / entanglement, propeller damage, epistaxis, papillomas, amputation, etc... Please note if no wounds / abnormalities are found.

Severely infected sides stretched due to 
bleeding, ulcers on head and vent-locking
some small papillomas on carapace and head
sutures splitting apart on head / right front flipper
impaired - may be bitten off at younger age
Enlarged organ at rear end - maybe female laying eggs?
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Eric M.I: Last: Duran
Address: 45CO Sandpiper
Virginia Beach, VA 23456
Area code/Phone number: (757) 721-2412

STRANDING DATE: Year 2001 Month 11 Day 12
Turtle number by day O-1
Field #: This was done by phone (757)437-8159
email: fax (757)437-4933

STATE COORDINATOR MUST BE NOTIFIED WITHIN 48 HRS. THIS WAS DONE BY PHONE (757)437-8159 EMAIL (757)437-4933

SPECIES: (check one)
☑ CC = Loggerhead
CM = Green
DC = Leatherback
EA = Hawksbill
LK = Kemp's ridley
UN = Unidentified
Check Unidentified if not positive. Do Not Guess.

SEX: (check one)
☑ Male
FN = Female
ND = Not determined

STRANDING LOCATION:
State: Virginia
County: Virginia Beach
Descriptive location (be specific): On the Sandbridge Beach off of the 1700 block of Sandbridge Rd in Virginia Beach.

CONDITION: (check one)
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!
Flipper tags present? Yes No
Check all 4 flippers. If found, record tag number(s), tag location, return address
Tag scan? Yes No
If found, record number, tag location

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length (NOTCH-TIP) __ cm / in
Minimum length (NOTCH-NOTCH) __ cm / in
Straight width (Widest Point) __ cm / in
Using non-metal measuring tape
Curved length (NOTCH-TIP) __ cm / in
Minimum length (NOTCH-NOTCH) __ cm / in
Curved width (Widest Point) __ cm / in
Weight: actual/ est. __ kg / g

Wax wounds / abnormalities on diagrams at left and describe below (note: torn or cut gear, or debris entanglement, propeller damage, epibiotics, papillomas, emaciation, etc.). Please note if no wounds / abnormalities are found.

The neck and rear leftflipper were severely bloated. Much of the outer layer of skin and most of the scales were missing from all over the body. The general condition of the animal was white and yellow. There were 4 partially separated gashes/slices on the carapace, the posterior marginal tips were missing. When cut open, the flesh appeared very mushy.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
Mike Farrell
M.I. C
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area Code/Phone number (757) 721-2412

STRANDING DATE:
Year 2000 Month 7 Day 15
Turtle number by day: 01
Field #: 3
State coordinator must be notified within 48 hrs.
This was done by: phone (757) 427-6159
email
fax (757) 427-6433

SPECIES: (check one)
\( \times \) CC = Loggerhead
CM = Green
DC = Leatherback
EL = Hawkbill
LK = Kemp's ridley
\( \times \) LN = Unidentified
Check Unidentified if not positive. Do Not Guess.

SEX: (check one)
\( \times \) Female
\( \times \) Male
How was sex determined?

CONDITION: (check one)
1 = Alive
2 = Fresh dead
3 = Moderately decomposed
4 = Severely decomposed
5 = Skeletal bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!
Check all 4 flippers, if found. Record tag number(s) / tag location / return address

FINAL DISPOSITION: (check one)
1 = Left on beach where found, survived
2 = Sunk, in beach, off beach
3 = Sunk, in all, 2 parts, unknown
4 = Muscle sample removed from front right flipper for long-term
5 = Pulled up in debris, drowned
6 = Alive, released
7 = Alive, taken to rehab. facility, where?
8 = Left floating, not recovered, painted
9 = Disposition unknown, explain

"If painted, what color?" Orange

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight (length, NOTCH-TIP) cm
Minimum length (NOTCH-NOTCH) cm
Straight width (Widest Point) cm
Using non-metal measuring tape
Curved length (NOTCH-TIP) cm
Minimum length (NOTCH-NOTCH) cm
Curved width (Widest Point) cm
Weight = actual ________ est. ________

Mark wounds / abnormalities on diagrams at left and below: note torn or cut, year or seasons entanglement, propeller damage, epidermis, papillomas, emaciation, etc... Please note if no wounds / abnormalities are found.

Bleated Scutes peeling off (eyes still intact, slight bleeding)

Latitude
Longitude

STRANDING LOCATION:
State Virginia
County
Descriptive location (be specific)
2.6 miles from Back Bay Ramp
Found in the Surf

Vacinal NOTCH

Posterior Marginal TIP

Posterior

Check all wounds:

- Torn or cut
- Year or seasons entanglement
- Propeller damage
- Epidermis
- Papillomas
- Emaciation

If no wounds / abnormalities are found, please mark:

- Torn or cut
- Year or seasons entanglement
- Propeller damage
- Epidermis
- Papillomas
- Emaciation

Weight = actual ________ est. ________
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatan Beach

Date: 6/30/00
Turtle # By Date: 1
Observer's Full Name: Eric Duran
Location: Fort Story; ¼-½ mi. South of Public Beach access
Species: C. caretta (CC)
Condition: Fresh Dead (1)
Remarks: 2 lg. slices through shell. Large piece of shell missing. Viscera exposed. Shell soft, w/ sponges attached, heavily encrusted w/ barnacles.

Curved Length (cm) 33.5 (n-1), 32.5 (n-2)
Curved Width (cm) 29.5

Codes:

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>CODES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC = Loggerhead</td>
<td></td>
</tr>
<tr>
<td>CM = Green</td>
<td></td>
</tr>
<tr>
<td>DC = Leatherback</td>
<td></td>
</tr>
<tr>
<td>FI = Hawksbill</td>
<td></td>
</tr>
<tr>
<td>IK = Kemp's ridley</td>
<td></td>
</tr>
<tr>
<td>UN = Unidentified</td>
<td></td>
</tr>
</tbody>
</table>

Conditions of Turtle:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report

Date: 7/20/91
Turtle #: 44-1
Observer's Full Name: C. St. John
Location: 30°0'36" S, 115°14'12" W

Species: CC
Condition: 2

Remarks: C. c. s. sp. commone. Possible local population small numbers en quart. Front flippers 1 day. Scales began to fall. Side chips fall off from tail end of carapace.

Curved Length (cm): 72.5
Curved Width (cm): 72.7

Hatch: 1988

CODES:

Species:
CC = Loggerhead
CM = Green
DC = Leatherback
HB = Hawksbill
K = Kemp's ridley
UD = Unidentified

Condition of Turtle:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcase
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatan Beach

Date: 4/29/20
Turtle #: By Day:
Observer's Full Name: Christopher Wilson
Location: 10500 Hwy. 109 N, Cape Charles, VA
Species:
Condition:
Remarks: Wild; Miami Bottlenose; shelled; extant; one's shell & limbs are still present. One turtle (large, white, female) has been found dead.

Curved Length (cm): 2.5
Curved Width (cm): 2.0

Diagram:
- Chelid Notch
- right flipper
- left flipper
- posterior
- marginal tip

Species Codes:
- CC = Loggerhead
- CM = Green
- DC = Leatherback
- HI = Hawksbill
- HK = Kemp's ridley
- UN = Unidentified

Condition of Turtle:
- 0 = Alive
- 1 = Fresh dead
- 2 = Moderately decomposed
- 3 = Severely decomposed
- 4 = Dried carcass
- 5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Crex Mountain Beach

Date: 12-17-87
Turtle # By Day: 3
Observer’s Full Name: Christopher Hacker
Location: From east side of 63rd St., go north one 1/4 mile.
Right by house over 100 feet in.
Species: C.
The turtle is first noticed near the corner.
Condition: 7
Remarks:
Milk is dripping. Holes are present. Right hind flipper absent. Small holes present on area and under the turtle.

Curved Length (cm): 71.1
Curved Width (cm): 65.6

CODES:

Notch

Species:
CC = Loggerhead
M = Green
DC = Leatherback
H = Hawksbill
K = Kemp’s ridley
UI = Unidentified

Condition of Turtles:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcase
5 = Skeleton, bones only
Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatan Beach

Date: 02-02-02
Turtle # By Day: 1
Observer's Full Name: Christopher Widdow
Location: Our water level was eight feet above ground level, and with half of a side washed in hard
Species: CC
Condition: Blounded, no head, no scutes, some scattered, scutes missing from left
Remarks: Posterior Marginal Tip

Curved Length (cm): 71.3 (pitch), 72.6 (fish)
Curved Width (cm): 71.4

Codes:

Species:
CC = loggerhead
CM = Green
DC = Leatherback
El = Hawksbill
K = Kemp's ridley
UN = Unidentified

Condition of Turtle:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only

Back Bay National Wildlife Refuge
Sea Turtle Stranding Report
Fort Story, Resort Strip, and Croatan Beach

Date: 02-02-02
Turtle # By Day: 2
Observer's Full Name: Christopher Widdow
Location: Our water level was eight feet above ground level, and with half of a side washed in hard
Species: CC
Condition: Blounded, no head, no scutes, some scattered, scutes missing from left
Remarks: Posterior Marginal Tip

Curved Length (cm): 71.3 (pitch), 72.6 (fish)
Curved Width (cm): 71.4

Codes:

Species:
CC = loggerhead
CM = Green
DC = Leatherback
El = Hawksbill
K = Kemp's ridley
UN = Unidentified

Condition of Turtle:
0 = Alive
1 = Fresh dead
2 = Moderately decomposed
3 = Severely decomposed
4 = Dried carcass
5 = Skeleton, bones only
<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>2/26/1997</td>
</tr>
<tr>
<td>Turtle # By Day</td>
<td>7</td>
</tr>
<tr>
<td>Observer's Full Name</td>
<td>John Smith</td>
</tr>
<tr>
<td>Location</td>
<td>34° 12′ N, 76° 01′ W</td>
</tr>
<tr>
<td>Species</td>
<td>C. caretta</td>
</tr>
<tr>
<td>Condition</td>
<td>Healthy</td>
</tr>
<tr>
<td>Remarks</td>
<td>Adult female</td>
</tr>
<tr>
<td>Curved Length (cm)</td>
<td>150</td>
</tr>
<tr>
<td>Curved Width (cm)</td>
<td>120</td>
</tr>
</tbody>
</table>

**Diagram**

- **Tortoise Notch**
- **Species Code**
  - CG: Loggerhead
  - CA: Green
  - DC: Leatherback
  - HH: Hawksbill
  - HK: Kemp's ridley
  - HU: Unidentified
- **Condition of Death**
  - 0: Alive
  - 1: Fresh dead
  - 2: Moderately decomposed
  - 3: Severely decomposed
  - 4: Dried carcase
  - 5: Skeleton, Streets only
**SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT**

**OBSERVER'S NAME / ADDRESS / PHONE:**
First: Sara M.I. I Last: Williams
Affiliation: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number: (757) 721-2412

**STATE COORDINATOR:**
State coordinator must be notified within 48 hrs. this was done by: phone (757) 437-6159
Email: 
Fax: (757) 437-4933

**STRANDING DATE:**
Year 2003 Month: 07 Day: 09
Turtle number by day: 0
Field #: 0

**Turtle number by day:**

**STATE:** VA
**_COUNTY:**
**Descriptive location (be specific):** 1.3 miles south of Back Bay NRW's Beach ramp

**CONDITION:** (check one)
- 1 = Alive
- 2 = Dead
- 3 = Moderately decomposed
- 4 = Severely decomposed
- 5 = Skeleton, bones only

**TAGS:** Contact state coordinator before disposing of any tagged animal!
- 1 = Yes / No
- 2 = Check any present, if found, record tag number(s), tag location, return address
- 3 = Painted, what color? orange

**CARAPACE MEASUREMENTS:** (see drawing)
- Using calipers Circle unit
  - Straight length (NOTCH-TIP): __ cm
  - Minimum length (NOTCH-NOTCH): __ cm
  - Straight width (Widest Point): __ cm

- Using non-metal measuring tape Circle unit
  - Curved length (NOTCH-TIP): __ cm
  - Minimum length (NOTCH-NOTCH): __ cm
  - Curved width (Widest Point): __ cm

**FINAL DISPOSITION:** (check one)
- 1 = Left on beach where found, painted
- 2 = Buried in beach where found
- 3 = Salvaged - all info calm, only
- 4 = Pulled up on beach, where found, painted
- 5 = Alive, released
- 6 = Alive, taken to rehab. facility, where
- 7 = Left floating, not recovered, painted
- 8 = Disposition unknown, explain

**If painted, what color? orange

**STRAND.IHC-OCCUR:**

**MARKED WOUNDS / ABNORMALITIES ON DIAGRAMS AT LEFT AND DESCRIBE BELOW:**

- Barnacles covering carapace, flesh dried, skeleton exposed on front, left flipper, skull, and neck

**WEIGHT:**
- Actual: __
- Asst: __

**Note:** If no wounds/abnormalities are found.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Sara  M.I.  Last: Williams
Affiliation: Back Bay National Wildlife Refuge
Address: 1005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number: (757) 721-2412

STRANDING DATE:
Year: 2020  Month: 06  Day: 07
Turtle number by day: 02
Field #: ____________
State coordinator must be notified within 48 hrs.
this was done by phone: (757) 437-0159
email: ____________
fax: (757) 437-4933

STRANDING LOCATION:
State: VA
County: Virginia Beach
Description (be specific): 6.3 miles South of Back Bay NWR's Beach Ramp

CONDITION: (check one)
- Alive
- Fresh dead
- Moderately decomposed
- Severely decomposed
- Dried carcass
- Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!
Flipper tags present? Yes ☑ No ☑
Check all 4 flippers. If found, record tag number(s): tag location / return address

FINAL DISPOSITION: (check one)
- Alive - released
- Alive, taken to rehab facility, where?
- Disposed of any tagged animal!! Yes ☑ No ☑
- Left floating, not recovered. Painted? Yes ☑ No ☑
- Disposition unknown, explain

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
- Straight length: NOTCH-TIP
- Minimum length: NOTCH-NOTCH
- Straight width: Widest Point
Using non-metal measuring tape
- Curved length: NOTCH-TIP
- Minimum length: NOTCH-NOTCH
- Curved width: Widest Point

Weight: ____________

Mark wounds / abnormalities on diagrams at left and describe below indicator of any gear or debris entanglement, propeller damage, epibactera, pancūtact, entanglement, etc. Please note if no wounds / abnormalities are found.

extremely bloated, all scutes are absent
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBESERVER'S NAME / ADDRESS / PHONE:
F: Brighid M. L. Last: Tewey
Attention: Back Bay National Wildlife Refuge
Address: 4005 Sandpiper Rd., VA Beach, VA 23456
Area code: Phone number: (757) 721-2412

STRANDING DATE:
Year: 2020 Month: 07 Day: 03
Field #: 
State coordinator must be notified within 48 hrs,
this was done by phone (757)427-0150
_email_ _fax_ (757)427-0150

SPECIES: (check one):
□ Loggerhead
□ Green
□ Leatherback
□ Hawksbill
□ Kemp's Ridley
□ Unidentified

Uncertainties are not acceptable. Do Not Guess.

SEX: (check one):
□ Male
□ Female
□ Unidentified

Stranding Location:
State: Virginia
County: Virginia Beach

Describe Location (be specific): Wash Woods

CONDITION: (check one):
□ Alive
□ Fresh Dead
□ Moderately decomposed
□ Severely decomposed
□ Dry carcass
□ Skeleton, bones only

TAGS: Contact state coordinator before disposing of any tagged animal!!

Check all 4 flippers, if found, record tag number(s), tag location, return address.

Mark wounds, abnormalities on diagrams at left and below notes on chart, gear or debris entanglement, propeller damage, epibiotic, factors, emaciation, etc. Please note if no wounds / abnormalities are found.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First Name: Christopher M. I. Last Name: Walker
Field #: ____________
Area Code/Phone Number: 757-721-2412

STRANDING DATE:
Year: 2012, Month: ___, Day: ___.
Turtle number by day: ___.
Field #: ____________
State coordinator must be notified within 48 hrs; this was done by phone (757)437-0159, email, fax (757)437-4933.

SPECIES: (check one)
- LC = Loggerhead
- CM = Green
- DC = Leatherback
- KI = Kemp's Ridley
- KN = Unclassified
Check Unidentified if not positive. Do Not Guess.

STILL TAKEN? Yes __ No __
Species verified by state coordinator? Yes __ No __

SEX: (check one)
- Immature, undetermined
- Male
- Female
How was sex determined?
- Necropsy
- Tail length (adult only)
- Length of tail beyond carapace: __ cm

LATITUDE: ____________
LONGITUDE: ____________

CONDITION: (check one)
1. = Alive
2. = Fresh dead
3. = Moderately decomposed
4. = Severely decomposed
5. = Skeleton, bones only

FINAL DISPOSITION: (check one)
1. = Left on beach where found, painted
2. = Buried on beach, off beach
3. = Salvaged, still alive
4. = Pulled up on beach, alive, painted?
5. = Alive, released
6. = Alive, taken to rehab. facility, where?
7. = Left floating, not recovered, painted?
8. = Disposition unknown, explain

TAGS: Contact state coordinator before disposing of any tagged animal!
Flipper tags present? Yes __ No __ Check all 4 flippers. If found, record tag number(s) / tag location / return address

If painted, what color? ____________
If passive tag scan? Yes __ No __
If found, record location / return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length: __ cm
Minimum length: __ cm
Straight width: __ cm

Using non-metal measuring tape
Curved length: __ cm
Minimum length: __ cm
Curved width: __ cm

Mark wounds / abnormalities on diagrams at left and describe below (hellolar or oil, gear or debris entanglement, propeller damage, epibiotics, backlashes, emaciation, etc). Please note if no wounds / abnormalities are found.

Slight rusting, dried from head
Small puffs in remaining eye
look like abrasions on carapace
both front flippers taken for samples.
SEA TURTLE STRANDING AND SALVAGE NETWORK – STRANDING REPORT

OBSERVER'S NAME/ADDRESS/PHONE:

First: Christopher M.I. Last: 2'

Back Bay National Wildlife Refuge
Plum Tree Island National Wildlife Refuge
4005 Sandpiper Road
Virginia Beach, VA 23456

SPECIES: (check one)

\[ \begin{align*}
- & CC = Loggerhead \\
- & CM = Green \\
- & DC = Leatherback \\
- & H = Hawksbill \\
- & K = Kemp's ridley \\
- & U = Unidentified
\end{align*} \]

Check Unidentified if not positive. Do Not Guess.

STATE COORDINATOR:

Contact state coordinator before disposing of any tagged animal!! If painted, what color?

TAGS: Contact state coordinator before disposing of any tagged animal!! Flipper tags present? Yes \( \square \) No

Condition: (check one)

\[ \begin{align*}
- & J = Alive \\
- & F = Fresh dead \\
- & M = Moderately decomposed \\
- & S = Severely decomposed \\
- & D = Dried carcass \\
- & N = Skeleton, bones only
\end{align*} \]

Final Disposition: (check one)

\[ \begin{align*}
- & L = Left on beach where found, painted? \( \square \) Yes \( \square \) No
- & B = Buried: on beach / offshore / in sand / carcass painted before burial? \( \square \) Yes \( \square \) No
- & S = Salvaged: all / partial: what body parts?
- & P = Pulled up on beach: painted? \( \square \) Yes \( \square \) No
- & A = Alive, released
- & R = Alive, taken to rehab. facility, where?
- & N = Disposition unknown, explain
- & M = Died in care tag scan? \( \square \) Yes \( \square \) No
- & C = Disposed in care tag scan? \( \square \) Yes \( \square \) No
- & G = Disposition unknown, explain

If painted, what color?

Carapace Measurements: (see drawing)

Using calipers

- Straight length (NOTCH-TIP) \( \text{cm} \) \( \text{in} \)
- Minimum length (NOTCH-NOTCH) \( \text{cm} \) \( \text{in} \)
- Straight width (Widest Point) \( \text{cm} \) \( \text{in} \)

Using non-metal measuring tape

- Curved length (NOTCH-TIP) \( \text{cm} \) \( \text{in} \)
- Minimum length (NOTCH-NOTCH) \( \text{cm} \) \( \text{in} \)
- Curved width (Widest Point) \( \text{cm} \) \( \text{in} \)

Weight = actual \( \text{lb} \) est. \( \text{kg} \)

Mark wounds / abnormalities on diagrams at left and describe below (note torn or oil, gear or debris entanglement, propeller damage, epibiota, epidermises, emaciation, etc.). Please note if no wounds / abnormalities are found.

Mark fully throughout, skill present!
**SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT**

**CESERVER'S NAME/ADDRESS/PHONE:**
- First: [Last: Workiner]
- Nation: Back Bay National Wildlife Refuge
- Address: 4005 Sandpiper Rd., VA Beach, VA 23456
- Area code/Phone number: (757) 721-3132

**STRANDING DATE:**
- Year: 2009
- Month: Nov
- Day: 24
- Field #: [State coordinator must be notified within 48 hrs.]
- Turtle number by day: 24

**STRANDING LOCATION:**
- State: VA
- County: VA Beach
- Descriptive location be specific: [27 mi north of VA Beach]

**CONDITION:** (check one)
- 1 = Alive
- 2 = Fresh dead
- 3 = Severely decomposed
- 4 = Tranquilized
- 5 = Skeleton/bones only

**TAGS:** Contact state coordinator before disposing of any tagged animal!!
- Fin clip tags present? Yes / No
- Check all 4 flippers if found, record tag number(s), tag location, return address

**CARAPACE MEASUREMENTS:** (see drawing)
- Using calipers
- Minimum length: [Draw unit]
- Maximum length: [Draw unit]

**FINAL DISPOSITION:** (check one)
- 1 = Retained in place, but monitored
- 2 = Buried in place, monitored
- 3 = Buried in place, not monitored
- 4 = Pulled up,放回大海, No tag, Yes or No
- 5 = Alive, taken to facility, monitored
- 6 = Alive, taken to facility, not monitored
- 7 = Left floating, not recovered, painted? Yes / No
- 8 = Disposition unknown, explain

**If painted, what color?**

**Mark wounds, abnormalities on diagrams at left and second below note for or cause of death or entanglement, propeller damage, infection, poisons, emaciation etc. Please note if no wounds/abnormalities are found.**

**Left front flipper is missing (local is chipped off when young) Called Virginia Sea Turtle Society**
STRANDING DATE:
Year 2010 Month 10 Day 21
Turtle number by day 0/3
Field #
State coordinator must be notified within 48 hrs.
this was done by phone (757)437-6159
email fax (757)437-6159
Area code/Phone number (757) 721-2412

SPECIES: (check one)
□ Loggerhead 
□ Leatherback
□ Kemp's Ridley
□ Undetermined
☑ Check Unidentified if not
positive. Do Not Guess.

SEX: check one:
□ Female 
□ Male 
□ Unknown
□ Not applicable
□ Sex not determined

STRAINING LOCATION:
State 
County 
Town or Location

CONDITION: (check one):
□ Alive
□ Fresh dead
□ Moderately decomposed
□ Severely decomposed
□ Dead carcass
□ Skeleton, bones only

TAGS: Contact state coordinator before
disposing of any tagged animal!!
Flipper tags present? Yes ☐ No ☐
Check all 4 flippers. If found, record tag
numbers, tag location / return address

CARAPACE MEASUREMENTS: (see drawing)
Using calipers Circle unit
Straight length (NOCCH-TP) 3 7/8 in
Minimum length (NOCCH-NOCCH) 3 7/8 in
Straight width (W-P2-W2) 2 9/16 in

Using non-metal measuring tape Circle unit
Curved length (NOCCH-NOCCH) 10 15/16 in
Curved width (W-P2-W2) 2 9/16 in

Weight = oz. = lbs.

If painted, what color? "Orange"

FINAL DISPOSITION: (check one):
□ Left in ocean where found, painted 2 lbs. 
□ Buried in beach, 10 lbs. 
□ Carcass painted before burial 10 lbs.
□ Carcass not painted before burial
□ Pulled up on beach, painted 2 lbs. 
□ Alive, released
□ Alive, taken to research facility elsewhere
□ Left floating, not recovered, painted? Yes ☐ No ☐
□ Disposition unknown, explain

If painted, what color? "Orange"

Mark Wounds / abnormalities on diagrams at left and record below. If animal or gear
or parts entanglement, propeller damage, entrapment, etc. Please note if no wounds /
abnormalities are found.

Head and flipper s, face overly deformed

Marked on "Die. "
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

OBSERVER'S NAME / ADDRESS / PHONE:
First: Christopher M. Last: Wicker
Address: Back Bay National Wildlife Refuge
4005 Sandpiper Rd., VA Beach, VA 23456
Area code/Phone number (757) 721-2412

STRANDING DATE:
Year: 2002 Month: 5 Day: 15
Turtle number by day: 01
Field #: 0
State coordinator must be notified within 48 hrs.
this was done by phone (757)437-0159
email fax (757)437-4933

SPECIES: (check one)
G = Loggerhead
CM = Green
OC = Leatherback
E = Hawksbill
LN = Unidentified

SEX: (check one)
M = Male
F = Female
ND = Undetermined

STRANDING LOCATION:
State: VA
County: VA Beach
Descriptive location (be specific):
0.5 mile south of 63rd VIRN northern barrier
Latitude: ______
Longitude: ______

CONDITION: (check one)
1 = Alive
2 = Fresh dead
3 = Moderately decomposed
4 = Severely decomposed
5 = Skeleton, bones only

FINAL DISPOSITION: (check one)
1 = Left on beach where found, painted
2 = Blinded, on beach, off beach
3 = Salvaged, alive, taken to rehab, facility, where
4 = Pulled up on beach/dune, painted
5 = Alive, released
6 = Alive, taken to rehab, facility, where
7 = Alive, taken to rehab, facility, where
8 = Left floating, not recovered, painted
9 = Disposition unknown, explain

TAGS: Contact state coordinator before disposing of any tagged animal!!
Flipper tags present? Yes No
Check all 4 flipper tags. If found, record tag number(s)/tag location/return address

PIT tag scan? Yes No
If found, record number/tag location

CARAPACE MEASUREMENTS: (see drawing)
Using calipers
Straight length (NOTCH-TIP) cm/in.
Minimum length (NOTCH-NOTCH) cm/in.
Straight width (Widest Point) cm/in.

Using non-metal measuring tape
Curved length (NOTCH-TIP) cm/in.
Minimum length (NOTCH-NOTCH) cm/in.
Curved width (Widest Point) cm/in.

Mark wounds / abnormalities on diagrams at left and describe below (note tail or flipper injury, bone or gills entanglement, proceller damage, eczema, papillomas, emaciation, etc. Please note if no wounds / abnormalities are found.

Moderately infected, vertical fracture on carapace, very present on both wings, digits missing from flippers; muscle sample taken.
SEA TURTLE STRANDING AND SALVAGE NETWORK - STRANDING REPORT

Date: [Year] [Month] [Day]

Observer's Name / Address / Phone:
First [Name] Last [Name]
Affiliation [Affiliation]
Address [Address]
Area Code: Phone Number (757) 721-2412

Species: [Species]
Sex: [Sex]

Stranding Location:
State [State]
Descriptive location (be specific)

Latitude

Longitude

Condition: [Condition]

Final Disposition: [Disposition]

Tags: Contact state coordinator before disposing of any tagged animal!
Flipper tags present? [Yes] [No]

Carapace Measurements: (see drawing)

PIT tag scan? [Yes] [No]

Carapace length (NOTCH-TIP) [cm]
Carapace width (NOTCH-NOTCH) [cm]
Minimum carapace length [cm]

Using non-metal measuring tape

Curved length (NOTCH-TIP) [cm]
Minimum curved length [cm]

Weight [kg] [lb]

Wounds / Abnormalities:

[Diagram]

Note: If no wounds / abnormalities are found.

[Signature]

[Date]
APPENDIX 2

SEA TURTLE NEST RELOCATION DATA SHEETS
DATA SHEET FOR CRAWLS & NEST RELOCATIONS

I. General Information (weather, time, tide level, wind speed, location, etc.)

Date: July 11, 2000
Tide height: falling
Estimated air temperature: 72°F

General weather conditions: 30% cloud cover, rainfall
Wind speed & direction: NE
Location of crawl: south of Back Bay NWR beach

II. Parties Involved

Lamar Fox, Sara Williams, Andrew Camponetti, Michael Chrise
Caroll, Eric Duran, Bingham Truett

III. Data to be collected for Each Set of Tracks

Crawl: 1, 2, 3, ...
Time crawl recorded: 11:05 am
Date: July 11, 2000

Track measurements:

- from where first visible near surf to nest site or end of crawl:
- Length of incoming tracks (m): 39.8
- Width of incoming tracks (cm): 90
- Length of outgoing tracks (m): 28
- Width of outgoing tracks (cm): 80

Flipper impressions: alternate or opposite

Distance from center of disturbed nesting area to toe of dune: 2.55 m

Topographical feature at end of tracks (CIRCLE area on diagram):

Was a nest found? yes false nest? false crawl only?

IV. Data to be collected for Each Nest (measurements of nest, egg, etc.)

Original Nest Data:

- Nest (i.e. 1, 2, 3, ...): 1
- Crawl #: 1
- Time nest excavated: 12:30 pm
- Width of disturbed nesting area: 2.3 m
- Length of disturbed nesting area: 2.5 m
- Nest cavity width at widest pt.: 19.5 cm
- Nest cavity length at longest pt.: 22 cm

Total # eggs: 115

* Total # eggs: 2 eggs were fused together and slightly torn at point of fusion. Fused eggs continued to tear upon removal and were not recovered with nest to reduce chance of invasion by ants or bacteria. Two fused eggs were counted as two individual eggs.

broken or predated eggs: 1 (see note below)

Temperature of soil in nest cavity: NA

NEST CAVITY

SPLICE

top nest depth: 19 cm
bottom nest depth: 48.3 cm
Back Bay National Wildlife Refuge
Nest Analysis for Nest 1, July 11, 2000 -- December 13, 2000
Inspected by: John Gallegos and Sara Williams

(Eggs frozen in freezer until inspection.)

Unhatched egg analysis:
• Developed Embryos = 28 (of varying degrees of development)
• Addled eggs = 15

Summary of Hatching for Nest laid on July 11, 2000
Nest hatched September 24-October 5, 2000

<table>
<thead>
<tr>
<th>Date</th>
<th># Live Hatchlings</th>
<th># Dead Hatchlings</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/24/00</td>
<td>22*</td>
<td>0</td>
</tr>
<tr>
<td>09/25/00</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>09/26/00</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>09/27/00</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>10/04/00</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>10/05/00**</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

* 4 Hatchlings given to the Virginia Marine Science Museum for the Headstart Program

** Nest excavated. A total of 38 eggs were removed and analyzed on December 13, 2000.
DATA SHEET FOR CRAWLS & NEST RELOCATIONS

I. General Information (weather, time, tide level, wind speed, location, etc.)

- Date: July 16, 2000
- Tide height: falling
- Estimated air temperature: 38°F
- General weather conditions: 50% cloud cover
- Wind speed & direction: North
- Location of crawl (-, include markers): 150 m

II. Parties Involved

Lamar Gore, Sarah Williams, Andrew Cunipil, Eric Durham
Carlye Turkson

III. Data to be collected for Each Set of Tracks

- Crawl number: 2
- Time crawl detected: 10:15 am
- Data collected: July 16, 2000
- Track measurements: Length of incoming tracks: 23.7 m
- Width of incoming tracks: 45 cm
- Length of outgoing tracks: 24.7 m
- Width of outgoing tracks: 42.3 cm
- Sand surface measurement: flats, measurement indicated: yes (outgoing only)
- Flipper impressions alternate or opposite: yes
- Distance from center of disturbed nesting area to toe of dunes: 0
- Topographical feature at end of tracks (CIRCLE area on diagram): sand

IV. Data to be collected for Each Nest (measurements of nest, egg, etc.)

Original Nest Data:

- Nest number: 1, 2, 3...
- Crawl number: 2
- Time nest excavated: 10:15 am
- Width of disturbed nesting area: 1.76 m²
- Length of disturbed nesting area: 1.74 m
- Nest cavity width at widest pt.: 1.76 m
- Nest cavity length at longest pt.: 1.74 m
- Total eggs = 6
- Damaged eggs = 2
- Broken or predared eggs = 0
- Temperature of soil in nest cavity: 32°C

NEST CAVITY

- Nest depth: 3 cm
- Nest size: 15 cm
APPENDIX 3

VMSM STRANDING TEAM 1999-2000
HATCHLING REPORT
To: John Stasko, John Gallegos and Sara Williams
Back Bay National Wildlife Refuge

Subject: Report on 1999-2000 sea turtle hatchlings at VMSM

Hello everyone. I have attached a report on the 1999-2000 sea turtle hatchlings for your records. The report summarizes the year in which these sea turtles were in the care of the museum. As you can see, it was a very successful year for the turtles and for the museum. We were able to continue our studies of the early growth and development of loggerhead sea turtles. This important information will eventually lead to a manuscript documenting results of several years of growth studies and the husbandry techniques developed to properly care for hatchling sea turtles. We are committed to advancing the husbandry of sea turtles in our care and sharing this information with other organizations involved in similar research, rescue and education activities related to sea turtles.

Equally important, these sea turtles have been part of a special educational experience for hundreds of thousands of people and tens of thousands of students. The value of seeing living animals as part of a learning experience is tremendous and we at the museum are able to see this on a daily basis through interactions with our many visitors. The continuing cooperation and participation of Back Bay National Wildlife Refuge with our sea turtle research and education programs and our stranding response efforts is very gratifying and rewarding. I am sure you feel the same way about these important cooperative efforts.

On behalf of myself, Beth Firchau (Curator in charge of sea turtle husbandry), Thomas Harder (Aquarist responsible for the sea turtle hatchlings), and the rest of our staff, thanks for your continued support and participation in these sea turtle programs. Have a great holiday season.

Sincerely,

W. Mark Swingle
Curator of Stranding Program & Acquisitions
Arrival:

Four loggerhead hatchlings were received by the Virginia Marine Science Museum (VMSM) from Nest #1 on Back Bay National Wildlife Refuge (BBNWR) on August 26, 1999. The hatchlings were in excellent health and were examined by museum veterinarian, Dr. Robert George, on September 9, 1999. At this time, all hatchlings were eating well and gaining weight.

Year at VMSM:

During the course of the next year, the hatchlings were reared in a specially designed holding system on exhibit at the VMSM. Water quality is maintained by a life support system which delivers continuous circulation of natural seawater at a temperature of 24.5°C and a salinity of 30 ppt (parts per thousand). The exhibit is designed to inform visitors about the life history and ecology of Virginia’s sea turtles and to show the early development of loggerhead sea turtles. Visitors can observe the care and feeding of the young sea turtles and also the weekly measurements of their growth by the animal care staff. The progress of their growth is displayed during the year as part of the exhibit. The museum welcomed more than 600,000 visitors, including more than 70,000 students, during the year in which these young sea turtles were in our care.

While in the care of the museum, the sea turtles were fed daily and their growth was measured on a weekly basis. The growth and development of the individual turtles was determined by measuring their weight (recorded in grams), their carapace length from nuchal notch to posterior notch (recorded in centimeters and abbreviated as CL N-N), and their carapace width at the widest point (recorded in centimeters and abbreviated as CW). In addition, the mass of food consumed by each individual turtle was also recorded as part of the museum’s ongoing efforts to study and advance the husbandry of sea turtles. Summaries of the growth and development of these young loggerheads are reported in the attached tables for your reference.
Release:

As the time approached for their release, the individual turtles were tagged with subcutaneous pit tags. The following pit tag numbers are associated with each turtle.

<table>
<thead>
<tr>
<th>Turtle Number</th>
<th>Pit Tag Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>414D211507</td>
</tr>
<tr>
<td>#3</td>
<td>414D235434</td>
</tr>
<tr>
<td>#4</td>
<td>414D2F6006</td>
</tr>
<tr>
<td>#5</td>
<td>414D106813</td>
</tr>
</tbody>
</table>

In addition, a blood sample was obtained from each individual turtle for routine screening by Dr. George prior to release. The results of the blood tests are also included as attachments for your reference.

The release of the turtles was coordinated with the U.S. Coast Guard (USCG). Museum staff member, Brian Russell, accompanied the turtles. The release was conducted from the USCG Cutter Albacore under the command of Captain Peter Niles on 11-09-2000. Details of the release were as follows:

- Location: 36 22.5N 74 25.3W
- Time: 0100
- Salinity: 34 ppt (parts per thousand)
- Water temp: the thermometer on the ship was not believed to be accurate, however the captain verified the location as warm waters of the Gulf Stream.
<table>
<thead>
<tr>
<th>DATE</th>
<th>WT. (gm)</th>
<th>CL N-N (cm)</th>
<th>CW (cm)</th>
<th>FOOD WT. (gm)</th>
<th>FOOD</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/10/99</td>
<td>34.3</td>
<td>5.01</td>
<td>4.18</td>
<td>~20pcs</td>
<td>scallops</td>
<td></td>
</tr>
<tr>
<td>10/08/99</td>
<td>90</td>
<td>8.27</td>
<td>6.77</td>
<td>~40pcs</td>
<td>shrimp</td>
<td></td>
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<tr>
<td>11/12/99</td>
<td>188</td>
<td>9.9</td>
<td>8.5</td>
<td>9.61g</td>
<td>gel</td>
<td></td>
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<tr>
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<td>9.8</td>
<td>13g</td>
<td>gel</td>
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<td>16g</td>
<td>gel</td>
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<tr>
<td>02/09/00</td>
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<td>12.7</td>
<td>18g</td>
<td>gel</td>
<td></td>
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<tr>
<td>03/08/00</td>
<td>893</td>
<td>16.9</td>
<td>14.3</td>
<td>24g</td>
<td>gel</td>
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<tr>
<td>04/12/00</td>
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<td>gel</td>
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<td>gel</td>
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<td>18.2</td>
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<td>gel</td>
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<td>26g</td>
<td>gel</td>
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<td>2319</td>
<td>24.6</td>
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<td>31g</td>
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<td>21.7</td>
<td>55g</td>
<td>smelt</td>
<td>fed various foods in this month</td>
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<td>11/01/00</td>
<td>3125</td>
<td>26.6</td>
<td>22.6</td>
<td>56g</td>
<td>crab</td>
<td></td>
</tr>
<tr>
<td>DATE</td>
<td>WT. (gm)</td>
<td>CL N-N (cm)</td>
<td>CW (cm)</td>
<td>FOOD WT. (gm)</td>
<td>FOOD</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>-----------</td>
<td>----------</td>
<td>-------------</td>
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<td>-------</td>
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</tr>
<tr>
<td>09/10/99</td>
<td>34.3</td>
<td>5.01</td>
<td>4.18</td>
<td>~20pcs</td>
<td>scallops</td>
<td>fed various foods in this month</td>
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<tr>
<td>10/08/99</td>
<td>102</td>
<td>8.75</td>
<td>7.23</td>
<td>~40pcs</td>
<td>shrimp</td>
<td>fed various foods in this month</td>
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<tr>
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<td>212</td>
<td>10.6</td>
<td>9.3</td>
<td>10.73g</td>
<td>gel</td>
<td>fed various foods in this month</td>
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<tr>
<td>12/10/99</td>
<td>337</td>
<td>12.6</td>
<td>10.6</td>
<td>15g</td>
<td>gel</td>
<td>fed various foods in this month</td>
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<tr>
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<td>564</td>
<td>14.1</td>
<td>12.0</td>
<td>18g</td>
<td>gel</td>
<td>fed various foods in this month</td>
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<td>02/09/00</td>
<td>704</td>
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<td>13.5</td>
<td>20g</td>
<td>gel</td>
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<td>15.1</td>
<td>28g</td>
<td>gel</td>
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<td>16.9</td>
<td>37g</td>
<td>gel</td>
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<td>18.1</td>
<td>33g</td>
<td>gel</td>
<td>fed various foods in this month</td>
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<tr>
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<td>1847</td>
<td>22.7</td>
<td>19.2</td>
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**PT #:** 0420-1  
**DOB:** 00000000  
**SEX:** U

**LOG:** VA MARINE SCI MUS, COLLECTIONS  
**PHY:** GEORGE, ROBERT DVM

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RC RESULTS CHECKED

END OF REPORT

VMSM, SEATURTLE 02

10/25/2000 03:21  
FINAL REPORT
### CHEMISTRY

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RC RESULTS CHECKED

VMSM, SEATURTLE 03
10/25/2000 03:21 FINAL REPORT
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PT #: 0420-4
DOB: 00000000

LOC: VA MARINE SCI MUS, COLLECTION:
PHY: GEORGE, ROBERT DVM
SEX: M

DATE: 10/24/00
TIME: 03:21

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RC RESULTS CHECKED
APPENDIX 4

NMFS GILLNET FISHERIES CLOSURE ANNOUNCEMENT
FOR IMMEDIATE RELEASE:
May 12, 2000
NR00-022

NOAA Fisheries Issues Emergency Rule to Protect Endangered and Threatened Sea Turtles along Eastern North Carolina and Virginia Coast

Large Mesh Gillnet Fishery Closed

NOAA Fisheries announces the closure of waters along the coasts of Virginia and eastern North Carolina and in the mouth of the Chesapeake Bay to fishing with gillnets with a mesh size 6 inches or larger. The closed area includes all Atlantic Ocean waters between Cape Hatteras and 38° N. (approximately the Virginia-Maryland border), west of 75° W. longitude, and the waters in lower Chesapeake Bay, east of the Hampton Roads bridge-tunnel and south of a line drawn between Old Point Comfort and Cape Charles City. Fishermen have until 11:59 p.m. on May 13, 2000 to retrieve any gillnets with 6 inch mesh or greater that are already set. This closure is in effect through June 11, 2000.

An unprecedented number of dead sea turtles have washed ashore on the North Carolina Outer Banks in April and May. During two concentrated stranding events from April 14-17 and May 3-8, a total of 280 turtles have been found between the town of Ocracoke and Oregon Inlet. Almost all the turtles have been loggerheads, a threatened species. The ten-year average is only 219 loggerheads stranding in all of North Carolina in an entire year. Winds and currents helped bring the carcasses ashore in large numbers, but reports from fishermen indicate that many dead turtles are still at sea, so the actual extent of the turtle mortality offshore is much greater than the strandings would indicate.

Four of the loggerheads that stranded in May were entangled in gillnets with mesh sizes of 10 to 12 inches. NOAA Fisheries has determined that the most likely source of this sea turtle mortality is large-mesh gillnetting for monkfish and possibly dogfish. Other possible causes, such as disease, toxic algae, trauma, or hook fisheries, are not consistent with the nature of the strandings. Satellite sea surface temperature information has allowed NOAA Fisheries to reconstruct the likely times and locations of the sea turtle mortality. Gillnetting for dogfish and monkfish have been the active fisheries in those times and places. These fisheries have long soak times, ranging from overnight to several days. Large-mesh gillnets are known to be highly effective at catching turtles and in fact were the gear of choice during the historical sea turtle fishery.

Sea turtles are now migrating northward along the North Carolina coast into Virginia waters and Chesapeake Bay as these waters are rapidly warming. The turtles will likely still be concentrated on their migratory routes over the next weeks, until they disperse over their foraging grounds, and they will continue to be vulnerable to coastal and offshore large-mesh gillnet fisheries. NOAA Fisheries is issuing this temporary closure to reduce any further mortality of threatened and endangered sea turtles from large-mesh gillnets, after the already record-setting number of strandings.
### Back Bay National Wildlife Refuge

#### 1970-2000 Sea Turtle Nest Information

<table>
<thead>
<tr>
<th>Nest # (T indicates transplanted)</th>
<th>Date of Nest</th>
<th>Locality</th>
<th>Exact Location of Nest**</th>
<th># Eggs</th>
<th># Hatching Emerged from Nest</th>
<th>Nest Success Rate***</th>
<th>Comments (not complete)</th>
<th>Top Nest Depth</th>
<th>Bottom Nest Depth</th>
<th>Hatch Date</th>
<th>Incubation Period (days)</th>
<th>Comments</th>
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</table>

**Key:**
- **BBNWR**: Back Bay National Wildlife Refuge
- **FCSP**: False Cape State Park
- **SB**: Sandbridge, Currituck NWR
- **NWR**: National Wildlife Refuge
- **N/A**: Not Available

**Notes:**
- *Relocated to BBNWR*
- *Relocated to Norfolk Zoo*
- *Relocated to VIMS*
- *Incubation Period (days)*
- *Success Rate***

**Incubation Period (days)***

- 1973: 50 days
- 1977: 50 days

**Examples:**
- 0.5m N FCSP N border = 0.5 miles North of False Cape State Park's northern border
- 0.75m S BBNWR N border = 0.75 miles South of BBNWR

**Comments:**
- "Example: 0.5m N FCSP N border = 0.5 miles North of False Cape State Park's northern border"

**Sea Turtle Nest Information**

- Eggs were relocated from Cape Romain NWR, SC after 50 days incubation to BBNWR, VA ("Loggerhead Eggs Transplant Project"). The relocation project produced a total of 5,557 hatchlings which were released in the Atlantic Ocean at BBNWR.

- The relocation project produced a 50 days incubation to BBNWR, VA ("Loggerhead Eggs Transplant Project"). The relocation project produced a total of 5,557 hatchlings which were released in the Atlantic Ocean at BBNWR.

- "Example: 0.5m N FCSP N border = 0.5 miles North of False Cape State Park's northern border"
### Back Bay National Wildlife Refuge

#### 1970-2000 Sea Turtle Nest Information

**Key:**
- BBNWR = Back Bay National Wildlife Refuge
- FCSP = False Cape State Park
- SB = Sandbridge, Dam Neck, and Little Island City Park beaches
- VB = Virginia Beach Resort Strip, Fort Story, and Croatan beaches

| Nest # ("t"
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<td># Eggs</td>
<td># HatchingEmerged from Nest</td>
<td>Nest Success Rate<strong>t</strong></td>
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<td>133</td>
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<td>10-Jul-95</td>
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<td>155</td>
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<td>57</td>
<td>25-Jun-99</td>
<td>BBNWR</td>
<td>1.6 m S BBNWR ramp</td>
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<td>131</td>
<td>97.76</td>
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<tr>
<td>58</td>
<td>7-Jul-99</td>
<td>FCSP</td>
<td>9 m FC Landing ramp</td>
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<td>88</td>
<td>95.65</td>
<td>33</td>
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<td>56 (30 exc)</td>
<td>48.70</td>
<td>19</td>
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Figure 8. 1980-2000 BBNWR Individual Nest Success Rates (Below)

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<th>Nest Success</th>
<th>Number of Nests</th>
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<tr>
<td>0-20%</td>
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<tr>
<td>21-30%</td>
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<td>31-40%</td>
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<td>41-50%</td>
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<tr>
<td>51-60%</td>
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<tr>
<td>61-70%</td>
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<td>71-80%</td>
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<tr>
<td>81-90%</td>
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1980-2000 BBNWR Nest Success Rates

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<th>Incubation Period (days)</th>
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<td>6-15-85</td>
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<td>7-28-91</td>
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Figures 9 and 10. 1980-2000 BBNWR Individual Nest Success Rates (Right)
Figures 11 and 12. BBNWR Individual Nest Success Rates and Top and Bottom Nest Depths.

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APPENDIX 6

2000 SEA TURTLE PATROL EXPENSES
### 2000 Sea Turtle Program Expenses

**Charges Made To ACOE:**

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<th>Turtle Related Biotech Hours:</th>
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<th>C Wicker</th>
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<td><strong>433</strong></td>
<td><strong>323</strong></td>
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@ 10.93/hour  
= $756  
(GS 5)

Other Biotech Hours:  
$6,143.08

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<th>Equipment:</th>
<th>Umbrella, Repair, Skull Caps</th>
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**Charges Made To BBNWR:**

**Patrol Hours (Biotech not included):**

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<th>434 (VMSM)</th>
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<tr>
<td>Intern (Stipend)</td>
<td>153 (Andy and Eric)</td>
</tr>
<tr>
<td>Staff (GS 5)</td>
<td>194 (Lamar, Sara, Cesar, Daffny, Brighid)</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td>(715 patrol hours)</td>
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=$2,311.67

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<tr>
<th>Vehicle Repairs</th>
<th>Morning Patrols</th>
<th>$3,263.69</th>
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<td>Night Patrols</td>
<td>$343.00</td>
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<td><strong>TOTALS</strong></td>
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= $5,918.36

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<td>ACOE Funding Minus Denver Cut (38%)</td>
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# Vehicle Repairs for Morning Patrols

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<th>Cost</th>
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<td>94 Honda ATV tune up</td>
<td>Honda of VB</td>
<td>$72.66</td>
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<td>02/16/00</td>
<td>Repairs to 94 Honda ATV</td>
<td>Honda of VB</td>
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<td>02/16/00</td>
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<td>Honda of VB</td>
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<td>06/05/00</td>
<td>12 cans WD40</td>
<td>Auto Parts</td>
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<td>Kramer Tire</td>
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<td>07/25/00</td>
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<td>07/31/00</td>
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<td>Cycle World</td>
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<td>09/21/00</td>
<td>Yamaha ATV tune up and tires</td>
<td>Cycle World</td>
<td>$480.39</td>
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<tr>
<td></td>
<td><strong>Total =</strong></td>
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<td><strong>$3,263.69</strong></td>
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# Summary of Vehicle Repairs for Night Patrols

<table>
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<tr>
<th>Date</th>
<th>Description</th>
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<th>Cost</th>
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<tbody>
<tr>
<td>06/16/00</td>
<td>Gas tank replacement for '93 Jeep</td>
<td>Witchduck Used Auto</td>
<td>$42.00 out of $140.00 (30%)</td>
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<td>April-Sept.</td>
<td>Repairs for '91 Jeep</td>
<td>BBNWR</td>
<td>$81.00</td>
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<tr>
<td>April-Sept.</td>
<td>Repairs for '93 Jeep</td>
<td>BBNWR</td>
<td>$220.00</td>
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<tr>
<td></td>
<td>2 Flat tires</td>
<td></td>
<td>misc.</td>
</tr>
<tr>
<td></td>
<td>Routine maint.: oil changes, fluids, washing off vehicles</td>
<td></td>
<td>misc.</td>
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<tr>
<td></td>
<td><strong>Total =</strong></td>
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<td><strong>343+misc.</strong></td>
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# Night Patrol Related Manpower (June & July)

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Hours</th>
<th>Rate</th>
<th>Total Cost</th>
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<tr>
<td>Sara Williams</td>
<td>Refuge Jr. Biologist</td>
<td>35+16</td>
<td>GS-4</td>
<td>$498.27</td>
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<tr>
<td>Lamar Gore</td>
<td>Refuge Wildlife Biologist</td>
<td>5</td>
<td>GS-9</td>
<td>$82.85</td>
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<tr>
<td>Eric Duran</td>
<td>Refuge Intern</td>
<td>38+40</td>
<td>stipend pay</td>
<td>$97.50</td>
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<tr>
<td>Andy Campomizzi</td>
<td>Refuge Intern</td>
<td>35+40</td>
<td>stipend pay</td>
<td>$93.75</td>
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<tr>
<td>Cesar Freytes</td>
<td>Maintenance Mechanic</td>
<td>~68</td>
<td>~$15.00/hour</td>
<td>$1,020</td>
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<tr>
<td><strong>Total =</strong></td>
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<td></td>
<td><strong>$1,792.37</strong></td>
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**Grand Total =** **$5,399.06**
Charges made to Army Corp of Engineers Account  
Back Bay National Wildlife Refuge  
2000 Sea Turtle Program  

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<table>
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<tr>
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<tr>
<td>Micheal Farrell</td>
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Grand Total = $15,383.12
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<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<tbody>
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<td>S. Williams(8)</td>
<td>M. C. Ferrell(8)</td>
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<td>M. C. Ferrell(8)</td>
<td>M. C. Ferrell(8)</td>
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<tr>
<td>E. Duran(15)</td>
<td>B. Marchant(lS)</td>
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<td>E. Duran(15)</td>
<td>S. Williams(8)</td>
<td>M. C. Ferrell(8)</td>
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<tr>
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<td>A. Campomizzi(8)</td>
<td>E. Duran(15)</td>
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<tr>
<td>E. Duran(2)</td>
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<td>Jim Thompson(1.5)</td>
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June Total Volunteer Hours: 434 X $5.25 = $2,278.50

June Total Staff Hours: 169 X $5.25 = $891.75

Break Down of Staff Hours and Expense:
- 35 hrs @ GS-4 = $341.95
- 5 hrs @ GS-9 = $82.85
- 73 hrs stipend pay = $91.25
- 56 hours biotechnician = $612.08
- Total = $1,128.13
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<th>August 1</th>
<th>August 2</th>
<th>August 31</th>
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<td>S. Williams (8)</td>
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<tr>
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<td>E. Duran (8)</td>
<td>C. Wicker (8)</td>
<td>E. Duran (8)</td>
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<td>M. Farrell (8)</td>
<td>E. Duran (8)</td>
<td>M. Farrell (8)</td>
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<tr>
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<td>E. Duran (8)</td>
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Night Patrol Schedule

July/August 2000

July and August

Total Volunteer Hours: 0

Total Staff Hours: 160

---

Break Down of Staff Hours and Expenses:

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<th>Hours</th>
<th>Rate</th>
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<td>64</td>
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Total Hours: 160

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Night Patrol Schedule

July/August 2000

Total Volunteer Hours: 0

Total Staff Hours: 160
## PAYROLL REPORT

**Organization Code:** 51510

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<th>ACT</th>
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<th>FIX.</th>
<th>SPEC.</th>
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<th>CODE</th>
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**Totals:** $13,448.18 $957.98  
**Grand Total:** $14,406.16
DCRLOG::SHOWS DATA STORED IN TABLE "COSTS".

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**DOCUMENT CONTROL REGISTER**

**Organization Code:** 51510

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<th>CODE</th>
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**Organization Total:** $976.96

**DATA BASE TOTAL:** $976.96
#### DOCUMENT CONTROL REGISTER

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**Comment:**
- 02/15/00: Taylor do it center. keys for jeep
- 02/16/00: honda of Va Bch; repair to 94 honda atv
- 02/16/00: cycle world; repairs of 98 suzuki atv
- 02/16/00: Colonial Chevrolet; repairs to 91 chev corsica
- 02/16/00: lee tractor of suffolk; repairs to john deer 6x4 gator
- 02/21/00: hall auto mall; repairs to 1995 jeep cherokee
- 04/17/00: new pig corp.; spill skid used for cleaning trams
- 04/17/00: pleasant ridge auto; vehicle repairs
- 05/26/00: kmart; wheelcovers for corsica
- 09/05/00: #4 honda of va bch; repair to turtle patrol atm clutch
- 09/21/00: stevenson ford; muffler hardware for ford backhoe
- 09/21/00: pleasant ridge auto; 11.55,27.95,58.37,10.91, 18.06
- 09/21/00: taylors; drain prob at colechester & padlock @ abceec
- 09/21/00: kellam & Eaton; nylon rope 3/8" 202 ft .47
- 09/21/00: the muffler center; 1663.84, 359.64 rpl ball jnts ront end 1988 ch
- 09/21/00: cycle world; repl tires brakes, tunup on yamaha 4x4
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Comment: #10 pleasant ridge auto; vehicle repairs
DOCUMENT CONTROL REGISTER

07/31/00 pendingmcsw 1262 0000 annu 257d N MC Swoope $300.75 N
Comment: pleasant ridge auto; various bpa non-paid invoices 145.69, 15.25, 8

08/23/00 5151000218a 1262 0000 annu 257d y MC Stasko $50.00 N
Comment: goodyear; tires

07/31/00 5151000231a 1262 r5an annu 257d y MC Swoope $318.81 N
Comment: #46 pleasant ridge auto; vehicle repairs

08/05/00 5151000233a 1262 r5an annu 257d y MC Caldwell $27.00 N
Comment: #1 goodyear; repair flat tire ford 531 tractor

08/05/00 5151000233a 1262 r5an annu 257d y MC Caldwell $78.72 N
Comment: #2 stevenson ford tractor; brake repairs for 531 tractor

08/05/00 5151000233a 1262 r5an annu 257d y MC Caldwell $1,056.84 N
Comment: #6 colonial cheverolet; repairs ac wipers on chevy cheyenne truck

08/05/00 5151000233a 1262 r5an annu 257d y MC Caldwell $290.77 N
Comment: #7 stevenson ford tractor; repairs bushhog on for 531 tractor

08/05/00 5151000232a 1262 0000 annu 257d y MC Stasko $123.77 N
Comment: beach ford; repair to aerostar

09/07/00 5151000247a 1262 r5an annu 257d y MC Swoope $102.00 N
Comment: cycle world; suzuki repairs had trb maint speed in 5 gear watr deb

09/07/00 pendingmcsw 1262 r5an annu 257d N MC Swoope $700.00 N
Comment: beach marine services; canoe needed to post and patrol shallow wat

09/07/00 pendingmcsw 1262 r5an annu 257d N MC Swoope $400.00 N
Comment: beach marine services; rough neck needed to post and patrol shallo

09/07/00 5151000246a 1262 0000 annu 257d y MC Caldwell $85.48 N
Comment: stevenson ford tractor, parts for bush hog

09/07/00 5151000246a 1262 0000 annu 257d y MC Caldwell $297.95 N
Comment: macco auto painting; chevy pu paint to be in compliance w service

09/11/00 5151000246a 1262 r5an annu 257d y MC Caldwell $1,305.98 N
Comment: the muffler center; repair to front brakes and radiator for 1988 ch

09/18/00 5151000247a 1262 r5an annu 257d y MC Swoope $157.32 N
Comment: pleasant ridge auto; boat repairs go devel air filter acloader

09/18/00 pendingmcgs 1262 r5an annu 257d N MC Swoope $3,263.00 N
Comment: outboard marine corpl evinrude midrange 4stroke outboard model e40

-------------------------------------------------------------------------------------------------
Organization Total: $16,887.31

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DATA BASE TOTAL: $16,887.31