KSC TR 51-2, Vol. IV of IV, Part 1
September 1980

N80-31969
~~N81-22583~~

NASA Contract Report 163122

A Continuation of Base-Line Studies for Environmentally Monitoring Space Transportation Systems at John F. Kennedy Space Center

Threatened and Endangered Species of the Kennedy Space Center: Marine Turtle Studies

National Aeronautics and Space Administration

John F. Kennedy Space Center

NASA

KSC FORM 16-12 (REV. 8/76)

VOLUME IV: PART 1

OF THE

FINAL REPORT

TO THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

JOHN F. KENNEDY SPACE CENTER

A CONTINUATION OF BASE-LINE STUDIES FOR ENVIRONMENTALLY

MONITORING SPACE TRANSPORTATION SYSTEMS (STS)

AT JOHN F. KENNEDY SPACE CENTER

CONTRACT NO. NAS 10-8986

VOLUME IV OF IV: THREATENED AND ENDANGERED SPECIES

OF THE KENNEDY SPACE CENTER

Part 1: Marine Turtle Studies

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AUGUST 21, 1979

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BIOSCIENCE OPERATIONS
CODE MD-B
JOHN F. KENNEDY SPACE CENTER
NASA

PREFACE

This document is part of a University of Central Florida contract report, "A Continuation of Base-Line Studies for Environmentally Monitoring Space Transportation Systems at John F. Kennedy Space Center."

The entire report consists of four volumes and an executive summary, all identified as KSC TR 51-2; NASA CR 163122:

Volume I: Terrestrial Community Analysis

Volume II: Chemical Studies of Rainfall and Soil Analysis

Volume III: Part I--Ichthyological Studies, Ichthyological Survey of Lagoonal Waters; Part II--Ichthyological Studies, Sailfin Molly Reproduction Study

Volume IV: Part I--Threatened and Endangered Species of the Kennedy Space Center: Marine Turtle Studies; Part II--Threatened and Endangered Species of the Kennedy Space Center: Threatened and Endangered Birds and Other Threatened and Endangered Forms

Executive Summary

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GENERAL OBJECTIVES

The general objectives of this contract were as follow:

(1) to characterize and quantify selected components of the environment;

(2) to select from among the components studied those which would be appropriate for the detection and assessment of possible perturbations induced by future NASA operations;

(3) to develop baseline data sufficient to define normal variation (i.e., changes not associated with NASA activities) in those selected environmental components; and

(4) to determine the kinds and amounts of measurements required to detect and document environmental perturbations that might be caused by future NASA activities.

GENERAL INTRODUCTION

The number of rare, threatened and endangered species that reside or occur periodically at the Kennedy Space Center is relatively large. That number varies with the choice of authority or list that one adheres to. It was made clear in the proposal for this work that forms included on the federal list of threatened and endangered species and those on the list promulgated by the Florida Committee on Rare and Endangered Plants and Animals (FCREPA) would be addressed in various degrees of intensity. Some, such as marine turtles and birds, were chosen for intensive study because of the lack of understanding of their status at KSC relative to the elevated level of public and federal concern for their well being. Others, such as all plant species, were not considered at all because of the lack of clarity of their federal status and because of resource limitations. Still others, such as manatees and alligators were not the subject of field investigations because they were under study by the U. S. Fish and Wildlife Service or other agencies.

The overall objectives of this work, therefore, were:

1. to provide NASA/KSC with consultation, awareness and evaluation of matters relating to marine turtles and the Endangered Species Act of 1973;
2. to provide baseline data against which results of future studies can be compared, for assessment of impact of the the STS program.

Although the federal government recognized only threatened and endangered status, FCREPA has established several additional categories for imperiled species. The definitions of those categories are as follow:

Endangered. Species in danger of extinction if the deleterious factors affecting their populations continue to operate. These are forms whose numbers have already declined to such a critically low level or whose habitats have been so seriously reduced or degraded that without active assistance their survival in Florida is questionable.

Threatened. Species that are likely to become endangered in the State within the foreseeable future if current trends continue. This category included:

1. species in which most or all populations are decreasing because of over-exploitation, habitat loss, or other factors;
2. species whose populations have already been heavily depleted by deleterious conditions and which, while not actually endangered, are nevertheless in a critical state;
3. species which may still be relatively abundant but are being subjected to serious adverse pressures throughout their range.

Rare. Species which, although not presently endangered or threatened as defined above, are potentially at risk because they are found only within a restricted geographic area or habitat in the State or are sparsely distributed over a more extensive range.

Species of Special Concern. Species that do not clearly fit into one of the foregoing categories yet warrant special attention. Included in this category are:

1. species that, although they are perhaps presently relatively abundant and widespread in the State, are especially vulnerable to certain types of exploitation or environmental changes and have experienced long-term population declines, and
2. species whose status in Florida has a potential impact on endangered or threatened populations of the same or other species outside the State.

Status Undetermined. Species that are suspected of falling in one of the above categories but for which available data are insufficient to provide an adequate basis for their assignment to a specific category.

Table 1 is a comprehensive list of imperiled species occurring at KSC, each with an indication of its status on federal and FCREPA lists. Of the plant species listed in this table, the first three are on the federal list of proposed endangered plants (F. R. 41, No. 117:24524-24572, June 16, 1976), the next six are in review status as threatened species (F. R. 40, No. 127:27824-27924, July 1, 1975) and the last six are from a preliminary FCREPA list. The final published form of that list (Ward, in press) will appear soon.

Table 1

A list of imperiled species of plants and animals occurring at the Kennedy Space Center, Florida.

Species	Federal Designation	FCREPA[1] Designation
PLANTS		
Zamis integrifolia	E	E
Calamovilfa curtissii	E	
Verbena tampensis	E	
Lechea cernua	T	
Rhynchosia cinerea	T	
Persea borbonia var. humilis	T	
Hymenocallis latifolia	T	
Ophioglossum palmatum	T	E
Verbena maritima	T	
Asclepius curtissii		E
Chrysophyllum oliviformae		E
Tournefortia gnaphalodes		E
Acrosticum aureum		R
Rhizopora mangle		SU
Avicennia germinans		SU
INVERTEBRATE ANIMALS		
none		
FISHES		
none		
AMPHIBIANS		
none		
REPTILES		
Caretta caretta	T	T
Chelonia mydas	E	E
Lepidochelys kempi	E	E
Eretmochelys imbricata	E	E
Gopherus polyphemus		T
Drymarchon corais	T	SC
Nerodia fasciata taeniata	T	E
Alligator mississippiensis	T	SC

E = endangered; T = threatened; R = rare; SU = status undetermined; SC = of special concern.

[1]Florida Committee on Rare and Endangered Plants and Animals

Table 1 (Continued)

A list of imperiled species of plants and animals occurring at the Kennedy Space Center, Florida.

Species	Federal Designation	FCREPA[1] Designation
BIRDS		
Brown Pelican	E	T
Rothschild's Magnificent Frigatebird		T
Great Egret		SC
Snowy Egret		SC
Reddish Egret		R
Louisiana Heron		SC
Little Blue Heron		SC
Black-crowned Night Heron		SC
Yellow-crowned Night Heron		SC
Least Bittern		SC
Wood Stork		E
Glossy Ibis		E
White Ibis		SC
Roseate Spoonbill		R
Coopers Hawk		SC
Southern Bald Eagle	E	T
Osprey		T
Peregrine Falcon	E	E
Merlin		SU
Southeastern American Kestrel		T
Florida Sandhill Crane		T
Black Rail		SU
American Oystercatcher		T
Piping Plover		SC
American Avocet		SC
Least Tern		T
Royal Tern		SC
Sandwhich Tern		SC
Caspian Tern		SC
Black Skimmer		SC
Florida Burrowing Owl		SC
Hairy Woodpecker		SC
Red-cockaded Woodpecker	E	E
Florida Scrub Jay		T
Florida Prairie Warbler		SC
American Redstart		R
Dusky Seaside Sparrow	E	E

E = endangered; T = threatened; R = rare; SU = status undetermined; SC = of special concern.

[1]Florida Committee on Rare and Endangered Plants and Animals

Table 1 (Continued)

A list of imperiled species of plants and animals occurring at the Kennedy Space Center, Florida.

Species	Federal Designation	FCREPA[1] Designation
MAMMALS		
Trichechus manatus	E	T
Neofiber alleni		SC
Peromyscus floridanus		T

E = endangered; T = threatened; R = rare; SU = status undetermined; SC = of special concern.

[1]Florida Committee on Rare and Endangered Plants and Animals

MARINE TURTLE STUDIES
Introduction

Literature Review

Nesting Adults

Prior to 1973, virtually nothing was known about the population of adult female sea turtles that nest annually on the beaches of the Kennedy Space Center-Cape Canaveral Air Force Station (KSC-CCAFS) complex. Ehrhart (1976) and Ehrhart and Yoder (1978) established that a minimum of 120 loggerhead turtles, Caretta caretta, and two or three green turtles, Chelonia mydas, nested on an 8 km stretch of KSC shore known as Playalinda Beach each year, but the limited nature of that study precluded any assessment of the relative importance of the entire 58 km of KSC-CCAFS shoreline to the survival of western Atlantic populations of Caretta and Chelonia. The southeastern U. S. is one of only four major loggerhead nesting areas remaining (Ernst and Barbour, 1972) and Florida beaches constitute the major portion of the nesting ground. The research of other workers provides some basis for comparison and assessment of KSC's importance. Worth and Smith (1976) discussed marine turtle nesting on Hutchinson Island, Florida, and estimated that 1,072 loggerheads nested on nine 1.25 km study areas in 1973. LeBuff (1969) and LeBuff and Beatty (1971) discussed various aspects of loggerhead nesting on Sanibel and Captiva Islands on the Gulf coast of Florida but gave no numbers useful for comparison. Later, LeBuff and Hagan (1978) reported a decline in the number of loggerhead nests in their Manasota Key-Cape Romano survey area from 758 (1970) to 520 (1975). In 1977, Davis and Whiting summarized a decade (1964-1973) of sea turtle nesting research at Cape Sable, in Everglades National Park and reported an increase from about 455 to 915 nests per season during that interval. Additional nesting surveys and tagging studies have been undertaken by F. Lund and B. Turner at important rookeries in Jupiter and south Brevard County, Florida, but results of these efforts are not available.

Recently, Carr and Carr (in press) have used aerial reconnaissance to determine numbers, distribution and seasonality of breeding colonies of marine turtles in Florida, Puerto Rico, and the Virgin Islands. That study employed data supplied by the UCF-KSC sea turtle research group as ground truth to establish a relationship between aerial counts and observed nestings on the beach. That study is now generally regarded as a very good beginning for the use of a technique that has produced disappointing results for others (LeBuff and Hagan, 1978). The National Marine Fisheries Service is currently planning further efforts to perfect that technique. The results of the same study included a ranking of the 10 sections of Florida most heavily visited by turtles. Five of the 10 are in Brevard County and three of the five are within KSC-CCAFS.

Other works that have provided useful census and/or natural history data for loggerheads include Caldwell, Carr, and Hellier (1955), Caldwell et al. (1959), and Caldwell, Carr, and Ogren (1959). The latter two dealt with the Jekyll Island, Georgia, loggerhead population. Caldwell (1959) also compiled and edited data gathered in the 1930's at Cape

Romain, South Carolina, by Baldwin and Loftin. This latter paper is one of a very few that gives actual measured body weights of loggerheads. Caldwell also published comments on the nesting behavior of loggerheads from the Georgia coast in 1962 and Gallagher et al. (1972) reported the results of work with loggerheads on Hutchinson Island, in Martin County Florida. Surprisingly, this was one of the first papers to include morphometric data for Florida loggerheads.

Outside of the U. S., the best-studied population of loggerheads is that of Tongaland, Natal in southeast Africa (Hughes, Bass, and Mentis, 1967; Hughes, 1970; Hughes and Brent, 1972). Hughes (1974) noted that the remarkable aspect of his data was not the number of turtles that had returned in subsequent years but rather the number that had not. Later, however, the same author (Hughes, 1976) was able to show that after 12 years of research the recovery rate of tagged animals back on the nesting beaches had reached 50 percent. There are many parallels between Hughes work and that reported here.

The green turtle, Chelonia, is widely distributed throughout the tropical and subtropical seas (Ernst and Barbour, 1972). Nesting populations have been studied at Ascension Island (Carr and Hirth, 1962), southern Yemen (Hirth and Carr, 1970), Malaysia (Hendrickson, 1958) and Heron Island, Australia (Bustard, 1967) and elsewhere. In the western hemishpere, nesting colonies of Chelonia have been studied by Pritchard (1969) in Surinam and Guyana, by Parsons (1962) on Isla Aves, and in Mexico by Peters (1954) and Duellman (1961). The most thoroughly studied colony, however, is that at Tortuguero, Costa Rica. General accounts of that work are in Carr and Ogren (1960) and Carr, Carr, and Meylan (1978).

Hirth (1971) compiled a synopsis of biological data on the green turtle that is thorough and comprehensive.

In the continental U. S., green turtles nest only on the Atlantic coast of Florida. There is, however, a paucity of information and literature concerning that population. Carr and Ingle (1959) were surprised "to find in print no definite record of a green turtle nesting on a Florida beach, or for that matter anywhere on the mainland of the United States." They proceeded to document the first two definite observations of nesting emergences of Chelonia mydas mydas, the Atlantic green turtle, on the coast of North America. Both were discovered by Florida Conservation Agents; one on Hutchinson Island, Martin County Fla.; the other a few miles north near Vero Beach, Indian River County Florida. Neither of the adult turtles was seen by Carr and Ingle but they examined hatchlings from the nest of the Hutchinson Island specimen and photographs of the one from Vero Beach. Apparently no standard measurements were made of either turtle and neither of them was weighed.

Routa (1967) also identified hatchling turtles from one Hutchinson Island nest as Chelonia and estimated that approximately 15 green turtles nested on the island in the summer of 1967. Again, none of these were measured, weighed, or even seen by the author.

Gallagher et al. (1972) observed 22 green turtle nests but only measured and tagged four of the nesting adults. None were weighed. Their observations were also made on Hutchinson Island and they estimated that approximately eight to ten Chelonia nested there in the summer of 1971. Worth and Smith (1976), also working on Hutchinson Island, noted 26 green turtle nests there in 1973. They estimated that eight individual turtles deposited those clutches. Until 1975, therefore, when Ehrhart reported nesting at KSC in Brevard County, all of the published records of Chelonia nesting emergences on the North American coast were from Hutchinson Island or nearby southern Indian River County.

Reproductive Characteristics

Many aspects of loggerhead reproduction have been studied. Caldwell (1959), Hughes and Mentis (1967), and Kaufmann (1975a) give sizes of nesting adults in South Carolina, southeast Africa, and Columbia. Ehrhart and Yoder (1978) give similar data for KSC turtles. The length of the nesting season is discussed by Caldwell (1959), LeBuff (1969), and Kaufmann (1975a), among others. Intervals between nestings (within season) are reported by Caldwell (1962), Worth and Smith (1976), Davis and Whiting (1977), LeBuff and Beatty (1971), Kaufmann (1975a), and Hughes, 1970. Caldwell (1962), Hughes and Mentis (1967), and more recently Hughes (1976) have discussed the multi-annual cycles of loggerheads. Clutch size, incubation periods, and hatchling morphology have been noted for various populations by Caldwell (1959), Hughes, Bass, and Mentis (1967), Hughes and Mentis (1967), LeBuff and Beatty (1971), Kaufmann (1975a), Davis and Whiting (1977), and Richardson (1978). Ehrhart (1979) presented preliminary data concerning all of these reproductive characteristics for loggerheads nesting at KSC.

Basic parameters of reproduction have been reported for green turtle populations at major nesting beaches throughout the world. These include Tortuguero, Costa Rica (Carr and Hirth, 1962), Surinam (Pritchard, 1969), Ascension Island (Carr and Hirth, 1962), Sarawak (Hendrickson, 1958), and Australia (Bustard, 1967). There is, however, virtually no information in the literature concerning specifics of Florida green turtle reproduction, other than the preliminary findings of Ehrhart (1976).

Mortality

The problem of mass mortality of marine turtles has been studied by Ulrich (1978) in South Carolina and Hillestad et al (1977) in Georgia. There is little doubt that shrimp trawling is a major cause in those states. A recent article in the Endangered Species Technical Bulletin (Anon., 1979) documents the stranding of about 60 loggerhead carcasses on the Texas coast in the fall of 1978. Almost nothing has been written about the problem in Florida. Ehrhart (1979) reported that mass strandings seem to have become a problem in the KSC area only since the fall of 1977 and presented preliminary data for 1977 and 1978.

Green turtles have generally not been involved in the mass stranding episodes but recently the carcasses of several small ones have been found on Florida beaches (Witham, pers. comm.). There is concern that at least some of these died as the result of ingesting tar balls from oil spills

(Witham, 1978). Tar balls can be dispersed in the same ocean currents as young green turtles (Witham, 1976), but the relationship between them has not been studied.

Lagoonal Populations

Little is known concerning the juvenile and sub-adult stages of sea turtle life history. As early as 1916, Schmidt emphasized the need to study the migrations and determine the growth rate of this segment of the sea turtle population.

The majority of the studies that have been conducted have been lab studies. Growth rates of captive hatchlings have been recorded (Caldwell, 1962; Uchida, 1967; Stickney et al., 1973; Kaufmann, 1975b; Witham, 1976). As part of a head-starting program, captive raised yearling turtles have been released and their subsequent growth and oceanic dispersal described (Witham, 1976; Witham and Futch, 1977). Schwartz (1977) conducted physiological experiments on the response of immature turtles to cold water temperatures. Owens et al. (1978) reported on a radio-immunoassay technique to sex immature green turtles.

Carr and Caldwell (1956) conducted a study on a naturally occurring population of young Chelonia and Lepidochelys in the Cedar Key-Crystal River area of Florida. They described the apparent seasonal migration of immature turtles from the area, obtained morphometric data for both species, and gave a tentative population size estimate for the Chelonia population. Schmidt (1916) tagged 65 animals and reported on the growth and movements of 17 of them in the wild. However, except for these two studies, most accounts on immature turtle movements have been fragmentary (Carr and Sweat, 1969; Burnett-Herkes, 1974).

Recently, new interest has arisen in immature sea turtles. Both Georgia and South Carolina have sponsored studies on sea turtle mortality caused by shrimp trawling operations. The turtles affected are mostly subadults (Hillestad et al., 1977; Ulrich, 1978). In Florida, the National Marine Fisheries Service is doing a monthly trawl study on a population of sub-adult Caretta in the Port Canaveral channel area. Trawling for turtles in this area in December, 1977 and 1978 yielded individuals that were buried in the mud in an apparent dormant state. Felgar et al. (1976) reported a similar phenomenon in Chelonia in the Gulf of California. Carr and Caldwell (1956) reported that a small minority of fishermen in Florida believed that populations of Chelonia also "buried up" during cold weather.

Limpus (1978) in Australia and Balazs (1978) in Hawaii have both initiated detailed ecological studies on naturally occurring populations of immature Caretta and Chelonia. Carr et al. (1978) again pointed out the importance of obtaining more data on the developmental habitats of juvenile sea turtles in order to understand the population dynamics of the adult animals.

Objectives

The general, or comprehensive, objective of the marine turtle studies, in addition to those already stated, was to provide assessment of the relative role and importance of the KSC area in the maintenance of marine turtle populations of the southeastern U. S.

Somewhat more specific objectives, relating to the above and stated previously, include:

1. To develop an accurate estimate of the size of the population (and its variation from year-to-year) of adult female marine turtles nesting on KSC beaches.
2. To develop a thorough understanding of the species composition of the nesting population.
3. To develop an understanding of the migratory patterns of sea turtles nesting at KSC.
4. To develop an understanding of fertility rates (and their normal variation) of sea turtle egg clutches at KSC. Implied here is also the development of an understanding of variation in other basic reproductive parameters, such as clutch size, egg size, and egg weight.
5. To develop an understanding of developmental rates and hatchling size and vigor at KSC. This objective, poorly stated originally, refers primarily to incubation periods and hatchling morphology.
6. To cooperate with the staff of the Merritt Island National Wildlife Refuge in efforts to propagate sea turtles at KSC.
7. To describe the pattern of sea turtle mortality in the KSC area.
8. To determine the size and species composition of the sea turtle population in the lagoonal waters surrounding KSC.
9. To determine the age structure (as estimated by size) of the lagoonal turtle population.

Methods

Nesting Adults

The study area in which the survey of nesting adults was carried out varied among the years. This was due to variation in vehicle availability and security authorization. In 1976, nightly coverage varied from as little as 8 km to as much as 40 km, depending on the number of vehicles available, the position of the tide, and the number of turtles encountered. The 8 km stretch of beach covered every working night (five nights per week) is indicated by the letter A in Figure 1. It is the area known as Playalinda Beach and extends from the permanent security barricade at the eastern terminus of Route 402 (just north of Launch Complex 39) 5 miles to the north, ending at Camera Pad UC 10. Two additional sections that were covered frequently (two to four nights per week), totalling 32 km, are indicated by the letter B in Figure 1. This included 21 km north of Camera Pad 10 and 11 km southward to the CCAFS boundary. Very occasionally, forays were made north and south of these points. In 1977, the extent of coverage was truncated in the north and authorization was gained to enter the CCAFS lands to the south. Accordingly, the survey extended throughout the 34 km from the Brevard-Volusia County line on the north, to Complex 37, on the south. In 1978, the northern boundary remained the same (Brevard-Volusia County line) but further authorization from the Air Force security organization allowed coverage of 43 km, southward to Camera Road A, which is 1.5 km southwest of the easterly tip of Cape Canaveral.

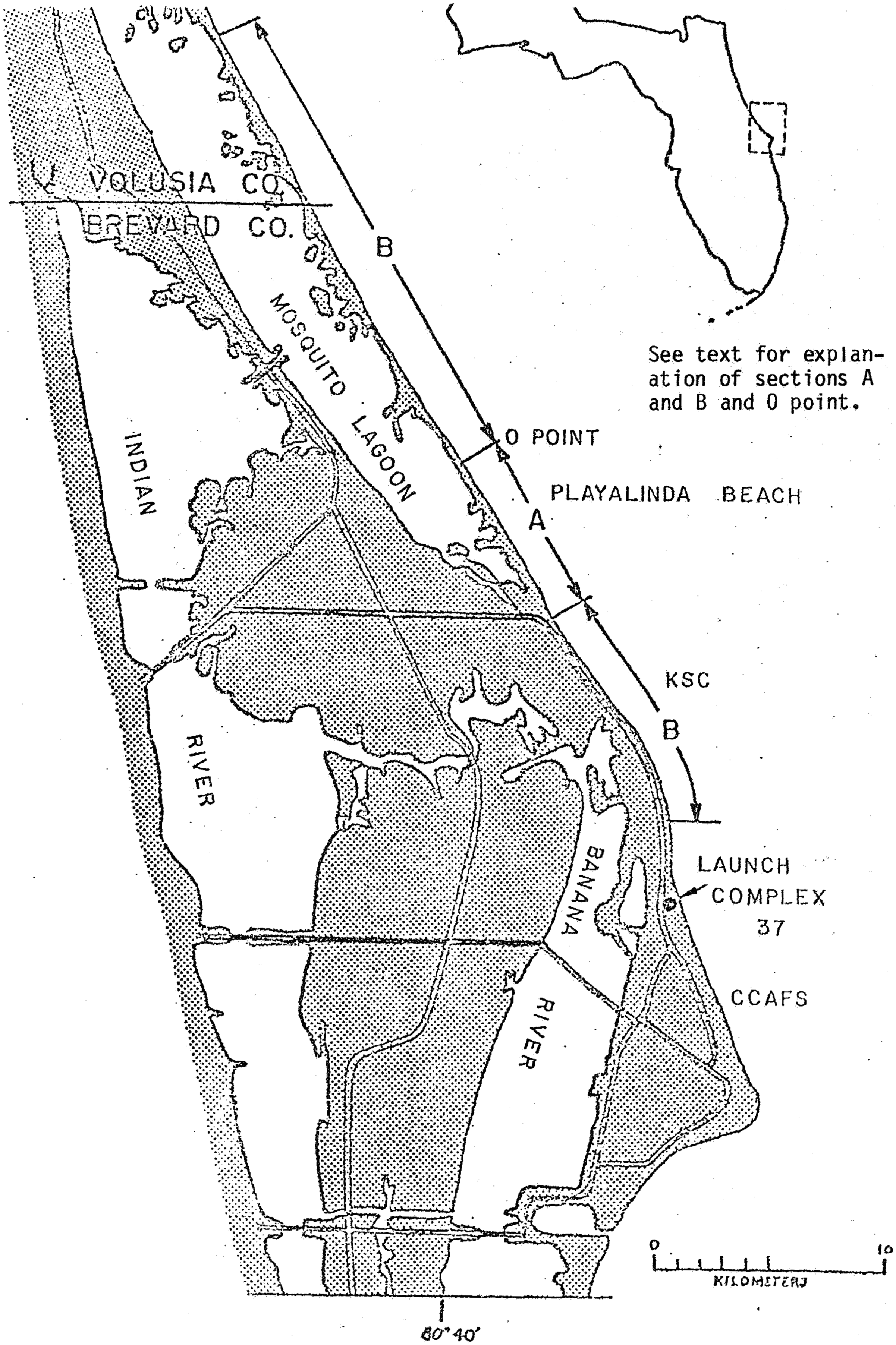


Figure 1. Sections of the KSC-CCAFS beach covered by regular nightly patrols 1976-1978.

Overall, therefore, primary coverage has extended from 28° 27' 30" (Camera Road A) to 28° 47' 30" north latitude (Volusia County line).

In 1976, we were entirely dependent throughout the season on vehicles provided by the Merritt Island National Wildlife Refuge, as no suitable vehicle was available through GSA. The vehicles were old military surplus jeeps and it was difficult to keep two of them running at any given time. The survey was conducted on 53 nights, between 18 May and 20 August. In 1977, a similar situation prevailed regarding beach vehicles. The refuge provided a jeep and NASA provided a 4-wheel-drive pick-up truck that could be used when and where proper tides and beach topography prevailed. In late July, when all of the 4-wheel vehicles were in disrepair, a 3-wheel all-terrain motorcycle was acquired in order to continue operating. The 34 km stretch of beach was surveyed on 60 nights between 27 May and 24 August, 1977.

In 1978, the efficiency and mobility of the survey crew was greatly improved. The refuge again provided a jeep and maintained it well. The pick-up truck had tires that were better suited to the task. Also, three all-terrain motorcycles were in use. The latter vehicles facilitated work six nights per week all summer (18 May - 29 August) with no whole nights lost to vehicle breakdowns, as was the case in 1976 and 1977. As a result, the total number of work nights increased by 33 percent (from 60 to 80) in 1978. The work generally began about 2100 hours and continued until 0300-0400.

Whenever an emergent turtle was encountered, the following data were recorded;

1. date.
2. species.
3. tag number.
4. capture code, as follows:
    a. N - new, not previously tagged
    b. MR - multi-annual recapture, tagged in a previous year, first encounter this year.
    c. SR - strange recapture, tagged by another investigator elsewhere.
    d. STR - short-term recapture, a turtle returning one to eight days after a non-nesting emergence.
    e. TWR - two week recapture.
    f. FWR - four week recapture.
    g. SWR - six week recapture.
    h. EWR - eight week recapture.
5. tide conditions: advancing or receding.
6. time discovered.
7. activity at discovery: emerging, moving upward on the beach, digging, laying, covering, or returning.
8. location: all locations were measured as distance north or south of a zero point. The zero point was the southern boundary of Sec. 36, R36E, T20S, which crosses the beach at the dune crossover near Camera Pad UC 10.
9. carapace length over curvature: distance over curve of shell from center of nuchal (precentral) scute to the distal tip of the longest posterior marginal scute.

10. carapace width over curvature: taken at the widest point and perpendicular to the longitudinal body axis.
11. carapace length straight line: taken with forester's tree caliper from center of nuchal scute to the distal tip of the longest posterior marginal scute.
12. carapace width straight line: taken with a caliper, the greatest horizontal axis.
13. plastron length: length of bottom shell.
14. greatest width of head: with caliper.
15. weight: procedure described below.
16. flipper damage: description and estimation of percent loss.
17. additional notes: miscellaneous observations.
18. investigators present.

The weighing procedure is unique; virtually no other marine turtle research group weighs animals routinely. It was accomplished through the use of a hydraulic jack and electric winches mounted in the beds of jeeps and the pick-up truck. A 225 kg capacity iron-clad spring scale was attached to the boom and turtles were drawn up in a sling made of heavy nylon straps. The staff of the Merritt Island National Wildlife Refuge was responsible for the design and construction of this gear. The scale was accurate to 3 kg and variation in the amount of sand clinging to the turtles and sling varied by as much as 3 kg. The total error is approximately 5 percent of the mean weight of loggerheads.

The tags used (Nasco No. 1005; Size no. 49) were provided by Dr. Archie F. Carr of the University of Florida. They are made of monel metal and were purchased originally from the National Band and Tag Co., of Newport, Ky. Dr. Carr's laboratory serves as a clearing house for tagging information for a number of marine turtle projects. Tags are numbered individually and each one is stamped with the words, reward, return and Dr. Carr's address. Dr. Carr pays the $5.00 reward for information returned and sends it on to us at once. The tags are cattle-ear tags and are set in place by a special (#48, Powr-r-ceps) applicator. Turtles were tagged on the posterior edge of the left front flipper about 10 cm distal to the edge of the carapace.

Reproductive Characteristics

Consideration of clutch size, fertility rates, egg size and weight, and other reproductive parameters begins with the collection of eggs. Generally this was done as the eggs were deposited. Occasionally, partial clutches that were being destroyed by raccoons when discovered were also taken. Standard procedure called for arranging the eggs in rows of 10 on the sand to assure counting accuracy. The eggs were then packed in buckets with care being taken that sand from the nest site insulated them from the bottom and sides. At least 5 cm of sand covered the uppermost eggs. Loggerhead eggs were seldom taken at other than the time of laying, but green turtle eggs, for which we lack sufficient data, were occasionally taken approximately 24 hrs. after laying (as, e.g., on a Monday night, the survey crew not having worked on Sunday). In that case, eggs were handled with extreme care, so that each one remained right side up. Reptilian embryos attach to the underside of the shell near the top, as the egg comes to lie, and should not be tumbled thereafter.

The egg buckets were then taken to an open, mobile-home type trailer at the Merritt Island lab. Before placement in the hatchery, 20 eggs were temporarily removed from each clutch, weighed (on a Mettler torsion balance) and measured. Turtle eggs are not perfectly round (a few are distinctly oval) and so minimum diameters were measured. Incubation temperatures were not controlled and the trailer was not air-conditioned. Mid-morning ambient temperatures ranged from 26.1°C to 30°C in August and 25.8°C to 28°C in September, 1976. Temperatures in two clutch centers ranged from 26.9°C to 30°C in August and 26.2°C to 28.4°C in September of the same year. Temperature in clutch centers ranged from 20.1°C to 27.7°C in October and 15.5°C to 26.7°C in November, 1978. Temperature relations were not under study as a primary project objective but the effects of temperature and other physical factors were investigated intensively by M. A. McGehee in 1977 and 1978. The master's thesis reporting the results is in second draft.

Upon hatching, young turtles were removed from the surface or dug out. A series of measurements (carapace length straight line, carapace width straight line, plastron length, and body depth) was made for 20 individuals of each clutch. All 20 were also weighed. Thereafter, they rejoined their clutch mates and were taken to the beach. Releases were made high on the beach, simulating natural nest placement and, whenever possible, during the morning hours of the day of first appearance at the sand surface.

Eggs that remained unhatched after 80 days were cut open and examined. We followed Hughes, Bass, and Mentis (1967) in recording as infertile any egg in which no development was visible to the unaided eye. For some of the clutches, discrepancies arose between the number of eggs reported and the number accounted for in all three years. The causes of this probably included human error in counting, although the counting procedure noted above should have nearly eliminated this factor. Other sources of discrepancies include the tearing and obliteration of infertile eggs by hatchlings, and the phenomenon of twinning. There is virtually no way to account for either without increasing mortality. Because of these discrepancies, minimum fertility rates (assuming all unaccounted for eggs were infertile) were computed and maximum fertility rates (assuming all unaccounted for eggs were fertile) were computed.

Estimation of the total number of turtles which nest on any given stretch of beach is generally confounded by a number of factors, among them: false crawls, non-uniform coverage, and variation in the number and location of nesting emergences subsequent to the first. To our knowledge, techniques of population estimation commonly employed to estimate densities of other kinds of animals, such as the Lincoln-Peterson Index and the Schnabel Method have not been applied to sea turtle data. Other workers (Richardson, 1978; Hughes, 1974) have employed custom methods that are particularly suited to their use. It was our hope to be able to estimate total numbers at KSC simply by enumeration. We assumed that after having tagged intensively during the first half of the season, we would observe a recapture frequency that approached 100 percent in the second half of the season. As Figure 2, a three-year compilation of weekly recapture rates shows, the rate remained below 50 percent until the 13th week of the season, and then rose to only 65 percent. By that time, however, total numbers of nesting animals had

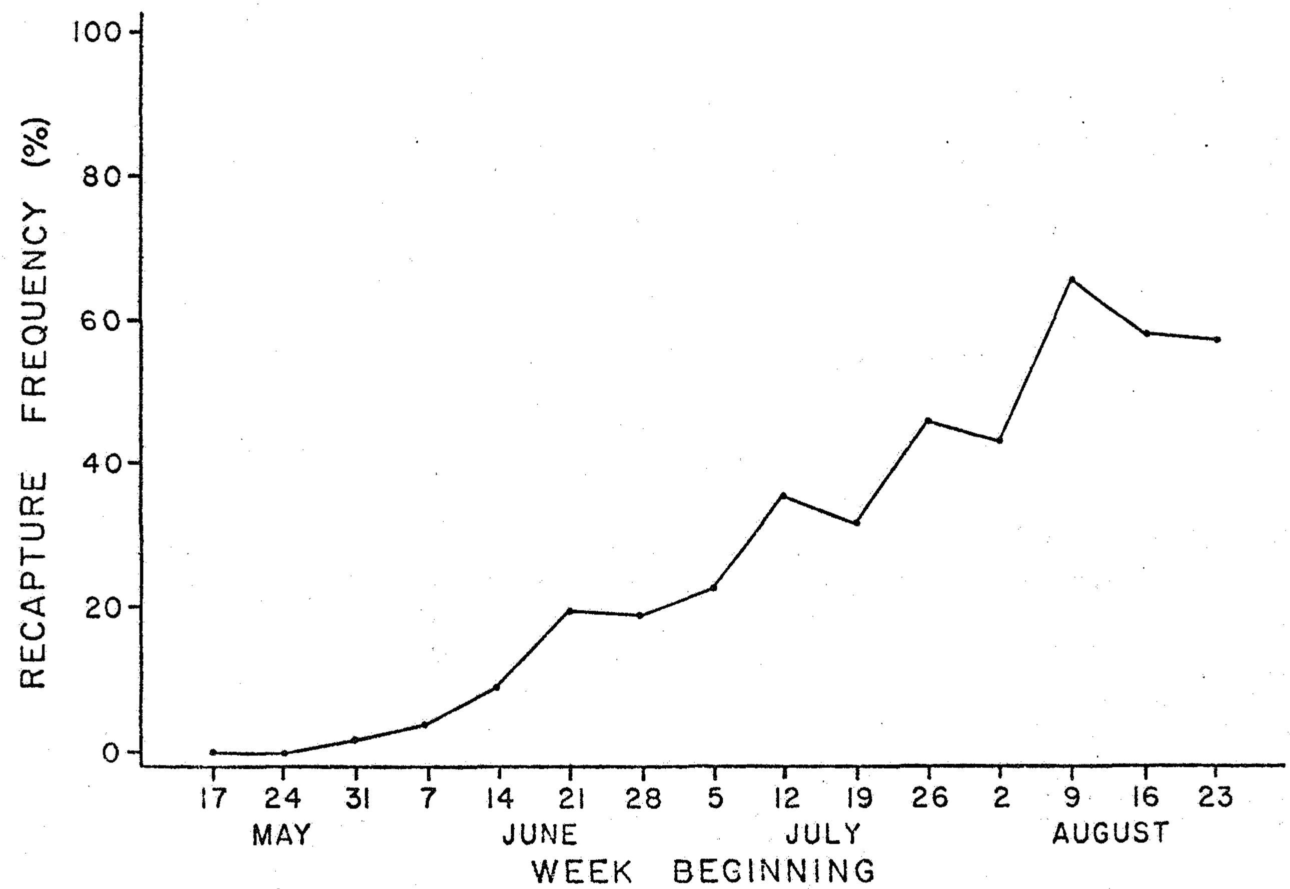


Figure 2. The recapture frequency of loggerhead turtles (*Caretta caretta*) for 1976-1978 nesting seasons combined.

decreased greatly and the 65 percent figure is based on considerably fewer animals than are earlier percentages shown there.

As a result, we felt compelled to try to apply estimation techniques to our data. One of the principal objections to this would be the violation of the assumption of no immigration or emigration. There is, however, no reason to believe that turtles originally tagged at KSC are going elsewhere for subsequent nesting. Furthermore, only 7 of 318 (2.2 percent) in 1976 (Appendix Table 1), 11 of 274 (4 percent) in 1977 (Appendix Table 2), and 9 of 652 (1.4 percent) in 1978 (Appendix Table 3) were tagged outside of KSC. The number of strange recaptures was larger than nine in 1978, but most of them had been tagged by a National Park Service crew on the KSC beach in Volusia County. Accordingly, we regarded the overall rate (2.1 percent) as negligible and proceeded to, in the first case, apply the Lincoln-Peterson Method (Smith, 1966). The Schnabel Method, as published by Schnabel (1938), is a variant of the Lincoln Index under a fully specified statistical model. Overton (1971) points out, however, that "the assumptions necessary for a fully specified statistical model are seldom tenable, and wildlifers are usually more interested in the adequate model with the fewest assumptions. The estimator can be derived from a 'canonical' model, which in effect is a generalization of all models leading to the estimator, and the model is found to be closely related to the model developed for the Lincoln Index." Accordingly, we have also applied the Schnabel Method to our data because it allows for a better estimate, the result of continuous refinement of a series of estimates. Confidence limits for the Schnabel Method were calculated according to the procedure given by Ricker (1975).

Virtually all of the data collected in the original three phases of the study are stored on computer cards and discs. The data set from the fourth phase, mortality documentation, is not as extensive and has been handled conventionally thus far. With the exception of a few minor operations where chi-square and t procedures were carried out on a calculator, the analysis of data was performed under the procedures of the computer system known as SAS (Statistical Analysis System, Barr et al., 1976). The two most commonly used statistical procedures were analysis of variance and regression analysis. Both of these were performed under the General Linear Model (GLM) procedure of SAS (PROC GLM). Where it became necessary to follow the analysis of variance with a multiple comparison test, Duncan's Multiple Range Test was used, under the DUNCAN procedure of SAS. Summary statistics (means, standard deviations, ranges, and number of observations) for virtually all data sets were computed under the PROC MEANS procedure of SAS. In those cases where it was deemed useful to display the distribution of points in a regression analysis the PROC PLOT SAS procedure was used. Finally, in a few instances where chi-square was used, the option for that test in the PROC FREQ procedure of SAS was used.

Mortality

Procedures involved in the documentation of sea turtle mortality in the KSC area were simple and direct. We benefited by the excellent cooperation of Captain Henry Morgan and his Florida Marine patrol staff (especialy Lt. J. Rizzo) who provided us with prompt information about beached carcasses. Information was also provided by the Canaveral National Seashore rangers, Pan Am security personnel at CCAFS and others.

We attempted to substantiate each report, whenever possible, by going to the reported location of the carcass and by removing the entire animal or its skull to our lab on Merritt Island. Most of the carcasses were in advanced stages of decomposition. We felt it was important to retrieve the carcasses or to remove the skull and bury the body for the following three reasons:

1. We wanted to examine them for signs of cause of death.
2. We wanted to have voucher specimens on hand for as many of our records as possible.
3. We wanted to avoid counting the same carcass twice (they can wash in and out and move laterally along the beach and be reported by more than one person).

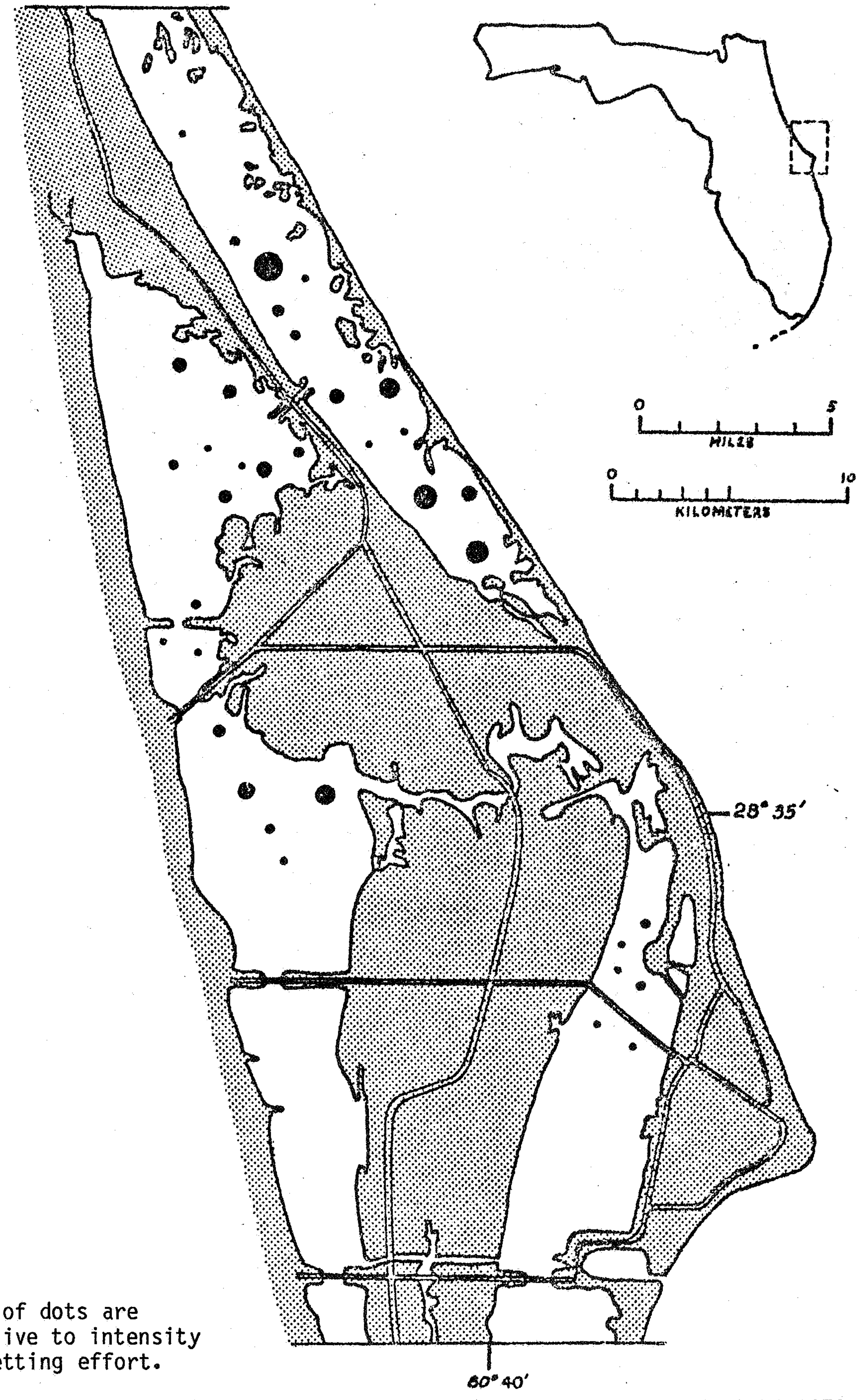
Not all strandings could be investigated, however, and reports began to come in from a variety of sources. The records, therefore, began to fall into various levels of verification. As a result, we began to classsify each of our sea turtle mortality records according to the following scheme:

1. Specimen (skull and/or carcass) in our possession; have measurements and computed weight.
2. Carcass reported by reliable source, known to have been disposed of by burying or removal from beach.
3. Carcass reported by reliable source, confirmed by follow-up phone call, disposition uncertain.
4. Unconfirmed report, disposition uncertain.

There were few facilities at the Merritt Island lab for curatorial work on the specimens collected. There were no alternatives to placing the rotting carcasses and skulls in a make-shift outdoor morgue for cleaning by maggots, ants, beetles, and other insects. The lack of professional curatorial care, the need for which was unforeseeable prior to October, 1977, has resulted in the loss of some specimens. The cleaning, gluing, and labeling are continuing on an as-time-permits basis at this writing.

Lagoonal Population

Turtles were captured throughout the year by netting. Three large mesh (25-38 cm) nets, ranging from 150 to 230 m in length, were used. They were deployed in three lagoonal systems; Indian River, Banana River, and Mosquito Lagoon, surrounding the Kennedy Space Center (Figure 3). These interconnecting lagoons are characterized by being long, narrow, shallow bodies of water. Average depth is 1.5 m with depths greater than 3 m confined to dredged basins and the channel of the Intracoastal Waterway. Most of the lagoonal system is composed of shallow grass flats areas, major species being *Syringodium filiforme* and *Halodue wrightii*. Salinity ranged from 25 to 42 ppt. There is no tidal influence in the system except near ocean inlets with most water movement being wind driven.



Size of dots are
relative to intensity
of netting effort.

Figure 3. Map of lagoonal study area showing sites netted, 1976-1979.

Both Mosquito Lagoon and Indian River were netted monthly, while the Banana River sampling was done bi-monthly. The dots in Figure 3 indicate all netting sites with the size of the dot corresponding to the level of sampling effort. The most intensive netting occurred in Mosquito Lagoon, it being the most productive area (in terms of catch-per-unit-effort). Netting effort averaged approximately 5 days per month, with nets being deployed for greater lengths of time during the summer months (May to September).

Nets were checked three times during the day; in the early morning, mid-day, and approximately an hour before dark. Nets deployed in the Banana River had been checked throughout the night since the beginning of the project because the large concentration of manatees (*Trichechus manatus*) in the area increased the probability of catching one in our nets. Since September, 1978, nets in Mosquito Lagoon and the Indian River, were also checked throughout the night due to the possibility of entangling and drowning a bottle-nosed dolphin (*Tursiops truncatus*).

Turtles were also collected in a unique way in January of 1977 and 1978, when record-breaking cold temperatures caused *Chelonia* and *Caretta* to come to the surface in a stunned condition. The lagoon was patrolled in our 17 ft. whaler in the early morning hours when water temperatures were at a minimum (ca. 4-8°C). All turtles found floating or stranded were taken (Ehrhart, 1977). The Florida Marine Patrol helped greatly in the collection of stunned animals from the Indian and Banana Rivers as well as Mosquito Lagoon.

All turtles collected, both during the netting operation and cold-stunning episodes, were taken to our lab and weighed on a platform scale to the nearest 0.1 kg. Straight-line carapace lengths, widths, and head widths were measured with a forester's caliper. Over-the-curve lengths, widths, and plastron lengths were measured with a metal tape measure. All linear measurements were made to the nearest 0.1 cm. Turtles were flipper tagged using monel tags, photographed, and released near the point of capture.

Size estimates for lagoonal *Caretta* and *Chelonia* populations were made using the Schumacher, Schnabel, and Hayne Methods (Hayne, 1949; Ricker, 1975). Ninety-five percent confidence intervals were calculated for the Schumacher and Schnabel estimates following Ricker, 1975. Analysis of variance and regression analysis on morphometric data were accomplished using the GLM procedure in the SAS computer package (Barr et al., 1976). Significant differences in the weight and size distributions and means between and within species were determined by X^2 and t-tests.

Results

Nesting Adults

Composition, Total Numbers and Estimates

During the 1976 nesting season, 318 Atlantic loggerhead turtles (*Caretta caretta*) and three Atlantic green turtles (*Chelonia mydas*) were encountered at KSC. We are reasonably certain that at least one additional green turtle nested at KSC in 1976 because the clutch, which hatched at our laboratory, was laid at a time that ruled out deposition by one of those observed. The three green turtles constituted 0.9 percent of the nesting assemblage, the rest (99.1 percent) were loggerheads.

In 1977, 274 loggerheads (98.9 percent) and three green turtles (1.1 percent) were observed, and in 1978, 652 loggerheads (97.9 percent) and 14 green turtles (2.1 percent). Overall, therefore, loggerheads comprise approximately 98.4 percent of the nesting assemblage, and green turtles make up the remaining 1.6 percent.

The Peterson estimate of the number of loggerheads nesting on 40 km of beach in 1976 is 598 ± 135 and the Schnabel estimate is 751 (676 - 868, 95 percent confidence). In 1977, for 34 km, the Peterson estimate is 572 ± 133 and the Schnabel technique yields 612 (551 - 707). Peterson and Schnabel estimates for the 43 km of beach covered in 1978 are 940 ± 121 and 1,127 (879 - 1,441). Because of the variation in coverage these estimates are not as useful for year-to-year comparisons as those which are given in Table 2. Those in Table 2 are corrected to estimate the population nesting only in 34 km each year. Those estimates, ranging from 512 to 810 (Peterson) and 612 to 1,063 (Schnabel), correspond to the totals actually enumerated and seem to indicate a marked increase in loggerhead nesting in 1978. The estimates, however, are just as sensitive to level of effort (kilometers of beach covered and number of nights in survey) as are the raw counts. Level of effort must be accounted for in any valid comparison of one year with another. Since the values in Table 2 are already corrected to reflect totals and estimates for a uniform 34 km stretch of beach, it is necessary only to divide each by the number of survey nights per season to produce a catch-per-unit-effort index, the units of which are number of turtles per survey night. Table 3 contains the values from Table 2 converted to such an index. The indices in that table relating to actual turtles encountered and to the Peterson and Schnabel estimates are uniformly higher for 1978.

The population estimates in Table 2 provide a means for estimating the total reproductive potential of the KSC nesting population. Although it is true that elsewhere in Florida individual turtles have been observed nesting nine times in one season (F. Lund, pers. comm.) and that we have good evidence to indicate that some KSC loggerheads nest as often as six or seven times, it is also true that only 203 (31 percent) of 652 loggerheads are positively known to have nested two or more times in the 1978 season. It now appears that earlier assumptions regarding the average number of times a female turtle nests in a season were in error and that the average number is between two and three. Considering the difference in the estimates in Table 2, this means that the number of clutches deposited on a 34 km stretch of KSC beach may vary from about 1,250 to 2,650. Considering that mean clutch size is 111-112, it means that about 130,000 to 300,000 eggs may be laid on that beach in any given year. The entire KSC-CCAFS complex includes 58 km of beach. Assuming that nesting density is relatively uniform throughout (see below), the total number of loggerhead eggs deposited may vary from 220,000 to 510,000.

Table 2

Total number of loggerhead turtles encountered and estimates of the population nesting on 34 km beach at the John F. Kennedy Space Center, 1976-1978.

Year	Turtles Encountered	Peterson Index	Schnabel Estimates
1976	272	512 (396-628)	643 (589-727)
1977	274	572 (439-705)	612 (551-707)
1978	558	810 (679-941)	1,063 (893-1,288)

Figures in parenthesis are 95 percent confidence interval.

Table 3

Catch-per-unit-effort indices (number of turtles per survey night) corresponding to numbers and estimates in Table 2.

Year	Turtles Encountered	Peterson Index	Schnabel Estimates
1976	5.1	9.7	12.1
1977	4.6	9.5	10.2
1978	7.0	10.1	13.3

The small number of green turtles that nests at KSC makes the use of estimation techniques impossible and unnecessary. Green turtle tracks and nest site signs differ from those of loggerheads and can be distinguished easily by the trained eye. Very few green turtle nesting emergences were missed, even if the animal itself was not seen. In 1976, there were not many more than four green turtles nesting at KSC and in 1977 not many more than three. The 1978 season was a relatively good one for Chelonia and we recorded 23 successful nesting emergences. These ere accomplished by not less than 14 individual turtles.

The total observed egg production for the 43 km of beach covered in 1978 was 2,840, all of which went into our protective incubation program. Assuming that green turtle nesting is uniform throughout the 58 km extent of KSC-CCAFS beach, it is possible that 30 to 35 green turtle clutches are deposited there in a good year, like 1978. The complement of eggs involved would be approximately 3,900 to 4,500.

A perfect definition of the distribution of nesting emergences among specific kilometers of beach at KSC is not attainable with the present data. Variation in vehicle availability, personnel, tides, and security authorization affected the uniformity of coverage significantly. Figure 4 summarizes the distribution of encounters over the 1976-78 period. It reflects the fact that the greatest concentration of effort was at Playalinda Beach (0-8 km S of the zero point) but also gives a general view of the spread of encounter localities during the three seasons. The uniformity of beach coverage was considerably greater in 1978 than in 1976 and 1977 and so the data for that year are qualitatively more instructive. Figure 5 shows the distribution of loggerhead turtle encounters among the 43 km of beach surveyed that year. A chi-square test for independence revealed that the observed distribution is not uniform (X^2 = 197, df = 45, critical value=79, p<0.01) but, because of the biases noted above, it is not valid to say that any one section is a better nesting beach than any other. The most important result of this analysis, shown clearly by Figure 5, is that there are no sections in which nesting density is particularly or abnormally low.

The number of green turtles nesting at KSC is small (20 individuals in 3 years) and little can be concluded concerning the distribution of Chelonia nesting within KSC. Figure 6 summarizes the locality data for green turtles in 1976, 1977 and 1978 and suggests some concentration of nesting in the more northerly extent of the space center.

Morphological Characteristics of the Nesting Population

Measurements of carapace length and width, plastron length, head width, and weight for loggerhead turtles encountered in 1976, 1977, and 1978 are compiled in Appendix Tables 4, 5, and 6. Figures 7, 8, 9, and 10 present the means, ranges, and standard deviations for all 3 years for straightline carapace length (CLSL), straightline caparace width (CWSL), over-curve carapace length (CLOC), overcurve carapace width (CWOC), plastron length (PL), head width (HW), and weight. The 1978 mean for each of these measurements is smaller than that for 1976 or 1977. Analysis of variance of weight data revealed that there were indeed differences among the means significant at the p<0.0003 level (Appendix Table 7). Duncan's

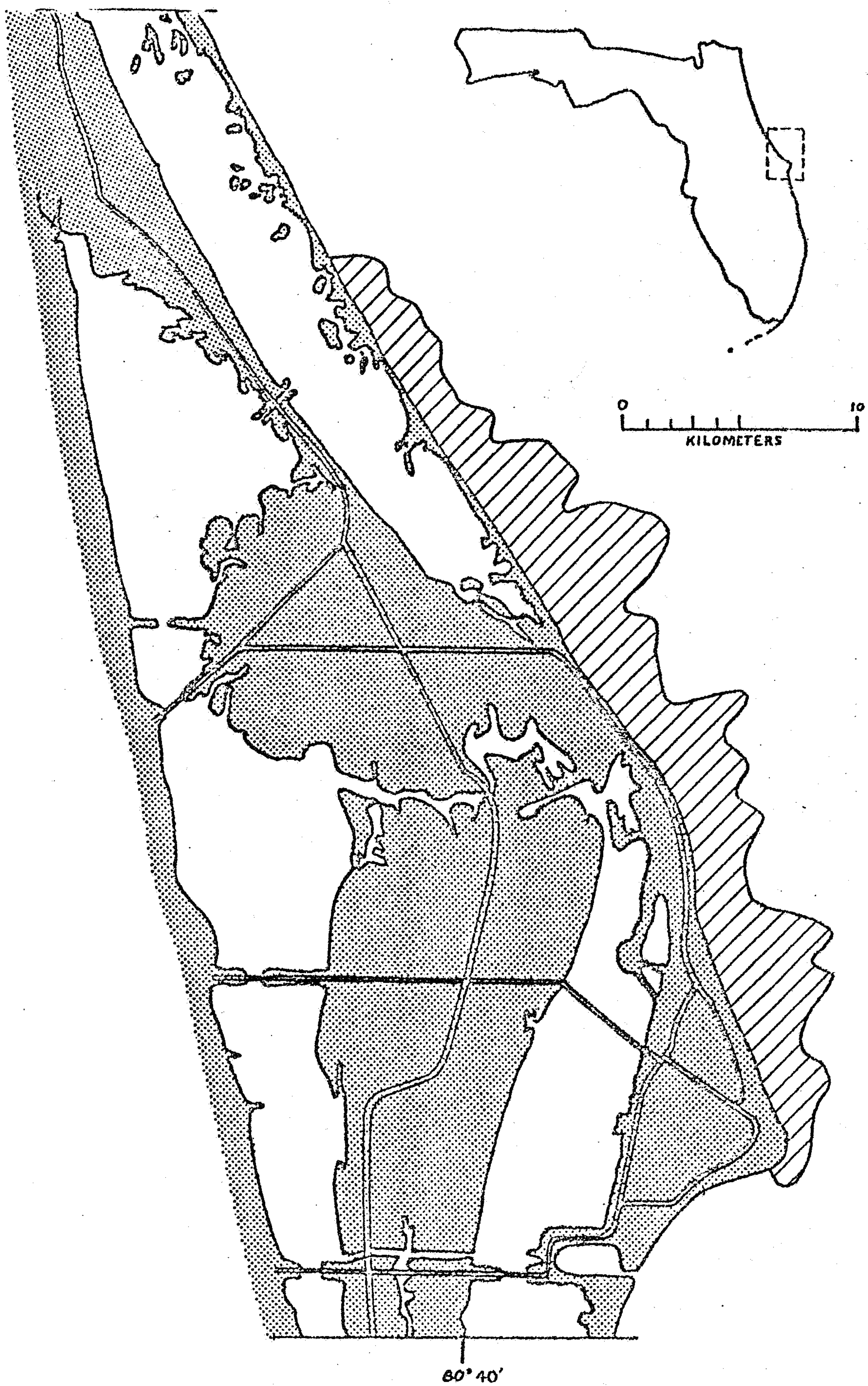


Figure 4. Relative distribution of loggerhead turtles (Caretta caretta) encountered on KSÇ nesting beach, 1976-1978. Height of diagonal-lined area is proportional to density

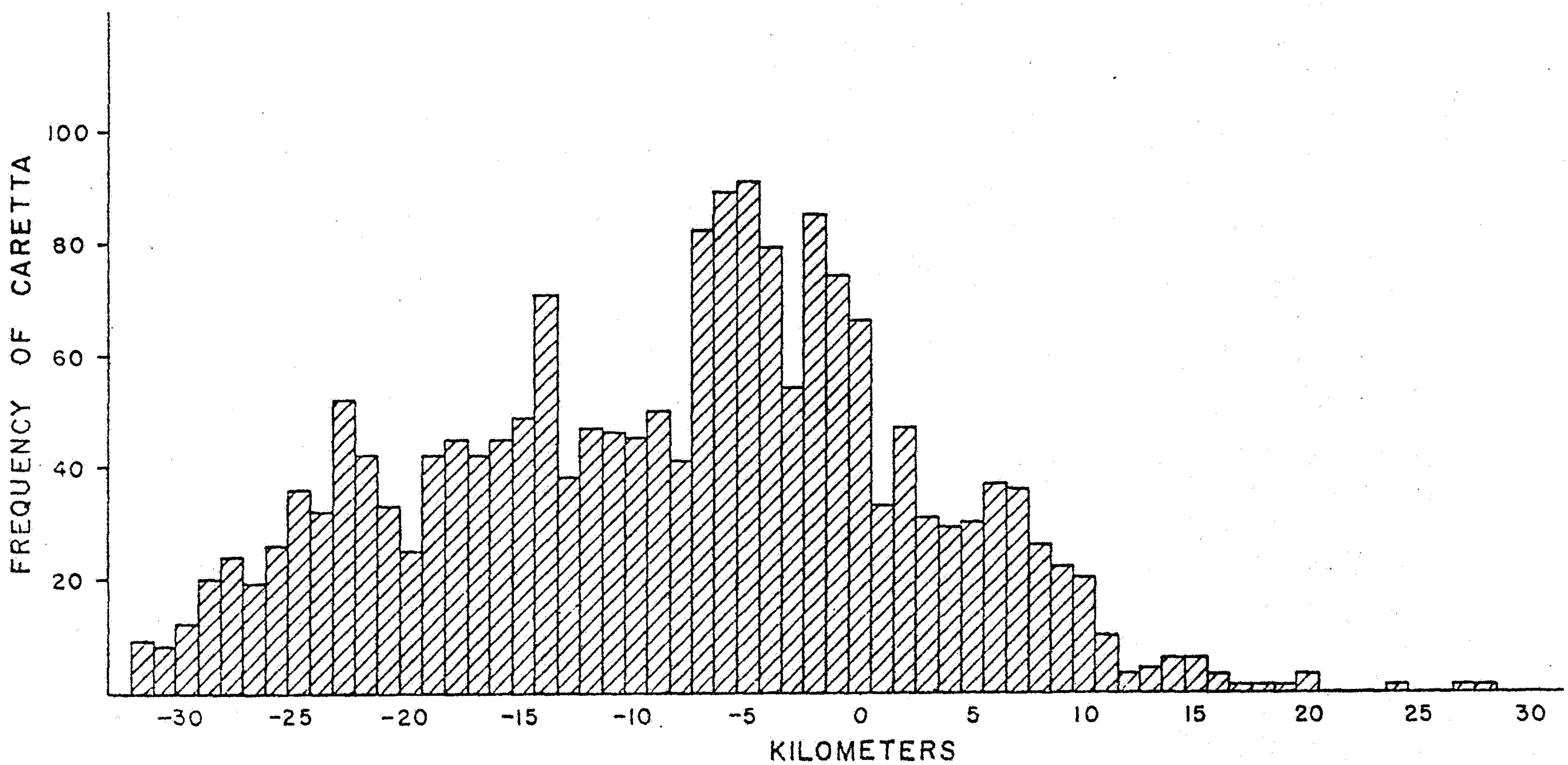


Figure 5. Frequency of loggerhead turtles (Caretta caretta) encountered per kilometer of nesting beach, Summer, 1978. Positive numbers = north of 0 point; negative numbers = south of 0 point (0 point is dune crossover at camera pad UC10, southern boundary of Sec. 36, R36E, T20S).

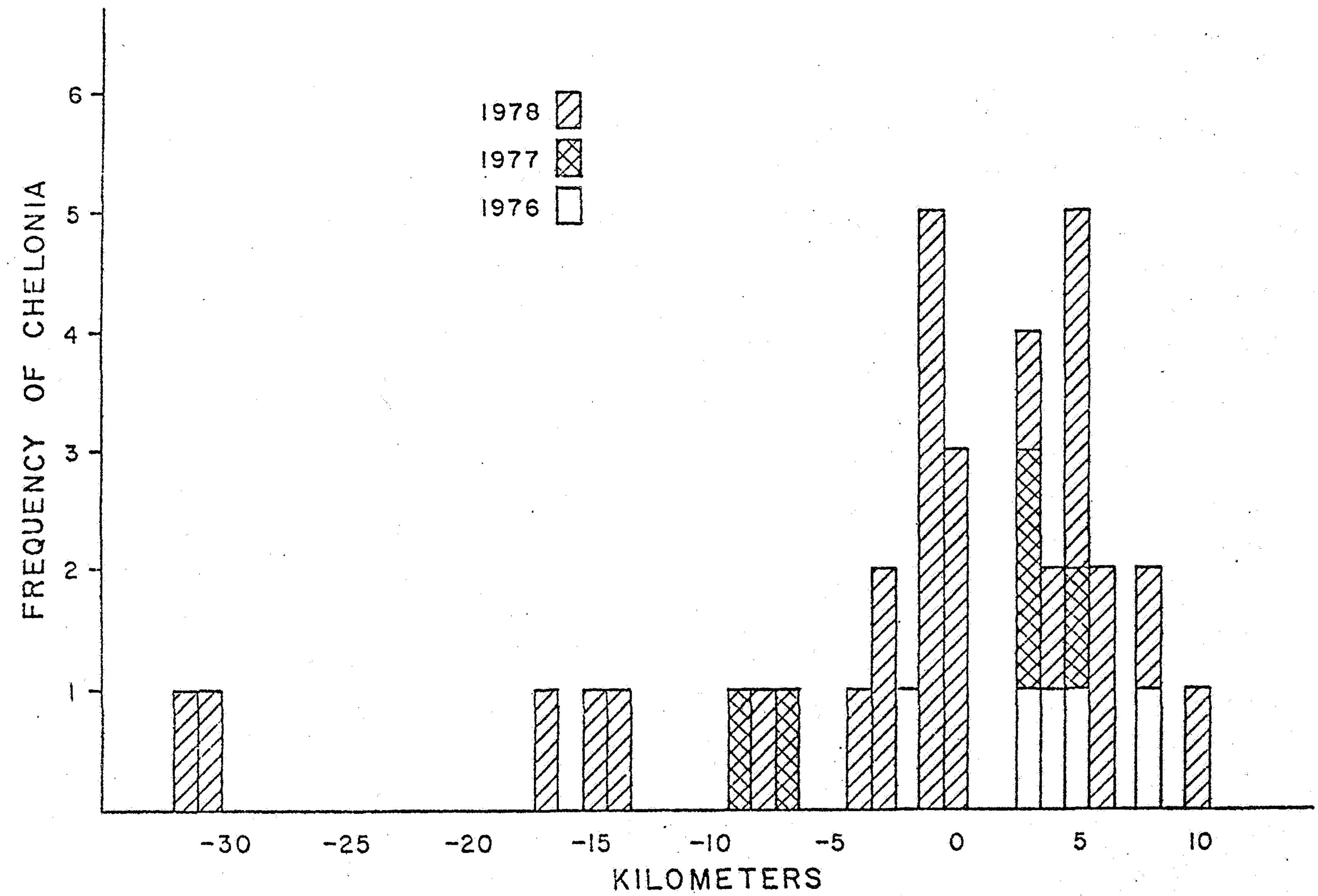


Figure 6. Frequency of green turtles (<u>Chelonia mydas</u>) encountered per kilometer of nesting beach, Summer, 1976--1978. Positive numbers = north of 0 point; negative numbers = south of 0 point (0 point is dune crossover at camera pad UC10, southern boundary of Sec. 36, R36E, T20S.

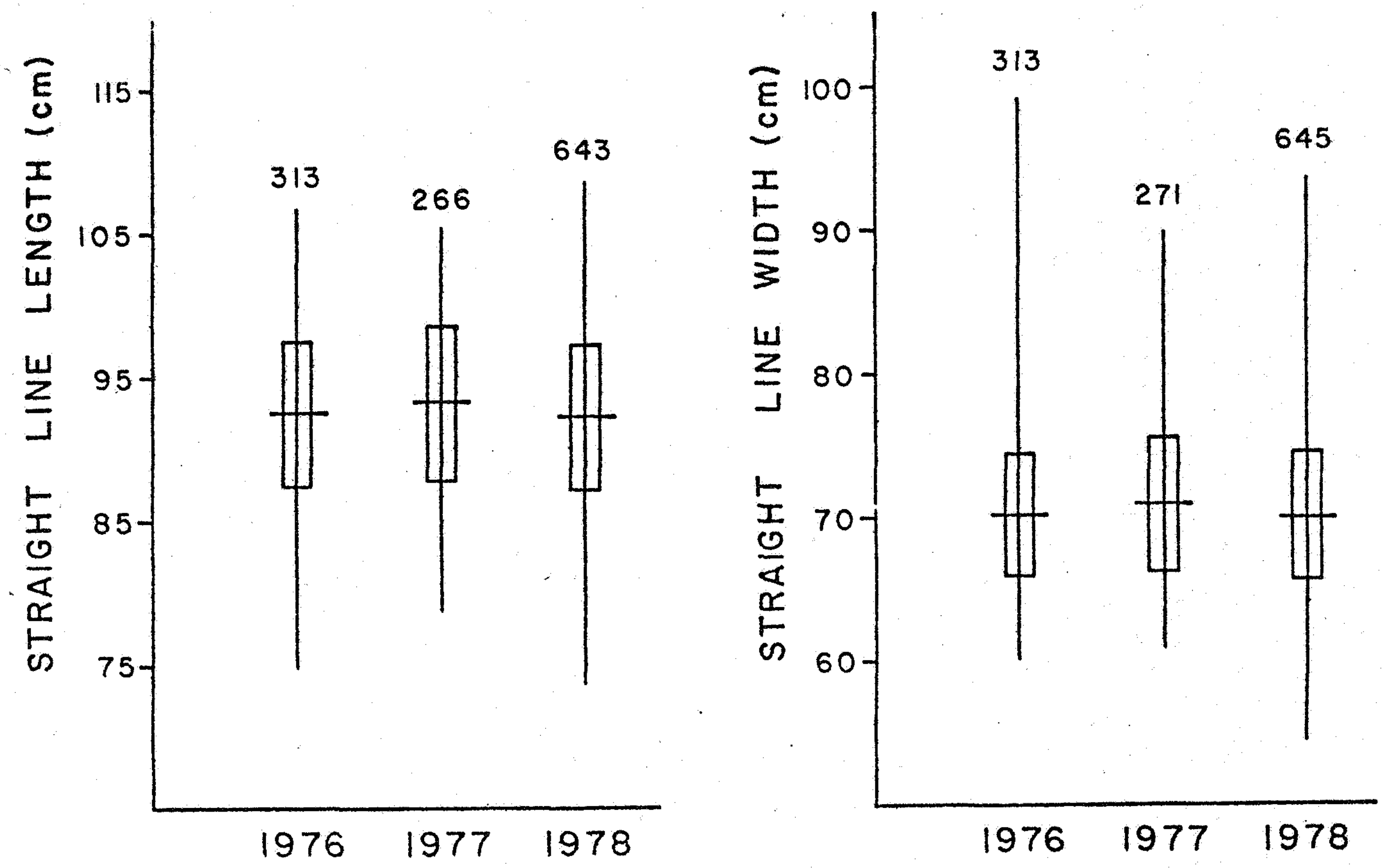


Figure 7. Summary of nesting loggerhead turtle (Caretta caretta) straight line length and width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = N.

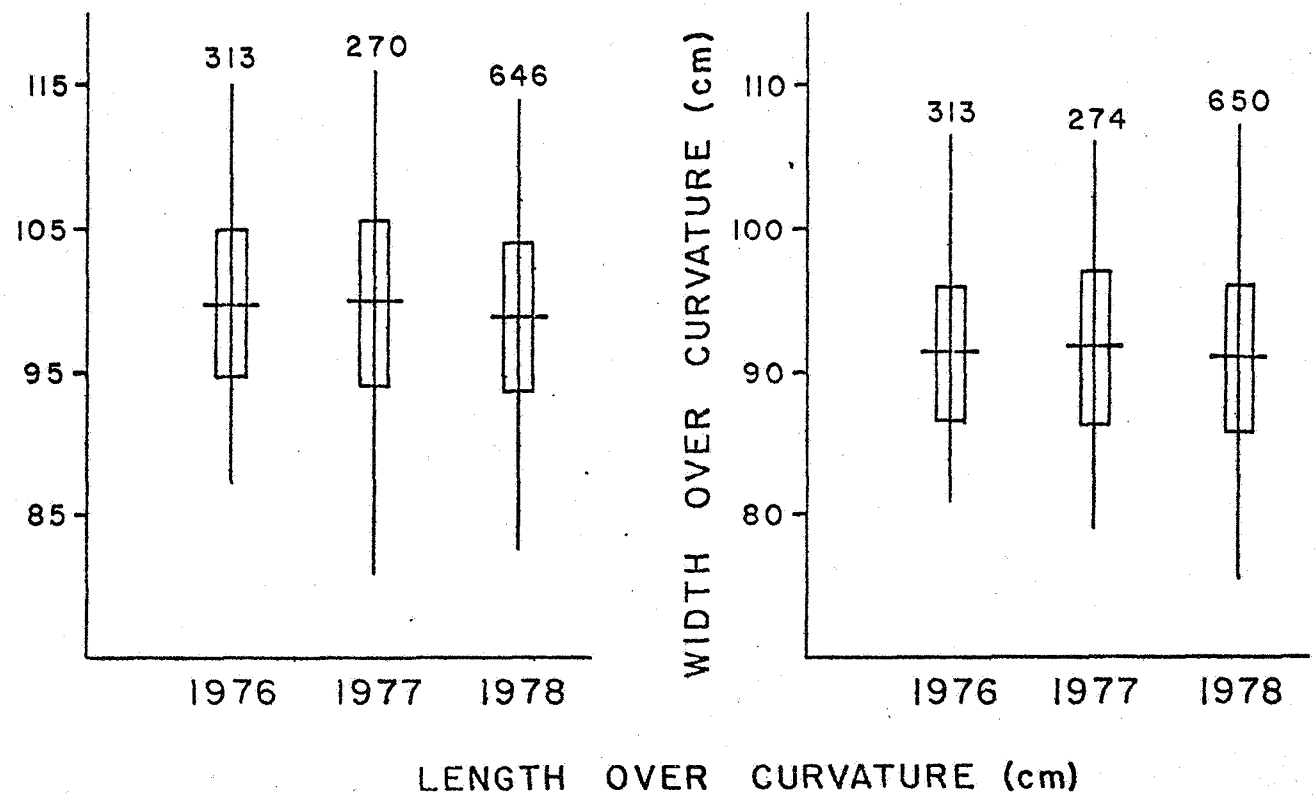


Figure 8. Summary of nesting loggerhead turtle (Caretta caretta) over curvature length and width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = N.

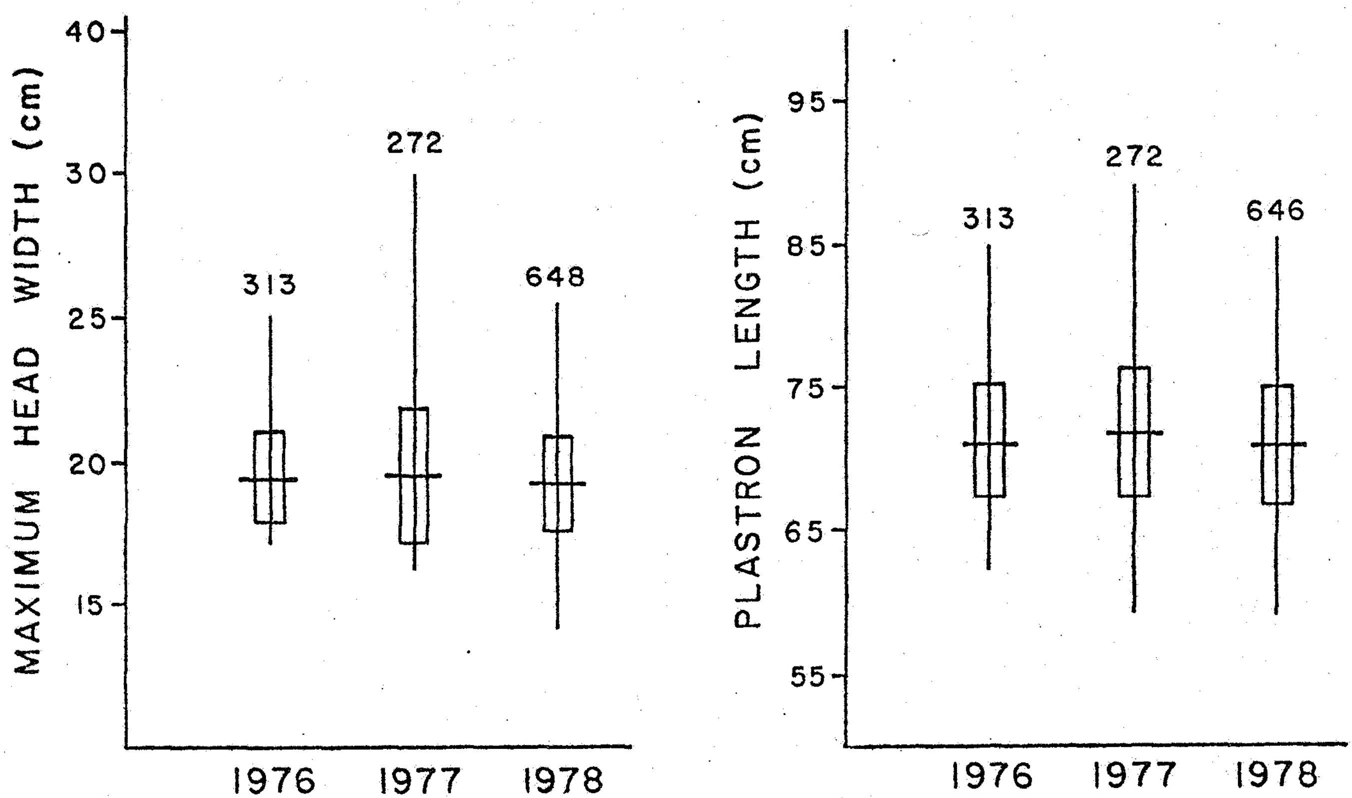


Figure 9. Summary of nesting loggerhead turtle (Caretta caretta) head width and plastron length measurements, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = N.

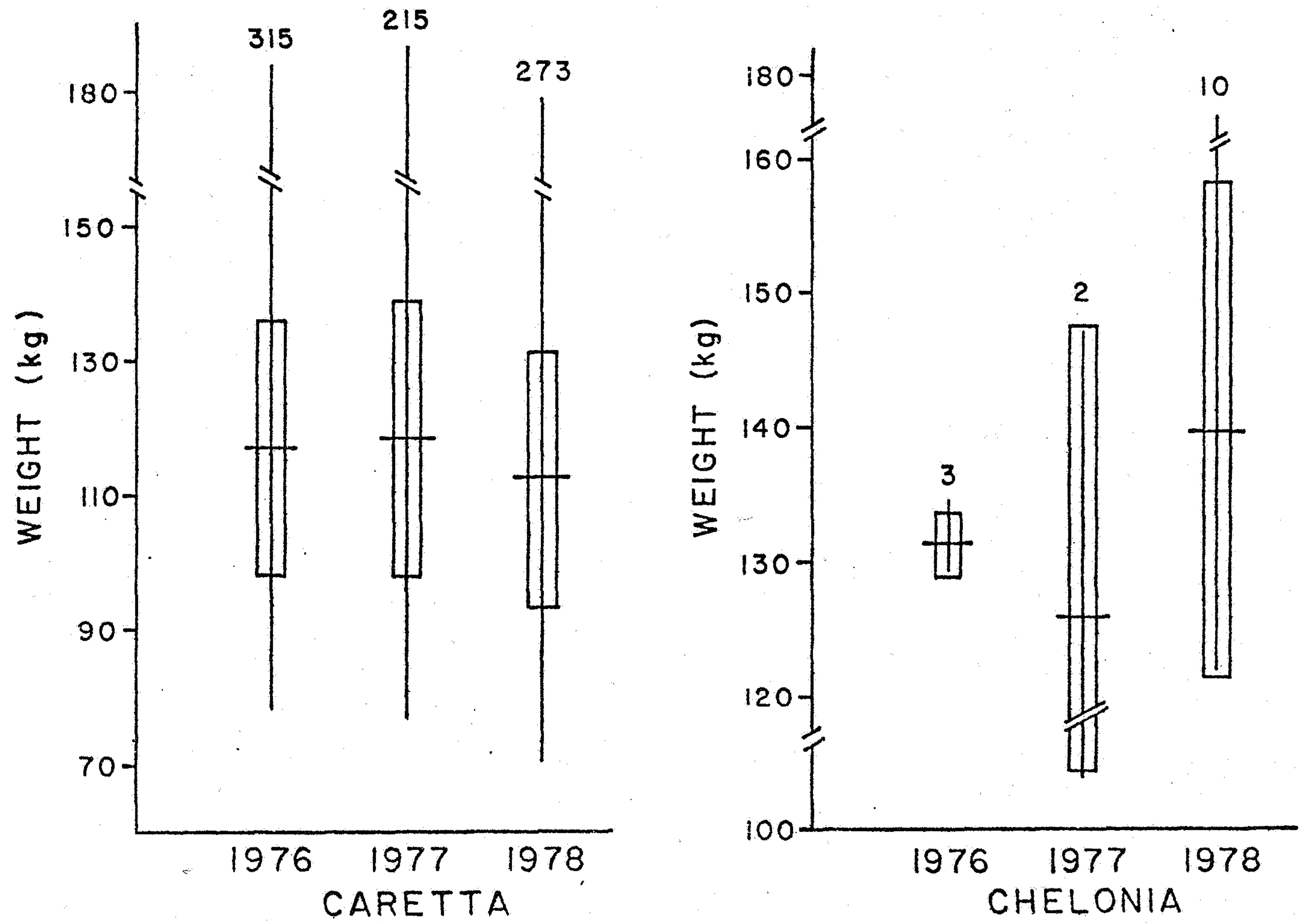


Figure 10. Summary of nesting loggerhead turtle (*Caretta caretta*) and green (*Chelonia mydas*) turtle weights, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = N.

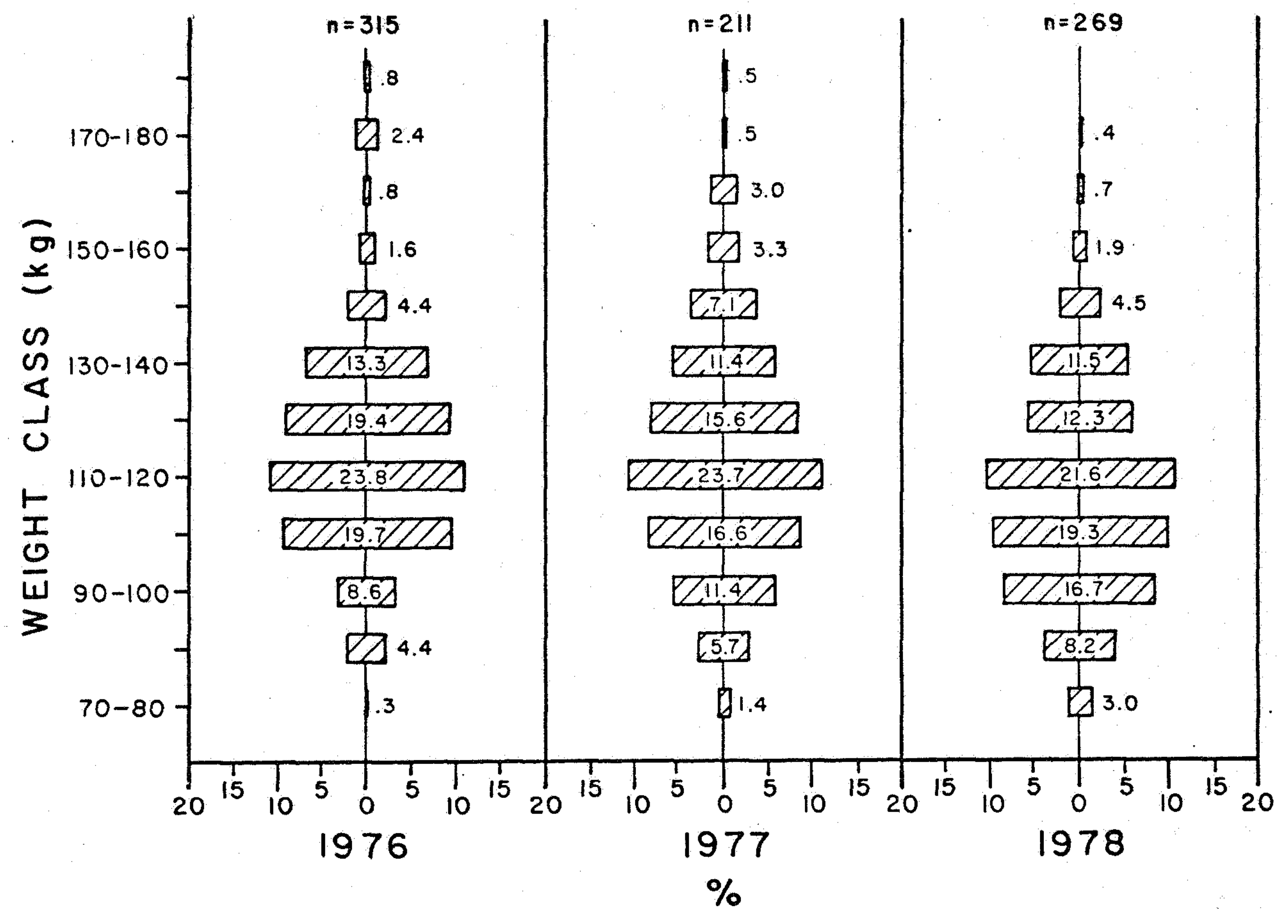


Figure 11. Weight-class distributions of the populations of female loggerhead turtles nesting at Kennedy Space Center, 1976-1978.

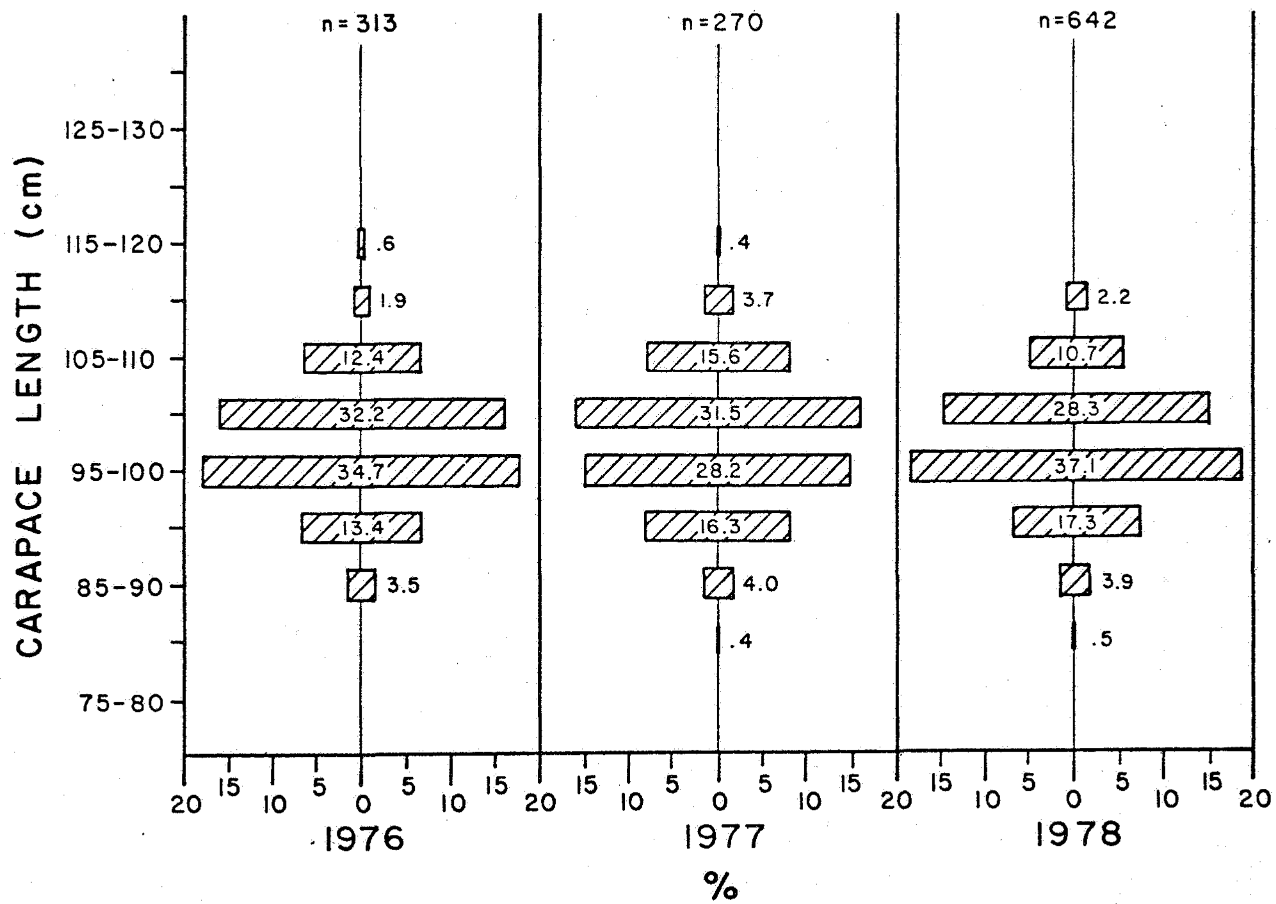


Figure 12. Size-class (over curvature carapace length) distribtuions of female loggerhead turtles nesting at Kennedy Space Center, 1976-1978.

Multiple Range Test further revealed that the loggerheads nesting in 1978 weighed less than those of the previous years (Appendix Table 8). Analysis of variance in CLSL data confirmed significant differences among means at $p<0.036$ (Appendix Table 9). Duncan's multiple range test (Appendix Table 10) demonstrated that the 1978 mean was significantly smaller than that for 1977 ($p<0.05$) but not smaller than the 1976 mean. For CLOC the analysis of variance indicated significant differences among means at $p<0.013$ (Appendix Table 11) and the Duncan procedure clearly ($p<0.05$) separated the smaller 1978 means from the others (Appendix Table 12).

The analysis of variance of CWSL data revealed significant differences among means (Appendix Table 13). The Duncan test (Appendix Table 14) showed that, as in the case of CLSL, the 1978 mean was significantly smaller than that for 1977 ($p<0.05$), but not smaller than the 1976 mean. There were also differences in PL means (Appendix Table 15; $p<0.007$) and again the smallest mean was in 1978. Duncan's procedure (Appendix Table 16) shows that the 1978 mean differs significantly from the 1977 one, but not from that of 1976, at $p<0.05$. Head width follows the pattern of weight and CLOC in that the analysis of variance confirms significant differences among means (Appendix Table 17; $p<0.0001$) and Duncan's multiple range test clearly separates the smaller 1978 mean from the others (Appendix Table 18; $p<0.05$). Only in the case of CWOC did the analysis of variance fail to indicate significant differences among annual means (Appendix Table 19). This is the least precise and most variable of all the measurements, because of variation and irregularities in shell shape. Although the 1978 mean was smaller than the others (Figure 8), the difference was not significant at $p<0.05$. It is clear, nevertheless, that the individuals of the 1978 loggerhead population were significantly smaller than those of 1976 and 1977.

Corresponding to these changes in morphometric means are shifts in size and weight class distributions. Figure 11 shows the frequency distribution of loggerhead weights for all 3 years. The shift toward the lower end of the distribution in 1978 is small but noticeable and a X^2 test for independence confirms that the data are distributed differently (X^2 = 25.4, df = 12, critical value=21.0). The same shift is evident in the distributions of CLOC (Figure 12) but the statistical significance is slightly less convincing. The X^2 value here is 15.0 with 8 df. The critical value for $p<0.05$ is 15.5. It can be said that the distributions are independent at the $p<0.06$ level.

The analyses of regression of loggerhead CWSL on CLSL and of CWOC and CLOC are presented in Appendix Figures 1 and 2. The squared correlation coefficients (sometimes called coefficients of determination), regression equations for the relationships, and probability values (the probability that such a distribution of points would result if there were not a linear relationship between the factors) are given on each figure. The coefficient is considerably higher for the over-curve measurements than for straight-line ones, even though the latter method is the accepted conventional one for turtles in general. The better correlation of CLOC with CWOC results, of course, from the fact that over-curve measurements take the third shell dimension, depth, into account.

Over 800 measurements of loggerhead weights were made during the study. This is by far the most extensive body of sea turtle weight data ever assembled. Linear relationshps between weight and linear measurements were analyzed because of their potential value to other investigators elsewhere and in the future at KSC. They may lack the means to weigh turtles but can always obtain shell measurements. The analysis of regressions of weight on CLSL, on CLOC, CWSL, CWOC, and PL are given in Appendix Figures 3, 4, 5, 6, and 7. P values for all of these relationships are <0.0001. The two linear characters that are most highly correlated with weight and, therefore, the most useful for prediction, are CLOC ($r^2 = 0.71$) and PL ($r^2 = 0.72$). The least useful one is CWSL ($r^2 = 0.51$).

Measurements of carapace length and width, plastron length, head width, and weight for green turtles encountered in 1976, 1977, and 1978 are compiled in Appendix Tables 20, 21, and 22. Figures 13, 14, 15, and 10 present the means, ranges and standard deviations for all 3 years for CLSL, CWSL, CLOC, CWOC, PL, HW, and weight. Although the small numbers of animals examined in 1976 and 1977 make year-to-year comparisons tenuous, analyses of variance were performed on the green turtle data. They revealed no significant differences among the years for any of these morphometric characters.

Regression analyses identical to those performed on loggerhead length-width and length-weight relationships were also used to analyze the much smaller body of Chelonia data. The 20 sets of linear measurements and the 14 weights are only marginally adequate to examine these relationships but they constitute the first such compilation and analysis for adult Florida green turtles. The linear regressions of CLSL and CWSL and of CLOC on CWOC are presented in Appendix Figures 8 and 9. It can be seen that, as in loggerheads, there is a much more faithful relationship between over-curve measurements than straight-line ones. Indeed, the correlation of CWSL and CLSL is very poor ($r^2 = 0.26$; $p<0.06$) in comparison to CWOC-CLOC for green turtles ($r^2 = 0.60$; $p<0.001$) and to all of those given for loggerheads above.

Appendix Figures 10, 11, 12, 13, and 14 present the regression of Chelonia weights on CLSL, CLOC, CWSL, CWOC, and PL. Unlike the condition in loggerheads, where weight is more highly correlated with CLOC than any other carapace measurement, in green turtles the best correlation is with CLSL ($r^2 = 0.78$; $p<0.0001$). As in loggerheads, PL is also a highly reliable predictor of weight ($r^2 = 0.68$; $p<0.0003$) and CWSL is virtually unrelated to weight ($r^2 = 0.18$; $p<0.13$).

Changes in weight and carapace length over-curve exhibited by 39 loggerheads and two green turtles nesting at 2, 3, 4 and 5-year intervals, are compiled in Appendix Table 23. Eighteen of the loggerheads were weighed at both the original and subsequent encounters but the data reveal no clear-cut trend. Ten of 18 changes were within the limits of measurement error (5 percent) and seven of them were actually recorded as having lost weight.

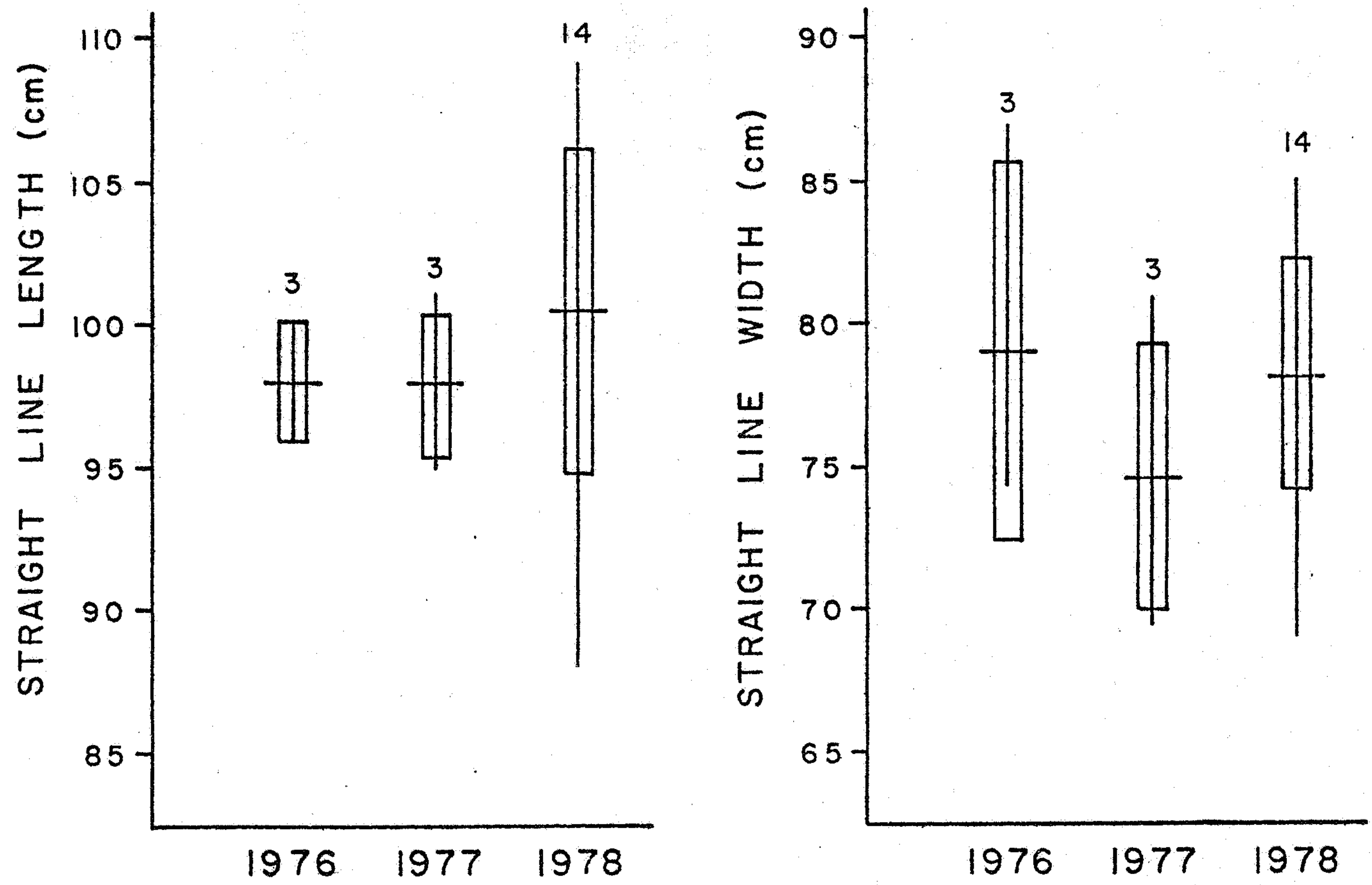


Figure 13. Summary of nesting green turtle (*Chelonia mydas*) straight line carapace length and width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = N.

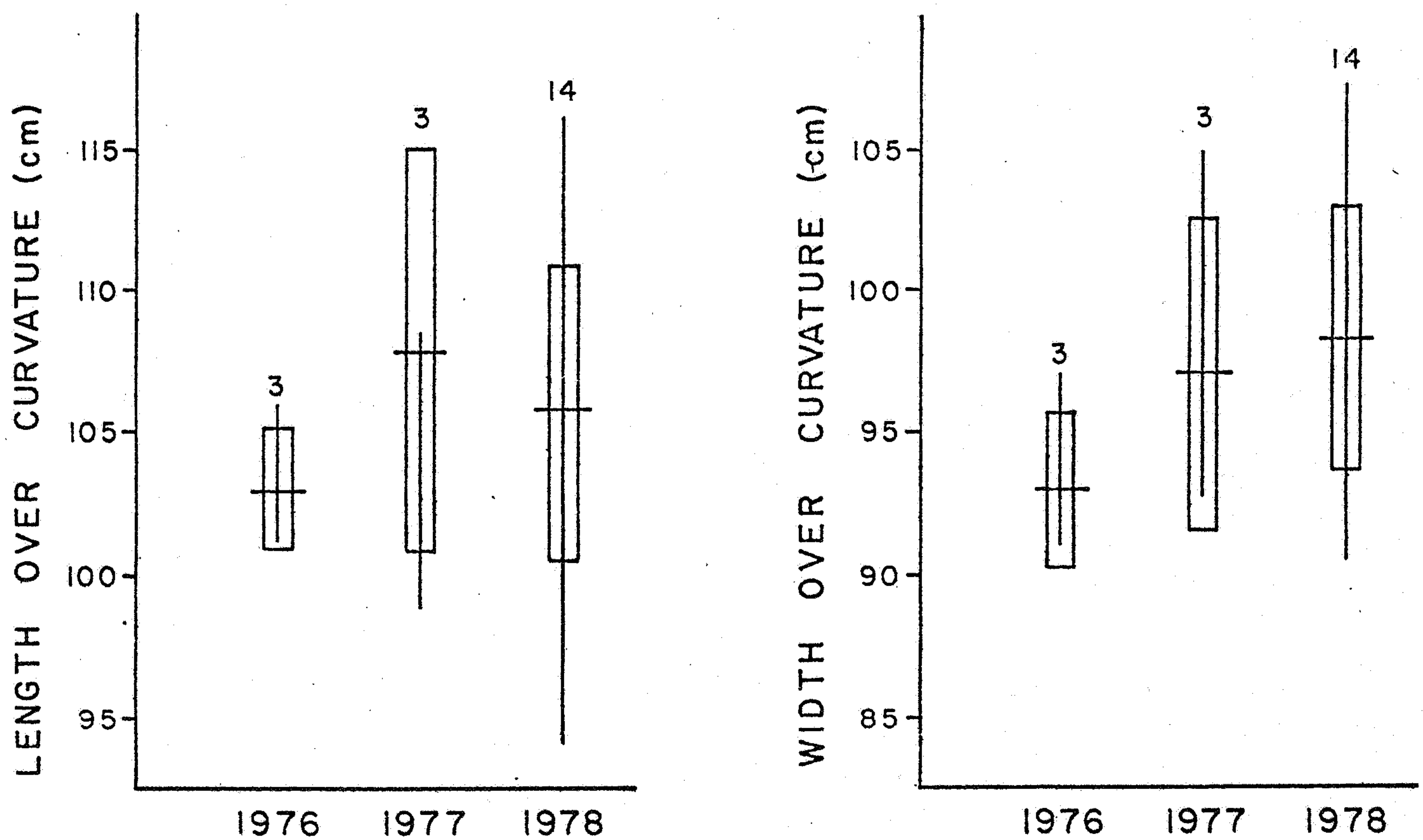


Figure 14. Summary of nesting green turtle (*Chelonia mydas*) over curvature carapace length and width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = N.

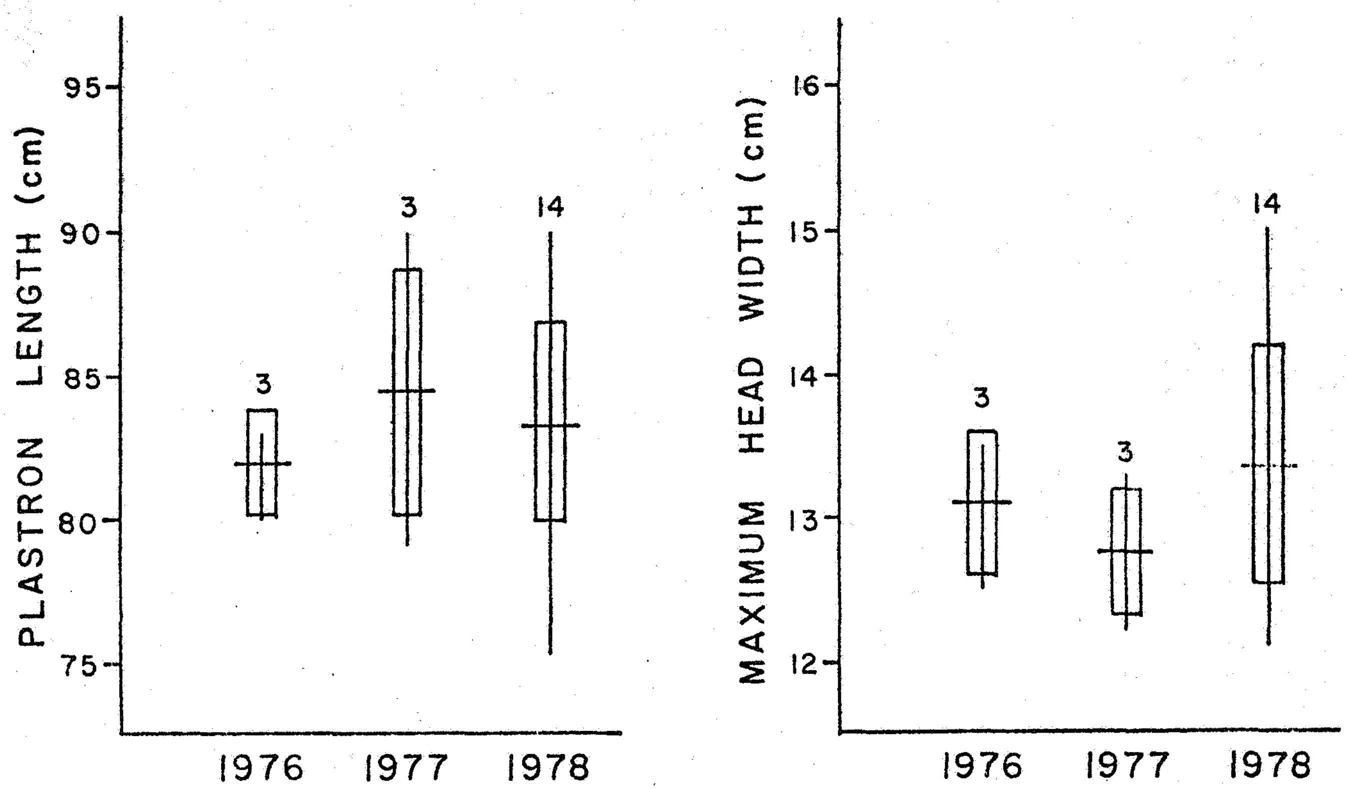


Figure 15. Summary of nesting green turtle (*Chelonia mydas*) plastron length and head width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = N.

Changes in CLOC also exhibit great variation, but when they are compiled according to year-class a weak trend is discernable (Appendix Table 24). In Appendix Table 23 and for purposes of analysis, any negative change was regarded as resulting from abrasion and recorded as zero. The trend in the results of Appendix Table 24 involves a slight but uniform increase in shell length from 0.95 cm in 2-year recaptures to 2.3 cm in 4 and 5-year recaptures. There is no question that adult loggerheads grow very slowly. The limited data available support this conclusion but are too sparse to allow further statistical treatment.

In 1978, for the first time, two turtles returned to KSC after a second multi-annual interval. One of these, No. C2311, is an interesting case. In only one other case in 6 years (Ehrhart, 1976) have we seen a turtle returning to nest in successive years. Virtually all of them return in 2, 3 or possibly more years. C2311 was tagged in 1973 and when it returned in 1977 it had gained no weight (recorded as having lost about 1 kg) and three major shell dimensions had increased by only 0.5-1.8 cm. Oddly, the turtle returned in 1978 to nest again. Unfortunately we were unable to weigh her that time but the three major shell dimensions increased markedly. Carapace length over-curve increased from 94.5 cm to 99.5 cm; straight-line length increased from 88.5 cm to 93.0 cm; and plastron length increased from 66.8 to 72.1 cm. All that growth occurred in 1 year in an animal that had not grown at all in the 4 previous years. It seems possible that the animal's return in successive years and its unusual growth may be reflections of having encountered unusually good environmental conditions during the year. If so, this phenomenon could be related to the overall increase in the nesting population seen in 1978. Unfortunately, however, no other 1-year re-nesters were encountered and the question remains unanswered.

The two green turtles, returning at 2 and 3 year intervals, exhibited increases in weight (4.5 and 4.6 kg) that are within the limits of measurement error (5 percent). The 3-year returnee gained 1.6 cm in CLOC while the other one remained unchanged in this measurement. Many more multi-annual recaptures are needed for any definition of a trend.

Long-distance Recoveries

There have been very few recoveries of KSC-tagged turtles outside of the U. S. Three of the four that we have had during the course of this project are from the Bahama Islands (Appendix Table 25), the most distant about 600 km SE of KSC. The fourth record is of one that must have gone around the southern tip of Florida because it was discovered dead near Sanibel Island, on the Gulf coast.

Reproductive Characteristics of Caretta and Chelonia at KSC

Multi-annual Periodicity and Site Fixity

Records of multi-annual recoveries of turtles tagged at KSC are compiled in Appendix Tables 26, 27, and 28. A summary of those data is presented in Table 4. In 1976, one-half of the loggerheads previously tagged by us at KSC and recovered there had been tagged in 1973. Only 51 loggerheads were tagged in that year so the five recovered in 1976 constitute a three-year recovery rate of about 10 percent. The other five loggerheads recovered this year were among a group of 111 tagged in 1974. No single-year recoveries were observed in 1976.

Table 4

Mean distances between tag and recovery sites for loggerhead turtles tagged and recovered at multi-annual intervals at Kennedy Space Center.

	2 Years		3 Years		4 Years		5 Years	
	N	$\overline{X}$ Distance (km)	N	$\overline{X}$ Distance (km)	N	$\overline{X}$ Distance (km)	N	$\overline{X}$ Distance (km)
1976	7	2.92	3	4.77				
1977	1	0.40	5	1.78	1	4.80		
1978	6	9.56	5	9.29	6	6.53	5	4.33
Total	14		13		7		5	
Interval $\overline{X}$		4.33		5.28		5.66		4.33
S.D.		4.73		3.78		1.22		--

Grant Total N: 39

Grand $\overline{X}$: 5.47 km

S. D.: 5.84

The single multi-annual recovery of a green turtle observed at KSC in 1976 is also listed in Appendix Table 28. This individual (A2790) was one of only two tagged in 1974 and returned to nest 7.0 km north of the original site. Green turtles are known to exhibit 2 and 3 year cycles but the latter is thought to predominate.

Only seven loggerheads tagged in previous years at KSC were recovered here in 1977. The number is surprisingly small in that 283 loggerheads were tagged in the 3 year period from 1973 to 1975. In 1977 five of seven recoveries were 3-year turtles. The five recoveries from the 1974 group constitute a 4.5 percent recovery rate. Only one turtle from the 1973 class and one from the 1975 class were recovered in 1977.

In 1978, 22 loggerheads tagged in previous years at KSC were recovered. This represents 3.6 percent of the total number (601) tagged in the years 1973-1976. Surprisingly, the highest recovery rate (10 percent) was from those tagged in 1973. Five of the 51 turtles tagged that year were back at KSC in 1978. Probably these turtles had returned once before, after either 2 or 3 years, then changed the cycle to return in the fifth year.

It has generally been assumed that the majority of loggerheads nest on 2 year cycles and that a large minority nest at 3 year intervals. Our data, however, indicate the 3 year cycle may be more common. As a case in point, the smallest recovery rate (1.8 percent) observed in 1978 was for the most recent possible year-class, 1976. In that year 318 loggerheads were tagged, but, to our knowledge, only 6 returned in 1978. Only five animals tagged in 1975 were recovered, but they constitute 4.1 percent of the year-class. The thorough mixture of year-classes among the recoveries definitely confuses the matter of multi-annual cycling in loggerheads. The single green turtle recaptured in 1978 had originally been tagged in 1975.

These multi-annual recoveries also provide considerable new information about the phenomenon of long-interval site fixity in loggerheads. Considerable attention has been given to the relatively small number of loggerheads tagged while nesting on the beach and subsequently recovered nesting at some distance elsewhere. Loggerheads have, therefore, been considered to be less site-tenacious than other species. The data in Table 4, however, document the remarkable site fixity exhibited by 39 turtles in the 2-, 3-, 4-, and 5-year recoveries observed in this study. The mean distance interval exhibited by these turtles is only 5.47 km (3.4 miles). Although the fact that our activities are restricted to a given stretch of beach would tend to bias this mean, it should be recalled that our coverage generally extended over 34 to 43 km. It should also be noted that the mean annual interval between tagging and recovery points varied very little (Table 4). As a matter of fact, the interval was exactly the same (4.33 km) for 2-year recoveries as for 5-year ones. The means for 3-year and 4-year recoveries were only slightly greater at 5.28 km and 4.66 km.

Information gathered concerning the length of the nesting season and the weekly intensity of nesting is summarized in Figure 16. It is a composite graph in which data from 1976, 1977, and 1978 are compiled. It shows clearly that loggerhead nesting is strong throughout the entire months of June and July and the first week of August. The peak of the season occurs from the last week in June through the third week of July, and although there is a troublesome depression in the number of turtles encountered during the week of 5 July, it is probably artificial.

An aerial survey flown on 3 May 1976, revealed two sets of sea turtle tracks about 1 mile north of Cape Canaveral. They were extremely clear and distinct and had probably been made the previous night (2-3 May 1976). On 4 May 1976, a park ranger at Canaveral National Seashore (KSC) reported a fresh turtle crawl that had definitely been made the previous night.

The loggerhead nesting season began somewhat later at KSC in 1977. The first crawls were reported at the beginning of the third week in May. We began tagging on 27 May and had the impression that the season was starting more slowly than usual.

The season seemed to begin early in 1978, with one crawl (track) reported during the last week in April. Beach surveys during the second week in May revealed, however, that nesting emergences were still rather sporadic and so full-scale tagging operations did not begin until 22 May.

In 1976, on the night of 20 August (the last night of tagging operations on the beach) four loggerheads (two new, two previously tagged) were encountered. National Park Service personnel reported a few crawls in the following week but none as late as 28 August, which was the latest date that we had ever encountered a nesting loggerhead (Ehrhart, 1976). In 1977, the last loggerhead was tagged on 19 August. Following that date we patrolled the beach on 22 August and 24 August, failed to encounter any turtles and, therefore, ceased night-time beach operations at that point. In 1978 the last loggerhead was encountered on 29 August, adding 1 day to the known season length for the species at KSC.

Prior to the 1977 season, green turtles were not known to nest outside of the month of July at KSC. During that summer, however, females of that species were found nesting on 27 June and 18 August. Then in 1978, both ends of the season were expanded again. Two Chelonia were discovered emerging to nest on 23 June 1978 and another was discovered on 22 August. Then on 28 August, a freshly deposited clutch of green turtle eggs was discovered, extending the season by 10 days beyond that known in previous years.

Re-emergence Intervals

The distributions of within-season re-emergence intervals for the 1976, 1977, and 1978 nesting seasons are compiled for loggerheads in Appendix Tables 29, 30, and 31. In 1976, the most commonly observed interval was 17-18 days, followed by 15-16 days. In 1977 and 1978, however, the 13-14 day interval predominated. A graphic comparison of these interval frequencies is given in Figure 17. The 1-3 day intervals

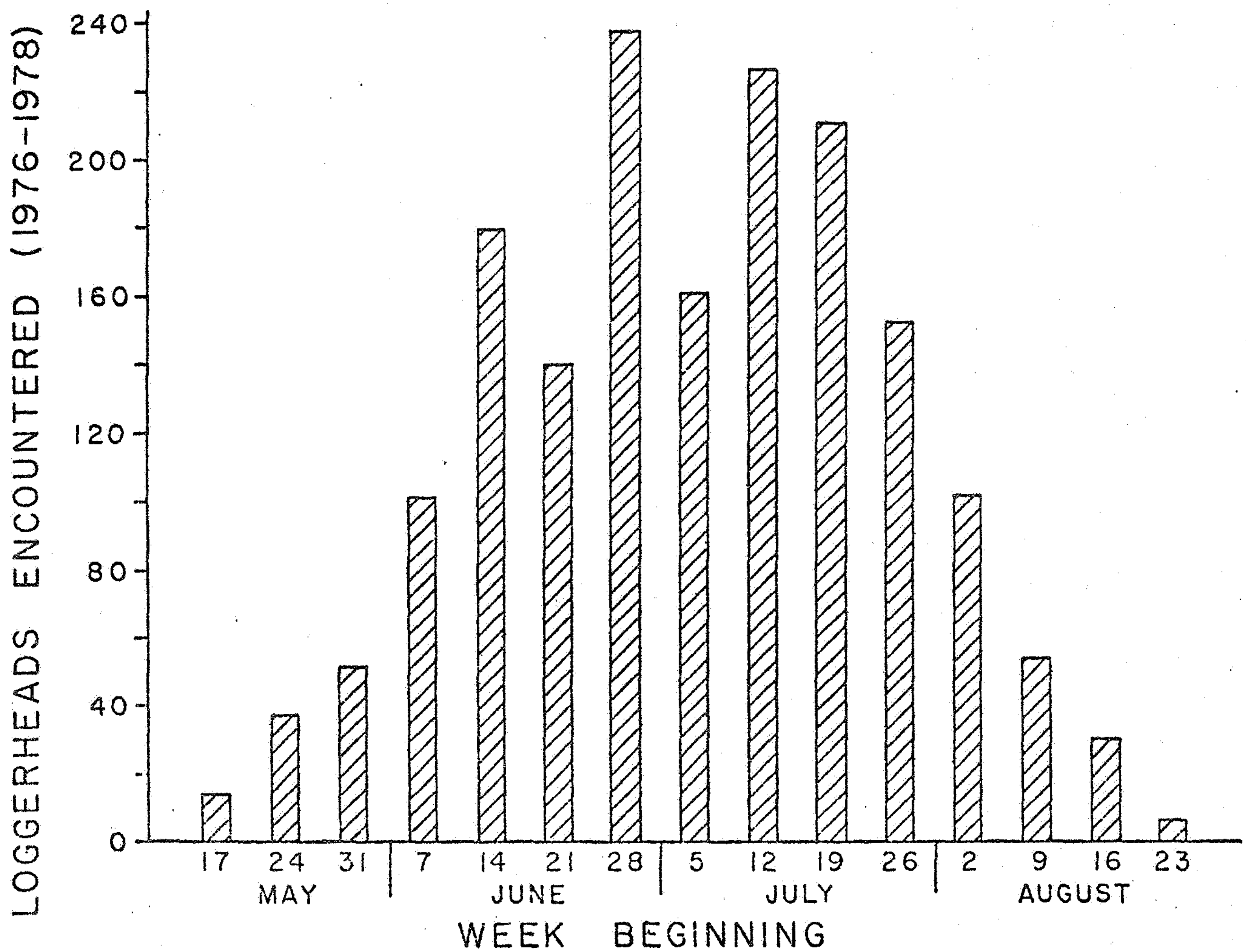


Figure 16. Length and intensity of loggerhead nesting season indicated by the total number of turtles encountered per week, at Kennedy Space Center, 1976-1978.

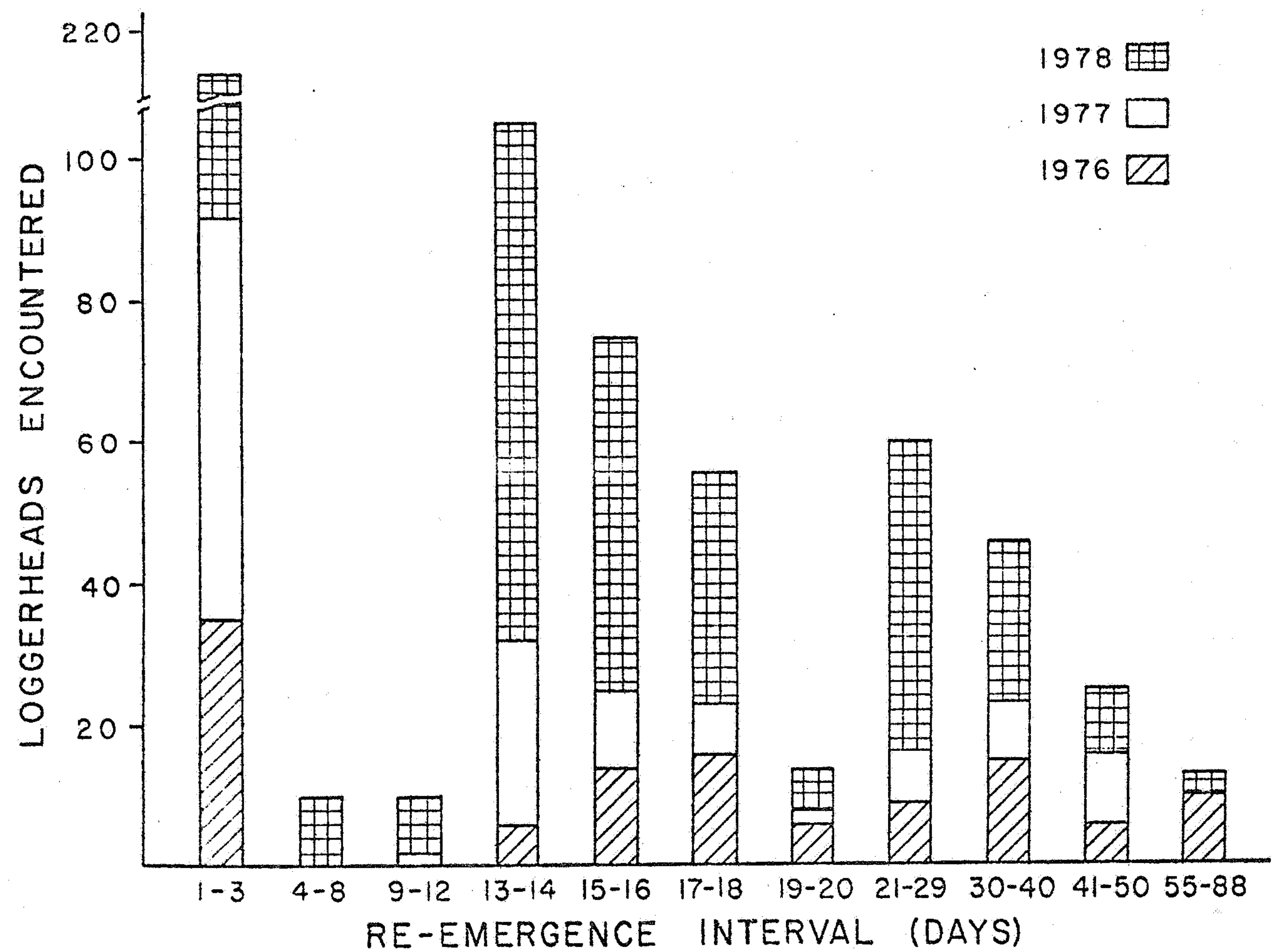


Figure 17. Frequency of nesting female loggerhead turtles encountered by re-emergence interval at Kennedy Space Center, 1976-1978.

in the Appendix Tables are simply reflections of re-emergences after failure to nest for one reason or another and have no usefulness in resolving the problem of annual shifts in interval length. Similarly, it is clear that intervals 19 days and above are indications of secondary, tertiary, etc. nestings and are of little use in defining shifts in the primary interval. Therefore, the distributions of encounters at 9-12, 13-14, 15-16, and 17-18 day intervals were subjected to a X^2 test for independence. The result ($X^2 = 19.5$, df = 6, critical value = 12.6, $p<0.05$) confirms that re-emergence intervals were significantly longer in the 1976 season and, more broadly, that the mean within-season re-emergence interval is a characteristic that is subject to some variation from year to year.

Too few green turtle re-emergences were observed to allow any analysis of this feature for that species.

Clutch Size

Appendix Tables 32, 33, and 34 compile data for all loggerhead clutches handled in 1976, 1977, and 1978. Appendix Tables 35, 36, and 37 are similar, for green turtle data. The summary statistics presented there include mean, standard deviation, range, and N. Figures 18 and 19 allow visual comparison of the within year variation and between year variability. An analysis of variance (Appendix Table 38) reveals no significant difference among the mean clutch sizes for 1976, 1977, and 1978 (for loggerheads). Although there is considerable variation in clutch size (65-173), the overall annual means do not vary appreciably. A regression analysis (Appendix Figure 15) showed that there is no trend toward increased or decreased clutch size as the season progresses. Clutch size does vary, however, with the weight and size of the female parent. The relationships graphed in Appendix Figures 16 and 17 show clearly that larger, heavier females lay larger clutches.

Too few green turtle clutches were laid at KSC in 1976 and 1977 to allow statistical analysis similar to that performed in loggerhead data, above.

Egg Weight and Diameter

Appendix Tables 32, 33, and 34 display egg weight and diameter data for loggerhead clutches handled in 1976, 1977, and 1978. Similar green turtle data are in Appendix Tables 35, 36, and 37. The summary statistics for these samples are graphed in Figures 20 and 21. They afford visual comparison of variation and variability. The analysis of variance for loggerhead egg weights (Appendix Table 39) and minimum egg diameters (Appendix Table 41) and the companion multiple range tests (Appendix Tables 40 and 42) reveal that, in spite of the apparent extreme uniformity of the annual means for these measures, egg size and weight were significantly smaller in 1977.

The regression analyses presented in Appendix Figures 18 and 19 show that loggerhead egg size and weight do not change during the course of the season.

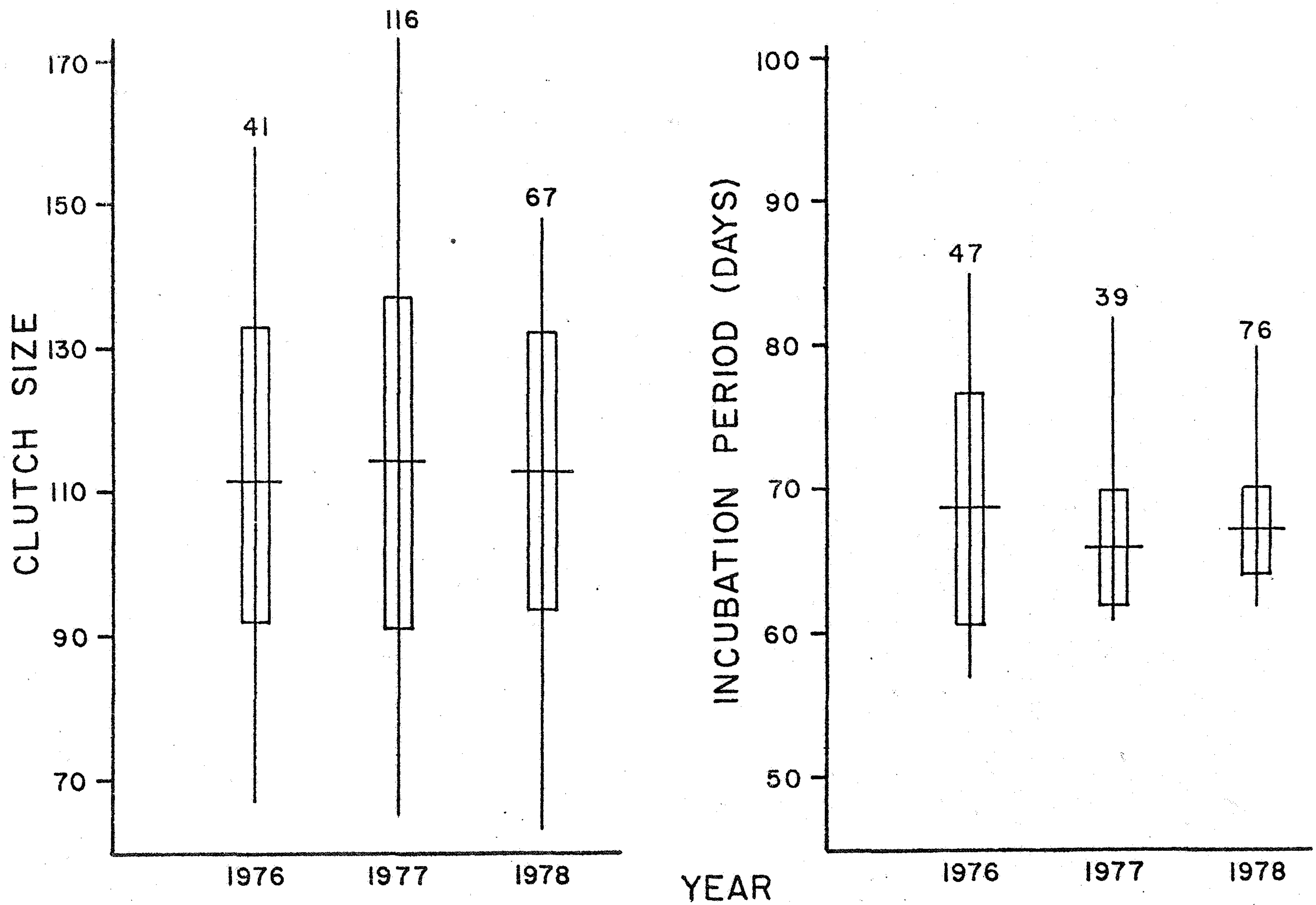


Figure 18. Summary of loggerhead turtle clutch size and incubation time data, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = clutch N.

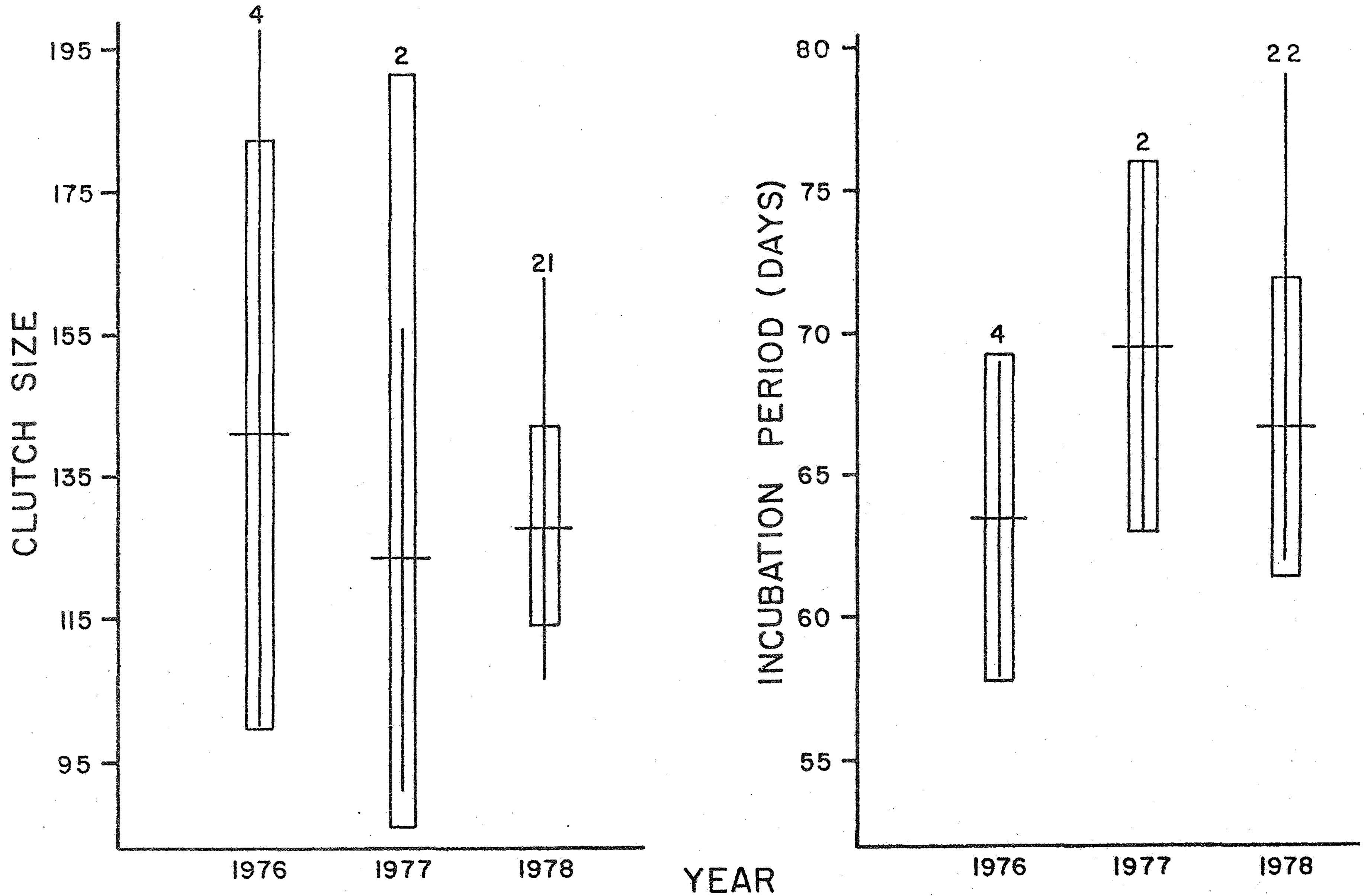


Figure 19. Summary of green turtle clutch size and incubation time data, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = clutch N.

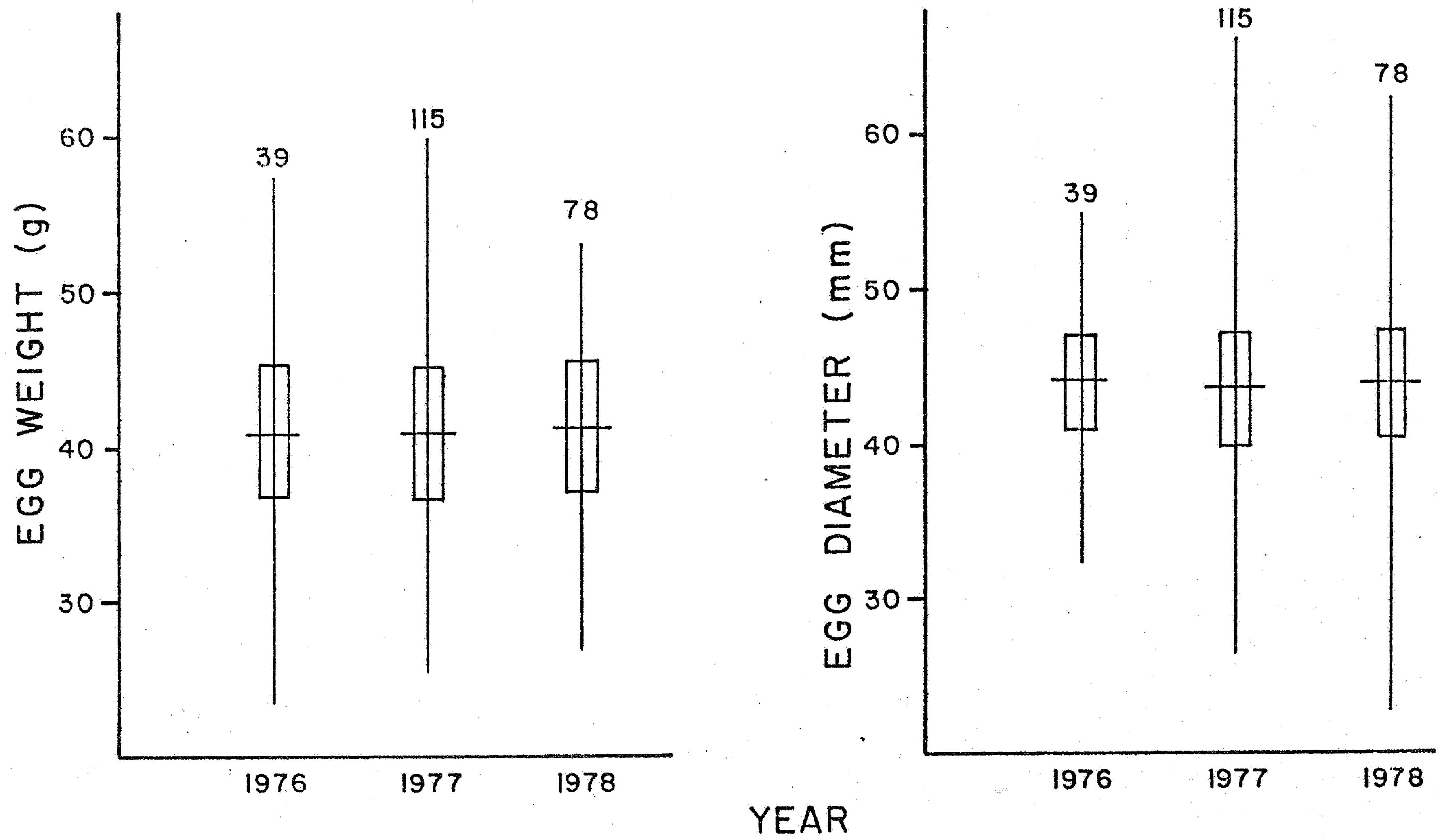


Figure 20. Summary of loggerhead turtle egg weight and minimum diameter measurements, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = clutch N.

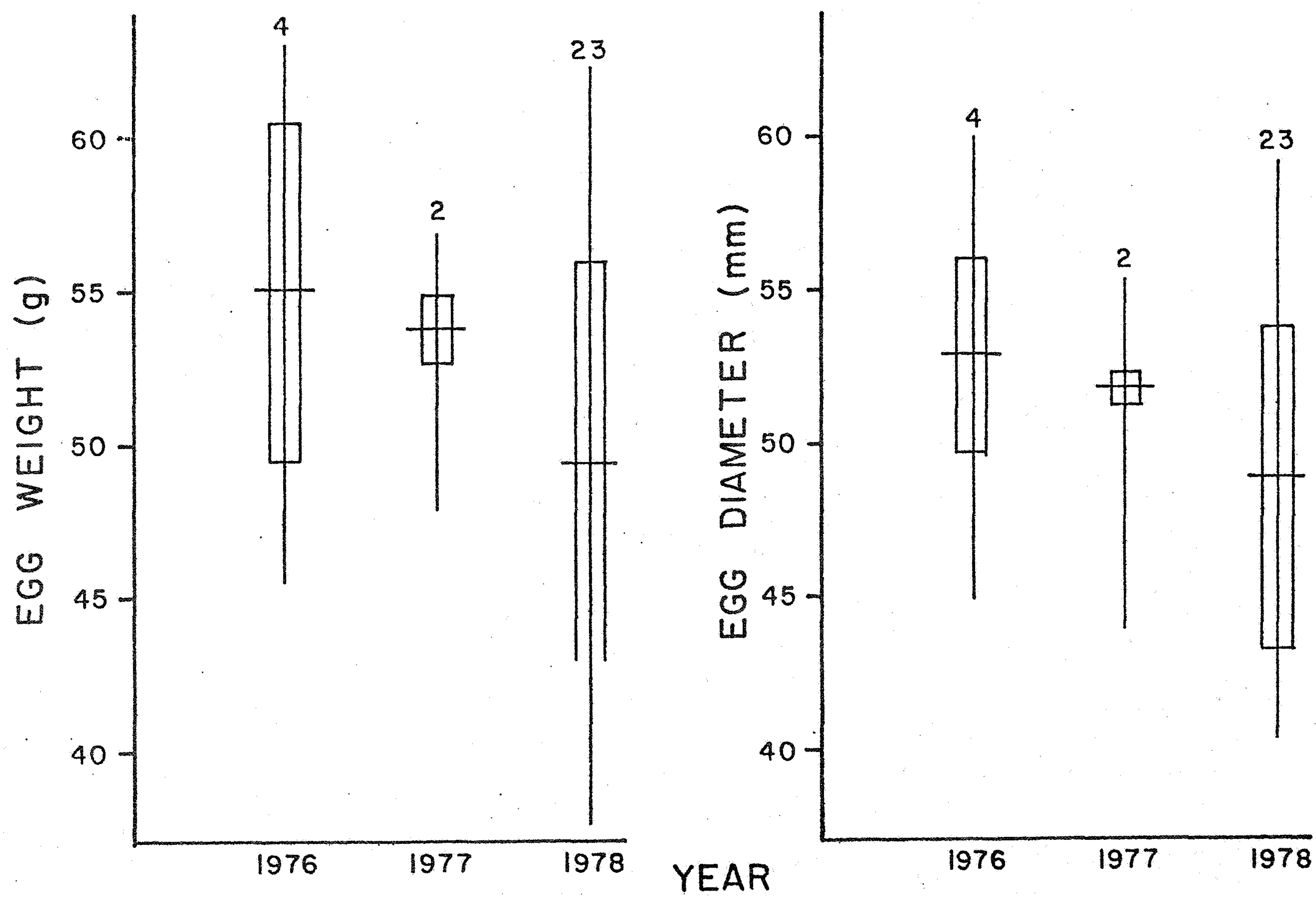


Figure 21. Summary of green turtle egg weight and minimum diameter measurements, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = clutch N.

Too few green turtle clutches were laid at KSC in 1976 and 1977 to permit statistical treatment of the data.

Incubation Periods

The data relating to incubation period lengths for loggerhead eggs in 1976, 1977, and 1978 are given in Appendix Tables 43, 44, and 45. The same kinds of data for green turtle eggs are given in Appendix Tables 46, 47, and 48. This aspect of the work was primarily a cooperative conservation effort with the Merritt Island National Wildlife Refuge and analysis of incubation periods was not a prime objective. Temperature and other conditions varied and no further analysis is warranted. The summary statistics in the Appendix Tables give a good idea of the variation in mean incubation period lengths under the prevailing conditions.

Fertility Rates

Minimum and maximum fertility rates observed in loggerhead clutches are shown in Appendix Tables 49, 50, and 51. Similar data for green turtle clutches, 1976-1978, are in Appendix Tables 52, 53, and 54. Unlike incubation periods, fertility rates may be important comparative factors in the baseline. Figures 22 and 23 show the variation and annual variability in these parameters for Caretta and Chelonia. The very slight differences seen in minimum fertility rates are not significant when tested by analysis of variance (Appendix Table 55). Furthermore, minimum fertility is not affected by variation in size (CLOC) or weight of the female parent. Analyses of the regressions of fertility on these two factors produced coefficients of 0.003 and 0.005. Neither is fertility affected by variation in egg weight (r^2 for the regression is 0.002) nor egg diameter (r^2 = 0.0001). There is also no linear relationship between fertility and clutch size (Appendix Figure 20), and fertility does not change as the season progresses (Appendix Figure 21).

The fact that only four green turtle clutches were recorded in 1976 and two in 1977 prevent further statistical treatment of these factors for that species.

Hatch Rates

Hatch rates and other data relative to the actual operation of the hatchery are presented for loggerheads in Appendix Tables 56, 57, and 58 and for green turtles in Appendix Tables 59, 60, and 61. These data, like those relating to incubation periods, are relevant primarily to the cooperative program of sea turtle conservation and preservation and are not directly applicable as baseline parameters and no further analysis is warranted.

Hathling Morphology

Appendix Tables 62, 63, 64, 65, 66 and 67 include loggerhead hatchling weight and linear measurement data for 1976-1978. Similar data for green turtle hatchlings appear in Appendix Tables 68, 69, 70, 71, 72, and 73. Figures 24, 25, and 26 provide visual evaluation of the means and variation in these data for loggerheads; and Figures 27, 28, and 29 do the same for green turtles. Although the weights of loggerhead

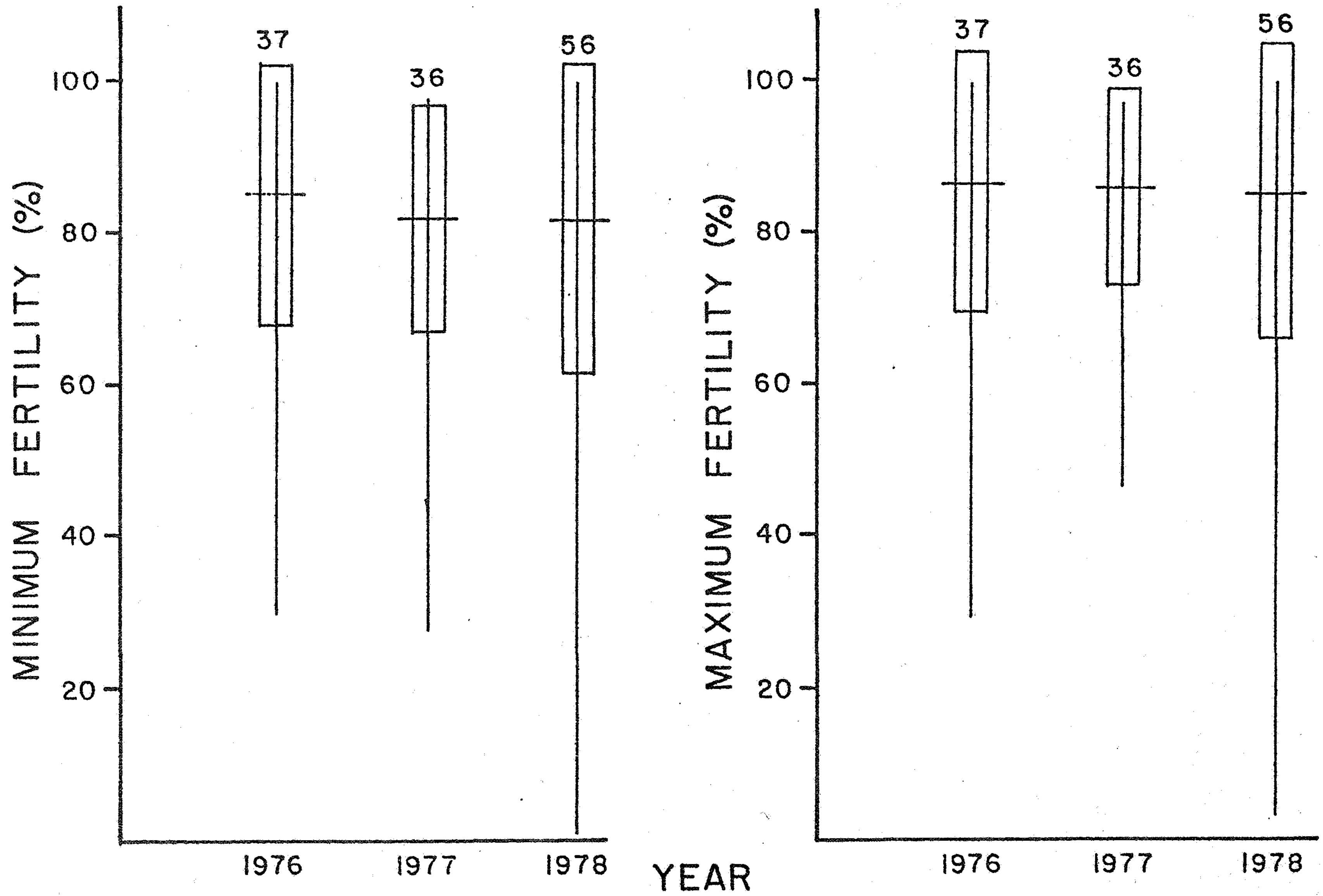


Figure 22. Summary of fertility rates for loggerhead turtles nesting at KSC, 1976-1978.

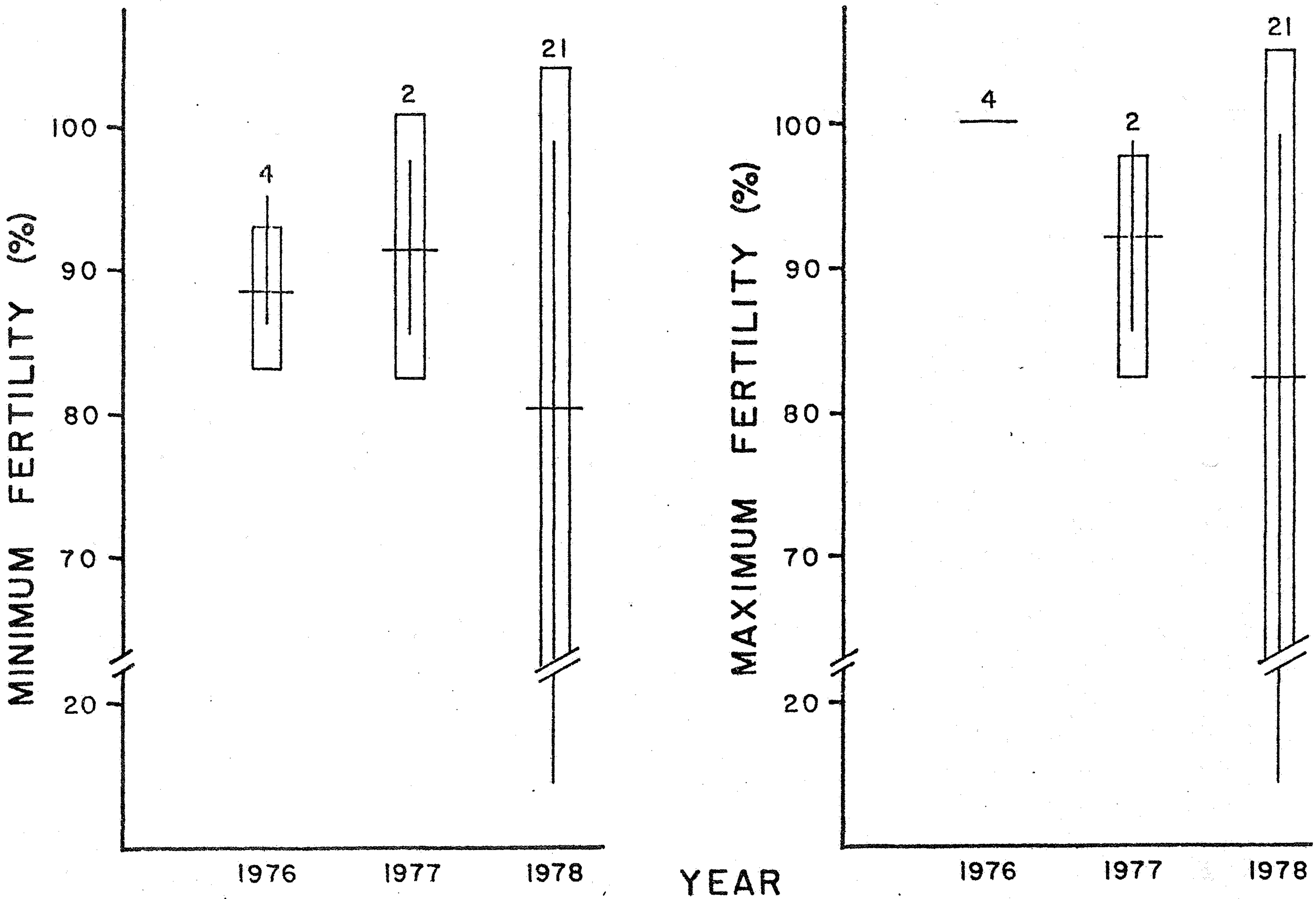


Figure 23. Summary of fertility rates for green turtles nesting at KSC, 1976-1978.

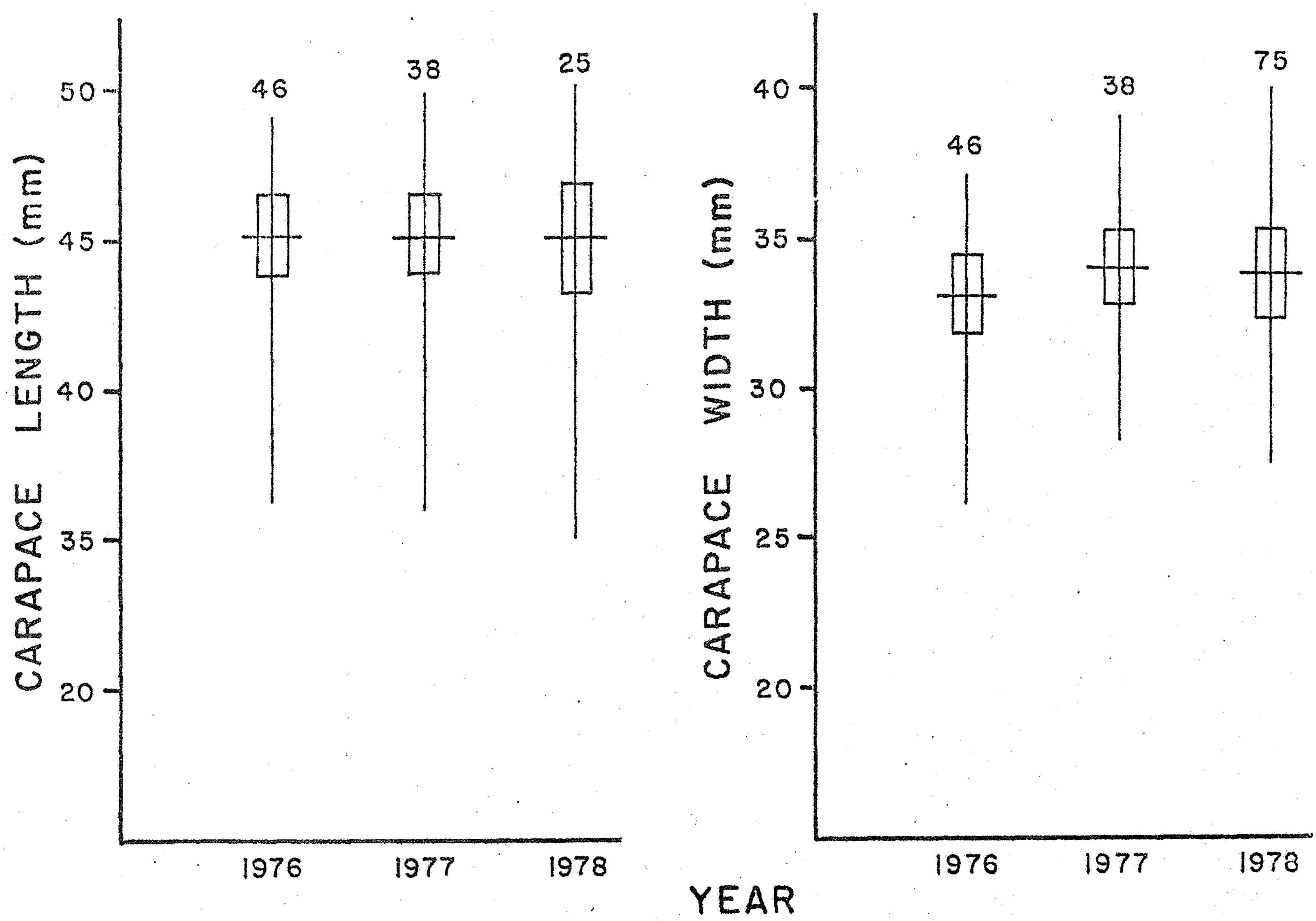


Figure 24. Summary of loggerhead hatchling carapace length and width measurements, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = clutch N.

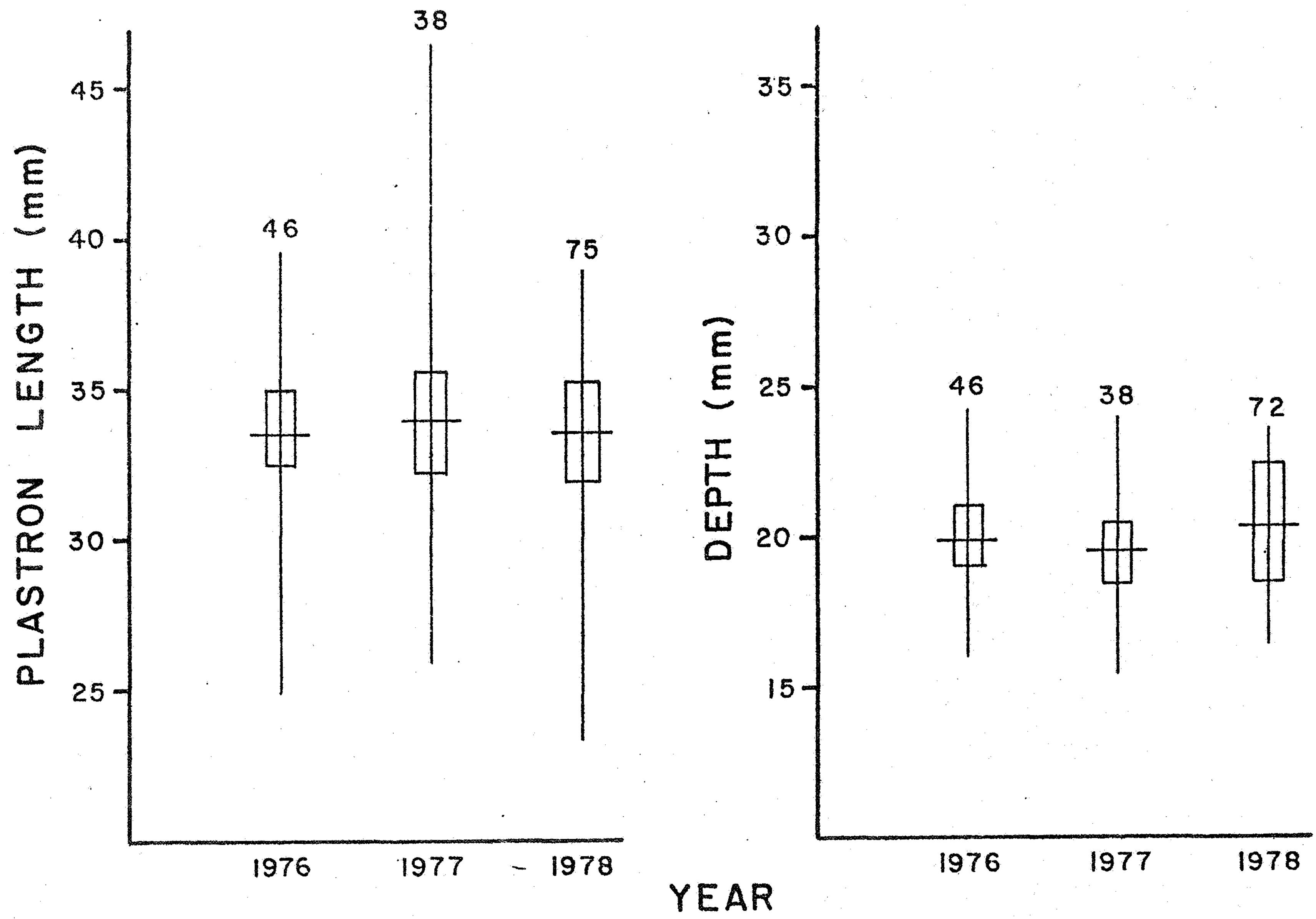


Figure 25. Summary of loggerhead hatchling plastron length and depth measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = clutch N.

Vertical line = range;
open box = + 1 SD;
horizontal line = mean;
numerical value =
clutch N.

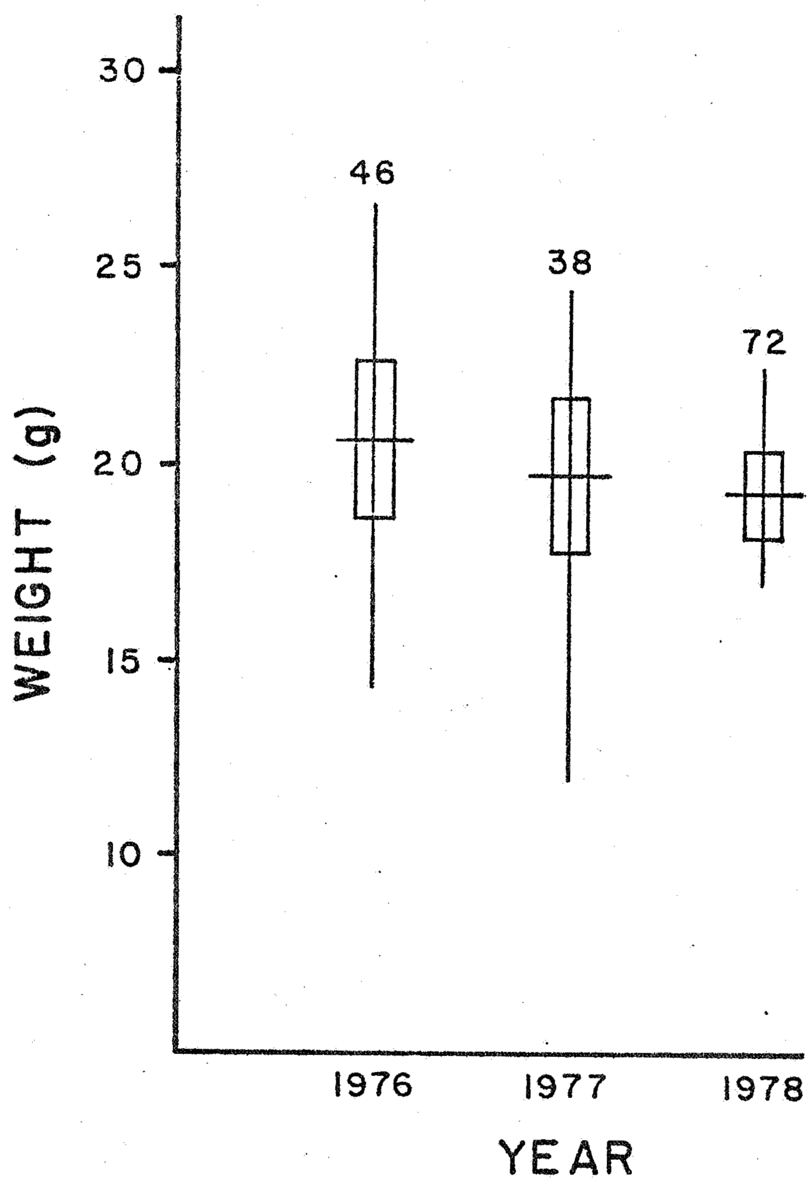


Figure 26. Summary of loggerhead hatchling weight measurements, 1976-1978.

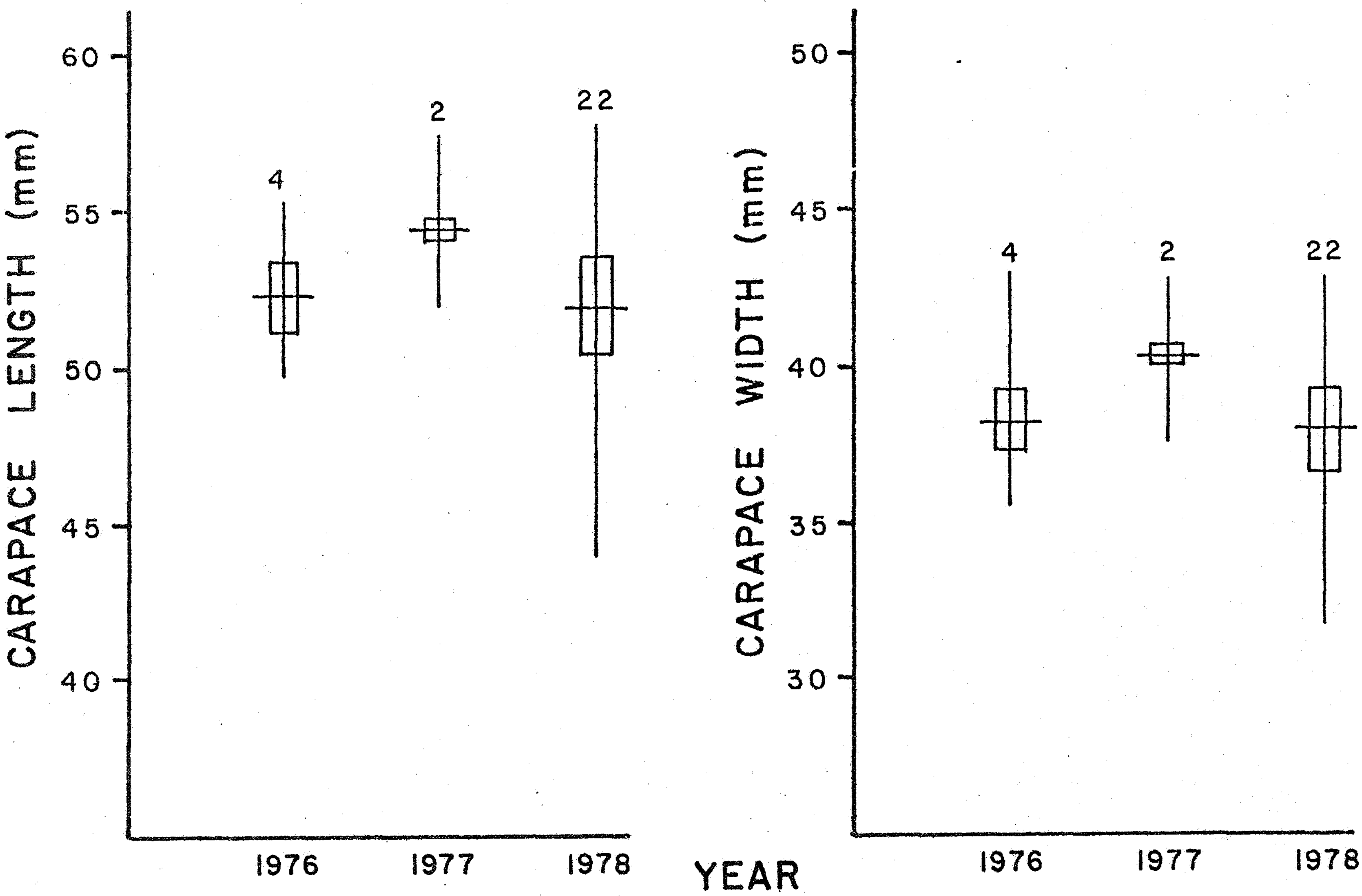


Figure 27. Summary of green turtle hatchling carapace length and width measurements, 1976-1978. Vertical line = range; open box = ± 1 SD; horizontal line = mean; numerical value = clutch N.

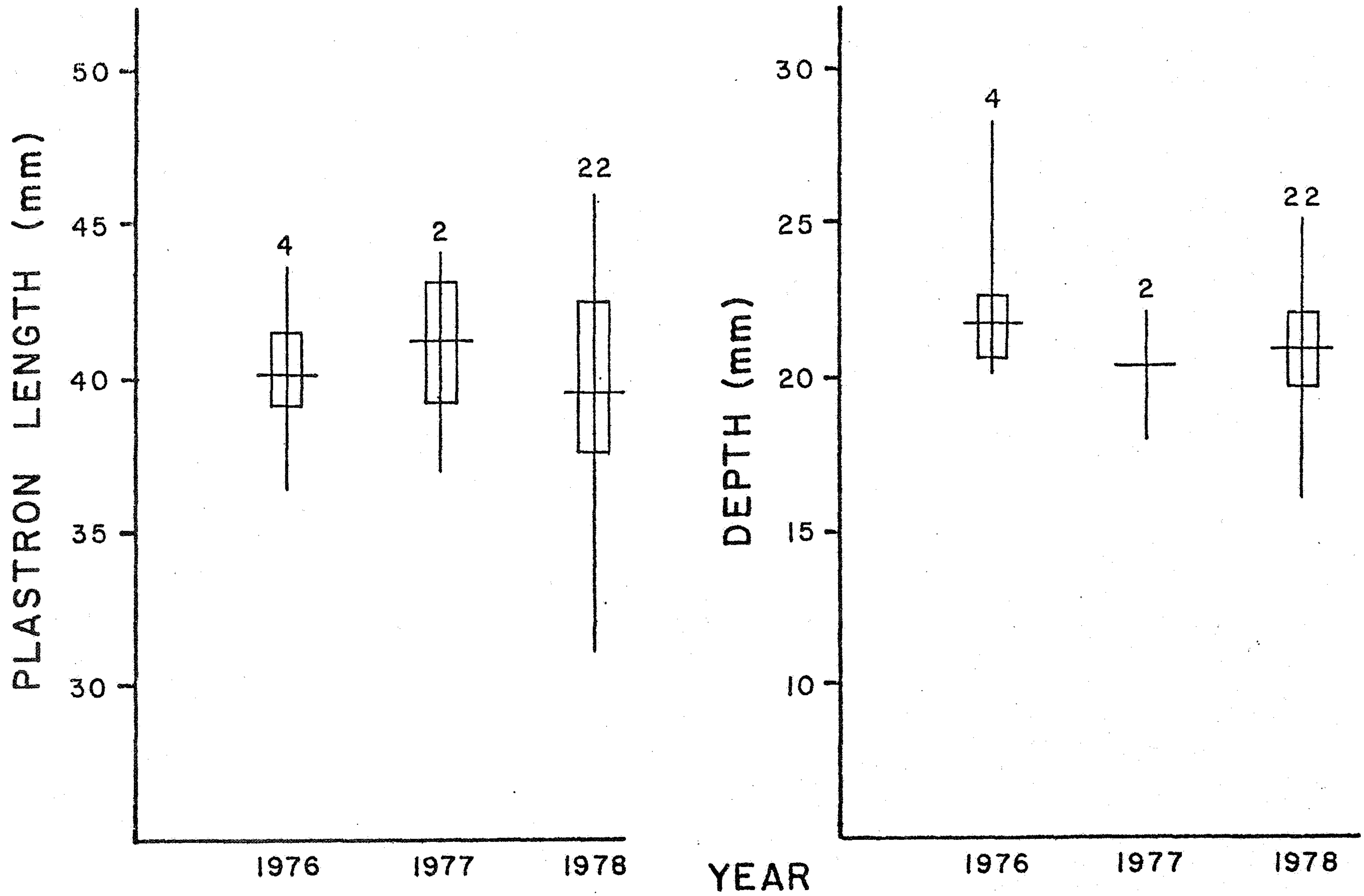


Figure 28. Summary of green turtle hatchling plastron length and depth, 1976-1978. Vertical line = range; open box = $\pm$ 1 SD; horizontal line = mean; numerical value = clutch N.

Vertical line = range;
open box = + 1 SD;
horizontal line = mean;
numerical value =
clutch N.

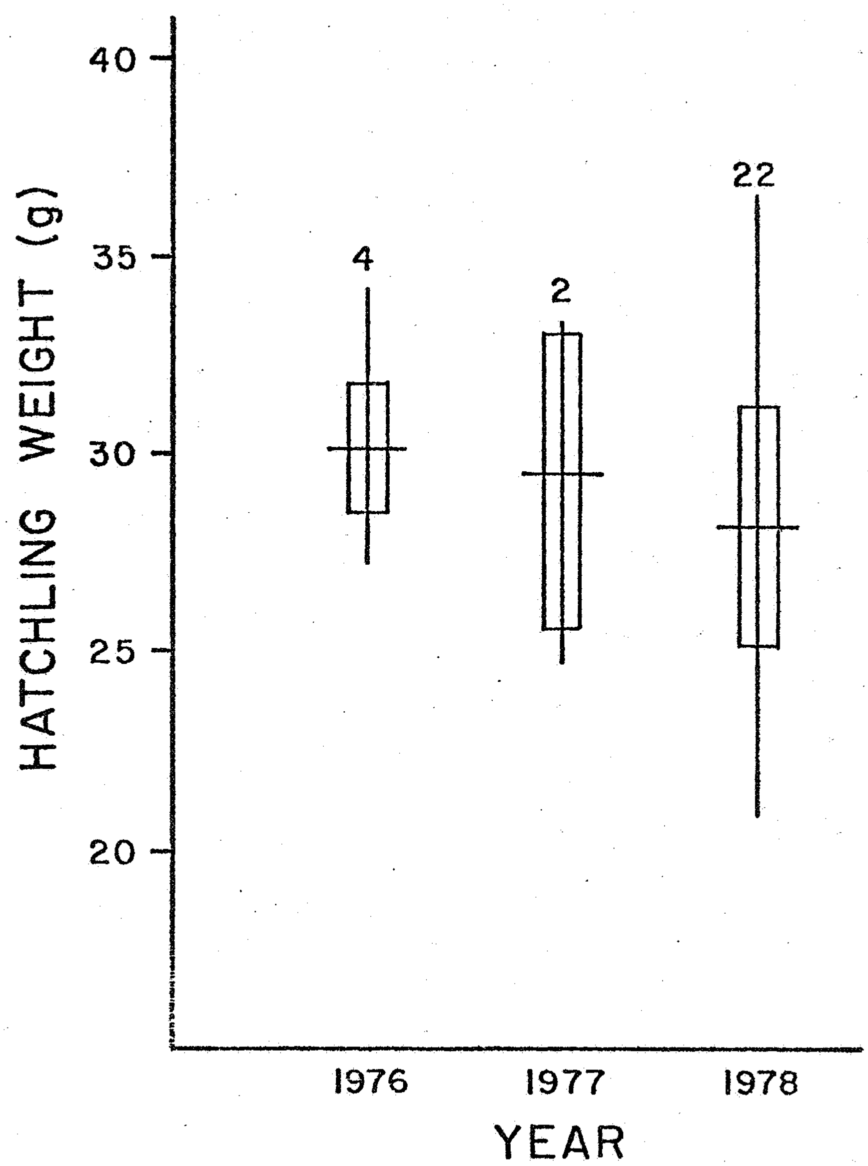


Figure 29. Summary of green turtle hatchling weights, 1976-1978.

hatchlings appear to be extremely unvariable (Figure 26), an analysis of variance reveals that there are significant differences among the 3 years (Appendix Table 74). Duncan's Multiple Range Test (Appendix Table 75) shows that it is the 1977 mean that differs from the other two. Hatchlings apparently were slightly lighter that year and the large N allowed detection of that difference.

The analyses of the loggerhead hatchling morphometric measurements present a contradictory trend. Carapace width differs significantly in all 3 years (Appendix Tables 76 and 77), and is greatest in 1977. Carapace length, on the other hand, does not differ among the years (Table 78), but the mean is greatest in 1977. Plastron length is, again, seen to be significantly greater in 1977 than in the other 2 years (Appendix Tables 79 and 80). The pattern in body depth runs counter to the trend for largest means in 1977 hatchlings (Appendix Tables 81 and 82). In this character the 1976 mean is significantly greater than the other two.

Marine Turtle Mortality in the KSC Area

Prior to the fall of 1977 the stranding of sea turtle carcasses on the beaches of the KSC area was, to our knowledge, so occasional that it deserved little attention. A large (CLOC 112 cm) adult male was recorded at the easterly tip of Cape Canaveral on June 13, 1975 and another dead male (CLOC 89.7) appeared on Playalinda Beach (KSC) on March 24, 1977. Other than these, the only mortality that we documented was that in the lagoons associated with the extremely cold period of the winter of 1977 (see below).

The situation changed abruptly in November, 1977. The first indication that something unusual was happening came via a phone call from the Florida Marine Patrol on November 10, 1977. They reported that eight dead sea turtles had washed up just south of Cape Canaveral, in the Air Force Eastern Test Range area. We set out at once to investigate and over the next 4 days were able to find two carcasses and further confirm that at least three others had been there. Since no one had acutally seen more than five on the beach at once, we decided to include only that number in the overall total, which by this time was beginning to mount. We again benefited by the excellent cooperation of Captain Henry Morgan and his Florida Marine Patrol staff (especially Lt. J. Rizzo) who provided us, over the next several weeks and up to the time of this writing, with prompt information about beached carcasses. Information was also provided by the Canaveral National Seashore rangers, Pan Am security personnel at CCAFS and others.

The results of our investigations during the fall of 1977 through April, 1979 are compiled in Appendix Tables 83-86. The data indicate that at least 34 dead turtles washed up on Volusia and Brevard County beaches in November and December, 1977. We were aware that the Brevard County Animal Control Department and certain city agencies removed and buried others but the number is unknown. Also, there is no way to estimate how many decay thoroughly at sea and never strand as intact carcasses or how many wash ashore on isolated stretches of beach and go unreported. Thirteen (38 percent) of the 34 were class-1 records; 10 (29 percent) were class-2 records and six (18 percent) were in class-3 records. In other words, 85 percent of the records are reasonably well-documented and credible. Of the 13 that we actually measured and computed weights for, 11 were immature. All were loggerheads (*Caretta caretta*). About half of the records were from Satellite Beach or Patrick AFB, but they extend from New Smyrna Beach to Melbourne Beach, a distance of about 80 km.

Dead sea turtles continued to wash up on Brevard and Volusia County beaches throughout the late winter and spring of 1978, although at a reduced rate. Entries in Appendix Table 84 for that period show that we investigated or documented, to one degree or another, the strandings of 21 loggerhead carcasses and two green turtle carcasses from 1 January to June 30, 1979. This is an average of about one per week.

Two of the loggerhead records in this period were for turtles that were definitely struck by boat propellers in the lagoonal system rather than having died in the ocean. The first case of green turtle mortality in this period was also from the Banana River (lagoon) and the animal had been struck by a boat. It should also be noted that one of the green turtles taken in the 1978 cold spell (see below) was badly damaged by a propeller. Several additional cases of propeller-wounding have come to our attention and it is fair to say that turtles injured or killed in that way are becoming common in the lagoons.

The other green turtle record during that period involved a large adult that washed up near Sebastian Inlet on June 12. It was badly decayed and bloated but there was no question that it was a female, slightly larger than the average green turtle encountered nesting on the beach in previous years. She was probably in the area to begin nesting when she died or was killed.

Strandings continued at a low rate throughout the summer of 1978. Then, in the fall, the phenomenon erupted again into a full-scale disaster. The total of 98 carcasses reported from July 1 to December 31, 1978 indicated a rate far in excess of that observed in 1977. Nearly all of these were from late September and October and all but seven were class-1 records. Again, we know that some strandings go unreported and the actual number may well have been double or triple that actually verified.

Only three of the 98 were from the lagoons inside the coastal strand (Indian River or Mosquito Lagoon). All of these bore evidence of having been struck by boats and were, therefore, not related to the mass mortality on the ocean beaches.

The overall pattern of turtle carcass strandings is graphed in Figure 30. It shows clearly that the records are concentrated in the fall of the year and in the area south of Port Canaveral. What Figure 30 does not show well is that in November and December, 1977, strandings were concentrated at Patrick AFB, the unincorporated area north of PAFB and at Satellite Beach, and in that year the reports did not start to come in until 10 November. In 1978, however, carcasses were concentrated within

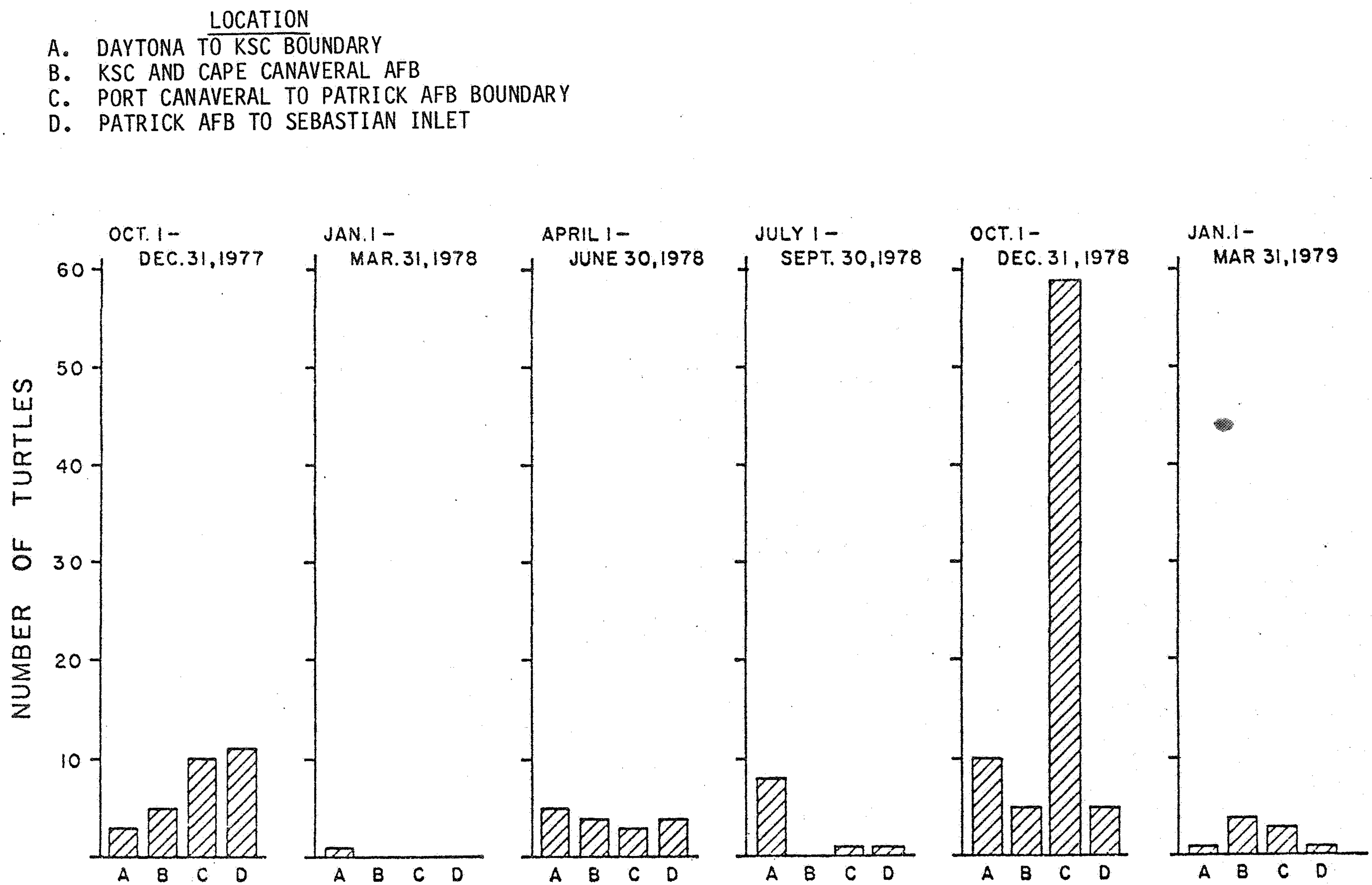


Figure 30. Patterns of marine turtle mortality, Brevard and Volusia Counties, Florida; 1977-1979.

the city limits of Cocoa Beach and Cape Canaveral and the great majority of them appeared in the first week of October.

The great majority of carcasses were badly decayed and few inferences can be made about cause of death. Nevertheless, a few field observations have been made that may be of use in the long-run. Also, a few of the fresher carcasses have been autopsied, providing meager bits of information.

A turtle that washed up at Cocoa Beach in October, 1978 had a black nylon line carefully knotted around the left rear flipper. Another one, at New Smyrna Beach, was reported to be similarly tied, although the rope was unknotted when we arrived to check it. Still another one had been partially butchered by someone using a knife.

Two carcasses autopsied at Sea World, Inc. in October presented contrasting situations. The first one was found dead on the beach at Cocoa Beach. The muscle and viscera seemed normal and healthy upon gross examination and the esophagus was filled with white shrimp. Pathologic examination revealed the presence of ova, probably trematodes, in the lung, liver, spleen, heart, and kidney but the indication was that it had died accidentally while feeding.

The other case involved a loggerhead that was still alive but moribund and found crashing helplessly against the sea wall at Port Canaveral. It was still alive the day before the autopsy. Here the muscle and viscera appeared grossly anemic, there was absolutely no food in the alimentary tract and the indication was that it had died of some chronic wasting disease. Pathologic examination revealed enteritis, granulomatous pneumonia and trematodiases, the former being the probable primary cause of death.

The preliminary indication then, is that the turtles (some of which are diseased) are being handled by men. These mortality records are now numerous enough so that we can begin to make some inferences about population structure. It is clear that the population is composed primarily of immature loggerheads (Figures 31 and 32). About 78 percent of those, for which measurements and computed weights were possible, are markedly smaller than the smallest females that nest on these beaches in the summer. Many of the remaining 22 percent (>80 kg) are doubtlessly immature as well, but they do fall within the lower end of the size range of nesting females. It is more reasonable to assume that virtually none of them are mature because none of them have borne tags. Thousands of nesting females are tagged on the east coast of Florida each summer. If those adult females were components of that population which apparently stays in Florida (Brevard County) waters through the winter, surely some of them would appear in a mass stranding such as occurred at Cocoa Beach in October, 1978. Correspondingly, National Marine Fisheries Service biologists report that the turtles dredged from the naviagation channel at Port Canaveral are mostly sub-adult. The mortality data provides no indication that the structure of this population changes with seasons. Although there are not enough data points for the January 1-March 31 period, an analysis of variance procedure applied to the data for other seasons revealed no significant differences.

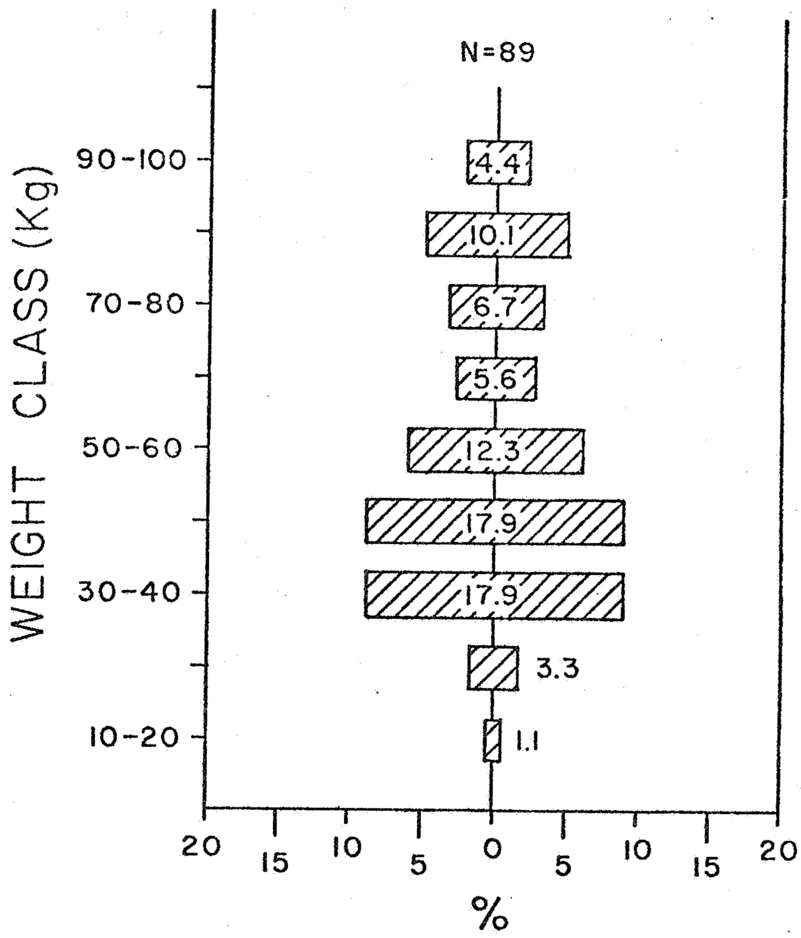


Figure 31. Weight-class distribution of the population of loggerhead turtles found dead on Brevard and Volusia County beaches, October 1, 1977 to March 30, 1979.

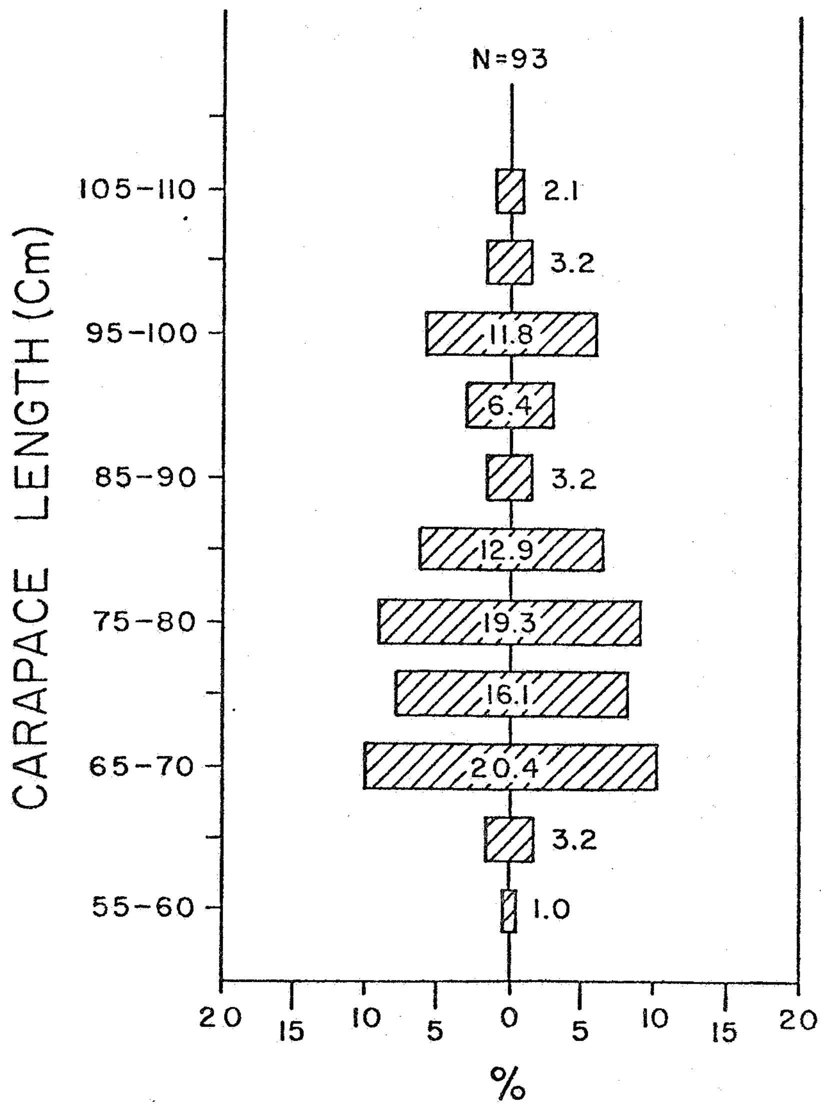


Figure 32. Size-class distribution (carapace length over curvature) of the population of loggerhead turtles found dead on Brevard and Volusia County beaches, October 1, 1977 to March 30, 1979.

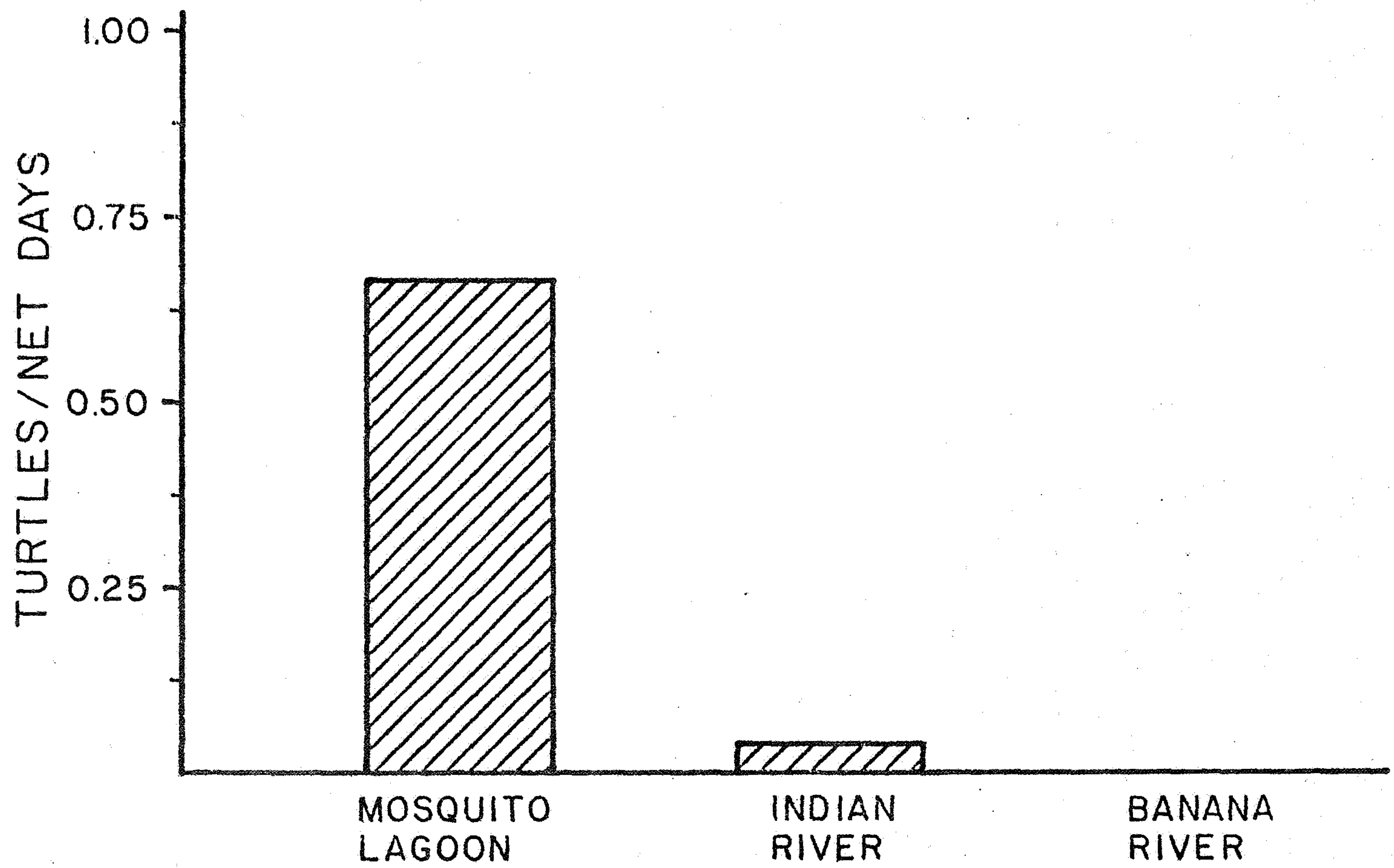


Figure 33. Turtle catch per unit effort by lagoonal system, 1976-1979.

Lagoonal Populations

From July, 1976 through April, 1979, the nets were deployed 112 times for a total of 6,415.25 net hours (267 days). Appendix Tables 87-90 list deployment localities, dates, hours, and captures.

Seventy percent of the total deployment time was allocated to Mosquito Lagoon, 25.5 percent to the Indian River, and 4.5 percent to the Banana River. Figure 33 compares turtles caught per day among the three lagoons. Mosquito Lagoon yielded 119 turtles (0.63 turtle/day). Only 2 loggerheads, one of which was originally caught in the lagoon, were captured in the 1,637 hours of Indian River netting (0.02 turtle/day). No turtles were ever netted in the Banana River. A sustained effort was made to net various areas in both the rivers to try to improve our capture record, however, we were not successful. We believe the disproportionately larger catch from Mosquito Lagoon is, in part, due to the larger areas of both rivers and the entrapment effect of Mosquito Lagoon. However, there does seem to be a concentrated population of sea turtles in the laggon that is not present in either river. Once it became apparent that Mosquito Lagoon was by far our most productive area in terms of catch-per-unit-effort (CPUE), we began an intensive netting of that area.

Many sites were sampled sporadically throughout the lagoon, but six sites received the most intensive netting (See Figure 34). An attempt was made to equalize sampling effort at sites 1, 4, and 6 because they are representative of the northern, central, and southern sections of the lagoon and thus could be used in making comparisons among the three sections. Table 5 summarizes the hours and number of both species of turtles caught per site. Site 1, near Tiger Shoals, in the northern section of the lagoon, was our most productive site yielding 44.8 percent of all turtles captured. The next most productive site was site 6, in the far southern section of the lagoon, which accounted for 15.2 percent of all the turtles captured. To put these figures in terms of CPUE, an index was made using turtles captured per day for each net site (Figure 35). Again, site 1 was the most productive, yielding 1.5 turtles per day of netting effort. However, now the second most productive site is site 3, an area in the eastern central section of the lagoon, which produced 0.583 turtle per day. This is because the site was netted only 13.6 percent of the total net deployment hours, yet yielded 13.3 percent of all turtles captured. In the same manner, site 5 ranked above 6 and site 2 also yielded the same CPUE as 6. The most productive sites were all adjacent to extended shallow water areas and usually placed across deeper water sloughs. Site 4, with no significant adjacent flats and basically always a deep water (circa 2.4 m) netting site, was our least productive area.

Figure 36 shows species caught per day by site. Loggerheads were caught most frequently at sites 1, 3, and 5, again, areas with deep relatively narrow sloughs. Sites 2, 4, and 6 were only half as productive as the previous three. This is puzzling because, except for site 4, the other two sites are also in relatively deep water sloughs (especially site 2). There is obviously some other factor (i.e. food abundance) affecting the netting results besides the topography of the lagoon.

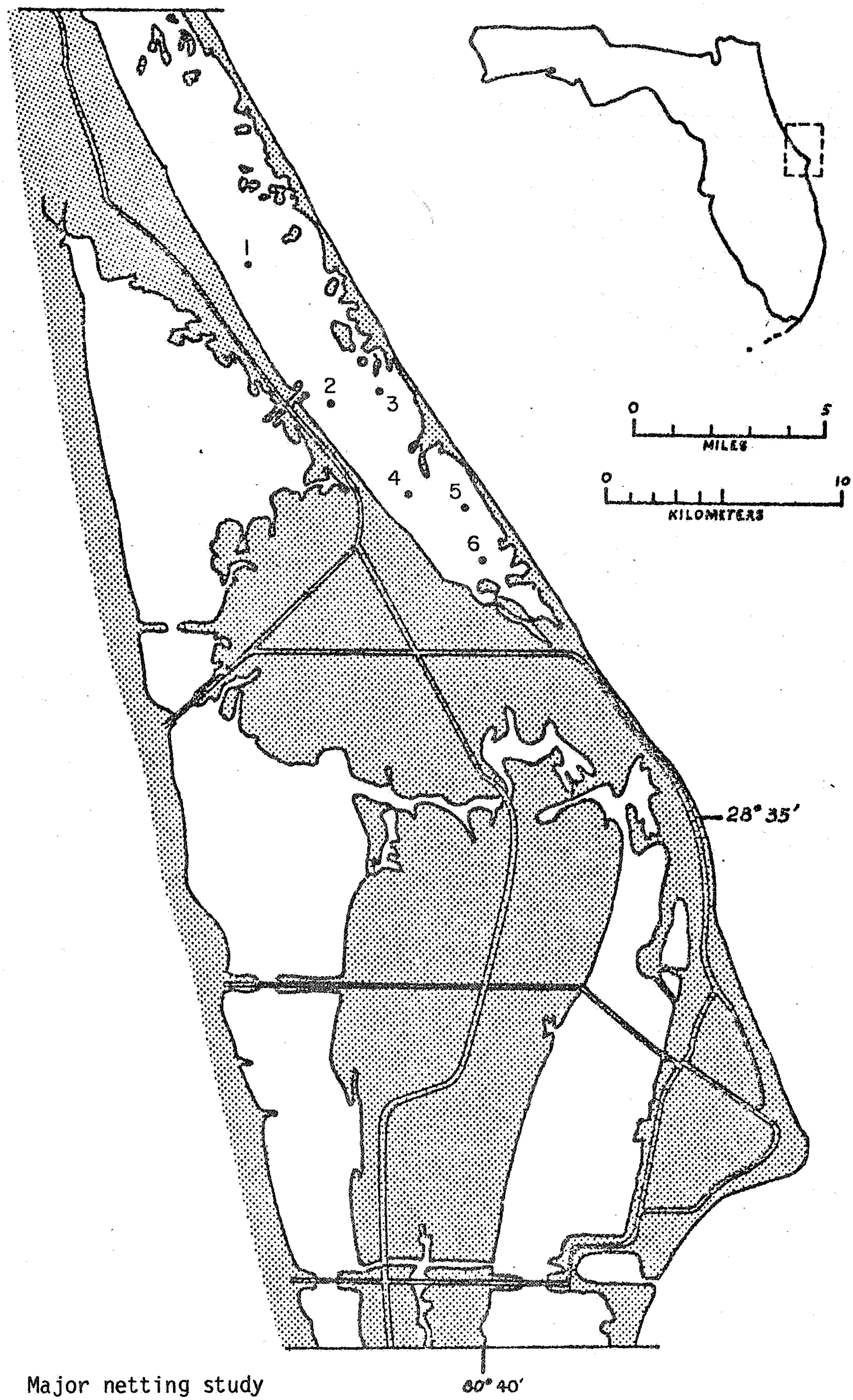


Figure 34. Major netting study sites in Mosquito Lagoon, 1976-1979.

Table 5

Summary of netting effort by site in Mosquito Lagoon, 1976-1979

Site No.	Hours Netted No.	(%)	*Chelonia* Captured No.	(%)	*Caretta* Captured No.	(%)
1	967.95	(22.8)	11	(47.8)	36	(43.9)
2	385.95	(9.1)	3	(13.0)	4	(4.9)
3	576.40	(13.6)	1	(4.3)	13	(15.8)
4	978.60	(23.1)	2	(8.7)	9	(11.0)
5	465.50	(11.0)	1	(4.3)	9	(11.0)
6	864.55	(20.4)	5	(21.7)	11	(13.4)
Total	4,238.95		23		82	

The green turtle capture results seem more clear-cut. The most productive sites, 1, 2, and 6, all were adjacent to extended grass flat areas; sites 3, 4, and 5 were not.

Figure 37 illustrates an index of loggerheads and green turtles caught per netting day by month for the entire study. It is apparent that loggerheads can be successfully netted throughout the year (no netting was done in December), but that the most productive months were from April to October. *Chelonia*, on the other hand, were caught much more frequently in the warmer months, especially August. They were also captured in good numbers in April but no *Chelonia* were captured in May. Since the general pattern of more turtles captured in the warmer months appears reasonable, we believe this lack of green turtles in May is attributable to sampling error rather than a significant change in the pattern.

Population Estimates

Table 6 gives the multiple census population estimates and confidence intervals for both species of turtles. The mean of the three estimates for *Chelonia* was 135 and 253 for *Caretta*. The mean of the three estimates for both species divided by the total sample area gives a density of 2.25 green turtles/km^2 and 4.2 loggerheads/km^2.

Immigration and Emigration

Table 7 summarizes recapture percentages for both species. Overall recapture percentages (total recaptures/total tagged animals x 100) for 1977 and 1978 combined are 18.8 percent and 16.7 percent for *Caretta* and *Chelonia*, respectively. However, different percentages result if only netting captures are used (i.e. total net recaptures/total net-captured turtles x 100). Combining 1977 and 1978 data gives an overall netting recapture rate of 28.8 percent for *Caretta* and 65.4 percent for *Chelonia*.

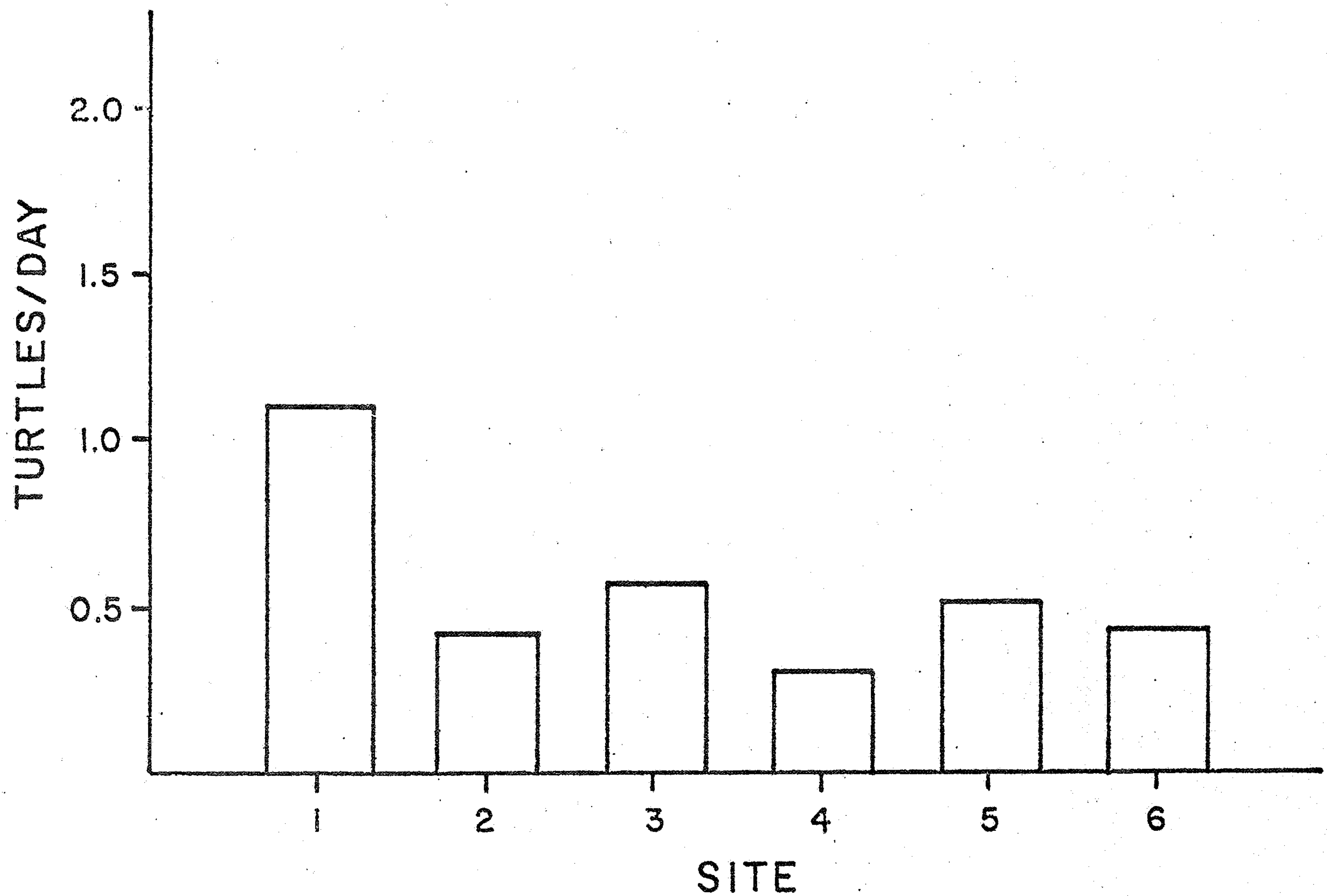


Figure 35. Turtle catch per unit effort by Mosquito Lagoon netting site, 1976-1979.

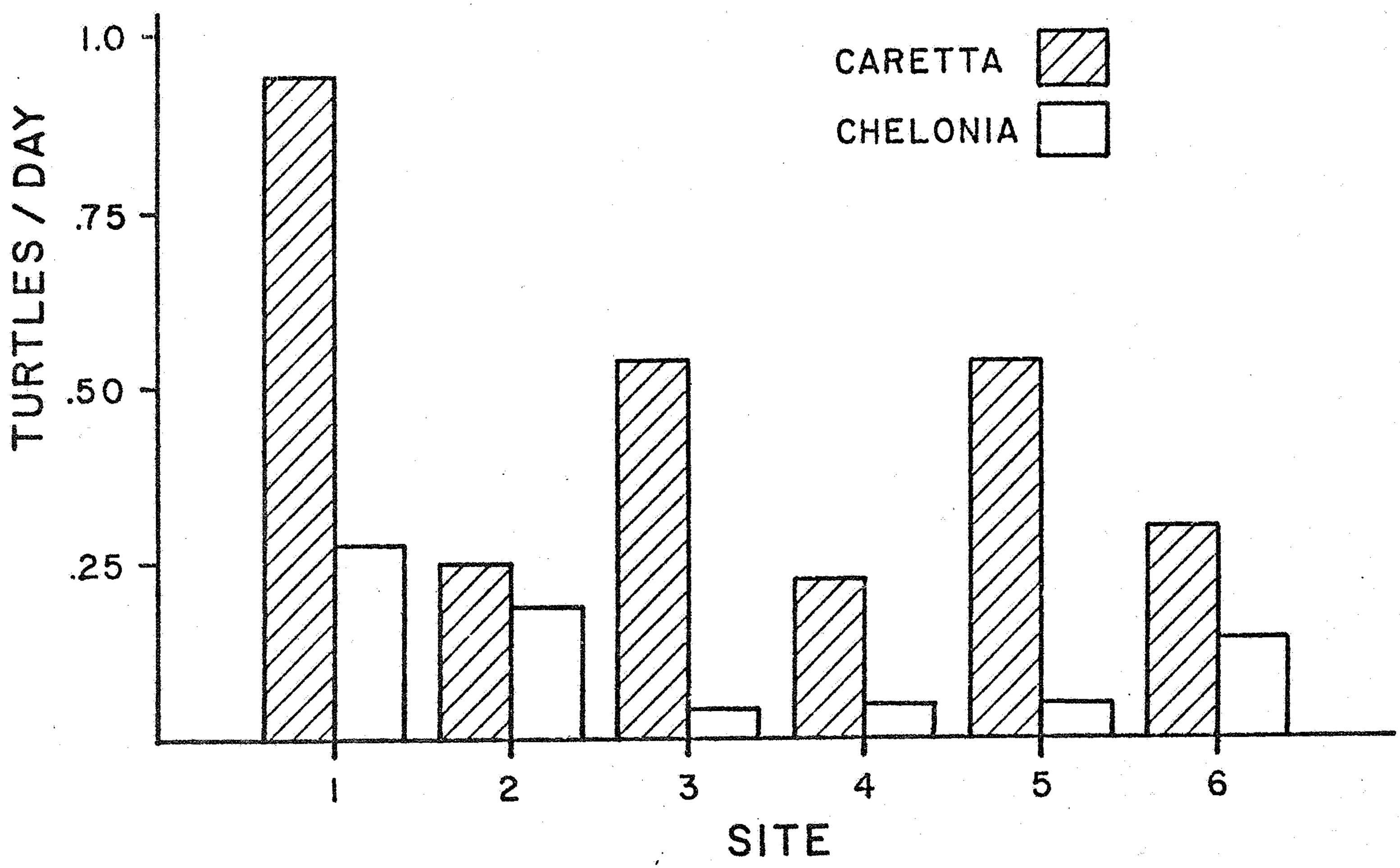


Figure 36. Species catch per unit effort by netting site in Mosquito Lagoon, 1976-1979.

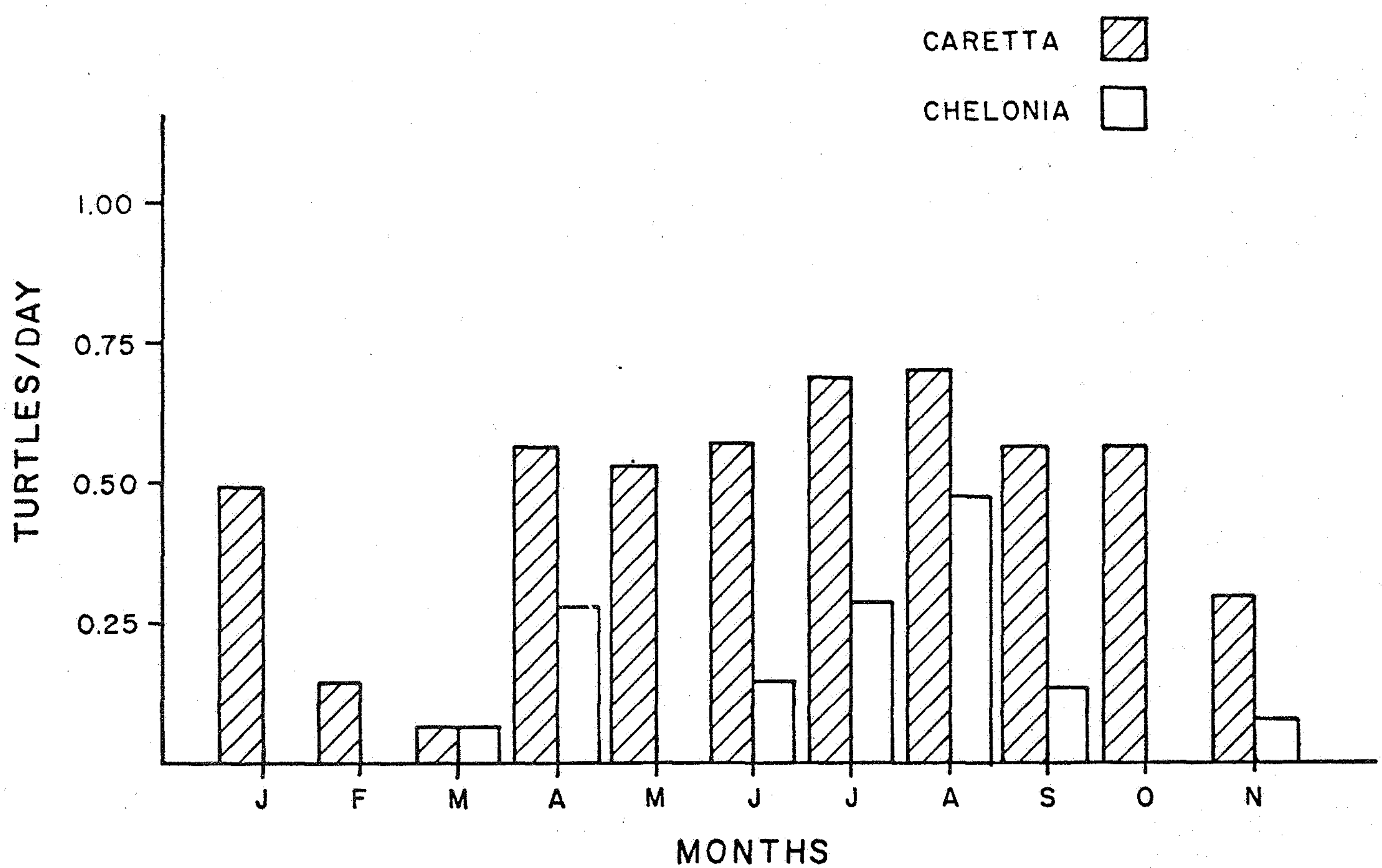


Figure 37. Species catch per unit effort by month in Mosquito Lagoon, 1976-1978.

Table 6

Population size estimates and confidence intervals for _Caretta_ and _Chelonia_ populations in Mosquito Lagoon.

Population Size Estimate Method	*Caretta caretta* Population Size	*Caretta caretta* 95% Confidence Interval	*Chelonia mydas* Population Size	*Chelonia mydas* 95% Confidence Interval
Schumacher	280	179-362	138	19-300
Schnabel	240	223-278	132	120-162
Hayne	239		134	
Mean of three different estimates	253		135	

Table 7

Yearly recapture percentages for lagoonal _Caretta_ and _Chelonia_

	Chelonia		Caretta	
	Netting Recapture %	Overall Recapture %	Netting Recapture %	Overall Recapture %
1977	92.3	12.9	33.3	17.9
1978	38.5	36.8	22.0	20.0
Combined	65.4	16.7	28.8	18.8

The combined recapture rate does not differ greatly from the overall recapture rate (28.8 precent vs. 18.8 percent), nor does the difference in recaptures between years (33.3 percent in 1977 vs. 22.0 percent in 1978).

However, In Chelonia, recapture success between years does appear to differ. The netting recapture percentage does differ substantially from the overall percentage (65.4 percent vs. 16.7 percent). Even more interesting is the inter-year variation in net-captured Chelonia in 1977, when 82 individuals were tagged during the cold-stunning episode, 12 of the 13 turtles (92.3 percent) netted in the subsequent months were tagged. However, in 1978 only 7 out of 19 (36.8 percent) were tagged. Because of the extensive effect of the January cold episode of 1977, we probably captured and tagged almost all the Chelonia present in Mosquito Lagoon. The high 1977 recapture rate gives support to our contention. The following year's substantial decline in recaptures indicates migration into the lagoon. Untagged turtles ranged from 3.9 to 49.2 kgs with no size class predominating. It seems no particular size class is entering the lagoon but that immigration is random.

There are few data on emigration. Only two turtles released in the lagoon have been recovered elsewhere. Both recoveries have been from the Indian River-Banana River lagoonal system which connects to Mosquito Lagoon. One turtle, a loggerhead, was captured in our nets in the Indian River 27 km south of its original release point in the lagoon. The other turtle, a Chelonia, was found dead in the Banana River 42 km from its release point.

Rates of emigration (and immigration) could have been better monitored if we netted at Ponce Inlet, the proposed entry point of lagoonal turtles. However, the necessary time expenditure and logistical difficulties made this prohibitive. Therefore, we can only speculate on how residential Caretta or Chelonia are. However, the maximum time interval between recaptures is 15 and 20 months for Caretta and Chelonia respectively, and indicates some degree of residency.

Population Structure

Hirth (1971) defines juvenile and sub-adult size classes in Chelonia as "juvenile = umbilical scar inconspicuous or absent and carapace length up to 40 cm; sub-adult = carapace length 40 to 80 cm; adult reproductively mature carapace length greater than 80 cm." Hillestad et al. (1977) and Ulrich (1978) agree that loggerheads mature at about 75.0 cm but Ulrich designates those below 75.0 cm as juveniles while Hillestad sub-divides that size range into juveniles (<50 cm) and sub-adults (50-75 cm).

Morphometrics of all lagoonal net captured turtles are given in Appendix Tables 91 and 92. Figures 38 and 39 summarize the distribution of weights and straight line lengths of all lagoonal turtles. Green turtles ranged from 29.5 to 75.4 cm in size (3.0-59.1 kg). Following the criteria outlined above, all green turtles are classified as immature. None showed signs of sexual dimorphism and most were quite small (41 percent were less than 20 kg). Loggerheads ranged from 44.0 to 92.5 cm

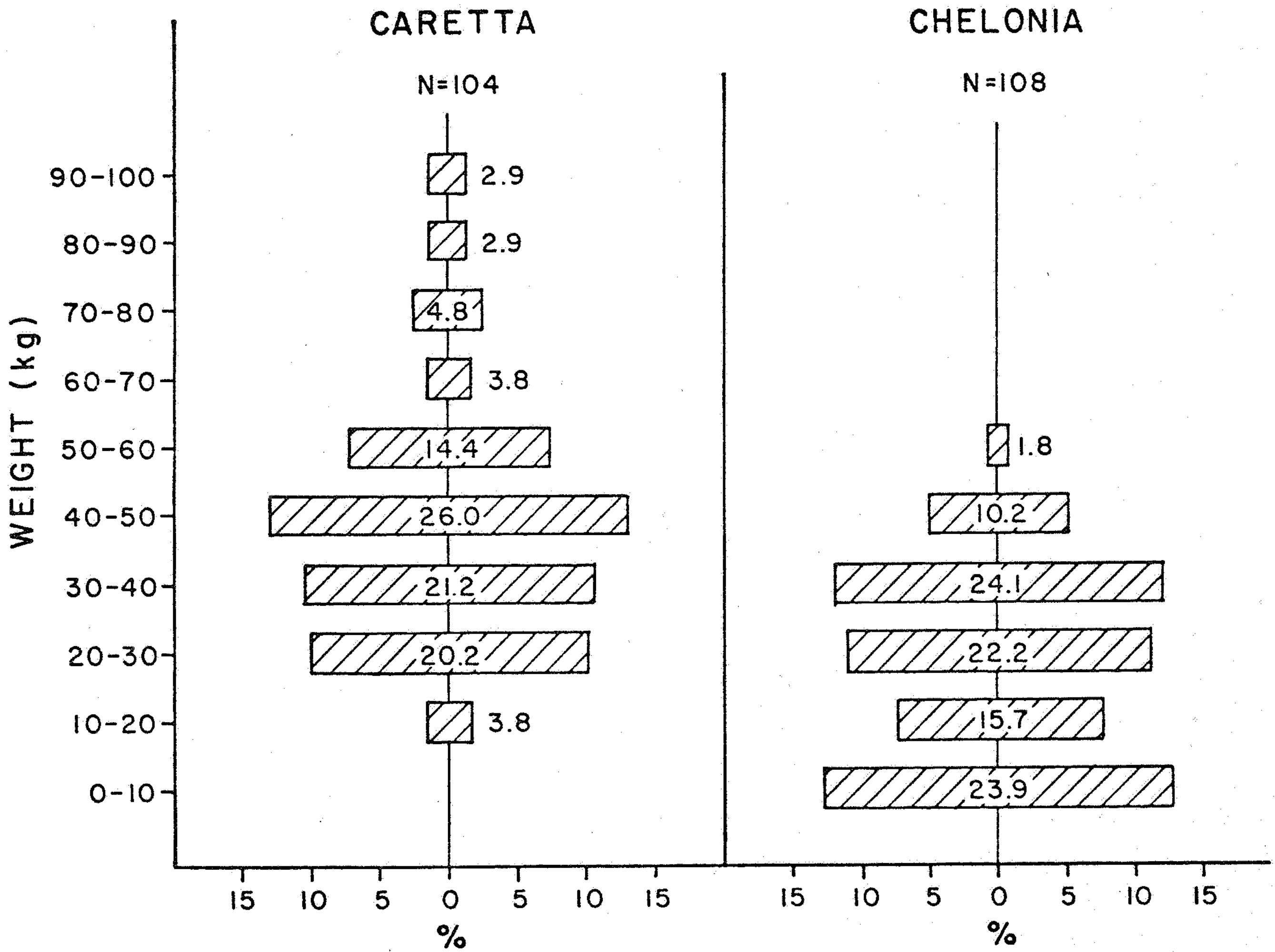


Figure 38. Weight-class distributions of lagoonal populations of loggerhead (_Caretta caretta_) and green (_Chelonia mydas_) turtles, 1976-1978.

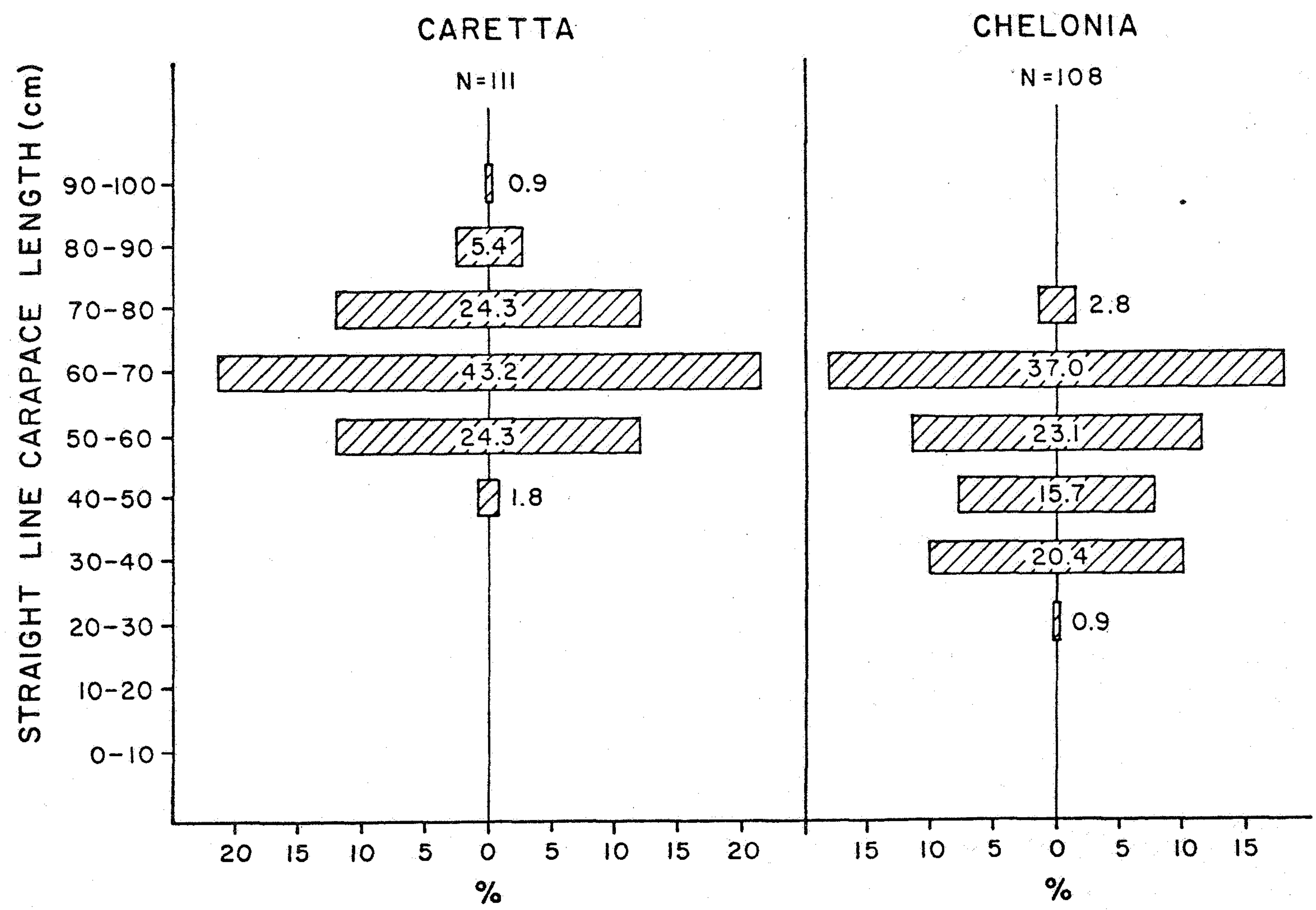


Figure 39. Size-class distributions (straight line carapace length) of lagoonal populations of loggerhead (Caretta caretta) and green (Chelonia mydas) turtles, 1976-1978.

Table 8

Length changes in recaptured lagoonal turtles (*Caretta caretta*).

Tag No.	Recapture Interval (Days)	Length Change (cm) Straight-Line	Length Change (cm) Over-Curve	Projected Length Change (cm/yr) Straight-Line	Projected Length Change (cm/yr) Over-Curve
A3123	442	7.0	6.7	5.78	5.54
A3123	153	4.2	1.8	10.10	4.33
A3123	288	2.8	4.9	3.50	6.20
A3137	341	6.3	5.4	6.76	5.79
A6545	110	1.1	1.8	3.67	5.98
A6547	146	2.8	4.1	6.91	10.12
H1149	270	0.7	0.5	0.95	0.68
A8208	383	8.8	6.8	8.38	6.48
A8217	110	1.6	2.7	6.35	9.00
A6524	161	4.0	1.7	9.09	5.00
			N	10	10
			$\bar{X}$	6.15	5.91
			S.D.	2.55	2.55

Table 9

Length changes in recaptured lagoonal green turtles (*Chelonia mydas*).

Tag No.	Recapture Interval (Days)	Length Change (cm) Straight-Line	Length Change (cm) Over-Curve		Projected Length Change (cm/yr) Straight-Line	Projected Length Change (cm/yr) Over-Curve
A6497	152	2.7	1.2		6.43	2.86
A6508	140	0.5	0.7		1.30	1.84
A6521	99	1.2	1.4		4.40	5.18
A6523	373	6.0	6.7		5.88	6.57
A6541	599	3.8	5.4		2.32	3.33
A6541	358	3.2	4.0		3.26	4.10
A6541	240	0.6	1.4		0.91	2.12
A6595	111	2.3	2.6		7.67	8.67
A8210	184	1.5	1.8		3.00	3.60
A6518	614	6.6	7.3		3.93	4.34
A6585	98	0.5	0.8		1.85	2.96
A3122	171	0.7	2.7		1.49	5.74
				N	12	12
				$\bar{X}$	3.54	4.28
				S.D.	2.19	1.98

(12.8 to 97.7 kg). The smallest nesting loggerhead on KSC weighed 77.1 kg with a straight-line carapace length of 70.5 cm. Six individuals were above 80 kg in weight. Therefore, it is likely that these animals can be considered mature. Two of the six turtles were sexed as males.

Using a X^2 test of independence, the two species straight-line length and weight distributions were found to be significantly different ($X^2 = 63.0$; $p < 0.05$). This is also intuitively obvious when comparing the weight distributions between the species: 87 percent of the Chelonia population is below 40 kg in weight, while only 45 percent of the Caretta fall in this category. Also striking is the lack of loggerheads below 20 kg in weight.

Growth Rate

Tables 8 and 9 summarize growth data for Caretta and Chelonia from Mosquito Lagoon. We have recaptured 20 loggerheads 22 times and 15 green turtles 18 times. Recaptures of less than 3 months have been excluded from our subsequent growth data calculations because not enough growth was apparent in this short time period. Therefore, we have total recapture data, ranging from 5 to 22 months, on 10 loggerheads and 12 green turtles.

The overall mean growth for Chelonia was found to be 3.24 cm/yr. Caretta had an overall mean growth of 6.17 cm/yr, almost twice that of green turtles. Figure 40 graphically illustrates the difference in growth rates between the two species in straight-line carapace lengths. The slope of the line for Caretta is 0.5, approximately double that of Chelonia at 0.26.

Cold Stunning

In mid-January of 1977, one of the most extraordinary events in sea turtle biology occurred in the waters surrounding the KSC. Unusually cold water temperatures that persisted for several days caused 143 sea turtles to float to the surface in a stunned condition. Until this time, the stunning, immobilization, and eventual death of large numbers of sea turtles as the result of exposure to naturally-occurring, extraordinarily low water temperatures had been given only anecdotal treatment in the zoological literature.

Prolonged periods of low air temperatures and high winds lowered the temperature of lagoonal waters to 11.5°C by January 13, 1977. The coldest period of the winter occurred during the week of January 17-23 with water temeperatures falling to 10°C and 7.3°C on January 18 and 19. At that time, small green turtles (Chelonia mydas) and a few small loggerheads (Caretta caretta) began to appear at the surface, stunned and immobile. By 20 January, the water temperature had fallen to 4°C and large numbers of sea turtles were severely affected (Appendix Figure 22). A massive effort, marked by considerable cooperation among the Florida Marine Patrol, the Merritt Island National Wildlife Refuge staff, commercial fishermen, and our own staff resulted, over the next 4 days, in the arrival at our lab of 143 stunned sea turtles. All except nine were from Mosquito Lagoon; six others were from the northern extreme of the Indian River and three were from the Banana River. Surprisingly, 100 (70 percent) were green turtles. Until this time, only two Chelonia had

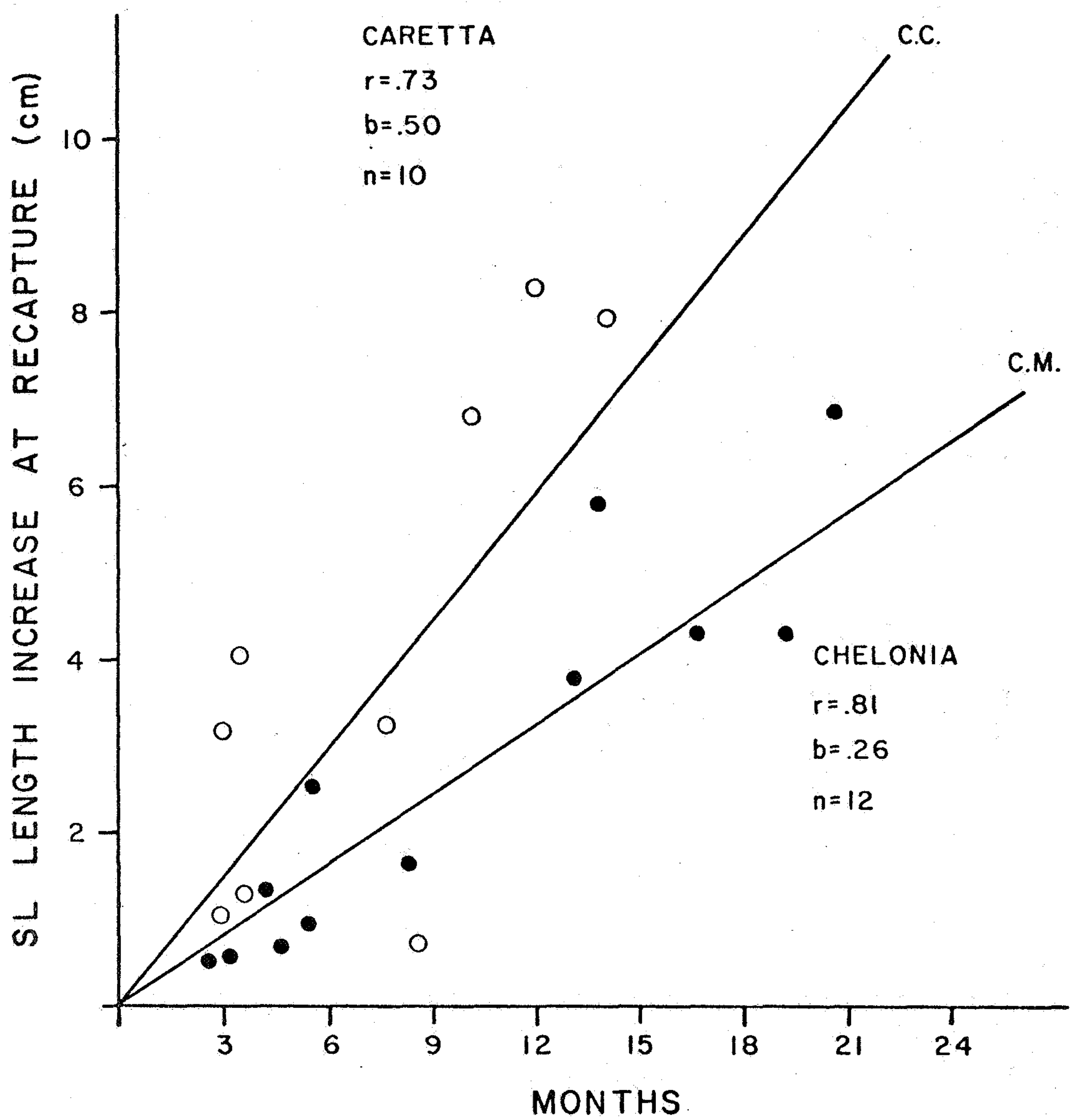


Figure 40. Straight line carapace length increases between captures for lagoonal loggerhead and green turtles.

been captured in our nets. All but one of the others (29.4 percent) were loggerheads. The single additional turtle was an Atlantic ridley (Lepidochelys kempi). This specimen constituted our second record of this highly endangered species in these waters. With the exception of a single adult female loggerhead, all of the turtles were immature. Morphological characteristics of the cold stunned loggerhead, green, and ridley turtles are listed in Appendix Tables 93 and 94.

Ten of the turtles were dead when discovered, nine others died within a few days. By January 23 a consideration of water temperature trends made it clear that the turtles could not be released in the lagoons again for some time. Accordingly, 99 of them (those larger than about 10 kg) were transported to a large swimming pool on the Kennedy Space Center on January 25. The pool is fed by artesian wells that flow at 24°C. Pool temperatures varied from 12.5 to 21.7°C during the two week period in which the turtles were kept there. During that time one additional turtle died, bringing the total to 20.

On February 8, the larger turtles were recaptured and returned to their native waters. Water temperature at the time of the release was 13.3°C. On February 13, the temperature of shallow, near-shore water was 15°C and the smaller green turtles remaining at our lab were released. Every turtle was weighed, measured, photographed, and tagged before release.

By mid-March we were aware of five sea turtle carcasses that had undoubtedly been killed during the cold water episode. None of them were tagged. The total known mortality, therefore, was 25 (19 green turtles, 6 loggerheads).

At least 43 percent of the green turtles had some lagoon bottom mud on the carapace. Many had a distinct, uniform layer of mud over the entire upper shell. This may be viewed as circumstantial support for the theory that some green turtles overwinter on the bottom in a state of dormancy.

There was an element of risk involved in moving the turtles to a fresh water environment and in keeping a large number of them in a relatively small enclosure. Anytime marine animals are crowded together abnormally the threat of fungal and other infections is high. Many marine organisms are not able to tolerate fresh water very long and these turtles came from lagoons where the salinity approaches or exceeds that of sea water. Furthermore, the behavioral effects of this confinement were hard to predict. Loggerheads are known to be more aggressive than greens and may not have tolerated this sort of density without considerable, harmful agonistic behavior.

However, due to our inability to release the turtles back in lagoonal waters because of continuing low temperatures or to keep them in our lab, we decided that moving them to the KARS artesian pool to be the only avenue open to us.

In order to get some idea of the effects of the turtles' confinement in our lab and in the pool we weighed them just before release (they had also been weighed earlier, upon arrival). As the information in Appendix Table 95 indicates, 24 of 27 loggerheads lost weight. It is difficult to weigh a vigorous, flapping turtle precisely and our measurements can only be considered accurate to $\pm$ 1 kg. Nevertheless, the trend is clear; the loggerheads lost as much as 10 percent (more in one questionable case) of their body weight during the captive period. Green turtles, on the other hand, fared much better (Appendix Table 96). Less than half (34 of 78 that were weighed) lost any weight at all and in most cases the observed loss was less than our error of measurement. Quite clearly, the green turtles were not nearly so subject to weight loss as the loggerheads were. We believe that this difference is largely a result of marked behavioral and physiological differences between Caretta and Chelonia. Loggerheads are known to be more tolerant of low temperatures than green turtles (Schwartz, 1978) and observations at the swimming pool indicate that the loggerheads were much more active than green turtles.

When water temperatures rose to an acceptable minimum (circa 15.0°C), we released the turtles near their points of capture. Our concern at that point, of course, centered around the possibility of harmful effects of returning the animals to salt water, and we began immediately to look for evidence of the ultimate success or failure of the entire rescue operation. In the succeeding months no carcasses of tagged turtles were ever reported, and, over the years, we have recaptured a number of turtles that were held in fresh water and all had gained weight and appeared in good health.

In January of 1978, unusually cold weather once again resulted in brief periods of extremely low water temperatures. The experience of the previous winter allowed us to predict possible immobilizing effects of the harsh conditions again this year. Accordingly, we began to patrol Mosquito Lagoon and the Indian River by boat on the coldest winter mornings, searching for stunned turtles. On January 15, 1978, when water temperatures dropped to 10.0°C, the first stunned turtle, a green turtle, was found. This turtle had been tagged during the 1977 episode but had not been seen since its release in February of that year. Reconnaissance of the lagoon continued and the next day, January 16, water temperatures dropped even further, to 8.0°C and two more green turtles were found stunned. Both were untagged. One weighed 3.9 kg., one of the smallest sea turtles ever found in the lagoon.

Open water patrols continued for another day but water temperatures rose above 11.0°C and no other turtles were seen. During the next week water temperatures rose to 20°C.

At the end of January a few more days of very cold weather occurred. Again, on January 30, open water patrols produced a stunned green turtle, when the water temperature was 8°C. That turtle had also been rescued and tagged during the previous winter's cold spell but was not seen in the interim. The following day, with water temperatures still at 8°C, another untagged green turtle and a loggerhead, the only one of that species found stunned in 1978, were brought in.

The turtles were kept at the laboratory until water temperatures rose to an acceptable level. The Florida Marine Patrol and local fishermen were both made aware of the possibility of stunned turtles but no animals other than the five we encountered were reported.

Appendix Table 97 displays the morphometric data gathered from the turtles stunned in 1978. It is noteworthy that three of the five green turtles captured in the 1978 episode were not tagged. Ten of the 11 green turtles captured in netting operations in 1977 were, contrastedly, tagged individuals first encountered during the 1977 cold spell.

It is clear that the 1978 cold-stunning episode was much less extensive than that of 1977. This was undoubtedly due, in part, to the fact that water temperature was not as low (8.0°C vs. 4.0°C) and, perhaps more importantly, that very cold conditions did not occur over an extended period of time (2-3 days vs. 6 days).

In January and early February of 1979, water temperatures dropped to 10.0°C several times but remained at this temperature only for short periods of time (i.e. overnight and early morning hours). The lagoon was again patrolled extensively several times in the early morning but no stunned turtles were encountered.

Discussion

Nesting Adults

Composition, Numbers, and Estimates

The results of this study, taken together with those of Carr and Carr (in press) establish the beaches of the Kennedy Space Center and the Cape Canaveral Air Force Station as a primary rookery in what is apparently the most important remaining reservoir for the loggerhead turtle, *Caretta caretta*, in the world. That reservoir consists of the nesting beaches of the southeastern U. S., especially Florida. Even in Florida, however, nesting does not occur on all Atlantic or Gulf beaches and relatively concentrated loggerhead nesting is restricted to parts of only seven counties: Brevard, Indian River, St. Lucie, Martin, Palm Beach, Monroe, and Volusia. Although the overall density of nesting may be slightly higher on shorter stretches of beach on Hutchinson Island (Worth and Smith, 1976), Jupiter Island (F. Lund, pers. comm.) and in south Brevard County (Turner, pers. comm.) no other nesting beach in Florida is so extensive and, at once, so well protected by governmental ownership. The 58 km stretch from the northern boundary of the space center to Port Canaveral includes the section of beach (Complex 37 to Port Canaveral) in which Carr and Carr (in press) observed the highest density of turtle nests per mile (as they expressed it) of any in the state. That section and two others at KSC-CCAFS were among the top 10 nesting beaches in Florida. The density of nesting at CCAFS is interesting in that the section includes the beach southwest of Cape Canaveral along the Canaveral Bight, where, according to some cursory aerial reconnaisance of ours, there is little nesting. This means that the density north of the Cape is even greater than reported. One possible explanation for this involves the Cape itself. Like all capes on the Atlantic coast, it has extensive shallow shoals extending southeasterly from its tip. These shoals may serve as a functional drift fence, shunting turtles to the beach just north of the Cape. Turtle nesting shows some concentration at several capes in the southeastern U. S., especially Cape Romain, S. C. (Caldwell, 1959). Nesting density just north of Cape Canaveral may also be augmented as turtles that might otherwise nest in the Cocoa Beach area, shy away from that heavily developed, brightly lighted section.

There may be other reasons why nesting seems concentrated north of the Cape but the important point is that turtles nest in reasonably large numbers in every km of KSC beach. No section seems to be lacking in habitat quality. At least in some years loggerheads nest at KSC at the rate of 34 to 78 per km and deposit 220,000 to 510,000 eggs. It can be argued, therefore, that from the point of view of nesting density, extent of nesting habitat, and potential for long-term conservation and management, no section of beach more important to the survival of western Atlantic loggerheads exists anywhere.

On July 26, 1978, loggerhead turtles and the Florida population of green turtles, Chelonia mydas, were declared threatened and endangered, respectively, by the federal government. The fact that the latter species is now known to nest in some numbers at KSC-CCAFS adds much more to the significance of the protected beaches here. It is true that our records of green turtles nesting are the northernmost in the western hemisphere and that the green turtles nesting at KSC are at the periphery of the nesting range, but it is also true that the 14 seen here in 1978 represent 8 to 15 percent of the estimated 200-300 adult females that remain. Only two years ago it was believed that no more than 50 adult females remained in the Florida population (Witham, pers. comm.). The good nesting season of 1978, partially documented by our results at KSC, caused the increase in the estimate and raised hopes that green turtle stocks are increasing, perhaps as the result of programs of Florida DNR and others. Only more time will tell if the trend is real. If the population is saved from extirpation, the beaches of KSC-CCAFS will play an important role in that salvation. The U. S. Dept. of the Interior is currently considering a proposal to designate certain Florida beaches, including those at KSC-CCAFS, as Critical Habitat for Chelonia mydas.

Further south in Florida there are stretches of beach where little or no nesting occurs adjacent to stretches of relatively high nesting density. That this does not seem to be the case at KSC can be a useful datum later, when possible affects of STS and other center programs are assessed. Although the writer is not familiar with the levels of illumination that may accompany shuttle launch preparations and the actual launches, we did have the experience of observing both loggerheads and green turtles nesting in the vicinity of LC 39 on nights just prior to some of the later Apollo program launches. Unless our understanding of the increased illumination for STS is grossly in error, we believe it is doubtful that there will be any effect on sea turtle nesting. Nevertheless, should the nesting density on one or more kilometers of beach adjacent to LC 39 fall off markedly during the period of STS launch activity, it should be regarded as a deviation from normal and solutions should be looked for. We are of the opinion that the complex is too far removed from the beach, the dunes too high, and the illumination too low to affect nesting adults. McFarlane (1963) and others have reported the disorientation of hatchlings by seaward-facing lights in south Florida. Virtually all loggerhead nests, however, are located at the base of the dune and, as noted above, the dunes are relatively high in this area. Also, the launch complex is set back from the beach considerably farther than are beach-front hotels and condominiums. These factors make it doubtful that hatchling disorientation will occur at KSC, but it is a potential problem that should not be ignored. Instructive information regarding this potential problem could be gathered by releasing and observing the behavior of hatchery-incubated young turtles on the beach under conditions of illumination that will prevail when the STS is operational.

Morphological Characteristics of the Nesting Population

Ehrhart (1976) reported extreme uniformity in weights and measurements of loggerheads at KSC in 1973, 1974, and 1975. He also reported a range of 81-110 cm CLSL for the 3-year period. The lower extreme of that range was extended in all 3 years of the present study but the upper extreme (110 cm) remains as the maximum. The overall range for the 1976-1978 period for CLSL was 74.0-107.5 cm. The 74.0 cm individual was smaller by 3.5 cm than any reported by Caldwell (1959) in South Carolina; Caldwell, Carr, and Ogren (1957) in Georgia; or Gallagher et al. (1972) in Florida. It weighed only 70.2 kg. No extensions of the range in CLOC (83-124 cm) above or below those observed by Ehrhart (1976) were made during 1976-1978.

The heaviest loggerhead yet encountered at KSC weighed 186.8 kg. Since no other sea turtle research groups routinely weigh turtles and only about four adult weights are reported in the literature (Caldwell, 1959) the range observed here (70.2 - 187.8 kg) can be regarded as the definitive weight range of adult females.

There are also virtually no reports of loggerhead plastron lengths in the literature other than those given in Ehrhart (1976). The range reported there (61.0 - 84.9 cm) was expanded somewhat during the present study to 59.5 - 90.0 cm. This, too can be regarded as the definitive range for adult female loggerheads.

Other morphometric characters closely approximate those reported earlier (ibid), but tend to average significantly smaller in 1978. The tendency for mean weights and carapace lengths to remain unchanged prevailed from 1973 to 1977. The small but significant decrease in these measurements and the shift in their overall distribution was an unexpected result. Although there is disagreement as to whether sea turtles continue to grow after maturing (Carr and Goodman, 1970), it seems likely that a 75 kg animal is younger than one weighing 175 kg. The relationship between age and weight is probably not linear but it is doubtful that none exists. Our own results (Appendix Table 24) point to an extremely slow increase in length among multi-annual recoveries. It can be argued, therefore, that the downward shift in the means and the overall distributions of weights and morphometric characters is a reflection of a younger population; a population into which there has been more recruitment of newly matured individuals in 1978. If it continues, that trend implies an improvement in the reproductive potential of the population, as the proportion of young adults increases. It may reflect the success of sea turtle conservation programs, including law enforcement. This shift in weights and lengths, however, means that these morphological characters must be dealt with more carefully as base-line data. No longer can one glibly say that loggerhead morphometrics are virtually unvarying from year-to-year and, therefore, form a static base- line. Those who would use these data for comparisons later will have to look for significant shifts in the distributions toward larger and heavier (older) animals. It is not the sort of thing that can be done quickly, or in the short-term.

The regression analyses of the length-width and length-weight relationships presented here for loggerheads are of greater use than those given by Ehrhart and Yoder (1978) because they are in simpler form and are based on many more data points. Most other investigators lack the means to weigh turtles and it is likely that this condition will persist, even at KSC. The linear measurements are easily taken with simple devices, however, and when used in the equations given in Appendix Figures 3, 4, 5, 6, and 7 can provide a good approximation to the weight structure of the population. These equations are also useful in the characterization of populations of dead turtles, such as those that periodcally appear on Brevard and Volusia County beaches. Most carcasses are so badly decayed that actual weights would be meaningless, but shell dimensions remain intact and can provide the means to reasonably accurate computation of weights.

Ehrhart (1976) reported the following ranges for green turtle morphometrics: Weight - 108 to 138 kg; CLSL - 94 to 99 cm; CWSL - 70 to 78 cm; CLOC - 98 to 111 cm; CWOC - 89 to 101 cm; PL - 79 to 85 cm; HW - 12.6 to 14.2 cm. Those data were taken from just five animals and constituted only the start of our understanding of Chelonia size and weight at KSC.

Two of the 1977 green turtles provided new size and weight records for the species at KSC. The 27 June specimen weighed 147.4 kg; 9.5 kg heavier than any previous KSC green turtle. The same animal also exceeded our previous maximum straight-line carapace length record by slightly more than one centimeter. It did not exceed previous maxima for other morphometrics, however, showing that there is not always correspondence among the various measurements. This fact is interesting too, in the case of the 18 August specimen, which measured 116 cm over the curve of the carapace. This exceeded, by 5 cm, the previously recorded maximum for this datum at KSC. The same turtle, however, exhibited a straight-line length of 97.5 cm, which is approximately in the middle of the range for that measurement. Unfortunately, we were not able to weigh the turtle. Notes indicate, however, that it was a particularly deep-bodied green turtle with a shell vaulted like that of a loggerhead (in the darkness, it was mistakenly identified as a loggerhead for some time). Using a regression equation developed from the length- weight relationships of other green turtles, we computed the weight of this turtle to be 166.5 kg, making it the heaviest Chelonia yet seen at KSC.

The 1978 data also provided size and weight range expansions for green turtles at KSC. Some confirmation of the computed weight of the large 1977 green turtle came from one encountered on 23 June 1978 which weighed 164.1 kg. Then on July 21, of that year the largest green turtle yet seen at KSC emerged to nest. She weighed 176.8 kg and exhibited the following morphometrics: CLSL - 109.1 cm; CWSL - 84.3 cm; CLOC - 116.1 cm; CWOC - 107.2 cm; PL - 90.0 cm; HW - 15.0 cm. At the other end of the scale, a green turtle encountered on July 15, 1978 had the smallest CLSL (88.0 cm) yet seen at KSC. Although no equiment for weighing was available, its computed weight (99.6 kg) is also the smallest record that we have for that datum.

Comparisons of these data for KSC green turtles with others in the literature reveal that, not suprisingly, they are very similar to those measured by Gallagher et al. (1972) on Hutchinson Island, Florida. They are also about the same as those nesting at Tortuguero, Costa Rica (Carr and Ogren, 1960) but definitely smaller than those of the Surinam (Pritchard, 1969) and Ascension Island populations (Carr and Hirth, 1962).

The usefulness of these morphometric data as a base-line for future comparison is subject to the same problems as in loggerheads. Although limitations of the data preclude any assessment of changes in the morphological structure of the population at this time, it may be that the Florida population is beginning to respond to convervation and management programs. If so, a downward shift in the distributions of size and weight is to be expected.

The regression analyses of length and width and of length and weight are the first such analyses to be performed on Florida green turtle data. The results provide the same benefits for green turtle researchers as those mentioned for loggerheads, above.

Long-Distance Recoveries

Long-distance recoveries of turtles tagged elsewhere in Florida by other investigators have generally not been compiled and published. F. Lund, who has been tagging turtles near Jupiter, Florida for over 12 years reports (pers. comm.) that the majority of his recoveries are from the Bahamas and another significant proportion are from Cuba. Our meager results do, however, support the hypothesis that many adult loggerheads that nest on Florida beaches spend some of the time between multi-annual returns among the Bahama Islands.

LeBuff (1974) reported a loggerhead that was tagged on Sanibel Island in 1968 being observed nesting in Brevard County, on the Atlantic coast, 4 years later. No published records of turtles that have nested first on the Atlantic coast and then on the Gulf exist, but Lund has had recoveries from shrimp trawlers off Mississippi. Although our no. H2125 moved east to west, it is not likely that she would have nested in the Sanibel area 1 year after nesting at KSC. The turtle was dead when found.

Summary and Conclusion

1. In the years from 1976 to 1978, Atlantic loggerhead turtles, *Caretta caretta*, made up 97.9 percent to 99.1 percent of the assemblage of sea

turtles nesting at KSC. Atlantic green turtles, Chelonia mydas, made up the remaining 0.9 percent to 2.1 percent. By themselves, these percentages are useful only qualitatively as monitoring devices.

2. Estimates of the number of loggerheads nesting in a 34 km stretch of beach at KSC range from 36 to 78 per km/year and no section is significantly lacking in nesting density. Monitoring the 10 km stretch of beach from the north security barricade to the KSC-CCAFS boundary would suffice in determining nesting density of loggerheads, both logistically and biologically. A better monitoring model would compare nesting density in this 10 km section of beach with that occurring on a relatively undisturbed 10 km of beach somewhat remote from LC 39, serving as a control. Four nights of data gathering per week should be planned.

3. The same two 10 km stretches of beach could be used to monitor the effects of illumination at LC 39 on hatchling orientation by the simultaneous release and systematic observation of the behavior of young turtles in the experimental and control beach areas.

4. The overall distributions of weight and size of adult loggerheads in 1978 shifted downward. If this trend continues, it will imply an improvement in the reproductive potential of the population, as the proportion of young adults increases. This shift in weights and lengths means that these characters must be dealt with more carefully as baseline data. These characteristics are useful for purposes of long-term monitoring, and any significant shifts toward larger and heavier (older) animals should be viewed as leading eventually to extirpation.

5. The small number of long-distance recoveries supports the hypothesis that adult loggerheads that nest on Florida beaches spend some of the time between multi-annual returns among the Bahama Islands.

Reproductive Characteristics of Caretta and Chelonia at KSC

Multi-annual Periodicity and Site Fixity

Carr and Carr (1970) have shown that individual green turtles, Chelonia mydas, tend to maintain a constant multi-annual cycle. Others have noted that green turtles return to nest 2 or 3 years after having laid one or more times in a given year (Hendrickson, 1958; Carr and Ogren, 1960). Caldwell (1962) and others have reported 2 and 3 year re-emergences in loggerheads and the concept of regular, cyclic behavior of adult females has been extended to include that species. Hughes (1976), however, has recently reported the results of 12 years of research on Tongaland loggerheads and concluded that there is no regular reproductive cycle. He noted that the most commonly seen interval was 2 years but that few turtles continued to exhibit that interval cyclically. Our work at KSC has not endured as long as Hughes' in southeast Africa, but the thorough mixture of year-class proportions, especially among the multi-annual recaptures of 1978 (Appendix Table 28), suggests that Florida loggerheads are similar. Hughes (1976) pointed out that a loggerhead can nest in as many as four seasons out of nine but that the interesting interval can change from 2 to 3 years at any time. We now have records of turtles at KSC that have returned at 2 years and then again after 3 years. At least one returned after 4 years (it may have been missed in the interim) and then after 1 year (although that is very unusual). It is difficult to be sure that a turtle encountered 4 or even 5 years subsequent to tagging was not missed in the interim. The small percentages of tag returns from recent year classes suggests, however, that some turtles may wait 4 or even 5 years to return.

This considerable irregularity in multi-annual return intervals has consequences for the use of this factor as part of a baseline. The future researcher cannot glibly assume that some specific proportion of marked animals will return at 2- or 3-year intervals or something is wrong. Environmental conditions far from the KSC nesting grounds may produce physiological conditions that dictate changes in interval length. The problem of tag loss is a very real one in the marine environment. Hopefully the introduction of tags composed of inconel or some other alloy of high corrosion resistance will solve this problem and, consequently, provide more information relative to multi-annual intervals.

Although other authors (e.g., Worth and Smith, 1976) have examined within-season re-emergence distance intervals, none have apparently addressed the matter of long-term (multi-annual) site-fixity. The remarkable similarity of means between 2-year and 5-year recoveries seen in this study and the close correspondence of 3- and 4-year ones lend considerable credence to the contention stated in Ehrhart (1976) that, like green turtles (Carr and Carr, 1972) loggerheads are remarkably site-tenacious.

The observation of marked site fixity in KSC loggerheads (the overall mean distance between recoveries is only 5.47 km) does not have major consequences for future workers, although it does support the contention, made above, that any significant drop-off in nesting on stretches of beach adjacent to STS operations should be viewed with concern.

Season Length

The loggerhead nesting season at KSC begins about a week later than at the nesting beaches further south. Routa (1967) reported that loggerheads nest in Hutchinson Island from the first week in May to the last week in August. Gallagher et al. (1972) extended the season to 10 September and reported the start of nesting as 7 May. At Cape Sable in south Florida, Davis and Whiting (1977) observed an 89 day season, from 10 May to 7 August.

Ehrhart (1976) had no records of nests or even tracks on the KSC beach in April 1973, 1974, or 1975 and the single tracks reported in late April, 1978 should not be regarded as a typical starting date. Some sporadic nesting often begins during the first week of May but it is not until the second week that substantive nesting occurs. We have never had a record of September nesting at KSC. Records for 28 and 29 August suggest, however, that September emergences may occasionally occur.

The Florida green turtle nesting season is not well defined in the literature. Ehrhart (1976) reported no Chelonia nesting outside of July. Now we know that they nest from at least 23 June to 28 August, a nesting season extension of more than a month. Future sea turtle researchers at KSC will need to plan accordingly.

Re-emergence Intervals

The significant upward shift in the distribution of loggerhead within-season re-emergence intervals was not expected. Caldwell (1962) noted 12 to 15 day intervals in Georgia; Worth and Smith (1976) observed that 65.5 percent returned at 14 ± 3 days; and Davis and Whiting (1977) spoke of a 12 day cycle. Both Hughes (1970) working in Natal, and Kaufmann (1975a) on the coast of Columbia, reported 15 day intervals as the mean. Our results agree with those cited, except in 1976, when there was a significant shift to longer re-emergence intervals (17-18 days). The cause of the shift is obscure, but the fact that it can occur is important. The future worker will need to be aware that there is year-to-year variability in this trait and that the manifestation of it does not necessarily imply that there is something abnormal or unnatural about it.

Clutch Size

Mean clutch size at KSC is very similar to that reported elsewhere in Florida (LeBuff and Beaty, 1971) and in Columbia (Kaufman, 1975a). It is somewhat smaller than the mean of 118 in Natal (Hughes, 1970) and the 126 reported for Georgia by Caldwell (1962).

The uniformity of annual means in clutch size seen in 1976 through 1978 and their similarity to those reported by Ehrhart (1976) for the 3 previous years testify to the usefulness of this parameter as a baseline component. The considerable within-season variation probably has a plethora of biological bases. It can be argued that a monitoring model should employ factors that vary little and others that vary broadly, so long as the long-term (annual) means have been shown to be uniform. The latter type may well be more responsive to environmental perturbations and less rigidly entrained genetically.

Caldwell (1962) concluded, on the basis of limited data, that clutch size decreased as the season progressed. If this were so, the use of this parameter in a monitoring program would require collections or at least counts throughout the length of the season. Ehrhart's (1976) limited data indicated that no such linear relationship between clutch size and point-in-season existed, and the massive data base generated in this study confirms that fact. Loggerhead clutch size does not decrease as the season progresses, at least not at KSC.

The fact that larger females lay larger clutches is a minor complicating factor. Any use of clutch size as a monitoring tool should include a check on the size distribution of adult females from which clutches were taken. It should approximate that observed in this study (see above), and displayed in Figure 12.

Egg Weight and Diameter

Caldwell (1959) reported that loggerhead eggs weigh about 35 g, on the average, at Cape Romain, South Carolina, and that is considerably less than the average observed at KSC. Remarkably few other authors have reported egg weights.

The fact that mean egg weight and egg diameter were significantly smaller in 1977 was unexpected. The means and variances seem very uniform; indeed, they are. The observed statistical significance of the difference should not be given exaggerated importance. It is probably due at least as much to the huge number of data points (4,500) as to any biological factor. The very small variation in these data make egg weight, especially, a useful component of the monitoring model. Because the eggs are not perfectly spherical, the measurement of minimum diameters is subject to error. This diminishes the usefulness of this parameter as a monitoring tool. The fact that egg weight (and size) does not decrease (or increase) as the season progresses, fits well with the similar lack of a trend in clutch size and means that the protocol for a monitoring program would not have to include a specific chronological schedule.

Fertility Rates

Few reports of fertility rates of loggerhead eggs appear in the literature. Hughes, Bass and Mentis (1967) and Hughes and Mentis (1967) reported 88.3 percent and 85.7 percent fertility in 2 successive years. The rates observed here are very comparable.

Fertility rates exhibit considerable within-season variation and no significant annual variability. They are not affected by variation in the size of the female parent, nor by variation in clutch size, egg weight or point-in-season. Accordingly, they can be very useful as components of a monitoring model. Quantifying this parameter involves considerably more manpower because unhatched eggs must be cut open and examined and the resultant hatchlings must be dealt with. Some inaccuracy is introduced by the destruction of infertile eggs by the hatchlings and by the phenomenon of twinning. Nevertheless, fertility rates constitute a reasonably useful component of the baseline. In addition, the hatchlings produced may well be useful as subjects for simple behavioral experiments that are suggested above (see Nesting Adults) as components of the monitoring program.

Hatchling Morphology

Caldwell (1959) reported a mean hatchling weight of 21.2 g which is virtually identical to those at KSC. It is odd that these South Carolina hatchlings could develop from eggs that weighed 15 percent less and still be equal in weight at hatching.

The fact that hatchlings were lighter in weight in 1977 agrees with the fact that eggs were lighter that year as well. The contradictory results of the morphometric analysis (1977 hatchlings are larger in most characters) confuses the issue somewhat. Linear measurements of hatchlings are more subject to error because of variation in the amount of unfolding and drying over time. Weight measurement is less subject to error and much less time-consuming. Accordingly, morphometric measurements are less useful as monitoring parameters.

Summary and Conclusions

1. The thorough mixture of year-class proportions amoung multi-annual recaptures (loggerheads) suggests that there may be no regular reproductive cycle. The monitoring model should not predict any specific proportion of marked turtles to return at 2, 3, or N-year intervals.
2. KSC loggerheads are markedly site-tenacious; the overall mean distance between multi-annual recoveries is only 5.47 km. This fact has only general significance to the monitoring program.
3. The loggerhead nesting season extends from the first week of May to the end of August at KSC. Green turtles nest there from 15 June to 28 August.
4. Re-emergence interval modes vary from year-to-year. The monitoring model should take this fact into account and not consider the expression of this trait as an indication of abnormality.
5. Mean clutch size for loggerheads at KSC is approximately 110 eggs and did not vary significantly from 1976 to 1978. Because of this and the fact that clutch size does not change as the season progresses, it is an excellent monitoring tool. The size distribution of adult females from which clutches for monitoring are taken should approximate that observed here and illustrated in Figure 12.
6. Egg weight and size can vary significantly from year-to-year if huge sample sizes are used. Measurement of egg diameter is subject to error. The range and within-sample variance is very small for both, however, and egg weight, at least, should be useful as a monitor, albeit with recognition of some small inherent variation. That egg weight and clutch size do not change over the course of the season means that the protocol for a monitoring program would not have to include a specific chronological schedule.
7. Fertility rates exhibit considerable within-season variation and no significant annual variation. Because of this and the fact that they are not affected by size of female parent, clutch size, egg weight, or point-in-season, they can be very useful as monitors. Measurement of this parameter is more labor intensive but the hatchlings produced can be used in other parts of the monitoring program.

8. Linear measurements of hatchlings are time-consuming and subject to error. Simple weights are easier to get and more error-free. With the same precautions noted in No. 6 (above) hatchling weight can be useful as a monitor.

Mortality

There is a definite correlation between the incidence of turtle carcass strandings and activity of the shrimp fishing fleet in the area. Ulrich (1978), in South Carolina and Hillestad, Richardson, and Williamson (1977), in Georgia, have shown conclusively that similar mass carcass strandings are due primarily to drownings in shrimp trawls. They had observers on board some of the trawlers. That has not been the case in Florida, as yet, but the implicaton is clear. The only question that remains is whether the turtles are healthy or not, before being captured. Our meager autopsy results indicate that some may indeed be diseased and even moribund when captured but it is doubtful that more than a small proportion are so affected.

The importance of this mortality documentation involves the need to assess sea turtle mortality in the KSC area prior to STS launch operations. The possibility of a first shuttle launch date in November 1979 has been discussed. In 1977, the first of at least 34 loggerhead carcasses stranded on the beach just south of the space center. If the first or subsequent launches should happen to coincide with a mass stranding like that in Cocoa Beach in 1978, having information on the scope, chronology, and cause of such disasters in the past should help to quell unreasonable public assumptions about cause and effect.

National Marine Fisheries Service (NMFS) biologists have recently shown that there is an unusual and extraordinary aggregation of loggerhead turtles in the navigation channel at Port Canaveral. It appears that in cold years they may actually overwinter there in a state of dormancy, stuck head-first in the sediment at the bottom of the channel. The turtles found there are reported to be mostly sub-adults (L. Ogren, pers. comm.). It is clear that the turtles that are dying and stranding north and south of the port are elements of the same population of immature animals. There was actually no direct evidence for that until mid-March 1979, when a dead turtle bearing a NMFS tag washed up on the beach at KSC. It had been tagged by NMFS in the navigation channel in November.

These mortality data taken together with what we now know about lagoonal populations, with the information being developed at Port Canaveral by NMFS, and with adult tag return data, are beginning to shape a new concept of the life history of loggerhead turtles. According to this hypothesis, immature turtles remain throughout the year in coastal and lagoonal waters, many perhaps not moving far from their natal beaches. They are joined there in the summers by adults migrating from the Bahamas, Cuba, and other parts of the Antilles. After the nesting season, most adults return to warmer waters for the winter. The immature animals remain, however, and apparently have the ability to overwinter in a state of dormancy. Some enter the lagoons, actively or passively, through inlets, and spend varying amounts of time there. As they mature and come under the influence of gonadal hormones, spatial activity increases and they eventually move out through a canal or inlet, to join the adult population when it arrives at the beginning of the next nesting season.

This hypothesis is just that, a hypothesis. But it brings together, in a parsimonious manner, information that has been developed by our group and others only within the last few years. It merits further testing and evaluation.

Summary and Conclusions

1. Significant numbers of sea turtle carcass strandings were first documented in the KSC area in November and December 1977. A total of 34 dead turtles was documented.
2. Very few mortality records were observed from January to March, 1978. The rate increased to about one per week in April through September 1978.
3. In early October mass mortality of sea turtles was documented (64 carcasses). The rate fell to about one per week again in January, February and March, 1979.
4. Should the first or subsequent STS launches happen to coincide with a mass stranding like that in Cocoa Beach in 1978, having information on the scope, chronology, and cause of such disasters in the past should help to quell unreasonable public assumptions about cause and effect.
5. Monitoring sea turtle mortality in the KSC area would have to be done through cooperation with the Florida Marine Patrol and local law enforcement agencies and sanitation departments. The cooperation of the latter two types of agencies depends on rapid response of investigators. Thorough documentation requires collection of voucher specimens (skull or other parts) and deposition in a proper museum collection. There is no scientific way to determine the percentage of reported strandings that should be investigated directly, but it seems reasonable that the credibility of all records would be enhanced if there were voucher specimens curated for more than 50 percent of the reports.

Lagoonal Population

Significance of KSC Lagoonal Populations

Very little research has centered on the immature stage of sea turtle life history. This is true despite the fact that an understanding of this stage is essential in understanding the population dynamics of the much better studied adults. Though this fact has long been recognized, only recently have researchers begun concentrated studies on immature turtle populations. There has also recently been strong governmental agency interest in these populations because of their designation as threatened and endangered. Sea turtles, when not on land nesting, are under the jurisdiction of the National Marine Fisheries Service. This agency is currently surveying and assessing the status of concentrated populations of marine turtles in their marine environment and considering critical habitat designation for them.

The lagoonal systems surrounding KSC have come to the attention of NMFS because of historical records indicating the presence of sea turtles there and our own research. Of the three lagoonal systems, Mosquito Lagoon can be considered an important and unique developmental habitat for immature Chelonia and Caretta. It is on the doorstep of KSC: one of our most productive netting sites for the endangered green turtle is located in the southern tip of Mosquito.Lagoon, about 1 km from LC 39.

Our population size estimates indicate a substantial population of sub-adult animals of both species. This result was completely unexpected for Chelonia. Green turtles are basically tropical animals that are seen only occasionally in sub-tropical or temperate waters. The 1977 cold stunning episode and concentrated netting adjacent to grass flats have shown that there is a population of approximately 140 Chelonia that are residential to some degree and there is immigration of these turtles into the lagoon.

The only other comparable population of Chelonia on the continental U.S. coast is the Cedar Key-Crystal River population in west Florida that has not been studied since 1956. There apparently are populations of sub-adult Caretta present in bays and estuaries in several southeastern states but no studies, except those on trawl mortality, are currently in progress.

The lagoon's Chelonia and Caretta populations are morphologically similar to those found on the west coast of Florida and the southeast coast (see below), but they differ because of the lagoon's trap effect. Essentially the lagoon is a baffle trap with only two narrow entrances from adjacent bodies of water. Turtles moving along the east coast of Florida may be drawn in by the strong tidal current present at Ponce de Leon Inlet, the northern access to the lagoon. Several instances of just such behavior have been observed. The northern end of Mosquito Lagoon is highly developed and has been dredged. A turtle, possibly not encountering suitable habitat, is funneled south following the Intercoastal Waterway to an area of less development and more grass flats.

Residency, Immigration and Emigration

In Chelonia, there is a strong tendency to become a resident once a suitable feeding ground is encountered and to display homing ability for that habitat (Schmidt, 1961; Carr and Caldwell, 1956; Burnett-Herkes, 1974). A green turtle may remain in the southern portion of the lagoon until it approaches maturity. Some may occasionally leave through Haulover Canal (we have a tag recovery from the adjacent Banana River, demonstrating this fact). As the turtle approaches maturity, physiological changes may increase its efforts to leave the lagoon and journey to the hypothesized natal nesting beach. This would explain the absence of green turtles in the 50-60 kg size category. This range is just below the smallest recorded nesting size.

The population of Florida west coast Chelonia was thought to leave the feeding grounds and move elsewhere in the winter. Carr and Caldwell (1956) reported that the local turtle fishermen believed that at the first cold spell, green turtles assembled in large bands and left the area completely, returning only when higher water temperatures occurred in the late spring. Our monthly netting data would have supported the hypothesis of seasonal occurrence of Chelonia in the lagoon since we have a much better CPUE in the summer months. However, the cold water episodes of 1977 and 1978 show that turtles remain in Mosquito Lagoon throughout the winter. Of the 99 green turtles captured in January 1977, 43 percent had mud on their carapaces. They may have settled on the bottom and become partially buried. This may be an adaptive strategy in response to the lagoon's trap effect, and if indeed the lagoon were more open to the ocean, the Chelonia might migrate seasonally. Felger et al (1976) reported green turtles burying in the mud in the Gulf of California which also has restricted access to the ocean (in terms of distance). This "burying up," therefore, may be a more common strategy than previously thought (see below).

In any event, there is evidence that green turtles remain in the lagoon for extended periods of time. The longest recapture interval was 20 months, an indication of some degree of residency. There is also indication of ongoing immigration of Chelonia into the lagoon (a 92 percent recapture rate in 1977 vs. 38.8 percent in 1978). Especially interesting was the fact that in 1977 we captured green turtles in our nets until September, and 11 of 12 of these turtles were recaptures. Then in the January 1978 cold-stun episode, three of the five Chelonia were new animals, and in the spring four more new green turtles were caught. This would seem to indicate a possible influx of green turtles into the lagoon in the fall. This fits in well with the report by Carr and Sweat (1969) that indicated that small bands of immature Chelonia turn up in inshore waters of Pamlico Sound, North Carolina, in November.

The presence of loggerheads in the lagoon is a more expected circumstance than that of Chelonia, since Caretta is known to enter estuarine situations (Ernst and Barbour, 1972). Sub-adult turtles seem to be especially abundant in bays and sounds as shown by both the Georgia and South Carolina trawl mortality studies where 94.4 percent and 72.5 percent of the turtles were below 75 cm in straight-line length (Hillestad et at., 1977; Ulrich, 1978). Both reports mention the rarity of loggerheads less than 50 cm in carapace length and this agrees with our data.

Our Caretta population size estimate of approximately 250 animals is probably an underestimation. Local fishermen tell us that there are hundreds of loggerheads in Mosquito Lagoon and they certainly are much more conspicuous (i.e. seen coming to the surface to breath) than green turtles. There also appears to be much more immigration of Caretta than Chelonia into the lagoon. Recapture percentages between 1977 and 1978 did not vary greatly and the mean percent recapture was low compared to that of green turtles (X percent = 28.8 percent vs. 65.4 percent). Emigration by loggerheads may also be lowering our recapture precentages. Although whether loggerheads are residential on feeding grounds remains to be studied, it is generally believed that Caretta ranges more widely than Chelonia (Ernst and Barbour, 1972). Loggerheads, being carnivorous, would not be restricted to areas of grass flats as green turtles may be and it would probably be to their advantage to be extremely mobile while foraging. This increased movement while feeding may be enough to enable loggerheads to find their way out of the trap of the lagoon just by the law of averages. However, Caretta have been in the lagoon for as long as 15 months which can indicate some degree of residency. It may well be that habitats like the lagoon are, indeed, a necessary factor in loggerhead development.

Population Structure

As stated earlier, the size distributions of the populations of both species of turtles are comparable to populations found in other areas. Therefore, since the lagoon has a typical population structure, it is worthwhile to compare the population structures of the two species of marine turtles that inhabit the same habitat. Green turtles under 40 kg accounted for 87 percent of the population. A large number of individuals were quite small (24.3 percent < 10 kg) but no yearling size class turtles were ever encountered. In contrast to Chelonia, 53.5 percent of the Caretta were over 40 kg, with 6 percent large enough to be categorized as adults. Even more striking was the lack of loggerheads below the 20 kg category which makes up 41 percent of the Chelonia population.

This difference in population structure may be explained in two ways: there may either be a differential growth rate or differential use of habitats by the turtles at different stages in their life. It is becoming increasingly clear that loggerheads grow faster and mature earlier than green turtles (see below). Even though the disparity seems too great, it is very possible that loggerheads in the 20-30 kg range are no older than Chelonia weighing 10 kgs or less.

An alternative explanation entails the use of the same habitat, for whatever reasons, by the two species at different points in their life history. It would not be a question of competition for they are, of course, exploiting different resources in the lagoon; Chelonia being exclusively herbivorous except for very early in life (see below) and Caretta being carnivorous. Rather, the differential use of the lagoon may relate to inherent differences in the species' life histories.

All size classes of Chelonia are found in the lagoon with the important exceptions of the lost first year and the adult categories. It may be argued that these two stages are missing because of different habitat requirements, the hatchling needing approximately a year of pelagic, open ocean, carnivorous existence, as indicated by Witham's (1976) results, and the tyro adult seeking a suitable breeding/nesting area.

The records indicate that Caretta primarily utilize inshore waters as sub-adults but are also present as adults and juveniles. They may be present in order to exploit the rich invertebrate fauna associated with these areas. However, there remains the question of where the under 50 cm loggerheads occur and why they are not also exploiting these available resources. It may be they are able to spend more time in an open ocean system, not constrained as Chelonia are by the necessity of finding shallow, grassy inshore waters.

Growth

As indicated above, our data show a differential growth rate between Chelonia and Caretta. Caretta in Mosquito Lagoon are growing approximately twice as fast as Chelonia (6.15 vs. 3.24 cm/yr). This would mean that a Chelonia would require twice the time to reach a certain size category. Therefore, a 61.0 cm Caretta may be the same age as a 32.0 cm Chelonia. Turtles may be entering the lagoon at the same age, but Caretta have grown twice as fast as Chelonia during their pelagic life stage. This may well be why Caretta below 50 cm are seldom seen in estuarine situations.

This is not what was believed in the past because most studies were based on captive animals which showed a much higher rate of growth. Schmidt in 1916, reported an increase of 5.2 kg/yr in wild recaptures (N = 8). This indicated an extremely slow growth rate. Hendrickson (1958) dismissed Schmidt's data as improbably slow according to his own captive growth rates. He estimated that in tropical waters it would only require 5 years for Chelonia to reach maturity. Caldwell (1962) with an N of four captive animals predicted 13 years until maturity. Hirth (1971) estimated an increase of 7-12 cm/yr with an age at maturity of 4 to 13 years. These data differ quite dramatically with growth in the wild. Burnett-Herkes (1974) found an increase of only 4.4 cm/yr (N = 3). Limpus (1978), working with the 60-90 cm size class in wild Chelonia, found a 1.1-1.4 cm increase/yr and predicts 30+ years to maturation. Balazs (1978), also working with wild populations, indicated that growth rates in his populations vary geographically between feeding grounds and reported a range of 0.95 to 5.3 cm. He predicted age of maturity at 13-50 years. On the basis of our data, we predict an age of maturity of approximately 30 years for green turtles.

Even less data are available for Caretta. Caldwell (1962), with an N = 5, again working with captive animals, estimated age of maturity at 6-7 years. Uchida (1967) estimated a maturation age of 8 years (N = 2). Limpus (1978) reported a maximum increase of 1.65 cm/yr in Caretta and predicted 30+ years to maturity. Limpus was working with Caretta in a larger size range (75-85 cm straight-line carapace length) than our lagoonal turtles which is the probable reason for the decreased growth rate. Our limited data also show that as a turtle gets larger its growth slows considerably. Carr and Goodman (1970) found that wild adult Chelonia increase only 0.4 cm/yr in length.

Our Caretta growth data fall mid-way between Limpus' results and those of the captive studies. Working with smaller turtles, we find a growth rate of 6 cm/yr and we estimate an age at maturity of 12-15 years.

Cold-stunning

Felger et al. (1976) have documented that green turtles overwinter in a state of dormancy by burrowing or settling into the bottom mud in the Gulf of California. This was the first documentation of such an occurrence and contradicted the general belief that green turtles migrate to warmer waters as temperatures decrease. Carr and Caldwell (1956) reported that a small minority of Gulf coast turtlers believed that green turtles did not migrate but rather stayed year round and "buried up" in the mud bottom of holes on the flats. Carr and Caldwell stated that this theory "seems to take support from the occasional occurrence of mud-covered turtles amoung the spring catches." In the winter of 1977-1978, shrimp trawlers in the Port Canaveral Channel trawled up many sub-adult loggerhead and a few ridley turtles that apparently were buried dormant in the mud at the bottom of the channel. These turtles were covered with mud and appeared emaciated.

It is a fact that at least 43 percent of the green turtles taken during the January, 1977 cold-water episode were covered, most uncharacteristically, by a uniform layer of lagoon bottom mud. We have photographs to document this. In that mud were found growing rhizomes of manatee grass (Cymodocea filiformis) and an alga, growing epizoically, tentatively identified as a species of Cladophora, a common littoral zone alga. This is the only time that we have ever seen mud-covered green turtles and it must be viewed as circumstantial evidence that some of them were sedentary on the bottom for a period of time.

However, it may be that winter dormancy is a more common strategy than previously thought, being employed when water temperatures fall below a critical minimum.

When turtles float to the surface in a stunned condition, it may well be an indication that the dormant response failed because unusually cold water temperatures for extended periods of time exceeded the turtles' critical threshold.

Cold-water stunning is reported anecdotally and well-known to natives of the area. Wilcox (1898) provides the following information: "The unusual cold of the winter of 1894-95 is also known to have seriously affected the abundance of turtles. Several hundred turtles were then found floating on the surface in a numbed or frozen condition. On being warmed, most of them survived and were soon on their way to the northern markets. Since the cold spell turtles have been much scarcer than ever."

It may well be that green turtles are more or less trapped in Mosquito Lagoon, which is blind at its southern end. Whether a turtle that has entered the lagoon at Ponce Inlet or through Haulover Canal has the sense to go north first to avoid lowering water temperatures is debatable. Lying dormant (or nearly so) on the bottom may be a response of trapped turtles; a response which fails in unusually cold years (this phenomenon apparently occurred last in 1962).

Schwartz (1979) has shown that loggerheads are more tolerant of low temperatures than greens and this is borne out by our observations. Appendix Figure 22 shows the relationship of water temperature to the number of turtles rescued per day during the 1977 cold spell. It is clear that green turtles were affected earlier and more seriously than loggerheads, and that many loggerheads survived the harsh conditions on their own. Indeed, the larger loggerheads were apparently not stunned at all.

In January 1978, turtles again came to the surface in a stunned condition but on a much more limited scale. Only five individuals were collected. Again green turtles were more susceptible and loggerheads. Four Chelonia and one small Caretta were collected. Water temperatures never fell as low as the previous year nor for as long a period of time. It appears that green turtles may be able to cope with temperatures in the 8°C to 11°C range on a limited basis, possibly burying themselves on the bottom of the lagoon in torpid state.

The documentation of the limited occurrence of the cold-water stunning phenomenon n 1978 is important because it indicates that cold-water stunning may occur, at some degree, every year. It is not an all-or-none, once-per-decade event as it may have seemed. Moreover, it is fair to say that as of this writing, the available evidence indicates that the phenomenon of cold-water stunning of sea turtles, particularly green turtles, reaches the peak of its expression in Mosquito Lagoon, within the confines of the Kennedy Space Center. It is doubtful that it occurs in the same intensity anywhere else in the world.

Summary and Conclusions

1. Of the three lagoonal systems at KSC (Banana River, Indian River, Mosquito Lagoon), Mosquito Lagoon was shown to be an important and unique developmental habitat for immature Chelonia and Caretta. The open-water portion of the lagoon is virtually surrounded by KSC lands and its southern extreme is less than 2 km from LC 39.
2. Our estimates indicate a total population of 135 green turtles and 253 loggerheads in Mosquito Lagoon. This result was completely unexpected for Chelonia: green turtles are basically tropical animals that are seen only occasionally in sub-tropical or temperate waters.
3. The weight and size structures of lagoonal Chelonia and Caretta populations differ and growth rates are different for the two species.
4. The phenomenon of cold-water stunning of sea turtles, particularly green turtles, reaches the peak of its expression in Mosquito Lagoon, within the confines of the Kennedy Space Center. It is doubtful that it occurs in the same intensity anywhere else in the world.
5. The only way to monitor these populations of immature, lagoonal loggerheads and green turtles is to capture individual turtles alive in large-mesh tangle nets. No other reasonable technique exists. Our results show that three netting sites; one in the north end, one in the middle, and one in the south end of the Mosquito Lagoon, were most productive (Figure 36). Also, it is clear that netting is most productive in the warmer months (April to October) even though turtles remain in the lagoon throughout the year (Figure 37). A monitoring program that included 72 hours of netting at each of the three sites in June, July, and August should produce numbers of captures adequate for comparisons against baseline capture rates established in this study. A new Florida statute requires that all nets set in Mosquito Lagoon

be tended throughout the day and night. Extending the monitoring effort into the fall, winter and spring would require a covered boat and would increase the cost greatly.

Acknowledgments

Most of the sea turtle research reported here could not have been initiated or conducted without the splendid cooperation and assistance of the former manager of the Merritt Island National Wildlife Refuge, Mr. Robert G. Yoder. I acknowlege his contribution and that of his staff members Jefferson Fountain and Dr. James L. Baker with sincere gratitude. The spirit of cooperation has continued under current manager Steven Vehrs, with special thanks going to assistant manager Robert C. Lee. Many other refuge staff members helped in hundreds of ways. I thank them all.

Capt. Henry Morgan and his staff at the Titusville headquarters of the Florida Marine Patrol have also worked with us in a fine spirit of cooperation. In Tallahassee, Mr. Charles Futch and Mr. Edwin Joyce, of the Florida Dept. of Natural Resources, have given prompt attention to our permit requests and cooperated in many other ways.

Dr. Archie F. Carr of the University of Florida has provided all of our turtle tags and paid rewards on returns over the past several years. More importantly, he has been a source of vital advice and encouragement.

We have also benefitted from the cooperation of Superintendent Donald Guiton and his staff at the Canaveral National Seashore. Similarly, Mr. Vincent Donahoo, of the Pan Am Security Force at CCAFS has assisted with clearance to work on the station.

At the University of Central Florida we were fortunate to have the administrative and technical assistance of Rosalie Creamer and Mary Ann Johnston. Both went out of their way to help on many occasions. Ms. Creamer's thorough competence has literally kept the ship afloat. Among the students, Mary T. Mendonca and E. Scott Clark made extraordinary contributions and served, essentially, as assistant principal investigators. Richard Demmer, who has been a mainstay on the field crew over the years, drafted all of the graphs and figures. M. Angela McGehee and Richard Seigel assisted competently with the field work, data analysis, and report preparation. The crew of undergraduate students that carried out a large share of the field work is too lengthy to name individually. Much of what was accomplished was due to their good work. I am well aware of the contribution these people have made in time and talent, and with sincere appreciation, I acknowledge them all.

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APPENDIX TABLES

MARINE TURTLE STUDIES

Table 1. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1976 but previously tagged elsewhere by other investigators.

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
C1661	20-May -1976	1972	4 years	Fla., Brevard Co., near Melbourne Beach	91
C1836	25-May -1976	1972	4 years	Fla., Brevard Co., near Melbourne Beach	91
SI242	31-May -1976	*	*	Fla., Brevard Co., Sebastian Inlet	111
JI566	31-May -1976	*	*	Fla., Palm Beach-Martin Co., Line	214
C2228	23-June-1976	1973	3 years	Fla., Brevard Co., near Melbourne Beach	91
E9221	23-June-1976	1975	1 year	Fla., Brevard Co., near Melbourne Beach	91
E9219	25-June-1976	1976	same year	Fla., Brevard Co., near Melbourne Beach	91
B3406	25-June-1976	1976	same year	Fla., Brevard Co., near Melbourne Beach	91
E9388	22-July-1976	1976	same year	Fla., Brevard Co., near Melbourne Beach	91
JI2595	22-July-1976	*	*	Fla., Palm Beach-Martin Co., Line	214

Table 1. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1976 but previously tagged elsewhere by other investigators. (continued)

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
B3407	22-July-1976	1976	same year	Fla., Brevard Co., near Melbourne Beach	91
133	23-July-1976	1973	3 years	Fla., St. Lucie Co., Hutchinson Island	138
JI1060	28-July-1976	*	*	Fla., Palm Beach-Martin Co., Line	214
B3398	4-Aug.-1976	1976	same year	Fla., Brevard Co., near Melbourne Beach	91
JI2651	4-Aug.-1976	*	*	Fla., Palm Beach-Martin Co., Line	214

* Information not yet available

Table 2. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1977 but previously tagged elsewhere by other investigators.

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
HI1581	13 June 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155
C3351	25 June 1977	1977	Same Year	Fla., Brevard Co., near Melbourne Beach	91
HI1753	1 July 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155
HI1655	5 July 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155
HI1557	8 July 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155
C3267	12 July 1977	1977	Same Year	Fla., Brevard Co., near Melbourne Beach	91
HI1882	13 July 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155
C3263	14 July 1977	1977	Same Year	Fla., Brevard Co., near Melbourne Beach	91
C3205	25 July 1977	1977	Same Year	Fla., Brevard Co., near Melbourne Beach	91
JI2940	26 July 1977	*	*	Fla.,Palm Beach-Martin County Line	214
HI1920	12 August 1977	1977	Same Year	Fla., St. Lucie - Martin County Line	155

Table 3. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators.

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
C2534	30 May 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
S1242?	2 June 1978	*	*	*	*
C2156	8 June 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
FL0030	12 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
JI3365	14 June 1978	*	*	Fla., Palm Beach - Martin County Line	214
FL0017	15 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0036	16 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
CR648	16 June 1978	*	*	*	
HI679	17 June 1978	*	*	Fla., St. Lucie Co., Hutchinson Island	138
C2935	17 June 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
C2895	19 June 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91

*Information not yet available.

Table 3. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators. (Continued).

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
CR1369	21 June 1978	*	*	*	*
F047	26 June 1978	1978	Same Year	Fla. Volusia Co., Canaveral National Seashore	*
GA0118	27 June 1978	*	*	*	*
C14641	29 June 1978	*	*	*	*
FL0082	29 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0086	29 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
CR1755	30 June 1978	*	*	*	*
F063	30 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
F064	30 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0006	30 June 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
E9289	3 July 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
F076	3 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*

*Information not yet available.

Table 3. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators. (Continued).

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
FL0033	3 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
F066	3 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0048	4 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
JI1917	5 July 1978	*	*	Fla., Palm Beach - Martin County Line	214
CRkk45	6 July 978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0057	8 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0019	11 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0028	11 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0093	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0099	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0010	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*

*Information not yet available.

Table 3. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators. (Continued).

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
FL0091	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0083	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
GA0136	13 July 1978	*	*	*	*
FL0078	13 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0126	14 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
JI3449	15 July 1978	*	*	Fla., Palm Beach - Martin County Line	214
F059	15 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
CR1195	15 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0024	17 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
F069	17 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0004	17 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*

*Information not yet available.

Table 3. Female loggerhead turtles (*Caretta caretta*) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators. (Continued).

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
FL0035	18 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0141	19 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0059	20 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0107	20 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0043	20 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
1236	21 July 1978	*	*	*	*
F030	21 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0077	24 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0058	24 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0166	25 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0002	25 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0168	25 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*

*Information not yet available.

Table 3. Female loggerhead turtles (_Caretta caretta_) nesting at Kennedy Space Center in 1978 but previously tagged elsewhere by other investigators. (Continued).

Tag No.	Date at KSC	Year Tagged	Time Interval	Tagging Locality	Distance Interval (km)
FL0076	25 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0123	26 July 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
C2099	27 July 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
FL0108	4 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0075	4 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
JI1586	5 Aug. 1978	*	*	Fla., Palm Beach - Martin County Line	214
F051	5 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0106	5 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0070	9 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
FL0110	10 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*
B3536	17 Aug. 1978	*	*	Fla., Brevard Co., near Melbourne Beach	91
FL0029	25 Aug. 1978	1978	Same Year	Fla., Volusia Co., Canaveral National Seashore	*

*Information not yet available.

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976.

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1405	18 May 1976	101.4	96.0	83.5	89.8	64.9	66.0	20.5
H1406	18 May 1976	-	102.5	87.3	93.5	67.5	71.0	20.4
A2738	18 May 1976	133.2	106.6	101.0	97.5	72.4	70.0	20.0
C1661	20 May 1976	109.1	99.5	90.0	91.7	65.5	68.0	18.2
H1408	20 May 1976	129.5	102.6	91.4	95.8	71.8	73.7	21.0
H1410	20 May 1976	127.2	100.0	92.3	99.0	70.8	74.9	20.5
H1411	20 May 1976	120.5	104.4	93.6	98.0	72.0	69.9	19.2
H1412	20 May 1976	129.5	108.0	96.2	100.5	73.9	75.2	19.7
H1414	24 May 1976	122.7	104.1	93.3	94.7	69.7	71.3	17.8
H1414	24 May 1976	109.1	91.6	89.9	87.2	71.4	66.1	18.0
H1415	24 May 1976	126.4	103.0	92.0	95.0	70.7	71.5	18.1
H1416	24 May 1976	110.5	98.5	92.4	90.6	72.7	70.5	18.5
H1417	24 May 1976	128.2	101.1	93.0	92.5	71.8	72.8	19.2
H1418	24 May 1976	134.1	98.9	89.2	93.1	70.2	68.9	21.0

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1419	24 May 1976	88.6	89.1	78.2	80.1	60.8	62.7	17.6
H1420	24 May 1976	137.7	105.0	98.9	97.5	71.4	76.4	20.8
H1421	24 May 1976	148.6	104.4	99.2	101.7	75.6	75.7	20.2
H1422	24 May 1976	109.1	100.9	92.4	93.9	71.6	71.0	18.7
H1423	24 May 1976	119.5	98.9	91.9	91.5	68.9	69.9	19.3
H1424	24 May 1976	125.9	96.1	91.2	91.1	66.9	70.4	19.0
H1425	24 May 1976	102.3	90.2	88.8	83.4	67.9	63.8	17.8
C2304	24 May 1976	131.8	108.3	92.1	98.8	72.9	73.4	18.6
A2725	25 May 1976	140.9	106.2	91.0	99.4	75.1	75.3	21.7
C1836	25 May 1976	118.2	98.4	92.0	92.2	70.3	67.9	19.8
H1426	25 May 1976	115.9	98.5	93.5	91.5	63.2	67.8	18.7
H1427	25 May 1976	121.8	101.1	92.0	95.4	68.7	70.3	20.1
H1429	25 May 1976	125.0	97.2	89.8	92.1	69.4	68.7	21.6
H1430	25 May 1976	118.2	98.2	89.0	91.9	68.8	70.0	19.9

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1431	25 May 1976	129.5	100.9	89.0	95.3	67.9	70.2	21.0
H1432	25 May 1976	113.6	99.6	89.8	91.2	69.6	68.4	18.9
H1433	25 May 1976	125.0	100.9	88.5	99.5	71.6	73.4	21.3
H1434	28 May 1976	113.6	99.0	93.5	94.4	68.7	72.0	20.2
H1435	28 May 1976	127.3	98.8	88.6	91.7	71.9	74.2	18.5
H1436	31 May 1976	110.0	97.0	87.4	88.2	65.5	68.4	17.4
H1437	31 May 1976	139.5	106.2	95.8	97.5	73.0	74.9	19.7
H1438	31 May 1976	119.1	102.6	94.3	96.5	69.6	72.3	20.2
H1439	31 May 1976	109.1	97.5	86.4	90.4	68.3	69.5	19.4
H1442	31 May 1976	97.7	93.8	82.9	88.4	64.2	66.7	17.5
H1444	31 May 1976	127.3	104.4	90.6	95.0	72.2	73.5	19.0
H1445	31 May 1976	122.7	101.7	91.0	95.1	69.5	71.9	19.1
H1446	31 May 1976	127.3	100.8	98.9	93.9	68.6	71.7	21.7
H1447	31 May 1976	104.5	98.9	87.3	88.2	69.5	66.5	17.2
H1448	31 May 1976	109.1	99.4	90.3	91.2	70.0	70.5	19.3

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE (Over Curvature)		CARAPACE (Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1449	31 May 1976	138.6	104.4	92.8	97.8	73.9	72.6	20.8
JI-566	31 May 1976	113.6	99.6	92.0	91.7	68.9	70.2	18.7
SI-242	31 May 1976	131.8	99.5	92.2	93.5	70.5	72.1	17.5
H1450	1 June 1976	123.6	102.2	89.5	95.5	69.3	71.3	20.8
H1451	1 June 1976	127.3	99.5	94.3	91.5	73.5	72.0	18.9
H1452	1 June 1976	104.5	94.3	87.2	89.3	68.4	68.5	18.1
H1453	1 June 1976	138.2	102.0	94.8	95.0	71.1	72.2	19.5
H1454	1 June 1976	129.5	102.9	94.5	97.8	75.2	79.8	21.8
H1440	7 June 1976	104.5	100.6	90.9	92.4	70.1	69.6	17.7
H1441	7 June 1976	119.1	99.6	86.7	93.0	67.5	70.5	20.0
H1443	7 June 1976	122.7	99.8	91.0	94.3	69.6	72.8	19.6
H1455	7 June 1976	122.7	101.5	95.6	94.5	71.3	72.6	21.0
H1456	7 June 1976	129.5	103.7	93.3	96.0	72.3	72.7	19.8
H1457	7 June 1976	130.5	99.8	93.8	92.9	71.0	73.6	20.3
H1458	7 June 1976	100.0	93.3	87.8	87.4	62.7	66.5	17.7
H1459	7 June 1976	95.5	92.9	84.0	87.0	65.5	67.5	17.5

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm
H1460	7 June 1976	122.7	101.4	91.6	94.1	70.7	72.4	20.8
H1461	8 June 1976	98.6	95.2	84.2	88.4	64.4	67.6	17.0
H1462	8 June 1976	118.2	102.6	94.8	94.8	71.8	70.6	19.7
H1463	8 June 1976	157.7	104.2	97.8	97.8	75.6	71.0	19.9
H1464	8 June 1976	156.8	111.1	102.5	105.6	74.2	76.5	25.2
H1465	8 June 1976	82.7	87.0	84.1	81.3	63.2	64.4	17.8
H1466	8 June 1976	137.7	104.9	91.6	99.0	74.2	72.8	20.7
H1467	8 June 1976	153.2	108.3	94.1	94.6	69.7	76.2	21.6
H1468	11 June 1976	122.7	101.8	90.4	92.6	69.5	73.1	19.3
H1469	11 June 1976	159.1	110.0	100.2	102.9	77.2	78.5	19.9
H1470	11 June 1976	138.6	105.1	91.0	98.1	72.6	74.4	21.9
H1471	11 June 1976	109.1	95.9	89.1	90.9	68.0	70.9	19.1
H1472	11 June 1976	140.9	106.3	93.9	98.0	74.4	77.7	21.2
H1428	14 June 1976	137.7	104.8	97.8	96.5	75.5	74.7	19.7
H1409	14 June 1976	117.3	103.8	93.8	98.3	70.7	73.0	21.1

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1473	14 June 1976	102.3	94.2	86.8	88.3	70.3	66.1	18.7
H1474	14 June 1976	119.1	99.9	89.6	92.8	65.8	71.0	19.8
H1475	14 June 1976	113.6	99.9	91.6	94.2	68.0	72.9	19.1
H1476	14 June 1976	121.4	101.7	89.3	93.2	72.7	71.2	17.9
H1477	14 June 1976	101.4	94.5	87.5	85.7	66.5	66.3	18.2
H1478	14 June 1976	122.7	96.9	94.9	91.9	71.8	70.5	20.3
H1479	14 June 1976	104.5	94.5	85.8	86.0	68.2	65.1	17.8
H1480	14 June 1976	97.7	100.5	88.3	92.4	66.7	67.7	17.7
H1481	14 June 1976	131.8	103.8	91.1	97.4	72.5	74.7	19.4
H1482	15 June 1976	125.0	104.2	93.7	95.8	71.9	71.4	19.2
H1483	15 June 1976	152.3	107.8	101.5	99.9	73.9	78.4	21.5
H1484	15 June 1976	111.4	96.9	87.1	87.7	63.0	68.4	18.7
H1485	15 June 1976	121.4	95.5	94.1	88.9	74.6	72.9	16.6
H1486	15 June 1976	130.5	103.3	93.7	93.7	70.0	73.4	19.0
H1487	15 June 1976	129.5	103.2	98.4	93.5	72.0	72.7	20.1
H1488	15 June 1976	107.7	-	-	91.1	71.5	66.5	19.0

Table 4. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1489	15 June 1976	88.6	89.3	80.1	82.8	61.3	61.7	16.8
H1490	15 June 1976	150.0	115.9	96.5	98.8	75.7	79.7	20.3
H1492	15 June 1976	110.0	96.0	86.7	89.8	67.4	71.2	16.9
H1493	15 June 1976	102.3	91.2	86.8	85.0	66.8	65.8	18.4
H1494	16 June 1976	99.5	90.0	86.8	83.5	69.4	66.9	16.0
H1495	16 June 1976	100.9	93.6	87.8	87.7	67.3	69.2	18.0
H1496	16 June 1976	139.5	101.5	95.0	93.0	74.8	73.7	21.3
H1497	16 June 1976	125.9	101.1	96.2	96.8	72.4	75.3	19.5
H1498	16 June 1976	118.2	101.6	93.1	95.3	70.2	74.0	20.8
H1499	16 June 1976	122.7	101.1	90.3	94.5	67.0	72.6	20.3
H1701	17 June 1976	104.1	95.6	82.2	89.5	60.0	64.5	18.7
H1702	17 June 1976	110.0	95.5	86.1	88.5	67.7	69.9	20.0
H1703	17 June 1976	148.6	106.8	97.9	99.2	75.3	75.0	21.3
H1704	17 June 1976	81.8	88.8	77.0	82.3	61.9	64.1	17.3

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1705	17 June 1976	125.9	100.4	90.7	95.0	70.2	71.5	19.8
H1706	17 June 1976	100.9	93.5	84.6	86.7	64.5	66.2	18.0
H1708	17 June 1976	104.5	96.4	86.2	89.5	67.5	68.8	20.0
H1709	17 June 1976	113.6	101.1	92.1	91.9	73.0	71.4	18.9
H1710	17 June 1976	105.5	98.6	87.9	92.5	67.1	72.8	18.5
H1711	17 June 1976	113.6	100.5	90.5	92.5	67.1	67.5	20.6
H1712	17 June 1976	119.1	108.6	94.8	100.2	72.9	71.6	21.1
H1713	17 June 1976	112.3	96.2	86.9	88.1	65.5	68.9	18.8
H1714	18 June 1976	110.0	96.7	88.4	90.7	69.8	67.9	18.5
H1715	18 June 1976	106.8	99.9	88.8	92.1	67.2	69.7	18.7
H1716	18 June 1976	119.5	98.7	91.5	90.4	68.5	69.5	19.5
H1717	18 June 1976	118.2	101.0	94.3	93.2	69.5	69.8	18.8
A2798	18 June 1976	156.8	105.0	96.8	100.2	74.3	79.4	26.0
A2785	21 June 1976	-	105.5	93.8	96.4	71.4	73.0	20.4
H1718	21 June 1976	-	104.9	93.1	95.0	70.1	71.5	22.2
H1719	22 June 1976	156.8	108.4	98.5	103.5	79.7	81.6	21.4
H1720	22 June 1976	90.9	93.2	85.4	88.2	66.7	65.7	17.5

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head With (cm)
H1721	22 June 1976	115.5	99.1	91.6	92.9	73.5	66.7	18.7
H1722	22 June 1976	119.1	99.5	92.6	94.8	71.1	71.0	18.7
H1723	22 June 1976	120.5	100.4	92.7	96.1	78.9	72.8	19.2
H1724	22 June 1976	147.7	105.3	99.1	98.9	78.3	77.0	20.1
A2716	22 June 1976	137.2	105.3	94.4	100.1	69.9	77.5	20.5
C2228	23 June 1976	106.8	94.9	84.0	86.8	65.0	65.4	18.7
E9221	23 June 1976	123.6	94.7	92.9	88.1	70.8	71.2	18.7
H1725	23 June 1976	96.4	91.0	83.5	86.4	65.5	63.3	18.5
H1726	23 June 1976	116.8	99.5	90.2	94.2	69.7	73.6	18.6
H1727	23 June 1976	125.0	99.1	92.3	91.1	73.4	70.5	20.7
H1728	23 June 1976	89.5	88.9	82.7	83.0	65.1	64.5	18.9
H1729	23 June 1976	125.0	98.2	93.4	92.3	71.5	71.9	18.6
H1730	24 June 1976	109.1	98.8	89.1	91.3	70.5	69.0	18.1
H1731	24 June 1976	118.2	97.8	91.0	75.4	66.4	69.7	18.7
H1732	24 June 1976	144.1	102.8	96.1	94.2	74.1	76.7	18.5

Table 4. Morphological characteristics of nesting female loggerhead turtles (<u>Caretta caretta</u>) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head With (cm)
H1733	24 June 1976	98.6	90.5	86.8	85.9	65.1	66.7	17.1
H1734	24 June 1976	134.1	103.2	95.2	96.0	73.5	72.8	19.3
H1735	25 June 1976	112.3	97.9	88.5	93.2	67.2	67.5	20.0
H1736	25 June 1976	87.7	89.9	84.7	84.8	64.4	65.3	15.9
H1737	25 June 1976	124.1	101.6	92.3	96.6	72.3	70.1	20.0
H1738	25 June 1976	128.2	105.0	94.8	95.7	74.0	72.0	17.7
H1740	25 June 1976	103.2	96.0	86.7	91.5	67.6	67.4	18.1
H1742	25 June 1976	100.0	94.2	88.8	86.4	64.1	64.8	18.5
H1743	25 June 1976	184.1	113.3	106.5	101.2	77.0	79.0	25.0
H1744	25 June 1976	124.1	97.3	90.3	90.1	70.0	69.4	20.7
H1745	25 June 1976	151.4	111.5	97.9	103.5	78.2	79.5	21.4
H1746	25 June 1976	153.2	108.6	96.6	106.6	67.1	74.8	23.8
H1747	25 June 1976	87.7	90.4	81.5	82.3	63.8	65.3	15.7
H1748	25 June 1976	104.5	92.1	89.0	84.9	67.5	69.6	17.1

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
E9219	25 June 1976	96.4	90.9	86.3	84.1	65.3	67.0	18.6
B3406	25 June 1976	121.3	100.8	88.5	94.1	72.3	71.6	18.9
H1776	28 June 1976	141.8	109.2	93.3	100.7	74.8	77.4	22.5
H1777	28 June 1976	134.1	101.2	92.7	93.4	68.8	69.8	19.8
H1500	28 June 1976	113.6	99.9	93.2	94.8	69.5	73.0	-
H1739	28 June 1976	117.3	98.5	87.7	92.9	68.3	69.0	20.2
H1741	28 June 1976	113.6	102.5	94.1	95.5	73.0	70.8	18.3
H1749	28 June 1976	102.3	98.5	82.5	90.4	63.5	64.5	18.4
H1750	28 June 1976	115.9	98.0	90.1	89.2	71.4	68.9	18.9
H1751	29 June 1976	106.8	99.2	92.5	90.6	71.7	71.5	18.5
H1752	29 June 1976	119.5	102.1	93.4	94.3	70.6	73.0	19.9
H1753	29 June 1976	136.4	104.1	99.3	97.2	74.8	75.0	20.7
H1754	29 June 1976	110.0	96.1	88.0	88.9	65.9	68.6	19.7
H1755	29 June 1976	139.5	101.4	93.9	96.0	72.5	71.8	22.1
H1756	29 June 1976	122.7	98.0	90.2	91.5	68.7	69.3	20.7

Table 14. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1757	29 June 1976	175.9	116.4	101.7	105.4	78.6	82.1	21.6
H1758	29 June 1976	110.0	97.4	86.9	92.8	68.7	69.8	20.6
H1759	29 June 1976	115.9	99.0	88.9	91.7	69.0	70.2	19.4
H1760	29 June 1976	134.1	102.1	92.3	92.2	72.9	72.6	19.7
H1761	29 June 1976	109.1	100.5	92.8	92.8	69.0	71.7	19.0
H1762	30 June 1976	90.9	89.7	86.5	84.4	64.7	-	18.6
H1763	30 June 1976	115.9	97.9	90.2	89.6	68.4	67.6	18.5
H1764	30 June 1976	95.5	93.8	85.9	87.7	68.0	66.9	18.1
H1765	30 June 1976	144.5	104.8	96.9	97.4	73.4	76.8	20.0
H1766	30 June 1976	94.1	95.9	87.4	89.8	68.2	65.8	18.0
H1767	1 July 1976	107.7	98.8	90.7	93.2	69.4	72.1	18.7
H1768	1 July 1976	88.6	89.4	85.5	83.4	66.5	64.3	-
H1769	1 July 1976	134.1	101.9	93.6	94.0	76.6	73.7	19.6
H1770	1 July 1976	114.5	98.4	92.0	94.6	71.8	72.6	20.5
H1771	1 July 1976	115.9	101.9	91.7	95.3	68.3	72.6	19.9

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1772	1 July 1976	103.2	93.0	84.4	88.1	63.8	67.4	18.4
H1773	1 July 1976	150.0	106.0	97.4	98.5	75.1	77.8	21.5
H1774	1 July 1976	123.6	100.8	93.2	95.5	71.8	72.3	20.4
C2329	1 July 1976	170.4	113.9	101.5	106.9	78.3	84.9	24.8
A2708	1 July 1976	129.5	-	95.3	-	71.2	75.0	19.2
H1775	2 July 1976	128.6	101.4	94.3	93.1	71.7	72.0	19.8
H1778	2 July 1976	108.2	101.9	92.0	94.8	66.4	71.3	19.9
H1779	2 July 1976	124.1	101.2	90.8	94.4	67.1	72.6	19.4
H1780	2 July 1976	143.2	107.5	99.4	99.8	77.4	79.5	21.7
H1781	2 July 1976	115.9	90.9	91.2	90.5	67.5	70.5	20.0
H1782	2 July 1976	100.0	92.8	83.2	87.5	64.4	66.5	18.0
H1783	2 July 1976	160.0	107.7	103.0	103.2	79.1	79.5	23.2
H1784	6 July 1976	94.1	96.0	88.0	86.2	67.2	69.5	16.9
H1785	6 July 1976	114.5	99.8	90.7	91.3	71.2	69.7	19.3
H1786	6 July 1976	131.8	101.5	96.4	96.2	73.2	78.4	23.5

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
H1787	6 July 1976	107.7	95.1	89.7	90.7	71.2	68.6	19.3
H1788	6 July 1976	103.2	93.9	86.5	89.4	69.8	66.8	17.3
H1789	7 July 1976	107.7	100.7	93.2	93.6	72.1	72.3	17.6
H1790	7 July 1976	109.1	97.6	93.0	90.8	73.9	71.9	18.4
H1791	7 July 1976	106.8	100.8	90.0	94.5	65.8	67.9	18.3
H1792	7 July 1976	98.6	94.7	86.2	86.9	65.2	70.8	17.1
H1793	7 July 1976	121.8	103.1	93.8	94.6	69.8	71.4	20.5
H1794	7 July 1976	94.5	92.6	83.1	83.6	63.4	65.5	17.7
H1795	8 July 1976	114.5	104.0	94.5	97.2	67.7	73.9	20.1
H1796	8 July 1976	94.1	93.4	81.9	85.5	60.4	67.8	18.4
H1797	8 July 1976	98.6	97.7	88.4	90.9	68.5	67.3	18.6
H1798	9 July 1976	100.9	91.3	85.5	83.5	68.4	65.0	17.6
H1799	9 July 1976	144.5	106.5	94.1	99.9	73.8	79.7	20.5
H1800	9 July 1976	125.0	106.0	95.7	98.0	72.7	74.4	19.4
A3001	9 July 1976	103.2	95.6	84.0	89.9	65.1	69.7	19.1

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3002	9 July 1976	115.9	96.4	92.3	89.6	69.4	72.4	19.7
A3003	9 July 1976	101.4	96.4	87.3	92.0	67.7	67.9	18.5
A3004	9 July 1976	119.1	98.6	93.3	91.3	72.0	71.5	19.6
A3005	10 July 1976	113.6	97.9	90.6	91.5	67.1	69.9	19.7
A3006	10 July 1976	110.0	96.0	90.4	90.2	68.9	70.3	19.8
A3007	10 July 1976	130.5	106.8	99.9	99.2	75.8	76.5	20.7
A3008	10 July 1976	110.5	100.0	91.1	93.3	70.7	72.7	19.5
A3009	12 July 1976	94.1	91.8	83.0	87.7	66.6	67.7	17.7
A3012	12 July 1976	141.8	101.5	92.8	97.6	74.7	76.3	22.0
A3013	12 July 1976	102.3	95.8	88.5	89.3	69.5	69.5	18.3
A3014	13 July 1976	119.1	99.5	89.4	91.4	72.9	75.9	18.5
A3015	13 July 1976	105.5	96.0	88.3	90.8	65.6	67.8	20.4
A3016	13 July 1976	119.1	102.2	93.3	97.0	72.4	75.2	19.4
A3017	13 July 1976	135.0	103.8	93.5	97.1	72.8	76.6	19.3
A3018	13 July 1976	91.8	90.9	86.4	84.4	65.6	65.1	17.1
A3020	13 July 1976	134.1	101.6	92.3	96.0	70.2	73.0	22.4

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3021	13 July 1976	113.6	100.4	93.0	92.0	70.7	69.3	18.9
A3022	13 July 1976	120.5	102.9	94.2	96.2	68.8	70.9	20.5
A3023	13 July 1976	163.6	-	102.2	-	80.1	78.2	21.0
C2355 retagged A3019	13 July 1976	120.4	104.4	97.4	95.7	74.3	74.1	20.2
A3025	14 July 1976	120.5	101.6	91.5	92.5	67.6	71.9	19.9
A3026	14 July 1976	112.7	99.7	92.0	93.8	70.8	71.7	20.0
A3027	14 July 1976	92.3	89.9	81.3	85.1	64.4	67.0	18.4
A3028	14 July 1976	139.5	107.4	99.7	74.8	99.4	73.5	20.9
A3029	14 July 1976	101.4	93.7	87.2	87.0	65.6	67.0	17.8
A3030	14 July 1976	106.8	97.4	89.7	92.0	69.5	69.9	19.7
A3031	15 July 1976	88.6	91.0	88.8	85.0	68.8	66.5	17.2
A3032	15 July 1976	100.0	98.5	88.7	90.0	63.2	65.5	19.5
A3033	15 July 1976	81.8	91.7	85.6	84.9	62.7	67.0	18.5
A3034	15 July 1976	118.2	96.7	90.7	89.8	67.0	70.2	19.4
A3035	15 July 1976	137.3	103.0	94.2	95.4	72.5	70.9	21.3

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3036	15 July 1976	106.8	95.4	84.6	87.4	64.3	67.4	19.3
A3038	15 July 1976	152.3	108.6	103.9	101.4	81.0	76.8	24.4
A3041	19 July 1976	102.3	96.6	89.6	89.6	70.6	67.7	18.3
A3042	19 July 1976	115.9	103.0	91.8	94.8	69.4	72.5	18.7
A3043	19 July 1976	119.5	97.2	91.2	91.8	70.5	71.5	19.6
A3044	19 July 1976	139.5	101.8	89.3	96.2	75.5	77.5	21.7
A3045	19 July 1976	113.6	102.2	90.1	95.3	67.6	71.0	18.5
A3046	19 July 1976	108.2	95.0	87.5	89.6	63.5	69.4	20.0
A3047	19 July 1976	94.1	96.1	90.0	90.2	72.3	68.8	18.5
A3048	19 July 1976	116.8	97.2	91.5	89.3	73.7	74.8	17.8
A3049	19 July 1976	137.3	103.5	98.0	98.5	78.3	77.3	21.0
A3050	20 July 1976	104.5	95.9	85.8	91.0	63.8	68.8	19.5
A3051	20 July 1976	100.9	95.1	90.5	88.7	69.0	69.5	17.0
A3052	20 July 1976	111.4	100.1	91.0	91.5	64.3	70.0	18.9
A3053	20 July 1976	102.3	100.6	88.4	90.9	68.5	70.5	18.3
A3054	20 July 1976	78.6	86.8	78.2	81.6	61.0	63.0	19.1

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976 (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3055	20 July 1976	110.5	98.8	88.4	91.2	68.6	69.8	18.6
A3056	20 July 1976	115.0	99.2	90.3	92.7	67.6	67.6	17.6
A3057	20 July 1976	111.4	99.5	91.0	92.8	70.7	70.0	18.7
A3058	20 July 1976	112.3	99.4	94.1	92.2	72.5	73.2	18.8
A3059	21 July 1976	102.3	97.9	89.5	91.3	68.7	66.4	19.3
A3060	22 July 1976	94.5	97.1	82.2	90.2	63.2	70.3	18.1
A3062	22 July 1976	126.4	101.7	91.3	94.9	68.9	73.0	20.6
A3063	22 July 1976	93.2	92.0	81.1	86.0	63.4	68.4	18.4
A3064	22 July 1976	97.7	99.4	89.0	89.7	67.5	66.1	18.4
A3065	22 July 1976	114.5	97.2	89.6	90.8	68.1	72.3	18.9
A3066	22 July 1976	129.5	105.8	96.3	99.0	69.6	75.0	19.6
B3407	22 July 1976	123.7	106.4	93.9	96.2	72.3	72.1	18.8
JI2595	22 July 1976	116.8	98.9	84.9	93.3	73.7	72.6	21.3
E9388 retagged A3061	22 July 1976	96.8	94.7	87.8	88.7	66.2	63.0	18.1
A3067	23 July 1976	131.8	100.0	95.4	94.6	72.5	74.0	20.5

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3068	23 July 1976	104.5	99.7	86.6	92.9	71.4	69.3	17.6
A3069	23 July 1976	125.0	103.6	93.7	96.5	74.1	74.6	19.7
A3070	23 July 1976	90.1	89.4	84.0	81.3	67.0	63.2	17.0
A3071	23 July 1976	89.5	-	82.0	-	64.2	66.0	17.2
A3072	23 July 1976	152.7	107.6	99.5	99.8	76.9	76.2	21.3
A3073	23 July 1976	108.2	101.3	87.0	94.4	66.3	69.0	18.5
A3074	23 July 1976	81.8	89.2	87.2	85.3	64.4	63.3	17.0
A3075	23 July 1976	131.8	104.2	94.4	98.5	73.5	75.6	21.6
A3077	23 July 1976	104.5	97.3	93.0	89.9	70.1	69.7	18.0
A3078	23 July 1976	134.1	101.6	94.5	97.4	73.0	71.7	23.5
A3079	23 July 1976	144.5	104.0	94.9	99.2	75.5	79.2	23.5
133	23 July 1976	130.0	105.8	94.7	96.1	75.6	73.8	20.5
A3080	26 July 1976	136.4	99.9	95.4	95.2	75.1	73.8	19.6
A3081	26 July 1976	172.7	113.5	99.0	106.7	77.1	80.0	22.6
A3082	26 July 1976	131.8	103.7	93.4	96.7	71.3	74.0	19.6
A3083	26 July 1976	126.4	105.3	96.6	97.3	73.0	74.0	19.0

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3084	26 July 1976	132.7	107.0	97.7	99.8	74.4	75.9	21.1
C2384	26 July 1976	131.8	100.5	98.6	94.5	71.8	74.4	22.0
A3085	27 July 1976	98.6	96.6	88.3	88.5	71.3	68.3	18.2
A3086	27 July 1976	116.8	102.2	91.6	95.9	72.3	74.9	19.7
A3087	27 July 1976	127.2	102.9	95.4	94.5	72.0	70.0	21.2
A3088	28 July 1976	119.5	100.1	92.7	93.4	67.5	73.5	19.4
A3089	28 July 1976	118.2	102.9	96.2	95.3	72.3	69.7	20.2
A3090	28 July 1976	121.4	101.0	91.9	93.2	70.2	73.2	20.6
A3091	28 July 1976	146.8	103.2	99.0	94.3	79.0	72.5	21.2
A3093	28 July 1976	119.5	100.0	88.4	93.2	71.2	73.4	21.1
JI1060	28 July 1976	111.4	97.2	89.4	92.6	69.3	68.3	20.5
A3094	29 July 1976	88.6	93.2	84.4	84.7	62.4	63.2	18.1
A3095	29 July 1976	131.8	107.3	97.7	98.2	75.5	75.6	19.6
A3096	29 July 1976	135.0	101.3	96.8	94.0	71.3	74.0	20.0
A3097	30 July 1976	100.9	99.7	88.9	92.3	67.2	69.4	18.4
A3098	30 July 1976	102.3	95.9	87.3	89.9	67.4	69.2	18.2

Table 4. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1976. (Continued)

Tag No.	Date	Weight (kg)	CARAPACE (Over Curvature) Length (cm)	CARAPACE (Over Curvature) Width (cm)	CARAPACE (Straight Line) Length (cm)	CARAPACE (Straight Line) Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3099	30 July 1976	125.0	101.1	90.1	93.0	70.6	71.0	20.1
A3100	30 July 1976	112.3	95.4	92.3	89.1	70.0	69.4	19.5
A3101	3 Aug. 1976	118.2	98.0	90.8	92.6	68.2	72.5	19.9
A3102	3 Aug. 1976	87.7	91.6	85.0	84.1	66.1	66.0	17.1
A3103	3 Aug. 1976	137.3	105.1	93.1	99.0	74.7	80.2	20.9
A3104	4 Aug. 1976	119.1	105.3	94.0	97.8	69.3	72.0	19.2
B3398	4 Aug. 1976	102.3	98.8	92.3	92.1	71.1	72.5	17.2
JI2651	4 Aug. 1976	128.6	105.5	91.9	99.9	73.8	73.5	21.3
A3105	5 Aug. 1976	127.3	98.8	88.3	93.1	67.1	69.2	20.5
A3106	6 Aug. 1976	108.2	92.6	85.8	86.7	67.8	69.4	18.6
A3107	9 Aug. 1976	111.4	95.7	92.5	91.0	68.9	70.1	18.3
A3109	9 Aug. 1976	125.0	104.9	94.2	98.0	73.6	73.1	20.5
A3110	20 Aug. 1976	125.0	105.9	99.9	96.5	78.4	77.3	18.7
A3111	20 Aug. 1976	140.9	-	90.8	-	71.3	76.3	23.8
$\bar{X}$		117.27	99.75	91.18	92.47	70.11	71.17	19.44
S. D.		18.85	5.17	4.76	5.22	4.26	3.96	1.66
N		N = 315	N = 313	(81.1-106.5)		(60.0-99.0)	(62.7-84.9)	(17.0-25.0)
Range		(78.6-184.1)	(86.8-115.0)		(74.8-106.9)			

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977.

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A2762	27 May 1977	126.9	100.1	107.7	72.0	95.9	74.0	22.7
A3138	27 May 1977	113.3	89.2	95.4	68.5	88.0	69.1	19.8
C2371	27 May 1977	158.7	99.5	108.2	74.3	103.0	77.9	19.9
A3140	2 June 1977	119.2	97.8	104.0	70.9	98.3	74.7	20.5
A3141	2 June 1977	125.6	97.5	104.0	71.8	94.7	77.0	19.8
A3142	2 June 1977	138.3	101.5	107.9	77.0	100.5	75.6	20.4
A3143	2 June 1977	111.1	90.2	100.2	68.5	94.1	74.5	22.2
A3177	2 June 1977		101.3	107.2	79.5	101.0	81.9	23.7
A3178	2 June 1977	111.1	94.7	101.2	94.7	90.2	72.5	20.0
A3144	3 June 1977	92.0	84.0	91.0	66.0	87.2	66.0	17.8
A3145	7 June 1977	97.5	86.5	93.7	62.8	82.6	65.6	21.5
A3146	7 June 1977	111.1	89.7	97.0	68.0	87.4	70.3	18.9
A3147	7 June 1977	112.0	91.8	98.0	67.8	88.1	71.3	19.9
A3148	7 June 1977				70.7	90.7	72.1	17.1
A3149	7 June 1977	114.7	91.6	97.5	70.3	92.8	71.7	20.5
A3153	7 June 1977	132.4	89.9	96.0	73.9	100.0	74.2	19.6
A3150	8 June 1977	119.2	96.7	106.0	68.5	90.6	76.0	19.6

Table 5. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3151	8 June 1977	112.4	89.0	93.5	69.1	90.6	70.0	18.2
A3152	8 June 1977	146.4	100.1	106.8	73.0	90.1	75.5	20.4
A3154	8 June 1977	117.9	91.0	99.1	71.0	96.1	73.7	18.5
C2311	8 June 1977	96.5	88.5	94.5	67.2	90.3	66.8	18.2
A3155	9 June 1977	102.0	91.3	98.0	65.1	87.3	70.8	17.9
A3156	9 June 1977	118.8	90.6	96.5	69.1	89.8	69.3	20.2
A3157	9 June 1977	155.1	104.2	109.1	76.8	100.1	77.9	25.9
A3158	9 June 1977	113.3	90.0	94.3	71.4	89.5	69.8	20.8
A3159	10 June 1977	122.4	93.8	101.8	69.2	92.5	72.1	18.9
A3160	10 June 1977	122.4	98.9	105.7	77.7	96.8	72.9	20.3
A3161	10 June 1977		83.0	88.9	62.3	84.3	68.4	18.5
A3162	12 June 1977	142.8	100.1	106.0	73.3	96.1	75.8	20.8
A3163	12 June 1977	169.1	101.7	110.1	75.2	101.3	81.4	20.2
A3164	12 June 1977	186.8			83.1	106.8	79.4	23.3
A3165	12 June 1977	125.6	98.9	102.5	71.1	96.0	75.8	19.6
A3167	12 June 1977	156.4	104.0	114.3	80.0	100.6	78.8	20.6
A3168	12 June 1977	105.6	89.4	94.4	62.4	80.2	66.6	18.6

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3183	15 June 1977	106.5	90.5	99.2	69.0	92.0	69.4	18.7
A3184	15 June 1977	104.3	91.0	98.2	71.2	87.9	71.3	18.6
H748	15 June 1977	115.6	92.7	101.0	71.0	94.5	69.0	19.5
H749	15 June 1977	119.2	91.6	99.5	69.0	89.0	70.5	18.4
H750	15 June 1977	120.1	95.0	101.7	67.4	91.9	69.9	22.1
H952	15 June 1977	98.4	87.9	95.2	66.8	84.5	68.4	18.1
A3185	16 June 1977	166.4	102.0	107.4	78.4	95.0	82.5	23.2
H953	16 June 1977	154.1	98.2	108.4	78.1	100.0	76.4	18.8
H954	16 June 1977	125.6	93.5	100.4	70.0	94.5	74.1	19.0
H955	16 June 1977	165.5	101.6	106.0	78.6	101.8	77.7	20.8
H957	16 June 1977	136.0	99.8	108.8	74.3	98.0	76.8	17.9
H958	16 June 1977	87.5	97.1	90.9	65.5	85.4	59.5	18.4
H959	16 June 1977	148.2	94.5	100.5	75.0	96.8	80.4	20.4
H960	17 June 1977	125.6	94.6	100.9	69.3	87.1	72.0	19.9
H962	17 June 1977	141.4	97.3	104.5	73.6	96.3	74.3	20.5
H963	17 June 1977	99.7	85.2	90.3	67.3	95.8	66.7	19.3

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H964	22 June 1977	128.3	100.2	111.0	73.4	96.7	79.2	20.9
H965	24 June 1977	112.0	91.8	98.0	69.4	90.6	68.9	21.4
H966	24 June 1977	126.9	97.3	103.9	73.2	90.1	75.3	20.4
H967	24 June 1977	131.5	102.5	108.0	68.8	96.7	79.0	22.3
H968	24 June 1977	131.5	101.8	108.2	73.8	91.8	76.4	22.2
A3186	25 June 1977		97.8	104.7	75.9	98.2	72.9	20.5
A3188	25 June 1977		104.8	110.6	81.5	100.7	81.2	21.7
H969	25 June 1977	97.5	88.8	96.5	64.7	85.4	68.8	18.4
H970	25 June 1977	138.3	97.8	104.3	77.6	98.7	75.4	20.2
H971	25 June 1977	94.3	84.8	90.8	67.2	87.4	67.6	19.3
H973	25 June 1977	120.1	93.5	100.6	74.2	95.9	71.9	20.1
H974	25 June 1977	124.7	98.9	106.1	76.5	93.7	73.4	19.4
H1064	25 June 1977	142.8	96.5	105.5	75.6	98.0	76.2	20.7
A3189	26 June 1977		101.2	109.5	75.0	96.9	75.7	20.2
A3190	26 June 1977		95.6	102.2	74.2	97.9	73.5	22.6
H975	26 June 1977	102.0	90.0	96.4	71.1	92.0	70.5	18.7
H1065	26 June 1977	167.8	104.1	108.8	77.3	97.0	79.6	23.6

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1066	26 June 1977	118.8	93.2	99.7	67.2	89.6	72.6	19.1
H1067	26 June 1977	99.7	90.8	98.5	67.6	87.8	69.7	17.8
H978	27 June 1977		89.0	96.0	70.5	89.0	68.0	18.0
H979	27 June 1977		87.0	93.0	62.3	87.0	66.0	19.5
H984	27 June 1977		94.5	102.0	71.5	93.0	73.5	19.5
H1068	27 June 1977	117.9	93.0	101.1	68.8	89.9	72.4	19.2
H1069	27 June 1977	109.7	88.0	96.7	69.3	85.6	68.3	17.7
H1070	27 June 1977	100.6	87.2	93.2	68.3	87.1	65.5	17.7
H1071	27 June 1977	145.1	97.5	105.0	78.1	99.7	76.5	20.2
H1073	27 June 1977	117.9	93.0	99.8	70.1	91.5	76.3	20.3
H1074	27 June 1977	127.8	94.5	104.4	70.9	100.0	72.5	21.4
A3191	28 June 1977		96.0	103.5	66.8	92.5	71.6	19.8
A3192	28 June 1977		87.8	95.0	71.4	89.0	71.6	16.6
H980	28 June 1977	80.7	83.5	85.5	64.6	79.2	64.6	20.1
H981	28 June 1977	77.0	83.3	88.1	61.0	79.9	61.0	17.3

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H982	28 June 1977	106.5	90.3	98.0	68.4	89.1	68.0	18.1
H983	28 June 1977	105.2	92.8	99.3	71.1	93.1	69.9	19.3
H1075	28 June 1977	103.4	90.7	97.5	65.3	89.8	67.5	19.4
H986	29 June 1977		93.3	100.7	70.9	91.0	72.5	19.5
H987	29 June 1977		84.0	91.4	66.9	86.0	64.5	18.1
H988	29 June 1977		93.2	100.4	69.1	99.3	68.0	19.7
H989	29 June 1977		93.5	100.7	69.1	93.0	67.8	20.4
H1076	29 June 1977	131.5	98.1	103.2	75.5	96.8	73.4	21.1
H1077	29 June 1977	99.7	88.2	96.4	67.5	84.6	68.8	17.7
H1078	29 June 1977	95.2	87.6	92.9	71.1	92.0	69.3	18.3
H1079	29 June 1977	92.0	89.6	94.1	71.2	87.0	65.0	18.8
H1080	29 June 1977	105.2	88.6	94.5	70.8	88.0	69.7	18.4
H1081	29 June 1977	135.1	98.2	105.3	74.4	94.2	76.4	19.3
C3351	29 June 1977	148.7	101.8	110.9	77.5	97.3	78.8	21.8
A3193	30 June 1977		93.8	100.0	67.5	90.3	73.9	19.5
A3194	30 June 1977		101.2	110.0	76.2	101.4	77.1	21.2
A3195	30 June 1977		96.5	103.7	73.6	94.3	74.9	20.2

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)		Plastron	Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Length (cm)	Head Width (cm)
A3197	30 June 1977		89.8	98.9	69.7	90.7	71.7	17.9
H1082	30 June 1977	110.2	89.4	95.7	74.1	95.4	71.2	19.1
H1083	30 June 1977	123.8	94.7	104.7	76.9	97.0	77.3	20.3
H1084	30 June 1977	112.4	91.4	98.8	69.4	89.3	72.8	19.4
H1085	30 June 1977	99.7	89.6	96.0	67.1	84.2	69.0	20.8
H1087	30 June 1977	108.8	89.5	95.8	67.7	86.2	69.3	20.0
H1088	30 June 1977	148.2	99.0	105.5	77.1	95.8	76.3	24.7
H1089	30 June 1977	101.1	86.4	92.5	68.1	87.0	69.0	17.9
H1090	30 June 1977	89.3	80.4	89.4	66.0	79.3	65.0	16.8
H1091	30 June 1977	128.3	92.7	100.3	70.6	90.7	70.2	18.5
H1092	30 June 1977	95.2	87.1	94.2	67.0	84.3	67.7	17.6
H1093	30 June 1977	118.8	94.4	104.1	67.7	92.0	71.1	20.7
H1094	30 June 1977	122.4	99.2	105.0	71.0	89.6	73.0	21.3
A2722	1 July 1977	111.1	88.8	94.7	66.2	87.3	68.1	18.8
A2730	1 July 1977	96.1	91.7	98.5	63.3	89.0	69.6	18.9
H1095	1 July 1977	164.6	104.2	109.6	78.1	97.3	78.7	26.5
H1096	1 July 1977	126.0	94.1	100.6	69.1	92.0	69.8	20.8

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3169	12 June 1977	130.1	97.5	105.1	71.5	90.7	74.4	20.5
A3179	12 June 1977				60.7	80.0	66.1	14.8
A3180	12 June 1977	80.7	84.5	92.7	60.7	82.3	63.9	16.8
A2762	13 June 1977							
A2822	13 June 1977		99.8	106.4	72.0	93.2	75.0	19.0
A3170	13 June 1977	166.4	102.5	114.2	77.8	101.6	82.0	19.9
A3171	13 June 1977	95.2	88.9	94.0	67.8	84.5	69.5	18.7
A3172	13 June 1977		96.3	104.8	72.2	95.9	70.4	20.8
A3173	13 June 1977		92.2	100.2	67.7	93.4	71.1	19.6
A3174	13 June 1977	109.7	84.5	93.5	70.2	88.9	70.5	16.7
A3175	13 June 1977	118.8	99.0	105.1	73.4	94.3	73.7	18.7
HI1581	13 June 1977	114.7	87.8	97.1	71.2	91.3	91.3	18.2
A3181	14 June 1977	108.8	90.3	98.5	72.4	90.8	72.5	20.2
A3182	14 June 1977	104.3	88.8	93.0	88.8	83.9	70.0	21.4
H745	14 June 1977	122.4	97.6	106.3	75.8	97.0	72.9	19.8
H746	14 June 1977	93.8	86.5	91.8	86.5	82.8	68.1	17.9
H747	14 June 1977	106.5	90.4	97.2	69.9	87.2	70.5	19.6

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line		CARAPACE Width (cm) Straight Line		Plastron Length (cm)	Maximum Head Width (cm)
			Straight Line	Over Curvature	Straight Line	Over Curvature		
H1097	1 July 1977	126.0	93.8	100.9	73.0	90.7	72.6	22.5
H1098	1 July 1977	117.0	92.0	98.4	71.8	91.3	72.9	20.6
H1099	1 July 1977	139.2	97.5	102.9	75.8	96.7	77.7	23.4
HI1753	1 July 1977	113.3	97.2	102.1	73.2	93.5	71.1	21.1
H1100	4 July 1977	123.3	88.2	99.0	75.2	93.0	74.2	19.5
H1126	4 July 1977	96.5	91.8	96.5	67.3	90.0	68.8	18.3
A3200	5 July 1977		100.3	104.5	72.0	98.0	77.6	20.5
H977	5 July 1977		104.7	110.0	76.4	99.0	83.3	22.9
H1127	5 July 1977		97.8	107.2	70.2	97.6	76.1	20.8
H1128	5 July 1977		97.5	104.2	72.5	96.5	77.8	25.3
H1129	5 July 1977		99.5	102.7	69.8	95.2	76.0	21.9
H1130	5 July 1977		93.6	96.6	69.3	92.2	69.1	18.9
H1132	5 July 1977		80.5	86.5	65.4	83.0	64.5	16.9
HI1655	5 July 1977		89.0	95.1	66.8	87.1	69.7	17.8
H1133	6 July 1977		92.1	97.0	66.2	90.2	68.7	19.0
H1134	6 July 1977		94.5	102.4	67.4	90.3	70.3	18.9
H1135	6 July 1977		100.3	103.5	74.4	96.2	76.6	22.0

Table 5. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3198	7 July 1977	115.6	88.8	96.5	67.8	85.3	71.8	21.8
A3199	7 July 1977	114.2	92.7	99.2	71.3	93.8	72.2	20.2
H990	7 July 1977	111.1	99.5	108.0	71.8	105.0	74.0	19.2
H1136	7 July 1977	112.0	94.1	97.4	71.8	93.6	71.2	19.4
H1137	7 July 1977	89.7	87.8	93.9	67.0	83.8	68.1	17.3
H1138	7 July 1977	102.0	86.7	92.5	69.8	85.0	68.8	17.2
H1139	7 July 1977	138.3	95.4	103.3	70.7	90.3	73.9	20.5
H1140	8 July 1977	137.4	93.2	102.9	74.3	94.7	73.8	17.8
H1141	8 July 1977	107.4	88.7	95.6	69.0	89.2	68.8	17.6
H1142	8 July 1977	99.7	86.3	93.9	64.8	86.3	67.6	18.3
H1143	8 July 1977	128.3	98.2	106.3	73.1	98.0	72.9	18.7
HI1557	8 July 1977	107.4	90.3	97.8	67.1	87.2	70.5	23.7
H1144	9 July 1977	110.2	94.3	99.1	69.8	91.5	73.4	18.2
H1145	9 July 1977	116.5	93.5	100.5	69.7	91.6	72.8	19.5
H1125	11 July 1977		84.3	90.0	64.2	83.5	67.0	17.2
H1151	11 July 1977	117.9	90.9	96.7	73.6	90.1	73.2	20.2
H1152	11 July 1977		96.0	101.4	77.7	98.6	75.7	19.2

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1153	11 July 1977	114.2	93.2	99.5	70.9	92.0	72.2	20.0
H1154	11 July 1977	83.9	80.4	86.5	63.0	80.0	60.2	17.6
H1155	11 July 1977	123.8	95.9	106.0	71.6	94.5	74.2	19.6
H1156	11 July 1977	112.4	87.5	94.9	65.4	87.6	67.3	18.8
H1157	11 July 1977	159.6	100.2	108.2	74.4	95.3	74.5	21.0
H991	12 July 1977		89.3	96.6	65.6	84.0	65.8	16.2
H992	12 July 1977		95.4	99.8	74.0	93.5	73.0	20.5
H1158	12 July 1977	106.5	89.6	97.8	70.6	88.8	68.0	17.8
H1159	12 July 1977	130.6	90.9	100.0	65.8	94.0	72.8	21.1
H1161	12 July 1977	119.2	92.5	99.0	68.4	93.0	68.5	19.6
H1162	12 July 1977	122.4			71.3	90.0	71.0	21.5
C3267	12 July 1977	102.9	87.6	94.6	62.8	84.8	65.5	20.5
A3190	13 July 1977		95.6	101.5	73.0	94.6	75.1	22.7
H993	13 July 1977		95.0	100.8	74.6	90.4	72.5	18.9
H994	13 July 1977		91.0	98.6	70.3	90.3	68.9	17.8
H1163	13 July 1977	99.7	86.5	93.2	66.4	83.6	67.7	16.2
H1164	13 July 1977	160.9	101.5	110.3	76.2	98.4	76.9	21.1

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1165	13 July 1977	149.6	99.0	106.1	77.4	96.7	78.4	19.5
H1166	13 July 1977	130.1	95.4	100.2	72.2	91.4	72.8	19.5
H1167	13 July 1977	109.7	88.5	94.7	64.3	83.9	69.7	19.7
H1168	13 July 1977	84.8	84.7	90.2	64.7	83.0	63.8	18.8
H995	14 July 1977	92.9	86.8	92.5	66.3	84.4	67.5	18.4
H1169	14 July 1977	84.8	80.9	88.2	63.3	82.5	60.6	17.0
C3263	14 July 1977	150.5	93.8	104.0	80.5	103.6	73.4	20.5
H996	15 July 1977	108.8	89.5	97.4	66.1	85.8	65.2	18.4
H1170	15 July 1977	114.2	94.7	100.4	70.5	91.3	70.1	19.2
H1171	15 July 1977	94.3	87.4	92.6	67.1	84.4	66.5	17.0
H1172	15 July 1977	114.2	90.8	96.1	64.5	88.1	69.3	21.2
H1173	15 July 1977	117.9	89.6	96.9	75.1	94.1	71.2	19.5
H1174	15 July 1977	96.1	84.6	89.2	66.1	83.6	65.7	17.8
H1175	15 July 1977	126.9	97.2	102.5	73.1	93.0	73.8	19.3
H997	18 July 1977	107.4	92.5	99.0	69.4	89.8	69.9	18.1

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H998	18 July 1977	98.4	86.2	95.4	65.6	86.7	65.1	16.9
H999	18 July 1977	103.8	95.0	101.4	70.2	90.7	74.0	17.8
H1000	18 July 1977	112.4	90.8	96.5	73.5	89.2	69.3	18.5
H1101	18 July 1977		98.2	104.0	70.3	91.1	74.2	20.5
H1201	18 July 1977	114.2	89.0	94.6	69.4	93.4	69.7	18.6
H1202	18 July 1977		96.8	104.2	72.3	96.2	72.6	19.4
H1102	19 July 1977	152.8	101.2	107.5	72.3	94.4	77.0	19.3
H1103	19 July 1977	125.6	93.7	98.8	71.7	92.4	70.5	19.8
H1104	19 July 1977	134.6	98.5	104.4	74.5	93.2	74.5	20.6
H1203	19 July 1977		85.3	92.3	64.7	85.4	64.1	16.7
H1204	19 July 1977		96.7	96.6	67.1	86.5	70.2	20.0
H1208	19 July 1977		96.4	103.7	72.1	93.7	73.8	23.8
H1124	19 July 1977	104.3	90.8	98.3	67.2	86.5	68.5	18.3
A2724	20 July 1977		95.1	101.0	70.3	95.2	70.5	18.5
H1105	20 July 1977	117.4	93.3	96.8	68.4	94.4	70.4	19.3
H1107	20 July 1977	138.3	97.9	104.9	76.5	96.7	73.2	19.9
H1108	20 July 1977	114.2	88.5	95.5	65.8	93.5	68.3	18.3

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1109	20 July 1977	144.2	98.2	104.7	76.5	96.8	79.3	21.1
H1110	20 July 1977	77.0	78.7	85.4	64.5	81.1	60.3	16.6
H1111	20 July 1977	101.5	91.8	97.1	67.9	88.5	72.2	19.3
H1112	20 July 1977	124.7	95.7	103.5	70.3	95.0	71.1	18.9
H1211	20 July 1977		94.9	100.4	71.7	94.9	71.9	21.4
H1212	20 July 1977		87.7	92.3	66.3	85.9	66.3	18.3
H1214	21 July 1977		93.4	99.7	66.4	86.2	71.9	18.9
H1115	21 July 1977	92.9	84.9	90.0	65.0	86.5	66.4	17.5
H1116	21 July 1977	105.2	89.5	98.1	68.0	89.0	68.0	19.3
H1114	21 July 1977	83.9	80.5	88.5	65.5	84.6	64.3	16.7
H1215	22 July 1977		93.4	100.5	74.0	95.0	76.6	19.5
H1216	22 July 1977		95.6	102.1	76.0	95.5	75.1	20.6
H1117	25 July 1977	137.8	101.1	105.7	75.8	97.0	75.6	21.1
H1219	25 July 1977	124.7	94.1	104.6	73.2	97.8	72.6	18.6
H1176	26 July 1977	136.0	99.0	104.5	72.5	94.7	73.2	19.2
H1177	26 July 1977	126.0	92.2	97.3	74.2	94.5	76.0	18.5
H1178	26 July 1977	102.0	94.6	94.6	68.2	87.3	69.0	17.4

Table 5. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)		Plastron	Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Length (cm)	Head Width (cm)
H1220	26 July 1977	80.7	84.4	89.2	67.0	82.3	67.7	18.0
H1221	26 July 1977	118.8	97.2	103.9	75.2	95.6	71.9	20.1
JI2940	26 July 1977	108.8	88.6	92.6	64.5	87.4	68.0	19.0
H1123	27 July 1977		95.0	103.0	72.2	90.3	74.0	18.4
H1179	27 July 1977	89.7	88.2	94.2	64.5	89.6	67.6	19.2
H1180	27 July 1977	79.3	86.9	92.7	68.5	84.3	68.5	17.2
H1181	27 July 1977	110.2	94.2	101.2	69.5	90.5	72.2	18.1
H1182	27 July 1977	128.3	94.1	101.5	69.6	93.0	74.0	21.2
H1222	27 July 1977		86.8	93.5	67.1	85.0	67.5	15.9
H1223	27 July 1977		78.8	81.0	61.0	79.8	61.8	16.2
H1122	28 July 1977	140.5	95.3	104.0	71.9	95.4	75.6	23.7
H1118	28 July 1977	136.9	100.8	107.2	70.8	97.6	78.4	22.5
H1183	28 July 1977	121.0	88.8	108.5	71.3	91.3	73.9	20.0
H1184	28 July 1977	107.4	91.7	97.9	66.2	86.5	68.8	18.0
H1186	28 July 1977	118.8	91.2	100.1	68.3	91.1	71.1	18.7
H1119	29 July 1977	111.1	92.5	99.7	69.0	88.5	69.5	19.9

Table 5. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1120	29 July 1977	119.2			68.7	94.4	70.2	19.8
H1188	29 July 1977	133.7	99.0	106.5	77.3	99.0	76.1	19.5
H1189	29 July 1977	121.5	97.6	102.5	75.3	94.0	79.3	19.8
H1190	29 July 1977	121.0	96.8	104.0	70.5	95.7	74.4	18.3
H1191	29 July 1977	102.9	87.4	94.9	70.1	85.1	68.0	17.9
H1192	29 July 1977	107.9	95.2	101.0	68.8	90.4	71.0	20.5
H1224	1 August 1977	120.1	93.9	100.0	71.9	94.1	73.3	19.1
H1226	1 August 1977		99.4	102.3	71.9	96.5	74.4	23.6
H1227	2 August 1977		96.3	98.5	68.2	90.2	69.6	20.3
H1228	2 August 1977			99.4		92.3	69.6	
H1225	4 August 1977	141.4	99.0	104.5	77.3	98.5	73.8	29.9
H1230	4 August 1977			101.7		94.0	73.5	
H1193	5 August 1977	113.3	91.8	100.0	68.6	91.0	70.0	18.8
H1195	10 August 1977	132.4	94.6	101.2	76.0	95.0	75.3	20.7
H1196	10 August 1977	130.1	94.6	101.3	71.1	90.2	74.3	20.6
H1237	10 August 1977	104.3	88.0	98.3	65.9	90.0	73.1	21.1
H1197	11 August 1977	147.3	99.6	106.2	73.5	96.8	75.2	19.3

Table 5. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; Summer, 1977 (continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
HI1920	12 August 1977	138.3	97.0	104.9	72.1	93.7	72.8	20.2
H1238	15 August 1977	110.2	90.2	96.9	70.6	89.3	71.3	20.0
H1239	15 August 1977	173.2	105.5	112.7	79.0	101.2	81.4	24.0
H1232	17 August 1977			101.5		96.5	77.9	
H1233	18 August 1977			98.2		92.4	71.3	
$\overline{X}$		118.43	93.18	99.91	70.82	91.70	71.92	19.51
S.D.		20.47	5.44	5.84	4.71	5.34	4.49	2.34
N		215	266	270	271	274	274	272
Range		(77.1-186.8)	(78.7-105.5)	(85.4-114.3)	(60.7-94.7)	(79.2-106.8)	(59.5-90.0)	(16.2-29.9)

Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978.

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
	2 June 1978	121.5	94.1	98.2	69.6	92.7	73.6	18.1
A2711	15 June 1978	109.7	87.9	95.5	65.3	87.5	68.7	19.1
A2714	29 June 1978		91.5	96.9	68.9	89.5	71.3	19.9
A2743	1 Aug. 1978	121.5	91.3	109.0	69.3	96.4	70.8	20.2
A2776	17 June 1978		88.8	93.6	70.8	93.3	70.8	18.2
A2821	3 July 1978		97.2	104.8	68.9	88.4	75.4	19.5
A2858	14 June 1978	99.7	85.9	90.0	70.3	90.2	69.5	17.9
A2888	30 June 1978	97.5	89.2	96.1	65.7	87.1	67.1	16.8
A2892	9 June 1978		94.6	105.0	71.4	91.1	70.6	19.2
A3071	17 June 1978		85.3	91.0	63.6	82.1	66.4	17.5
A3100	3 July 1978		88.8	96.5	67.9	91.6	68.2	18.9
B3536	17 Aug. 1978	79.3	77.2	86.4	59.2	81.4	59.1	16.3
CR1195	15 July 1978	138.7	96.4	101.2	77.8	96.4	75.8	22.2
CR1369	21 June 1978		102.0	109.2	72.0	95.2	74.2	20.7
CR1755	30 June 1978		94.8	99.6	70.8	91.7	73.1	21.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
CR648	16 June 1978	130.1	93.4	96.3	71.9	92.3	70.4	23.1
C14641	29 June 1978	131.5	100.2	107.6	76.7	94.3	78.1	20.2
C2099	27 July 1978	107.4	94.8	102.1	79.0	93.0	70.4	20.9
C2156	8 June 1978		99.4	105.0	72.9	96.4	76.6	22.1
C2311	7 June 1978		93.0	99.5	70.5	89.7	72.1	18.2
C2317	11 July 1978		95.3	101.7	71.3	89.3	71.6	19.8
C2331	18 May 1978	115.6	92.1	101.0	70.5	89.6	74.1	18.8
C2342	29 June 1978	124.7	95.4	104.4	72.3	92.2	72.4	19.0
C2359	3 Aug. 1978		105.1	109.0	73.3	99.0	75.6	20.3
C2369	22 July 1978		92.8	98.9	69.7	91.7	69.2	20.8
C2374	27 May 1978		87.0	93.9	58.3	85.0	67.2	16.3
C2376	12 June 1978		83.8	91.0	65.4	84.5	68.2	18.1
C2534	30 May 1978	105.2	87.9	95.2	64.7	83.8	68.1	17.5
C2895	19 June 1978	126.9	96.9	104.8	73.0	94.8	73.8	20.6

Table 6. Morphological characteristics of nesting female loggerhead turtles (_Caretta caretta_) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
		Weight	Straight	Over	Straight	Over	Length	Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
C2935	17 June 1978	120.1	90.9	97.7	67.0	90.4	71.0	20.3
E9289	3 July 1978		89.6	95.5	67.4	90.5	69.5	17.6
FL0002	25 July 1978		92.9	100.5	74.0	92.0		18.2
FL0004	17 July 1978	83.9	85.5	92.7	62.9	82.4	63.0	16.3
FL0006	30 June 1978		91.3	98.3	62.2	86.4	68.0	18.7
FL0010	13 July 1978	98.4	89.5	95.0	66.2	90.2	68.5	18.0
FL0017	15 June 1978		85.7	91.5	65.5	87.8	68.6	19.1
FL0019	11 July 1978		93.2	99.5	73.3	90.0	70.3	19.2
FL0024	17 July 1978	151.9			77.6	101.2	77.6	21.0
FL0028	11 July 1978		97.1	100.4	72.5	98.1	72.2	20.7
FL0029	25 Aug. 1978		99.5	106.4	75.6	95.3	73.4	20.0
FL0030	12 June 1978		86.5	94.0	62.8	84.2	61.3	17.2
FL0033	3 July 1978		89.0	95.3	64.8	87.0	65.3	15.6
FL0035	18 July 1978	102.9	91.7	97.4	66.2	87.5	73.0	19.0
FL0036	16 June 1978	154.1	102.5	106.9	78.3	99.1	76.3	25.5

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
FL0043	20 July 1978		93.4	100.0	70.8	90.0	71.2	20.1
FL0048	4 July 1978		90.5	97.8	67.0	91.8	72.8	20.4
FL0057	8 July 1978	115.1	91.0	101.0	64.8	95.1	72.4	19.0
FL0058	24 July 1978	96.5	88.5	96.1	71.0	97.0	71.5	17.5
FL0059	20 July 1978		90.8	99.2	68.3	87.6	71.1	18.8
FL0070	9 Aug. 1978		87.3	94.3	68.1	89.0	68.6	18.5
FL0075	4 Aug. 1978		88.1	95.1	65.0	88.2	62.2	16.3
FL0076	25 July 1978		92.5	99.6	68.2	92.3	71.2	20.0
FL0077	24 July 1978		91.2	95.8	68.0	92.0	70.5	19.9
FL0078	13 July 1978	86.2	90.8	96.0	64.9	86.4	65.8	17.8
FL0082	29 June 1978		98.8	105.9	79.3	100.0	75.1	21.3
FL0083	13 July 1978		92.5	97.5	70.8	90.3	73.5	19.2
FL0086	29 June 1978		100.0	103.0	75.0	94.5	72.7	18.7
FL0091	13 July 1978		93.3	99.5	68.5	90.5	69.2	19.8
FL0093	13 July 1978		93.6	103.0	71.0	91.8	72.5	18.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
		Weight	Straight	Over	Straight	Over	Plastron Length	Head Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
FL0099	13 July 1978		81.4	88.6	60.9	81.4	61.2	15.1
FL0100	10 Aug. 1978		87.7	92.0	63.9	84.5	65.5	15.0
FL0106	5 Aug. 1978		91.6	96.1	68.9	86.0		20.0
FL0107	20 July 1978		95.7	103.8	73.4	90.0	72.0	19.3
FL0108	4 Aug. 1978		97.9	103.2	75.0	95.5		22.9
FL0123	26 July 1978		86.4	94.3	65.8	85.4	65.1	16.0
FL0126	14 July 1978		88.9	95.3	70.3	88.8	65.2	19.5
FL0141	19 July 1978	103.4	89.8	95.4	69.4	89.2	71.0	21.0
FL0166	25 July 1978		96.0	99.8	70.1	93.3	73.1	20.2
FL0168	25 July 1978		92.7	100.7	68.9	88.1	68.9	19.0
F047	26 June 1978	130.1	93.3	103.9	70.1	92.6	73.2	20.2
F051	5 Aug. 1978	112.4	93.3	100.0	69.6	91.4	69.1	19.1
F059	15 July 1978		90.1	95.1	68.9	86.4	67.9	19.7
F063	30 June 1978		93.3	101.8	72.0	93.8	72.9	19.0
F064	30 June 1978	122.4	93.9	100.3		94.0	73.8	20.0
F066	3 July 1978	117.9	92.8	94.1	71.0	93.5	72.6	18.9

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
		Weight	Straight	Over	Straight	Over	Plastron Length	Head Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
F069	17 July 1978	95.2	89.2	95.4	68.8	85.8	69.5	18.7
F076	3 July 1978		95.4	101.2	69.8	92.3	73.3	19.5
GA0118	27 June 1978	115.6	94.0	100.5	69.8	87.6	69.6	20.0
GA0136	13 July 1978		86.5	98.0	66.6	86.2	60.1	17.4
HI679	17 June 1978		84.6	88.4	62.3	81.4	64.6	16.7
H1261	22 May 1978	147.3	100.4	110.4	69.6	97.1	77.6	21.2
H1262	22 May 1978	83.9	81.1	88.4	63.8	82.1	65.1	15.3
H1263	22 May 1978	91.6	86.3	91.3	65.8	83.6	68.8	16.6
H1264	22 May 1978	179.1	103.8	111.1	78.0	107.0	85.5	24.3
H1265	22 May 1978	114.7	89.4	94.9	67.5	90.3	72.0	18.5
H1266	22 May 1978			89.6	66.1	80.0	63.3	
H1268	22 May 1978	125.6	92.9	100.6	74.1	92.2	74.0	20.0
H1269	26 May 1978	102.0	87.9	95.6	69.4	90.0	71.0	17.6
H1270	30 May 1978	124.7	95.2	104.1	64.9	90.7	72.8	19.5
H1272	30 May 1978	122.4	98.7	105.5	71.5	94.1	73.8	21.8

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1273	30 May 1978	90.7	87.3	92.8	66.5	85.7	64.9	18.3
H1274	1 June 1978	153.2	100.5	108.6	79.5	102.8	79.5	22.2
H1275	1 June 1978	96.5	88.2	93.0	66.8	84.0	67.3	19.3
H1276	25 May 1978	104.3	84.4	97.8	65.8	88.3	68.0	20.2
H1278	26 May 1978	107.4	92.0	97.7	67.7	85.5	70.8	18.8
H1279	31 May 1978	87.0	87.6	94.0	63.2	82.3	64.2	17.7
H1280	31 May 1978	111.1	91.7	99.5	68.4	90.6	69.7	20.1
H1281	31 May 1978	115.6	94.7	100.5	68.1	91.5	71.8	18.9
H1282	1 June 1978	141.4	93.8	104.0	72.8	95.8	73.7	20.3
H1283	1 June 1978	117.9	93.2	99.4	72.0	93.2	71.0	19.9
H1284	2 June 1978		95.5		73.6		74.3	21.4
H1285	2 June 1978	111.1	88.1	100.0	67.7	86.5	70.0	19.0
H1287	2 June 1978	163.2	100.5	105.1	76.9	99.5	81.3	23.3
H1290	2 June 1978	167.8	103.7	114.0	80.4	103.8	81.3	21.0
H1291	5 June 1978	98.8	89.4	96.0	69.8	90.0	69.8	19.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H1292	5 June 1978	127.8	93.6	100.6	74.5	97.7	74.3	19.7
H1293	5 June 1978	125.6	93.8	100.4	72.0	92.4	75.4	24.6
H1294	6 June 1978		84.0	91.3	60.9	85.7	65.8	17.8
H1295	7 June 1978	143.8	101.5	110.6	75.2	99.0	82.6	19.6
H1296	7 June 1978		93.2	98.9	69.5	90.2	69.2	18.3
H1297	8 June 1978		96.0	104.5	74.6	95.4	71.1	21.2
H1298	8 June 1978	114.3	96.4	101.3	76.3	93.8	74.5	19.4
H1299	7 June 1978		92.0	98.5	68.0	89.0	69.4	16.2
H1300	8 June 1978	84.8	85.9	92.2	68.2	88.0	67.3	18.3
H1436	8 June 1978	99.7	89.3	97.0	66.6	87.0	67.9	17.8
H1457	3 Aug. 1978			101.4	72.9	93.8	73.5	20.0
H1497	1 July 1978		97.8	103.7	71.8	96.5	76.5	19.7
H1718	12 June 1978	139.7	93.9	103.1	72.2	91.8	72.3	22.2
H1901	6 June 1978	117.9	94.5	100.4	70.0	90.2	71.0	19.7
H1902	6 June 1978	121.0	95.9	103.3	75.5	93.8	73.3	18.6

Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum Head Width (cm)
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	
H1903	6 June 1978	131.5	92.7	101.2	76.3	96.5	75.7	19.6
H1904	6 June 1978	104.3	88.0	95.8	71.2	90.4	65.5	17.5
H1905	6 June 1978	121.0	99.5	106.5	75.4	95.1	72.0	19.6
H1906	6 June 1978	95.2	85.4	90.8	61.4	82.0	66.3	17.4
H1907	6 June 1978	97.5	86.7	96.2	64.0	86.0	68.3	18.8
H1908	6 June 1978	111.1	97.0	105.1	69.2	89.0	71.5	19.3
H1909	6 June 1978	90.7	85.1	92.4	64.4	86.1	66.9	17.6
H1910	6 June 1978	145.1	99.4	107.7	77.2	98.2	79.9	20.7
H1912	7 June 1978	106.5	89.7	94.6	73.0	88.5	70.5	18.3
H1913	7 June 1978	145.1	96.8	103.3	70.8	94.7	76.3	19.6
H1915	7 June 1978	137.4	99.1	105.8	70.1	91.9	73.4	22.4
H1916	7 June 1978	83.9	87.2	91.3	65.0	82.6	66.4	17.8
H1918	8 June 1978		92.8	98.5	64.8	88.4	68.4	17.7
H1919	9 June 1978		96.8	101.6	73.6	94.3	73.2	19.8
H1921	12 June 1978		97.8	106.5	72.7	96.3	74.0	20.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H1922	12 June 1978		87.6	93.7	65.0	84.9	68.1	17.9
H1923	12 June 1978		92.0	97.4	67.0	90.1	69.0	19.6
H1924	12 July 1978		97.8	108.2	94.2	99.1	75.7	21.3
H1925	12 June 1978	103.4	91.3	99.3	70.6	91.5	67.6	18.4
H1926	8 June 1978	105.6	86.8	93.3	70.0	90.3	68.0	18.1
H1927	8 June 1978	138.3	98.7	107.7	75.7	98.9	78.2	20.9
H1928	10 June 1978		94.9	101.8	67.0	94.0	75.5	19.4
H1929	10 June 1978		89.3	96.8	69.8	91.2	72.5	19.3
H1930	10 June 1978		91.2	104.5	71.4	97.2	72.9	18.4
H1931	10 June 1978		92.9	103.9	72.3	92.4	68.9	18.7
H1932	12 June 1978		93.1	100.6	66.6	93.6	71.1	19.4
H1933	12 June 1978		90.3	96.5	70.9	93.6	69.1	18.2
H1934	13 June 1978		92.9	100.9	68.9	89.3	69.6	20.2
H1935	13 June 1978		94.8	101.7	73.9	91.3	77.3	19.0
H1936	13 June 1978		90.2	98.5	68.9	88.4	72.2	18.8

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1937	13 June 1978		97.7	108.5	71.2	100.8	79.3	21.4
H1938	13 June 1978		100.5	91.9	73.4	92.5	72.2	21.8
H1939	14 June 1978	91.6	85.8	92.9	66.2	85.8	64.8	17.3
H1940	14 June 1978	123.3	95.4	102.9	72.5	94.4	73.3	19.3
H1941	14 June 1978	132.4	96.4	102.9	73.2	95.0	74.9	19.0
H1942	14 June 1978	148.2	99.4	106.4	77.6	100.7	78.5	21.8
H1943	14 June 1978	119.2	91.4	99.6	67.3	91.0	69.0	19.4
H1944	14 June 1978		91.5	99.3	69.4	90.9	72.2	
H1945	14 June 1978		91.5	100.1	68.1	90.5	70.6	18.3
H1946	14 June 1978		93.6	98.2	73.2	89.6	73.2	19.4
H1947	14 June 1978		91.0	96.1	75.1	88.1	72.2	17.5
H1948	14 June 1978		93.1	99.4	71.1	91.9	71.9	19.2
H1949	14 June 1978		88.1	93.7	68.2	91.9	70.0	16.8
H1950	14 June 1978		96.0	101.4	72.0	93.6	69.9	17.3
H1952	12 June 1978	93.9	88.0	95.4	67.8	89.2	67.4	16.5
H1954	12 June 1978	84.8	88.0	92.1	63.8	84.2	64.3	16.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1955	12 June 1978		96.9	102.3	69.2	91.7	72.0	21.0
H1956	16 June 1978	116.1	94.3	103.0	73.1	95.2		18.8
H1957	12 June 1978	78.0	81.0	89.2	65.0	83.3	63.9	15.2
H1958	13 June 1978	114.2	93.3	99.5	74.8	93.8	71.8	18.1
H1959	14 June 1978	108.8	92.2	99.9	75.2	93.1	69.0	18.9
H1960	14 June 1977	92.9	87.9	94.8	67.3	87.2	68.8	16.9
H1961	14 June 1978	106.5	88.5	93.5	67.9	87.5	68.2	17.3
H1962	14 June 1978	105.6	90.5	96.0	67.0	87.6	69.2	19.0
H1963	14 June 1978	112.0		96.3	88.7	89.1	70.5	17.9
H1964	14 June 1978	76.1	80.0	85.0	57.9	80.2	62.9	16.6
H1965	14 June 1978	132.4	100.4	105.6	74.9	96.0	78.5	18.9
H1966	14 June 1978	87.0	85.9	90.8	64.4	80.7	65.2	17.3
H1968	15 June 1978		90.4	97.5	76.4	95.1	72.5	18.4
H1969	15 June 1978		99.4	105.7	77.3	101.5	76.8	23.2
H1970	15 June 1978		88.7	94.5	63.0	84.4	69.1	19.5

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H1971	15 June 1978		99.8	108.0	76.9	98.1	75.5	20.4
H1972	15 June 1978		93.9	100.7	73.4	96.3	70.3	21.1
H1973	16 June 1978		87.4	95.8	66.8	89.4	66.7	16.7
H1974	16 June 1978	145.1	98.8	109.1	74.0	98.5	76.1	21.3
H1975	16 June 1978	126.9	94.4	101.9	75.5	92.5	74.5	20.5
H1976	15 June 1978	130.1	98.8	103.3	69.9	92.4	71.5	20.5
H1977	15 June 1978	104.3	92.4	97.5	69.9	91.5	70.3	18.2
H1978	15 June 1978	88.4	85.3	92.4	61.1	84.1	66.4	18.2
H1979	15 June 1978	101.1	88.3	93.9	70.0	87.4	69.0	16.3
H1980	15 June 1978	132.4	92.3	99.9	77.5	97.4	76.4	19.5
H1982	15 June 1978		97.7	95.5	65.8	85.1	67.4	19.1
H1983	15 June 1978		96.1	103.5	74.5	93.4	74.5	21.1
H1985	15 June 1978		94.0	100.9	69.5	92.2	70.4	20.0
H1986	15 June 1978	99.7	89.4	95.1	69.4	90.3	66.5	18.1
H1987	15 June 1978		87.3	92.1	60.0	86.9	65.9	17.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Length (cm)	Width (cm)
H1988	15 June 1978		99.0	103.6	71.9	90.1	73.0	22.6
H1993	16 June 1978	126.9	95.2	104.3	71.3	92.7	72.6	19.9
H1994	16 June 1978	126.0	95.4	101.9	66.2	88.5	73.6	21.8
H1996	16 June 1978	92.9	87.0	91.2		87.5	66.1	18.3
H1997	16 June 1978	115.6	91.4	95.8	68.4	89.3	73.5	20.5
H1998	16 June 1978	130.1	91.2	100.5	71.3	95.5	73.1	19.1
H1999	16 June 1978	105.7	94.0	98.0	72.0	90.8	69.3	18.0
H2000	16 June 1978	138.3	100.2	107.4	69.0	93.3	73.7	23.2
H2001	17 June 1978		94.5	100.9	71.0	96.6	77.8	19.1
H2002	17 June 1978		90.6	98.9	71.8	94.1	74.5	17.9
H2003	17 June 1978		91.9	97.8	66.8	87.9	69.8	21.6
H2004	17 June 1978		82.9	88.7	61.8	78.5	61.8	16.6
H2005	19 June 1978	111.1	93.5	100.8			73.9	20.9
H2007	19 June 1978	92.9	86.0	90.5	66.9	83.4	67.0	18.9
H2008	19 June 1978	130.1	95.5	102.5	78.4	97.0	75.4	19.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2009	19 June 1978	133.7	99.4	106.0	74.3	98.5	74.7	21.6
H2010	19 June 1978	143.7	102.8	110.4	78.2	97.9	79.8	20.0
H2011	19 June 1978	106.5	92.2	96.5	70.1	89.6	70.5	20.6
H2012	19 June 1978		92.3	97.3	68.6	92.4	71.6	19.8
H2013	19 June 1978	113.3	94.9	101.4	70.3	90.5	73.4	19.5
H2014	20 June 1978		91.4	98.6	66.1	94.8	75.0	19.9
H2015	20 June 1978		90.2	98.2	70.5	92.3	69.4	19.3
H2016	20 June 1978		91.4	96.8	66.4	91.7	71.1	20.1
H2017	20 June 1978	116.5	91.3	98.1	70.6	95.4	75.5	19.4
H2018	20 June 1978		95.8	102.6	73.3	94.6	72.9	21.4
H2019	20 June 1978	140.6	94.3	101.6	74.0	100.6	75.3	19.6
H2020	20 June 1978		103.7	107.8	72.1	93.5	78.8	18.3
H2022	21 June 1978		95.5	102.7	70.1	92.7	71.4	18.4
H2023	22 June 1978	99.8	91.3	97.1	69.3	92.0	69.0	20.4
H2024	17 June 1978		94.4	101.6	71.4	91.3	69.9	22.8

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2025	17 June 1978		94.0	99.9	76.5	92.5	75.7	23.5
H2026	17 June 1978		96.4	103.1	70.0	93.2	72.4	21.0
H2027	17 June 1978	120.2	90.0	97.9	63.8	91.6	65.2	18.8
H2028	17 June 1978		98.3	104.8	72.1	95.5	72.8	21.1
H2029	17 June 1978		92.0	96.0	64.1	86.1	70.5	21.9
H2030	17 June 1978		88.6	95.3	70.7	88.6	68.5	17.5
H2031	17 June 1978		87.1	92.3	63.5	81.5	67.3	18.3
H2032	17 June 1978		93.8	100.0	70.8	93.5	72.1	19.7
H2035	19 June 1978		94.3	103.4	71.4	96.5	75.2	22.6
H2036	19 June 1978	101.1	85.5	93.2	65.9	86.8	65.2	18.8
H2037	19 June 1978	130.1	98.3	104.0	74.2	95.8	70.9	20.8
H2038	19 June 1978	81.6	83.0	90.0	64.1	85.1	62.5	15.7
H2039	19 June 1978	129.2	100.5	107.0	74.5	106.5	78.3	23.3
H2042	20 June 1978		93.0	101.8	73.9	91.7	72.3	18.8
H2043	20 June 1978		82.8	89.2	64.6	82.7	60.8	17.4
H2044	20 June 1978		90.3	97.4	67.4	90.0	68.9	17.9

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2045	20 June 1978		90.9	98.5	72.9	92.6	71.5	18.9
H2046	20 June 1978	95.2	88.5	93.7	69.3	88.0	70.8	19.0
H2047	20 June 1978	110.2	94.0	99.2	76.4	95.1	72.3	18.3
H2048	20 June 1978	102.0	91.5	99.7	66.9	87.1	62.7	18.3
H2049	21 June 1978	148.2	104.8	111.5	75.5	103.5	78.5	23.8
H2050	21 June 1978	114.7	92.3	98.2	64.9	92.0	67.5	20.0
H2051	22 June 1978		87.9	94.3	65.8	86.3	67.3	18.5
H2052	22 June 1978		92.7	96.5	69.2	90.1	71.1	18.7
H2053	22 June 1978	113.8	92.8	99.6	70.5	93.4	69.0	20.9
H2054	22 June 1978	88.4	87.5	94.0	69.9	84.2	68.5	17.5
H2055	22 June 1978		81.6	86.3	61.9	81.6	64.1	15.5
H2056	23 June 1978		99.2	104.4	70.5	95.6	75.1	20.6
H2057	23 June 1978	138.3	101.3	109.6	74.7	97.9	77.0	19.0
H2059	23 June 1978	119.2	92.5	98.3	69.6	86.8	70.4	18.9
H2060	23 June 1978	137.4	97.4	102.6	76.1	94.9	76.8	19.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
		Weight	Straight	Over	Straight	Over	Length	Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
H2061	26 June 1978		91.9	95.8	68.9	88.0	68.6	17.2
H2062	24 June 1978		96.4	100.5	70.2	91.5	74.5	19.5
H2063	24 June 1978			92.0		82.8		
H2064	26 June 1978		92.3	98.8	72.0	95.6	70.6	19.7
H2065	26 June 1978		98.3	102.5	74.6	93.6	76.2	21.3
H2066	24 June 1978			97.3		91.0		
H2067	26 June 1978		100.3	106.6	77.3	97.1	74.5	19.8
H2068	27 June 1978		97.1	104.0	72.6	100.2	73.1	19.8
H2069	27 June 1978		91.2	101.1	69.0	92.7	71.8	19.0
H2071	27 June 1978		91.3	105.2	75.1	94.1	74.8	19.9
H2072	27 June 1978		92.4	99.5	67.9	99.6	71.5	17.9
H2073	27 June 1978	130.2	95.2	101.2	78.0	94.3	75.0	21.9
H2074	27 June 1978		87.1	94.0	66.2	85.0	68.2	17.4
H2075	21 June 1978	105.2	88.8	95.3	67.8	86.5	68.0	18.0
H2076	22 June 1978	86.1	86.9	91.7	65.2	85.5	66.8	

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2077	12 July 1978		95.6	106.4	75.6	96.5	70.0	20.8
H2078	23 June 1978		95.8	102.5	69.4	92.8	72.2	20.3
H2079	23 June 1978		100.5	106.3	71.6	93.8	76.5	21.8
H2080	23 June 1978		86.8	95.7	68.2	90.0	70.8	16.3
H2081	23 June 1978		93.1	99.6	70.8	92.8	72.3	19.8
H2082	23 June 1978		89.6	94.4	67.8	89.5	67.8	18.6
H2084	24 June 1978	116.1	92.9	101.0	71.4	94.0	72.9	18.4
H2085	26 June 1978	139.6	98.0	105.6	73.2	98.8	74.4	19.9
H2086	26 June 1978	102.0	88.9	94.8	64.9	84.9	68.4	18.3
H2087	24 June 1978	102.9	90.3	99.3	67.5	88.8	72.5	18.5
H2088	27 June 1978	126.9	97.5	102.3	75.0	91.7	74.0	19.9
H2089	27 June 1978	125.6					76.8	19.8
H2090	27 June 1978	98.4	90.8	95.9	69.5	89.0	68.0	18.9
H2091	27 June 1978	106.5	90.6	95.2	65.8	86.9	68.5	18.5
H2092	28 June 1978		91.9	96.8	70.3	88.3	75.7	19.5

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
		Weight	Straight	Over	Straight	Over	Length	Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
H2093	28 June 1978		104.2	110.9	78.5	101.2	81.3	23.0
H2094	29 June 1978		86.6	94.4	65.2	90.5	67.5	20.2
H2095	29 June 1978	136.0	94.4	103.3	79.3	93.5	74.5	21.2
H2096	29 June 1978		94.2	103.0	70.0	94.0	74.0	18.2
H2097	29 June 1978	87.1	86.8	94.5	64.3	86.6	69.0	16.0
H2098	29 June 1978		83.8	91.2	66.4	86.2	67.2	18.0
H2099	29 June 1978		90.6	98.8	67.0	93.3	71.2	18.3
H2100	29 June 1978		99.5	99.8	67.7	98.5	75.0	22.0
H2101	28 June 1978		79.2	89.2	68.0	86.0	69.9	18.5
H2102	28 June 1978		93.9	99.2	67.8	90.1	68.7	18.5
H2105	29 June 1978		94.4	98.7	77.3	95.2	73.5	19.9
H2106	5 July 1978				63.9	82.5	63.0	17.0
H2107	29 June 1978		99.9	106.0	73.0	94.8	74.0	20.8
H2108	5 July 1978		98.5	106.0	74.8	99.9	78.8	19.6
H2111	29 June 1978							

Table 6. Morphological characteristics of nesting female loggerhead turtles (<u>Caretta caretta</u>) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2112	30 June 1978		86.5	92.2	65.6	87.5	64.2	16.9
H2113	30 June 1978		89.0	95.4	63.4	85.6	67.3	16.9
H2114	30 June 1978	113.4	93.4	100.6	69.9	95.0	71.6	19.9
H2115	30 June 1978		84.9	90.3	65.0	84.5	66.6	17.6
H2116	30 June 1978		90.7	96.4	69.6	88.5	72.4	18.3
H2118	30 June 1978		87.5	91.5	64.5	83.2	66.0	20.6
H2119	30 June 1978		85.3	90.9	65.5	85.8	67.9	16.9
H2120	30 June 1978		87.2	92.0	66.0	87.5	66.5	18.5
H2121	30 June 1978		93.8	101.5	69.0	81.3	70.5	19.4
H2123	4 July 1978		94.9	100.0	74.0	90.5	74.7	21.2
H2124	28 June 1978		96.5	103.2	72.8	90.5	71.1	19.6
H2125	28 June 1978		96.1	105.0	65.9	93.7	72.5	18.2
H2126	29 June 1978		95.5	103.8	72.1	99.2	71.7	20.8
H2127	29 June 1978		91.8	96.0	64.4	99.4	67.5	17.1
H2128	29 June 1978	125.6	94.0	95.2	70.3	103.8	74.9	17.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2129	30 June 1978	115.6	90.4	98.7	70.6	93.5	70.0	19.5
H2130	30 June 1978	117.9	94.1	101.0	71.8	92.4	70.4	20.0
H2131	30 June 1978	110.2	91.3	99.0	68.6	89.3	68.6	16.5
H2132	30 June 1978	95.2	87.1	93.5	65.6	86.5	67.2	19.1
H2133	30 June 1978	98.8	88.2	95.7	63.1	87.0	66.2	19.4
H2134	30 June 1978	122.4	92.3	103.9	66.9	87.3	71.6	20.0
H2135	30 June 1978	144.2	99.1	109.2	74.4	99.3	74.7	22.2
H2136	30 June 1978	74.8	80.5	86.9		81.3	59.3	16.6
H2137	30 June 1978	113.3	94.5	100.5	70.3	95.3	73.9	20.1
H2138	1 July 1978	107.4	86.8	93.7	69.0	88.9	69.3	18.9
H2139	1 July 1978	92.5	84.9	94.0	62.0	87.4	66.0	17.3
H2140	1 July 1978	106.5	90.7	97.8	66.0	88.0	70.3	17.4
H2141	1 July 1978	101.5	89.9	99.7	65.5	90.5	71.0	16.6
H2142	3 July 1978		82.9	90.9	65.1	82.4	60.1	19.0
H2143	3 July 1978		92.7	98.4	66.3	88.5	68.5	21.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2145	3 July 1978		93.6	98.4	70.2	93.4	75.8	23.2
H2146	3 July 1978		92.1	97.7	71.3	92.0	73.4	20.2
H2147	3 July 1978		84.5	90.0	65.6	85.5	62.8	18.6
H2148	4 July 1978		90.1	98.4	67.8	92.3	68.0	19.4
H2149	3 July 1978		95.8	101.9	69.3	94.4	73.3	20.7
H2150	3 July 1978		91.3	98.0	72.8	88.0	67.0	16.8
H2151	29 June 1978		93.2	100.5	77.0	97.5	71.2	18.8
H2152	29 June 1978	82.5	81.4	88.1	63.2	82.9	63.6	17.2
H2153	29 June 1978	112.0	92.3	100.5	69.2	88.8	73.4	18.5
H2154	29 June 1978	131.5	96.0	102.6	74.1	98.1	75.3	20.3
H2155	29 June 1978		90.8	99.6	70.6	91.8	73.0	18.3
H2156	30 June 1978		92.5	96.1	69.0	90.2	67.4	21.8
H2158	30 June 1978		96.1	102.4	69.8	96.0	73.2	19.7
H2160	30 June 1978		91.8	98.3	66.8	89.1	70.5	17.5
H2161	30 June 1978		94.3	102.2	71.5	97.5	74.1	19.6

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2162	5 July 1978		91.4	99.1	72.0	91.8	65.8	18.7
H2163	4 July 1978		94.6	100.5	71.5	94.8	73.7	20.9
H2164	30 June 1978		90.0	96.8	67.4	88.2	65.0	20.5
H2165	5 July 1978		92.4	99.6	74.5	95.5	73.4	18.2
H2166	30 June 1978		87.4	94.6	68.8	88.9	66.9	17.0
H2167	3 July 1978	131.5	100.4	107.7	76.0	103.0	77.0	19.6
H2169	4 July 1978		82.0	89.8	63.8	82.9	62.7	16.5
H2170	4 July 1978		88.0	94.6	65.8	84.3	64.5	18.7
H2171	4 July 1978	127.9	99.3	106.8	74.5	98.4	73.4	22.6
H2172	4 July 1978		97.6	104.3	75.2	97.7	75.0	20.0
H2173	4 July 1978		102.8	111.9	75.7	97.9	76.0	22.2
H2174	4 July 1978		88.5	97.0	70.1	90.4	69.8	20.0
H2175	29 June 1978		92.9		63.5			19.3
H2176	4 July 1978		91.4	99.5	75.7	97.9	72.5	20.9
H2177	3 July 1978	109.8	90.8	99.6	73.6	95.6	70.5	19.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2178	3 July 1978		82.3	89.5	62.7	82.3	63.5	19.0
H2179	3 July 1978		93.2	99.2	67.5	86.7	71.2	20.3
H2180	4 July 1978	112.9	90.7	97.5	70.5	93.4	71.4	19.3
H2181	3 July 1978		91.2	98.7	72.8	90.8	70.9	19.4
H2182	3 July 1978		88.5	95.5	63.0	82.5	65.9	17.4
H2183	3 July 1978		88.5	94.4	68.7	90.4	68.9	16.7
H2184	3 July 1978		107.5	110.8	75.7	98.2	82.2	21.8
H2185	3 July 1978		94.0	100.1	67.5	88.0	69.7	22.0
H2186	5 July 1978		93.0	99.0	68.2	87.6	69.4	17.8
H2188	5 July 1978		88.8	92.7	67.5	87.0	68.4	16.2
H2189	5 July 1978		86.9	92.7	65.2	83.8	65.7	17.6
H2190	5 July 1978		90.0	96.0	66.8	86.8	70.5	18.1
H2191	5 July 1978		98.7	106.0	75.9	97.2	75.1	19.8
H2192	5 July 1978		85.5	93.4	63.3	88.0	65.0	18.1
H2193	5 July 1978		94.9	101.3	70.0	91.3	73.7	19.4

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2194	10 July 1978	125.1	98.4	103.5	74.0	93.6	73.2	21.6
H2195	10 July 1978	117.9	92.9	102.1	76.5	95.9	74.3	17.8
H2197	14 July 1978		93.8	98.8	67.2	89.3	70.0	20.7
H2198	14 July 1978		95.0	102.4	72.0	97.8	77.0	19.0
H2199	14 July 1978	116.1	95.3	101.1	69.0	88.5	70.9	19.3
H2200	14 July 1978		96.2	103.1	70.9	94.5	75.8	18.1
H2201	4 July 1978		90.0	96.0	70.2	88.2	68.8	17.9
H2202	4 July 1978		101.5	108.8	72.2	97.2	73.2	20.3
H2203	4 July 1978	130.6	95.0	99.6	74.8	93.7	76.1	21.6
H2204	4 July 1978		93.1	98.5	72.2	90.4	70.0	18.8
H2206	5 July 1978		86.4	92.8	67.2	82.6	63.3	16.9
H2207	7 July 1978		91.2	99.1	67.7	90.0	70.3	18.3
H2208	6 July 1978		90.3	94.8	66.3	86.3	68.1	18.2
H2209	6 July 1978		97.2	104.2	77.5	97.2	74.7	20.7
H2210	6 July 1978		91.0	98.3	70.3	91.0	69.0	19.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
		Weight	Straight	Over	Straight	Over	Plastron Length	Head Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
H2211	7 July 1978		97.5	104.9	75.5	98.1	77.2	19.0
H2213	8 July 1978		97.7	96.2	77.9	96.2	77.3	20.9
H2214	7 July 1978	70.3	80.3	85.6	60.4	75.2	62.8	18.6
H2215	7 July 1978		94.8	103.0	72.0	94.0	72.2	18.6
H2216	8 July 1978		90.3	98.2	71.4	86.6	70.0	17.0
H2217	8 July 1978		88.8	94.8	68.4	85.8	67.0	17.5
H2223	10 July 1978	138.7	105.0	110.1	77.3	101.0	79.5	21.9
H2224	11 July 1978		89.1	94.2	67.0	85.9	71.8	17.7
H2225	10 July 1978	101.5	94.5	100.2	66.1	89.9	73.6	
H2226	4 July 1978		91.9	100.0	74.0	91.4	75.4	19.5
H2227	7 July 1978		86.5	91.8	64.2	80.5	65.7	18.8
H2228	4 July 1978		100.2	106.6	71.4	97.9	76.7	21.2
H2229	6 July 1978		92.0	99.1	68.3	94.7	70.4	19.0
H2231	12 July 1978		87.8	97.0	61.9	84.4	70.3	18.1
H2232	6 July 1978		103.8	108.4	79.4	103.9	78.7	21.9

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2233	12 July 1978		91.3	96.3	69.8	90.0	70.3	22.1
H2235	12 July 1978		88.6	95.1	66.7	86.4	67.4	17.5
H2237	6 July 1978		94.2	104.5	66.5	93.3	71.2	17.8
H2239	4 July 1978		95.5	102.5	72.5	94.3	72.7	19.9
H2240	4 July 1978	112.0	92.5	99.0	68.3	90.6	70.5	20.0
H2241	4 July 1978		90.2	96.5	71.9	89.7	67.8	18.9
H2242	4 July 1978		90.7	99.5	69.0	91.9	69.7	19.1
H2243	4 July 1978		98.4	107.6	76.0	96.5	75.1	21.0
H2244	7 July 1978		78.3	85.2	60.6	76.0	61.2	16.2
H2246	7 July 1978		95.3	101.3	70.1	91.1	72.0	18.5
H2247	12 July 1978		95.0	103.0	74.3	96.0	73.2	18.9
H2248	8 July 1978		97.5	103.5	74.5	91.4	74.4	19.6
H2250	8 July 1978		89.2	95.6	72.6	92.8	69.9	19.1
H2252	6 July 1978		90.0	98.2	63.5	91.8	68.2	17.8
H2253	6 July 1978		95.5	102.8	69.4	91.1	69.5	19.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2254	6 July 1978		86.4	95.2	65.9	85.6	64.9	17.5
H2256	10 July 1978		97.0	105.6	74.3	93.2	73.2	18.8
H2257	10 July 1978		88.2	95.4	69.5	88.4	67.6	17.9
H2258	10 July 1978		92.9	100.0	67.0	84.2	70.4	21.0
H2259	10 July 1978		87.1	91.9	70.4	89.3	70.4	17.9
H2260	10 July 1978		88.9	95.6	70.4	94.8	67.2	18.2
H2261	10 July 1978		97.6	104.0	78.8	93.9	72.0	19.8
H2262	11 July 1978		94.8	105.5	75.8	94.7	68.7	20.0
H2263	11 July 1978	115.6	91.7	101.5	69.2	90.2	71.5	19.4
H2264	11 July 1978		98.7	106.4	73.8	100.0	70.5	21.2
H2265	11 July 1978	116.6	93.2	99.6	71.0	93.6	70.3	18.6
H2267	11 July 1978	121.5	98.5	105.3	70.1	92.3	74.5	19.3
H2268	11 July 1978		88.4	95.4	69.0	86.9	71.0	19.3
H2269	11 July 1978		98.1	103.4	77.5	95.7	78.2	22.0

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2270	12 July 1978	111.1	92.0	99.3	64.3	87.8	70.0	18.2
H2271	12 July 1978		85.9	95.4	68.0	88.6	74.8	17.4
H2272	12 July 1978	99.8	87.5	95.9	61.9	84.9	69.1	17.1
H2273	12 July 1978		98.2	108.1	73.0	98.6	81.8	21.0
H2274	11 July 1978		86.3	94.2	67.1	85.4	66.8	17.3
H2275	11 July 1978		89.8	98.9	67.8	87.8	70.4	17.0
H2277	11 July 1978		94.9	100.4	70.9	94.2	72.7	20.8
H2278	13 July 1978		86.4	93.3	67.5	85.3	66.4	17.5
H2279	13 July 1978		104.2	110.0	79.5	100.0	79.9	21.2
H2280	13 July 1978		87.1	92.9	67.8	85.1	65.0	18.7
H2281	13 July 1978		92.7	98.4	69.9	88.2	72.3	18.9
H2282	13 July 1978		96.9	102.7	74.8	93.1	74.1	19.9
H2283	11 July 1978		91.2	99.4	75.0	93.0	74.2	17.8
H2284	13 July 1978		95.6	102.0	70.2	95.4	71.9	20.1
H2285	11 July 1978		92.3	100.3	71.5	94.2	74.2	18.6

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Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Length (cm)	Width (cm)
H2286	11 July 1978		81.7	87.9	62.0	79.0	60.4	15.3
H2287	11 July 1978		94.3	100.5	67.2	91.4	73.4	19.9
H2288	11 July 1978		89.2	95.9	68.6	85.5	66.3	16.9
H2289	11 July 1978		89.6	96.6	65.9	84.7	69.2	17.1
H2290	11 July 1978		92.5	97.7	71.6	91.6	75.3	20.3
H2291	12 July 1978		95.6	100.5	70.2	90.0	69.9	20.3
H2292	12 July 1978		99.2	104.2	73.8	94.3	75.7	21.6
H2293	12 July 1978		94.4	102.1	71.3	94.8	72.6	21.3
H2294	12 July 1978		92.3	100.0	68.2	89.8	67.7	19.3
H2295	12 July 1978		83.6	89.5	62.6	81.6	63.9	18.0
H2296	12 July 1978		91.8	97.3	69.4	88.8	68.3	19.4
H2297	13 July 1978		87.8	94.8	67.2	83.7	66.1	18.5
H2299	14 July 1978		90.3	95.9	66.2	86.3	69.5	17.6
H2300	13 July 1978		92.2	99.3	74.6	92.2	73.2	18.1
H2301	13 July 1978		91.0	98.5	67.4	89.2	74.4	19.0

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2302	13 July 1978		90.6	98.0	67.4	91.6	69.8	20.0
H2304	14 July 1978		99.0	106.7	81.4	99.1	79.5	20.0
H2306	14 July 1978	95.2	87.0	93.6	66.8	90.2	69.8	19.7
H2307	14 July 1978	122.4	93.6	100.0	68.4	92.8		20.7
H2308	14 July 1978	88.4	86.5	92.0	66.4	83.5	65.2	19.2
H2309	15 July 1978	111.5	94.5	102.9	71.1	93.0	69.5	19.8
H2310	15 July 1978	82.5	84.9	91.4	59.4	81.6	64.4	17.6
H2311	15 July 1978	128.3	98.8	107.2	74.8	99.2	76.5	20.6
H2312	15 July 1978	92.0	84.9	94.3	64.3	86.0	67.9	17.0
H2313	15 July 1978		90.0	99.6	66.3	90.8	71.7	18.1
H2319	17 July 1978	89.3	86.0	92.2	66.0	88.3	68.6	17.9
H2320	19 July 1978		84.1	90.5	67.0	87.7	67.9	16.7
H2321	19 July 1978		96.1	100.7	71.4	93.5	69.4	16.5
H2322	19 July 1978		77.1	84.5	62.5	81.3	60.9	15.8
H2324	17 July 1978	102.0	91.1	98.6	67.8	88.2	71.4	19.7

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2325	13 July 1978		91.5	99.9	70.4	90.8	71.2	20.9
H2326	13 July 1978	114.7	93.2	102.1	71.4	90.0	72.0	22.0
H2327	13 July 1978	114.7	94.0	101.0	69.5	92.0	73.0	18.9
H2329	13 July 1978	117.9	99.2	105.0	76.2	98.0	77.4	20.0
H2331	13 July 1978		104.2	110.4	75.9	92.6	80.0	21.6
H2332	13 July 1978		87.5	96.0	68.9	89.4	70.5	18.2
H2333	13 July 1978		84.9	92.3	64.2	85.7	64.5	19.0
H2335	15 July 1978	97.5	86.3	94.1	68.3	90.0	66.2	17.8
H2336	15 July 1978	102.0	90.9	96.6	67.0	88.2	66.8	19.2
H2337	15 July 1978	135.1	94.0	100.2	73.2	97.9	70.6	20.9
H2338	15 July 1978	118.3	91.9	102.1	75.8	96.4	71.2	18.7
H2339	15 July 1978	96.1	86.0	93.4	68.3	90.4	62.6	17.1
H2340	17 July 1978	98.8	90.1	93.8	68.1	87.6	68.7	18.5
H2341	17 July 1978	128.7	94.5	101.1	78.0	96.4	72.3	18.5
H2342	17 July 1978	113.8	96.0	101.4	68.3	89.3	71.0	18.4

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2343	17 July 1978	111.5	93.1	98.8	70.4	91.3	75.8	19.9
H2345	17 July 1978	119.2	96.0	102.0	74.2	91.9	73.3	19.0
H2346	17 July 1978	102.9	94.4	110.5	71.8	94.3	70.2	18.4
H2347	19 July 1978	96.5	87.3	95.0	66.4	85.1	67.4	17.4
H2348	19 July 1978	114.7	89.8	97.5	66.9	86.9	68.2	18.7
H2350	17 July 1978	130.6	95.5	100.2	78.2	99.3	75.0	19.2
H2351	14 July 1978	104.3	89.8	97.2	68.0	88.5	68.8	19.3
H2352	14 July 1978		98.0	104.5	73.7	95.5	72.6	19.6
H2353	14 July 1978		97.8	104.1	75.5	91.8	74.0	19.8
H2354	15 July 1978		97.8	106.0	74.0	94.6	75.0	19.1
H2355	15 July 1978		98.7	105.5	73.3	93.0	75.0	21.6
H2356	15 July 1978		95.3	101.1	72.5	93.9	71.9	17.4
H2358	17 July 1978	104.3	92.9	99.0	68.8	93.7	69.5	18.0
H2359	17 July 1978	88.4	86.4	95.3	60.5	82.0	65.7	17.8
H2360	26 July 1978	103.4	93.2	98.4	70.5	87.1	71.7	18.3
H2361	26 July 1978	126.0	92.0	99.8	65.8	92.3	71.8	22.0

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Length (cm)	Width (cm)
H2362	28 July 1978		85.0	90.3	61.1	79.8	64.4	16.9
H2363	29 July 1978		90.5	97.2	67.3	87.2	71.8	18.8
H2364	29 July 1978		94.5	101.1	71.2	92.5	72.0	19.4
H2365	29 July 1978		90.5	96.8	70.0	87.4	70.0	19.0
H2366	29 July 1978		86.6	93.5	66.5	87.0	67.9	17.8
H2367	1 Aug. 1978		96.4	99.9	69.6	89.1	70.3	20.1
H2368	20 July 1978		81.0	83.1	64.3	83.2	66.0	17.5
H2369	20 July 1978		88.2	93.2	64.5	83.1	69.0	17.6
H2370	19 July 1978		93.8	100.6	73.8	93.6	71.6	20.1
H2371	19 July 1978		92.0	98.3	71.3	94.2	70.1	19.1
H2372	19 July 1978	158.7	107.1	111.2	74.7	102.1	77.7	25.3
H2373	20 July 1978	107.5	91.4	97.8	69.2	89.6	68.3	18.3
H2374	19 July 1978		94.1	98.4	70.2	90.8	69.4	19.1
H2376	22 July 1978		89.2	95.6	68.8	88.6	70.4	19.2
H2377	25 July 1978		85.1	90.8	68.0	85.5	64.7	16.6

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
H2380	25 July 1978		80.0	86.4	62.4	80.8	62.6	16.8
H2381	26 July 1978		96.1	99.1	73.3	93.4	77.4	21.5
H2382	26 July 1978		96.8	104.2	73.6	96.8	73.9	22.0
H2383	27 July 1978		92.7	100.0	71.5	93.9	71.6	17.6
H2385	27 July 1978		94.8	100.5	72.6	97.5	72.2	20.4
H2386	28 July 1978		92.7	97.7	75.0	92.0	69.7	18.2
H2387	22 July 1978		98.5	100.0	72.6	91.3	73.0	20.8
H2388	24 July 1978		89.9	97.9	65.0	90.0	69.2	18.8
H2389	24 July 1978		86.0	92.9	68.2	96.0	65.7	16.8
H2391	25 July 1978		86.9	94.3	67.7	88.7	68.1	16.8
H2392	25 July 1978		91.9	97.9	67.8	89.7	72.8	17.0
H2394	27 July 1978		84.6	92.3	60.1	83.1	64.5	18.4
H2395	27 July 1978		98.2	104.0	72.7	95.3	71.4	20.7
H2398	3 Aug. 1978		92.5	91.6	68.5	86.4	65.0	18.5
H2401	18 July 1978	96.1	85.8	90.0	67.8	87.2	66.6	18.3

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					Maximum
			Length (cm)		Width (cm)		Plastron	Head
		Weight	Straight	Over	Straight	Over	Length	Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
H2402	18 July 1978	124.7	98.3	103.4	76.8	96.7	73.0	19.7
H2403	19 July 1978	107.9	90.0	95.3	69.4	89.9	72.2	20.6
H2404	20 July 1978	138.7	95.0	103.4	69.9	96.0	75.3	21.5
H2405	20 July 1978	116.1	93.1	98.6	70.6	92.8	67.5	19.7
H2406	20 July 1978	109.7	94.1	100.2	69.9	92.6	71.8	19.0
H2407	20 July 1978	96.1	88.5	98.2	64.1	82.2	65.0	15.3
H2408	20 July 1978	108.8	94.1	100.8	71.0	91.1	68.2	19.1
H2409	20 July 1978	92.5	87.0	95.2		86.0	67.8	16.5
H2410	20 July 1978	141.9	87.9	105.9	74.0	96.2	79.0	20.3
H2412	21 July 1978	102.9	98.3	100.0	70.8	90.4	68.6	17.5
H2413	21 July 1978	78.0	83.4	88.4	62.2	81.6	64.4	16.1
H2415	22 July 1978	94.3	88.1	95.5	66.5	89.4	68.6	16.6
H2416	22 July 1978	88.4	87.3	95.7	67.7	87.7	68.7	17.3
H2417	22 July 1978	118.3	93.3	99.2	72.0	98.2	75.0	20.3
H2418	22 July 1978	103.4	90.2	98.2	72.0	91.0	73.5	17.2

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2419	22 July 1978		100.5	101.5	73.4	99.3	78.3	22.0
H2420	24 July 1978	112.9	93.8	100.6	68.8	93.4	72.1	17.8
H2421	24 July 1978	108.8	92.1	98.1	70.2	98.1	72.2	19.0
H2422	25 July 1978		93.3	101.1	68.0	91.3	73.5	18.5
H2423	25 July 1978		94.7	104.7	88.8	91.2	70.0	18.2
H2424	25 July 1978	78.4	84.2	89.0	62.4	80.4	65.1	16.6
H2425	25 July 1978	80.7	83.2	88.7	63.2	83.5	64.2	17.5
H2426	21 July 1978		87.6	95.0	62.8	84.8	63.2	16.9
H2428	21 July 1978		92.9	99.6	72.9	95.1	76.1	19.2
H2429	21 July 1978		101.6	106.3	77.2	97.9	77.5	20.2
H2430	21 July 1978		95.5	101.5	71.0	93.8	71.6	19.0
H2433	21 July 1978		100.6	108.5	77.9	96.7	76.7	21.2
H2435	20 July 1978		90.9	97.5	66.2	89.2	68.5	19.2
H2436	20 July 1978		94.0	100.6	72.2	89.6	71.3	18.9
H2437	20 July 1978		91.0	99.3	68.2	88.0	69.2	19.6

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2438	20 July 1978		91.0	96.3	71.2	95.0	70.8	19.0
H2439	20 July 1978		89.1	94.0	65.8	85.3	64.6	18.8
H2440	22 July 1978		92.0	97.3	68.5	87.0	69.4	19.6
H2442	24 July 1978		88.2	95.8	63.0	85.4	66.2	20.4
H2443	24 July 1978		91.0	96.0	70.4	87.8	69.8	18.6
H2444	22 July 1978		93.7	99.8	72.0	90.2	70.4	19.0
H2445	22 July 1978		96.7	103.5	69.9	93.9	69.5	19.8
H2446	22 July 1978		88.2	92.1	69.7	86.2	67.4	18.6
H2447	22 July 1978		101.0	107.3	75.0	97.1	75.8	19.2
H2448	21 July 1978	96.1	85.8	91.9	70.0	89.0	67.1	18.8
H2449	21 July 1978				69.1	87.2	74.4	19.4
H2450	18 July 1978	125.6	95.2	103.2	71.8	97.2	74.0	19.8
H2452	27 July 1978	122.4	97.8	105.9	74.4	94.9	77.5	19.8
H2453	27 July 1978	107.4	93.7	102.2	68.0	90.7	71.7	18.4
H2454	28 July 1978		98.8	108.9	77.1	105.2	79.0	20.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2455	28 July 1978		91.6	97.2	74.3	92.4		18.5
H2457	29 July 1978	93.8	90.0	94.7	65.8	86.2	66.4	19.2
H2458	29 July 1978	102.0	89.3	97.3	66.5	87.9	67.3	18.5
H2459	29 July 1978	155.1			80.5	103.6	78.0	20.8
H2461	31 July 1978	113.3	91.4	98.6	70.4	95.6	71.8	20.5
H2462	1 Aug. 1978	93.8	89.6	96.2	63.7	84.8	66.2	17.5
H2463	2 Aug. 1978	112.0	96.2	103.9	70.0	89.8	68.6	20.6
H2464	2 Aug. 1978	90.7	87.0	92.6	67.7	84.0	66.3	16.7
H2465	2 Aug. 1978	118.8	93.3	100.3	76.7	96.2	76.1	18.1
H2466	2 Aug. 1978	114.2	93.6	101.6	73.7	95.0	73.3	19.3
H2467	3 Aug. 1978	111.1	89.1	96.3	66.5	89.5	70.5	19.5
H2468	4 Aug. 1978	87.5	83.3	87.4	64.8	83.4	67.2	17.5
H2469	4 Aug. 1978	130.1	98.2	101.7	74.6	93.4	77.5	22.9
H2470	5 Aug. 1978		91.0	96.7	68.6	89.5	71.2	20.8
H2475	4 Aug. 1978	102.0	92.2	98.4	70.5	88.5	71.5	18.2
H2476	31 July 1978		100.7	105.6	77.5	99.5	77.1	20.4

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2477	31 July 1978		90.8	97.8	66.3	88.9	67.2	19.1
H2478	31 July 1978		90.1	97.3	67.4	90.5	71.7	18.5
H2481	2 Aug. 1978	107.0	93.3	99.4	72.8	90.7	71.4	16.9
H2482	2 Aug. 1978		107.0	107.2	80.0	103.7	80.7	21.2
H2483	2 Aug. 1978		96.2	104.2	76.9	96.4	75.4	19.2
H2485	3 Aug. 1978		101.9	106.8	73.7	95.9	74.4	19.3
H2486	3 Aug. 1978		97.6	101.6	73.3	94.1	75.2	18.9
H2487	7 Aug. 1978		89.2	96.7	71.8	89.3	68.0	18.2
H2488	7 Aug. 1978		87.3	94.2	69.8	91.9	67.1	19.5
H2489	8 Aug. 1978		94.0	98.9	72.3	90.6	71.0	17.4
H2490	1 Aug. 1978		93.9	100.5	68.1	88.5	69.3	20.0
H2491	3 Aug. 1978		92.5	97.8	72.6	88.0	69.0	18.8
H2492	4 Aug. 1978		84.0	90.2	60.4	78.0	65.2	16.7
H2494	4 Aug. 1978		91.9	96.9	67.7	89.6	69.6	18.4
H2499	3 Aug. 1978		91.1	98.4	64.5	83.6	70.4	19.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (Caretta caretta) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
		Weight	Straight	Over	Straight	Over	Plastron Length	Head Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
H2500	3 Aug. 1978		103.0	107.2	75.8	96.6	77.0	22.1
JI1586	5 Aug. 1978		95.5	101.9	66.2	86.0	71.2	18.6
JI1917	5 July 1978		93.0	100.8	67.0	88.8	69.8	20.5
JI3365	14 June 1978		84.4	89.1	64.5	84.9	64.3	14.1
JI3449	15 July 1978	90.7	89.3	93.7	64.5	86.8	66.4	17.8
P1001	5 Aug. 1978	90.7	87.2	93.4	63.1	86.8	67.8	17.2
P1002	8 Aug. 1978		95.4	102.8	72.8	93.5	72.3	19.9
P1003	9 Aug. 1978		91.4	98.9	66.6	89.5	68.9	19.5
P1004	10 Aug. 1978		98.4	105.2	71.0	97.3	73.2	20.1
P1006	14 Aug. 1978	131.9	101.0	106.5	79.0	100.2	77.8	20.3
P1007	16 Aug. 1978		85.1	91.5	70.0	86.7	66.6	17.1
P1008	16 Aug. 1978	116.5	93.5	101.8	76.2	94.6	71.2	19.5
P1009	16 Aug. 1978		92.5	99.7	75.4	97.7	69.2	20.6
P1011	21 Aug. 1978		85.6	91.4	64.3	82.7	66.1	18.6
P1013	7 Aug. 1978	115.6	94.1	100.6	74.8	93.2	72.2	19.1

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
		Weight	Straight	Over	Straight	Over	Plastron Length	Head Width
Tag No.	Date	(kg)	Line	Curvature	Line	Curvature	(cm)	(cm)
P1014	7 Aug. 1978	105.2	88.3	98.1	68.3	86.3	69.2	18.6
P1015	7 Aug. 1978	109.7	93.0	101.4	66.3	86.3	70.8	19.0
P1016	8 Aug. 1978	105.2	90.8	97.9	68.9	87.9	68.7	17.7
P1017	10 Aug. 1978		89.1	95.9	66.0	81.2	67.1	20.3
P1018	17 Aug. 1978		93.5	98.1	68.6	93.2	73.0	23.7
P1020	29 Aug. 1978		90.3	94.7	68.2	87.7	69.0	17.9
P1026	14 Aug. 1978	106.1	93.8	102.4	66.3	89.9	63.8	20.9
P1027	21 Aug. 1978		91.4	98.0	66.4	98.0	70.8	19.9
P1029	24 Aug. 1978		92.8	98.8	71.4	90.7	75.2	19.2
P1044	18 Aug. 1978	95.2	91.7	96.6	65.5	92.3	69.4	19.1
P1045	17 Aug. 1978	97.5	90.8	95.7	69.6	91.3	69.9	17.2
P1048	15 Aug. 1978	70.2	74.0	84.0	57.8	77.2	59.0	16.1
P1049	15 Aug. 1978	100.6	85.5	93.0	61.4	87.5	67.1	16.8

Table 6. Morphological characteristics of nesting female loggerhead turtles (*Caretta caretta*) at the Kennedy Space Center, Brevard County, Florida; summer 1978. (Continued).

			CARAPACE					
			Length (cm)		Width (cm)			Maximum
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Head Width (cm)
P1050	15 Aug. 1978	98.4	93.2	99.4	69.8	87.8	69.0	16.9
1236	21 July 1978		91.3	96.3	67.8	90.5	69.2	19.1
$\bar{X}$		112.48	92.22	98.87	69.91	90.94	70.85	19.16
S.D.		19.05	5.12	5.23	4.55	5.16	4.18	1.68
N		273	643	646	645	650	646	648
Range		(70.2-179.1)	(74.0-107.5)	(83.1-114.0)	(57.8-94.2)	(75.2-107.0)	(59.0-85.5)	(14.1-25.5)

Table 7. Analysis of variance table for three year comparisons of loggerhead weights.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	6,092	2	3,046	8.31	.0003
Error	316,363	863	366		
Total	322,455	865			

Table 8. Duncan's Multiple Range Test for Comparisons of loggerhead weights. Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	118.35	213	1977
A	118.11	382	1976
B	112.48	271	1978

Table 9. Analysis of variance table for three year comparisons of loggerhead carapace lengths (SL).

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	177	2	88.4	3.33	.036
Error	32,215	1,213	26.6		
Total	32,392	1,215			

Table 10. Duncan's Multiple Range Test for Comparisons of loggerhead carapace lengths (SL). Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	93.1	263	1977
B A	92.8	314	1976
B	92.2	639	1978

Table 11. Analysis of Variance table for three year comparisons of loggerhead carapace length (OC).

Variation	Squares	df	Square	F Value	P
Model	249	2	124.4	4.35	.013
Error	34,867	1,221	28.6		
Total	35,116	1,223			

Table 12. Duncan's Multiple Range Test for comparisons of loggerhead carapace length (OC). Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	99.8	267	1977
A	99.7	314	1976
B	98.9	643	1978

Table 13. Analysis of Variance table for three year comparisons of loggerhead carapace width (SL)

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	141	2	70.4	3.48	0.031
Error	24,696	1,222	20.2		
Total	24,837	1,224			

Table 14. Duncan's Multiple Range Test for Comparison of loggerhead carapace width (SL). Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	70.8	268	1977
B A	70.1	316	1976
B	69.9	641	1978

Table 13. Analysis of variance table for three year comparisons of loggerhead plastron lengths.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	169	2	84.4	4.88	.008
Error	21,194	1,226	17.3		
Total	21,363	1,228			

Table 16. Duncan's Multiple Range Test for comparisons of loggerhead plastron lengths. Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	71.8	272	1977
B A	71.2	315	1976
B	70.8	642	1978

Table 17. Analysis of variance table for three year comparisons of loggerhead head widths.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	57	2	28.4	9.68	.0001
Error	3,581	1,223	2.9		
Total	3,638	1,225			

Table 18. Duncan's Multiple Range Test for Comparisons of loggerhead head widths. Means with same letter are not significantly different.

Grouping	Mean	N	Year
A	19.7	268	1977
A	19.5	314	1976
B	19.2	644	1978

Table 19. Analysis of Variance table for three year comparisons of loggerhead carapace width (OC).

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	95	2	47.7	1.84	.16
Error	31,912	1,230	25.9		
Total	32,007	1,232			

Table 20. Dates of capture and morphological data for nesting female green turtles (*Chelonia mydas*) at the Kennedy Space Center, Brevard County, Florida; 1976.

			CARAPACE					
			(Over Curvature)		(Straight Line)			
Tag No.	Date	Weight (kg)	Length (cm)	Width (cm)	Length (cm)	Width (cm)	Plastron Length (cm)	Maximum Head Width (cm)
A3011-A3037*	12 July 1976	134.1	106	97	100	87	83	12.5
A3024-A3092*	13 July 1976	130.4	103	93	98	77	83	13.3
A2790	14 July 1976	129.5	101	91	96	74	80	13.5
	Range	129.5-134.1	101-106	91-97	96-100	74-87	80-83	12.5-13.5
	$\overline{X}$	131.3	103	93	98	79	82	13.1
	S.D.	2.4	2.2	2.7	2.1	6.6	1.8	0.5

*Original tags faulty, replaced at subsequent emergence.

Table 21. Dates of capture and morphological data for nesting female green turtles (*Chelonia mydas*) at the Kennedy Space Center, Brevard County, Florida; summer, 1977.

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1072	27 June 1977	147.4	101.2	108.8	73.2	93.6	84.2	13.3
H1121	28 July 1977	104.3	95.1	98.7	69.8	92.7	79.2	12.8
H1240	18 August 1977		97.5	116.0	81.0	104.9	90.0	12.2
$\overline{X}$		125.85	97.93	107.83	74.66	97.06	84.46	12.76
S.D.		21.55	2.5	7.09	4.68	5.55	4.41	.44
N		2	3	3	3	3	3	3
Range		(104.3-147.4)	(95.1-101.2)	(98.7-116.8)	(69.8-81.0)	(92.7-104.9)	(79.2-90.0)	(12.2-13.3)

Table 22. Dates of capture and morphological data for nesting female green turtles (*Chelonia mydas*) at the Kennedy Space Center, Brevard County, Florida; summer, 1978.

			CARAPACE					
			Length (cm)		Width (cm)			
Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A2847	15 July 1978	129.2	102.0	107.6	79.3	97.5	84.6	14.8
H2058	23 June 1978	164.1	103.9	108.7	76.9	100.1	85.3	13.6
H2083	23 June 1978	122.5	101.3	107.0	77.4	98.0	84.5	13.2
H2168	4 July 1978		103.7	109.4	85.1	102.0	86.9	13.3
H2249	8 July 1978		96.3	104.6	79.4	104.0	83.6	12.5
H2314	15 July 1978		88.0	94.2	69.1	90.6	75.4	12.4
H2414	21 July 1978	127.8	102.9	109.5	82.0	103.5	85.2	13.4
H2431	21 July 1978	176.8	109.1	116.1	84.3	107.2	90.0	15.0
H2456	28 July 1978	138.3	99.9	104.5	75.8	98.3	82.1	14.0
H2460	31 July 1978	145.1	101.7	108.0	80.7	97.5	82.7	13.5
H2474	7 Aug. 1978		92.9	98.1	76.2	94.6	80.8	12.1
P1005	14 Aug. 1978	126.9	99.5	105.0	76.2	94.5	81.5	13.6
P1010	18 Aug. 1978	144.2	104.1	108.6	77.0	96.5	85.1	12.9
P1028	22 Aug. 1978	121.5	97.0	103.7	76.9	92.5	79.6	12.8
$\overline{X}$		139.68	100.51	105.73	78.31	98.34	83.38	13.36
S.D.		18.46	5.68	5.23	4.02	4.65	3.50	0.84
N		10	14	14	14	14	14	14
Range		(121.5-176.9)	(88.0-109.1)	(94.2-116.1)	(69.1-85.1)	(90.6-107.2)	(75.4-90.0)	(12.1-15.0)

Table 23. Changes in weight and length exhibited by loggerhead turtles and green turtles nesting at two and three year intervals at KSC.

Tag No.	Date Tagged	Date Recovered	Interval	Weight Change (kg)	Length Change Over-Curve (cm)
Catetta					
A2738	5 July 1974	18 May 1976	1 year, 320 days	*	0.0
A2304	6 June 1973	24 May 1976	2 years, 353 days	*	4.3
A2725	2 July 1974	25 May 1976	1 year, 328 days	+ 3.7	0.0
A2798	6 Aug. 1974	18 June 1976	1 year, 317 days	+15.2	0.0
A2785	19 July 1974	21 June 1976	1 year, 337 days	*	+2.6
A2716	1 July 1974	22 June 1976	1 year, 358 days	+ 7.8	+0.5
C2329	28 June 1973	1 July 1976	3 years, 3 days	- 0.5	0.0
A2708	28 June 1974	1 July 1976	2 years, 3 days	- 6.7	*
C2355	7 Aug. 1973	13 July 1976	2 years, 3 days	- 1.7	+2.4
C2343	12 July 1973	26 July 1976	3 years, 25 days	+ .8	+0.5
A2722	2 July 1974	1 July 1977	2 years, 364 days	+ 6.8	+1.3
A2724	5 July 1974	20 July 1977	3 years, 15 days	*	+0.7
A2730	3 July 1974	1 July 1977	2 years, 363 days	+ 9.1	+0.1
A2762	11 July 1974	27 May 1977	2 years, 320 days	+ 1.0	+1.6
A2822	25 June 1975	13 June 1977	1 year, 353 days	*	+0.9
C2311	12 June 1973	8 June 1977	3 years, 362 days	- 3.2	+0.5
C2311	"	7 June 1978	4 years, 360 days	*	+5.5
C2331	3 July 1973	18 May 1978	4 years, 319 days	+ 0.1	+1.0
C2374	27 June 1974	27 May 1978	3 years, 303 days	*	+0.5
H1436	31 May 1976	8 June 1978	2 years, 8 days	-10.0	0.0
A2892	30 July 1975	9 June 1978	2 years, 314 days	*	+5.0

*No data.

Table 23 . Changes in weight and length exhibited by loggerhead turtles and green turtles nesting at two and three year intervals at KSC. (Continued).

Tag No.	Date Tagged	Date Recovered	Interval	Weight Change (kg)	Length Change Over-Curve (cm)
C2376	25 June 1975	12 June 1978	2 years, 352 days	*	*
H1718	21 June 1976	12 June 1978	1 year, 356 days	*	0.0
A2858	18 July 1975	14 June 1978	2 years, 331 days	- 8.1	0.0
A2711	28 June 1974	15 June 1978	3 years, 352 days	+ 1.9	+0.2
A3071	23 July 1976	17 June 1978	1 year, 329 days	*	+1.7
A2776	17 July 1974	17 June 1978	3 years, 335 days	*	+0.9
A2714	1 July 1974	29 June 1978	3 years, 363 days	*	+0.9
C2342	12 July 1973	29 June 1978	4 years, 352 days	+ 2.6	+1.4
C2342	"	26 June 1975	1 year, 348 days	- 3.3	0.0
A2888	29 July 1975	30 June 1978	2 years, 336 days	- 4.5	+0.2
H1497	16 June 1976	1 July 1978	2 years, 15 days	*	+2.6
A3100	30 July 1976	3 July 1978	1 year, 338 days	*	*
A2821	24 June 1975	3 July 1978	3 years, 9 days	*	+1.3
C2317	26 June 1973	11 July 1978	5 years, 15 days	*	+3.7
C2369	26 June 1974	22 July 1978	4 years, 26 days	*	+4.3
A2743	8 July 1974	1 Aug. 1978	4 years, 24 days	*	+9.3
C2359	14 Aug. 1973	3 Aug. 1978	4 years, 354 days	*	0.0
H1457	7 June 1976	3 Aug. 1978	2 years, 57 days	*	+1.6
Chelonia					
A2790	23 July 1974	10 July 1976	1 year, 353 days	+ 4.5	0.0
A2847	13 July 1975	15 July 1978	3 years, 2 days	+ 4.6	+1.6

*No data.

Table 24. Mean increase in carapace length over curve for loggerheads returning to KSC at two to five year intervals.

	INTERVAL			
	2 Year	3 Year	4 Year	5 Year
$\overline{X}$	0.95 cm	1.40 cm	2.30 cm	2.30 cm
S.D.	1.08	1.72	3.36	2.23
N	13.0	11.0	7.0	5.0

Table 25. Long-distance recoveries of loggerhead turtles tagged at Kennedy Space Center.

Tag No.	Date Originally Tagged (KSC)	Date Recovered	Recovery Location	Time Interval	Distance Interval
H1189	29 July 1977	15 Sept. 1977	Marsh Harbor, Abaco, Bahamas	48 Days	ca. 430 km
A3185	16 June 1977	8 May 1978	Eleuthera, Bahamas	326 Days	ca. 600 km
H2125	28 June 1978	10 April 1979	San Carlos Bay, Sanibel Is., FL	286 Days	ca. 600 km
A3053	20 July 1976	18 May 1979	North Side, Grand Bahama Is.	2 Yrs., 302 Days	ca. 300 km

Table 26. Site fixity exhibited by loggerhead turtles (*Caretta caretta*) and a green turtle (*chelonia mydas*) nesting at two- and three- year intervals at KSC.

Tag No.	Date Tagged	Date Recovered	Interval	Distance Between Tag and Recovery Sites (km)	
Caretta					
A2738	5-July-1974	18-May -1976	1 year, 320 days	2.5	S
C2304	6-June-1973	24-May -1976	2 years,353 days	4.3	S
A2725	2-July-1974	25-May -1976	1 year, 328 days	2.2	S
A2798	6-Aug.-1974	18-June-1976	1 year, 317 days	.16	N
A2785	19-July-1974	21-June-1976	1 year, 337 days	.48	S
A2716	1-July-1974	22-June-1976	1 year, 358 days	3.7	N
C2329	28-June-1973	1-July-1976	3 years, 3 days	2.5	N
A2708	28-June-1974	1-July-1976	2 years, 3 days	2.6	N
C2355 (A3019)	7-Aug.-1973	13-July-1976	2 years, 3 days	8.8	N
C2343	12-July-1973	26-July-1976	3 years, 25 days	7.5	N
				$\bar{x}$ = 3.47	
				SD = 2.77	
Chelonia					
A2790	23-July-1974	10-July-1976	1 year, 353 days	7.0	N

Table 27. Site fixity exhibited by loggerhead turtles at two and three year intervals at Kennedy Space Center.

Tag No.	Date Tagged	Date Recovered	Interval	Distance between Tag and Recovery Sites (km)	
A2722	2 July 1974	1 July 1977	2 Years, 364 days	3.2	(N)
A2724	5 July 1974	20 July 1977	3 Years, 15 days	0.5	(S)
A2730	3 July 1974	1 July 1977	2 Years, 363 days	4.5	(S)
A2762	11 July 1974	27 May 1977	2 Years, 320 days	0.0	
A2822	25 June 1975	13 June 1977	1 Year, 353 days	0.4	(N)
C2311	12 June 1973	8 June 1977	3 Years, 362 days	4.8	(S)
C2371	27 June 1974	27 May 1977	2 Years, 334 days	0.7	(N)
			$\overline{X}$	2.35	
			S.D.	2.06	

Table 28. Site fixity exhibited by loggerhead turtles (*Caretta caretta*) and a green turtle (*Chelonia mydas*) nesting at multi-year intervals at Kennedy Space Center.

Tag No. Caretta	Date Originally Tagged	Date Recovered	Interval	Distance between Tag and Recovery Sites (km)	
C2331	3 July 1973	18 May 1978	4 Years, 319 days	0.75	(S)
C2374	27 June 1974	27 May 1978	3 Years, 303 days	1.15	(N)
H1436	31 May 1976	8 June 1978	2 Years, 8 days	7.20	(S)
A2892	30 July 1975	9 June 1978	2 Years, 314 days	2.76	(N)
C2376	25 June 1975	12 June 1978	2 Years, 352 days	21.04	(S)
H1718	21 June 1976	12 June 1978	1 Year, 356 days	9.96	(S)
A2858	18 July 1975	14 June 1978	2 Years, 331 days	11.68	(S)
A2711	28 June 1974	15 June 1978	3 Years, 352 days	15.03	(S)
A3071	23 July 1976	17 June 1978	1 Year, 329 days	27.94	(S)
A2776	17 July 1974	17 June 1978	3 Years, 335 days	2.37	(S)
A2714	1 July 1974	29 June 1978	3 Years, 363 days	2.24	(N)
A2888	29 July 1975	30 June 1978	2 Years, 336 days	3.00	(S)
H1497	16 June 1976	1 July 1978	2 Years, 15 days	3.39	(N)
A3100	30 July 1976	3 July 1978	1 Year, 338 days	2.60	(S)
A2821	24 June 1975	3 July 1978	3 Years, 9 days	7.95	(N)
C2317	26 June 1973	11 July 1978	5 Years, 15 days	0.73	(N)
C2369	26 June 1974	22 July 1978	4 Years, 26 days	11.20	(N)
A2743	8 July 1974	1 Aug. 1978	4 Years, 24 days	7.17	(S)
C2359	14 Aug. 1973	3 Aug. 1978	4 Years, 354 days	10.50	(N)
H1457	7 June 1976	3 Aug. 1978	2 Years, 57 days	6.25	(S)

Table 28. Site fixity exhibited by loggerhead turtles (*Caretta caretta*) and a green turtle (*Chelonia mydas*) nesting at multi-year intervals at Kennedy Space Center. (Continued).

Tag No. Caretta	Date Originally Tagged	Date Recovered	Interval	Distance between Tag and Recovery Sites (km)	
*C2311	12 June 1973	7 June 1978	4 Years, 360 days	5.52	(S)
*C2342	12 July 1973	29 June 1978	4 Years, 352 days	4.16	(S)
				$\bar{X}$ = 7.48	
				S.D. = 6.87	
Chelonia					
A2847	13 July 1975	15 July 1978	3 Years, 2 days	4.44	(S)

*Turtles recovered in intervening years:

C2311 on 8 June 1977	4.80	(S)
C2342 on 26 June 1975	3.70	(S)

Table 29. Re-emergence intervals, successive recapture distances and direction of movements for female loggerhead turtles (Caretta caretta) returning within a single season, 1976.

Re-emergence Interval (Days)	N	Distance Between Successive Captures X (S.D.) (km)	Range (km)	Direction of Movements (N/S)
1-3	35	5.49 (4.62)	0.16 - 16.48	19/16
13-14	6	4.40 (4.26)	0.64 - 7.68	5/1
15-16	14	6.45 (6.06)	0.16 - 20.16	8/6
17-18	16	5.74 (3.86)	0.80 - 13.11	5/11
19-20	6	7.60 (5.46)	2.32 - 17.28	3/3
30-37	15	4.94 (3.68)	0.08 - 12.56	6/9
41-51	6	9.70 (8.35)	1.60 - 20.80	4/2
55-59	6	11.73 (5.68)	4.80 - 18.24	5/1
64-88	4	13.39 (9.17)	0.96 - 21.44	4/0

Table 30. Re-emergence intervals, successive recapture distances and direction of movements for female loggerhead turtles (*Caretta caretta*) returning within a single season, 1977.

Re-emergence Interval (days)	N	Distance Between Successive Captures $\bar{X}$ (km)	(S.D.)	Range (km)	Direction of Movements (N/S)
1-3	57	7.14	4.45	0.00 - 28.52	26/30
11-12	2	0.82	0.03	0.79 - 0.82	0/2
13-14	26	5.09	4.33	0.18 - 17.02	11/15
15-16	11	4.38	3.30	0.00 - 11.67	6/4
17-18	7	10.85	7.24	0.95 - 23.83	3/4
19-20	2	11.11	10.32	0.79 - 21.45	2/0
25-29	9	6.73	3.99	0.72 - 11.21	4/5
30-37	8	10.88	6.09	0.31 - 22.58	6/2
38-49	10	7.53	6.14	0.15 - 16.69	6/4

Table 31. Re-emergence intervals, successive recapture distances and direction of movements for female loggerhead turtles (*Caretta caretta*) returning within a single season, 1978.

Re-emergence Interval (days)	N	Distance Between Successive Captures: $\bar{X}$ (S.D.) (km)	Range (km)	Direction of Movements (N/S)
1-3	122	6.9 (7.1)	0.0 - 33.1	62/59
4-8	10	12.6 (9.5)	1.2 - 22.9	6/4
9-12	8	16.3 (6.7)	3.7 - 27.5	6/2
13-14	73	6.3 (6.2)	0.0 - 24.2	44/28
15-16	50	4.9 (5.6)	0.0 - 26.3	21/28
17-18	33	8.2 (5.7)	0.2 - 19.1	17/16
19-20	6	10.5 (9.1)	0.2 - 25.7	2/4
21-25	14	7.2 (6.4)	0.1 - 21.2	7/7
26-30	37	6.8 (7.8)	0.2 - 32.3	19/18
31-40	23	10.4 (9.3)	0.0 - 30.1	13/9
41-50	9	4.9 (5.5)	0.1 - 15.5	7/2
57-63	3	9.7 (6.0)	5.1 - 16.4	3/0

Table 32. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1976.

Tag No.	Number Eggs in Clutch	DIAMETER (cm) (Sample of 20) X	(S.D.)	Range	WEIGHT (g) (Sample of 20) X	(S.D.)	Range
H1405	81	41.19	(.81)	39.0 - 42.0	38.11	(.10)	37.0 - 39.5
A2738	90	41.00	(.81)	40.0 - 42.0	38.97	(1.21)	37.2 - 40.5
U18M2	58*	45.36	(.72)	43.0 - 46.0	49.76	(2.16)	46.0 - 54.5
U18M1	65*	41.04	(.80)	39.0 - 42.0	38.19	(1.33)	36.0 - 41.0
U25MY	*	43.20	(1.10)	41.0 - 45.0	42.76	(1.30)	40.9 - 46.0
H1426	136	42.75	(1.11)	39.0 - 44.0	42.26	(1.63)	38.1 - 45.0
H1434	107	41.58	(.85)	40.0 - 43.0	39.59	(1.19)	37.3 - 41.9
H1444	78	41.10	(1.04)	39.0 - 43.0	37.93	(2.24)	35.9 - 43.1
H1452	99	-	-	-	41.15	(.82)	39.2 - 42.3
H1459	95	40.52	(1.05)	39.3 - 42.8	36.65	(2.42)	33.2 - 42.1
H1462	130	42.65	(.98)	41.0 - 45.0	42.89	(1.52)	44.8 - 40.0
H1470	158	40.47	(.63)	39.5 - 41.5	37.62	(1.15)	35.9 - 39.5
H1449	136	42.37	(.72)	41.0 - 43.0	40.67	(1.04)	38.2 - 42.0
H1490	146	44.65	(1.34)	42.0 - 47.0	50.26	(1.93)	47.8 - 54.5
H1492	116	43.25	(1.10)	41.0 - 45.0	44.32	(1.63)	40.5 - 47.0
H1443	127	43.78	(.48)	43.0 - 44.5	45.28	(.62)	44.2 - 46.8
H1727	112	42.30	(.65)	41.0 - 43.5	41.18	(1.50)	38.2 - 43.4
H1749	88	44.65	(.67)	43.0 - 46.0	48.09	(.93)	47.0 - 50.9
H1781	124	40.85	(1.06)	38.0 - 42.0	36.75	(2.30)	39.7 - 29.1

Table 32. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1976. (Continued)

Tag No.	Number Eggs in Clutch	DIAMETER (cm) (Sample of 20) X	(S.D.)	Range	WEIGHT (g) (Sample of 20) X	(S.D.)	Range
H1794	80	39.90	(1.07)	38.0 - 42.0	34.70	(1.19)	32.8 - 37.2
H1798	113	42.65	(.48)	42.0 - 43.0	43.19	(.96)	41.8 - 44.8
H1720	83	41.68	(.68)	41.0 - 43.0	39.23	(1.13)	37.2 - 41.5
H1443	125	42.86	(.59)	42.0 - 44.2	42.56	(.90)	41.8 - 44.4
A3014	126	38.58	(.89)	36.3 - 40.6	30.80	(2.39)	23.6 - 33.8
A3016	117	42.99	(.54)	42.0 - 44.1	44.64	(.89)	43.1 - 46.2
A3047	67	42.34	(.66)	41.2 - 43.5	41.36	(1.97)	37.0 - 44.5
H1783	148	-	-	-	-	-	-
A3044	140	43.44	(.62)	42.0 - 44.2	45.93	(1.19)	44.0 - 48.0
A3054	71	44.28	(.97)	42.4 - 45.9	48.74	(2.20)	46.1 - 51.7
H1716	134	43.73	(.73)	43.0 - 45.4	47.32	(1.68)	43.8 - 50.0
H1445	114	42.45	(.55)	41.4 - 43.4	42.61	(1.19)	41.2 - 45.2
A3064	95	40.35	(.56)	39.5 - 41.5	35.15	(1.79)	33.6 - 42.0
A3065	111	42.66	(1.51)	39.5 - 44.8	41.01	(1.61)	37.2 - 43.4
A3071	94	41.75	(2.01)	38.2 - 47.0	42.00	(1.02)	39.5 - 43.9
A3004	103	42.48	(.62)	41.2 - 43.7	40.18	(1.25)	38.4 - 43.1
A3091	122	42.59	(.78)	41.4 - 44.0	43.38	(2.22)	38.8 - 46.4
A3088	127	41.81	(.62)	40.5 - 42.8	41.46	(1.22)	39.3 - 43.5
A3098	110	38.78	(1.25)	36.2 - 40.8	33.63	(2.21)	29.4 - 37.2
A3097	117	40.53	(.43)	39.6 - 41.2	37.43	(.99)	35.8 - 39.4

Table 32. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1976. (Continued)

Tag No.	Number Eggs in Clutch	DIAMETER (cm) (Sample of 20) X	(S.D.)	Range	WEIGHT (g) (Sample of 20) X	(S.D.)	Range
A3101	112	41.69	(.61)	40.4 - 42.6	40.81	(.99)	38.3 - 41.9
H1750	104	41.87	(.64)	40.0 - 42.6	41.39	(.83)	39.2 - 42.7
A3106	101	40.83	(.49)	40.0 - 42.0	37.90	(1.21)	35.0 - 39.8
H1481	119	42.95	(.95)	41.1 - 44.6	43.48	(2.45)	40.0 - 47.4
A3110	129	41.17	(1.26)	39.0 - 43.6	39.91	(1.91)	37.0 - 43.0
GRAND $\bar{X}$	111.60	42.07			41.19		
S.D.	21.40	1.48			4.22		
RANGE	67-158			36.2 - 47.0			23.6 - 57.5

*Part clutches not included in means

Table 33. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20) $\overline{X}$	(S.D.)	Range	Diameter (mm) (Sample of 20) $\overline{X}$	(S.D.)	Range
A3140	132	38.0	(0.86)	36.5-39.4	41.2	(0.44)	40.3-42.0
A3148	76	35.0	(1.85)	32.2-38.5	39.5	(0.89)	37.2-41.0
A3151	122	37.7	(0.82)	36.9-40.0	40.6	(0.82)	39.1-42.0
A3159	115	40.3	(1.78)	37.4-42.8	43.1	(1.37)	41.5-47.5
A3163	143	35.4	(0.99)	33.1-37.0	36.3	(0.62)	34.9-37.2
A3167	131	35.1	(1.73)	31.2-37.9	40.3	(0.83)	38.2-41.6
A3170	162	39.7	(2.93)	32.9-44.0	40.6	(1.56)	36.4-42.4
A3178	99	35.9	(1.45)	33.2-38.8	40.1	(0.67)	39.0-41.2
A3180	81	36.2	(1.37)	34.0-38.3	40.5	(0.58)	39.3-41.6
A3181	84	37.0	(0.87)	35.9-38.3	36.6	(0.58)	35.0-37.3
A3182	96	41.6	(1.70)	38.9-45.4	38.6	(0.68)	37.5-40.0
A3184	79	44.9	(1.68)	42.0-49.1	39.7	(0.65)	38.8-41.0
H1110	68	41.6	(1.29)	38.2-43.9	42.5	(1.24)	40.9-46.2
H1114	72	42.7	(1.59)	40.1-45.0	42.9	(0.70)	41.8-44.1
H1115	93	36.8	(2.09)	32.5-39.3	40.8	(0.92)	39.3-42.2
H1116	103	46.5	(3.03)	35.5-50.8	44.2	(0.69)	43.2-46.1
H1166	107	42.6	(1.40)	39.5-44.1	42.5	(0.61)	41.0-43.5
H1174	103	44.5	(1.68)	40.0-47.0	43.2	(0.62)	41.9-44.2
H1178	94	45.7	(1.37)	43.1-48.9	43.4	(0.71)	42.0-44.8
H1211	99	43.5	(1.05)	41.1-44.9	42.5	(0.79)	41.0-43.2
H1212	131	37.8	(1.60)	35.8-41.1	41.0	(0.91)	39.7-43.5
H1214	110	51.7	(1.78)	49.0-56.0	46.0	(0.91)	44.3-47.9

Table 33. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H745	94	45.0	(1.10)	44.3-49.5	39.7	(0.53)	38.5-40.9
H746	101	42.8	(1.61)	40.1-45.4	37.8	(0.82)	36.5-39.7
H748	116	42.4	(1.24)	40.3-45.0	38.6	(0.64)	37.6-39.8
H750	118	36.2	(0.88)	34.9-37.9	36.7	(0.46)	35.8-37.5
H975	89	42.3	(1.78)	39.1-45.0	42.1	(0.71)	40.8-43.6
H995	90	44.6	(1.75)	43.1-50.5	43.1	(0.59)	42.1-44.4
A3138	105	44.3	(1.31)	41.9-46.5	43.8	(0.59)	42.8-45.1
A3142	109	45.1	(1.11)	43.0-47.0	44.9	(2.29)	42.5-52.0
A3177	154	42.7	(3.19)	34.2-48.5	42.9	(0.82)	42.0-44.6
U02JN	117	37.8	(1.40)	35.0-41.2	41.2	(0.62)	40.1-42.2
A3149	84	34.9	(1.26)	33.6-39.0	39.6	(0.78)	38.2-41.9
A3154	126	41.4	(1.44)	39.1-45.9	41.8	(0.53)	40.8-42.7
A3158	113	45.3	(2.32)	42.2-51.0	43.5	(0.93)	41.7-45.3
A3160	150	33.3	(1.15)	31.0-34.5	37.9	(1.18)	36.0-40.5
A3179	97	41.1	(1.33)	39.8-45.0	42.3	(0.75)	41.2-43.9
A3180	106	37.4	(1.24)	35.1-40.0	40.6	(1.06)	39.0-43.2
A3169	140	42.2	(0.89)	40.2-44.1	42.6	(1.04)	40.2-44.8
A3171	84	44.4	(0.96)	41.9-46.5	43.5	(0.52)	42.1-44.2
H955	160	35.5	(1.26)	33.2-37.2	41.8	(0.84)	40.3-43.5
A3144	94	43.6	(0.88)	41.0-45.2	43.3	(0.49)	42.5-44.2
H965	126	37.5	(1.31)	35.5-40.5	41.0	(0.66)	39.8-42.4
H966	173	37.9	(3.04)	30.9-44.0	41.3	(1.30)	38.2-43.2

Table 33. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H968	138	44.3	(0.75)	43.0-45.5	43.7	(1.05)	42.4-47.0
A3156	118	45.4	(1.24)	43.0-47.5	44.2	(0.92)	43.0-47.1
A3160	153	35.0	(0.99)	32.0-36.2	40.2	(0.54)	38.5-41.0
H969	104	46.0	(0.84)	44.8-47.7	43.3	(0.57)	42.2-44.0
H970	119	43.8	(1.40)	41.8-46.8	42.7	(0.64)	41.6-43.9
H971	95	34.9	(2.95)	25.4-37.9	39.1	(1.46)	35.0-40.6
H974	149	47.0	(0.94)	45.2-48.5	43.6	(0.73)	42.0-44.9
A3165	132	38.2	(1.84)	33.7-40.0	40.9	(0.80)	39.0-41.8
A3189	151	35.7	(1.91)	32.4-39.8	40.1	(0.69)	38.8-41.7
H1068	133	38.5	(0.90)	36.9-39.9	41.0	(0.62)	40.0-42.0
H1073	101	40.3	(1.30)	36.9-42.9	41.5	(0.65)	40.0-43.0
H1075	114	40.0	(1.29)	38.0-43.1	41.3	(0.79)	39.3-42.4
H982	115	42.8	(1.10)	40.4-44.2	42.3	(0.55)	41.2-43.1
H983	119	38.5	(0.90)	35.9-40.0	41.1	(0.42)	40.5-42.2
H973	135	49.1	(1.01)	47.2-50.8	44.7	(0.57)	43.6-45.8
A3142	151	40.6	(1.94)	37.0-44.1	41.5	(1.12)	39.9-43.2
H1076	97	42.6	(1.25)	39.2-45.1	42.6	(0.64)	41.1-43.6
H1083	141	33.8	(1.95)	31.0-37.7	39.2	(1.14)	36.5-41.0
H1084	104	43.3	(0.56)	42.1-44.3	42.5	(0.67)	41.5-43.8
H1090	128	34.2	(2.40)	31.5-42.3	38.8	(1.02)	36.5-40.0
H1082	130	46.2	(3.49)	43.0-59.9	43.2	(1.05)	42.0-46.5
H1088	146	55.2	(1.28)	53.0-57.3	46.5	(0.66)	45.3-47.9
H1104	134	42.2	(1.63)	40.1-45.0	43.0	(0.49)	42.2-44.0

Table 38. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H1126	126	38.7	(1.99)	31.1-40.5	41.5	(1.14)	37.2-43.0
H1127	131	40.1	(0.61)	39.1-41.3	41.9	(0.45)	41.1-42.7
H1128	153	45.2	(1.36)	42.2-47.3	43.1	(0.73)	41.7-44.5
H1133	124	41.8	(0.96)	39.8-43.1	42.4	(0.54)	41.3-43.1
H977	159	45.5	(1.20)	43.8-47.6	43.2	(0.61)	42.0-44.6
H1129	122	46.1	(1.01)	43.0-47.5	43.6	(0.55)	42.7-44.4
H1134	100	35.6	(1.79)	32.3-38.2	39.9	(0.79)	38.5-41.3
H1135	129	41.3	(1.19)	38.3-43.0	42.0	(0.57)	40.8-42.9
H1136	100	43.6	(1.18)	40.0-45.5	43.2	(0.93)	41.1-45.1
H1137	82	39.1	(1.59)	35.6-41.5	39.9	(1.05)	36.8-41.5
H1138	105	42.2	(1.12)	40.1-44.2	42.3	(0.97)	39.8-43.5
A3152	126	39.4	(1.89)	35.1-42.2	41.8	(1.34)	40.0-45.0
A3199	115	38.7	(1.53)	35.4-40.9	40.9	(0.92)	39.8-42.3
H1153	102	41.0	(2.54)	32.7-44.0	42.6	(0.82)	41.1-44.0
H1154	68	46.0	(1.17)	42.8-48.5	43.9	(0.55)	42.5-44.5
H993	132	39.9	(2.43)	35.2-43.2	41.8	(0.97)	39.9-43.2
H1162	126	40.0	(1.01)	37.5-41.1	41.1	(0.81)	40.0-42.0
H1067	118	38.9	(1.98)	34.8-41.0	41.4	(0.81)	39.7-42.4
A3190	116	35.7	(1.17)	33.0-39.0	40.3	(0.74)	39.1-42.1
A3142	144	40.0	(2.37)	36.9-43.3	44.7	(0.90)	43.0-46.5
A3185	127	46.1	(1.93)	39.9-47.9	43.7	(0.46)	43.0-44.4
H1203	80	36.2	(1.57)	33.3-40.0	40.9	(0.84)	39.3-42.2

Table 33. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	X	(S.D.)	Range
H1201	124	41.0	(1.38)	38.8-43.8	41.9	(0.57)	40.9-42.8
A3159	121	42.2	(1.59)	39.9-45.1	43.2	(0.82)	41.4-44.5
H998	110	37.5	(0.67)	36.4-39.3	40.8	(0.71)	39.6-41.9
H1216	89	42.6	(1.21)	40.8-44.9	42.6	(0.53)	41.5-43.4
H1144	114	40.7	(2.34)	37.2-48.3	41.9	(0.67)	40.8-43.2
H1179	111	33.5	(1.20)	32.0-35.5	40.9	(0.87)	39.5-43.1
H1121	91	54.5	(1.50)	51.2-56.9	46.0	(0.84)	44.2-47.5
H1119	127	40.7	(0.96)	39.2-43.5	42.1	(0.40)	41.2-42.6
H1192	112	37.9	(0.90)	36.5-39.8	41.1	(0.45)	40.0-41.9
H1189	135	45.2	(1.35)	42.9-47.5	43.3	(1.72)	39.0-45.0
H1120	112	40.7	(2.69)	33.7-44.5	40.7	(2.20)	37.0-44.0
U02A1	127	46.8	(1.66)	44.1-49.9	43.5	(0.83)	41.9-45.0
H1227	101	40.2	(1.30)	38.0-42.8	41.5	(0.98)	39.9-43.0
H1129	65	49.4	(1.86)	46.0-53.8	44.7	(2.26)	41.9-53.2
H1105	114	36.6	(0.75)	34.9-38.1	41.7	(0.80)	39.7-43.2
H1145	85	35.5	(2.27)	32.9-42.1	40.2	(0.86)	39.2-43.0
H1091	77	46.3	(1.46)	44.2-49.2	43.6	(0.95)	41.5-44.5
H1225	121	41.1	(1.44)	37.8-42.9	41.9	(2.28)	33.2-44.1
H964	136	41.0	(1.31)	39.3-43.9	42.1	(0.63)	41.0-43.5
H1074	133	43.2	(2.49)	36.3-46.1	41.8	(1.16)	40.0-44.0
H1222	84	39.6	(1.08)	36.0-41.7	42.1	(0.47)	41.2-42.9

Table 33. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20) $\bar{X}$	(S.D.)	Range	Diameter (mm) (Sample of 20) $\bar{X}$	(S.D.)	Range
H1132	80	37.7	(1.03)	36.2-40.0	40.0	(0.52)	39.2-41.0
H1197	122	38.5	(1.30)	36.3-41.2	41.2	(0.53)	40.2-42.0
H1123	94	39.7	(2.46)	33.8-42.8	41.8	(0.88)	39.0-42.9
H1239	122	45.8	(2.36)	40.3-48.8	43.7	(0.62)	42.0-44.5
H1233	117	34.4	(1.06)	32.2-36.1	39.5	(0.56)	38.0-40.6
A3175	92	38.1	(1.06)	36.2-40.0	40.4	(0.54)	39.1-41.1
$\bar{X}$	114.26	41.04			41.83		
S. D.	(23.07)		(4.33)			(1.86)	
Range	65-173			25.4-59.9			33.2-53.2

Table 34. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1978.

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
A2776		42.27	(0.65)	40.8-43.2	43.15	(1.65)	41.0-47.9
A2892	119	42.08	(0.84)	39.8-43.5	40.21	(1.04)	38.8-42.0
CR1369	148	42.46	(0.70)	41.2-43.9	41.97	(1.25)	39.9-44.9
C2311	113	43.20	(0.50)	42.2-44.2	43.62	(1.53)	40.5-45.9
C2331	109	42.35	(0.91)	41.0-43.9	40.55	(1.64)	38.2-43.5
C2374	103	41.31	(0.61)	39.4-42.4	40.47	(0.99)	38.8-42.2
E9289	130	42.71	(0.91)	41.0-44.6	42.28	(1.68)	39.7-47.0
FL0004	114	41.43	(0.61)	40.0-42.0	39.14	(1.05)	37.5-41.7
FL0106	113	42.48	(0.87)	41.0-44.0	41.48	(1.07)	39.5-43.8
FL0110	63	42.88	(0.61)	41.9-44.0	43.53	(1.03)	41.9-46.1
H1269	115	40.00	(0.55)	39.2-40.8	35.72	(1.31)	33.9-37.5
H1272	108	42.89	(0.46)	42.0-43.8	44.37	(0.95)	43.1-47.2
H1275		43.01	(0.51)	42.0-43.9	44.75	(1.14)	42.4-46.5
H1276	113	43.37	(2.13)	40.0-49.0	46.70	(1.49)	44.0-50.0
H1280	134	40.00	(0.80)	38.2-41.3	37.65	(0.98)	36.0-39.4
H1281	135	42.16	(0.48)	41.2-42.9	42.26	(0.94)	40.2-44.3
H1284	138	43.92	(1.06)	41.3-45.5	47.99	(2.44)	43.5-52.0
H1291	111	40.20	(0.64)	39.1-41.4	35.79	(1.62)	33.5-38.7
H1293	126	42.61	(0.57)	41.3-43.4	42.64	(1.19)	39.9-44.5
H1294	82	40.63	(0.90)	39.3-42.1	38.06	(1.37)	36.0-41.2
H1295	148	44.22	(2.02)	39.6-51.2	46.15	(1.00)	44.0-48.2
H1296	120	43.65	(0.94)	41.8-45.2	44.03	(1.02)	41.9-45.8
H1298	102	42.78	(1.35)	40.4-44.9	41.30	(2.24)	37.0-44.0
H1300	116	40.25	(0.74)	38.8-41.8	35.04	(1.09)	33.9-38.0
H1436	124	42.30	(0.63)	41.1-43.9	40.98	(0.99)	38.9-42.5
H1915	108	40.40	(0.69)	39.2-41.8	36.44	(0.99)	34.1-38.0
H1918	95	45.56	(1.56)	43.5-48.7	47.79	(0.94)	46.2-49.5
H1927		44.74	(0.90)	43.8-47.8	47.60	(1.24)	45.9-49.9
H1928	136	41.96	(0.60)	40.5-43.0	44.82	(1.05)	43.0-46.2
H1929	116	39.46	(1.27)	34.5-40.5	38.82	(1.09)	35.9-40.5
H1932	100	41.81	(1.17)	39.1-43.1	38.98	(1.25)	37.2-41.9

Table 34. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1978. (Continued)

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	X	(S.D.)	Range
H1935	105	41.89	(0.89)	40.6-44.5	38.38	(0.86)	36.0-39.9
H1957	74	39.62	(0.80)	38.3-40.8	33.94	(1.36)	30.8-37.0
H1968	107	41.76	(0.56)	40.1-42.6	41.90	(1.31)	40.0-44.0
H1969	125	42.25	(0.72)	41.0-44.2	41.14	(1.11)	39.2-43.5
H1970	119	41.67	(0.99)	39.3-43.0	40.87	(1.48)	38.1-43.7
H1971	121	41.54	(0.38)	40.9-42.1	39.82	(0.95)	38.5-41.9
H1983	140	42.70	(0.76)	41.5-44.0	44.95	(1.23)	42.2-46.2
H1993	102	40.28	(1.33)	38.2-42.8	41.76	(2.54)	36.1-44.3
H2025	110	42.22	(0.74)	40.7-43.5	43.17	(1.57)	40.9-46.0
H2029	121	40.52	(0.69)	39.5-42.0	36.02	(0.90)	34.4-37.8
H2039	126	43.86	(0.52)	42.8-44.7	46.19	(1.14)	43.1-48.0
H2042		43.53	(1.07)	42.1-46.7	45.04	(1.71)	41.8-48.3
H2043	101	42.91	(0.74)	42.0-45.2	43.56	(1.76)	42.0-49.8
H2046	88	43.79	(0.43)	43.0-44.4	45.89	(1.39)	44.1-49.0
H2065	96	42.29	(0.91)	40.5-43.9	42.74	(2.30)	39.5-48.8
H2081	146	41.83	(0.78)	40.5-43.6	35.78	(1.91)	32.1-38.6
H2090	118	41.13	(0.68)	39.6-42.0	38.44	(1.98)	31.5-40.9
H2109	136	40.35	(1.01)	39.0-44.0	35.13	(1.14)	33.2-37.5
H2177	117	39.56	(0.89)	37.5-41.1	33.83	(2.15)	30.4-35.6
H2177	88	40.36	(0.65)	39.4-42.0	36.71	(1.14)	35.9-38.9
H2211	148	39.10	(1.29)	34.9-41.1	35.69	(1.95)	30.6-39.2
H2214	69	41.66	(1.14)	39.2-43.8	43.35	(1.60)	41.1-47.1
H2248	132	43.74	(1.11)	41.0-45.2	45.43	(2.19)	40.5-48.8
H2253	100	45.12	(0.70)	43.9-46.2	51.72	(1.22)	49.1-53.2
H2256	103	43.59	(0.58)	42.6-44.5	45.61	(1.36)	43.0-48.0
H2258	108	44.51	(0.51)	43.5-45.4	48.44	(1.98)	43.0-52.1
H2306	100	43.21	(1.11)	40.5-44.9	44.68	(1.24)	42.9-47.3
H2329		44.04	(0.75)	42.8-45.5	50.55	(0.87)	48.9-52.0
H2329	121	44.41	(0.92)	42.8-45.6	49.36	(2.42)	43.9-53.0
H2332	116	41.09	(0.73)	39.9-42.1	35.99	(1.00)	34.0-37.2
H2351	87	42.11	(1.19)	40.0-44.1	42.41	(1.64)	39.9-45.0

Table 34. Number and size of eggs deposited by loggerhead turtles (*Caretta caretta*) at Kennedy Space Center, 1978. (Continued)

Tag No.	Number Eggs in Clutch	Weight (g) (Sample of 20)			Diameter (mm) (Sample of 20)		
		$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H2355	115	43.38	(0.81)	41.4-44.3	43.26	(1.53)	40.8-45.9
H2371	116	42.17	(0.84)	40.2-43.2	44.69	(1.70)	41.3-48.5
H2380	72	40.58	(1.29)	36.5-43.1	36.31	(1.44)	33.3-38.4
H2440	109	41.62	(0.66)	40.4-42.8	41.37	(1.66)	38.3-43.9
H2448	117	41.38	(1.34)	38.7-43.9	37.18	(3.36)	31.8-41.2
P1007	104	37.05	(0.77)	35.2-38.1	36.55	(1.25)	34.9-39.0
P1008	108	38.57	(.917)	36.9-40.0	39.73	(0.85)	38.8-42.0
U06678	98	44.31	(1.02)	42.5-46.0	47.16	(1.85)	44.0-50.1
U07678		43.77	(0.58)	42.7-45.0	35.39	(1.09)	35.0-40.0
U20678		42.49	(0.72)	41.7-45.0	41.83	(1.04)	40.2-44.9
U25578	142	37.38	(1.61)	31.3-39.0	32.19	(1.75)	27.0-34.2
U30578		40.94	(0.50)	40.2-42.0	38.14	(0.92)	36.5-39.9
U31578		42.25	(0.71)	41.2-43.4	41.82	(1.60)	39.1-44.2
070678		43.17	(0.76)	42.2-45.1	42.64	(2.38)	33.6-44.8
250578		40.18	(1.37)	36.5-41.2	38.92	(1.53)	36.5-41.9
310578		42.5	(0.57)	41.6-43.8	41.47	(1.22)	39.5-43.4
N =	66	78			78		
$\bar{X}$	109.82	41.43			42.02		
S.D.	25.36	1.686			4.277		
Range	63-148	31.30-51.20			27.00-53.20		

Table 35. Number and size of eggs deposited by green turtles (*Chelonia mydas*) at Kennedy Space Center, 1976.

Tag No.	Number Eggs in Clutch	DIAMETER (cm) (Sample of 20) X	(S.D.)	Range	WEIGHT (g) (Sample of 20) X	(S.D.)	Range
U06JL	198	48.20	(.95)	46.0 - 50.0	60.22	(2.82)	52.2 - 63.0
A3024	100	45.67	(.70)	44.8 - 48.0	53.01	(2.23)	50.0 - 60.2
U28JL	131	44.56	(.81)	42.5 - 45.6	48.60	(1.31)	45.4 - 50.0
A3092	135	47.21	(.64)	46.4 - 48.2	58.49	(1.67)	55.7 - 61.9
GRAND $\bar{X}$	141.00	46.41			55.08		
S.D.	41.09	1.61			5.30		
RANGES	100-198			42.5 - 50.0			45.4 - 63.0

Table 36. Number and size of eggs deposited by green turtles (*Chelonia mydas*) at Kennedy Space Center, 1977.

Tag No.	Number Eggs In Clutch	Weight (g) (Sample of 20) $\bar{X}$	(S.D.)	Range	Diameter (Sample of 20) $\bar{X}$	(S.D.)	Range
H1121	91	54.5	(1.50)	51.2-56.9	46.0	(0.84)	44.2-47.5
H1240	156	52.9	(2.02)	47.8-56.0	45.7	(1.50)	42.0-47.2
$\bar{X}$	123.5	53.70			45.85		

Table 37. Number and size of eggs deposited by loggerhead turtles (*Chelonia mydas*) at Kennedy Space Center, 1978.

Tag No.	Number Eggs in Clutch	Diameter (cm) (Sample of 20) X	S.D.	Range	Weight (g) (Sample of 20) X	S.D.	Range
H2083	122	45.38	0.45	45.2-46.0	46.55	1.12	44.7-48.8
H2249	130	42.52	0.63	41.1-43.5	43.34	1.40	40.5-45.8
U11778	152	43.08	1.80	40.0-48.0	46.95	1.24	44.1-48.5
H2314	120	43.20	1.00	41.5-44.8	44.14	1.56	41.2-46.0
U16778	111	44.64	1.02	42.3-45.9	50.05	2.54	45.1-57.9
H2315	119	48.42	0.77	46.6-49.6	62.33	1.42	59.7- 65.0
H2058	128	42.36	1.25	38.9-44.4	46.44	1.29	44.2-48.3
H2431	134	49.38	0.83	48.3-51.2	63.02	2.14	56.0-65.5
H2414	163	42.82	0.98	41.0-44.8	44.16	1.83	41.5-47.1
H2314	123	40.08	0.10	38.8-43.2	46.25	1.97	43.2-50.4
H2456	107	46.00	0.84	44.9-48.0	51.04	1.21	48.2-51.9
H2087	132	47.12	1.04	45.6-49.6	55.72	1.71	52.0-58.1
H2397	127	47.01	1.06	46.2-48.5	57.02	2.36	53.4-63.9
H2474	110	41.64	2.00	40.0-46.0	48.46	1.43	45.2-50.1
H2168	137	42.31	1.93	37.3-43.8	46.05	4.08	37.8-50.1
FL0172	-	44.03	0.93	42.7-46.3	46.72	2.29	43.5-50.1
P1005	122	44.41	1.54	41.9-47.0	47.80	2.70	38.1-50.8
H2315	126	48.14	0.88	46.2-49.8	61.65	2.18	59.0-66.0
U18878	-	42.80	0.79	41.6-44.3	37.62	1.74	35.2-41.5
P1010	150	42.35	1.75	39.0-44.1	48.28	2.67	44.5-51.8
U22878	127	43.32	1.52	40.5-47.0	43.98	3.51	37.9-50.8
P1028	131	44.54	0.87	43.0-45.7	49.87	2.39	42.9-52.2
U28878	117	44.68	0.58	43.7-45.9	49.36	1.42	46.3-52.2
N	21	23			23		
$\overline{X}$	128.0	44.37			49.42		
S.D.	13.0	2.43			6.46		
Range	107-163	40.1-49.4			37.6-62.3		

Table 38. Analysis of variance table for three year comparisons of loggerhead clutch sizes.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	906.3	2	453.2	1.22	0.3
Error	51650.6	139	371.6		
Total	52556.9	141			

Table 39. Analysis of variance table for three year comparisons of loggerhead egg weights.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	142.2	2	71.1		
Error	99773.5	4498	22.2	3.21	0.04
Total	99915.7	4500			

Table 40. Duncan's Multiple Range Test for comparisons of loggerhead egg weights. Means with same letter are not significantly different.

Grouping	Mean(g)	N	Year
A	41.43	1556	1978
B A	41.42	758	1976
B	41.07	2187	1977

Table 41. Analysis of Variance table for three year comparisons of loggerhead egg minimum diameters.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	114.5	2	57.2		
Error	19211.8	4496	4.3	13.4	.0001
Total	19326.2	4498			

Table 42. Duncan's Multiple Range Test for comparisons of loggerhead egg minimum diameters. Means with same letter are not significantly different.

Grouping	Mean(mm)	N	Year
A	42.18	757	1976
A	42.02	1556	1978
B	41.77	2186	1977

Table 43. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) confined in laboratory at Kennedy Space Center; Summer, 1976.

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
U18M1	18 May 1976	5 August 1976	79
U20MY	20 May 1976	7 August 1976	79
U24MY	24 May 1976	11 August 1976	85
H1405	18 May 1976	7 August 1976	81
H1426	25 May 1976	11 August 1976	78
A2738	18 May 1976	9 August 1976	83
U25MY	25 May 1976	9 August 1976	76
U18M2	18 May 1976	9 August 1976	83
H1434	28 May 1976	10 August 1976	74
U28MY	28 May 1976	10 August 1976	74
H1423	24 May 1976	11 August 1976	85
H1444	1 June 1976	14 August 1976	74
H1452	1 June 1976	14 August 1976	74
U31M1	31 May 1976	15 August 1976	76
H1459	7 June 1976	16 August 1976	70
H1470	11 June 1976	17 August 1976	67
U31M2	31 May 1976	16 August 1976	77
H1462	8 June 1976	17 August 1976	70

Table 43. Incubation periods for clutches of loggerhead turtle eggs (Caretta caretta) confined in laboratory at Kennedy Space Center; Summer, 1976. (Continued)

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
H1449	17 June 1976	24 August 1976	68
H1490	15 June 1976	23 August 1976	69
H1492	15 June 1976	23 August 1976	69
H1727	24 June 1976	26 August 1976	63
H1443	24 June 1976	27 August 1976	64
H1781	2 July 1976	29 August 1976	58
H1749	28 June 1976	30 August 1976	63
H1794	7 July 1976	2 Sept. 1976	57
H1720	9 July 1976	5 Sept. 1976	58
H1798	9 July 1976	5 Sept. 1976	58
H1443	10 July 1976	8 Sept. 1976	60
A3016	13 July 1976	10 Sept. 1976	59
A3014	13 July 1976	12 Sept. 1976	61
H1783	9 July 1976	17 Sept. 1976	70
A3044	19 July 1976	19 Sept. 1976	62
H1445	21 July 1976	17 Sept. 1976	58
H1716	21 July 1976	19 Sept. 1976	60
A3054	20 July 1976	22 Sept. 1976	64
A3047	19 July 1976	22 Sept. 1976	65
U21JL	21 July 1976	23 Sept. 1976	64

Table 43. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) confined in laboratory at Kennedy Space Center; Summer, 1976. (Continued)

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
A3071	23 July 1976	24 Sept. 1976	63
A3065	22 July 1976	23 Sept. 1976	63
A3064	22 July 1976	26 Sept. 1976	66
A3091	28 July 1976	1 Oct. 1976	65
A3097	30 July 1976	8 Oct. 1976	70
A3101	3 Aug. 1976	12 Oct. 1976	70
H1750	4 Aug. 1976	12 Oct. 1976	69
A3106	6 Aug. 1976	15 Oct. 1976	70
H1481	9 Aug. 1976	18 Oct. 1976	70
		$\bar{X}$	68.95
		S.D.	7.89

Table 44. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) confined in laboratory at Kennedy Space Center; summer, 1977.

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
A3140	2 June 1977	6 August 1977	65
A3178	2 June 1977	8 August 1977	67
A3148	7 June 1977	11 August 1977	65
A3159	10 June 1977	12 August 1977	63
A3170	13 June 1977	17 August 1977	65
A3182	14 June 1977	15 August 1977	62
H746	14 June 1977	18 August 1977	65
A3181	14 June 1977	19 August 1977	66
H745	14 June 1977	19 August 1977	66
H748	15 June 1977	19 August 1977	65
A3163	15 June 1977	19 August 1977	65
H750	15 June 1977	20 August 1977	66
A3184	15 June 1977	21 August 1977	67
A3172	16 June 1977	22 August 1977	67
U09JY	9 July 1977	13 September 1977	66
A3167	14 July 1977	15 September 1977	63
H1166	14 July 1977	15 September 1977	63
H995	14 July 1977	16 September 1977	64
H1174	15 July 1977	16 September 1977	63
A3151	18 July 1977	17 September 1977	61
H1110	20 July 1977	20 September 1977	62
H1212	20 July 1977	21 September 1977	63

Table 44. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) confined in laboratory at Kennedy Space Center; summer, 1977 (continued).

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
H1211	20 July 1977	21 September 1977	63
H1114	21 July 1977	22 September 1977	63
H1115	21 July 1977	20 September 1977	61
H1116	21 July 1977	26 September 1977	67
H1214	21 July 1977	26 September 1977	67
A3180	26 July 1977	28 September 1977	64
H1178	26 July 1977	1 October 1977	67
U01AU	1 August 1977	4 October 1977	64
H1227	2 August 1977	11 October 1977	70
H1105	3 August 1977	8 October 1977	66
H1104	4 August 1977	12 October 1977	69
H1129	5 August 1977	8 October 1977	64
H1074	9 August 1977	18 October 1977	70
H1132	10 August 1977	24 October 1977	75
H1197	11 August 1977	16 October 1977	66
H1239	15 August 1977	29 October 1977	75
A3175	19 August 1977	9 November 1977	82
		$\overline{X}$	65.95
		S.D.	4.08
		Range	61-82

Table 45. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) in protective incubation program at Kennedy Space Center; Summer, 1978.

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
C2331	18 May 1978	26 July 1978	69
U25578	25 May 1978	1 August 1978	68
U25M78	25 May 1978	1 August 1978	68
H1276	25 May 1978	1 August 1978	68
H1269	26 May 1978	29 July 1978	64
U30578	26 May 1978	3 August 1978	69
C2374	30 May 1978	8 August 1978	70
H1272	30 May 1978	6 August 1978	68
U31578	31 May 1978	6 August 1978	67
H1280	31 May 1978	6 August 1978	67
U31M78	31 May 1978	8 August 1978	69
H1281	31 May 1978	6 August 1978	67
H1275	1 June 1978	15 August 1978	75
H1284	2 June 1978	8 August 1978	67
H1291	5 June 1978	11 August 1978	67
H1293	5 June 1978	11 August 1978	67
U06678	6 June 1978	13 August 1978	68
H1294	6 June 1978	11 August 1978	66
U07678	7 June 1978	14 August 1978	68
H1295	7 June 1978	13 August 1978	67
U07J78	7 June 1978	10 August 1978	64
C2311	7 June 1978	13 August 1978	67
H1915	7 June 1978	12 August 1978	66
H1927	8 June 1978	13 August 1978	66
H1918	8 June 1978	14 August 1978	67
H1300	8 June 1978	14 August 1978	67
H1298	8 June 1978	14 August 1978	67
H1436	8 June 1978	13 August 1978	66
A2892	9 June 1978	16 August 1978	68

Table 45. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued.)

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
H1928	10 June 1978	14 August 1978	65
H1929	10 June 1978	16 August 1978	67
H1932	12 June 1978	18 August 1978	67
H1935	13 June 1978	19 August 1978	67
H1971	15 June 1978	19 August 1978	65
H1969	15 June 1978	22 August 1978	68
H1970	15 June 1978	19 August 1978	65
H1968	15 June 1978	18 August 1978	64
H1983	15 June 1978	19 August 1978	65
A2776	17 June 1978	26 August 1978	70
H2025	17 June 1978	23 August 1978	67
U20678	20 June 1978	25 August 1978	66
H2046	20 June 1978	26 August 1978	67
H2043	20 June 1978	25 August 1978	66
CR1369	21 June 1978	25 August 1978	65
H2081	23 June 1978	30 August 1978	68
H1296	24 June 1978	30 August 1978	67
H2065	26 June 1978	1 September 1978	67
H2109	29 July 1978	1 September 1978	64
H2029	1 July 1978	9 September 1978	70
H2177	3 July 1978	7 September 1978	66
E9289	3 July 1978	7 September 1978	66
H2039	5 July 1978	9 September 1978	66
H2211	7 July 1978	11 September 1978	66
H2248	8 July 1978	17 September 1978	71
H2256	10 July 1978	12 September 1978	64
H2258	10 July 1978	10 September, 1978	62
H2090	12 July 1978	14 September 1978	64
H2329	13 July 1978	19 September 1978	68
H2355	15 July 1978	21 September 1978	68

Table 45. Incubation periods for clutches of loggerhead turtle eggs (*Caretta caretta*) in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued.)

Parent Tag No.	Date Deposited	Date Hatched	Period (Days)
H2177	17 July 1978	20 September 1978	65
FL0004	17 July 1978	20 September 1978	65
H2371	19 July 1978	29 September 1978	72
H2440	22 July 1978	26 September 1978	66
H2380	26 July 1978	29 September 1978	65
H2306	29 July 1978	3 October 1978	66
H2351	31 July 1978	3 October 1978	64
H1993	1 August 1978	3 October 1978	63
FL0106	5 August 1978	10 October 1978	66
H2448	10 August 1978	14 October 1978	65
FL0110	10 August 1978	14 October 1978	65
H2329	14 August 1978	27 October 1978	74
P1007	16 August 1978	21 October 1978	66
H2214	16 August 1978	26 October 1978	71
H2332	21 August 1978	30 October 1978	70
H2253	22 August 1978	9 November 1978	79
H1957	23 August	11 November 1978	80
		N	76
		$\overline{X}$	67.24
		S.D.	3.05
		Range	62-80

Table 46. Incubation periods for clutches of green turtle eggs (*Chelonia mydas*) confined in laboratory at Kennedy Space Center; Summer, 1976.

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
U06JL	6 July 1976	2 Sept. 1976	58
A3024	13 July 1976	10 Sept. 1976	59
U28JL	28 July 1976	29 Sept. 1976	69
A3092	28 July 1976	28 Sept. 1976	68
		$\bar{X}$	63.50
		S.D.	5.80

Table 47. Incubation periods for clutches of green turtle eggs (*Chelonia mydas*) confined in laboratory at Kennedy Space Center; summer, 1977.

Parent Tag No.	Date Deposited	Date Hatched	Incubation Period (Days)
H1121	28 July 1977	29 September 1977	63
H1240	18 August 1977	2 November 1977	76
		$\overline{X}$	69.50
		S.D.	6.50

Table 48. Incubation periods for clutches of green turtle eggs (*Chelonia mydas*) in protective incubation program at Kennedy Space Center; Summer, 1978.

Parent Tag. No.	Date Deposited	Date Hatched	Incubation Period (Days)
H2083	23 June 1978	24 August 1978	62
H2249	8 July 1978	9 September 1978	63
U11X1	11 July 1978	16 September 1978	67
H2314	15 July 1978	16 September 1978	63
U16X1	16 July 1978	16 September 1978	62
H2315	18 July 1978	20 September 1978	64
H2058	20 July 1978	26 September 1978	68
H2431	21 July 1978	25 September 1978	66
H2414	21 July 1978	23 September 1978	64
H2314	27 July 1978	27 September 1978	62
H2456	28 July 1978	29 September 1978	63
H2083	2 August 1978	3 October 1978	62
H2397	3 August 1978	5 October 1978	63
H2474	7 August 1978	9 October 1978	63
H2168	8 August 1978	12 October 1978	65
FL0172	9 August 1978	14 October 1978	66
P1005	14 August 1978	21 October 1978	68
H2315	17 August 1978	28 October 1978	72
P1010	18 August 1978	31 October 1978	74
P1028	22 August 1978	9 November 1978	79
U22A1	22 August 1978	2 November 1978	72
U28A1	28 August 1978	14 November 1978	78

N	22
$\overline{X}$	66.64
S.D.	5.20
Range	62-79

Table 49. Fertility rates for loggerhead turtles (Caretta caretta) clutches in protective incubation program at Kennedy Space Center; Summer, 1976.

Parent Tag No.	Fertility Rate (%)* Minimum	Maximum
U18M1	100	100
U20MY	86	88
U24MY	87	91
H1405	99	99
H1426	80	96
A2738	90	90
U25MY	48	48
U18M2	93	98
H1434	94	94
U28MY	79	79
H1423	88	88
H1444	53	53
H1452	57	57
U31M1	30	30
H1459	90	90
H1470	68	68
U31M2	59	59
H1462	92	93
H1449	97	97
H1490	95	97
H1492	91	93
H1727	91	92
H1443	98	100
H1781	94	94
H1749	100	100
H1794	85	85
H1720	98	98
H1798	94	94
H1783	95	97
H1445	97	99
U21JL	100	100
A3071	93	95
A3065	100	100
A3091	97	97
A3097	89	98
H1750	56	64
A1481	86	86
$\overline{X}$	85.1	86.7
S.D.	17.2	17.4
R	30 - 100	30 - 100

* Minimum and maximum rates explained in text.

Table 50. Fertility rates for loggerhead turtles (*Caretta caretta*) clutches in protective incubation program at Kennedy Space Center; summer, 1977.

Parent Tag No.	Fertility Rate Minimum	Fertility Rate Maximum
A3140	60.6	60.6
A3148	71.1	73.7
A3151	95.1	95.9
A3159	80.9	91.3
A3163	94.4	95.1
A3167	86.3	86.3
A3170	88.9	89.5
A3172	75.0	91.7
A3175	85.9	88.0
A3178	55.6	59.6
A3180	85.8	90.6
A3181	79.8	79.8
A3182	84.4	87.5
A3184	25.8	46.4
H745	91.5	91.5
H746	56.4	57.4
H748	84.5	85.3
H750	77.1	77.1
H995	87.8	87.8
H1074	74.6	74.6
H1104	72.4	80.6

Table 50. Fertility rates for loggerhead turtles (*Caretta caretta*) clutches in protective incubation program at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	Fertility Rate Minimum	Fertility Rate Maximum
H1105	96.6	96.6
H1110	89.7	94.1
H1114	66.7	89.9
H1115	87.1	91.4
H1116	73.0	96.0
H1166	93.5	93.5
H1174	81.6	88.3
H1178	91.5	94.7
H1211	92.2	95.1
H1212	93.9	96.2
H1214	93.7	93.7
H1227	95.0	95.0
H1239	95.9	96.7
U09JY	94.4	94.4
U01AU	97.6	97.6
$\overline{X}$	82.12	86.21
S.D.	14.97	12.62
Range	25.8-97.6	46.4-97.6

Table 51. Fertility rates for loggerhead turtle (<u>Caretta caretta</u>) clutches in protective incubation program at Kennedy Space Center; Summer, 1978.

Parent Tag No.	Fertility Rate Minimum	Fertility Rate Maximum
C2331	90.8	94.5
U25578	80.3	81.0
H1276	88.5	93.8
H1269	89.6	91.3
C2374	87.4	93.2
H1272	82.4	82.4
H1280	59.7	72.4
H1281	95.6	95.6
H1284	83.3	94.9
H1291	98.2	98.2
U06678	83.7	85.7
H1294	67.1	87.8
H1295	74.3	83.1
C2311	87.6	90.3
H1915	64.8	66.7
H1300	85.3	91.4
H1298	91.2	91.2
H1436	84.7	88.7
A2892	71.4	73.9
H1929	63.8	69.0
H1932	91.0	98.0
H1935	88.6	92.4
H1971	90.9	90.9
H1969	90.4	91.2
H1970	93.3	93.3
H1983	67.1	87.9
H2025	90.0	90.9

Table 51. Fertility rates for loggerhead turtle (*Caretta caretta*) clutches in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued)

Parent Tag No.	Fertility Rate Minimum	Fertility Rate Maximum
H2046	94.3	95.5
H2043	98.0	98.0
CR1369	93.9	95.9
H2081	88.4	93.2
H1296	90.8	94.2
H2065	95.8	95.8
H2109	90.4	90.4
H2029	100.0	100.0
H2177	90.6	96.6
E9289	57.7	58.5
H2039	97.6	99.2
H2211	43.9	63.5
H2248	44.7	47.0
H2258	100.0	100.0
H2355	0.9	4.3
H2177	80.7	83.0
H2371	2.9	2.9
H2440	87.0	92.6
H2380	98.6	98.6
H2306	94.0	94.0
H2351	94.7	98.7
FL0106	97.3	97.3
H2448	94.9	97.4
H2329	79.3	82.6
P1007	94.2	95.2
H2214	88.4	95.7
H2332	86.1	86.1

Table 51. Fertility rates for loggerhead turtle (*Caretta caretta*) clutches in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued)

Parent Tag No.		Fertility Rate Minimum	Fertility Rate Maximum
H2253		63.0	69.0
H1957		93.2	97.3
	N	56	56
	$\overline{X}$	81.83	85.58
	S.D.	20.39	19.48
	Range	0.9 - 100.0	2.9 - 100.0

Table 52. Fertility rates for green turtles (*Chelonia mydas*) clutches in protective incubation program at Kennedy Space Center, Summer, 1976.

Parent Tag No.		Fertility Rate (%) Minimum	Maximum
U06JL		86	100
A3204		87	100
A3092		86	100
U28JL		95	100
	$\overline{X}$	88.5	100
	S.D.	4.35	-
	Range	86-95	-
	N	4	4

Table 53. Fertility rates for green turtles (*Chelonia mydas*) clutches in protective incubation program at Kennedy Space Center, Summer, 1977.

Parent Tag No.		Fertility Rate (%) Minimum	Maximum
H1121		97.8	98.9
H1240		85.2	85.2
	$\overline{X}$	91.50	92.05
	S.D.	8.91	9.69
	Range	85.2-97.8	85.2-98.9
	N	2	2

Table 54. Fertility rates for green turtle (Chelonia mydas) clutches in protective incubation program at Kennedy Space Center; Summer, 1978.

Parent Tag No.		Fertility Rate Minimum	Fertility Rate Maximum
H2083		98.4	98.4
H2249		92.3	93.8
U11778		14.2	14.2
H2314		91.6	91.6
U16778		93.7	93.7
H2315		87.3	87.3
H2058		28.1	30.5
H2431		77.4	80.5
H2414		98.8	98.8
H2314		93.5	96.7
H2456		83.7	85.6
H2083		94.7	94.7
H2397		96.9	98.4
H2474		76.4	76.4
H2168		71.9	78.5
P1005		95.1	95.1
H2315		93.7	93.7
P1010		78.0	78.0
P1028		39.7	48.1
U22878		82.7	96.1
U28878		99.1	99.1
	N	21	21
	$\overline{X}$	80.34	82.34
	S.D.	23.91	23.31
	Range	14.2-99.1	14.2-99.1

Table 55. Analysis of Variance table for three year comparisons of leggerhead minimum fertility rates.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	249.3	2	124.6		
Error	46907.1	155	302.6	0.41	0.66
Total	47156.4	157			

Table 56. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1976.

Parent Tag No.	No. Eggs Secured	Eggs Pipped		Eggs Pipped Dead		Hatchlings Released		Fertile Unhatched		Infertile Unhatched		Experimental Use No.	Unaccounted For	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		No.	(%)
U18M1	65	45	(92)	3	(06)	42	(86)	4	(08)	0	(0)	16	0	
U20MY	89	31	(35)	1	(01)	30	(34)	47	(53)	10	(11)	0	1	(01)
U24MY	101	72	(71)	3	(03)	69	(68)	17	(17)	10	(10)	0	2	(02)
H1405	81	57	(70)	4	(05)	53	(65)	23	(28)	1	(01)	0	0	(0)
H1426	136	101	(74)	4	(03)	97	(71)	19	(14)	6	(04)	0	10	(07)
A2738	90	54	(60)	5	(06)	49	(54)	27	(30)	9	(10)	0	0	(0)
U25MY	98	36	(37)	0	(00)	36	(37)	11	(37)	51	(52)	0	0	(0)
U18M2	58	36	(62)	2	(03)	34	(58)	18	(31)	4	(06)	0	0	(0)
H1434	107	88	(82)	4	(03)	84	(78)	6	(05)	13	(12)	0	0	(0)
U28MY	121	76	(62)	4	(03)	72	(59)	20	(16)	25	(20)	0	0	(0)
H1423	112	78	(76)	1	(01)	77	(75)	12	(11)	11	(10)	10	0	(0)
H1444	78	39	(50)	1	(01)	38	(48)	3	(03)	36	(46)	0	0	(0)
H1452	99	56	(56)	4	(04)	52	(52)	1	(01)	42	(42)	0	0	(0)
U31M1	89	4	(04)	0	(00)	4	(04)	23	(25)	62	(69)	0	0	(0)

Table 56. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1976. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
H1459	95	83	(87)	0	(00)	83	(87)	3	(03)	9	(09)	0	0	(0)
H1470	158	105	(66)	0	(00)	105	(66)	22	(13)	31	(19)	0	0	(0)
U31M2	111	38	(34)	3	(02)	35	(31)	28	(25)	45	(40)	0	0	(0)
H1462	130	89	(68)	2	(01)	87	(66)	32	(24)	8	(06)	0	1	(01)
H1449	136	126	(92)	0	(00)	126	(92)	6	(04)	4	(02)	0	0	(00)
H1490	146	139	(95)	2	(01)	137	(93)	2	(01)	4	(02)	0	1	(01)
H1492	116	103	(88)	0	(00)	103	(88)	4	(03)	8	(06)	0	1	(01)
H1727	112	97	(86)	0	(00)	97	(86)	6	(05)	8	(07)	0	1	(01)
H1443	127	123	(96)	5	(03)	118	(92)	3	(02)	0	(00)	0	1	(01)
H1781	124	110	(88)	7	(05)	103	(83)	7	(05)	7	(05)	0	0	(00)
H1749	88	85	(96)	0	(00)	85	(96)	3	(03)	0	(00)	0	0	(00)
H1794	80	58	(72)	7	(08)	51	(63)	10	(12)	12	(15)	0	0	(00)
H1720	83	81	(97)	0	(00)	81	(97)	1	(01)	1	(01)	0	0	(00)
H1798	113	106	(93)	0	(00)	106	(93)	1	(01)	6	(05)	0	0	(00)
H1443	125	101	(96)	0	(00)	101	(96)	-		-		20	0	(00)
A3016	117	93	(95)	0	(00)	93	(95)	-		-		20	0	(00)

Table 56. Hatch rates and other data for loggerhead turtles (_Caretta caretta_) generated in protective incubation program at Kennedy Space Center; Summer, 1976. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
A3014	126	99	(93)	0	(00)	99	(93)	-		-		20	0	(00)
H1783	139	102	(73)	4	(02)	98	(70)	32	(23)	5	(03)	0	1	(01)
H1445	114	102	(89)	8	(07)	94	(82)	10	(08)	2	(01)	0	1	(01)
H1716	134	104	(91)	5	(04)	99	(86)	-		-		20	0	(00)
A3047	67	39	(82)	0	(00)	39	(82)	-		-		20	0	(00)
U21JL	23	22	(95)	0	(00)	22	(82)	1	(04)	0	(00)	0	0	(00)
A3071	94	86	(91)	0	(00)	86	(91)	3	(03)	4	(04)	0	1	(01)
A3065	111	109	(98)	0	(00)	109	(98)	2	(01)	0	(00)	0	0	(00)
A3064	95	69	(92)	0	(00)	69	(92)	-		-		20	0	(00)
A3091	122	119	(97)	0	(00)	119	(97)	0	(00)	3	(02)	0	0	(00)
A3097	117	77	(88)	0	(00)	77	(88)	5	(05)	1	(01)	30	4	(04)
A3101	112	85	(92)	1	(01)	84	(91)	-		-		20	0	(00)
H1750	104	59	(56)	3	(02)	56	(53)	4	(03)	27	(25)	0	4	(03)
A3106	101	79	(97)	0	(00)	79	(97)	-		-		20	0	(00)

Table 56. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1976. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Piped Dead No.	Eggs Piped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
A1481	119	90	(75)	6	(05)	84	(70)	13	(10)	16	(13)	0	0	
TOTAL	4,668	3,551	(76)	89	(01)	3,462	(74)					216	29	(01)
$\bar{X}$	106.1	78.9		1.97		39.4							.64	
S.D.	25.5	30.4		2.4		43.3							1.69	
Range	23-158	4-139	(04-98)	0-8	(00-08)	4-137	(04-98)						0-10	(00-07)

Table 57. Hatch rates and other data for loggerhead turtles (Caretta caretta) generated in protective incubation program at Kennedy Space Center; summer, 1977.

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
A3140	132	45	(34)	3	(02)	42	(32)	35	(27)	52	(39)	0	0	(00)
A3148	74	41	(55)	1	(01)	40	(54)	13	(18)	20	(27)	0	0	(00)
A3151	122	115	(94)	0	(00)	115	(94)	1	(01)	5	(04)	0	1	(01)
A3159	103	88	(85)	0	(00)	88	(85)	5	(05)	10	(10)	0	0	(00)
A3163	143	134	(94)	0	(00)	134	(94)	1	(01)	7	(05)	0	1	(01)
A3167	131	111	(85)	0	(00)	111	(85)	2	(02)	18	(14)	0	0	(00)
A3170	162	136	(84)	23	(14)	113	(70)	8	(05)	17	(10)	0	1	(01)
A3172	21	15	(71)	4	(19)	11	(52)	3	(14)	2	(10)	0	1	(05)
A3175	92	59	(64)	0	(00)	59	(64)	20	(22)	11	(12)	0	2	(02)
A3178	95	43	(45)	1	(01)	42	(44)	12	(13)	40	(42)	0	4	(04)
A3180	101	76	(75)	20	(20)	56	(55)	15	(15)	10	(10)	0	0	(00)
A3181	84	66	(79)	0	(00)	66	(79)	1	(01)	17	(20)	0	0	(00)
A3182	96	75	(78)	0	(00)	75	(78)	6	(06)	12	(13)	0	3	(03)
A3184	79	17	(22)	0	(00)	17	(22)	8	(10)	52	(66)	0	2	(03)
H745	94	79	(84)	0	(00)	79	(84)	7	(07)	8	(09)	0	0	(00)
H746	101	47	(47)	4	(04)	43	(43)	10	(10)	43	(43)	0	1	(01)

Table 57. Hatch rates and other data for loggerhead turtles (<u>Caretta caretta</u>) generated in protective incubation program at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
H748	116	97	(84)	0	(00)	97	(84)	1	(01)	17	(15)	0	1	(01)
H750	118	87	(74)	1	(01)	86	(73)	4	(03)	27	(23)	0	0	(00)
H995	90	76	(84)	0	(00)	76	(84)	3	(03)	11	(12)	0	0	(00)
H1074	134	59	(44)	3	(02)	56	(42)	41	(31)	34	(25)	0	0	(00)
H1104	132	71	(54)	0	(00)	71	(54)	26	(20)	26	(20)	0	9	(07)
H1105	116	109	(94)	1	(01)	108	(93)	3	(03)	4	(03)	0	0	(00)
H1110	65	60	(97)	0	(00)	60	(97)	1	(02)	4	(06)	3	0	(00)
H1114	69	44	(67)	4	(06)	40	(61)	2	(03)	7	(11)	3	13	(20)
H1115	93	80	(86)	5	(05)	75	(81)	1	(01)	8	(09)	0	4	(04)
H1116	86	72	(87)	3	(04)	69	(83)	1	(01)	4	(05)	3	6	(07)
H1166	107	99	(93)	0	(00)	99	(93)	2	(02)	7	(07)	0	1	(01)
H1174	103	67	(65)	2	(02)	65	(63)	17	(17)	12	(12)	0	7	(07)
H1178	94	78	(83)	2	(02)	76	(81)	8	(09)	5	(05)	0	3	(03)
H1211	96	92	(99)	0	(00)	92	(99)	3	(03)	5	(05)	3	4	(04)
H1212	128	112	(90)	8	(06)	104	(83)	12	(10)	5	(04)	3	1	(01)
H1214	110	98	(89)	3	(03)	95	(86)	6	(05)	7	(06)	0	1	(01)

Table 57. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
H1227	101	93	(92)	1	(01)	92	(91)	3	(03)	5	(05)	0	0	(00)
H1239	122	104	(85)	0	(00)	104	(85)	13	(11)	4	(03)	0	1	(01)
U09JY	54	50	(93)	0	(00)	50	(93)	1	(02)	3	(06)	0	0	(00)
U01AU	84	79	(94)	4	(05)	75	(89)	3	(04)	2	(02)	0	0	(00)
Total	3,648	2,774	(76)	102	(03)	2,431	(67)	298	(8)	521	(14)	15	67	(02)
$\overline{X}$	101.33	77.06		2.83		67.53		8.28		14.47			1.86	
S.D.	26.87	28.89		5.28		32.67		9.54		13.87			2.90	
Range	21-162	17-136 (22-99)		0-23 (00-20)		11-134 (22-99)		1-41 (01-31)		2-52 (02-66)			0-13	

Table 58. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1978.

Parent Tag No.	No. Eggs Secured	Eggs Pipped		Eggs Pipped Dead		Hatchlings Released		Fertile Unhatched		Infertile Unhatched		Unaccounted For	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
A2776	31	13	(42)	1	(03)	12	(39)	17	(55)	0	(00)	1	(03)
A2892	119	73	(61)	0	(00)	73	(61)	12	(10)	31	(03)	3	(03)
CR1369	148	131	(89)	9	(06)	122	(82)	8	(05)	6	(04)	3	(02)
C2311	113	91	(81)	2	(02)	89	(79)	8	(07)	11	(10)	3	(03)
C2331	109	92	(84)	0	(00)	92	(84)	7	(06)	6	(06)	4	(04)
C2374	103	69	(67)	0	(00)	69	(67)	21	(20)	7	(07)	6	(06)
E9289	130	53	(41)	14	(11)	39	(30)	22	(17)	54	(42)	1	(01)
FL0004	114	108	(95)	0	(00)	108	(95)	1	(01)	6	(05)	1	(01)
FL0106	113	109	(96)	0	(00)	109	(96)	1	(01)	3	(03)	0	(00)
FL0110	63	68	(108)	0	(00)	68	(108)	1	(02)	0	(00)	6	(10)
H1269	115	98	(85)	1	(01)	97	(84)	5	(04)	10	(09)	2	(02)
H1272	108	87	(80)	0	(00)	87	(80)	2	(02)	19	(18)	0	(00)
H1275	92	11	(12)	5	(06)	6	(07)	57	(62)	18	(20)	6	(07)
H1276	113	93	(82)	0	(00)	93	(82)	7	(06)	7	(06)	6	(05)
H1280	134	70	(52)	0	(00)	70	(52)	10	(07)	37	(28)	17	(13)
H1281	135	125	(92)	5	(01)	119	(88)	5	(04)	6	(04)	0	(00)
H1284	138	112	(81)	1	(01)	111	(80)	3	(02)	7	(05)	16	(12)
H1291	111	106	(95)	0	(00)	106	(95)	3	(03)	2	(02)	0	(00)

Table 58. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued).

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Unaccounted For No.	Unaccounted For (%)
H1293	126	85	(67)	0	(00)	85	(67)	16	(13)	28	(22)	3	(02)
H1294	82	57	(62)	0	(00)	51	(62)	4	(05)	10	(12)	17	(21)
H1295	148	90	(61)	0	(00)	90	(61)	20	(14)	25	(17)	13	(09)
H1296	120	106	(88)	1	(01)	105	(88)	3	(03)	7	(06)	4	(03)
H1298	102	86	(84)	2	(02)	84	(82)	7	(07)	9	(09)	0	(00)
H1300	116	97	(84)	0	(00)	97	(84)	2	(02)	10	(09)	7	(06)
H1436	124	97	(78)	0	(00)	97	(78)	8	(06)	14	(11)	17	(14)
H1915	108	68	(63)	0	(00)	68	(63)	2	(02)	36	(33)	2	(02)
H1918	95	92	(97)	0	(00)	92	(97)	2	(02)	6	(06)	5	(05)
H1927	121	86	(71)	11	(09)	75	(62)	15	(12)	14	(12)	6	(05)
H1928	136	120	(88)	0	(00)	120	(88)	13	(10)	6	(04)	3	(02)
H1929	116	64	(55)	2	(02)	62	(53)	10	(09)	36	(31)	6	(05)
H1932	100	63	(63)	0	(00)	63	(63)	28	(28)	2	(02)	7	(07)
H1935	104	86	(83)	1	(01)	85	(82)	7	(07)	8	(08)	3	(03)
H1957	74	51	(69)	7	(09)	44	(59)	18	(24)	2	(03)	3	(04)
H1968	107	102	(95)	11	(10)	91	(85)	6	(06)	5	(05)	6	(06)
H1969	128	98	(78)	2	(02)	96	(77)	15	(12)	11	(09)	1	(01)
H1970	119	99	(83)	1	(01)	98	(82)	12	(10)	8	(07)	0	(00)

Table 58. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued).

Parent Tag No.	No. Eggs Secured	Eggs Pipped		Eggs Pipped Dead		Hatchlings Released		Fertile Unhatched		Infertile Unhatched		Unaccounted For	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
H1971	121	105	(87)	1	(01)	104	(86)	5	(04)	11	(09)	0	(00)
H1983	140	89	(64)	0	(00)	89	(64)	5	(04)	17	(12)	29	(21)
H1993	102	110	(108)	0	(00)	110	(108)	1	(01)	8	(08)	17	(17)
H2025	110	87	(79)	0	(00)	87	(79)	12	(11)	10	(09)	1	(01)
H2029	121	113	(93)	0	(00)	113	(93)	8	(07)	0	(00)	0	(00)
H2039	126	119	(94)	1	(01)	118	(94)	4	(03)	1	(01)	2	(02)
H2043	101	97	(96)	0	(00)	97	(96)	2	(02)	2	(02)	0	(00)
H2046	88	79	(90)	0	(00)	79	(90)	4	(05)	4	(05)	1	(01)
H2065	96	92	(96)	0	(00)	92	(96)	0	(00)	4	(04)	0	(00)
H2081	146	87	(60)	0	(00)	87	(60)	42	(29)	10	(07)	7	(05)
H2090	118	117	(99)	1	(01)	116	(98)	4	(03)	2	(02)	5	(04)
H2109	136	120	(88)	0	(00)	120	(88)	3	(02)	13	(10)	0	(00)
H2177	117	94	(85)	4	(03)	95	(81)	7	(06)	4	(03)	7	(06)
H2177	88	64	(73)	2	(02)	62	(70)	7	(08)	15	(17)	2	(02)
H2211	148	58	(39)	2	(14)	56	(38)	7	(47)	54	(36)	29	(20)
H2214	69	57	(74)	3	(43)	48	(70)	10	(14)	3	(04)	5	(07)
H2248	132	56	(42)	0	(00)	56	(42)	3	(02)	70	(53)	3	(02)
H2253	100	41	(41)	1	(01)	40	(40)	22	(22)	31	(31)	6	(06)

Table 58. Hatch rates and other data for loggerhead turtles (*Caretta caretta*) generated in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued).

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Unaccounted For No.	Unaccounted For (%)
H2256	102	95	(93)	2	(02)	93	(91)	9	(09)	2	(02)	4	(04)
H2258	107	102	(95)	1	(01)	101	(94)	5	(05)	0	(00)	0	(00)
H2306	100	94	(94)	0	(00)	94	(94)	0	(00)	6	(06)	0	(00)
H2329	31	22	(71)	1	(03)	21	(68)	0	(00)	6	(19)	3	(01)
H2329	121	91	(75)	1	(01)	90	(74)	5	(04)	21	(17)	4	(03)
H2332	115	93	(81)	8	(07)	85	(74)	6	(05)	16	(14)	0	(00)
H2351	75	68	(91)	0	(00)	68	(91)	3	(04)	1	(01)	3	(04)
H2355	115	1	(01)	0	(00)	1	(01)	0	(00)	110	(96)	4	(03)
H2371	116	3	(03)	0	(00)	3	(03)	0	(00)	113	(97)	0	(00)
H2380	72	67	(93)	0	(00)	67	(93)	4	(06)	1	(01)	0	(00)
H2440	108	93	(86)	1	(01)	92	(85)	1	(01)	8	(07)	6	(06)
H2448	117	110	(94)	7	(06)	103	(88)	1	(01)	3	(03)	3	(03)
P1007	104	90	(87)	2	(02)	88	(85)	8	(08)	5	(05)	1	(01)
U06678	98	74	(76)	0	(00)	74	(76)	8	(08)	14	(14)	2	(02)
U07678	57	21	(41)	0	(00)	21	(41)	3	(06)	22	(43)	5	(10)
U20678	132	96	(73)	0	(00)	96	(73)	13	(10)	11	(08)	12	(09)
U25578	142	58	(41)	1	(01)	57	(40)	56	(40)	27	(19)	1	(01)
U30578	128	56	(44)	0	(00)	56	(44)	28	(22)	28	(22)	16	(13)
U31578	56	44	(79)	0	(00)	44	(79)	2	(04)	1	(02)	9	(16)

Table 58. Hatch rates and other data for loggerhead turtles (Caretta caretta) generated in protective incubation program at Kennedy Space Center; Summer, 1978. (Continued).

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Unaccounted For No.	Unaccounted For (%)
070678	74	0	(00)	0	(00)	0	(00)	4	(05)	6	(08)	64	(86)
250578	92	71	(71)	0	(00)	71	(77)	8	(09)	13	(14)	0	(00)
310578	35	29	(83)	0	(00)	29	(83)	9	(26)	5	(14)	8	(23)
Total	8162	6011	(74)	115	(01)	5896	(72)	697	(08)	1145	(14)	437	(05)
$\overline{X}$		79.0		1.5		76.3						5.7	
S.D.		30.7		2.9		31.9						9.1	
Range		0-131		0-14		0-122						0-64	

Table 59. Hatch rates and other data for green turtles (*Chelonia mydas*) generated in protective incubation program at Kennedy Space Center; Summer, 1976.

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Unhatched No.	Unhatched (%)	Experimental Use Number
U06JL	199	172	(86)	4	(2)	168	(84)	27	(14)	0
A3024	100	87	(91)	1	(1)	86	(90)	13	(13)	5
A3092	135	116	(89)	1	(1)	115	(88)	19	(14)	5
U28JL	131	125	(95)	0	(0)	125	(95)	6	(4)	0
Total	565	500	(88.5)	6	(1)	494*	(87.4)	65	(11.5)	10
$\bar{X}$	141.2	125		1.5		123.5		16.25		
S.D.	41.6	35.3		1.7		34.0		8.9		
Range	100-199	87-172		0-4		86-168		6-27		

*Of these hatchlings, 435 were given to the Florida Department of Natural Resources for tank rearing for one year.

Table 60. Hatch rates and other data for green turtles (Chelonia mydas) generated in protective incubation program at Kennedy Space Center; summer, 1977.

Parent Tag No.	No. Eggs Secured	Eggs Pipped No.	Eggs Pipped (%)	Eggs Pipped Dead No.	Eggs Pipped Dead (%)	Hatchlings Released No.	Hatchlings Released (%)	Fertile Unhatched No.	Fertile Unhatched (%)	Infertile Unhatched No.	Infertile Unhatched (%)	Experimental Use No.	Unaccounted For No.	Unaccounted For (%)
H1121	91	88	(97)	0	(00)	88	(97)	1	(01)	1	(01)	0	1	(01)
H1240	156	117	(75)	0	(00)	117	(75)	16	(10)	23	(14)	0	0	(00)

Table 61. Hatch rates and other data for green turtles (*Chelonia mydas*) generated in protective incubation program at Kennedy Space Center; summer, 1978.

Parent Tag No.	No. Eggs Secured	Eggs Pipped		Eggs Pipped Dead		Hatchlings Released		Fertile Unhatched		Infertile Unhatched		Unaccounted For	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
FL0172	128	110	(86)	0	(00)	110	(86)	7	(05)	8	(06)	3	(02)
H2058	128	27	(21)	0	(00)	27	(21)	9	(07)	89	(70)	3	(02)
H2083	132	122	(92)	0	(00)	122	(92)	3	(23)	7	(05)	0	(00)
H2083	122	115	(94)	1	(01)	114	(93)	5	(04)	2	(02)	0	(00)
H2168	135	70	(52)	0	(00)	70	(52)	27	(20)	29	(21)	9	(07)
H2249	130	119	(92)	0	(00)	119	(92)	1	(01)	8	(06)	2	(02)
H2314	119	97	(82)	1	(01)	96	(81)	12	(10)	10	(08)	0	(00)
H2314	123	113	(92)	3	(02)	110	(89)	2	(02)	4	(03)	4	(03)
H2315	110	93	(85)	1	(01)	92	(84)	3	(03)	14	(13)	0	(00)
H2315	126	90	(71)	2	(02)	88	(70)	28	(22)	8	(06)	0	(00)
H2397	127	114	(90)	1	(01)	113	(89)	9	(07)	2	(02)	2	(02)
H2414	163	160	(98)	0	(00)	160	(98)	1	(01)	2	(01)	0	(00)
H2431	133	98	(74)	0	(00)	98	(74)	5	(04)	26	(20)	4	(03)
H2456	104	80	(77)	1	(01)	79	(76)	7	(07)	15	(14)	2	(02)
H2474	110	82	(75)	0	(00)	82	(75)	2	(02)	26	(24)	0	(00)
P1005	122	78	(64)	0	(00)	78	(64)	38	(31)	6	(05)	0	(00)
P1010	150	72	(48)	8	(05)	64	(43)	45	(30)	33	(22)	0	(00)
P1028	131	29	(22)	3	(02)	26	(20)	23	(18)	68	(52)	11	(08)

Table 61. Hatch rates and other data for green turtles (*Chelonia mydas*) generated in protective incubation program at Kennedy Space Center; summer, 1978. (Continued)

Parent Tag No.	No. Eggs Secured	Eggs Pipped		Eggs Pipped Dead		Hatchlings Released		Fertile Unhatched		Infertile Unhatched		Unaccounted For	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
U11778	148	14	(09)	1	(01)	13	(09)	7	(05)	127	(86)	0	(00)
U16778	111	99	(89)	5	(05)	94	(85)	5	(05)	7	(06)	0	(00)
U18878	44	0	(00)	0	(00)	0	(00)	0	(00)	44	(100)	0	(00)
U22878	127	82	(65)	2	(02)	80	(63)	23	(18)	5	(04)	17	(13)
U28878	117	111	(95)	16	(14)	95	(81)	5	(04)	1	(01)	0	(00)

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Table 62. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1976.

Parent Tag No.	N	Weight X	Weight S.D.	Weight Range	Depth X	Depth S.D.	Depth Range
A2738	20	18.8	(0.7)	17.8 - 20.1	18.9	(0.9)	18.0 - 21.1
H1405	20	19.7	(0.6)	18.5 - 20.9	20.3	(1.3)	18.2 - 21.3
H1423	20	22.0	(0.6)	20.9 - 22.9	20.4	(0.6)	19.6 - 22.0
H1426	20	20.4	(0.6)	19.2 - 21.8	20.7	(0.8)	19.5 - 22.1
H1434	20	21.0	(0.5)	20.0 - 21.6	20.6	(0.6)	19.6 - 21.6
H1444	20	16.8	(0.6)	15.4 - 18.0	18.0	(0.5)	17.1 - 19.0
H1449	20	20.9	(0.6)	20.0 - 22.0	20.9	(0.7)	19.8 - 22.2
H1452	20	20.0	(0.7)	18.4 - 20.9	20.0	(0.7)	19.0 - 21.2
H1459	20	17.1	(0.7)	15.9 - 18.8	17.0	(0.7)	16.0 - 18.2
H1462	20	21.7	(0.8)	20.0 - 23.1	20.0	(0.7)	18.3 - 21.9
H1470	20	20.5	(0.7)	19.1 - 22.0	20.0	(0.7)	18.2 - 21.3
H1490	20	25.0	(0.8)	23.1 - 26.6	21.8	(0.6)	20.8 - 23.0
H1492	20	19.3	(1.4)	16.3 - 22.0	19.6	(0.6)	18.9 - 20.6
U18M1	20	20.9	(1.2)	16.5 - 22.8	19.1	(1.1)	17.6 - 21.5
U18M2	20	21.7	(0.7)	19.2 - 22.6	20.6	(0.7)	19.3 - 21.6

Table 62. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1976. (Continued)

Parent Tag No.	N	Weight			Depth		
		X	S.D.	Range	X	S.D.	Range
U20MY	20	21.2	(0.7)	19.8 - 23.1	20.3	(1.3)	18.3 - 22.5
U24MY	20	21.1	(0.6)	19.8 - 22.2	19.9	(0.8)	18.2 - 21.5
U25MY	20	22.0	(0.6)	21.0 - 23.0	20.6	(0.8)	19.2 - 22.0
U28MY	20	22.7	(0.6)	21.2 - 23.5	21.4	(0.5)	20.3 - 22.5
U31MY	20	16.1	(0.6)	15.0 - 17.5	18.5	(0.5)	17.5 - 19.5
A3014	20	16.5	(0.9)	15.0 - 18.0	19.3	(0.5)	18.5 - 20.3
A3016	20	22.5	(0.6)	21.8 - 24.0	20.8	(0.7)	19.8 - 22.0
A3044	20	21.1	(0.5)	20.2 - 22.2	20.1	(0.7)	19.0 - 21.5
A3047	20	16.6	(1.1)	14.5 - 18.0	17.7	(0.9)	16.0 - 19.2
A3054	20	20.9	(1.3)	18.5 - 22.8	19.8	(0.9)	18.0 - 21.2
A3065	20	21.0	(1.0)	19.0 - 22.2	19.7	(0.6)	18.9 - 21.0
A3071	20	22.9	(0.7)	21.1 - 24.1	19.9	(0.7)	18.4 - 21.5
A3091	20	21.1	(0.7)	19.9 - 22.4	20.8	(0.6)	19.9 - 21.7
A3101	20	20.6	(0.8)	19.0 - 22.2	19.0	(0.9)	18.0 - 21.0
A3106	20	21.2	(0.4)	20.5 - 22.3	20.9	(0.5)	20.0 - 21.6
A3097	20	19.8	(0.9)	17.8 - 21.6	20.9	(1.0)	19.3 - 22.5

Table 62. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1976. (Continued)

Parent Tag No.	N	Weight			Depth		
		X	S.D.	Range	X	S.D.	Range
A3098	20	20.9	(0.9)	18.9 - 22.0	20.6	(0.8)	19.4 - 21.9
H1443	20	21.8	(0.4)	20.9 - 22.6	20.3	(0.7)	18.2 - 21.1
H1443	20	21.4	(0.5)	20.4 - 22.5	20.5	(0.6)	19.2 - 22.1
H1445	20	21.4	(0.8)	19.2 - 22.5	20.2	(0.7)	18.9 - 22.0
H1481	20	19.6	(0.7)	18.6 - 20.9	18.6	(0.6)	17.9 - 20.5
H1716	20	23.3	(0.8)	21.6 - 24.9	21.0	(0.7)	20.2 - 23.0
H1720	20	22.6	(0.7)	21.0 - 23.9	21.2	(0.6)	20.0 - 22.0
H1727	20	19.5	(0.8)	18.2 - 20.8	19.2	(0.5)	18.4 - 20.3
A3064	19	18.6	(0.7)	17.0 - 20.5	19.7	(0.8)	18.0 - 21.2
H1749	20	24.7	(0.6)	23.5 - 25.9	20.8	(0.6)	20.0 - 22.0
H1750	20	21.6	(1.0)	19.6 - 23.1	21.0	(1.2)	19.0 - 24.3
H1781	20	22.4	(0.9)	20.5 - 23.9	21.0	(0.5)	20.0 - 22.0
H1783	20	19.4	(0.7)	17.3 - 20.5	18.8	(0.8)	17.2 - 20.0
H1794	20	18.7	(0.9)	17.0 - 20.1	20.0	(0.6)	19.0 - 21.0
H1798	20	22.3	(0.6)	21.2 - 23.5	21.4	(0.5)	20.5 - 22.5
$\bar{X}$		20.4			20.0		
Total S.D.			(2.0)			(1.0)	
Range				14.5 - 26.6			16.0 - 24.3

Table 63. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1976.

Parent Tag No.	N	Carapace Length			Carapace Width			Plastron Length		
		X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
A2738	20	44.4	(1.2)	42.2 - 46.2	33.1	(1.9)	26.2 - 35.0	33.4	(1.6)	32.0 - 35.2
H1405	20	44.7	(0.9)	43.0 - 46.5	33.2	(0.8)	32.2 - 34.8	32.1	(1.4)	28.9 - 34.8
H1423	20	46.4	(0.8)	44.8 - 48.1	35.6	(0.6)	34.8 - 36.8	33.2	(1.3)	30.3 - 36.3
H1426	20	45.3	(1.1)	43.1 - 47.2	34.0	(1.2)	31.2 - 35.4	34.5	(1.3)	31.5 - 36.9
H1434	20	45.7	(1.1)	47.3 - 43.7	33.6	(1.0)	31.4 - 35.3	33.7	(1.1)	30.8 - 35.6
H1444	20	45.9	(1.1)	40.1 - 45.2	33.1	(0.7)	31.6 - 33.9	33.5	(1.3)	30.2 - 35.2
H1449	20	45.5	(0.9)	44.0 - 47.2	33.2	(0.9)	31.5 - 34.9	34.1	(0.8)	33.1 - 36.1
H1452	20	44.8	(1.2)	42.4 - 46.9	34.8	(1.0)	33.1 - 36.5	35.0	(1.2)	32.9 - 36.8
H1459	20	43.6	(0.8)	42.0 - 45.0	32.7	(0.7)	32.0 - 34.5	32.8	(1.2)	30.0 - 36.0
H1462	20	46.4	(0.8)	44.9 - 48.1	34.3	(1.0)	32.5 - 36.5	34.2	(1.2)	32.2 - 36.2
H1470	20	44.0	(0.8)	42.0 - 45.0	32.2	(1.1)	30.0 - 34.0	32.7	(0.8)	31.0 - 34.7
H1490	20	47.7	(0.7)	46.0 - 48.9	34.7	(1.1)	32.0 - 36.1	36.8	(1.6)	34.5 - 39.6
H1492	20	44.0	(2.4)	38.5 - 47.0	31.8	(2.3)	27.0 - 34.8	33.7	(1.7)	30.1 - 35.1
U18M1	20	44.7	(1.6)	39.6 - 46.7	32.5	(1.4)	30.0 - 35.0	33.6	(1.9)	29.5 - 36.2
U18M2	20	47.0	(1.4)	42.3 - 49.1	35.1	(1.2)	31.5 - 36.7	34.6	(1.2)	32.5 - 36.3

Table 63. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1976. (Continued)

Parent Tag No.	N	Carapace Length			Carapace Width			Plastron Length		
		X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
U20MY	20	44.8	(0.9)	42.5 - 46.9	33.2	(1.0)	30.2 - 35.0	32.6	(1.1)	30.5 - 35.5
U24MY	20	45.3	(1.2)	43.1 - 47.2	34.1	(1.1)	32.0 - 36.7	35.2	(0.9)	33.1 - 36.8
U25MY	20	45.6	(0.8)	44.6 - 47.7	33.6	(0.9)	32.3 - 35.6	34.3	(1.0)	32.8 - 36.0
U28MY	20	46.5	(0.9)	45.0 - 47.9	34.2	(1.1)	32.4 - 36.0	36.0	(0.8)	34.3 - 37.8
U31MY	20	41.0	(1.7)	36.2 - 42.9	30.6	(1.0)	29.2 - 31.5	28.2	(1.6)	25.0 - 30.9
A3014	20	42.2	(0.9)	40.3 - 43.5	29.9	(0.9)	28.8 - 31.2	31.0	(0.9)	29.2 - 32.3
A3016	20	46.8	(0.9)	45.2 - 48.1	33.3	(0.7)	31.7 - 34.7	34.0	(1.5)	31.0 - 35.9
A3044	20	46.1	(1.1)	44.0 - 47.8	33.3	(1.4)	29.5 - 35.3	34.9	(1.1)	32.8 - 35.5
A3047	20	43.7	(1.3)	40.5 - 46.1	32.1	(1.2)	29.5 - 33.4	32.3	(1.0)	30.5 - 34.2
A3054	20	45.7	(1.5)	43.0 - 48.0	34.3	(1.2)	32.0 - 36.5	34.3	(1.3)	31.9 - 36.1
A3065	20	44.6	(0.9)	43.2 - 46.0	32.5	(1.4)	28.3 - 34.0	33.6	(1.3)	32.0 - 35.2
A3071	20	46.3	(0.9)	45.0 - 48.2	34.3	(0.6)	33.2 - 35.0	33.6	(1.5)	29.9 - 35.9
A3091	20	46.0	(0.7)	45.2 - 48.0	33.5	(0.7)	32.1 - 34.8	34.5	(1.1)	32.3 - 36.2
A3101	20	45.8	(0.9)	44.2 - 47.2	33.5	(1.0)	31.5 - 35.6	34.4	(0.9)	33.0 - 36.2
A3106	20	45.4	(0.7)	44.0 - 46.6	32.2	(0.9)	30.6 - 34.0	31.9	(1.1)	30.0 - 34.0
A3097	20	44.9	(1.6)	42.5 - 49.5	32.3	(0.7)	31.0 - 33.5	32.8	(1.5)	29.0 - 35.5

Table 63. Linear measurements of loggerhead turtle hatchlings (<u>Caretta caretta</u>) at Kennedy Space Center, 1976. (Continued)

Parent Tag No.	N	Carapace Length			Carapace Width			Plastron Length		
		X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
A3098	20	43.9	(1.0)	41.9 - 45.5	32.1	(1.1)	30.2 - 34.1	30.7	(1.1)	28.9 - 33.5
H1443	20	46.3	(1.2)	44.2 - 48.0	33.5	(0.7)	32.2 - 35.0	33.6	(1.8)	30.0 - 36.2
H1443	20	46.6	(0.9)	45.2 - 48.4	34.0	(0.8)	33.1 - 35.8	34.6	(1.1)	32.0 - 36.5
H1445	20	45.2	(0.7)	44.2 - 46.5	33.2	(0.7)	31.8 - 34.5	35.0	(1.3)	30.4 - 37.0
H1481	20	44.6	(0.8)	43.2 - 47.0	32.7	(0.8)	30.5 - 34.1	32.5	(0.9)	31.1 - 34.0
H1716	20	46.4	(1.0)	49.0 - 45.0	33.7	(0.8)	32.8 - 35.0	35.7	(0.8)	34.1 - 37.2
H1720	20	46.4	(1.0)	44.1 - 48.0	35.1	(0.8)	33.5 - 36.5	33.5	(1.4)	31.5 - 35.5
H1727	20	44.2	(0.8)	42.5 - 45.2	32.4	(1.0)	31.1 - 34.1	32.6	(1.6)	30.2 - 35.5
A3064	19	43.8	(1.0)	42.2 - 45.6	30.9	(0.8)	29.2 - 32.4	32.5	(1.1)	30.6 - 34.2
H1749	20	48.2	(0.7)	47.0 - 49.1	35.4	(0.8)	34.0 - 37.1	35.0	(1.4)	31.0 - 36.5
H1750	20	46.8	(1.4)	44.0 - 49.0	33.3	(0.8)	32.0 - 35.0	33.6	(1.2)	31.5 - 35.5
H1781	20	45.0	(1.2)	43.0 - 47.0	30.0	(1.2)	30.0 - 34.7	34.0	(1.3)	31.0 - 36.3
H1783	20	44.8	(1.2)	42.2 - 47.0	32.9	(1.0)	31.5 - 34.5	34.0	(1.1)	36.0 - 36.0
H1794	20	43.1	(0.9)	41.1 - 45.0	32.2	(1.0)	29.5 - 34.0	32.4	(0.8)	30.9 - 33.9
H1798	20	46.6	(1.2)	44.2 - 48.5	33.9	(1.0)	32.3 - 36.1	33.9	(1.3)	30.5 - 35.7
$\bar{X}$		45.2			33.2			33.6		
Total S.D.			(1.4)			(1.3)			(1.5)	
Range				36.2 - 49.5			26.2 - 37.1			25.0 - 39.6

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Table 64. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Parent Tag No.	Clutch Size	Weight (g) (Sample of 20)			Depth (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
A3140	132	18.4	(1.24)	15.5-19.8	20.5	(0.77)	19.2-21.8
A3148	76	18.3	(1.19)	15.5-19.9	19.7	(0.82)	18.7-21.6
A3151	122	19.1	(0.51)	18.1-20.1	18.6	(0.76)	17.4-20.9
A3159	115	18.7	(0.43)	17.7-19.2	19.0	(0.66)	17.5-20.0
A3163	143	19.1	(0.75)	17.8-21.1	19.0	(0.56)	18.2-20.2
A3167	131	17.9	(0.57)	16.6-18.9	18.5	(0.50)	17.4-19.6
A3170	162	21.8	(1.00)	20.0-23.5	21.7	(1.14)	19.5-23.8
A3172	24	22.8	(1.10)	20.8-24.1	18.7	(0.39)	18.2-19.5
A3175	92	17.2	(0.84)	15.9-18.4	18.2	(0.81)	17.0-19.7
A3178	99	17.8	(1.19)	14.9-19.3	20.2	(0.96)	18.1-21.9
A3180	81	17.9	(0.77)	16.0-19.3	18.7	(0.64)	17.7-19.8
A3181	84	17.3	(0.92)	14.4-18.5	19.1	(0.92)	17.6-21.0
A3182	96	20.1	(0.58)	18.2-20.8	20.0	(1.21)	17.7-22.2
A3184	79	21.2	(1.35)	18.8-23.5	20.4	(1.04)	18.2-21.6
H745	94	21.8	(0.68)	20.4-23.2	19.9	(0.86)	18.2-21.9
H746	101	22.4	(0.82)	19.9-24.4	21.0	(0.88)	19.0-22.5

Table 64. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	Clutch Size	Weight (g) (Sample of 20)			Depth (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
H748	116	22.0	(0.63)	21.0-23.6	19.6	(0.50)	19.0-20.7
H750	118	16.4	(0.65)	15.0-18.0	18.7	(0.42)	18.0-19.4
H995	90	21.5	(0.67)	20.4-22.5	20.8	(1.01)	19.2-22.6
H1074	133	19.6	(1.98)	12.0-21.5	19.6	(0.87)	17.9-20.9
H1104	134	18.5	(0.85)	17.0-19.9	19.5	(0.84)	18.1-21.1
H1105	114	21.0	(0.67)	20.0-22.5	20.0	(0.68)	19.0-21.2
H1110	68	16.0	(0.99)	14.1-17.4	17.6	(0.66)	16.4-18.9
H1114	72	19.2	(0.88)	17.7-20.7	18.7	(0.51)	17.7-19.7
H1115	93	16.8	(0.68)	15.5-17.8	17.5	(0.68)	16.4-18.5
H1116	86	19.2	(1.01)	17.8-21.3	18.3	(0.73)	17.0-19.4
H1129	65	22.6	(1.15)	20.4-23.9	20.3	(0.80)	18.2-21.2
H1132	80	17.5	(0.65)	16.5-18.6	19.0	(0.61)	18.1-20.0
H1166	107	21.6	(0.93)	19.9-23.3	20.0	(0.82)	18.7-21.7
H1174	103	21.9	(0.96)	19.8-23.9	20.7	(1.14)	19.0-24.0
H1178	94	19.6	(1.39)	16.0-21.5	18.6	(0.88)	17.2-20.1
H1197	122	19.7	(0.92)	17.3-21.2	19.9	(0.97)	18.2-21.4

Table 64. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	Clutch Size	Weight (g) (Sample of 20)			Depth (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
H1211	96	17.8	(0.79)	16.1-19.1	18.9	(0.93)	16.8-20.7
H1212	128	19.2	(0.71)	18.1-20.6	19.9	(1.01)	18.4-22.3
H1214	110	22.3	(0.99)	20.1-24.5	18.8	(0.64)	17.8-20.0
H1227	101	22.0	(0.71)	21.0-23.9	20.3	(0.73)	18.5-21.4
H1239	122	21.0	(1.58)	18.0-23.8	19.5	(0.82)	18.1-21.2
U01AU	69	22.0	(0.58)	20.8-23.8	20.5	(0.57)	19.1-21.4
Total $\overline{X}$		19.7			19.5		
Total S.D.			(1.98)			(0.96)	
Total Range				12.0-24.5			16.4-24.0

Table 65. Weight and linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	Clutch Size	Carapace Length (mm) (Sample of 20)			Carapace Width (mm) (Sample of 20)			Plastron Length (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
H748	116	47.0	(0.79)	45.1–48.2	35.5	(1.08)	32.2–37.0	35.6	(0.99)	33.4–37.3
H750	118	45.1	(0.70)	44.0–46.5	32.7	(0.75)	31.2–34.1	33.8	(1.00)	30.8–35.3
H995	90	45.9	(1.23)	43.8–47.8	35.3	(1.42)	32.4–37.2	35.1	(1.00)	33.3–36.5
H1074	133	44.3	(0.89)	42.4–45.3	32.5	(0.80)	31.2–33.9	29.4	(1.77)	26.0–32.5
H1104	134	44.1	(0.97)	41.9–45.7	33.0	(0.92)	31.0–34.5	33.7	(0.87)	31.8–35.0
H1105	114	45.3	(1.20)	42.2–47.0	33.4	(1.08)	30.2–35.0	33.8	(0.93)	31.3–35.6
H1110	68	44.9	(1.10)	42.7–46.8	34.2	(0.91)	14.1–17.4	34.0	(1.11)	32.5–37.7
H1114	72	46.9	(1.04)	44.2–48.4	35.9	(0.74)	34.2–37.3	35.1	(0.76)	33.3–36.4
H1115	93	43.6	(0.93)	41.0–45.3	33.9	(0.77)	32.3–35.1	34.2	(0.69)	33.2–35.4
H1116	86	46.5	(1.04)	44.8–48.3	35.8	(0.96)	34.0–37.0	35.3	(0.62)	34.0–36.0
H1129	65	45.7	(1.13)	43.5–47.8	33.7	(1.23)	32.2–37.2	33.0	(1.32)	31.3–36.2
H1132	80	42.1	(0.64)	41.1–43.2	30.9	(0.70)	30.0–32.2	29.0	(1.38)	26.5–31.9
H1166	107	45.8	(1.20)	43.6–48.0	34.2	(1.52)	30.3–36.8	34.8	(1.41)	31.8–36.7
H1174	103	45.6	(1.58)	40.7–47.7	33.9	(1.74)	29.7–36.4	34.8	(1.31)	32.0–36.7
H1178	94	45.8	(1.38)	42.8–47.6	35.2	(1.32)	29.3–36.1	34.0	(1.33)	29.3–36.1
H1197	122	44.3	(0.97)	42.0–46.0	31.8	(0.97)	30.3–33.3	31.6	(1.06)	30.0–33.4

Table 65. Weight and linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977.

Parent Tag No.	Clutch Size	Carapace Length (mm) (Sample of 20)			Carapace Width (mm) (Sample of 20)			Plastron Length (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
A3140	132	43.5	(2.33)	38.7-46.2	32.1	(1.82)	28.9-34.2	-	-	-
A3148	76	44.0	(1.90)	40.2-46.6	33.7	(1.38)	30.6-36.2	33.0	(1.64)	29.2-36.0
A3151	122	45.4	(1.45)	41.0-47.4	33.9	(1.16)	30.8-35.7	32.9	(1.30)	30.6-35.0
A3159	115	45.9	(0.86)	44.5-47.4	34.1	(0.73)	32.3-35.7	33.5	(1.23)	31.4-35.9
A3163	143	45.4	(1.22)	42.3-47.1	34.0	(0.96)	31.4-35.9	35.3	(1.24)	32.3-37.3
A3167	131	44.1	(0.79)	42.7-45.4	33.4	(1.24)	30.3-35.4	32.6	(1.11)	29.4-34.2
A3170	162	45.7	(1.80)	41.8-47.7	34.2	(1.70)	31.0-36.5	35.7	(2.81)	32.5-36.6
A3172	24	47.4	(1.50)	44.4-49.5	36.2	(1.27)	34.5-38.5	36.8	(1.20)	34.2-38.7
A3175	92	44.4	(0.97)	42.5-46.5	33.6	(0.78)	32.2-35.2	31.6	(1.50)	29.0-34.8
A3178	99	43.8	(2.13)	38.3-47.4	33.1	(1.74)	29.7-35.8	-	-	-
A3180	81	44.6	(1.10)	42.3-46.5	32.6	(0.88)	30.8-34.2	33.2	(0.99)	31.1-35.0
A3181	84	43.2	(1.19)	38.9-44.4	32.9	(1.60)	28.2-34.7	33.1	(1.35)	30.6-35.2
A3182	96	44.7	(1.24)	42.4-47.2	34.5	(1.74)	30.9-36.8	34.9	(1.06)	32.3-37.1
A3184	79	45.9	(2.48)	41.1-49.1	35.1	(2.33)	30.3-37.6	36.1	(1.63)	33.0-38.3
H745	94	46.2	(1.58)	43.4-49.1	34.9	(1.81)	31.3-37.9	35.4	(1.73)	31.2-38.1
H746	101	46.0	(1.27)	42.5-47.7	34.5	(1.44)	30.0-36.0	34.7	(1.45)	32.4-36.8

Table 65. Weight and linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center; summer, 1977. (Continued)

Parent Tag No.	Clutch Size	Carapace Length (mm) (Sample of 20)			Carapace Width (mm) (Sample of 20)			Plastron Length (mm) (Sample of 20)		
		$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range	$\overline{X}$	(S.D.)	Range
H1211	96	44.6	(1.76)	40.7-47.2	34.1	(1.73)	29.8-35.9	33.9	(1.13)	31.7-35.7
H1212	128	43.9	(1.88)	39.6-46.7	34.2	(1.74)	30.4-37.3	34.2	(1.44)	30.3-37.2
H1214	110	48.7	(1.05)	45.0-49.8	37.1	(1.30)	33.0-39.1	36.9	(1.12)	34.0-38.2
H1227	101	46.2	(0.87)	44.7-47.3	34.5	(0.87)	32.8-35.7	34.7	(0.91)	32.9-36.0
H1239	122	44.5	(2.29)	36.0-47.7	33.7	(0.98)	31.9-36.0	33.0	(1.01)	30.8-34.5
U01AU	69	47.0	(0.63)	45.4-48.2	34.6	(0.68)	32.7-35.5	33.9	(0.75)	32.2-35.1
$\overline{X}$		45.2			34.0			34.0		
Total S.D.			(1.32)			(1.25)			(1.11)	
Range				36.0-49.8			28.2-39.1			26.0-38.7

Table 66. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1978

Parent Tag No.	Weight (Sample of 20) X	S.D.	Range	Depth (Sample of 20) X	S.D.	Range
A2892	20.0	0.8	18.2-21.2	19.0	0.6	17.8-20.0
CR1369	23.2	0.9	21.6-24.5	21.3	0.8	19.1-23.0
C2311	20.9	0.9	19.4-22.5	18.8	1.3	16.0-21.1
C2331	19.1	0.9	16.0-20.1	18.0	0.6	16.5-19.2
C2374	19.7	0.9	18.1-23.0	18.8	0.7	17.6-20.0
E9289	21.9	0.8	20.3-23.3	20.3	0.9	18.9-21.8
FL0004	18.7	0.5	17.8-19.6	19.0	0.8	17.8-20.9
FL0106	19.8	0.8	18.1-20.9	17.8	1.1	16.2-20.1
FL0110	21.9	0.8	20.9-23.8	19.9	0.5	19.0-21.0
H1269	20.0	0.7	18.9-21.5	19.0	0.8	17.8-21.3
H1272	20.4	1.1	19.7-24.5	18.9	0.9	17.3-20.5
H1276	19.5	0.4	18.4-20.3	19.6	0.7	18.4-21.3
H1280	20.9	0.7	19.5-22.4	20.3	0.6	19.6-21.9
H1281	22.0	0.8	20.2-23.3	19.0	0.9	17.4-20.5
H1284	23.6	1.5	18.2-25.2	19.6	0.9	16.5-21.0
H1291	19.4	0.7	18.0-20.2	18.6	0.4	18.0-19.5
H1293	20.7	1.0	17.2-22.0	19.7	0.5	18.8-20.4
H1294	16.9	0.7	15.1-18.0	18.2	0.8	17.0-20.0
H1295	20.8	0.6	19.9-22.0	19.8	0.7	18.2-21.1
H1296	23.4	0.7	22.0-25.0	20.5	0.5	19.5-21.5
H1298	21.9	1.0	19.5-23.5	19.0	1.1	15.9-20.9
H1300	16.5	0.6	15.2-17.4	18.9	0.9	17.2-20.3
H1436	19.1	0.7	17.5-20.2	19.3	0.8	17.9-20.9
H1915	18.1	0.8	16.2-19.7	17.8	0.8	16.9-19.5
H1918	23.3	1.6	18.0-24.8	20.3	0.8	19.2-22.1
H1927	21.3	0.7	20.2-22.6	18.7	0.8	17.1-20.2
H1928	22.8	1.5	17.2-24.5	21.1	0.7	19.7-22.4
H1929	20.0	0.7	18.5-21.1	19.6	1.0	17.1-21.3
H1932	19.3	0.6	17.9-20.8	19.1	0.7	18.1-20.8

Table 66. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1978

Parent Tag No.	Weight (Sample of 20) X	S.D.	Range	Depth (Sample of 20) X	S.D.	Range
H1935	19.7	0.6	18.6-21.2	18.8	0.5	17.9-19.6
H1957	17.1	1.3	15.1-19.4	19.2	0.8	17.9-20.8
H1968	19.4	0.7	18.0-21.5	20.1	0.8	19.3-21.5
H1969	21.5	0.6	20.4-22.8	19.3	0.9	18.1-20.9
H1970	20.4	1.1	17.5-22.1	19.6	0.9	17.5-22.0
H1971	21.5	0.9	19.8-23.2	17.0	0.6	16.0-18.3
H1983	20.1	0.4	19.4-20.7	18.3	1.2	16.2-19.8
H1993	19.2	0.9	17.7-20.9	20.3	0.6	19.1-21.2
H2025	21.1	0.8	18.8-22.2	20.2	0.6	18.8-21.2
H2029	19.6	0.6	18.0-20.8	18.6	0.8	17.2-19.9
H2039	22.9	0.8	21.0-24.0	21.4	0.8	19.3-23.0
H2043	22.2	0.5	21.3-23.1	21.8	1.1	20.2-23.3
H2046	23.1	0.6	22.0-23.9	19.9	0.5	19.0-21.0
H2065	19.7	0.4	18.9-20.2	19.5	0.8	18.0-21.2
H2081	17.2	0.8	15.1-18.5	18.0	1.1	14.8-19.2
H2090	19.3	0.7	17.9-20.8	19.9	0.8	18.1-21.1
H2109	18.4	0.6	17.0-19.3	19.9	0.9	18.3-21.5
H2177	18.2	0.7	16.4-19.1	19.2	0.6	18.4-20.5
H2177	19.4	0.7	18.1-20.5	19.3	0.5	18.0-20.1
H2211	10.8	0.6	19.9-22.1	19.3	0.7	18.2-21.2
H2214	19.8	0.8	18.1-21.8	20.6	0.6	19.5-22.0
H2248	23.1	0.8	21.8-25.0	20.6	0.6	19.7-22.2
H2253	20.5	0.9	18.8-23.0	20.2	1.2	17.9-22.5
H2256	23.5	0.8	22.0-24.7	20.6	0.7	19.8-22.0
H2258	24.7	0.8	22.9-26.3	22.5	0.8	21.0-24.0
H2306	22.0	0.6	20.8-23.0	19.6	0.5	18.8-20.4
H2329	22.9	2.2	19.3-23.9	19.8	0.7	18.4-21.1
H2329	21.8	0.4	20.8-23.8	20.6	0.7	19.1-22.0
H2332	19.0	0.5	17.8-19.8	20.4	0.7	19.2-21.7
H2351	21.2	0.8	19.8-22.9	20.1	0.5	19.0-21.1

Table 66. Weight and body depth of loggerhead turtle hatchlings (*Caretta caretta*) at Kennedy Space Center, 1978

Parent Tag No.	Weight (Sample of 20) X	S.D.	Range	Depth (Sample of 20) X	S.D.	Range
H2380	16.8	0.8	15.3-18.1	19.6	0.5	18.5-20.3
H2440	20.0	0.9	18.2-21.4	19.2	0.6	17.8-20.9
H2448	20.0	0.3	19.3-21.0	20.2	0.7	18.5-21.1
P1007	20.1	1.2	16.8-22.1	19.6	0.6	18.1-20.8
U06678	22.4	0.6	21.0-23.0	19.4	0.8	18.0-20.8
U07678	17.9	1.0	15.8-19.6	18.3	1.0	16.9-20.2
U20678	22.1	0.6	20.9-23.0	20.4	1.1	19.0-23.0
U25578	17.3	0.7	15.8-18.4	19.1	0.9	12.6-20.4
U30578	16.7	0.9	14.0-18.0	17.6	0.8	16.0-19.1
U31578	20.6	0.3	20.0-21.0	18.8	0.9	17.0-20.2
070678	20.7	1.1	17.1-22.0	19.0	0.8	17.3-20.2
250578	20.0	0.9	18.1-21.8	18.5	1.1	16.8-20.5
310578	18.7	1.7	16.8-21.5	19.3	0.9	18.0-20.7
N	72			72		
$\bar{X}$	20.39			19.32		
S.D.	1.90			1.12		
Range	16.5-23.6			17.0-22.5		

Table 67. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at KSC, 1978.

Parent Tag No.	Carapace Length			Carapace Width			Plastron Length		
	X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
A2776	44.3	1.7	40.0-46.9	34.0	1.2	31.5-35.2	33.5	1.4	30.6-35.3
A2892	45.8	0.9	44.2-48.0	35.1	1.1	32.7-36.8	34.5	0.8	33.0-35.9
CR1369	46.9	1.2	44.2-49.0	34.4	1.0	32.3-36.0	35.7	1.25	33.2-37.8
C2311	45.6	1.4	43.8-49.0	33.9	1.7	30.5-36.7	33.7	1.8	30.8-36.9
C2331	44.4	1.6	41.0-46.5	33.0	1.6	29.1-35.0	33.8	1.2	30.1-35.1
C2374	45.6	0.8	44.2-47.1	34.4	0.6	33.5-35.8	34.8	0.8	3.29-36.2
E9289	45.4	1.5	42.5-48.0	34.8	2.1	30.5-37.0	33.4	1.6	30.5-36.6
FL0004	43.0	1.3	39.6-44.4	30.3	1.2	28.2-32.3	31.7	1.1	28.9-33.2
FL0106	43.5	0.9	42.1-45.2	30.5	0.9	28.5-32.1	30.0	1.0	28.5-31.8
FL0110	46.6	0.9	45.1-48.0	34.6	1.1	32.0-36.8	34.1	1.2	32.0-37.2
H1269	43.6	1.1	41.5-46.1	32.0	1.2	29.5-34.0	31.9	1.9	28.2-36.0
H1272	45.8	0.8	44.1-46.9	34.2	0.8	32.8-35.8	35.3	0.7	33.9-36.5
H1275	45.0	2.6	40.8-47.9	33.2	2.7	29.0-36.9	32.7	2.3	29.0-34.8
H1276	44.1	0.9	42.9-45.6	33.5	0.7	32.2-34.4	31.6	1.1	29.7-34.4
H1280	45.6	1.1	43.8-47.2	33.9	1.1	31.5-36.0	32.8	1.2	30.1-34.7
H1281	46.2	1.3	42.0-48.0	35.6	1.0	33.2-37.1	35.5	0.8	33.9-37.2
H1284	46.3	0.9	44.1-47.7	35.0	1.0	32.2-36.8	35.2	1.3	30.9-37.1
H1291	45.1	0.7	43.8-46.2	35.5	0.7	34.0-37.2	33.8	0.8	32.4-35.1
H1293	45.5	1.0	43.0-47.5	35.0	0.8	32.5-36.0	33.8	0.9	32.3-36.3
H1294	43.1	2.1	38.1-49.9	32.7	1.3	28.1-34.0	31.4	1.2	27.9-34.4
H1295	46.5	0.8	44.9-48.0	35.0	0.8	33.2-36.3	35.1	0.7	34.0-37.4
H1296	45.6	1.0	44.0-47.5	34.7	1.2	31.8-37.1	34.8	1.1	32.6-36.9
H1298	45.8	1.2	42.3-47.1	33.8	1.9	29.8-37.0	32.9	1.3	30.2-35.0

Table 67. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at KSC, 1978. (Continued)

Parent Tag No.	Carapace Length			Carapace Width			Plastron Length		
	X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
H1300	43.0	0.8	41.7-44.2	32.9	0.9	30.0-34.2	31.1	1.2	29.1-34.0
H1436	43.4	3.6	35.0-46.5	35.0	2.3	33.2-44.0	33.9	1.0	32.3-34.5
H1915	44.7	1.1	42.2-46.7	33.1	0.7	32.0-34.5	33.2	1.3	30.0-35.3
H1918	48.2	2.3	39.9-50.1	36.7	1.2	34.6-39.1	35.4	1.7	31.9-38.6
H1927	45.9	1.1	43.2-47.3	34.5	1.1	32.3-36.0	34.9	0.9	33.2-37.0
H1928	46.0	1.2	43.0-48.0	34.6	0.9	33.1-36.0	33.4	1.5	30.5-36.5
H1929	45.2	1.0	42.4-46.5	34.9	0.6	34.0-36.1	33.9	1.1	32.2-36.7
H1932	45.5	0.7	44.5-47.2	34.2	0.9	32.5-35.8	34.4	0.8	33.1-35.8
H1935	46.1	0.9	44.1-47.5	34.3	1.0	31.2-35.6	34.0	1.2	31.0-36.2
H1957	40.9	1.2	38.1-42.5	30.1	0.9	28.9-32.9	27.6	1.9	23.3-31.9
H1968	44.6	0.8	43.2-46.1	33.5	0.9	31.3-35.3	33.5	0.8	32.1-35.0
H1969	46.0	0.86	44.2-48.0	35.4	0.87	33.4-37.0	33.6	1.0	31.8-35.4
H1970	45.5	1.2	43.8-47.6	34.2	1.3	32.2-36.9	32.9	1.7	29.9-35.8
H1971	46.2	0.82	45.0-47.9	35.0	0.99	33.1-37.2	34.7	0.81	33.2-36.4
H1943	45.5	0.63	44.8-46.9	33.5	1.0	31.3-35.2	33.1	1.2	31.2-35.4
H1993	44.0	0.83	43.0-46.0	32.1	0.82	30.4-34.2	32.6	0.89	30.5-34.2
H2025	45.9	1.6	41.1-48.0	35.1	0.83	33.7-36.5	33.6	1.0	31.2-35.1
H2029	45.4	1.0	44.3-48.5	34.7	0.83	32.7-35.9	34.0	1.0	32.2-36.8
H2039	46.8	2.7	36.3-49.0	35.2	1.2	33.0-37.3	35.8	1.75	30.0-38.0
H2043	46.9	1.0	45.3-49.2	33.5	0.86	31.3-34.9	34.2	1.0	32.1-36.2
H2046	47.0	0.9	45.5-49.0	35.6	0.73	34.0-36.9	36.2	1.0	34.1-39.0
H2065	45.2	0.8	43.8-46.8	34.3	0.94	33.0-35.9	34.4	0.88	33.0-36.0
H2081	43.5	1.6	38.1-46.1	32.8	2.1	27.6-36.0	33.8	0.89	31.8-35.4

Table 67. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at KSC, 1978. (Continued)

Parent Tag No.	Carapace Length			Carapace Width			Plastron Length		
	X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
H2090	43.7	2.8	32.2-46.1	32.6	0.81	30.9-34.1	33.1	1.3	29.9-35.5
H2109	42.5	1.0	41.2-44.4	31.4	1.1	29.5-33.3	31.6	1.0	29.5-33.2
H2177	43.0	1.1	41.6-45.2	31.9	0.78	30.3-33.9	30.5	0.94	29.0-32.2
H2211	44.2	0.82	42.2-45.5	32.6	0.9	31.2-34.2	33.5	1.0	31.5-35.8
H2214	44.5	1.0	42.7-47.1	33.4	0.86	32.0-35.0	33.3	0.92	31.9-34.8
H2248	48.3	1.1	45.6-49.9	38.0	1.0	36.0-40.0	37.2	1.0	35.3-39.1
H2253	44.2	1.3	41.2-46.1	33.1	1.3	30.6-35.9	30.9	3.0	18.9-33.8
H2256	46.7	1.0	43.8-48.5	35.4	1.0	33.1-37.0	36.0	1.3	32.0-37.9
H2258	46.8	1.7	43.5-49.8	34.4	1.4	32.2-37.9	35.4	1.3	32.1-37.6
H2306	46.1	0.62	45.2-47.3	33.9	0.61	33.1-35.4	35.2	0.85	33.5-36.9
H2329	47.0	1.0	44.2-48.5	35.1	0.97	32.5-36.7	35.8	0.95	34.1-37.2
H2329	46.9	1.2	45.0-49.6	34.2	0.9	32.8-35.7	34.9	0.67	33.0-36.2
H2332	43.1	0.78	42.0-44.6	30.9	1.0	29.3-33.2	31.6	1.1	30.0-34.2
H2351	45.8	1.0	43.8-48.8	32.2	0.99	31.0-34.9	33.8	1.0	32.1-36.3
H2371	43.6	-	43.6-43.6	33.5	-	33.5-33.5	32.3	-	32.3-32.3
H2380	42.4	1.2	40.3-44.3	30.0	0.88	28.8-31.7	30.8	0.84	29.4-32.9
H2440	43.7	1.0	42.0-45.3	31.6	1.0	29.7-33.0	32.9	1.0	31.2-35.7
H2448	43.6	0.8	41.9-44.9	32.7	1.0	30.3-35.0	31.4	0.96	29.9-33.5
P1007	45.8	0.97	43.9-47.4	34.5	1.4	31.8-39.7	35.1	1.0	32.4-37.0
U06678	46.3	0.78	44.9-48.0	34.9	0.7	33.4-36.0	34.5	0.75	33.0-35.9
U07678	43.8	1.1	42.0-47.0	32.5	1.1	30.4-34.8	32.1	1.1	30.0-35.6
U20678	47.5	0.78	46.1-49.0	35.9	0.9	34.0-37.1	35.7	0.77	34.3-37.4

Table 67. Linear measurements of loggerhead turtle hatchlings (*Caretta caretta*) at KSC, 1978. (Continued)

Parent Tag No.	Carapace Length			Carapace Width			Plastron Length		
	X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
U25578	43.5	0.84	42.0-44.9	31.8	0.88	30.4-33.5	32.0	1.6	27.0-34.8
U30578	42.8	0.69	42.0-44.0	33.2	0.71	32.0-34.2	33.0	0.78	32.0-34.6
U31578	46.2	0.77	44.9-48.0	34.2	0.59	34.1-36.3	35.4	0.73	34.1-37.0
070678	46.6	0.86	45.0-48.1	35.6	0.87	34.0-37.0	34.6	1.5	31.0-36.[illegible]
250579	43.9	0.91	42.0-45.3	32.7	0.84	31.1-34.3	30.6	1.2	27.8-32.8
310578	45.8	2.9	35.0-49.3	34.8	1.4	31.3-37.8	34.9	1.1	32.2-36.7
H2177	47.3	0.82	42.1-45.0	32.8	1.0	30.2-34.1	31.8	0.86	30.2-33.4
N	75			75			75		
$\overline{X}$	45.10			33.81			33.63		
S.D.	1.83			1.54			1.67		
Range	35.0-50.1			27.6-40.0			23.3-39.0		

Table 68. Weight and body depth of green turtle hatchlings (*Chelonia mydas*) at KSC, 1976.

Parent Tag No.	N	Weight (g) X	Weight (g) S.D.	Weight (g) Range	Depth (mm) X	Depth (mm) S.D.	Depth (mm) Range
U06JL	20	29.5	(0.7)	27.9 - 30.5	21.4	(0.7)	20.1 - 22.8
A3024	20	29.4	(0.6)	28.0 - 30.6	21.0	(0.8)	20.0 - 22.5
U28JL	20	29.1	(1.5)	27.2 - 31.5	21.4	(0.9)	20.1 - 23.5
A3092	20	32.5	(1.1)	30.3 - 34.2	23.1	(1.6)	21.0 - 28.3
Grand Total		30.1	(1.6)	27.2 - 34.2	21.7	(0.9)	20.0 - 28.3

Table 69. Weight and linear measurements of green turtle hatchlings (*Chelonia mydas*) at Kennedy Space Center, 1977.

Parent Tag No.	Weight (g) (Sample of 20)			Carapace Length(mm) (Sample of 20)			Carapace Width (mm) (Sample of 20)		
	$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H1121	31.9	(0.92)	30.0-33.5	54.7	(1.33)	52.0-57.5	40.1	(1.08)	37.5-42.1
H1240	26.6	(1.10)	24.6-28.5	54.2	(1.22)	52.2-56.1	40.5	(1.34)	38.0-42.8

Table 70. Weight and linear measurements of green turtle (*Chelonia mydas*) hatchlings at Kennedy Space Center, Summer, 1978.

Tag No.	Weight (g) (Sample of 20) X	S.D.	Range	Carapace Length (mm) (Sample of 20) X	S.D.	Range	Carapace Width (mm) (Sample of 20) X	S.D.	Range
H2083	26.19	0.729	(24.0–27.4)	50.76	1.14	(50.1–53.1)	36.6	1.35	(34.3–39.1)
H2249	25.39	0.71	(23.9–26.8)	49.26	1.13	(47.0–51.3)	35.92	0.94	(34.8–38.0)
H2314	23.84	1.65	(20.8–25.6)	50.58	2.13	(45.0–53.4)	37.9	1.82	(32.1–39.4)
H2315	34.03	0.95	(32.2–34.9)	55.98	1.00	(53.8–57.8)	39.44	1.16	(37.4–41.8)
H2058	25.52	1.05	(24.0–27.4)	51.47	2.65	(45.2–53.6)	37.37	1.13	(33.9–39.0)
H2431	30.03	1.00	(27.0–31.7)	52.98	1.09	(51.0–55.0)	41.00	0.80	(39.0–42.1)
H2414	24.32	0.62	(23.2–25.3)	50.02	0.79	(48.3–52.1)	37.55	0.88	(36.2–39.1)
H2314	28.62	0.80	(27.2–30.0)	53.06	1.12	(51.0–54.8)	38.81	0.62	(37.5–39.4)
H2456	31.23	1.05	(29.8–33.8)	52.39	1.53	(49.6–57.2)	37.81	1.20	(35.1–40.1)
H2083	28.76	1.00	(27.0–31.2)	52.01	0.86	(50.3–53.3)	37.70	0.90	(36.4–39.1)
H2397	31.05	1.04	(29.0–33.2)	53.22	1.25	(50.2–56.1)	37.43	1.91	(33.3–41.1)
H2474	29.32	0.75	(27.9–31.5)	51.99	0.90	(51.2–54.2)	37.29	1.00	(35.4–38.3)
H2168	25.02	0.88	(23.3–26.2)	50.83	0.91	(49.6–52.7)	36.35	1.07	(34.1–38.0)
FL0172	27.23	1.10	(24.5–28.9)	51.03	1.43	(47.8–53.3)	38.10	1.19	(35.2–40.0)
P1005	29.18	0.88	(27.1–30.2)	52.97	0.99	(49.5–54.4)	38.73	1.10	(36.1–40.5)
H2315	33.88	1.56	(31.2–36.8)	55.30	0.75	(53.8–56.5)	40.88	0.87	(39.3–42.8)
P1010	30.85	1.73	(27.8–34.5)	53.35	1.46	(50.3–56.2)	39.4	1.34	(38.1–41.3)
P1028	27.49	1.63	(24.4–29.3)	50.63	2.32	(44.1–54.8)	36.07	2.32	(31.7–40.1)
U16778	28.83	1.27	(27.1–31.9)	52.19	1.37	(50.2–55.0)	39.12	1.90	(36.3–42.6)
U11778	24.12	0.81	(23.0–25.7)	50.44	1.86	(46.6–52.9)	37.23	2.03	(33.5–39.5)
U22878	25.71	1.38	(23.6–27.3)	50.43	1.16	(48.2–51.9)	37.16	1.15	(35.0–39.1)
U28878	28.85	0.80	(27.2–30.3)	53.05	0.72	(52.1–54.4)	37.00	1.00	(35.0–38.4)

Table 70. Weight and linear measurements of green turtle (*Chelonia mydas*) hatchlings at Kennedy Space Center, Summer, 1978. (Continued)

Tag No.	Weight (g) (Sample of 20)			Carpace Length (mm) (Sample of 20)			Carpace Width (mm) (Sample of 20)		
	X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
$\overline{X}$	28.13			52.0			37.92		
S.D.		2.97			2.64			1.39	
Range			(20.8-36.8)			(44.1-57.8)			(31.7-42.8)

Table 71. Linear measurements of green turtle hatchlings (*Chelonia mydas*) at KSC, 1976.

Parent Tag No.	N	Carapace Length			Carapace Width			Plastron Length		
		X	S.D.	Range	X	S.D.	Range	X	S.D.	Range
U06JL	20	54.0	(0.9)	52.4 - 55.5	39.4	(1.5)	37.8 - 42.0	42.1	(1.1)	39.7 - 43.7
A3024	20	51.9	(1.0)	50.1 - 53.6	36.9	(0.8)	35.5 - 38.4	39.7	(1.6)	36.4 - 41.9
U28JL	20	51.3	(1.0)	49.6 - 53.2	38.3	(1.7)	35.9 - 43.0	40.0	(1.1)	38.5 - 41.6
A3092	20	52.1	(1.0)	49.9 - 54.3	38.3	(0.9)	36.8 - 40.2	39.4	(1.2)	37.1 - 41.3
Grand Total		52.3	(1.1)	49.6 - 55.5	38.2	(1.0)	35.5 - 43.0	40.3	(1.2)	36.4 - 43.7

Table 72. Linear measurements of green turtle hatchlings (*Chelonia mydas*) at Kennedy Space Center, 1977.

Parent Tag No.	Plastron Length (Sample of 20)			Depth (Sample of 20)		
	$\bar{X}$	(S.D.)	Range	$\bar{X}$	(S.D.)	Range
H1121	42.6	(0.89)	40.7-44.0	20.3	(0.94)	17.8-22.0
H1240	39.8	(1.42)	37.0-41.8	20.3	(0.83)	18.6-22.1

Table 73. Linear measurements of green turtle hatchlings (*Chelonia mydas*) at Kennedy Space Center, Summer, 1978.

Tag No.	Plastron (Sample of 20) X	S.D.	Range	Depth (mm) (Sample of 20) X	S.D.	Range
H2083	38.70	1.51	(36.2-43.0)	22.43	1.09	(20.1-24.2)
H2249	36.71	0.87	(34.5-38.5)	19.79	0.75	(18.5-21.0)
H2314	38.87	1.93	(34.9-41.3)	19.73	0.84	(18.7-21.2)
H2315	42.78	1.36	(39.9-45.9)	22.26	0.90	(20.9-23.8)
H2058	39.90	2.08	(34.6-43.6)	19.33	0.78	(18.2-21.1)
H2431	42.88	0.98	(41.0-45.1)	21.93	0.55	(21.0-23.1)
H2414	38.95	0.95	(37.2-41.1)	17.82	1.24	(15.9-20.0)
H2314	40.99	1.10	(39.1-42.8)	21.77	0.61	(20.7-22.9)
H2456	38.93	1.26	(36.2-41.0)	21.60	0.71	(20.3-23.2)
H2083	40.35	0.89	(39.0-42.2)	21.23	0.86	(20.0-22.8)
H2397	40.48	0.85	(39.1-42.2)	19.47	1.07	(17.2-21.5)
H2474	39.73	1.01	(38.3-42.0)	20.59	0.57	(19.8-21.6)
H2168	38.51	1.06	(36.4-40.3)	20.12	0.46	(19.3-21.3)
FL0172	38.31	1.37	(36.3-41.1)	21.37	0.67	(20.1-23.0)
P1005	39.37	1.10	(37.3-41.8)	20.86	0.61	(19.8-22.0)
H2315	42.57	0.91	(40.9-44.7)	22.21	0.75	(21.1-23.6)
P1010	41.09	1.18	(39.1-44.0)	22.94	1.15	(21.0-25.1)
P1028	35.68	1.96	(31.2-38.1)	20.85	1.56	(16.9-23.0)
U16778	40.68	1.04	(39.4-44.0)	21.15	0.79	(20.0-22.8)
U11778	39.38	1.89	(35.9-41.8)	19.72	0.86	(18.5-21.7)
U22878	36.18	1.43	(34.8-38.1)	20.81	0.56	(19.5-21.7)
U28878	37.94	0.98	(36.1-39.8)	21.06	0.73	(20.0-22.5)
$\overline{X}$	39.50			20.86		
S.D.	1.95			1.22		
N	22			22		
Range	(31.2-45.9)			(15.9-25.1)		

Table 74. Analysis of Variance table for three year comparisons of loggerhead hatchling weights.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	338.8	2	169.4		
Error	20854.9	3355	6.2	27.3	.0001
Total	21193.7	3357			

Table 75. Duncan's Multiple Range Test for comparisons of loggerhead hatchling weights. Means with same letter are not significantly different.

Grouping	Mean(g)	N	Year
A	20.4	837	1976
A	20.4	1458	1978
B	19.7	1063	1977

Table 76. Analysis of Variance table for comparisons of loggerhead hatchling carapace widths.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	457.7	2	228.9		
Error	13239.8	3355	3.9	56.0	.0001
Total	13697.5	3357			

Table 77. Duncan's Multiple Range Test for comparisons of loggerhead hatchling carapace widths. Means with same letter are not significantly different.

Grouping	Mean(mm)	N	Year
A	34.0	1063	1977
B	33.8	1458	1978
C	33.1	837	1976

Table 78. Analysis of variance table for comparisons of loggerhead hatchling carapace lengths.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	9.9	2	4.9		
Error	15772.3	3355	4.7	1.05	.35
Total	15782.2	3357			

Table 79. Analysis of Variance table for comparisons of loggerhead hatchling plastron lengths.

Source of Variation	Sum of Squares	df	Mean Square	F Value	P
Model	338.9	2	169.5		
Error	16794.4	3233	5.2	32.6	.0001
Total	17133.3	3235			

Table 80. Duncan's Multiple Range Test for comparisons of loggerhead hatchling plastron lengths. Means with same letters are not significantly different.

Grouping	Mean (mm)	N	Year
A	34.2	942	1977
B	33.6	1458	1978
B	33.4	836	1976

Table 81. Analysis of Variance table for comparisons of loggerhead hatchling body depths.

Source of Variation	Sum of Squates	df	Mean Square	F Value	P
Model	214.0	2	107.0		
Error	10391.0	3353	3.1	34.5	.0001
Total	10605.0	3355			

Table 82. Duncan's Multiple Range Test for comparisons of loggerhead hatchling body depths. Means with same letter are not significantly different.

Grouping	Means (mm)	N	Year
A	20.0	837	1976
B	19.5	1458	1978
B	19.4	1061	1977

Table 83. Summary of marine turtle mortality records, Brevard and Volusia Counties; Fall, 1977.

No.	Species	Class**	Date Reported	Location	Straight Line Length(cm)	Over-Curve Length(cm)	Computed Wgt.(kg)	Age
1	*C. caretta*	1	10 Nov.,77	Brevard Co., Cape Canaveral A.F.S. (Eastern Test Range)	59.5	-	32	Juvenile
2	*C. caretta*	1	10 Nov.,77	"	68.7	73.2	48	Juvenile
3	*C. caretta**	3	10 Nov.,77	"	-	-	-	-
4	*C. caretta**	3	10 Nov.,77	"	-	-	-	-
5	*C. caretta**	3	10 Nov.,77	"	-	-	-	-
6	*C. caretta**	2	13 Nov.,77	Brevard Co.,Satellite Beach - North	-	-	-	-
7	*C. caretta**	2	14 Nov.,77	Brevard Co.,Satellite Beach	-	-	-	-
8	*C. caretta**	2	15 Nov.,77	Brevard Co.,Melbourne Beach	-	-	-	-
9	*C. caretta**	2	15 Nov.,77	Brevard Co.,Patrick A.F.B. - North	-	-	-	-
10	*C. caretta**	4	11 Nov.,77	Volusia Co.,New Smyrna Beach	-	-	-	-
11	*C. caretta**	4	11 Nov.,77	"	-	-	-	-
12	*C. caretta*	1	21 Nov.,77	Brevard Co.,Satellite Beach	63.0	68.5	43	Juvenile

Table 83. Summary of marine turtle mortality records, Brevard and Volusia Counties; Fall, 1977 (Continued).

No.	Species	Class**	Date Reported	Location	Straight-Line Length(cm)	Over-Curve Length(cm)	Computed Wgt.(kg.)	Age
13.	*C. caretta*	2	21 Nov.,77	Brevard Co.,Patrick A.F.B.	-	-	-	-
14	*C. caretta*	1	21 Nov.,77	Brevard Co.,Patrick A.F.B.	61.8	66.7	36	Juvenile
15	*C. caretta*	1	21 Nov.,77	Brevard Co.,Patrick A.F.B.	66.7	69.6	42	Juvenile
16	*C. caretta*	1	21 Nov.,77	Brevard Co.,Patrick A.F.B.	76.7	81.0	69	Juvenile
17	*C. caretta*	1	21 Nov.,77	Brevard Co.,Satellite Beach	-	99.5	95	Adult?
18.	*C. caretta**	3	23 Nov.,77	Brevard Co.,Patrick A.F.B.	-	-	-	-
19.	*C. caretta*	1	25 Nov.,77	Volusia Co.,New Smyrna Beach	64.1	67.0	37	Juvenile
20.	*C. caretta*	1	19 Nov.,77	Brevard Co.,Playalinda Beach	67.0	71.5	45	Juvenile
21	*C. caretta*	1	19 Nov.,77	Brevard Co.,Indialantic	91.9	98.0	93	Adult
22	*C. caretta**	4	19 Nov.,77	Brevard Co.,Satellite Beach	-	-	-	-
23.	*C. caretta*	4	19 Nov.,77	Brevard Co.,Melbourne Beach	-	-	-	-

Table 83. Summary of marine turtle mortality records, Brevard and Volusia Counties; Fall, 1977 (Continued).

No.	Species	Class**	Date Reported	Location	Straight-Line Length(cm)	Over-Curve Length(cm)	Computed Wgt.(kg.)	Age
24.	C. caretta	3	15 Nov.,77	Brevard Co.,Patrick A.F.B.	-	-	-	-
25	C. caretta	1	2 Dec.,77	Volusia Co.,Turtle Mound	71.5	76.9	55	Juvenile
26	C. caretta	1	3 Dec.,77	Brevard Co.,Patrick A.F.B.	63.2	67.8	38	Juvenile
27	C. caretta	1	9 Dec.,77	"	-	-	-	Juvenile
28	C. caretta*	2	11 Dec.,77	Brevard Co.,Satellite Beach	-	-	-	-
29	C. caretta*	2	9 Dec.,77	Central Brevard Co.	-	-	-	-
30	C. caretta*	2	9 Dec.,77	Central Brevard Co.	-	-	-	-
31	C. caretta	2	9 Dec.,77	Central Brevard Co.	-	-	-	-
32	C. Caretta	2	11 Dec.,77	Central Brevard Co.	-	-	-	-
33	C. caretta*	3	12 Dec.,77	Brevard Co.,Patrick A.F.B.	-	-	-	-
34	C. caretta*	4	12 Dec.,77	Brevard Co.,Indian Harbor Beach	-	-	-	-

*Identification assumed
**See text for explanation of class ranks

Table 84. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, January 1 - June 13, 1978.

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
1.	*C. caretta*	1	5 Jan., 78	Volusia Co., New Smyrna Beach	72.3	78.3	57	Juvenile
2.	*C. mydas*	1	20 March, 78	Brevard Co., Lagoonal	59.6	64.8	31	Juvenile
3.	*C. caretta*	1	4 April, 78	Brevard Co., KSC	89.4	96.4	90	Juvenile-Young adult
4.	*C. caretta*	1	6 April, 78	Brevard Co., Patrick A.F.B.	87.2	92.2	82	Juvenile-Young adult
5.	*C. caretta*	3	7 April, 78?	Brevard Co., Melbourne Beach	-	-	-	-
6.	*C. caretta**	4	15 April, 78	Indian River Co., Vero Beach	-	-	-	-
7.	*C. caretta**	4	15 April, 78	Brevard Co., Cocoa Beach	-	-	-	-
8.	*C. caretta*	2	15 April, 78	Volusia Co., New Smyrna Beach	-	-	-	-
9.	*C. caretta**	4	18 April, 78	Volusia Co., Daytona Beach	-	-	-	-
10.	*C. caretta**	4	18 April, 78	Indian River Co., Vero Beach	-	-	-	-
11.	*C. caretta*	1	18 April, 78	Brevard Co., Indialantic	86.5	78.7	58	Juvenile

*Identification assumed

Table 34. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, January 1 - June 13, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
12.	*C. caretta*	1	28 April, 78	Brevard Co., Holland St. Park	66.5	71.5	45	-
13.	*C. caretta*	1	1 May, 78	Brevard Co., Cape Canaveral A.F.S.	-	98.0	93	Juvenile-Young adult
14.	*C. caretta*	1	1 May, 78	Brevard Co., Cape Canaveral A.F.S.	-	94.6	87	Juvenile-Young adult
15.	*C. caretta*	1	7 May, 78	Brevard Co., Patrick A.F.B.	87.4	90.3	79	Juvenile
16.	*C. caretta*	1	8 May, 78	Volusia Co., New Smyrna Beach	66.1	70.3	43	Juvenile
17.	*C. caretta*	1	16 May, 78	Brevard Co., Cape Canaveral A.F.S.	-	-	-	-
18.	*C. caretta*	1	16 May, 78	Volusia Co., Rose Bay	74.4	76.6	54	Juvenile
19.	*C. caretta*	1	27 May, 78	Volusia Co., Mosquito Lagoon	58.3	61.0	26	Juvenile
20.	*C. caretta*	3	29 May, 78	Volusia Co., Ponce Inlet	-	-	-	-
21.	*C. caretta*	1	13 June, 78	Volusia Co., New Smyrna Beach	100.1	105.4	106	Juvenile-Young adult

*Identification assumed

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978.

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
1.	C. mydas	1	12 June, 78	Indian River Co., Sebastian Inlet	101.5	109.6	143.0	Adult
2.	C. caretta	1	26 June, 78	Brevard Co., Patrick A.F.B.	62.2	65.7	34.6	Juvenile
3.	C. caretta	1	2 July, 78	Brevard Co., Mosquito Lagoon	-	-	-	-
4.	C. caretta	1	4 July, 78	Volusia Co., New Smyrna Beach	91.5	99.9	95.5	-
5.	C. caretta	1	7 July, 78	Indian River Co., Vero Beach	65.3	68.6	39.8	Juvenile
6.	C. caretta	1	17 July, 78	Brevard Co., Playalinda Beach	62.5	68.0	38.7	Juvenile
7.	C. caretta	1	17 July, 78	Volusia Co., Ponce Inlet	-	-	-	-
8.	C. caretta	1	21 July, 78	Volusia Co., New Smyrna Beach, Mosquito Lagoon	-	-	-	-
9.	C. caretta	1	21 July, 78	Volusia Co., Daytona Beach	94.9	98.5	93.0	Juvenile-Young adult
10.	C. caretta*	2	23 July, 78	Volusia Co., Daytona Beach	-	-	-	-

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
11.	*C. caretta*	1	11 Aug., 78	Brevard Co., KSC	57.5	62.3	28.5	Juvenile
12.	*C. caretta*	1	24 Aug., 78	Volusia Co., New Smyrna Beach	51.9	56.9	19.0	Juvenile
13.	*C. caretta*	1	25 Aug., 78	Volusia Co., New Smyrna Beach	61.2	67.4	37.7	Juvenile
14.	*C. caretta*	1	10 Sept., 78	Brevard Co., S. Holland State Park	72.3	77.3	55.3	Juvenile
15.	*C. caretta**	1	11 Sept., 78	Volusia Co., New Smyrna Beach	-	-	-	-
16.	*C. caretta*	1	22 Sept., 78	Brevard Co., Playalinda Beach	95.3	99.5	94.8	Juvenile-Young adult
17.	*C. caretta**	3	27 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
18.	*C. caretta**	3	27 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
19.	*C. caretta*	1	27 Sept., 78	Brevard Co., Cape Canaveral	62.1	66.1	35.4	Juvenile
20.	*C. caretta*	1	27 Sept., 78	Brevard Co., Indian River	113.2	124.3	138.9	Adult

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
21.	*C. caretta*	1	28 Sept., 78	Brevard Co., Cocoa Beach	67.0	-	47.0	Juvenile
22.	*C. caretta*	1	28 Sept., 78	Brevard Co., Cocoa Beach	75.4	-	63.0	Juvenile
23.	*C. caretta*	1	30 Sept., 78	Brevard Co., Cocoa Beach	54.8	-	24.0	Juvenile
24.	*C. caretta*	1	30 Sept., 78	Brevard Co., Satellite Beach	95.0	99.8	100.0	Adult
25.	*C. caretta*	1	30 Sept., 78	Brevard Co., Cocoa Beach	61.2	65.7	34.6	Juvenile
26.	*C. caretta**	2	30 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
27.	*C. caretta**	2	30 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
28.	*C. caretta**	2	30 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
29.	*C. caretta**	2	30 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-
30.	*C. caretta**	2	30 Sept., 78	Brevard Co., Cocoa Beach	-	-	-	-

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
31.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	78.7	85.1	69.1	Juvenile
32.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	72.0	78.6	57.6	Juvenile
33.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	100.0	105.2	105.0	Adult
34.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	73.0	79.1	58.5	Juvenile
35.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
36.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	79.5	84.9	68.6	Juvenile
37.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
38.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	63.0	68.8	40.2	Juvenile
39.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	76.4	83.1	65.6	Juvenile
40.	*C. caretta*	1	1 Oct., 78	Brevard Co., Cocoa Beach	64.7	71.0	44.1	Juvenile

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
41.	_C. caretta_	1	1 Oct., 78	Brevard Co., Cocoa Beach	67.2	72.5	46.8	Juvenile
42.	_C. caretta_	1	1 Oct., 78	Brevard Co., Cape Canaveral A.F.S.	84.2	92.0	81.5	Juvenile-Young adu
43.	_C. caretta_	1	2 Oct., 78	Brevard Co., Cocoa Beach	78.0	82.0	63.6	Juvenile
44.	_C. caretta_	1	2 Oct., 78	Brevard Co., Cocoa Beach	67.1	73.4	48.4	Juvenile
45.	_C. caretta_	1	2 Oct., 78	Brevard Co., Cocoa Beach	67.0	73.2	48.0	Juvenile
46.	_C. caretta_	1	2 Oct., 78	Brevard Co., Cocoa Beach	62.9	67.5	37.8	Juvenile
47.	_C. caretta_	1	2 Oct., 78	Brevard Co., Cocoa Beach	73.8	78.0	56.5	Juvenile
48.	_C. caretta_*	2	3 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
49.	_C. caretta_*	2	3 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
50.	_C. caretta_*	2	3 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-

*Identification assumed
**Estimated weight

. Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
51.	*C. caretta**	2	3 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
52.	*C. caretta**	2	3 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
53.	*C. caretta*	1	3 Oct., 78	Brevard Co., Patrick A.F.B.	70.2	76.2	53.3	Juvenile
54.	*C. caretta*	1	3 Oct., 78	Brevard Co., Patrick A.F.B.	68.8	74.4	50.1	Juvenile
55.	*C. caretta*	1	3 Oct., 78	Brevard Co., Cocoa Beach	62.4	67.3	37.5	Juvenile
56.	*C. caretta*	1	3 Oct., 78	Brevard Co., Cocoa Beach	73.0	78.5	57.4	Juvenile
57.	*C. caretta*	1	3 Oct., 78	Brevard Co., Satellite Beach	63.4	67.4	37.7	Juvenile
58.	*C. caretta*	1	4 Oct., 78	Volusia Co., New Smyrna Beach	92.3	100.5	96.6	Juvenile-Young adult
59.	*C. caretta*	1	4 Oct., 78	Brevard Co., Cocoa Beach	68.6	71.1	44.3	Juvenile
60.	*C. caretta*	1	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	70**	Juvenile

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
61.	C. caretta	1	4 Oct., 78	Brevard Co., Cocoa Beach	92.2	100.5	96.6	Juvenile-Young adu
62.	C. caretta	1	4 Oct., 78	Brevard Co., Cocoa Beach	79.0	84.0	67.2	Juvenile
63.	C. caretta	1	4 Oct., 78	Brevard Co., Cocoa Beach	92.1	97.0	90.4	Juvenile-Young adu
64.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
65.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
66.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
67.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
68.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
69.	C. caretta*	4	4 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
70.	C. caretta*	2	5 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
71.	*C. caretta**	2	5 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
72.	*C. caretta**	2	5 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
73.	*C. caretta**	2	5 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
74.	*C. caretta**	2	5 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-
75.	*C. caretta*	1	6 Oct., 78	Brevard Co., Cocoa Beach	76.2	79.0	58.3	Juvenile
76.	*C. caretta*	1	6 Oct., 78	Brevard Co., Cocoa Beach	74.4	78.0	56.5	Juvenile
77.	*C. caretta*	1	7 Oct., 78	Brevard Co., Cocoa Beach	-	-	43**	Juvenile
78.	*C. caretta*	1	7 Oct., 78	Brevard Co., Cocoa Beach	90.9	95.8	88.2	Juvenile-Young adult
79.	*C. caretta*	1	7 Oct., 78	Brevard Co., Cape Canaveral	-	76.0	53.0	Juvenile
80.	*C. caretta**	4	8 Oct., 78	Brevard Co., Cocoa Beach	-	-	-	-

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
81.	*C. caretta*	1	9 Oct., 78	Brevard Co., Patrick A.F.B.	65.0	71.0	44.1	Juvenile
82.	*C. caretta*	1	15 Oct., 78	Volusia Co., New Smyrna Beach	90.0	97.2	77.9	Juvenile-Young adult
83.	*C. caretta*	1	17 Oct., 78	Brevard Co., Cocoa Beach	62.9	69.5	41.4	Juvenile
84.	*C. caretta*	1	18 Oct., 78	Volusia Co., New Smyrna Beach	65.4	71.3	44.6	Juvenile
85.	*C. caretta*	1	5 Nov., 78	Volusia Co., Daytona Beach	58.7	62.6	29.1	Juvenile
86.	*C. caretta*	1	14 Nov., 78	Brevard Co., Cocoa Beach	80.4	86.3	71.3	Juvenile
87.	*C. caretta*	1	14 Nov., 78	Brevard Co., Cocoa Beach	74.7	81.2	62.2	Juvenile
88.	*C. caretta*	1	14 Nov., 78	Brevard Co., Cocoa Beach	63.9	68.5	39.6	Juvenile
89.	*C. caretta*	1	19 Nov., 78	Brevard Co., Cocoa Beach	85.0	92.3	82.0	Juvenile-Young adult
90.	*C. caretta*	1	24 Nov., 78	Volusia Co., Canaveral National Seashore North	72.0	78.3	57.1	Juvenile

*Identification assumed
**Estimated weight

Table 85. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, June 12 - November 27, 1978. (Continued).

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
91.	*C. caretta*	1	24 Nov., 78	Volusia Co., Canaveral National Seashore North	60.4	64.0	31.5	Juvenile
92.	*C. caretta*	1	24 Nov., 78	Volusia Co., Canaveral National Seashore North	71.5	76.3	53.6	Juvenile
93.	*C. caretta*	1	24 Nov., 78	Volusia Co., Canaveral National Seashore North	74.0	80.0	60.2	Juvenile
94.	*C. caretta*	1	26 Nov., 78	Brevard Co., Cocoa Beach	73.3	79.1	58.7	Juvenile
95.	*C. caretta*	1	27 Nov., 78	Brevard Co., Cape Canaveral AFB	79.0	86.5	72.0	Juvenile
96.	*C. caretta*	1	27 Nov., 78	Brevard Co., Cape Canaveral AFB	75.3	80.2	60.6	Juvenile
97.	*C. caretta*	1	27 Nov., 78	Brevard Co., Cape Canaveral AFB	94.0	102.0	100.0	Adult
98.	*C. caretta*	1	27 Nov., 78	Brevard Co., Cape Canaveral AFB	73.7	80.6	61.3	Juvenile

*Identification assumed
**Estimated weight

Table 86. Summary of marine turtle mortality records, Brevard, Volusia and Indian River Counties, December 3, 1978 to April 30, 1979.

No.	Species	Class	Date Reported	Location	Straight Line Length (cm)	Over-Curve Length (cm)	Computed Wgt. (kg)	Age
1.	*C. caretta*	1	3 Dec., 78	Brevard Co., Indialantic	57.5	62.8	28.5	Juvenile
2.	*C. caretta*	1	29 Dec., 78	Brevard Co., Cocoa Beach	72.9	77.2	53.9	Juvenile
3.	*C. caretta*	1	2 Mar., 79	Brevard Co., Cocoa Beach	67.5	72.7	46.8	Juvenile
4.	*C. caretta*	1	17 Mar., 79	Volusia Co., New Smyrna Beach	-	-	-	-
5.	*C. caretta*	1	19 Mar., 79	Brevard Co., KSC	75.8	81.0	61.0	Juvenile
6.	*C. caretta*	1	20 Mar., 79	Brevard Co., KSC	73.2	79.5	60.2	Juvenile
7.	*C. caretta*	1	20 Mar., 79	Brevard Co., CCAFS	79.2	86.5	72.0	Juvenile
8.	*C. caretta*	1	28 Mar., 79	Brevard Co., Cocoa Beach	61.0	66.0	35.0	Juvenile
9.	*C. caretta**	3	28 Mar., 79	Indian River Co., S. of Sebastian Inlet	-	-	-	-
10.	*C. caretta*	1	28 Mar., 79	Brevard Co., Cocoa Beach	79.1	85.4	69.5	Juvenile
11.	*C. caretta*	1	31 Mar., 79	Brevard Co., KSC	92.5	98.6	93.2	Juvenile-Young adul
12.	*C. mydas*	1	3 Apr., 79	Indian River Co.,Vero Beach	33.0	35.3	4.7	Juvenile
13.	*C. Caretta*	1	21 Apr., 79	Volusia Co., Ormond Beach	75.5	81.7	63.4	Juvenile
14.	*C. caretta*	1	30 Apr., 79	Brevard Co., KSC	71.0	78.9	58.0	Juvenile

*Identification assumed

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
15-16 July, 1976	Fla., Volusia Co., Mosquito Lagoon, near Tiger Shoal; 28° 51' 30" N; 80° 49' W.	22.5	225.0	2 *Caretta caretta*	0.95
10-12 Aug., 1976	Fla., Brevard Co., Indian River, off Duck Roost Cover; 28° 44' N; 80° 47' 30" W.	45.0	225.0	None	0.0
23-26 Aug., 1976	Fla., Brevard Co., Indian River, off Marsh Bay; 28° 42' 20" N; 80° 46' 30" W.	67.0	225.0	None	0.0
7-10 Sept., 1976	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' 15" N; 80° 42' 15" W.	67.5	225.0	2-*Caretta caretta* 1-*Lepidochelys kempi*	0.48
20-22 Sept., 1976	Fla., Brevard Co., Indian River, off Banana Creek north; 28° 35' N; 80° 45' W.	51.0	225.0	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
25-28 Oct., 1976	Fla., Brevard Co., Indian River, off Black Point; 28° 41' N; 80° 48' 30" W.	62.0	225.0	None	0.0
17-23 Nov., 1976	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' 15" N; 80° 42' 15" W.	135.0	225.0	1-*Chelonia mydas*	0.08
22-24 Dec., 1976	Fla., Brevard Co., Indian River, off Banana Creek, north 28° 35' N; 80° 45' W.	38.5	225.0	None	0.0
24-25 Dec., 1976	Fla., Brevard Co., Indian River, off Marsh Bay; 28° 42' 20" N; 80° 46' 36" W.	24.5	225.0	None	0.0
25-26 Dec., 1976	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' 15" N; 80° 42' 15" W.	19.5	225.0	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
5-7 Jan., 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' 15" 80° 42' 15"	52.5	225.0	2-*Caretta caretta*	0.41
12-14 Jan., 1977	Fla., Brevard Co., Indian River, off Banana Creek north; 28° 35' N; 80° 45' W.	29.0	225.0	None	0.0
14-15 Jan., 1977	Fla., Brevard Co., Indian River, off Marsh Bay; 28° 42' 20" N; 80° 46' 36" W.	25.0	225.0	None	0.0
21-23 Feb., 1977	Fla., Brevard Co., Mosquito Lagoon, off Camera Pad 10; 28° 42' N; 80° 40' 30" W.	50.0	225.0	1-*Caretta caretta*	0.21
23-25 Feb., 1977	Fla., Brevard Co., Indian River, off Marsh Bay; 28° 42' N; 80° 46' 30" W.	45.0	225.0	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
25-27 Feb., 1977	Fla., Brevard Co., Indian River, off Banana Creek north; 28° 35' N; 80° 45' W.	48.0	225	None	0.0
8-12 March, 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42'15" N; 80° 42' 15" W.	88.0	225	None	0.0
21-23 March, 1977	Fla., Brevard Co., Indian River, off Black Point; 28° 41' N; 80° 47' 30" W.	45.0	225	None	0.0
23-24 March, 1977	Fla., Brevard Co., Indian River, off Banana Creek north; 28° 35' N; 80° 45' W.	29.5	225	None	0.0
24-26 March, 1977	Fla., Brevard Co., Mosquito Lagoon, off Camera Pad 10; 28° 42' N. 80° 40' 30" W.	42.0	225	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
6-10 April, 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' 15" N; 80° 42' 15" W.	96.0	205	1-*Caretta caretta*	0.12
19-20 April, 1977	Fla., Brevard Co., Banana River, off U.S.A.F. Titan Complex; 28° 32' N; 80° 36' W.	25.0	225	None	0.0
26-27 April, 1977	Fla., Brevard Co., Indian River, off Banana Creek; 28° 35' N; 80° 45' W.	28.0	225	1-*Caretta caretta*	0.38
26-27 April, 1977	Fla., Brevard Co., Indian River, off Moore Creek; 28° 34' N; 80° 44' W.	28.0	205	None	0.0
27-29 April, 1977	Fla., Brevard Co., Indian River, off Dummit Creek; 28° 42' 15" N; 80° 45' 15" W.	40.0	225	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
27-29 April, 1977	Fla., Brevard Co., Indian River, near target pilings; 28° 43' 30" N; 80° 47' W.	40.0	205	None	0.0
29 April-1 May 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	45.0	430	2-*Caretta caretta* 2-*Chelonia mydas*	0.50
12-15 May, 1977	Fla., Brevard Co., Mosquito Lagoon, off Klondike Beach; 28° 44' 30" N; 80° 42' 45" W.	73.0	430	2-*Caretta caretta*	0.15
7-11 June, 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	91.5	435	1-*Chelonia mydas* 1-*Caretta caretta*	0.12
14-15 June, 1977	Fla., Brevard Co., Banana River, off U.S.A.F. Titan Complex; 28° 32' N; 80° 36' W.	25.5	435	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
15-17 June, 1977	Fla., Brevard Co., Indian River, no. of Banana Creek; 28° 35' N; 80° 45' W.	44.0	435	None	0.0
18-20 June, 1977	Fla., Brevard Co., Mosquito Lagoon, off Tiger Shoals; 28° 51' N; 80° 49' W.	48.0	435	2-*Caretta caretta*	0.23
20-23 June, 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	73.5	206.6	1-*Chelonia mydas*	0.16
20-23 June, 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' N; 80° 42' W.	70.0	228.6	1-*Caretta caretta*	0.15
27 June-1 July, 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	92.75	435	2-*Caretta caretta*	0.12

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
6-11 July, 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' N; 80° 42' W.	114.0	182.9	1-*Caretta caretta* 1-*Chelonia mydas*	0.23
7-11 July, 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	93.0	206.6	2-*Caretta caretta*	0.25
19-22 July, 1977	Fla., Brevard Co., Mosquito Lagoon, off Klondike Beach; 28° 44' N; 80° 42' W.	73.25	380.4	4-*Caretta caretta*	0.34
25-28 July, 1977	Fla., Brevard Co., Indian River, near target pilings; 28° 43' 30" N; 80° 47' W.	77.8	173.7	None	0.0
25-28 July, 1977	Fla., Brevard Co., Mosquito Lagoon, so. of Haulover Canal; 28° 44' N; 80° 43' 30" W.	69.5	206.6	3-*Chelonia mydas*	0.50

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
28-30 July, 1977	Fla., Brevard Co., Indian River, so. of Titusville Bridge; 28° 35' 30" N; 80° 47' 30" W.	45.0	380.4	None	0.0
16-19 Aug., 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' N; 80° 42' W.	66.5	380.4	None	0.0
23-25 Aug., 1977	Fla., Brevard Co., Banana River, off U.S.A.F. Titan Complex; 28° 32' N; 80° 36' W.	43.0	310.9	None	0.0
26-28 Aug., 1977	Fla., Brevard Co., Mosquito Lagoon, so. of Haulover Canal; 28° 44' N; 80° 43' 30" W.	49.5	310.9	3-*Caretta caretta*	0.47
28-31 Aug., 1977	Fla., Brevard Co., Indian River, off Grassy Point; 28° 45' 30" N; 80° 49' W.	69.0	310.9	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
4-9 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, off Camera Pad 10; 28^{o} 42' N; 80^{o} 40' W.	118.0	206.6	3-*Caretta caretta* 1-*Chelonia mydas*	0.39
11-14 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, off Cucumber Island; 28^{o} 43' N; 80^{o} 42' 30" W.	80.0	206.6	2-*Caretta caretta*	0.29
11-17 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28^{o} 42' N; 80^{o} 42' W.	143.3	173.7	2-*Caretta caretta*	0.19
15-19 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, off Klondike Beach; 28^{o} 44' N; 80^{o} 42' W.	96.6	137.2	1-*Caretta caretta*	0.18
17-20 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, so. of Haulover Canal; 28^{o} 44' N; 80^{o} 43' 30" W.	70.5	173.7	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
20-23 Sept., 1977	Fla., Brevard Co., Mosquito Lagoon, off Marker 35; 28° 46' N. 80° 45' 30" W.	75.0	310.9	4-*Caretta caretta*	0.41
23-25 Sept., 1977	Fla., Brevard Co., Indian River, no. of Banana Creek; 28° 35' N. 80° 45' W.	45.5	310.9	None	0.0
12-16 Oct., 1977	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	91.0	173.7	None	0.0
19-23 Oct., 1977	Fla., Brevard Co., Mosquito Lagoon, so. of Haulover Canal; 28° 44' N; 80° 43' 30" W.	92.25	380.4	1-*Caretta caretta*	0.07
25-26 Oct., 1977	Fla., Brevard Co., Banana River, no. of Buck Creek; 28° 30' N; 80° 38' W.	24.0	380.4	None	0.0

Table 87. Summary of research effort, lagoonal turtle netting operation, 15 July 1976 to 18 November 1977.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
27-30 Oct., 1977	Fla., Brevard Co., Indian River, Marsh Bay; 28° 42' 20" N; 80° 46' 36" W.	72.5	380.4	1-*Caretta caretta*	0.09
11-13 Nov., 1977	Fla., Brevard Co., Indian River, off Marker 31; 28° 35' 30" N; 80° 47' 30" W.	48.25	173.7	None	0.0
15-18 Nov., 1977	Fla., Brevard Co., Mosquito Lagoon, off Camera Pad 10; 28° 42' N; 80° 40' W.	73.3	228.6	3-*Caretta caretta*	0.43
15-18 Nov., 1977	Fla., Brevard Co., Mosquito Lagoon, off Turtlepen Point; 28° 42' N; 80° 42' W.	73.3	206.6	None	0.0
TOTAL		3717.8	15,772.3	61	.0025

Table 88. Summary of research effort, lagoonal turtle netting operation, 6 January to 20 June, 1978.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
6-8 Jan., 1978	Fla., Brevard Co., Indian River, Marsh Bay; 28° 42' 20" N; 80° 46' 36" W.	40	228.6	None	0.00
12-13 Jan., 1978	Fla., Brevard Co., Banana River, E. of Marker 36; 28° 31' 00" N; 80° 36' 00" W.	24	228.6	None	0.00
24-27 Jan., 1978	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 40' 30" N; 80° 41' 00" W.	76.0	228.6	1 *Caretta caretta*	0.14
11-13 Feb., 1978	Fla., Brevard Co., Mosquito Lagoon, So. of Haulover; 28° 44' 30" N; 80° 44' 30" W.	51.7	228.6	None	0.00
17-19 Feb., 1978	Fla., Brevard Co., Indian River, off Marker 33; 28° 36' 00" N; 80° 38' 30" W.	49.25	228.6	None	0.00

Table 88. Summary of research effort, lagoonal turtle netting operation, 6 January to 20 June, 1978. (Continued)

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
25-26 Feb., 1978	Fla., Brevard Co., Banana River, S.W. of NASA Causeway Bridge; 28^{o} 30' 00" N; 80^{o} 37' 30" W.	24.5	228.6	None	0.00
20-23 Mar., 1978	Fla., Brevard Co., Mosquito Lagoon, off Max Hoeck Creek; 28^{o} 40' 30" N; 80^{o} 41' 00" W.	71.25	91.4	None	0.00
20-23 Mar., 1978	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28^{o} 41' N; 80^{o} 40' W.	70.8	137.2	None	0.00
23-24 Mar., 1978	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28^{o} 41' N; 80^{o} 40' W.	31.25	228.6	1 *Caretta caretta* 1 *Chelonia mydas*	0.67
23-25 Mar., 1978	Fla., Brevard Co., Mosquito Lagoon, So of Camera Pad 10; 28^{o} 42' 00" N; 80^{o} 41' 00" W.	47.5	173.7	None	0.00

Table 88. Summary of research effort, lagoonal turtle netting operation, 6 January to 20 June, 1978. (Continued)

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
27-29 Mar., 1978	Fla., Brevard Co., Indian River, Marsh Bay; 28° 42' 00" N; 80° 46' 00" W.	42.5	228.6	None	0.00
27-29 Mar., 1978	Fla., Brevard Co., Indian River, W. of Markers 7 and 8; 28° 42' 00" N; 80° 48' 00" W.	40.3	173.7	None	0.00
4-7 Apr., 1978	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point; 28° 41' N; 80° 40' W.	74.0	228.6	1 *Caretta caretta*	0.14
4-7 Apr., 1978	Fla., Brevard Co., Mosquito Lagoon, N.W. of Middle Banks; 28° 41' 00" N; 80° 41' 30" W.	75.25	173.7	3 *Caretta caretta*	0.55
17-19 Apr., 1978	Fla., Brevard Co., Indian River, off Marker 33; 28° 36' 00" N; 80° 48' 30" W.	43.25	228.6	None	0.00

Table 88. Summary of research effort, lagoonal turtle netting operation, 6 January to 20 June, 1978. (Continued)

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
22-23 Apr., 1978	Fla., Brevard Co., Banana River, S.E. of NASA Causeway Bridge; 28° 30' 30" N; 80° 36' 00" W.	24.5	228.6	None	0.00
2-6 May, 1978	Fla., Brevard Co., Mosquito Lagoon, off Klondike Point; 28° 44' 00" N; 80° 42' 30" W.	86.75	228.6	None	0.00
3-8 May, 1978	Fla., Brevard Co., Mosquito Lagoon, off Pork Chop Island; 28° 44' 30" N; 80° 43' 00" W.	12.6	173.7	3 *Caretta caretta*	0.33
6-8 May, 1978	Fla., Brevard Co., Mosquito Lagoon, So. of Haulover; 28° 43' 30" N; 80° 43' 30" W.	52.25	228.6	None	0.00
15-17 May, 1978	Fla., Brevard Co., Indian River, No. of R.R. trestle; 28° 40' 00" N; 80° 47' 00" W.	48	228.6	None	0.00

Table 88. Summary of research effort, lagoonal turtle netting operation, 6 January to 20 June, 1978. (Continued)

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
14-20 June, 1978	Fla., Brevard Co., Mosquito Lagoon, off Marker 34; 28° 46' 00" N; 80° 46' 30" W.	152	228.6	7 *Caretta caretta* 2 *Chelonia mydas*	0.62
14-20 June, 1978	Fla., Brevard Co., Mosquito Lagoon, off Marker 31; 28° 47' 00" N; 80° 46' 30" W.	147.3	173.7	3 *Caretta caretta*	0.30
SUBTOTAL (Jan-mid-June)		1,398.35	4,526.1	22 19 *Caretta caretta* 3 *Chelonia mydas*	0.008
TOTAL (July, 1976 - June, 1978)		5,116.15	20,298.4	83	0.002

Table 89. Summary of research effort, lagoonal turtle netting operation, 22 June to 29 October, 1978.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
22-24 June, 1978	Fla., Brevard Co., Indian River, off Marker 34; 28° 36' 00" N; 80° 46' 00" W.	41.5	228.6	None	0.00
24-25 June, 1978	Fla., Brevard Co., Banana River, W. of Marker 41; 28° 32' 00" N; 80° 36' 30" W.	25.5	228.6	None	0.00
6-10 July, 1978	Fla., Brevard Co., Mosquito Lagoon, E. of Marker 30; 28° 47' 30" N; 80° 45' 30" W.	87.3	228.6	4 *Caretta caretta* 1 *Chelonia mydas*	0.60
28-30 July, 1978	Fla., Brevard Co., Indian River, So. of target pilings 28° 43' 30" N; 80° 47' 00" W.	46.6	228.6	None	0.00
2-6 Aug., 1978	Fla., Volusia Co., Mosquito Lagoon, off Marker 29; 28° 48' 30" N; 80° 47' 30" W.	98.0	228.6	3 *Caretta caretta* 6 *Chelonia mydas*	0.96

Table 89. Summary of research effort, lagoonal turtle netting operation, 22 June to 29 October, 1978. (Continued).

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
2-6 Aug., 1978	Fla., Volusia Co., Mosquito Lagoon, off Marker 24; 28° 49' 30" N; 80° 48' 00" W.	91.3	173.7	3 *Caretta caretta*	0.45
16-17 Aug., 1978	Fla., Brevard Co., Indian River, E. of Marker 32; 28° 35' 30" N; 80° 47' 30" W.	26.0	173.7	None	0.00
30-31 Aug., 1978	Fla., Brevard Co., Banana River, off Marker 41; 28° 31' 30" N; 80° 36' 00" W.	24.5	173.7	None	0.00
6-8 Sept., 1978	Fla., Volusia Co., Mosquito Lagoon, E. of Markers 29 and 30; 28° 48' 30" N; 80° 47' 30" W.	48.5	228.6	1 *Caretta caretta* 2 *Chelonia mydas*	0.65
9-11 Sept., 1978	Fla., Brevard Co., Mosquito Lagoon, off Gallinipper Point 28° 41' 00" N; 80° 40' 00" W.	54.75	228.6	1 *Caretta caretta*	0.19

Table 39. Summary of research effort, lagoonal turtle netting operation, 22 June to 29 October, 1978.

(Continued).

Date	Locality	Net Hours	Net Meters	Turtles Capture	Captures/Day 100 m net
11-13 Sept., 1978	Fla., Brevard Co., Mosquito Lagoon, off Pork Chop Island 28° 44' 30" N; 80° 42' 30" W.	40.8	228.6	1 *Caretta caretta* 1 *Chelonia mydas*	0.52
14-15 Sept., 1978	Fla., Volusia Co., Mosquito Lagoon, off Marker 19; 28° 51' 00" N; 80° 48' 30" W.	30.5	228.6	1 *Caretta caretta*	0.34
19-20 Sept., 1978	Fla., Volusia Co., Mosquito Lagoon, off Marker 25; 28° 48' 30" N; 80° 48' 00" W.	25.3	228.6	2 *Caretta caretta*	0.83
21-22 Sept., 1978	Fla., Brevard Co., Indian River, Marsh Bay 28° 42' 30" N; 80° 46' 30" W.	26.5	228.6	None	0.00
10-13 Oct., 1978	Fla., Brevard Co., Mosquito Lagoon, off Marker 30; 28° 47' 30" N; 80° 45' 30" W.	71.3	228.6	5 *Caretta caretta*	0.74

Table 89. Summary of research effort, lagoonal turtle netting operation, 22 June to 29 October, 1978.

(Continued).

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
24-25 Oct., 1978	Fla., Brevard Co., Banana River, E. of Marker 42; 28^{o} 32' 00" N; 80^{o} 36' 00" W.	25.0	173.3	None	0.00
27-29 Oct., 1978	Fla., Brevard Co., Indian River, S.E. of Marker 33; 28^{o} 36' 30" N; 80^{o} 46' 30" W.	52.0	173.3	None	0.00
TOTAL (Mid June - Oct., 1978)		815.35	3,609.7	33 turtles 23 *Caretta caretta* 10 *Chelonia mydas*	0.03

Table 90. Summary of research effort, lagoonal turtle netting operation, 10 November, 1978 to 9 April, 1979.

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
10-12 Nov., 1978	Fla., Brevard Co., Mosquito Lagoon, off Turtle Pen Pt.; 28° 42' 00" N; 80° 42' 30" W.	53.0	173.7	1 *Caretta caretta*	0.26
19-20 Nov., 1978	Fla., Brevard Co., Indian River, north, so. of Marker 2; 28° 42' 30" N; 80° 46' 30" W.	30.5	173.7	None	0.00
16-17 Dec., 1978	Fla., Brevard Co., Indian River, south, SE of Titusville bridge; 28° 38' 00" N; 80° 48' 00" W.	26.0	173.7	None	0.00
27-29 Jan., 1979	Fla., Brevard Co., Mosquito Lagoon, off Marker 34; 28° 46' 00" N; 80° 46' 30" W.	67.0	173.7	1 *Caretta caretta*	0.21
30-31 Jan., 1979	Fla., Brevard Co., Indian River north, SE of Marker 3: 28° 42' 30" N; 80° 46' 30" W.	25.0	173.7	None	0.00

Table 90. Summary of research effort, lagoonal turtle netting operation, 10 November, 1978 to 9 April, 1979. (Continued).

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
16-18 Feb., 1979	Fla., Brevard Co., Mosquito Lagoon, off Camera Pad 10; 28° 42' 00" N; 80° 41' 00" W.	59	173.7	None	0.00
27-28 Feb., 1979	Fla., Brevard Co., Banana River, SE of NASA Causeway Bridge; 28° 30' 30" N; 80° 36' 00" W.	24.5	173.7	None	0.00
13-14 Mar., 1979	Fla., Brevard Co., Indian River, SE of Titusville Bridge;	25.0	173.7	None	0.00
19-20 Mar., 1979	Fla., Brevard Co., Indian River, so. of R.R. trestle bridge;	27.0	173.7	None	0.00
27-29 Mar., 1979	Fla., Brevard Co., Mosquito Lagoon, off Marker 30; 28° 47' 30" N; 80° 45' 30" W.	63.75	228.6	None	0.00

Table 90. Summary of research effort, lagoonal turtle netting operation, 10 November, 1978 to 9 April, 1979. (Continued).

Date	Locality	Net Hours	Net Meters	Turtles Captured	Captures/Day 100 m net
6-9 Apr., 1979	Fla., Volusia Co., Mosquito Lagoon, off Marker 29; 28° 48' 30" N; 80° 47' 30" W.	47.0	173.7	None	0.00
7-9 Apr., 1979	Fla., Brevard Co., Mosquito Lagoon, off Marker 31; 28° 47' 00" N; 80° 46' 30" W.	47.0	228.6	3 *Caretta caretta*	0.67
GRAND TOTAL (July, 1976 - April, 1979)		6415.25	26,102.3	121 turtles	0.002

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979.

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3039	16 July 1976	ML	43.2	68.9	64.5	53.9	64.5	51.8	12.6
A3040	16 July 1976	ML	60.0	71.2	75.9	55.7	68.1	49.0	-
A3112	8 September 1976	ML	79.5	81.2	86.2	63.1	80.1	63.6	17.2
A3113	10 September 1976	ML	74.1	75.7	83.1	61.6	76.6	60.9	16.7
A3118	6 January 1977	ML	59.1	79.0	76.6	59.8	72.9	58.8	11.4
A3119	6 January 1977	ML	53.2	67.9	75.1	57.4	68.5	53.2	14.4
**A6576	7 April 1977	ML	12.8	44.2	50.0	39.4	47.8	34.5	9.7
**A6533	10 April 1977	ML	26.2	57.0	61.4	47.0	56.5	44.5	11.7
**A6555	27 April 1977	IR	28.3	58.2	61.5	50.6	62.3	45.8	12.5
A3137	29 April 1977	ML	57.0	71.0	78.0	56.1	72.6	54.0	14.6
A3136	30 April 1977	ML	95.4	92.5	100.0	58.8	90.4	66.5	19.0
A3176	12 May 1977	ML	80.0	78.5	87.5	59.5	81.4	60.0	16.7
**A6545	12 May 1977	ML	32.2	60.9	65.8	48.3	61.0	46.0	12.5
**A6524	8 June 1977	ML	39.4	64.2	71.0	52.6	56.6	50.5	13.8

**Recaptured turtles

ML = Mosquito Lagoon   IR = Indian River

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
**A6547	19 June 1977	ML	38.8	64.3	69.7	54.8	68.4	47.5	14.2
A6597	19 June 1977	ML	27.9	60.2	63.9	50.4	58.6	46.4	12.5
**A3123	21 June 1977	ML	37.5	65.7	70.3	50.3	62.2	49.4	13.8
A6598	28 June 1977	ML	17.1	47.8	62.1	39.2	48.3	37.5	10.2
H985	28 June 1977	ML	49.6	70.2	74.9	52.8	69.4	49.6	15.2
H1148	8 July 1977	ML	59.1	72.0	77.7	58.7	73.4	54.3	14.6
H1147	9 July 1977	ML	97.7	88.5	95.9	64.9	88.5	65.0	17.1
H1149	9 July 1977	ML	72.2	77.3	83.6	61.8	79.0	60.5	16.2
H1209	20 July 1977	ML	24.4	56.5	62.2	49.9	61.4	44.4	11.4
H1210	20 July 1977	ML	71.4	77.8	83.7	59.8	72.0	60.5	16.9
H1217	20 July 1977	ML	90.9	81.9	89.1	64.8	80.2	63.7	17.8
H1218	22 July 1977	ML	66.0	75.2	80.5	56.3	74.2	57.7	15.8
A8201	27 August 1977	ML	31.3	60.6	64.8	48.3	59.6	46.9	11.9
A8202	27 August 1977	ML	-	60.8	66.3	51.7	64.6	48.4	12.5

**Recaptured turtles

ML = Mosquito Lagoon

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1198	28 August 1977	ML	79.5	81.2	88.4	65.4	84.4	63.1	17.3
**H1147	5 September 1977	ML	-	-	-	-	-	-	-
H1199	7 September 1977	ML	41.6	65.0	71.5	53.0	64.7	51.6	14.4
H1234	8 September 1977	ML	68.2	74.2	81.3	60.3	75.0	58.1	16.5
**A3176	12 September 1977	ML	83.2	82.5	89.2	64.0	83.2	61.9	17.8
A8206	14 September 1977	ML	27.0	58.8	64.2	48.5	60.1	40.4	11.3
H1235	14 September 1977	ML	59.1	71.8	75.6	60.2	72.2	58.1	15.7
H1241	17 September 1977	ML	53.2	72.8	78.2	57.8	70.1	56.3	14.8
H1242	19 September 1977	ML	32.6	60.1	65.0	50.8	61.8	47.4	12.4
H1243	20 September 1977	ML	29.2	59.2	64.2	49.3	60.0	45.8	12.8
H1244	21 September 1977	ML	88.6	85.0	95.5	65.5	80.4	63.1	18.6
A8208	23 September 1977	ML	27.3	55.8	62.0	45.3	55.5	44.0	11.6
**H1218	23 September 1977	ML	68.8	75.3	80.1	56.4	74.4	57.7	15.7
**H1198	22 October 1977	ML	83.2	82.2	88.4	65.1	84.5	63.9	17.5

**Recaptured turtles

ML = Mosquito Lagoon

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1245	27 October 1977	IR	61.4	72.5	78.5	57.5	73.2	55.9	17.2
**A3176	16 November 1977	ML	80.0	82.8	89.6	64.1	83.2	62.9	17.4
H1234	16 November 1977	ML	66.8	76.5	81.5	59.3	74.6	58.7	16.6
H1199	17 November 1977	ML	43.8	66.2	72.5	53.3	66.5	51.6	14.5
H1247	25 January 1978	ML	49.4	67.1	72.7	58.1	72.8	52.4	14.4
H1252	24 March 1978	ML	40.0	67.0	70.2	53.6	66.8	52.6	14.9
H1253	4 April 1978	ML	33.2	62.3	66.0	52.9	64.7	49.0	13.2
**H1149	4 April 1978	ML	66.8	78.0	84.1	62.7	79.9	61.1	15.8
**H1247	5 April 1978	ML	48.7	67.0	72.4	58.8	71.9	52.1	14.2
**A3137	5 April 1978	ML	71.4	77.3	83.4	62.4	79.0	58.3	16.2
**A3123	6 April 1978	ML	46.1	68.5	75.2	53.9	67.4	50.4	14.6
H1258	4 May 1978	ML	52.3	72.9	79.1	55.9	70.0	56.0	15.0
H1259	6 May 1978	ML	55.4	73.4	77.7	60.6	73.4	56.7	16.1
H1260	7 May 1978	ML	33.1	62.8	66.0	51.6	62.2	47.0	12.3
H1989	15 June 1978	ML	47.7	70.5	75.8	57.3	70.7	56.9	14.9

**Recaptured turtles

ML = Mosquito Lagoon IR = Indian River

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H1991	15 June 1978	ML	50.0	71.8	77.1	55.3	71.6	55.5	15.8
H1992	15 June 1978	ML	63.6	75.8	80.3	57.7	74.6	59.0	15.8
A8220	16 June 1978	ML	32.7	60.5	64.6	50.3	61.1	49.0	17.1
A8219	17 June 1978	ML	22.8	54.9	58.8	44.4	57.3	42.5	10.9
H2034	17 June 1978	ML	-	76.4	80.0	59.4	75.1	59.2	15.4
H2033	18 June 1978	ML	41.9	65.1	69.5	53.5	66.4	52.5	12.2
**H1259	18 June 1978	ML	58.7	74.0	78.5	59.8	74.4	56.0	15.8
H2040	20 June 1978	ML	50.4	71.0	74.9	56.6	71.7	48.4	16.3
*$\overline{X}$			53.4	70.2	77.9	56.0	70.0	53.8	14.6
S.D.			20.60	9.12	5.18	5.73	8.55	8.1	1.7
N			46	49	49	49	49	49	48
Range			(12.8-97.7)	(44.2-88.5)	(50.0-100.0)	(39.4-65.5)	(47.8-90.4)	(34.5-66.5)	(9.7-19.0)

*Recaptures excluded

**Recaptured turtles   ML = Mosquito Lagoon

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2103	18 June 1978	ML	80.3	88.3	93.8	66.2	85.0	63.5	18.9
H2218	7 July 1978	ML	41.3	65.3	70.1	52.6	65.4	51.0	14.1
H2221	7 July 1978	ML	44.2	64.8	71.2	54.9	67.1	52.2	14.2
H2220	9 July 1978	ML	43.1	68.1	74.0	55.2	67.7	55.5	13.2
H2305	10 July 1978	ML	41.4	67.3	72.5	53.8	70.8	50.5	14.0
H2484	3 August 1978	ML	38.0	64.8	70.7	54.8	68.1	48.2	13.6
**H1992	4 August 1978	ML	55.3	76.1	79.8	58.5	74.7	58.0	16.0
H2495	4 August 1978	ML	52.1	69.5	75.7	56.9	70.9	54.0	15.6
H2497	5 August 1978	ML	34.4	62.9	67.0	50.4	61.0	49.3	12.8
H2399	5 August 1978	ML	42.5	69.6	75.6	59.5	72.8	54.7	13.9
H2471	6 August 1978	ML	38.7	65.3	70.1	50.6	63.6	49.7	14.4
**H1989	7 September 1978	ML	50.0	70.8	75.8	58.7	71.4	56.6	14.9
P1051	11 September 1978	ML	68.8	73.2	84.9	58.6	74.1	58.9	15.4
P1023	12 September 1978	ML	45.7	69.6	75.2	54.6	66.3	54.8	14.7

*Recaptures excluded

**Recaptured turtles ML = Mosquito Lagoon

Table 91. Capture data and morphological characteristics of net-captured loggerhead turtles (*Caretta caretta*) from KSC lagoons; July 1976 - April 1979. (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
**A8217	14 September 1978	ML	24.2	54.9	61.1	43.9	53.0	43.5	10.7
P1030	19 September 1978	ML	-	72.9	78.2	55.9	71.0	55.2	15.4
P1031	19 September 1978	ML	-	72.9	79.0	57.8	71.8	55.7	15.7
**A8202	10 October 1978	ML	40.6	64.6	68.8	51.4	61.9	49.0	13.6
P1033	10 October 1978	ML	47.2	67.7	70.7	55.3	68.8	51.0	14.7
P1034	10 October 1978	ML	42.1	67.8	72.9	56.0	67.2	53.1	13.4
P1035	13 October 1978	ML	-	66.2	71.2	53.1	65.7	51.0	13.1
P1036	11 October 1978	ML	-	69.4	74.0	55.4	69.9	53.4	15.3
P1039	28 January 1979	ML	31.0	50.5	66.0	50.5	61.3	46.1	12.1
P1043	7 April 1979	ML	-	69.7	76.0	57.5	71.7	54.1	14.2
P1041	8 April 1979	ML	40.5	64.7	69.1	54.5	65.5	50.2	13.8
P1042	8 April 1979	ML	40.2	64.8	69.5	51.8	63.5	48.5	14.2
A8224	5 May 1979	ML	27.4	55.8	61.0	48.4	57.6	45.3	11.4
*$\bar{X}$			51.61	70.05	74.38	55.60	68.59	53.37	14.63
S.D.			19.45	6.86	9.40	5.12	10.72	6.09	1.20
N			64	71	71	71	71	71	70
Range			(12.8-97.7)	(44.2-88.5)	(50.0-100.0)	(39.4-65.5)	(47.8-90.4)	(34.5-66.5)	(9.7-19.0)

*Recaptures excluded
**Recaptured turtles ML = Mosquito Lagoon

Table 92. Capture data and morphological characteristics of net-captured green turtles (*Chelonia mydas*) from Mosquito Lagoon; November, 1976-April, 1979.

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3116	18 November 1976	33.1	62.0	65.7	50.5	65.7	54.3	9.3
*A6521	6 April 1977	29.0	59.7	63.2	47.3	54.3	48.8	9.0
A6595	7 April 1977	7.5	39.0	41.8	31.0	35.1	32.9	6.2
*A6589	8 April 1977	8.7	39.7	42.4	32.9	37.5	33.1	6.3
*A6521	30 April 1977	28.6	59.4	63.5	46.0	54.6	47.8	8.8
*A6585	30 April 1977	18.5	50.7	53.4	42.6	50.2	42.8	6.1
*A6508	8 June 1977	7.4	38.7	41.0	32.5	36.9	32.4	6.2
*A6497	21 June 1977	7.0	37.0	39.4	30.5	35.0	31.2	5.6
*A3122	9 July 1977	54.5	69.2	74.4	55.3	68.0	57.8	9.9
*A6595	27 July 1977	9.6	42.3	44.4	32.9	37.6	36.7	6.5
*A6599	27 July 1977	12.6	45.5	48.0	34.8	40.0	40.1	6.9
*A3116	7 September 1977	38.7	65.7	69.0	51.1	59.6	55.1	9.8
A8216	24 March 1978	10.5	44.8	47.2	35.4	41.2	37.4	6.6
A8221	17 June 1978	11.7	43.0	46.9	35.8	42.3	36.5	6.8
H2041	19 June 1978	40.9	68.9	73.0	54.0	61.5	58.0	9.9

*Recaptures

Table 92. Capture data and morphological characteristics of net-captured green turtles (*Chelonia mydas*) from Mosquito Lagoon; November, 1976-April, 1979. (Continued).

Tag No.	Date	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
H2434	8 July 1978	39.4	69.3	72.8	51.9	64.9	58.2	9.1
*H2434	3 August 1978	-	-	-	-	-	-	-
*A8210	3 August 1978	-	-	-	-	-	-	-
H2472	3 August 1978	25.1	58.2	62.0	45.4	56.0	50.9	7.7
H2473	3 August 1978	25.9	59.5	62.7	47.0	55.6	49.9	9.0
A8223	3 August 1978	8.65	40.2	43.0	31.1	36.8	34.5	6.5
H2496	5 August 1978	29.4	60.9	64.7	47.2	55.1	52.3	8.2
*A6518	7 September 1978	40.2	70.0	74.1	53.3	62.2	59.5	9.8
P1022	6 September 1978	35.5	62.4	66.1	48.4	58.7	55.4	9.7
*A6541	12 September 1978	55.9	72.8	79.4	56.5	67.9	62.5	10.5
$\overline{X}$		25.15	54.73	58.18	43.19	51.16	46.44	8.02
S.D.		15.41	12.21	13.02	9.02	11.68	10.41	1.60
Range		7.0-55.9	37.0-72.8	39.4-79.4	30.5-56.5	35.0-68.0	31.2-62.5	5.6-10.5

*Recaptures

Table 93. Capture data and morphological characteristics of cold-stunned loggerhead turtles (*Caretta caretta*) from KSC lagoons; 18-24 January 1977.

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3121	19 January 1977	ML	40.0	56.0	61.0	52.5	63.2	48.0	12.0
A3120	20 January 1977	ML	48.6	69.7	73.5	53.0	67.0	53.5	13.2
A3126	20 January 1977	IR	111.3	91.4	99.5	67.4	93.7	69.8	19.6
A3123	20 January 1977	ML	31.8	61.5	68.5	48.7	60.0	46.5	13.0
A6530	20 January 1977	ML	46.9	71.2	77.5	55.5	67.2	54.3	14.7
A6525	20 January 1977	ML	36.5	68.6	75.0	54.6	69.0	50.7	13.9
A6524	20 January 1977	ML	39.8	64.3	71.0	52.0	66.3	52.0	13.9
A6527	21 January 1977	ML	48.4	69.5	75.1	58.9	70.6	56.6	14.6
A6526	21 January 1977	ML	27.5	58.0	61.8	46.5	58.0	46.0	12.4
A6528	21 January 1977	ML	37.0	64.5	70.3	50.1	64.3	51.2	13.3
A6539	21 January 1977	ML	42.1	66.7	70.2	53.0	56.9	51.2	13.0
A6517	21 January 1977	ML	51.1	72.0	76.5	56.5	70.4	54.5	5.9
A6515	21 January 1977	ML	33.4	62.2	66.3	50.0	64.2	47.0	12.7
A6513	21 January 1977	ML	25.8	54.3	62.0	46.0	55.3	44.5	11.6
A6512	21 January 1977	ML	25.2	59.5	61.5	43.5	62.5	44.6	11.7
A6520	21 January 1977	ML	38.8	61.0	66.5	54.5	67.0	49.5	12.8
A6519	21 January 1977	ML	29.8	57.5	63.0	47.2	58.6	45.9	11.9

Table 93. Capture data and morphological characteristics of cold-stunned logger head turtles (*Caretta caretta*) from KSC lagoons; 18-24 January 1977 (Continued).

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6543	21 January 1977	ML	35.8	65.2	69.8	52.0	66.5	21.4	12.9
A6535	21 January 1977	ML	41.7	66.0	73.5	52.0	69.0	51.5	13.6
A6533	21 January 1977	ML	27.7	57.1	61.8	48.0	58.0	45.7	11.8
A6560	22 January 1977	ML	18.8	50.6	55.0	44.4	54.2	40.3	10.8
A6559	22 January 1977	ML	25.3	56.8	61.2	45.5	57.0	44.5	11.5
A6558	22 January 1977	ML	26.0	58.3	64.0	47.9	59.0	45.0	11.8
A6576	22 January 1977	ML	13.1	44.0	49.4	38.9	48.0	35.1	9.2
A6547	22 January 1977	ML	45.5	61.5	65.6	52.5	63.2	45.5	15.7
A6556	22 January 1977	ML	25.3	55.1	60.7	45.3	56.0	42.8	11.9
A6555	22 January 1977	ML	26.0	58.2	62.4	51.6	63.4	46.4	12.8
A6552	22 January 1977	ML	49.5	68.2	75.3	55.8	67.9	53.5	14.6
A6544	22 January 1977	ML	52.9	58.4	77.7	71.6	77.2	55.2	15.6
A6545	22 January 1977	ML	29.8	64.0	60.8	59.2	47.6	45.5	13.2
A6549	22 January 1977	ML	22.8	52.8	56.0	46.4	54.5	44.6	11.1
A6548	22 January 1977	ML	22.3	54.5	57.2	45.0	55.0	42.4	11.9
A6557	22 January 1977	ML	18.8	51.3	55.1	44.2	54.3	40.7	18.8

Table 93. Capture data and morphlogical characteristics of cold-stunned loggerhead turtles (*Caretta caretta*) from KSC lagoons; 18-24 January 1977 (Continued)

Tag No.	Date	Location	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A3134	22 January 1977	ML	55.1	72.2	78.8	56.3	70.8	57.6	5.9
A3133	22 January 1977	ML	48.9	71.2	75.0	56.4	69.7	53.8	5.8
A3132	22 January 1977	ML	31.7	59.1	64.7	51.8	62.0	47.9	12.5
A3131	22 January 1977	ML	37.5	64.2	68.3	54.2	65.7	51.3	12.7
A3130	22 January 1977	ML	25.6	57.8	61.8	47.3	62.0	44.2	12.4
A3129	22 January 1977	ML	32.0	58.2	62.7	50.3	62.0	45.5	11.9
A3128	22 January 1977	ML	29.7	58.8	64.7	46.9	59.4	46.7	11.9
A3127	22 January 1977	ML	36.4	58.6	65.2	52.8	64.7	48.5	5.5
A6592	24 January 1977	IR	33.5	63.5	69.0	53.4	61.8	49.8	12.9
$\bar{X}$			36.3	61.8	67.0	51.4	62.9	47.9	12.4
S.D.			15.7	7.9	8.7	6.1	7.9	7.2	2.8
N			42	42	42	42	42	42	42
Range			13.1-111.3	44.0-91.4	49.4-99.5	38.9-71.6	47.6-93.7	21.4-69.8	5.5-19.6

ML = Mosquito Lagoon IR = Indian River

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977

Tag No.	Date	Location	Weight (kg)	CARAPACE Length (cm) Straight Line	CARAPACE Length (cm) Over Curvature	CARAPACE Width (cm) Straight Line	CARAPACE Width (cm) Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6504	18 January 1977	ML	4.9	34.7	36.0	28.5	32.7	28.5	5.8
A6503	19 January 1977	ML	13.4	47.2	49.8	38.9	43.4	39.5	7.3
A6506	19 January 1977	ML	7.4	38.7	41.3	31.3	35.2	33.2	6.2
A6505	19 January 1977	IR	5.7	35.0	38.0	27.9	32.7	29.5	5.6
A6507	19 January 1977	ML	8.1	39.5	42.5	34.0	40.5	33.5	5.9
A6508	19 January 1977	ML	7.3	38.2	40.3	31.4	35.6	33.2	6.0
A6499	19 January 1977	ML	8.1	38.1	41.0	30.6	35.3	33.1	6.3
A3122	19 January 1977	ML	44.5	68.5	71.7	55.7	67.0	56.4	10.1
A3124	20 January 1977	ML	33.1	67.0	70.0	51.5	61.6	52.6	9.2
A3116	20 January 1977	ML	29.5	61.5	65.8	48.4	56.0	52.9	9.1
A2155	20 January 1977	ML	4.0	31.5	33.5	24.5	27.5	26.5	5.5
A6498	20 January 1977	ML	7.7	31.9	32.3	32.2	35.8	32.5	6.4
A6501	20 January 1977	ML	5.9	35.1	37.1	27.2	31.2	29.0	5.3
A6500	20 January 1977	ML	9.4	40.3	43.2	34.3	38.5	34.9	6.7
A6497	20 January 1977	ML	6.2	39.7	38.2	29.7	33.8	30.7	5.8
A6496	20 January 1977	ML	44.2	68.9	73.2	54.7	66.5	54.8	10.1

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6495	20 January 1977	ML	15.0	48.3	52.0	38.7	44.8	40.4	7.4
A6494	20 January 1977	ML	40.7	66.8	71.8	49.6	61.4	40.7	10.0
A6493	20 January 1977	ML	39.7	65.8	70.5	50.6	62.5	56.2	9.5
A6492	20 January 1977	ML	33.4	63.7	66.5	48.7	58.4	55.0	9.3
A6491	20 January 1977	ML	15.7	51.9	56.0	41.1	48.3	43.7	7.9
A6490	20 January 1977	ML	25.4	58.1	61.5	44.1	51.3	50.4	8.5
A6489	20 January 1977	ML	31.0	63.0	67.8	47.9	56.7	54.0	9.2
A6488	20 January 1977	ML	27.8	61.8	64.7	45.1	53.0	52.4	8.7
A6487	20 January 1977	ML	30.8	64.1	68.0	47.5	57.0	55.1	9.0
A6486	20 January 1977	ML	35.0	64.1	69.3	49.4	59.5	55.9	9.5
A6485	20 January 1977	ML	33.7	63.7	68.0	50.4	59.0	51.7	9.3
A6484	20 January 1977	ML	38.2	68.0	72.8	52.0	60.3	57.5	9.9
A6483	20 January 1977	ML	27.8	59.5	63.8	47.9	57.4	51.5	8.9
A6482	20 January 1977	ML	34.3	62.6	65.8	51.0	59.5	53.0	9.4
A6481	20 January 1977	ML	33.3	63.3	66.8	49.2	58.4	55.0	9.0
A6480	20 January 1977	ML	37.0	62.2	66.0	48.4	57.3	51.5	9.1

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (Chelonia mydas) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6479	20 January 1977	ML	13.2	45.3	48.2	36.7	44.0	40.0	7.0
A6477	20 January 1977	ML	39.8	67.6	71.4	54.2	65.6	56.9	9.5
A6502	20 January 1977	ML	4.7	32.5	35.8	26.8	31.2	28.4	5.7
XX0001	21 January 1977	ML	21.2	56.5	60.1	45.2	50.6	45.5	8.2
XX0002	21 January 1977	ML	4.8	32.4	34.6	26.9	31.0	28.0	5.7
A6518	21 January 1977	ML	31.1	63.4	66.8	55.8	47.2	54.1	8.6
A6521	21 January 1977	ML	25.6	58.5	62.1	46.5	54.5	48.8	8.2
A6509	21 January 1977	ML	8.2	39.3	42.8	31.9	36.1	33.4	6.1
A6510	21 January 1977	ML	14.4	47.4	50.5	37.3	43.3	40.8	7.3
A6529	21 January 1977	IR	15.5	50.3	53.6	37.8	44.6	43.5	7.3
A6531	21 January 1977	ML	22.1	55.4	60.2	44.6	51.4	47.4	7.9
A6511	21 January 1977	ML	39.7	66.3	70.5	55.0	62.6	55.3	9.7
A6514	21 January 1977	ML	22.5	57.2	60.4	41.9	51.5	47.4	8.5
A6516	21 January 1977	ML	19.5	53.6	56.3	43.5	50.5	44.0	7.3
A6538	21 January 1977	ML	3.8	30.9	32.5	24.5	27.0	26.3	5.4
A6537	21 January 1977	ML	10.3	42.8	45.2	33.9	33.3	37.5	6.6

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6536	21 January 1977	ML	35.3	65.3	69.0	48.3	58.5	54.5	9.6
A6522	21 January 1977	ML	31.2	61.5	65.0	48.0	56.2	51.6	9.2
A6523	21 January 1977	ML	5.2	34.8	36.7	27.9	31.1	29.5	6.0
A6541	21 January 1977	ML	46.2	69.6	74.0	53.2	66.4	59.7	10.0
A6540	21 January 1977	ML	41.2	67.5	70.6	55.4	65.8	58.2	9.7
A6550	21 January 1977	ML	41.7	67.4	70.5	55.3	65.0	58.4	10.0
A6532	21 January 1977	ML	14.0	48.7	51.5	36.7	45.2	39.7	7.6
A6534	21 January 1977	IR	16.3	52.2	56.3	39.5	45.7	42.8	7.6
A6542	21 January 1977	ML	25.2	57.2	62.0	47.1	55.5	48.9	8.8
A6588	22 January 1977	ML	41.9	69.0	74.2	53.9	64.8	60.8	10.1
A6593	22 January 1977	ML	20.7	54.8	58.0	41.7	48.2	47.5	8.2
A6587	22 January 1977	ML	25.7	58.2	61.9	44.1	52.7	51.0	8.5
A6575	22 January 1977	ML	15.4	50.0	53.0	39.3	45.3	41.0	7.9
A6589	22 January 1977	ML	8.3	39.1	41.8	32.2	37.6	34.0	6.3
A6551	22 January 1977	ML	5.3	33.8	35.9	27.8	32.2	28.8	5.6
A6554	22 January 1977	BR	7.6	37.9	49.1	30.2	35.0	32.4	6.2

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6553	22 January 1977	ML	22.3	55.0	57.9	43.8	52.5	47.3	.0
A6568	22 January 1977	ML	12.9	45.8	48.8	38.2	43.3	40.1	6.5
A6567	22 January 1977	ML	21.5	54.8	58.0	42.9	51.2	46.7	8.5
A6566	22 January 1977	ML	8.5	40.5	42.2	31.9	37.0	33.5	6.3
A6546	22 January 1977	ML	27.4	59.6	62.4	45.3	53.8	52.0	8.8
A6574	22 January 1977	ML	6.7	38.5	40.1	29.7	33.1	32.4	5.9
A6573	22 January 1977	ML	11.8	45.1	48.0	36.2	41.4	37.5	7.3
A6572	22 January 1977	ML	24.0	57.3	60.5	42.9	52.5	49.9	8.5
A6571	22 January 1977	ML	7.5	38.9	40.6	32.8	37.0	33.0	6.1
A6586	22 January 1977	ML	11.4	44.6	46.8	35.7	40.3	39.4	7.2
A6578	22 January 1977	ML	33.4	64.5	69.0	48.9	60.4	54.4	8.8
A6577	22 January 1977	ML	41.5	66.7	71.5	52.6	61.5	57.6	9.6
A6583	22 January 1977	ML	21.6	55.5	60.1	43.0	52.8	47.1	8.1
A6561	22 January 1977	ML	59.1	75.4	79.6	59.1	71.2	64.3	11.1
A6565	22 January 1977	ML	29.8	60.5	64.5	48.4	55.4	52.5	8.8
A6564	22 January 1977	ML	41.9	68.3	72.5	54.9	63.7	57.5	10.3

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
A6563	22 January 1977	ML	6.1	37.4	33.5	29.3	33.6	32.0	5.0
A6562	22 January 1977	ML	8.5	40.9	43.9	31.4	36.4	33.5	6.3
A6570	22 January 1977	ML	23.9	57.2	62.0	44.9	52.5	47.9	8.1
A6569	22 January 1977	ML	30.8	61.8	65.5	49.9	59.5	53.0	8.2
A6585	22 January 1977	ML	17.7	50.2	52.6	42.2	49.9	44.1	8.0
A6584	22 January 1977	ML	14.8	48.4	51.2	41.2	46.9	41.7	7.7
A6580	22 January 1977	ML	3.0	29.5	31.8	24.0	27.9	24.4	5.0
A6582	22 January 1977	ML	39.4	66.3	70.2	48.3	59.1	56.5	9.8
A6581	22 January 1977	ML	34.6	64.1	68.1	52.1	61.0	54.8	9.7
A6579	22 January 1977	ML	39.1	69.4	72.6	52.1	61.6	60.4	3.5
XX0003	22 January 1977	ML	27.2	59.3	62.5	45.2	54.2	50.0	8.6
XX0007	22 January 1977	ML	17.9	54.3	58.7	43.8	51.0	47.0	7.5
XX0006	22 January 1977	ML	31.5	59.8	66.4	51.5	58.9	52.5	8.9
XX0005	22 January 1977	ML	54.5	72.9	78.0	57.8	71.5	60.5	10.5
XX0004	22 January 1977	ML	27.4	58.9	63.0	46.4	54.3	50.5	8.6
XX0009	22 January 1977	ML	3.7	39.2	42.5	34.3	38.2	33.7	6.7

Table 94. Capture data and morphological characteristics of cold-stunned green turtles (*Chelonia mydas*) from Kennedy Space Center lagoons; 18-24 January 1977 (Continued)

				CARAPACE					
				Length (cm)		Width (cm)			
Tag No.	Date	Location	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
XX0008	22 January 1977	ML	28.9	60.4	63.5	46.8	54.0	52.3	8.8
A6590	23 January 1977	ML	7.0	37.1	39.9	30.0	36.4	30.2	6.1
A6591	23 January 1977	BR	23.3	57.8	61.2	43.5	50.0	50.0	8.7
A6594	24 January 1977	IR	16.0	50.2	53.0	40.3	47.1	42.5	7.8
$\bar{X}$			22.4	53.1	56.4	42.0	49.1	45.0	7.9
S.D.			13.4	12.2	13.0	9.2	11.6	10.3	1.6
N			99	99	99	99	99	99	99
Range			3.0-59.1	29.5-75.4	31.8-79.6	24.0-59.1	27.0-71.5	24.4-64.3	3.5-11.1

ML = Mosquito Lagoon IR = Indian River BR = Banana River

Table 95. Weight changes of cold-stunned loggerhead turtles (*Caretta caretta*) while in captivity.

Tag No.	Capture Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A3123	20 January 1977	31.8	8 February 1977	30.2	- 1.6
A6524	20 January 1977	39.8	8 February 1977	36.2	- 3.6
A6512	21 January 1977	25.2	8 February 1977	24.0	- 1.2
A6513	21 January 1977	25.8	8 February 1977	25.7	- 0.1
A6515	21 January 1977	33.4	8 February 1977	31.5	- 1.9
A6519	21 January 1977	29.8	8 February 1977	26.4	- 3.4
A6520	21 January 1977	38.8	8 February 1977	38.6	- 0.2
A6526	21 January 1977	27.5	8 February 1977	26.0	- 1.5
A6528	21 January 1977	37.0	8 February 1977	35.1	- 1.9
A6533	21 January 1977	27.7	8 February 1977	27.1	- 0.6
A6535	21 January 1977	41.7	8 February 1977	39.4	- 2.3
A6539	21 January 1977	42.1	8 February 1977	40.2	- 1.9
A6543	21 January 1977	35.8	8 February 1977	33.6	- 2.2
A3127	22 January 1977	36.4	8 February 1977	36.6	+ 0.2
A3128	22 January 1977	29.7	8 February 1977	28.1	- 1.6
A3130	22 January 1977	25.6	8 February 1977	25.9	+ 0.3
A3131	22 January 1977	37.5	8 February 1977	36.6	- 0.9
A6544	22 January 1977	52.9	8 February 1977	49.7	- 3.2
A6545	22 January 1977	29.8	8 February 1977	29.2	- 0.6

Table 95. Weight changes of cold stunned loggerhead turtles (*Caretta caretta*) while in captivity. (Continued)

Tag No.	Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A6548	22 January 1977	22.3	8 February 1977	21.5	- 0.8
A6549	22 January 1977	22.8	8 February 1977	21.6	- 1.2
A6555	22 January 1977	26.0	8 February 1977	25.0	- 1.0
A6556	22 January 1977	25.3	8 February 1977	24.9	- 0.4
A6557	22 January 1977	18.8	8 February 1977	10.9	- 7.9
A6559	22 January 1977	25.3	8 February 1977	24.9	- 0.4
A6560	22 January 1977	18.8	8 February 1977	19.5	+ 0.7
A6592	24 January 1977	33.5	8 February 1977	33.1	- 0.4

Table 96. Weight changes of cold-stunned green turtles (*Chelonia mydas*) while in captivity.

Tag No.	Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A6504	18 January 1977	4.9	13 February 1977	4.9	0.0
A6499	19 January 1977	8.1	13 February 1977	8.4	0.3
A6503	19 January 1977	13.4	13 February 1977	12.8	- 0.6
A6505	19 January 1977	5.7	13 February 1977	5.6	- 0.1
A6506	19 January 1977	7.4	13 February 1977	8.0	0.6
A6507	19 January 1977	8.1	13 February 1977	8.3	0.2
A6508	19 January 1977	7.3	13 February 1977	7.1	- 0.2
A3116	20 January 1977	29.5	8 February 1977	29.7	0.2
A3124	20 January 1977	33.1	8 February 1977	32.9	- 0.2
A6480	20 January 1977	37.0	8 February 1977	32.7	- 4.3
A6481	20 January 1977	33.3	8 February 1977	34.2	0.9
A6482	20 January 1977	34.3	8 February 1977	32.4	- 1.9
A6483	20 January 1977	27.8	8 February 1977	26.7	- 1.1
A6484	20 January 1977	38.2	8 February 1977	39.5	1.3
A6485	20 January 1977	33.7	8 February 1977	32.6	- 1.1
A6486	20 January 1977	35.0	8 February 1977	33.9	- 1.1
A6487	20 January 1977	30.8	8 February 1977	30.8	0.0
A6488	20 January 1977	27.8	8 February 1977	28.0	0.2
A6489	20 January 1977	31.0	8 February 1977	32.5	1.5
A6490	20 January 1977	25.4	8 February 1977	25.8	0.4
A6491	20 January 1977	15.7	8 February 1977	16.0	0.3
A6492	20 January 1977	33.4	8 February 1977	32.7	- 0.7

Table 96. Weight changes of cold-stunned green turtles (*Chelonia mydas*) while in captivity (Continued).

Tag No.	Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A6493	20 January 1977	39.7	8 February 1977	39.6	- 0.1
A6494	20 January 1977	40.7	11 February 1977	40.2	- 0.5
A6495	20 January 1977	15.0	8 February 1977	15.3	0.3
A6496	20 January 1977	44.2	8 February 1977	44.5	0.3
A6497	20 January 1977	6.2	13 February 1977	5.6	- 0.6
A6498	20 January 1977	7.7	13 February 1977	7.3	- 0.4
A6500	20 January 1977	9.4	13 February 1977	10.7	1.3
A6501	20 January 1977	5.9	13 February 1977	5.1	- 0.8
A6502	20 January 1977	4.7	13 February 1977	4.3	- 0.4
A6509	21 January 1977	8.2	13 February 1977	8.1	- 0.1
A6510	21 January 1977	14.4	8 February 1977	14.7	0.3
A6511	21 January 1977	39.7	8 February 1977	39.1	0.6
A6514	21 January 1977	22.5	8 February 1977	22.8	0.3
A6516	21 January 1977	19.5	8 February 1977	20.6	1.1
A6518	21 January 1977	31.1	8 February 1977	31.1	0.0
A6521	21 January 1977	25.6	8 February 1977	26.2	0.6
A6522	21 January 1977	31.2	8 February 1977	31.1	- 0.1
A6523	21 January 1977	5.2	13 February 1977	5.1	- 0.1
A6529	21 January 1977	15.5	8 February 1977	16.0	0.5
A6532	21 January 1977	14.0	8 February 1977	13.9	- 0.1

Table 96. Weight changes of cold-stunned green turtles (*Chelonia mydas*) while in captivity (Continued).

Tag No.	Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A6534	21 January 1977	16.3	8 February 1977	16.6	0.3
A6536	21 January 1977	35.3	8 February 1977	35.0	- 0.3
A6537	21 January 1977	10.3	8 February 1977	9.3	- 1.0
A6538	21 January 1977	3.8	13 February 1977	3.4	- 0.4
A6541	21 January 1977	46.2	8 February 1977	47.5	1.3
A6542	21 January 1977	25.2	8 February 1977	26.5	1.3
A6550	21 January 1977	41.7	8 February 1977	42.1	0.4
A6546	22 January 1977	27.4	8 February 1977	28.2	0.8
A6551	22 January 1977	5.3	13 February 1977	4.9	- 0.4
A6553	22 January 1977	22.3	8 February 1977	24.0	1.7
A6554	22 January 1977	7.6	13 February 1977	7.3	- 0.3
A6562	22 January 1977	8.5	13 February 1977	8.4	- 0.1
A6563	22 January 1977	6.1	13 February 1977	6.2	0.1
A6565	22 January 1977	29.8	8 February 1977	31.4	1.6
A6566	22 January 1977	8.5	13 February 1977	8.1	- 0.4
A6567	22 January 1977	21.5	8 February 1977	21.9	0.4
A6568	22 January 1977	12.9	8 February 1977	12.6	- 0.3
A6569	22 January 1977	30.8	8 February 1977	30.9	0.1
A6570	22 January 1977	23.9	8 February 1977	23.9	0.0
A6572	22 January 1977	24.0	8 February 1977	23.9	- 0.1

Table 96. Weight changes of cold-stunned green turtles (*Chelonia mydas*) while in captivity (Continued).

Tag No.	Date	(kg) Capture Weight	Release Date	(kg) Release Weight	(kg) Weight Change
A6573	22 January 1977	11.8	8 February 1977	12.0	0.2
A6574	22 January 1977	6.7	13 February 1977	6.5	- 0.2
A6575	22 January 1977	15.4	8 February 1977	15.8	0.4
A6577	22 January 1977	41.5	8 February 1977	42.4	0.9
A6578	22 January 1977	33.4	8 February 1977	34.1	0.7
A6581	22 January 1977	34.6	8 February 1977	34.2	- 0.4
A6583	22 January 1977	21.6	8 February 1977	23.0	1.4
A6584	22 January 1977	14.8	8 February 1977	16.0	1.2
A6585	22 January 1977	17.7	13 February 1977	16.1	- 1.6
A6586	22 January 1977	11.4	8 February 1977	11.6	0.2
A6587	22 January 1977	25.7	8 February 1977	26.4	0.7
A6588	22 January 1977	41.9	8 February 1977	42.3	0.4
A6589	22 January 1977	8.3	8 February 1977	8.0	- 0.3
A6590	23 January 1977	7.0	13 February 1977	6.9	- 0.1
A6591	23 January 1977	23.3	8 February 1977	22.1	- 1.2
A6594	24 January 1977	16.0	8 February 1977	16.6	0.6

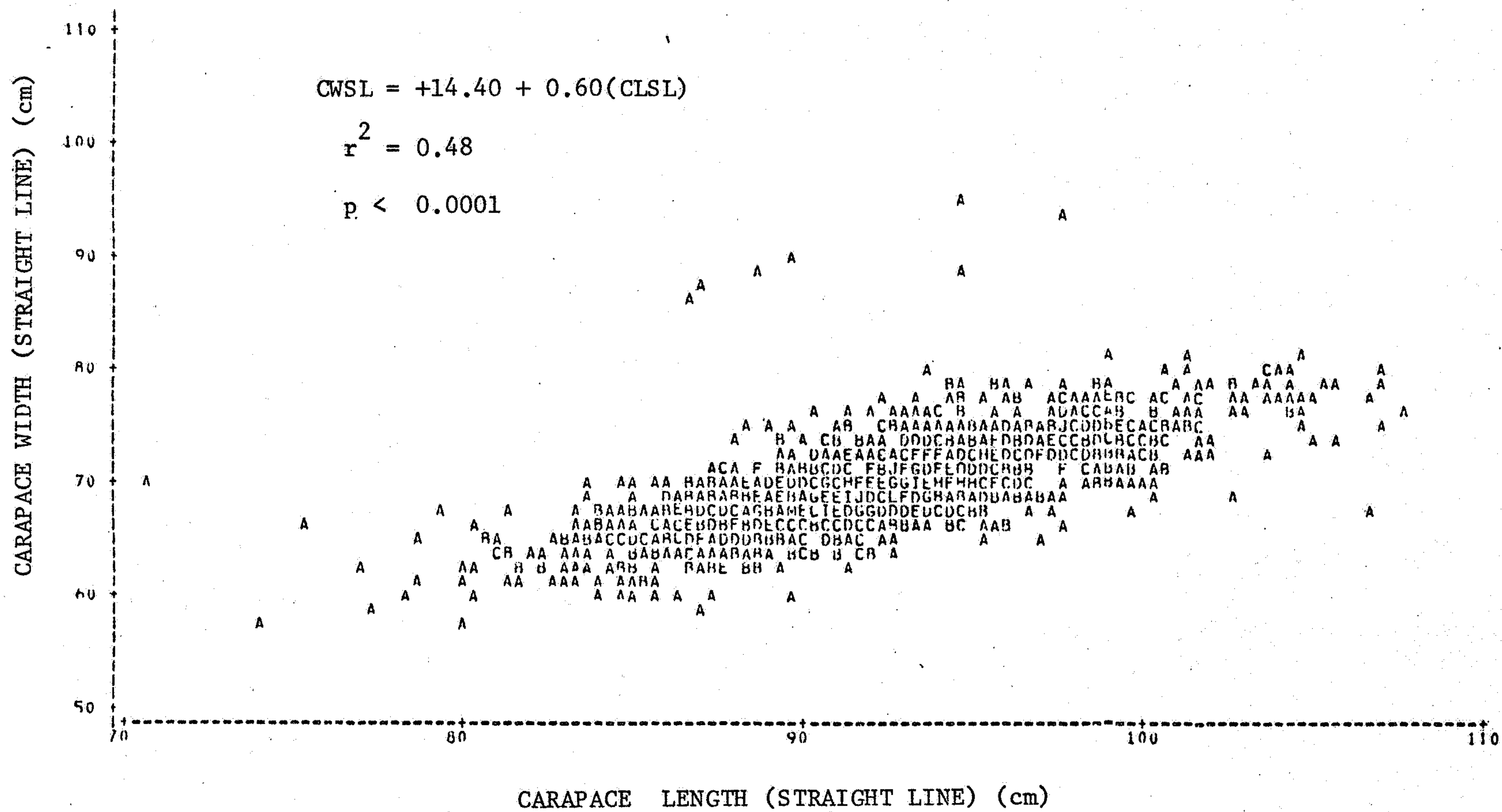
Table 97. Capture data and morphological characteristics of cold-stunned sea turtles from Mosquito Lagoon; January, 1978

				CARAPACE					
				Length (cm)		Width (cm)			
Species	Tag No.	Date	Weight (kg)	Straight Line	Over Curvature	Straight Line	Over Curvature	Plastron Length (cm)	Maximum Head Width (cm)
Chelonia	*A6541	15 January 1978	50.3	72.8	78.0	56.5	68.0	61.2	10.2
Chelonia	A8209	16 January 1978	3.9	31.6	33.3	25.7	28.0	27.0	5.7
Chelonia	H1250	16 January 1978	49.2	72.6	76.6	58.2	66.9	62.5	10.2
Chelonia	*A6523	30 January 1978	8.3	40.8	43.4	32.4	37.1	35.1	6.4
Chelonia	A8210	31 January 1978	37.8	65.2	69.7	51.9	66.1	55.2	9.0
Caretta	A8211	31 January 1978	37.6	63.5	67.4	54.0	66.1	49.6	13.4

*Recaptures

APPENDIX FIGURES

Figure 1. Regression scattergram of straight line carapace width on straight line length for nesting loggerhead turtles 1976-1978. A = 1 obs., B = 2 obs., etc.



$$CWSL = +14.40 + 0.60(CLSL)$$

$$r^2 = 0.48$$

$$p < 0.0001$$

Figure 2. Regression scattergram of over curvature carapace width on over curvature length for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

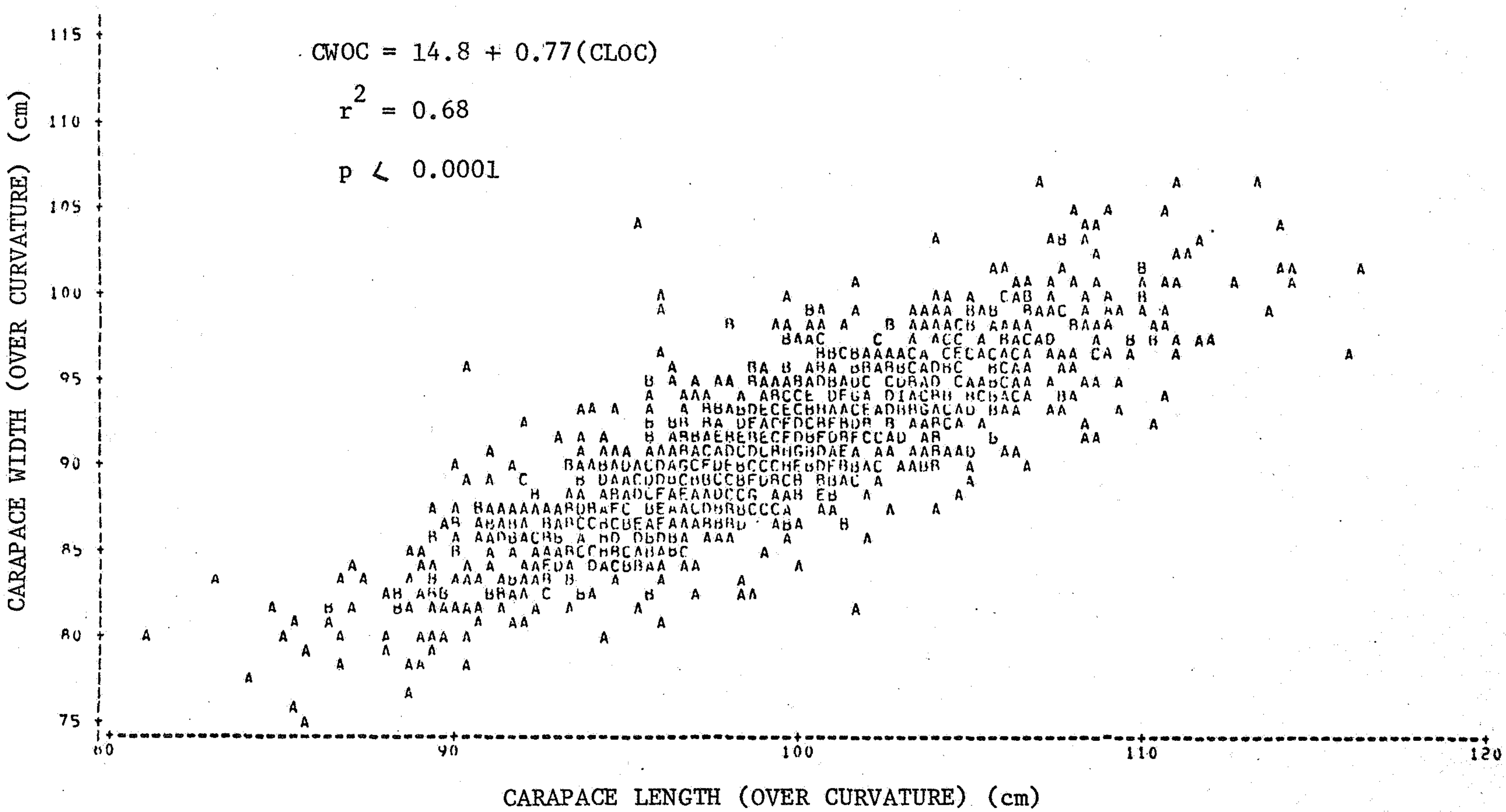


Figure 3. Regression scattergram of weight on straight line carapace length for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

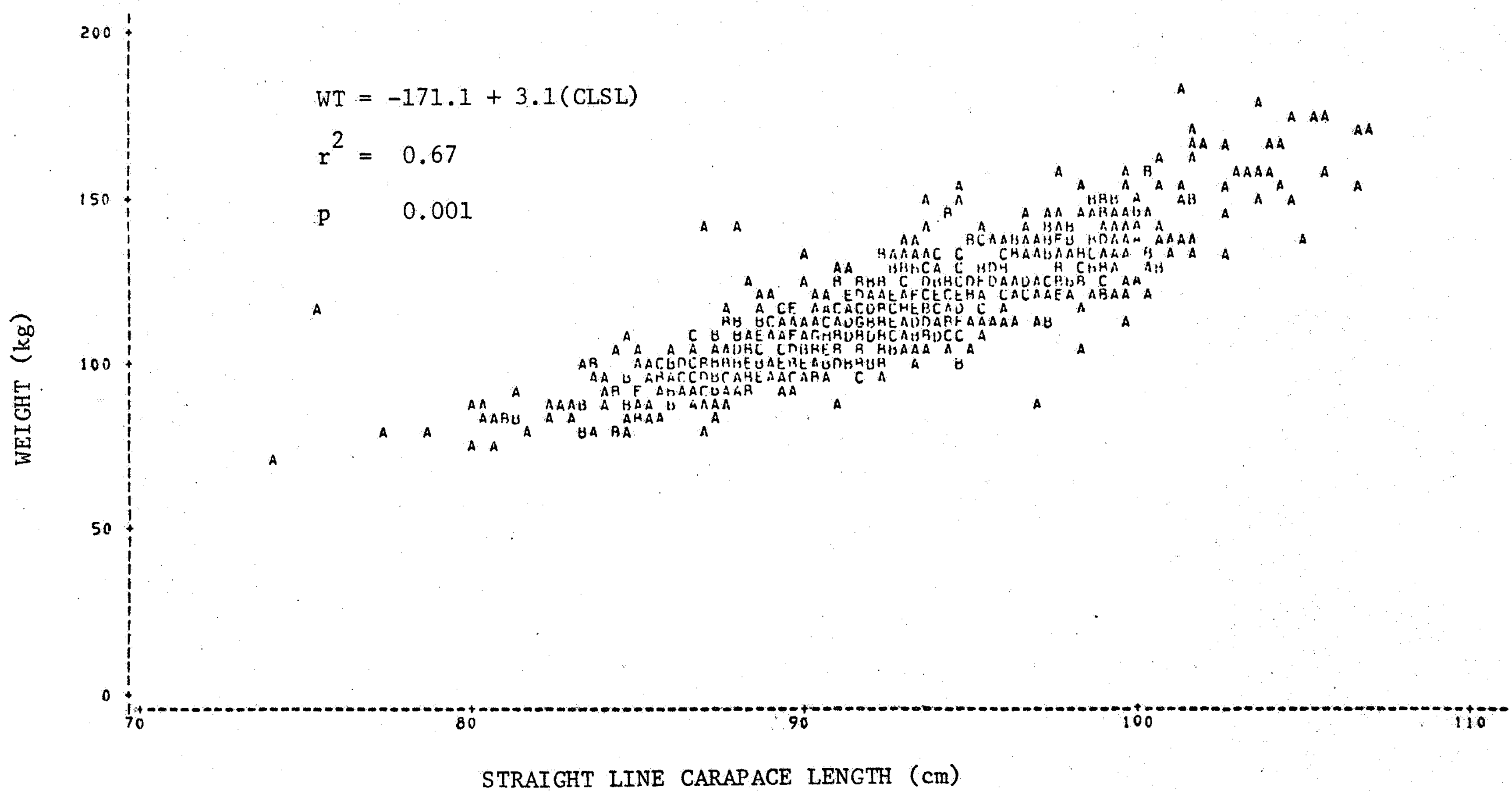


Figure 4. Regression scattergram of weight on over curvature carapace length for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

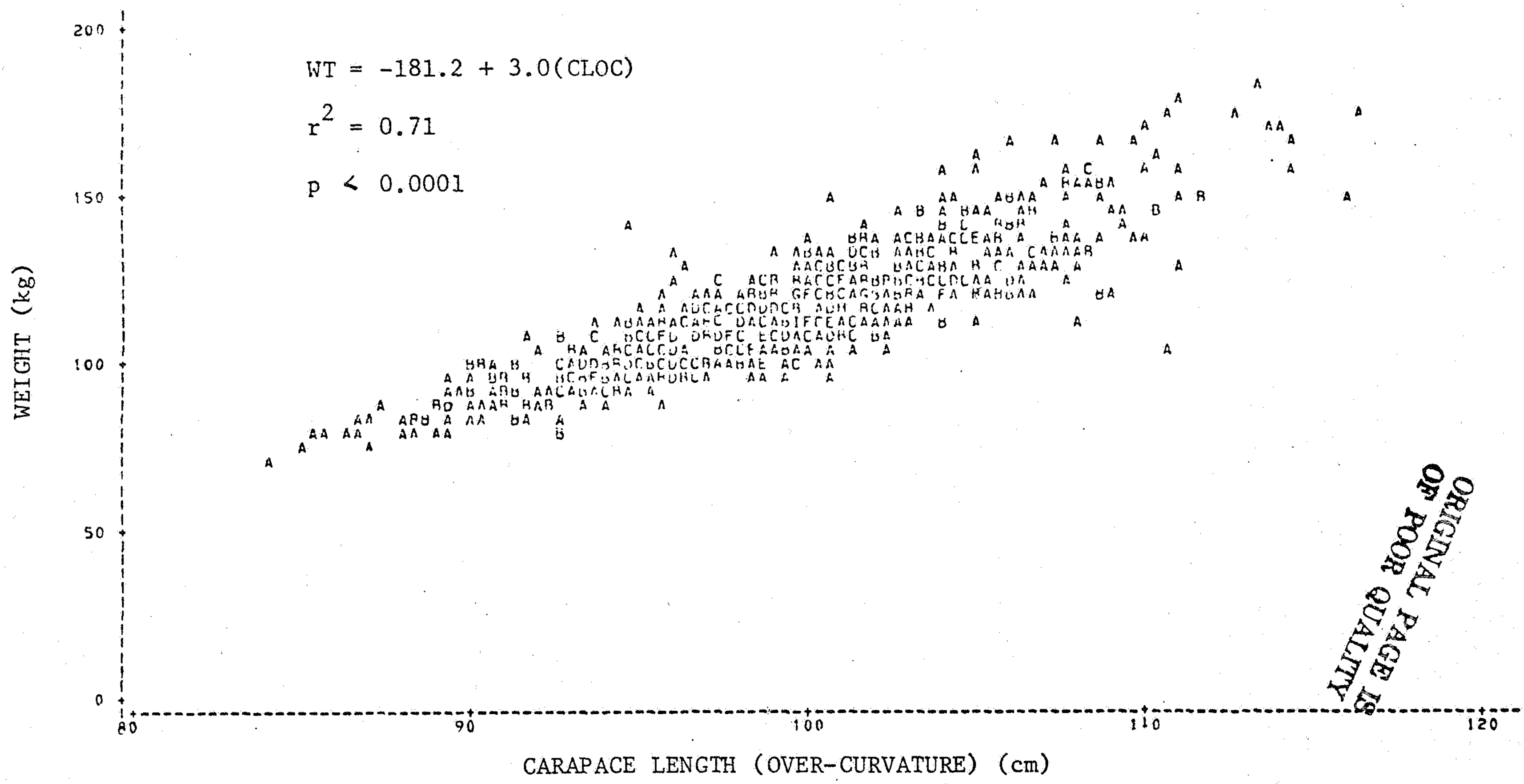


Figure 5. Regression scattergram of weight on straight line carapace width for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

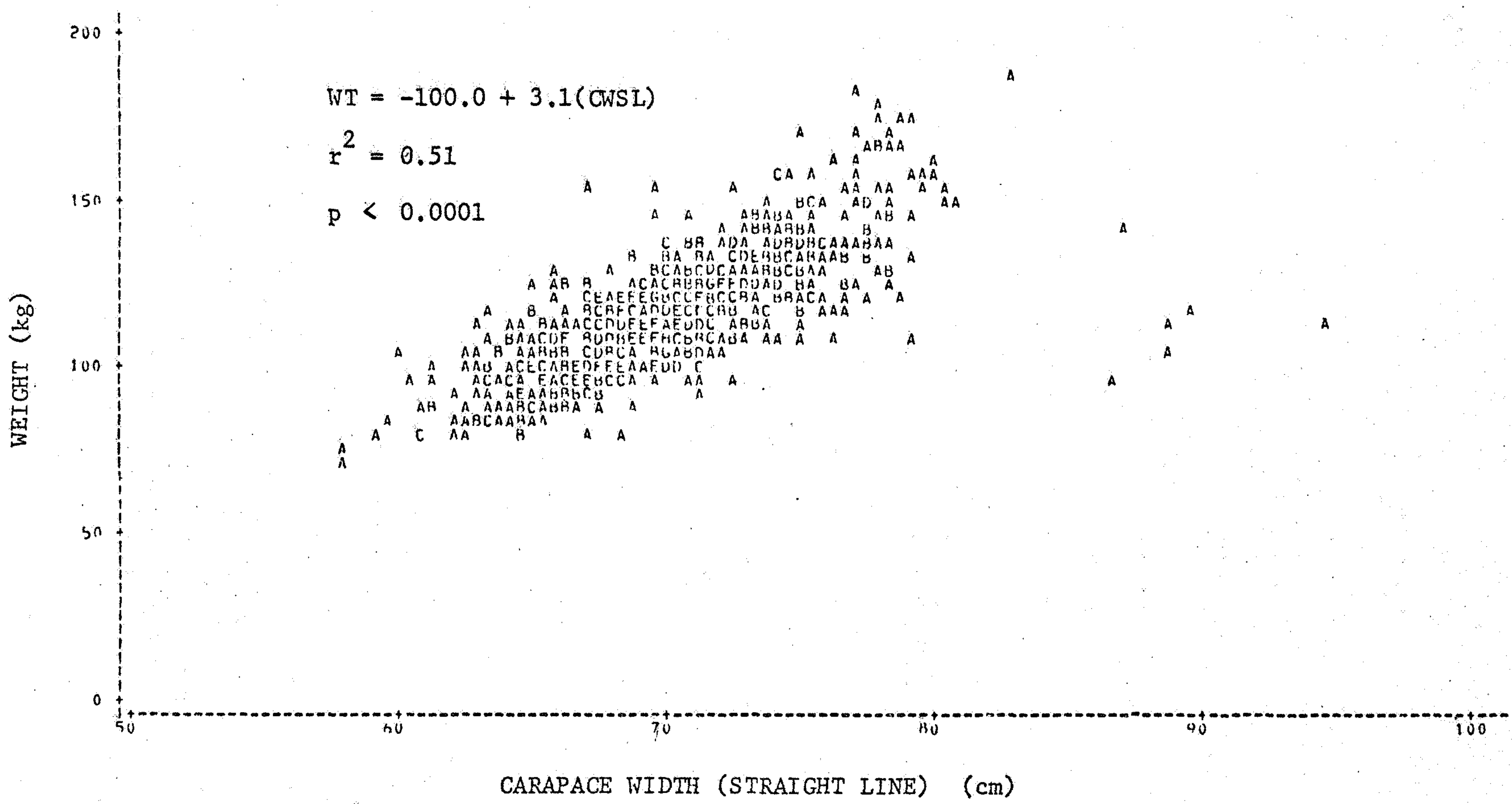


Figure 6. Regression scattergram of weight on over curvature carapace width for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

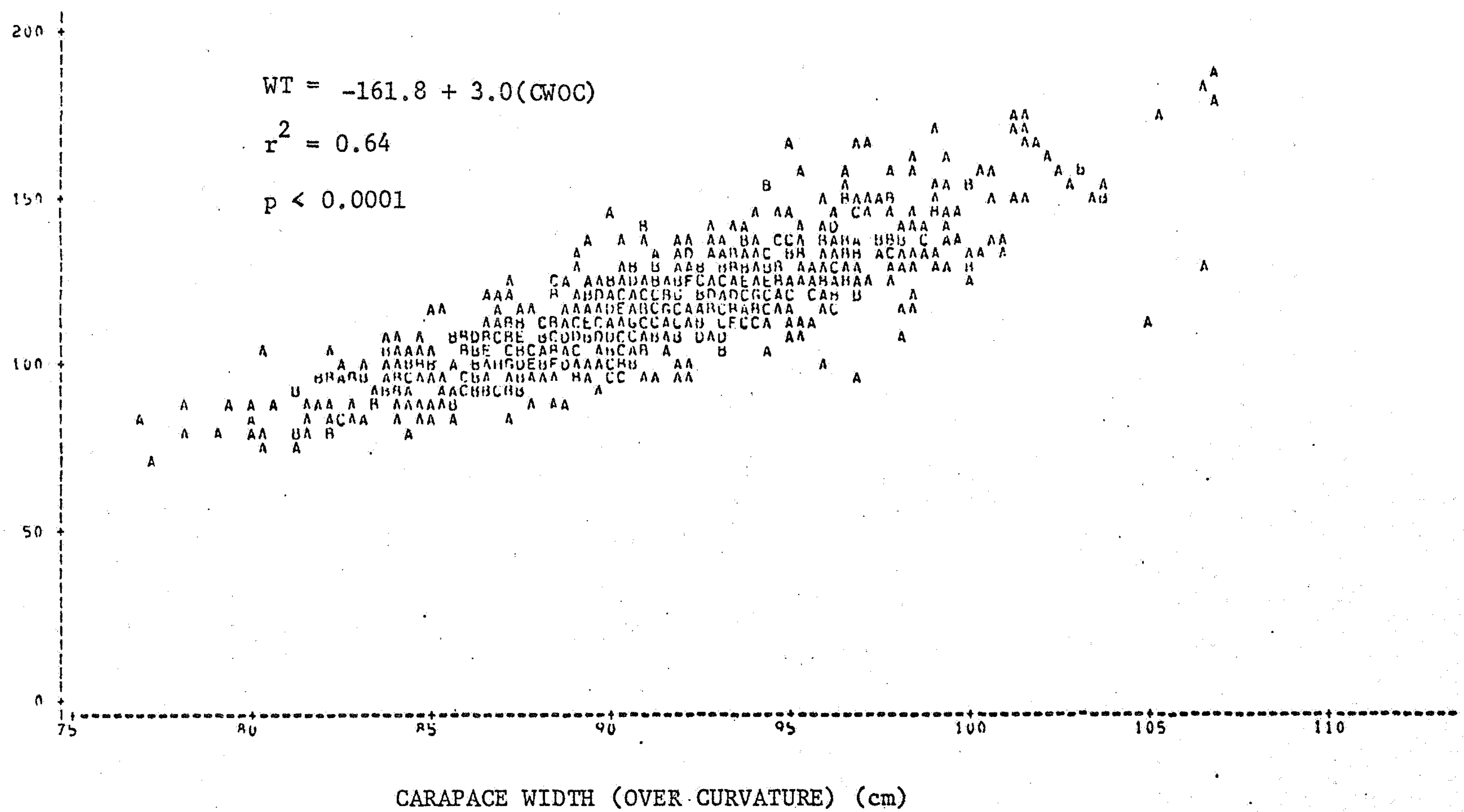


Figure 7. Regression scattergram of weight on plastron length for nesting loggerhead turtles, 1976-1978. A = 1 obs., B = 2 obs., ect.

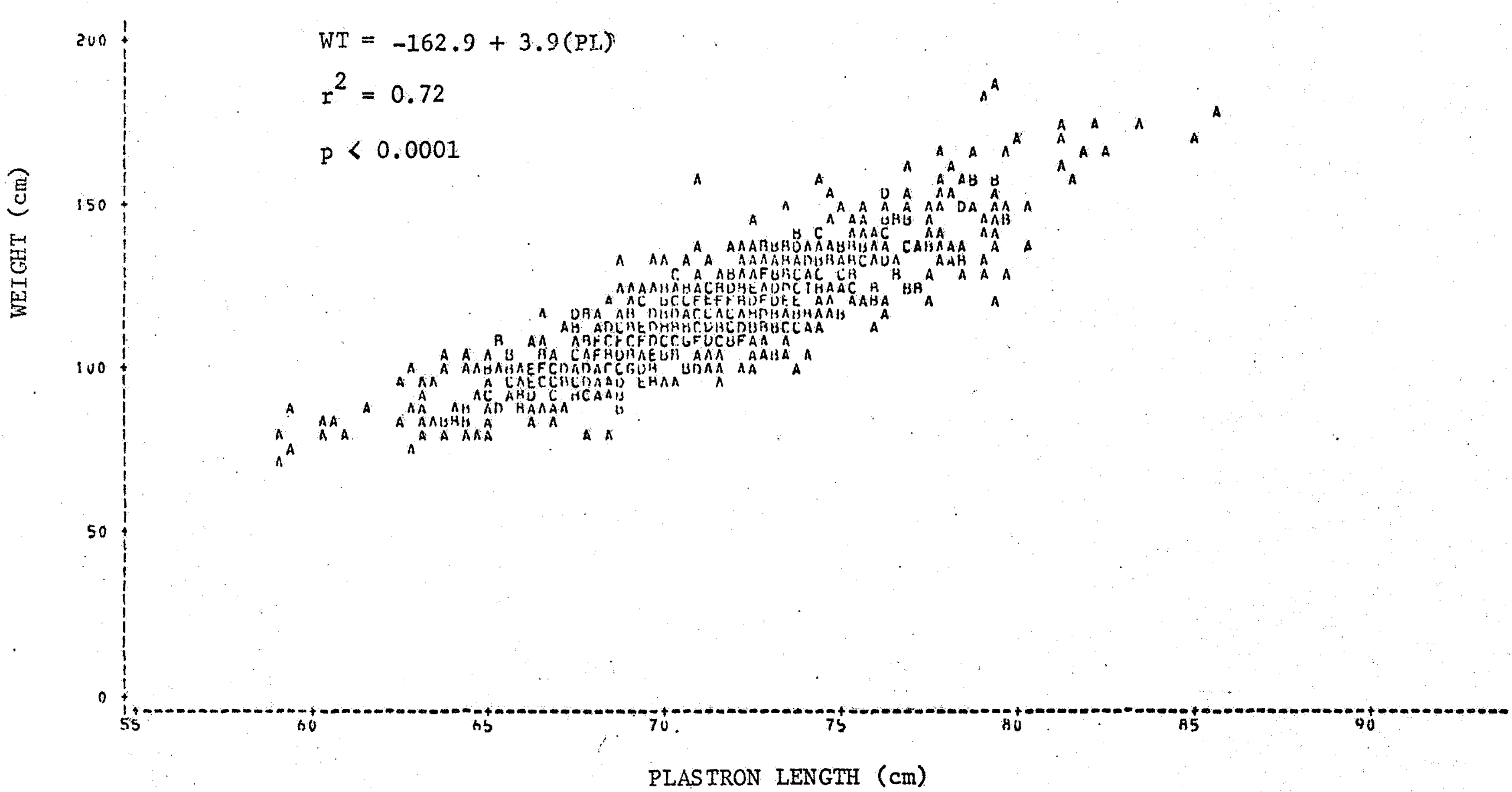


Figure 8. Regression scattergram of straight line carapace width on straight line length for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

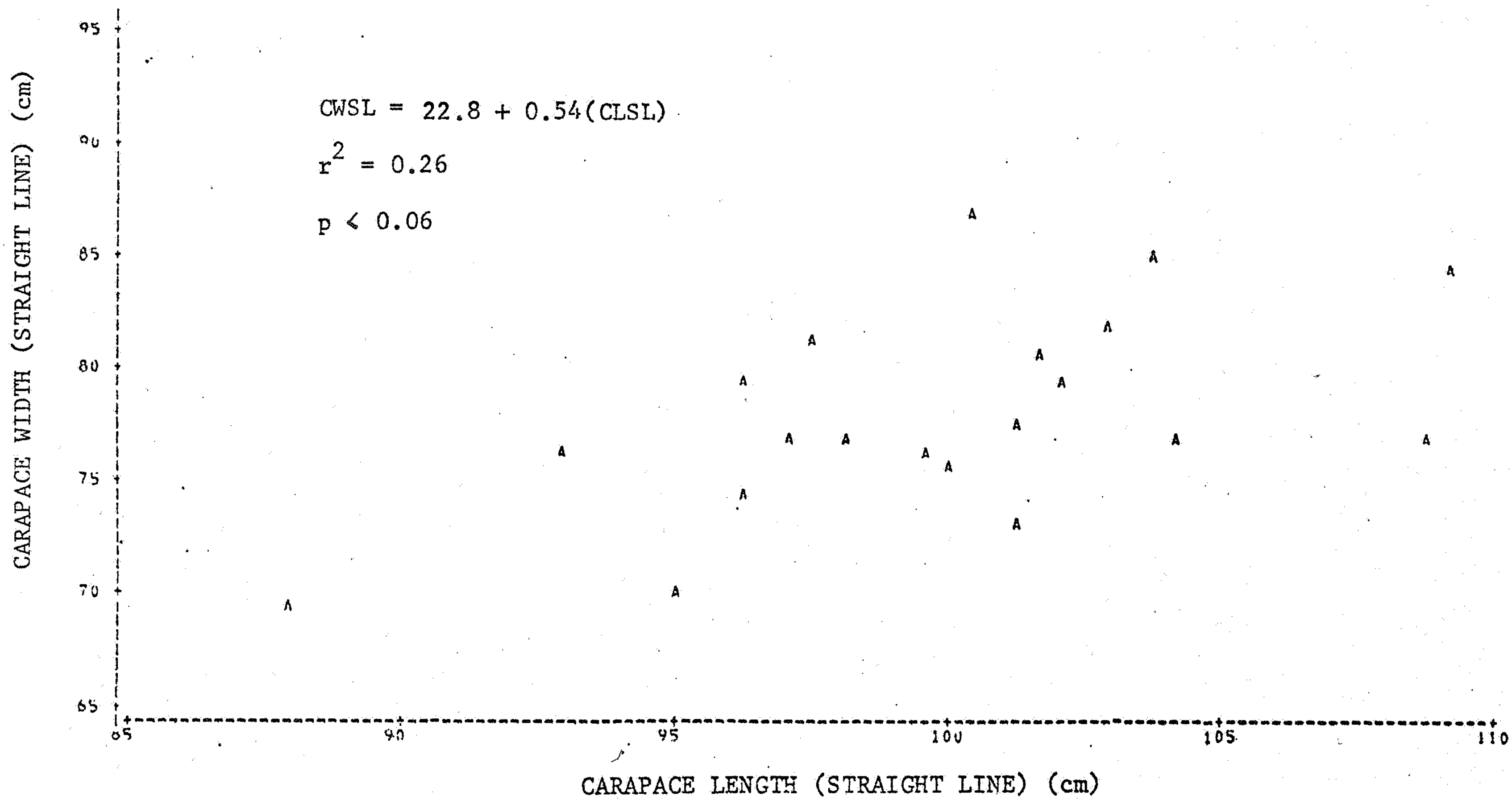


Figure 9. Regression scattergram of over curvature carapace width on over curvature length for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

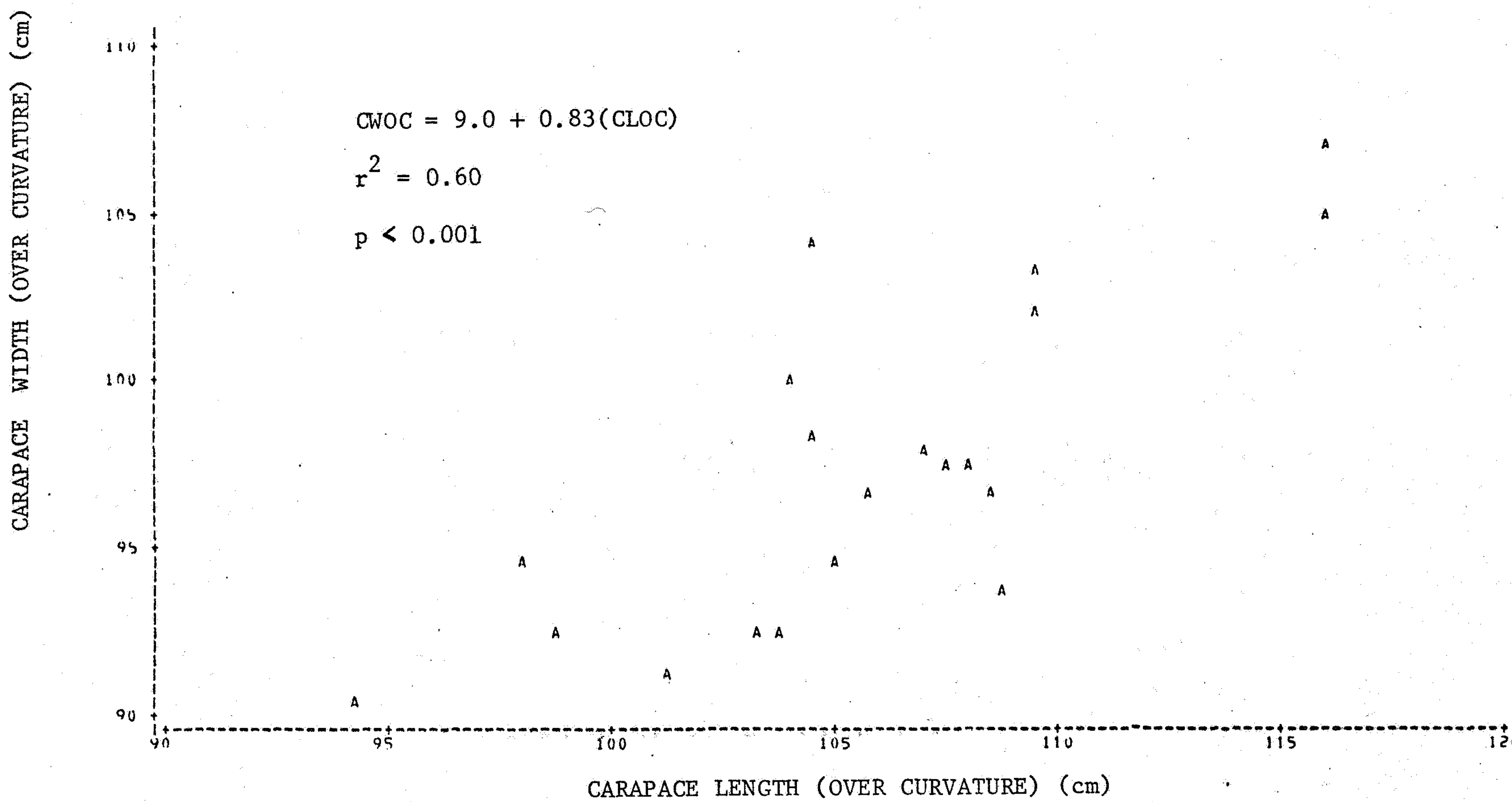


Figure 10. Regression scattergram of weight on straight line carapace length for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

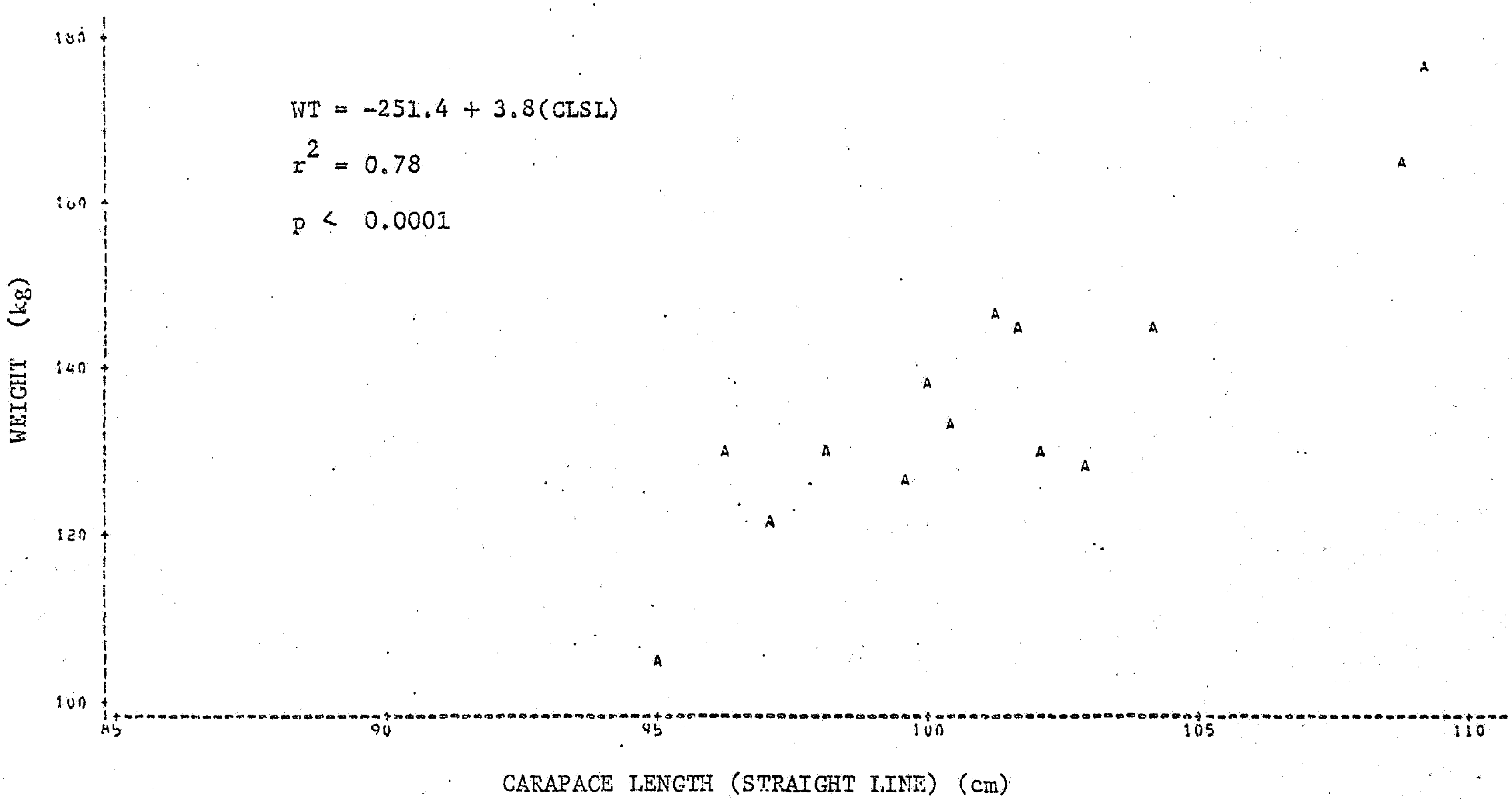


Figure 11. Regression scattergram of weight on over curvature carapace length for nesting green turtles, 1976-1978. A = 1 obs.

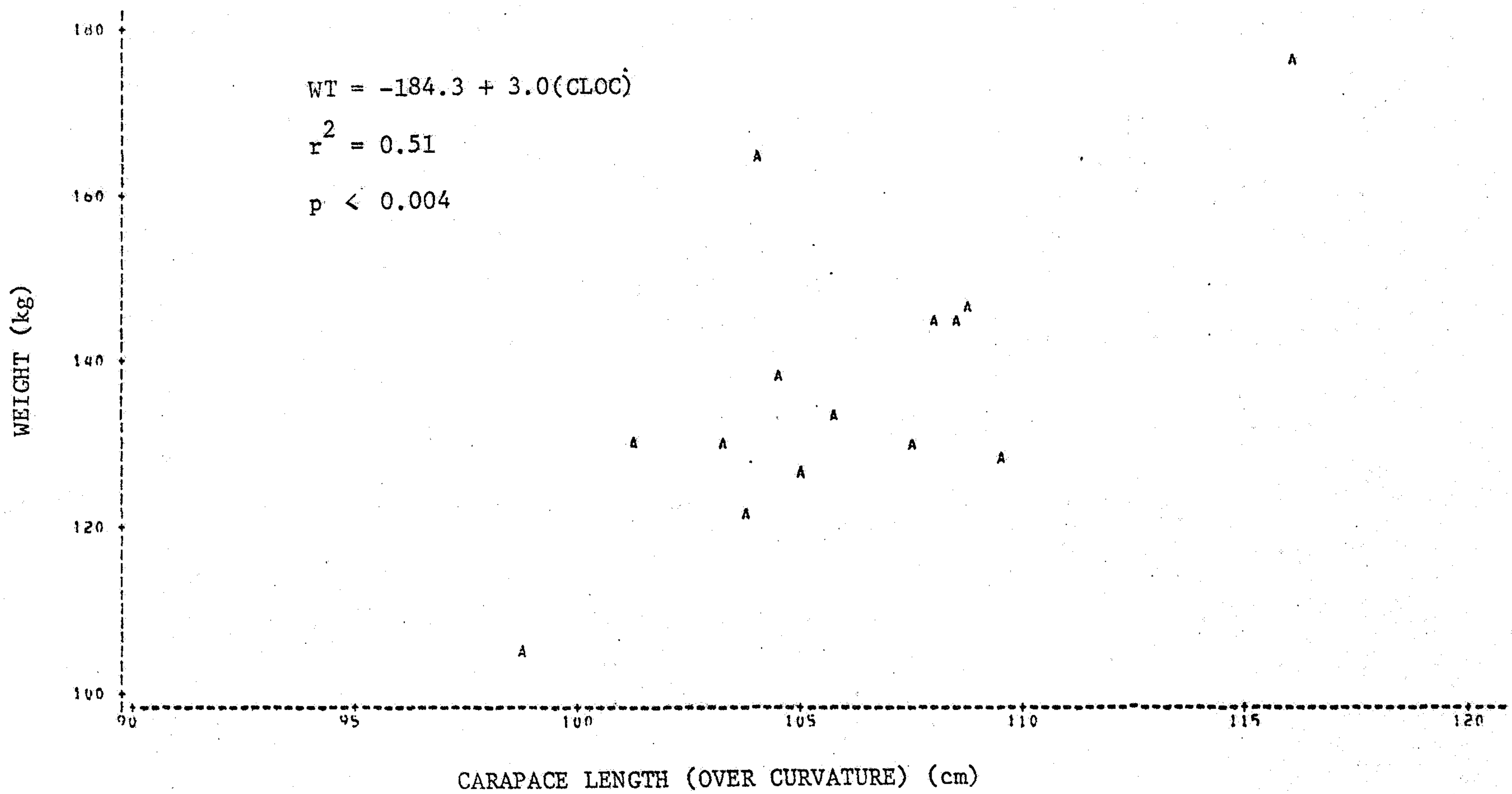


Figure 12. Regression scattergram of weight on over curvature carapace width for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

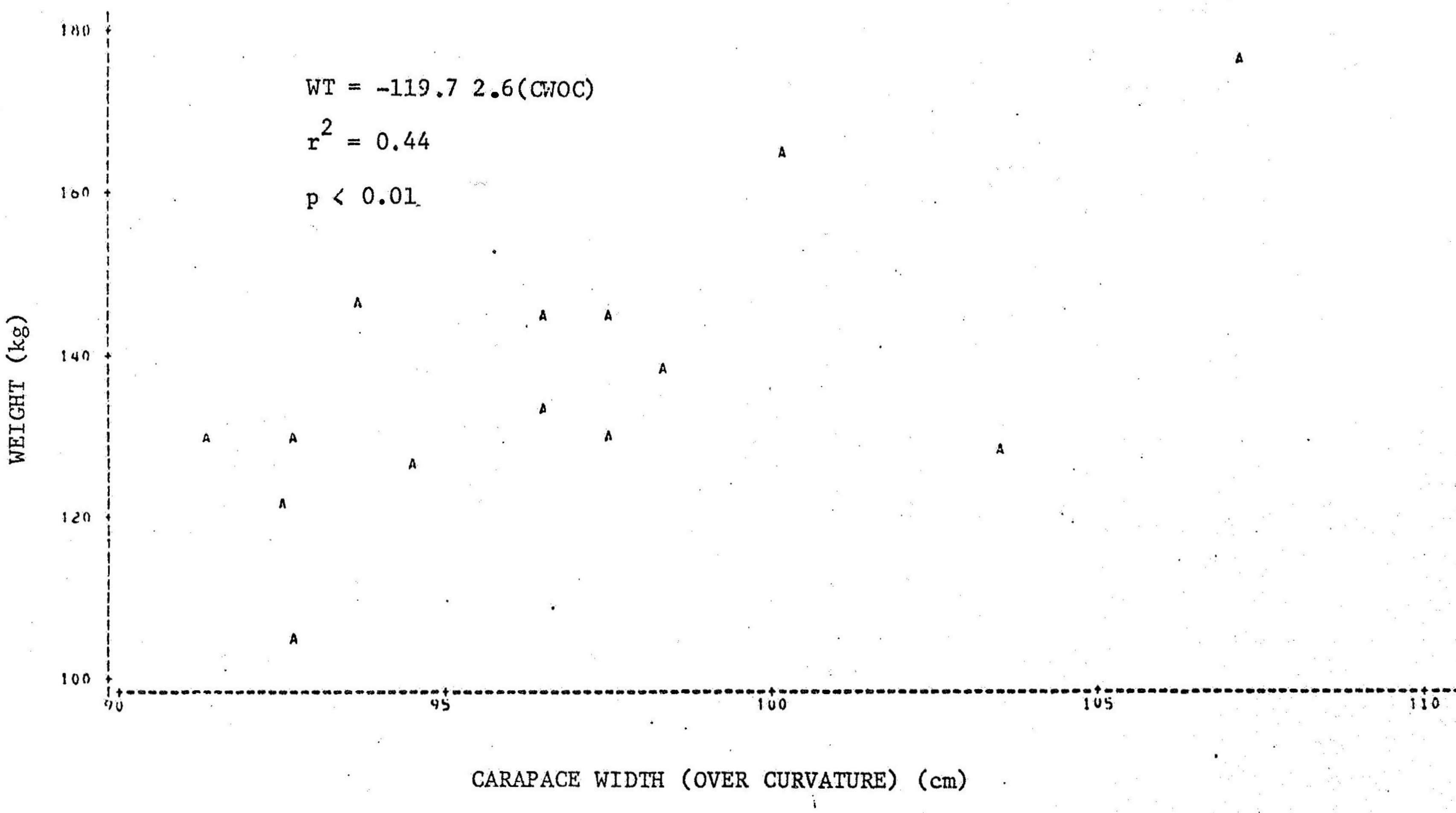


Figure 13. Regression scattergram of weight on straight line carapace width for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

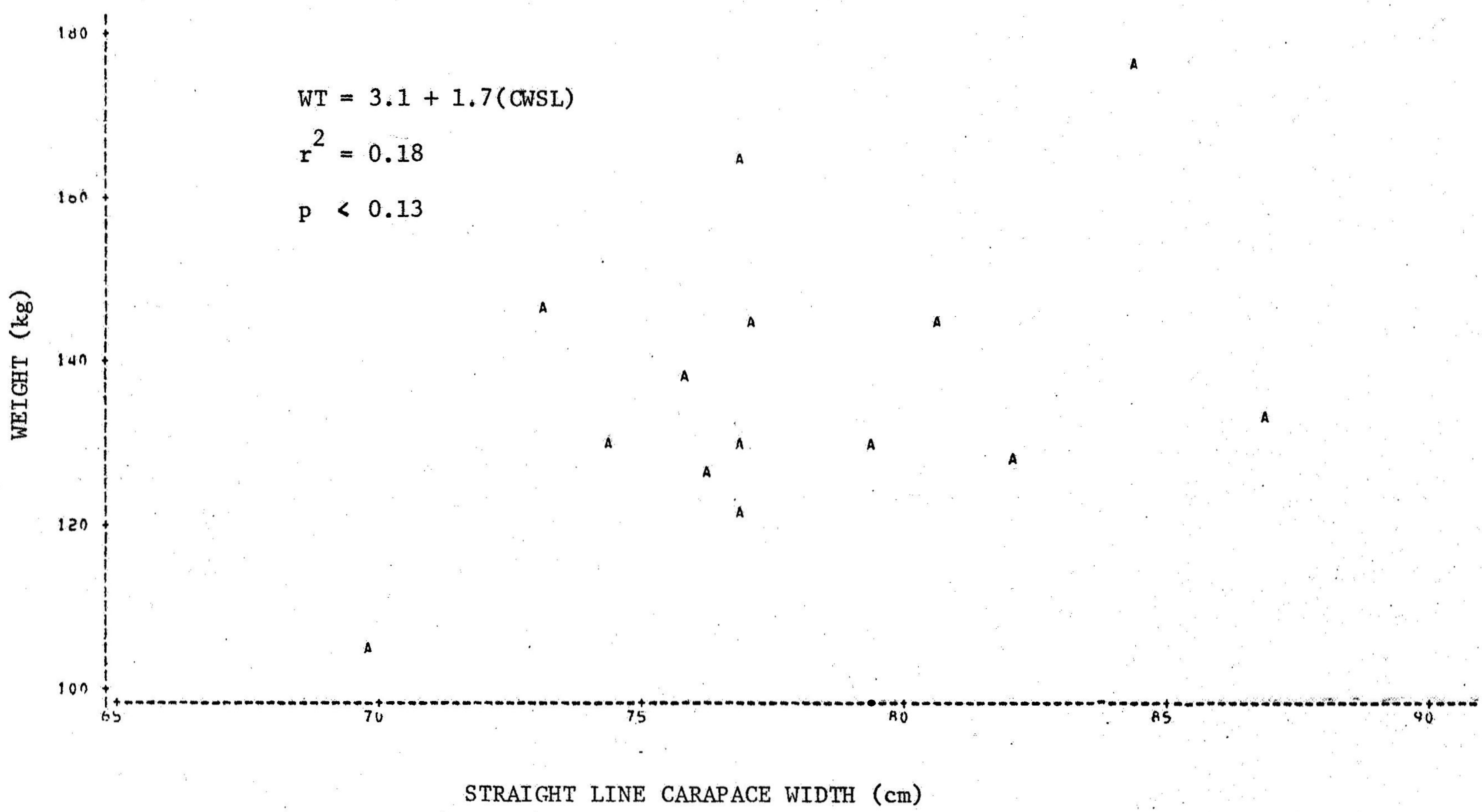


Figure 14. Regression scattergram of weight on plastron length for nesting green turtles, 1976-1978. A = 1 obs., B = 2 obs., etc.

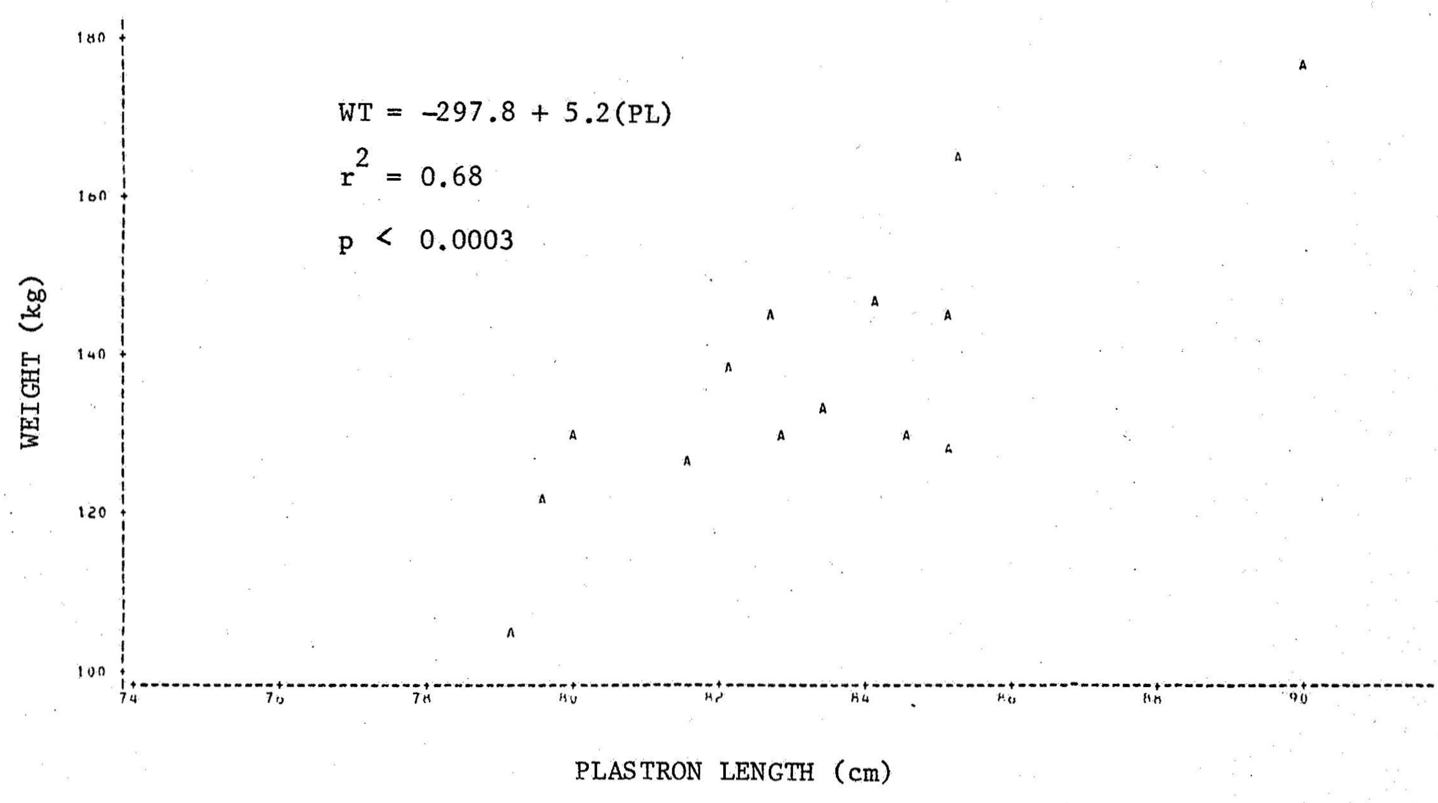
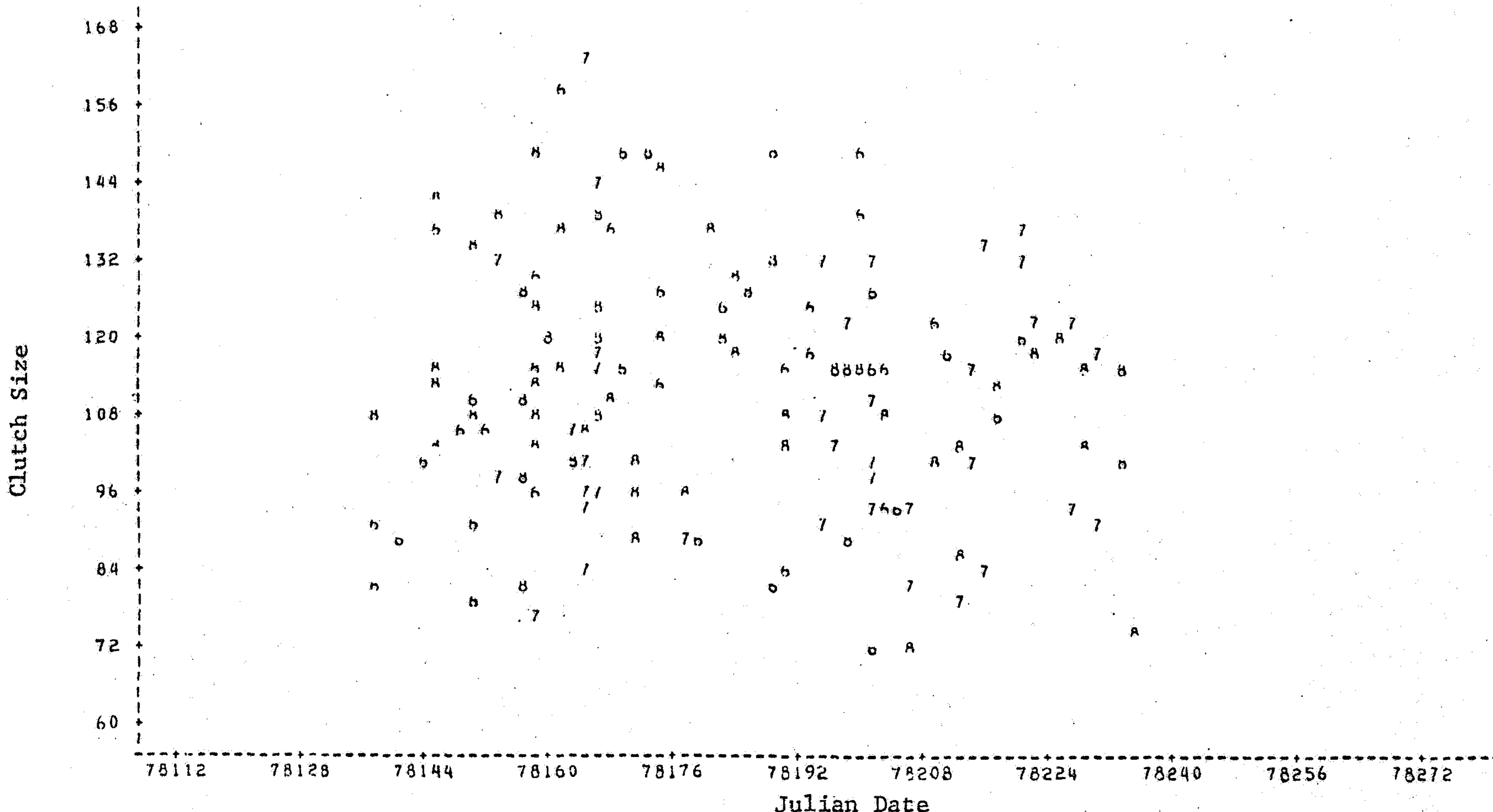
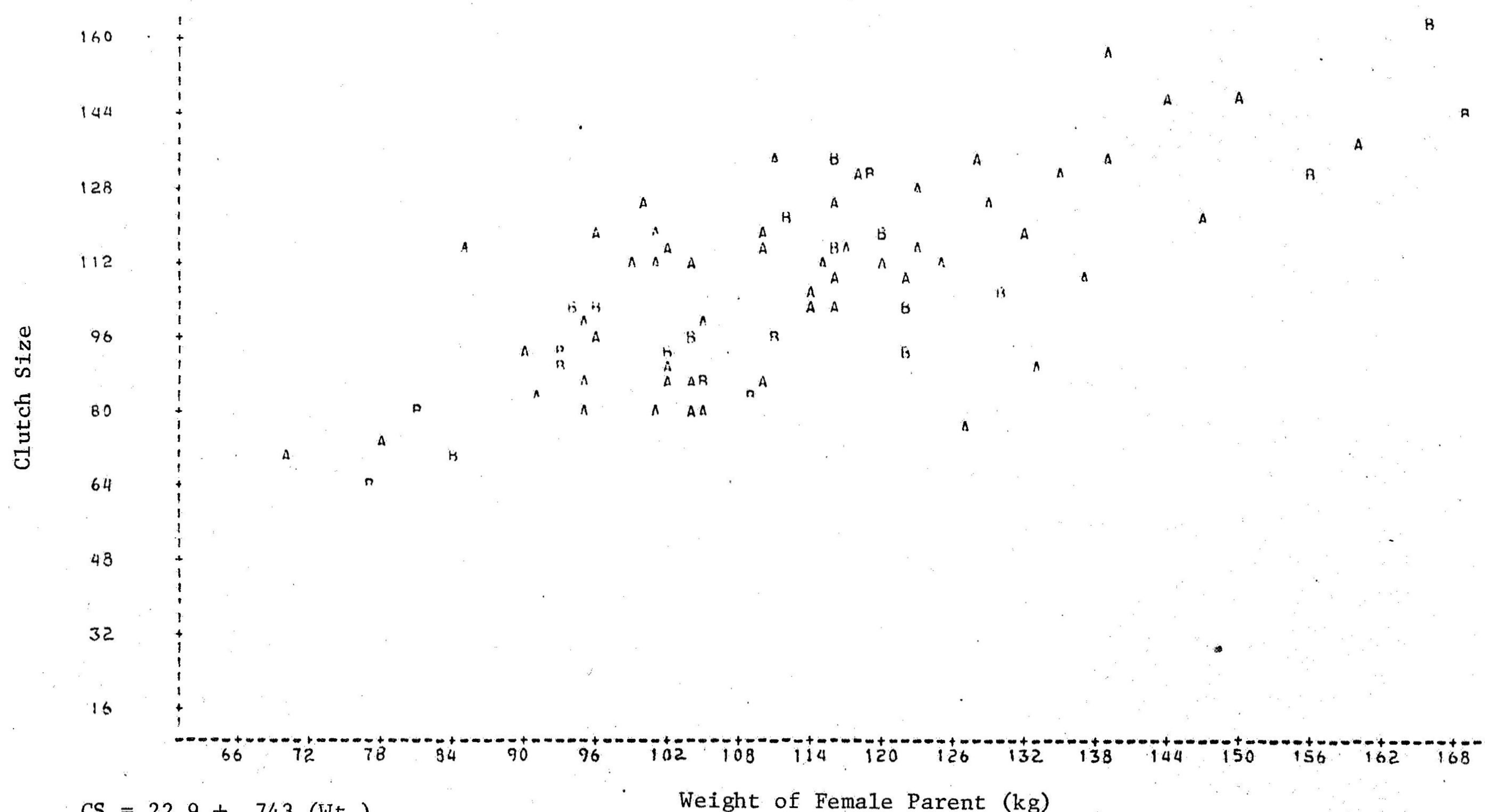


Figure 15. Scattergram of the regression of clutch size on Julian date (point-in-season). Numbers in the scattergram represent years: 6 = 1976, 7 = 1977, 8 = 1978. Julian dates are preceded by "78" for programming convenience.



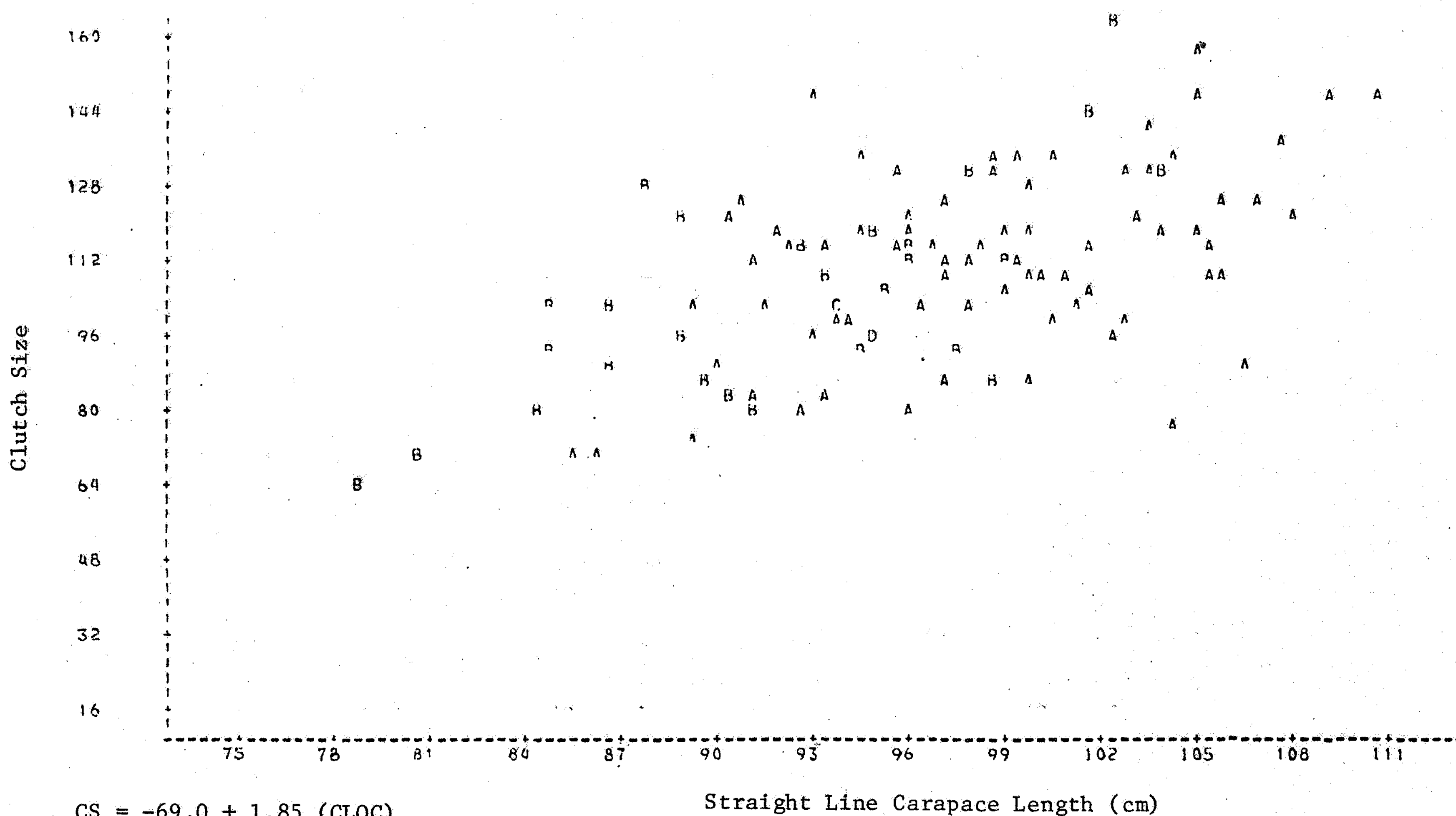
cs = 4057 - .05 (Julian date)
$r^2 = .005$
$p < 0.4$

Figure 16. Scattergram of the regression of clutch size (CS) on weight of female parent. A = 1 obs; B = 2 obs.



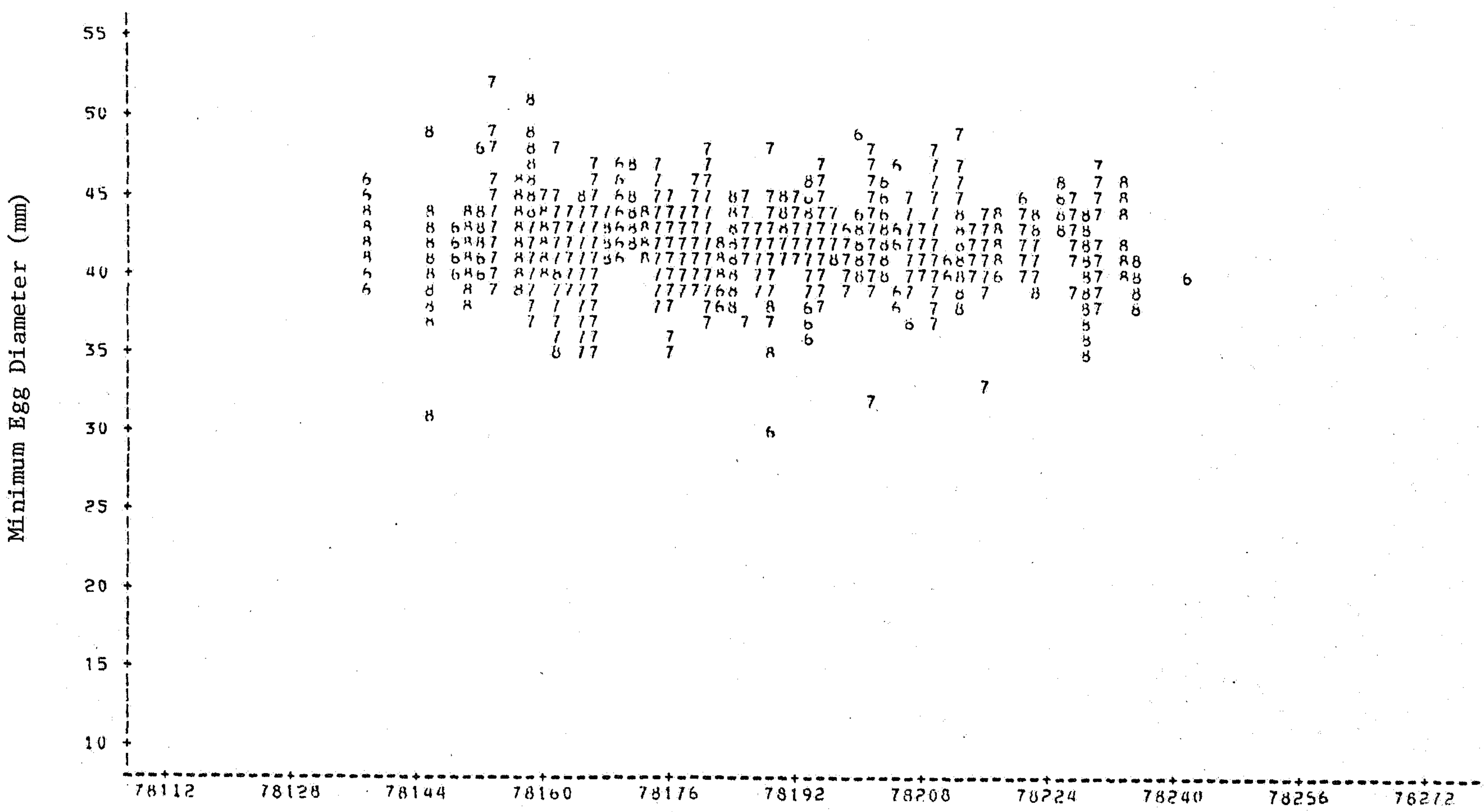
$CS = 22.9 + .743\ (Wt.)$
$r^2 = .56$
$p < .0001$

Figure 17. Scattergram of the regression of clutch size (CS) on straight line carapace length (CLOC).
A = 1 obs., B = 2 obs., etc.



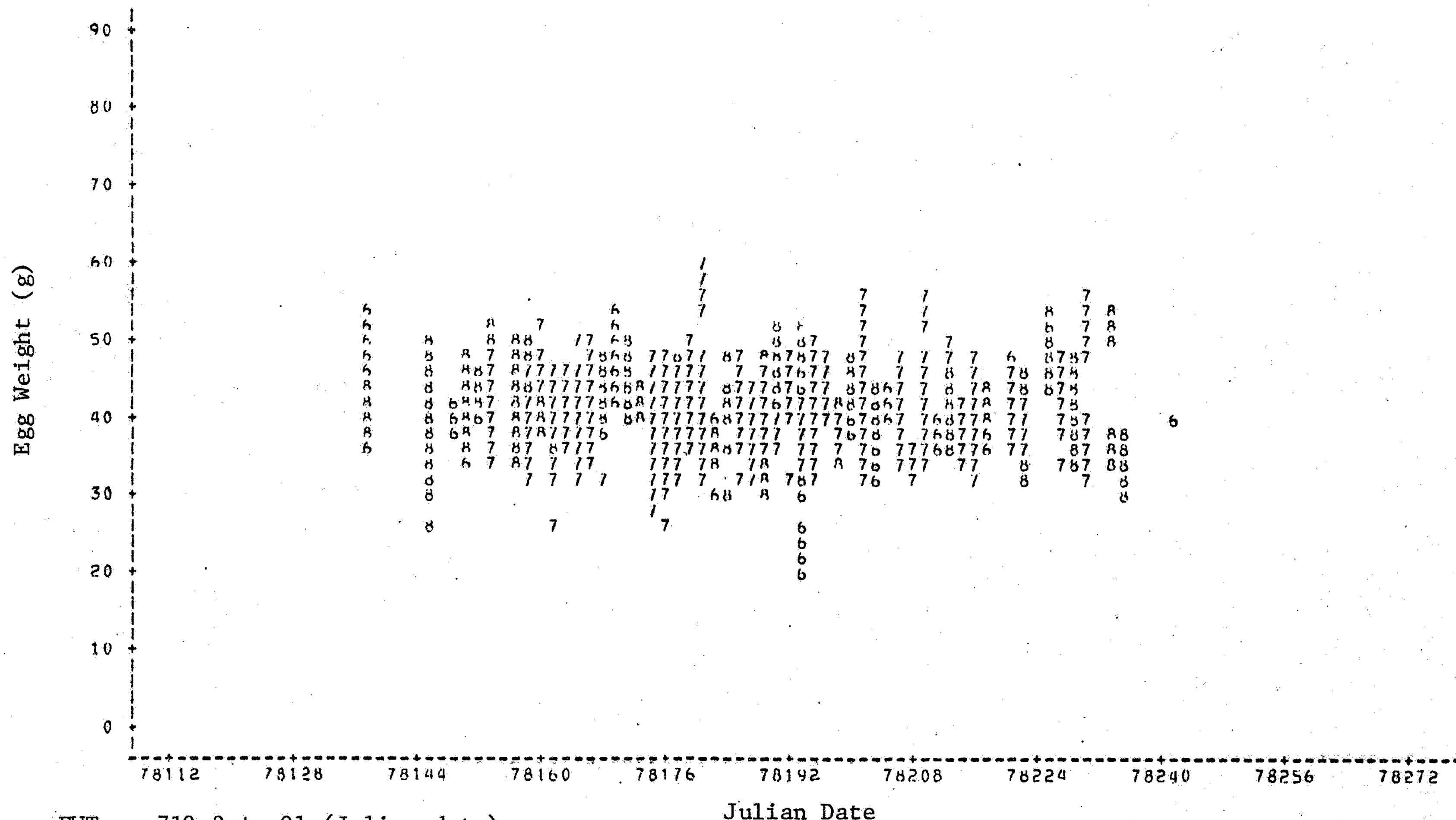
$CS = -69.0 + 1.85\ (CLOC)$
$r^2 = .30$
$p < .0001$

Figure 18. Scattergram of the regression of minimum egg diameter (MED) on Julian date (point-in-season). Numbers in the scattergram represent years: 6 = 1976, 7 = 1977, 8 = 1978. Julian dates are preceded by "78" for programming convenience.



$MED = -245.3 + .004$ (Julian date)
$r^2 = .002$
$p < .004$

Figure 19. Scattergram of the regression of egg weight (EWT) on Julian date (point-in-season). Numbers on the scattergram represent years: 6 = 1976, 7 = 1977, 8 = 1978. Julian dates are preceded by "78" for programming convenience.

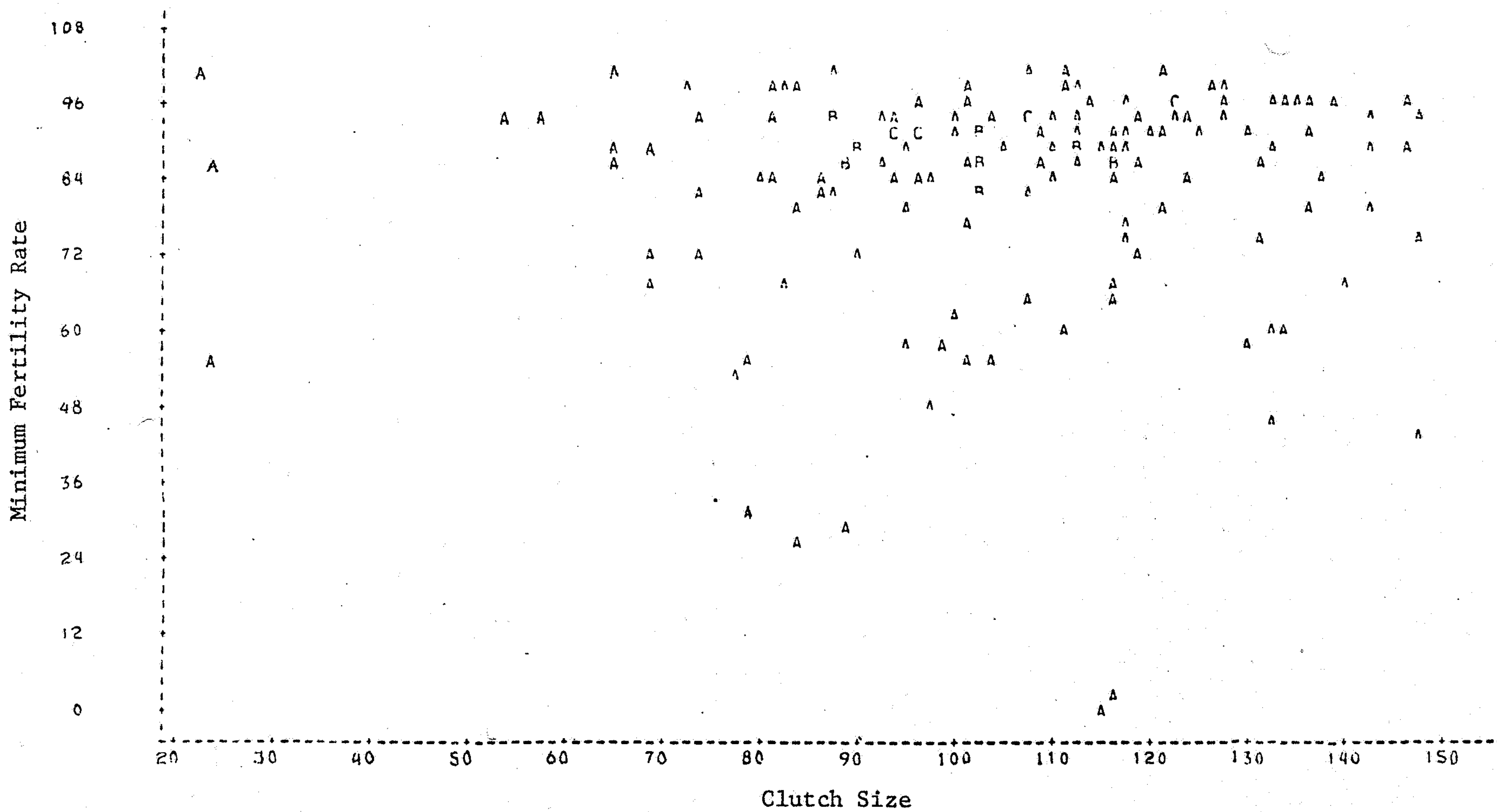


$EWT = -719.2 + .01$ (Julian date)

$r^2 = .003$

$p < .0006$

Figure 20. Regression scattergram of minimum fertility rates (MFR) on clutch size (CS) for loggerhead eggs, 1976-1978. A = 1 obs., B = obs., etc.



MFR = 80.9 + .02 CS
r^2 = .0007
p < .737

Figure 21. Regression scattergram of minimum fertility rates (MFR) on Julian date (point-in-season) for loggerhead eggs, 1976-1978. Julian dates are preceded by "78" for programming convenience.

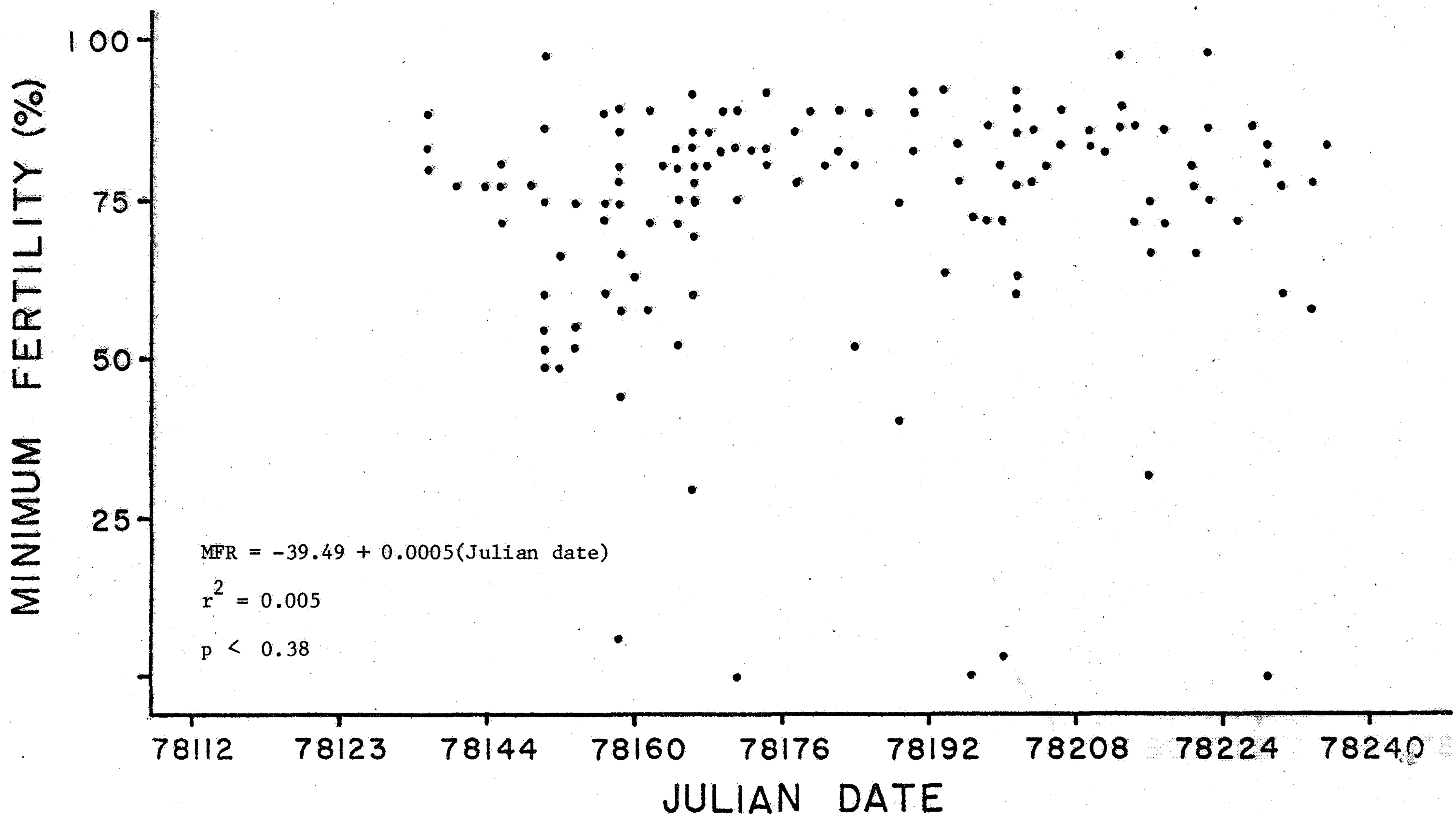
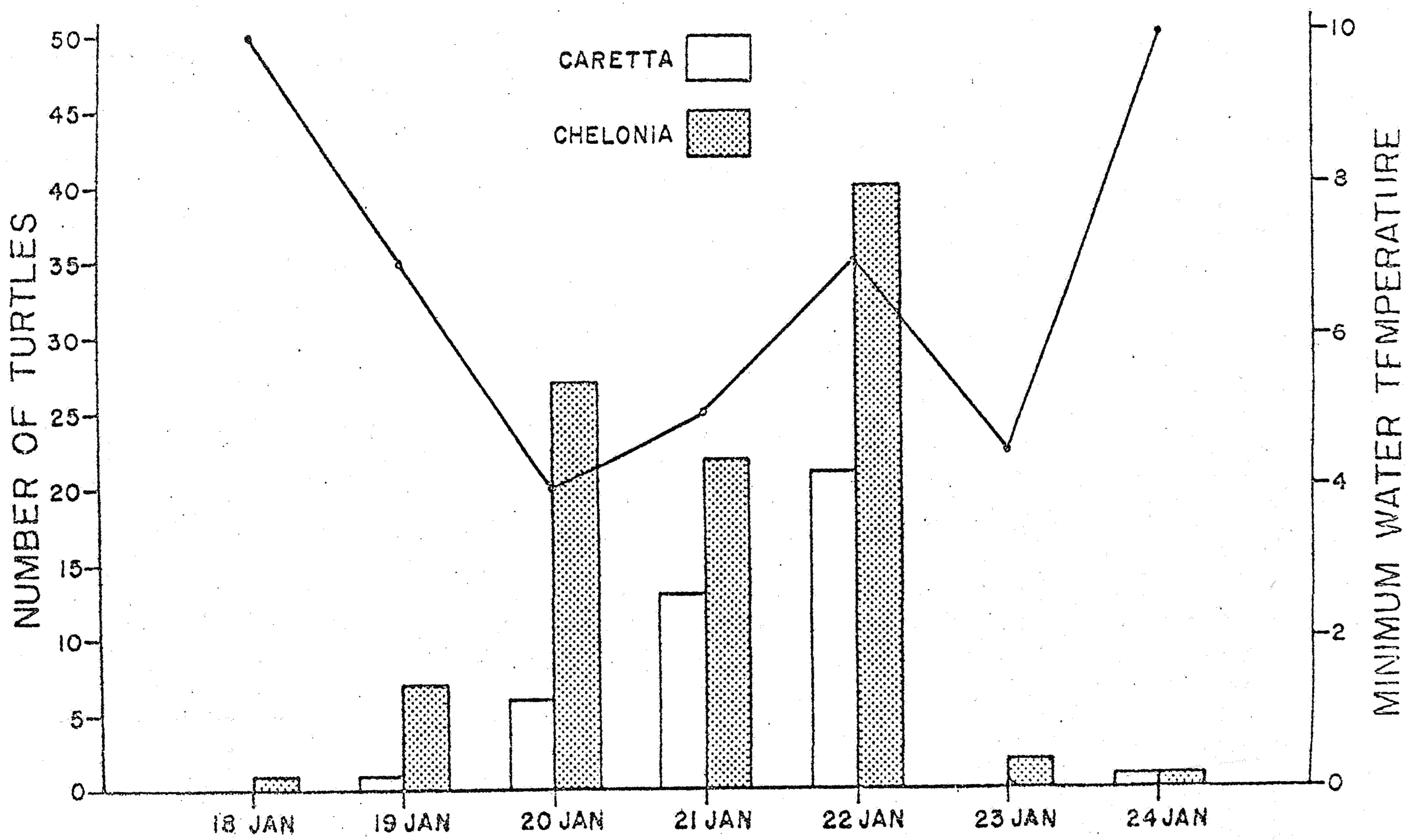


Figure 22. Relationship of water temperature to number of loggerhead (*Caretta*) and green (*Chelonia*) turtles rescued per day during cold stunning episode, 18-24 January 1977.



STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
CR-163122		

4. Title and Subtitle	5. Report Date
Vol IV: Part I--Threatened and Endangered Species of the Kennedy Space Center: Marine Turtles	
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
L. M. Ehrhart	TR 51-2
9. Performing Organization Name and Address	10. Work Unit No.
Department of Biological Sciences University of Central Florida P.O. Box 25000, Orlando, Florida 32816	11. Contract or Grant No. NAS 10-8986
	13. Type of Report and Period Covered Environmental Base Line 1976 - 1979
12. Sponsoring Agency Name and Address National Aeronautics and Space Administration Washington, D. C. 20546	14. Sponsoring Agency Code MD-B

15. Abstract

This study was undertaken in order to determine the status of marine turtle populations in the KSC area. Research was gathered, in part, from previous studies and, more specifically, as a result of ground and aerial surveillance conducted from 1976 to April 1979. During ground surveillance, various data were recorded on emergent turtles such as: species, weight, tag number (if previously tagged), time discovered, activity at discovery and the location of discovery. Observations were also made on nesting and reproductive characteristics, population estimates, immigration and emigration and growth rate of the turtles. Mortality studies were additionally made and autopsies performed on dead turtles found in the area. It was concluded that further mortality documentation would have to be done just prior to and just after a future space launch operation at KSC in order to accurately assess the cause and effect relationship of such a launch on the turtle population.
Supplementary note: Prepared under the sponsorship of the Biomedical Office, Bioscience Operations, Dr. William M. Knott and Dr. Paul Buchanan.

16. Key Words

Loggerhead; nesting; mortality; reproduction; green turtles

17. Bibliographic Control	18. Distribution
STAR Category 51	Unlimited

19. Security Classif.(of this report)	20. Security Classif.(of this page)	21. No. of Pages	22. Price
Unclassified	None		

KSC FORM 16-272NS (REV. 7/78)