

**1994 ANNUAL REPORT
SEA TURTLE CONSERVATION PROJECT
ON VIEQUES ISLAND**

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**A REPORT TO
U.S. NAVAL STATION
ROOSEVELT ROADS NAVAL FACILITIES
VIEQUES, PUERTO RICO**

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ABSTRACT

Eggs of the Leatherback (*Dermochelys coriacea*), Hawksbill (*Eretmochelys imbricata*) and Green (*Chelonia mydas*) sea turtle were collected from several locations around Vieques Island.

A total of 5,186 eggs, (1,359 yolked and 432 yolkless) from 17 Leatherback nests, 2,785 eggs from 20 Hawksbills nests and 610 eggs from 5 Green nests were collected and relocated to a protected beach hatchery at NAF (Naval Ammunition Facilities) Mosquito area on Vieques.

A total of 3,518 hatchling were released during the 1994 breeding season with a species distribution of 703 Leatherback, 2,359 Hawksbill and 456 Green hatchlings.

The mean hatchling success for Leatherback, Hawksbill and Green nests were 51.72%, 84.70% and 74.75% respectively.

Based on data obtained from on site observations an estimated of 47 females (18 Leatherback, 17 Hawksbill and 12 Green) comprised the 1994 breeding population in the study area.

Data concerning morphometric parameters such as measurements of adults individuals, eggs hatchlings, interesting interval, clutch size and incubation periods were collected during the project.

Illegal poaching of eggs and hunting of individuals of different age groups around Vieques Island's coast line were reported even in Navy restricted areas. This type of ilegal activity is the principal threatening factor for future recovery of the sea turtle population of Vieques Island.

INTRODUCTION

Conservative numbers of three species of sea turtles, the Hawksbill (*Eretmochelys imbricata*), the Leatherback (*Dermochelys coriacea*) and the Green turtle (*Chelonia mydas*) nest every year on Vieques Island. Despite local and federal laws protecting these species, they are hunted. Nests and spearguns are commonly used by turtle poachers. Several nesting females are slaughtered and their eggs collected by poachers. Natural factors such as beach erosion, freshwater run off, high surf and predation by Mongoose (*Herpestes auropunctatus*) also contributes to nest destruction.

In order to increase the reproductive success of these threatened and endangered species, a conservation and educational project in conjunction with the Roosevelt Roads Naval Base at Ceiba was initiated in 1991. First, the Leatherback (*D. coriacea*), the Green (*C. mydas*) and the Hawksbill (*E. imbricata*) sea turtles nesting areas were identified. Secondly, threatened eggs were relocated to a protected beach hatchery to enhance survival probabilities. Thirdly, the hatchlings were released in their natal beach.

Prior to 1991, all information concerning sea turtle population of Vieques Island was limited to general surveys. Since the establishment of this project, more concise data have been gathered about the population biology of these species at Vieques Island.

OBJECTIVES

1. Estimate total number of nests within the study area.
2. Increase hatching reproduction success by relocating threatened nests to a protected hatchery.
3. Identify new nesting areas.
4. Identify and tag sea turtles.
5. Protect gravid females while nesting.
6. Implement the educational program.

METHODOLOGY

A. EGG COLLECTION AND BEACH COVERAGE

Several beaches were patrolled early in the morning and at night. Nesting areas were identified and sea turtles eggs were collected (table 1, 2 and 3).

B. BEACH HATCHERY

Grass and wild supralitoral plants growing around the sea turtles hatchery are removed periodically. Empty eggs shells, yolkless and rotten eggs are removed from the artificial nests. No structural maintenance of the hatchery was required during project duration.

C. EGG HANDLING AND RELOCATION

When fresh tracks were found during beach patrolling, nests areas were identified and eggs search was initiated until the nests is found. The turtle eggs were collected one by one and all yolked eggs were kept in the same axial orientation. The eggs were placed in a styrofoam box, partially filled with a fine layer of sand, transported to the hatchery located at NAF Mosquito Beach area and transplanted in artificial nests.

Whenever a sea turtle was found nesting during the night patrols, her eggs were collected. No specific axial orientation was necessary because of the proximity of all beaches to the hatchery site. They were relocated within two hours after egg laying. Once the eggs arrived at the hatchery area, the diameters of ten randomly selected eggs were measured using a 15 cm caliper. The configuration of the artificial nests closely resemble a natural nest. During transplanting, the yolked eggs were placed on top of the yolkless eggs, as occurs in their natural conditions. Finally, the eggs were covered with damp sand a 45.7 cm circle of wire mesh was placed on top of each nests so that when hatchlings emerged they were counted for reproduction success rates.

TABLE 1. LEATHERBACK (*Dermochelys coriacea*) NESTING SUMMARY BY BEACH

BEACH	In-situ	Poached	Eroded	Relocated	Nest	Crawl	Nester
Playa Brava	12	0	0	0	12	3	3
Yellow Beach	16	0	0	8	24	5	6
Puerto Diablo	6	0	0	0	6	0	2
Blue Beach	0	0	0	2	2	0	1
Playa Navio	0	0	0	1	1	0	1
Sun Bay	0	0	0	3	3	0	1
Playita	2	0	0	0	2	0	1
Red Beach	1	0	0	2	3	0	1
El Gallito	0	0	0	1	1	0	1
TOTALS	37	0	0	17	54	8	17

TABLE 2. HAWKSBILL (*Eretmochelys imbricata*) NESTING SUMMARY BY BEACH

BEACH	In-situ	Poached	Eroded	Relocated	Nest	Crawl	Nester
Jalovita	0	0	0	1	1	4	1
Playa Navio	0	0	0	1	1	0	1
Tamarindo Sur	1	3	0	3	7	0	4
Punta Arenas	2	0	0	2	4	0	1
Jalova	0	2	0	4	6	1	2
Playa Fanduca	2	1	0	3	6	8	3
Playa Brava	2	0	0	0	2	0	2
Sun Bay	0	0	0	4	4	0	2
Media Luna	0	0	0	2	2	0	1
TOTALS	7	6	0	20	33	13	17

TABLE 3. GREEN (*Chelonia mydas*) TURTLE NESTING SUMMARY BY BEACH

BEACH	In-situ	Poach	Eroded	Relocated	Nest	Crawl	Nester
Santa María	0	0	0	1	1	0	1
Playa Blanca	5	1	0	1	7	0	3
Playa Brava	5	1	3	3	12	4	4
Playa Barco	15	0	4	0	19	3	4
TOTALS	25	2	7	5	39	7	12

D. HATCHING AND NEST EXCAVATION

The hatchery was monitored daily for the presence of predators, except when the base was closed due to military exercises. After 55 days of incubation, the nests were watched closely for any sign of collapsed sand on top of the nest. This event indicates that eggs were hatching and/or hatchlings were working their way out. When they emerged from the nest, the hatchlings were counted.

Each nest was excavated after the primary emergence in order to release any trapped hatchlings and determine hatching success. Yolkless, unhatched and dead hatchlings were counted and compared to the original count.

Unhatched eggs that had obvious embryonic progress were opened to determine the developmental stage. The residual contents are buried away from the hatchery area. Ten live hatchlings of each nest were weighted using 50 g and 100 g capacity spring scales and measured with a 15 cm caliper. Finally, the hatchlings were allowed to make their way back to the sea, allowing imprinting.

E. NESTING

Beach patrolling schedules were done on interesting intervals of nine to ten days for the Leatherbacks and twelve to fourteen days for the Hawksbills. Search for turtles during all night patrols were conducted by DNER personnel and volunteers on 30 to 45 minute intervals. The patrolling schedule insures finding of sea turtle in an early nesting stage. When a sea turtle was encountered, personnel do not approach the turtle until nest digging was well underway. The approach was made from behind and the use of flashlights was kept to a minimum to avoid any disturbance to the gravid female. Special efforts were made to verify if the turtle was previously tagged, if not the tagging procedure was initiated.

F. TAGGING

Following egg deposition, all untagged turtles were doubled tagged. One tag was placed on each hard trailing edge of the front flippers. Selfpiercing monel tags were supplied by DNER with the following sequence numbers: DNER 1,000 to 1,100 for Hawksbills and DNER 076 to 100 and 401 to 500 for Leatherbacks. The tags were inserted through a single slit made with modified pliers to pierce the tough skin of the flippers. The action was directed to avoid misaligned tags which are often lost. Measurements over the carapace (notch-tip) and the width (widest point) were taken. Injuries, deformities, ectobiota and tag scars were also recorded.

RESULTS AND DISCUSSION

A. NESTING

The 1994 Nesting Season began on February 25 and was extended until November 9, 1994. One hundred twenty six (126) emergences were identified on the study area during this season including successful and unsuccessful attempts from this fifty four (54) nests belongs to Leatherbacks, thirty three (33) to Hawksbills and thirty nine (39) to Green Sea Turtle. Forty seven (47) females (18 Leatherbacks, 17 Hawksbills and 12 Green) comprised the 1994 breeding population in the study area.

Fourty two (42) nests were relocated to the hatchery during this season (17 Leatherback, 20 Hawksbill and 5 Green).

Table 4. TOTAL OF NESTS RELOCATED BY SPECIES

SPECIE	NESTS	TOTAL EGGS
Leatherback	17	1,359*
Hawskbill	20	2,785
Green Turtle	5	610

(*)=Yolk eggs

The mean clutch size for Leatherbacks was 105.35 eggs.

The mean diameter of Leatherbacks yolked eggs was 52.44 mm.

The mean clutch size for Hawksbills was 139.25 eggs.

The mean diameter for Hawksbills eggs was 36.18 eggs.

For Green Turtle the mean clutch size was 122 eggs.

The mean diameter for Green was 44.4 mm.

B. HATCHING

Hatchery operation resulted in the released of three thousand five hundred eighteen (3,518) hatchlings which represents an overall mean hatching success of 74.0%. Seven hundred three (703) Leatherbacks hatchling were released this represents a 51.72% hatching success. Two thousand three hundred fifty nine (2,359) Hawksbills hatchlings were released with a hatching success of 84.70% four hundred fifty six (456) Green hatchlings were released with a hatching success of 74.75% . The combined averaged incubation period for the three species was 60.35 days. The mean incubation period for Leatherbacks was 62.14 days. For Hawksbill the mean incubation period was 60.30 days. The mean incubation period for Green was 55.6 days.

Mean straight line length for Leatherback hatchlings 61.06 mm. The mean straight

line width was 41.02mm. For the Hawksbill was 42.9 mm and 31.05mm. For the Green was 51.96mm and 41.94mm, respectively.

C. PREDATION

No predation occurred during the incubation period nor during hatchling release.

D. MEASUREMENTS AND TAGGING OF NESTING TURTLES.

Two (2) Leatherback females were tagged during oviposition stage. The morphometric parameters for the turtles are presented on table 5.

TABLE 5. MORPHOMETRIC PARAMETERS

SPECIES	Type of Measurements	Dimension	Tags No.
Leatherback #1	over curve notch tip	1.5 m.	
	over curve width	1.10 m.	# 86,87
Leatherback #2	over the curve notch tip	1.57 m.	
	over the curve width	1.16 m.	# 88,89

E. EDUCATIONAL ACTIVITIES

The public education program is an important part of this project. During 1994 eight lectures were offered to four hundred thirty five (435) students (2nd grade School to College level) and sixty nine (69) adults (parents, teachers, leaders) using slides, posters, preserved specimens and brochures about the Conservation Project (Table 6).

TABLE 6. LECTURES OFFERED DURING 1994

INSTITUTION	Origin	Persons
Playa Grande Elem. School (2nd grade)	Vieques	26 students, 8 adults
Playa Grande Elem. School (4th grade)	Vieques	20 students, 2 adults
Playa Grande Elem. School (6th grade)	Vieques	35 students, 1 adults
Girl Scouts	Islandwide	200 students, 40 adults
Club 4H	Islandwide	45 students, 8 adults
Language & Ecological Life Camp.	EU	25 students, 4 adults
Playa Grande Elem. School (5th grade)	Vieques	25 students, 1 adults
José C. Barbosa Elem. School (2 to 4 grade)	Vieques	60 students, 5 adults

ACKNOWLEDGMENTS

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leatherback turtle (*Dermochelys coriacea*) Humacao, Puerto Rico
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Figure 1. Percent of Leatherback Nests per Beach, 1994

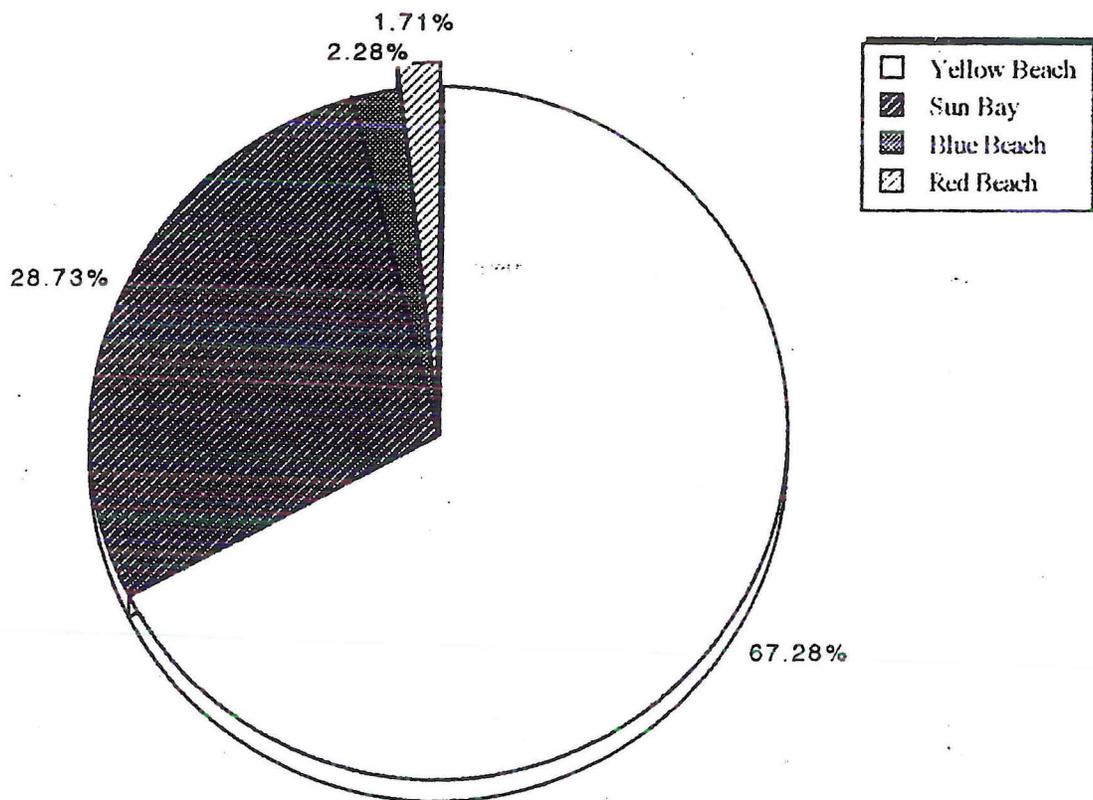


Figure 2. Percent of Hawksbill nests per Beach, 1994

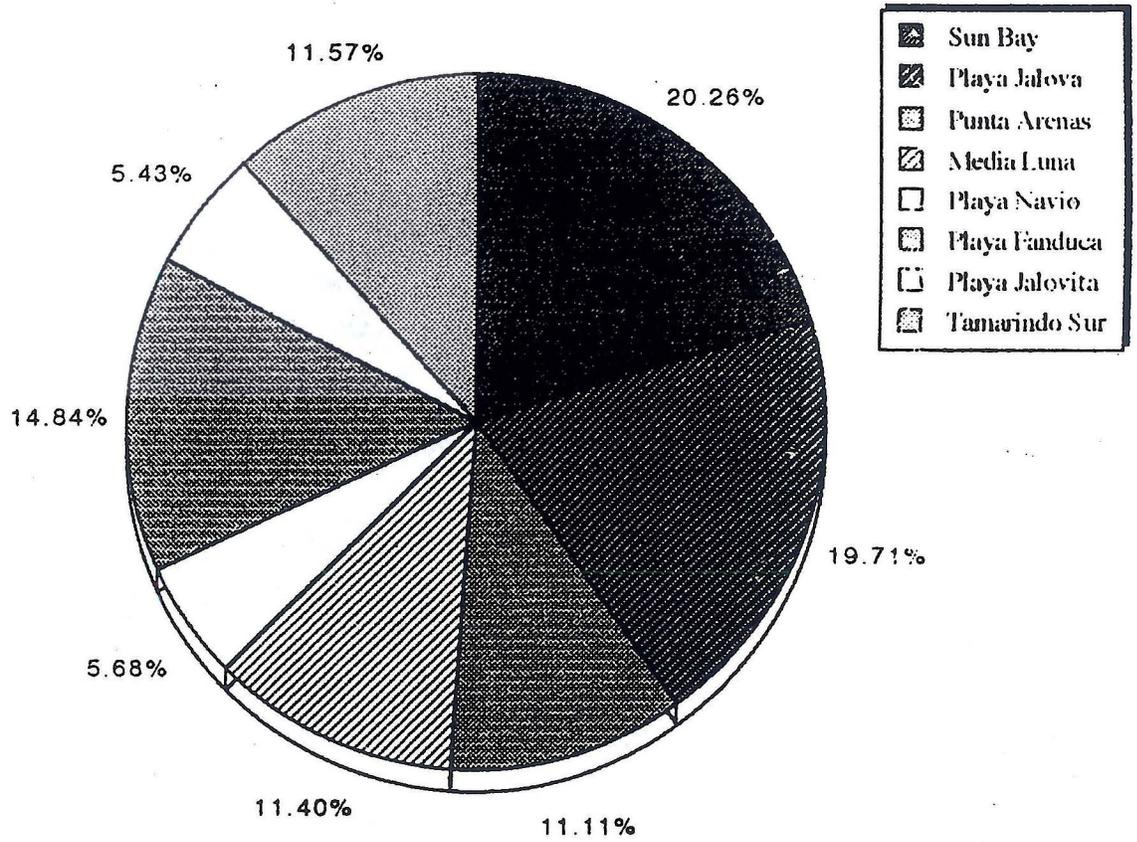


Figure 3. Green Turtle Nesting Summary BY Beach

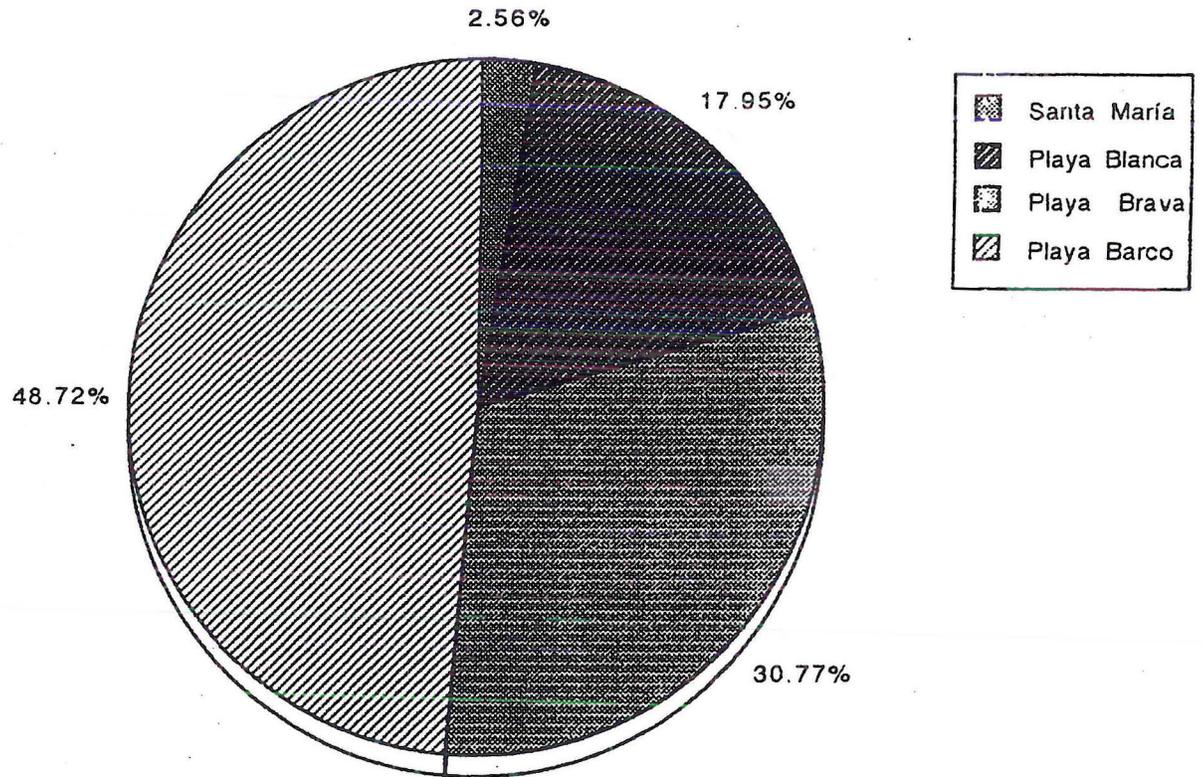


Figure 2. Percent of Hawksbill nests per Beach, 1994

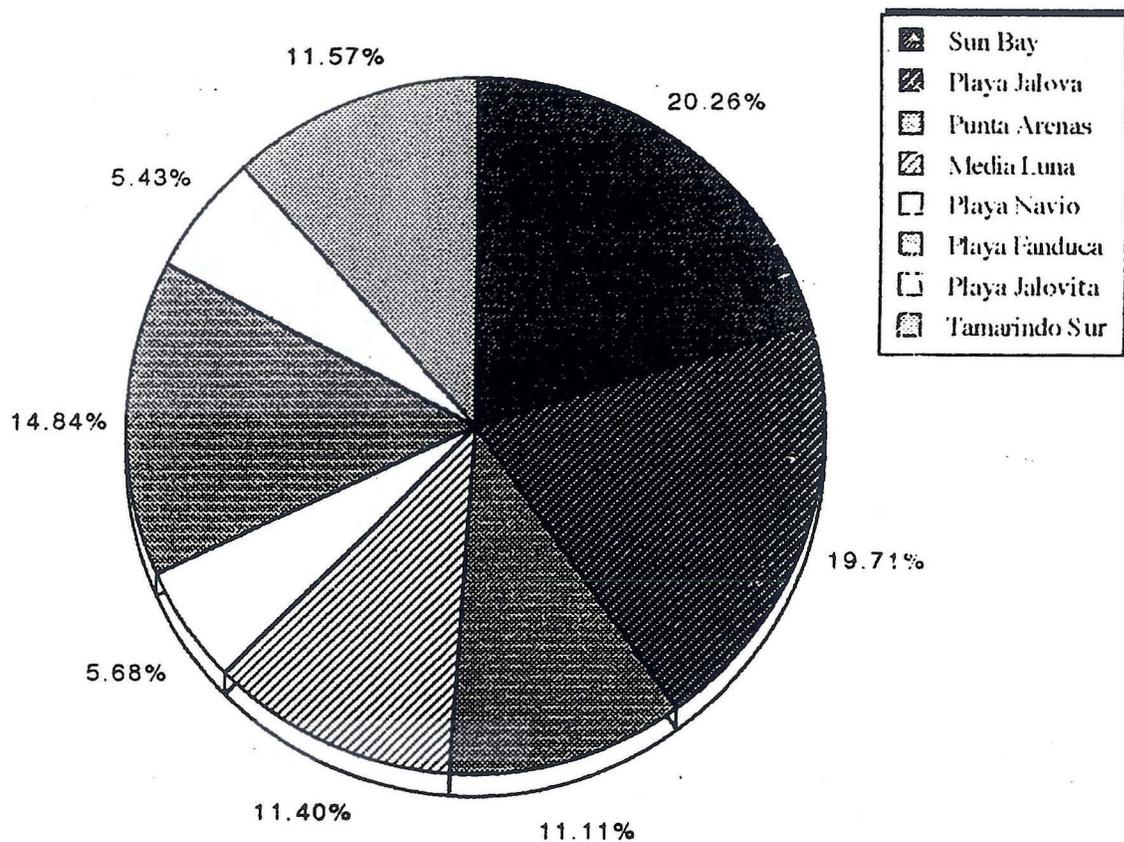


Figure 3. Green Turtle Nesting Summary BY Beach

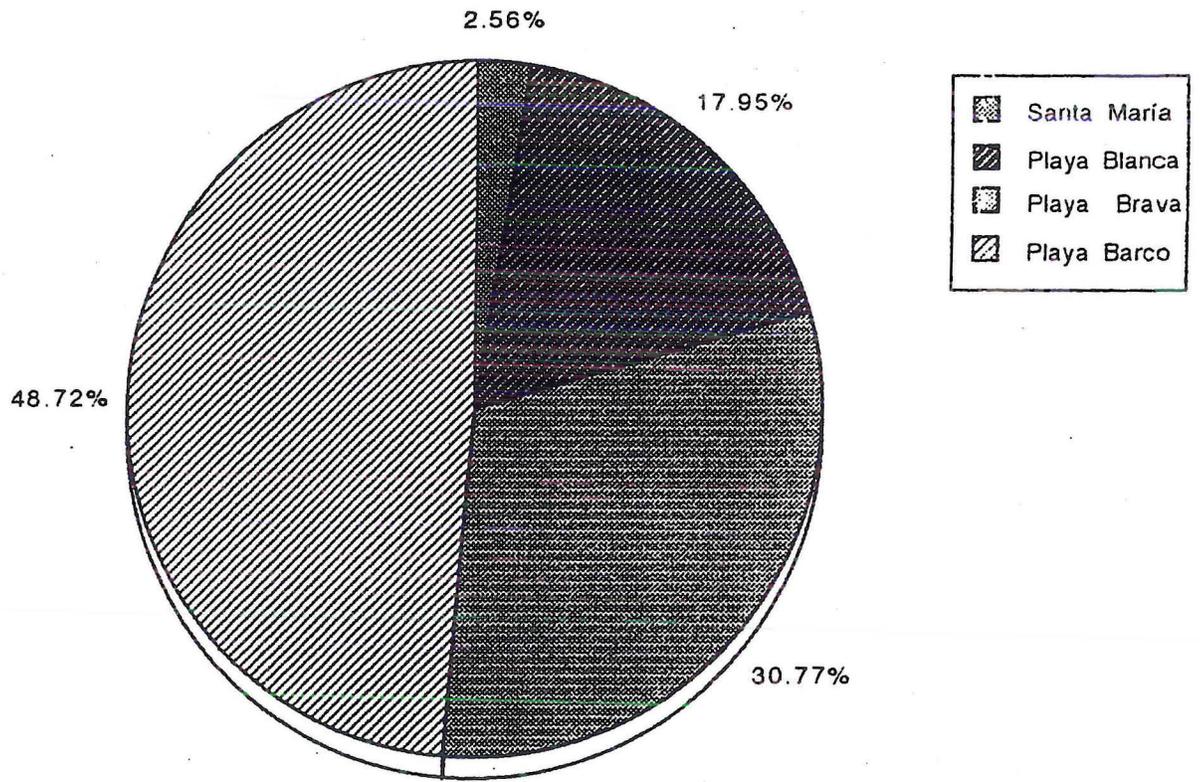


Figure 4. Mean Hatching Success for Leatherback Nests

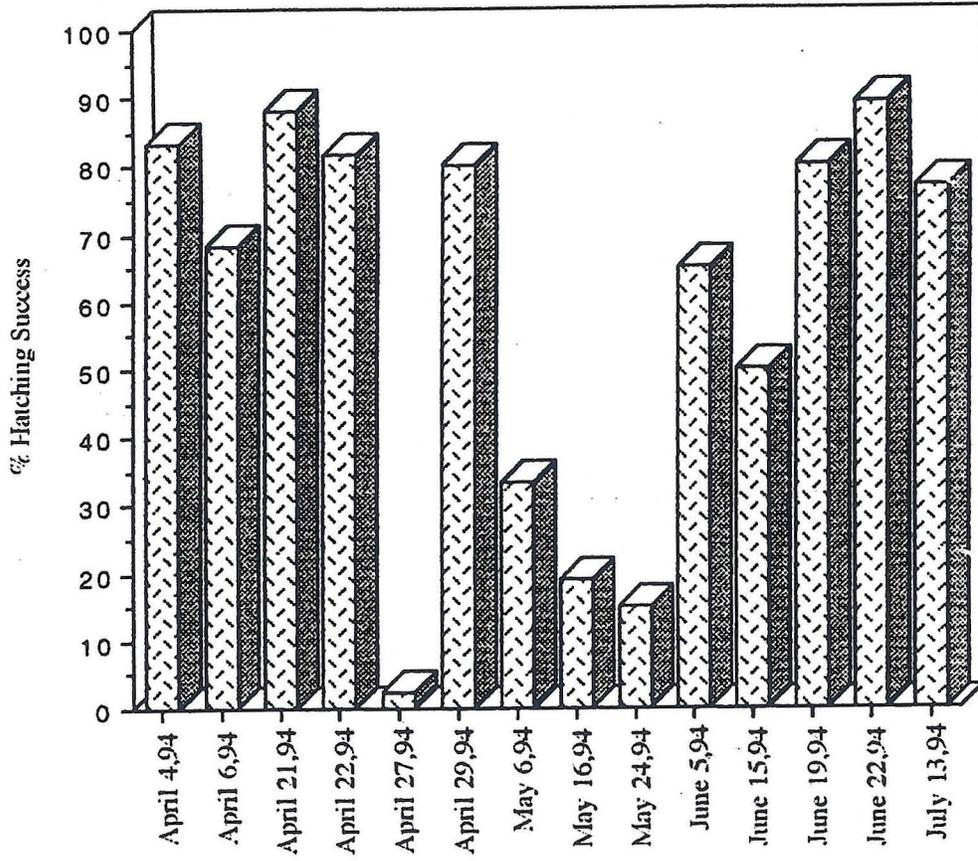


Figure 5. Mean Hatching Success for Hawksbill Nests

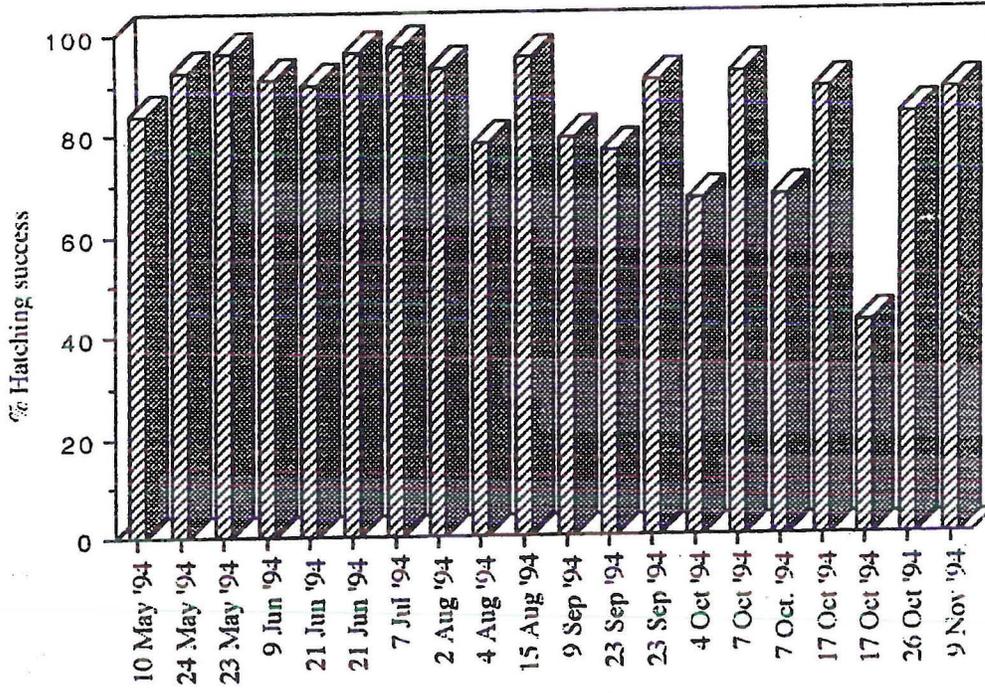


Figure 6. Mean Hatching Success for Green Turtle Nests

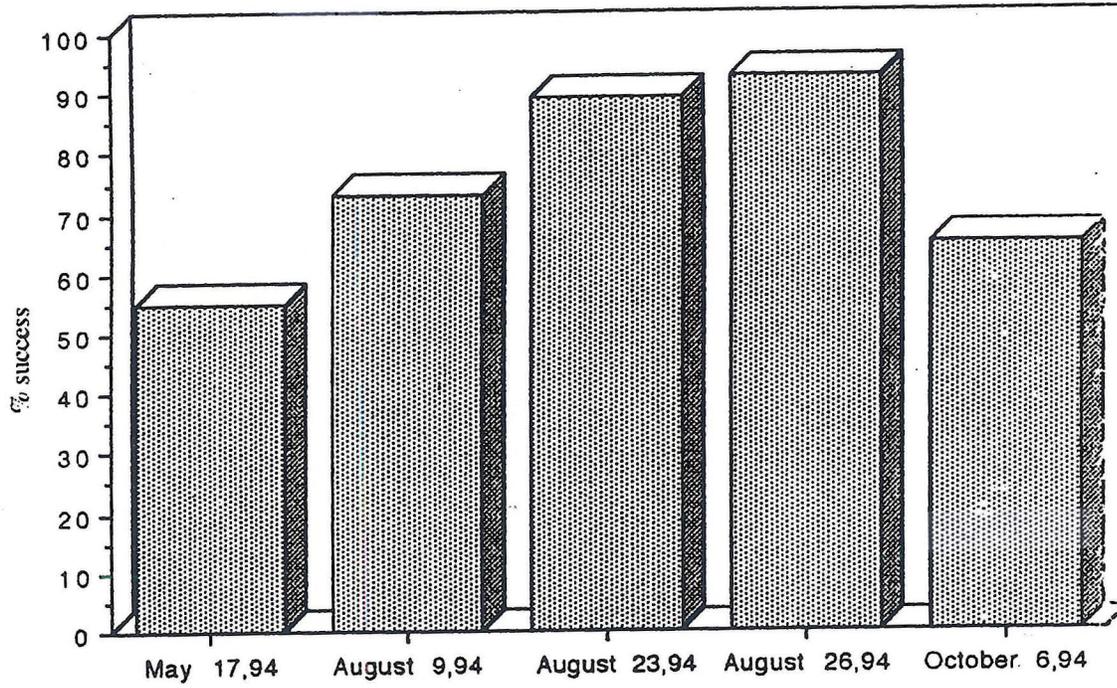


Figure 7. Leatherback Mean Incubation Period

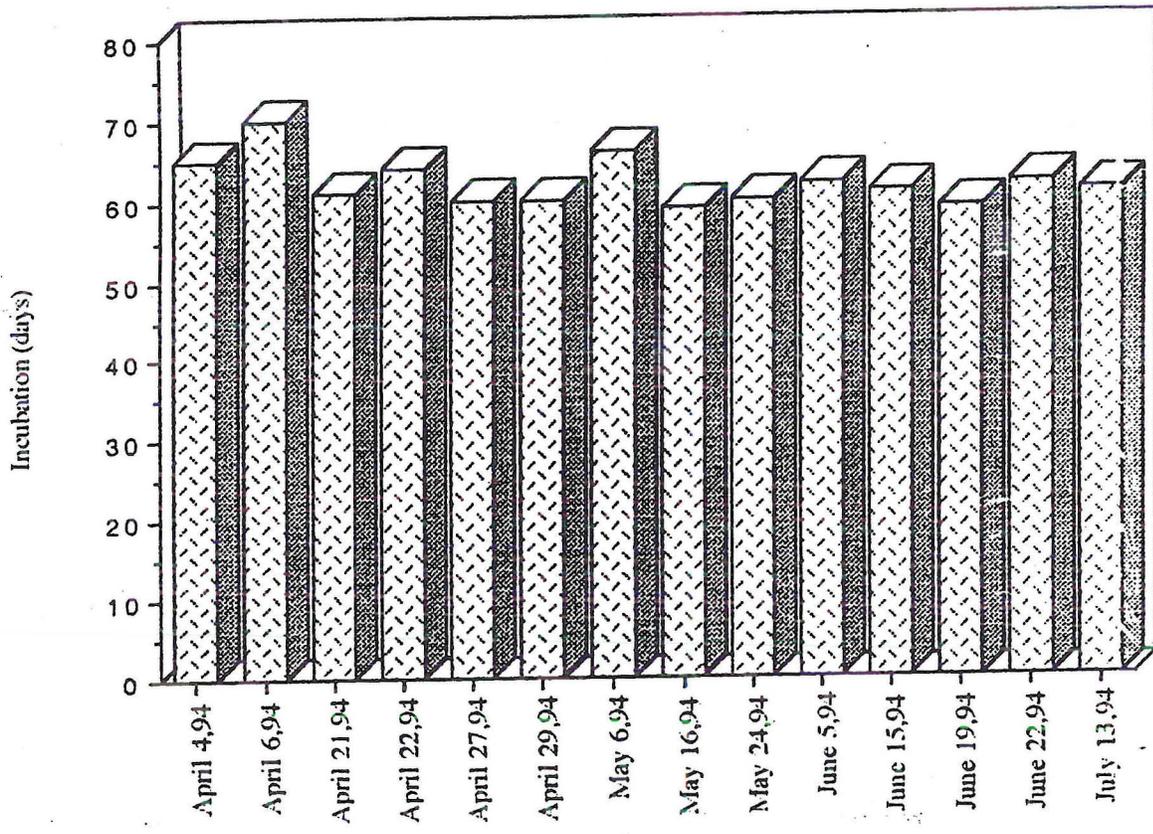


Figure 8. Hawskbill Mean Incubation Period

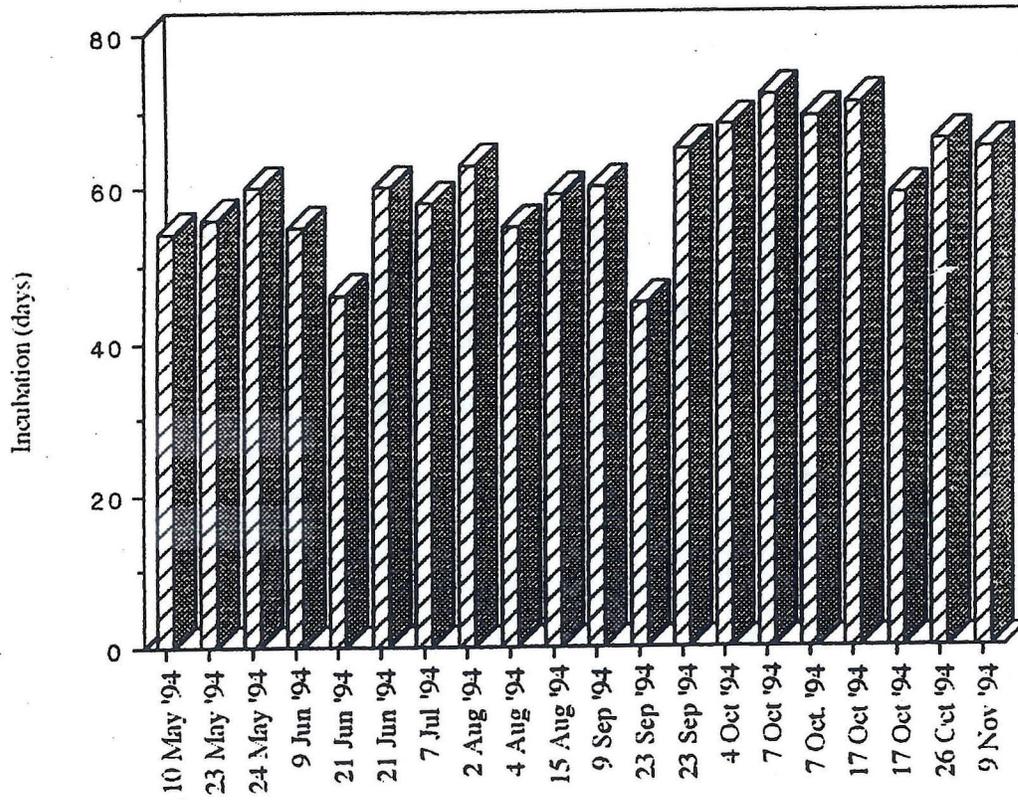


Figure 9. Green Turtle Mean Incubation Period

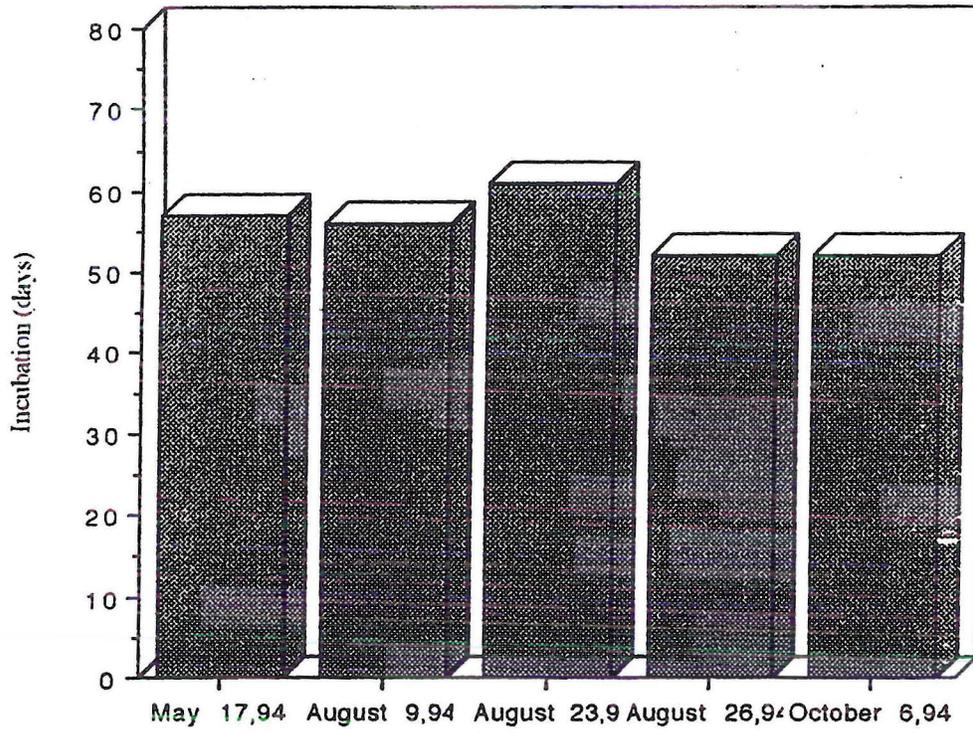


Figure 10. Leatherback Total Nest Clutch Size

