

Chincoteague

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REPORT OF

CHINCOTEAGUE NWR

WILDLIFE MANAGEMENT STUDY

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Progress Report (No. 2)

Division of Wildlife Refuges

Project: Chincoteague, Virginia and Cape Romain, South Carolina

Region 4

Code: Chincoteague No. 1

Date: October 31, 1970

Title: An attempt at the Northward Extension of the Breeding Range of the Atlantic Loggerhead Turtle (Caretta caretta caretta) by Egg Transplants

ABSTRACT

A total of 677 Atlantic Loggerhead Turtle eggs from six nests was collected from Cape Romain National Wildlife Refuge on July 9, 1970. They were transported to Chincoteague NWR and 672 were transplanted as the same six nests in six different wire cylinder enclosures on July 10, 1970. The eggs were from two nests estimated to be from 1 to 7 days old, one nest 4 days old and three nests 10 to 30 days old. Only 23 eggs hatched from one nest while 649 eggs from all six nests did not hatch. This was a 19.2 percent hatch of one nest and a 3.4 percent hatch from all six nests. The 23 eggs began hatching on September 27 and were completed by October 12. About 25 of at least 600 eggs opened contained developed turtle embryos. All 23 hatchlings were deposited on the surf and entered the ocean. Analysis of 1969 and 1970 transplant times and nest ages show much higher hatching success of older nests (over 30 days old) and, therefore, it is recommended that 1,200 eggs be collected and transplanted in July, 1971 from Cape Romain nests determined to be laid in late May and early June.

OBJECTIVES

Objectives continued to be the same as at the outset of the project. That is egg transplantation from Cape Romain NWR, where a high population of nesting loggerheads exist, to similar appearing protected beach area on Chincoteague NWR, where the range reportedly previously extended.

INTRODUCTION

The population status of the Atlantic Loggerhead Turtle continues as unknown. The bulk of the species nesting is on the south Atlantic coast with Cape Romain, South Carolina and Baldhead (Smith) Island, North Carolina, northern extremity concentrations. Scattered nestings occur up the southern portion of the North Carolina Outer Banks. This year, two fresh nests of the species were found on Back Bay NWR beaches by Refuge Manager Robert Gilmore. These two nests were found in high

J.C. - read over and get me briefed if there's any thing you disagree with, esp. regarding next year's recommendations on page 5. Otto

public use areas and, therefore, dug up and transplanted secretly between two large sign posts. Neither of the nests hatched. This area is less than a hundred miles from the Chincoteague study area where for the second consecutive year 600 loggerhead eggs have been transplanted from Cape Romain nests.

#### METHODS

The study was divided into two main sections: (A) egg transplanting, and (B) determination of the establishment of a nesting colony. Progress Report No. 2 deals only with Part A as no attempt will be made to activate Part B until 1974.

A total of 677 eggs was dug up from six nests at Cape Romain NWR on July 9, 1970, a month earlier than the previous year. These were transported immediately, in separate lard cans and sand, to Chincoteague and 672 were buried into six separate nesting cages on July 10. On Cape Romain, egg pickup was conducted by Refuge Manager McDaniel and Assistant Chincoteague Manager Jackson.

Re-nesting structures (enclosures) were completely different than those tried in 1969. Rather than large square screened cages, the 1970 eggs were put into six round wire baskets about three feet long and 16 inches in diameter. These were buried in the sand in an upright position so that approximately two feet were covered and one foot was exposed. The eggs were packed in loose sand in the buried two-foot portion. Four of the cages had 9 x 12-inch windows inserted near the bottom so that hatching progress could be noted. Transportation to Chincoteague and actual transplanting was conducted by Jackson under the supervision of Refuge Manager Appel. The eggs were transplanted into six nests separated as they were when found on the Cape Romain beach. No nests were mixed with eggs of another nest.

The nesting site was posted as off-limits to visitors. Refuge personnel visited it frequently and on a few occasions, caught visitors in the act of digging out the containers. Table 2 shows the number and estimated ages of the six nests. All nests were opened on September 15 by Jackson. Two nests were examined closely by Jackson and the writer on September 22 and by Assistant Manager Keel on October 12, 1970. All nests were dug up for the final time on October 28 by Recreation Specialist Stevens and the East Coast Biologist.

#### RESULTS AND DISCUSSION

Of the 672 eggs buried, only 23 or 3.4 percent hatched while the remaining 649 or 96.6 percent did not hatch. Of the 23 hatchlings, all entered the ocean, although three were reported very cold and inactive at time of release.

### Chronology of Hatching

All eggs collected were probably laid from mid-June on. At least three of the nests were known to have been laid from July 1 on. Normally, incubation takes around 60 days in a loggerhead nest and since all eggs are laid by a single female on a single night, all eggs hatch in a short two or three-night interval. In the 1969 Chincoteague transplant, however, it was found that the hatching period took up to 31 days and that it occurred as long as 100 days after laying. This year, unfortunately, only 23 eggs from a single nest of 120 eggs hatched in the entire six nests of 672 eggs. Hatching in the successful nest occurred in a 16-day period beginning on September 27 and ending on October 12. Emerging hatchlings numbered from one to eight during this period. Assuming that laying took place in mid-June, a time interval of 105 to 120 days occurred from egg laying to hatching.

No hatching occurred in the other nests. However, in the other nest containing well developed embryos (nest #4), hatching appeared near at the time of death. By this we mean embryos were fully developed, egg liquid was still present and egg pipping itself appeared as the only step preventing complete hatching. No sumps were reported observed in this year's transplants compared to last year when three of four enclosures had sumps reported.

Table 1 shows the individual nest results and that nest #2 had the only usable data. It shows that hatching began on September 27, was half completed two days later, three-quarters completed six days later and finished a week after that. Last year's data averaged approximately three weeks earlier, having hatching beginning September 4 and completed September 28 in eggs that were collected and transplanted a month later than this year, but which were significantly older in age (see last year's report - Progress Report #1, Tables 1 and 2).

### Hatching Success

As mentioned, only 23 eggs in one of six nests hatched this year. This was 19.2 percent of the 120 eggs in the nest and 3.4 percent of all 672 eggs transplanted in 1970. In four of the remaining nests, no eggs were fertile (no embryos found upon examination) and in the remaining nest, #4, approximately 25 fully developed but unhatched embryos were found in the October 28 examination. Table 2 presents individual nest data while the same table in the 1969 progress report showed a 44.4 percent hatching success of 612 eggs transplanted.

In that 1970 hatching was so unsuccessful, all 23 hatchlings were carried from their enclosure to the surf. Therefore, no unusual observations of the trek as occurred last year were made.

Table 1

Time of Hatching of Loggerhead Turtles  
Chincoteague National Wildlife Refuge  
1970

Nest Number	Number Eggs	Hatching Dates					Total Hatched	
		Sump	Begin	50%	75%	100%		
1	129	Unknown	None	-	-	-	None	
2	120	Unknown	Sept. 27	Sept. 29	Oct. 5	Oct. 12	23	
3	147	Unknown	None	-	-	-	None	
4	105	Unknown	None	-	-	-	None	
5	75	Unknown	None	-	-	-	None	
6	96	Unknown	None	-	-	-	None	
<b>Totals &amp; Averages</b>		672	Unknown	Sept. 27	Sept. 29	Oct. 5	Oct. 12	23

Table 2

Artificial Loggerhead Turtle Nests  
Chincoteague National Wildlife Refuge  
1970

Enclosure & Nest No.	Number Eggs	Estimated Age	Hatched		Not Hatched		Number To Ocean
			No.	%	No.	%	
1	129	10-30 days	0	0.0	129	100.0	0
2	120	10-30 days	23	19.2	97	80.8	23
3	147	4 days	0	0.0	147	100.0	0
4	105	10-30 days	0	0.0	105	100.0	0
5	75	1-7 days	0	0.0	75	100.0	0
6	96	1-7 days	0	0.0	96	100.0	0
<b>Totals</b>		- -	23	3.4	649	96.6	23

SUMMARY AND CONCLUSIONS

On the basis of the second year's transplant attempt, results were very disappointing. However, 1969's attempts, when nearly half the eggs hatched, do provide us with the knowledge that better results can be obtained. Consequently, we must take a close look at the difference in study methods and conditions during the two years.

It is doubtful that weather or tide conditions were too much different at Cape Romain and Chincoteague between the two summers although this cannot be completely ignored. Collection and transportation methods were similar although nests were ~~not~~ separated this year and not in 1969.

Nest age and selection, though, did differ between the two study years. In 1969, eggs from five nests were collected on August 8. At the time of collection, all nests except one were old nests or from 30 to 50 days old since egg laying. Eggs from all these nests hatched except the ones from the youngest nest, which was estimated at 1 to 30 days old. In 1970, eggs from six nests were collected on July 9. All nests were young in that they were from 1 to 30 days old since egg-laying. Only one hatched and it was one of the three oldest nests. Another older nest had fully developed embryos although no hatching occurred. From these two comparisons, it can be concluded that egg age at the time of collection and transportation does make a difference perhaps to the further development of the embryo.

RECOMMENDATIONS

On the basis of the above conclusion, it is recommended that the 1971 collection take place in early July but that exact nest age be known at collection time and that the majority of the eggs be taken from nests known to be laid in late May and early June. This will require several trips to the beach by the Cape Romain NWR staff and the location and date marking of the nests as they are found. No more than two nests should be less than 30 days old for comparative purposes. It is further recommended that since this year's hatching was so unsuccessful, 1,200 eggs from 10 to 12 nests be collected at Cape Romain and transplanted at Chincoteague per nest, in order to pursue our primary objective of hopefully establishing a nesting colony on Chincoteague NWR. Again, individual nests should be kept separated, transported in separate containers and transplanted in separate enclosures as in 1970.

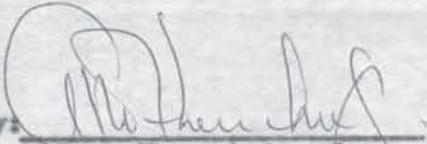
REFERENCES CITED

See page 6, Progress Report #1

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