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SUMMARY OF LOGGERHEAD SEA TURTLE PROJECT  
1979

Cumberland Island National Seashore

Cape Lookout National Seashore

Canaveral National Seashore

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## FOREWORD

This is the first in a series of annual reports that address the long term Loggerhead Sea Turtle project being conducted by the National Park Service Cooperative Research Unit (NPS-CRU) of the Institute of Ecology, University of Georgia, under the Natural Science and Research Division, Southeast Region.

The report is constructed so that the superintendent and staff of a particular park can review the work accomplished in their area and obtain an overview of the entire project by examining the summaries of data collected in the other parks involved in the project.

I wish to thank the superintendents and staff of Cape Lookout, Cumberland Island and Canaveral National Seashores for their significant contributions of moral, monetary, and manpower resources that made the 1979 field effort a success.

- - D.L. Stoneburner

## INTRODUCTION

The nesting activity of the Loggerhead Sea Turtle (Caretta caretta), a threatened species, has long been a major sightseeing attraction on the shores of the southeastern United States. However, as interest in seashore living and public recreation demands increase, the nesting beaches of marine turtles have been and are being subjected to intensive commercial development. The reduction in the number of natural rookery sites, coupled with the intensification of commercial trawler fisheries, has contributed to rapid declines in the number of sea turtles.

The rookery beaches in the National Park System represent a significant portion of the remaining major nesting sites in the southeast. Managers of the seashore parks with rookery beaches face a series of questions that pertain to the status of the endangered and threatened species of marine turtles which utilize their beaches. These questions range from restrictions of beach use by visitors to critical habitat management and preservation. The purpose of this long term project is to provide the parks involved in the study with information that can be used in formulating answers to these questions.

## METHODS

Three national seashores, Cape Lookout (NC), Cumberland Island (GA) and Canaveral (FL) were active in the project during 1979. At Cape Lookout, a seven-mile stretch of beach was selected and demarcated in one-quarter-mile sections; five-mile stretches of beach were demarcated in the other two parks.

Throughout the sea turtle nesting season (May to September), these five- and seven-mile study sites were patrolled from sunset to sunrise each night. When nesting loggerhead turtles were encountered, their activity was observed and noted. For each turtle, body measurements were collected and two "Rototags" were affixed to the trailing edge of both front flippers. Old tags that had become worn and unreadable were removed and appropriate records made. The time of tag application, moon phase, tidal stage and cloud conditions were recorded. In addition, all crawls, those resulting in a nest and those where no eggs were laid (false crawls and abortions), were diagrammed.

Each nest was marked in a manner that enabled the turtle patrol members some means of identifying the nest by turtle, date, time and degree of natural predation.

All nests that could be relocated were checked for predation, flooding and hatchling crawls for a minimum estimate of natural nest success.

## RESULTS AND DISCUSSION

There were a total of 1,315 turtle crawls recorded at Cape Lookout, Cumberland Island and Canaveral National Seashores during the 1979 nesting season. Of these, 839 resulted in nests and 476 were false or aborted crawls. A total of 295 loggerhead and 3 green sea turtles were encountered, of which 197 had not been previously tagged. Nest predation data showed that 425 nests were disturbed by natural predators (343 by raccoons, 67 by ghost crabs and 15 by other organisms). A total of 4,244 hatchlings emerged from disturbed and undisturbed nests and entered the sea. A total of 77 loggerhead sea turtles were found dead

TABLE 1. Loggerhead Sea Turtle Project Summary, 1979

|                           |             |
|---------------------------|-------------|
| Total Crawls              | 1,335       |
| Total Nests               | 839         |
| Total False Crawls        | 496         |
| Total Turtles Encountered | 295         |
| Total Tagged First Time   | 197         |
| First Crawl               | 7 May 1979  |
| Last Crawl                | 27 Aug 1979 |
| Total Hatchlings          | 4,244       |
| Nest Predation (Total)    | 425         |
| Raccoons                  | 343         |
| Ghost Crabs               | 67          |
| Other                     | 15          |
| Dead on Beach             | 77          |

on the beach. None of these dead turtles had tags on their flippers, but there were several instances where old tag scars were clearly present. These data are presented as a project summary in Table 1.

In the future, as we acquire more information about the loggerhead population and its ecology, it will be possible to examine data summaries, like the one just presented, and discuss the significance of the information. A computerized listing of each park's data is being archived at the NPS-CRU, University of Georgia, and will be available on request.

#### Canaveral National Seashore

Patrols at Canaveral National Seashore started on May 1, 1979 and stopped on September 15, 1979. Hurricane David virtually eliminated the collection of significant natural nest hatchling data. Three green sea turtles were encountered; all laid nests, two of which were preyed upon to some degree by raccoons. The third green turtle nest disappeared during Hurricane David.

Table 2 contains the data summary of the 1979 field work at Canaveral. The location and demarcation of the study area is shown in Figure 1. The data on loggerhead emergence, false/aborted crawls and successful nesting crawls are presented in Figure 2 according to their location in the study area and in Figure 3 according to their date of occurrence.

TABLE 2. Summary of 1979 Loggerhead Sea Turtle Data for Canaveral  
National Seashore

|                                    |                 |
|------------------------------------|-----------------|
| Total Crawls                       | 773             |
| Total Nests                        | 520             |
| Total False Crawls                 | 253             |
| Total Turtles Encountered          | 189             |
| Total Tagged First Time            | 145             |
| First Crawl                        | 9 May 1979      |
| Last Crawl                         | 27 Aug 1979     |
| Tag Numbers Issued                 | FL0200 - FL0562 |
| Total Hatchlings                   | 2,606           |
| Nest Predation (Total)             | 367             |
| Raccoons                           | 329             |
| Ghost Crabs                        | 23              |
| Other                              | 15              |
| Dead Turtles Observed on the Beach | 1               |

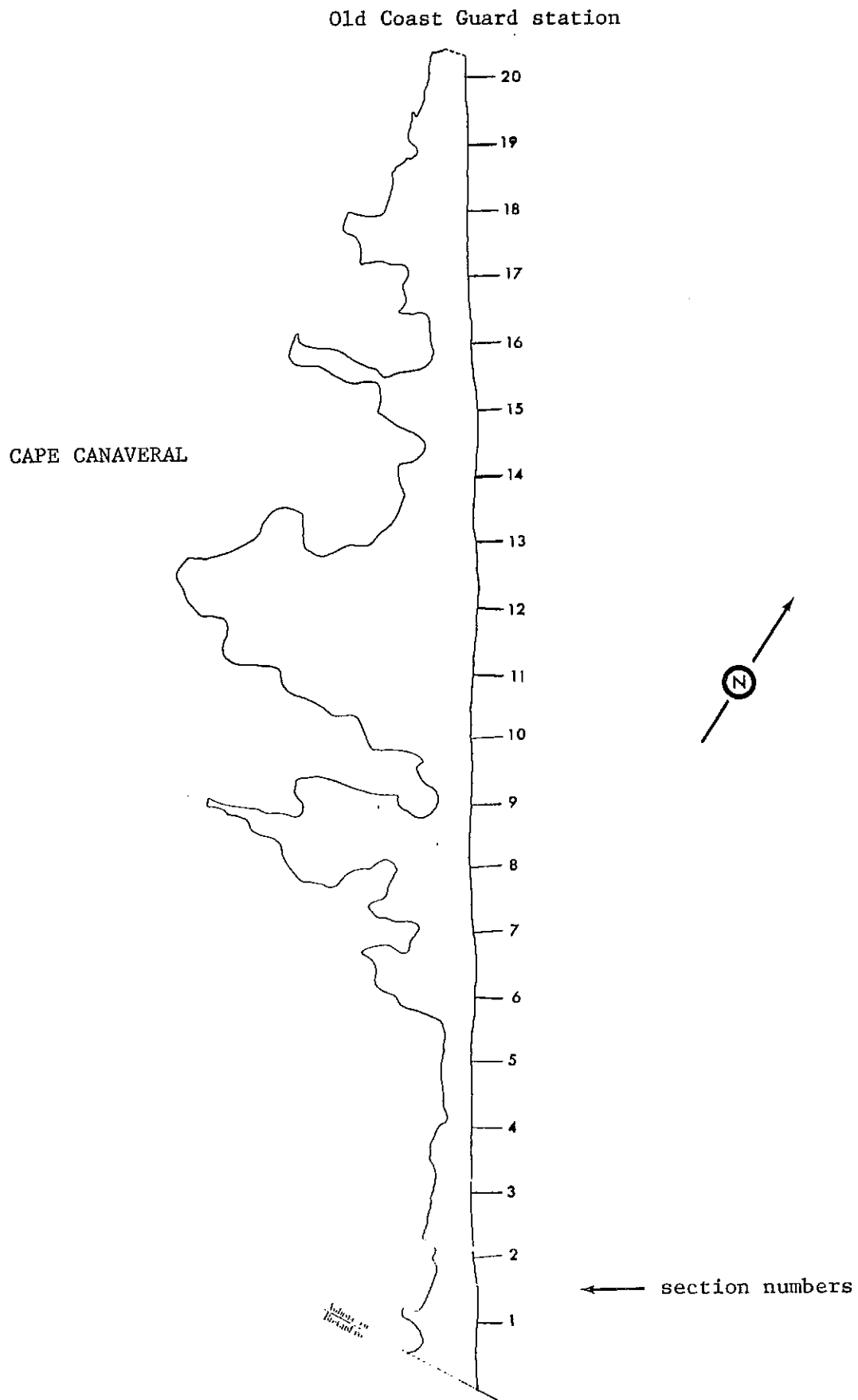


Figure 1. Location map of intensive study site at Canaveral National Seashore

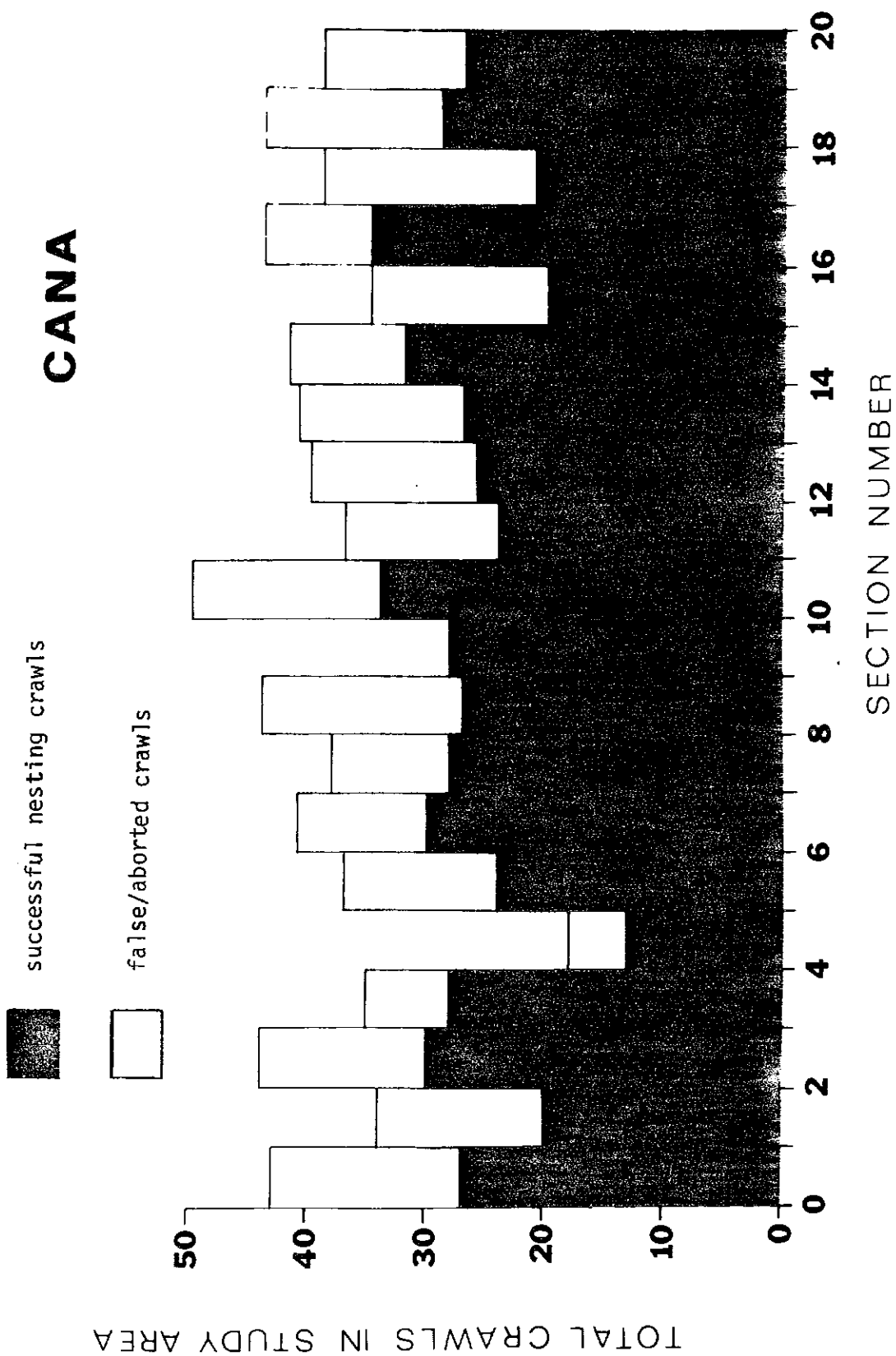


Figure 2. Density of false/aborted crawls and successful nesting crawls distributed throughout the Canaveral intensive study site

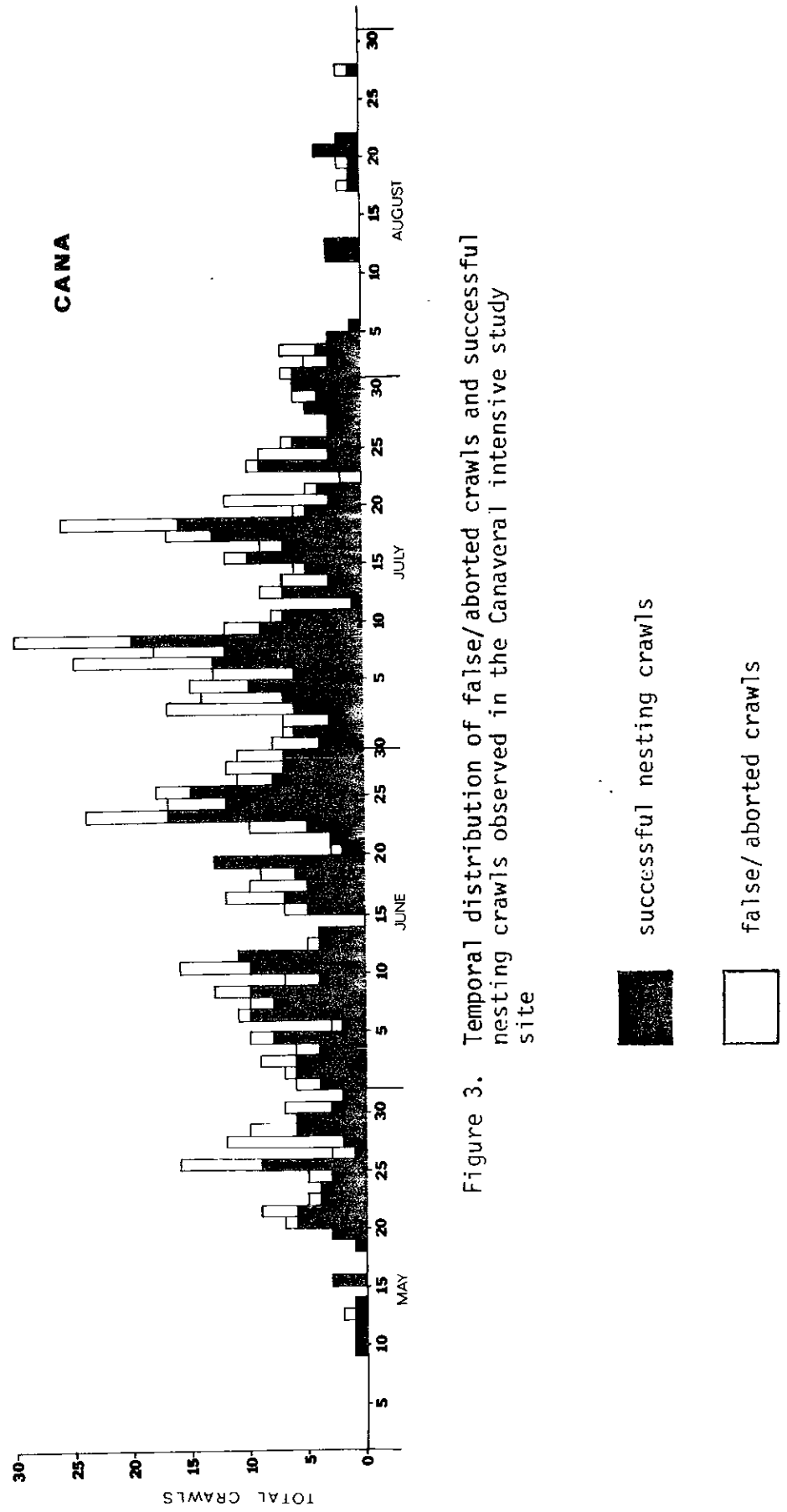


Figure 3. Temporal distribution of false/aborted crawls and successful nesting crawls observed in the Canaveral intensive study site

## Cumberland Island National Seashore

Nightly patrols at Cumberland Island National Seashore were conducted from May 12, 1979 through August 25, 1979. The location and demarcation of the five-mile study sites are presented in Figure 4. Table 3 contains the data summary of the 1979 field work. Figures 5 and 6 show the number of false/aborted crawls and successful nesting crawls according to location and date of occurrence, respectively. Hurricane David virtually eliminated the collection of detailed, meaningful natural nest hatchling success.

It is significant to note that no loggerhead sea turtle nests at Cumberland Island were destroyed by feral hogs. This is the direct result of the intensive and highly efficient feral hog management program that is a continuing, internal park effort.

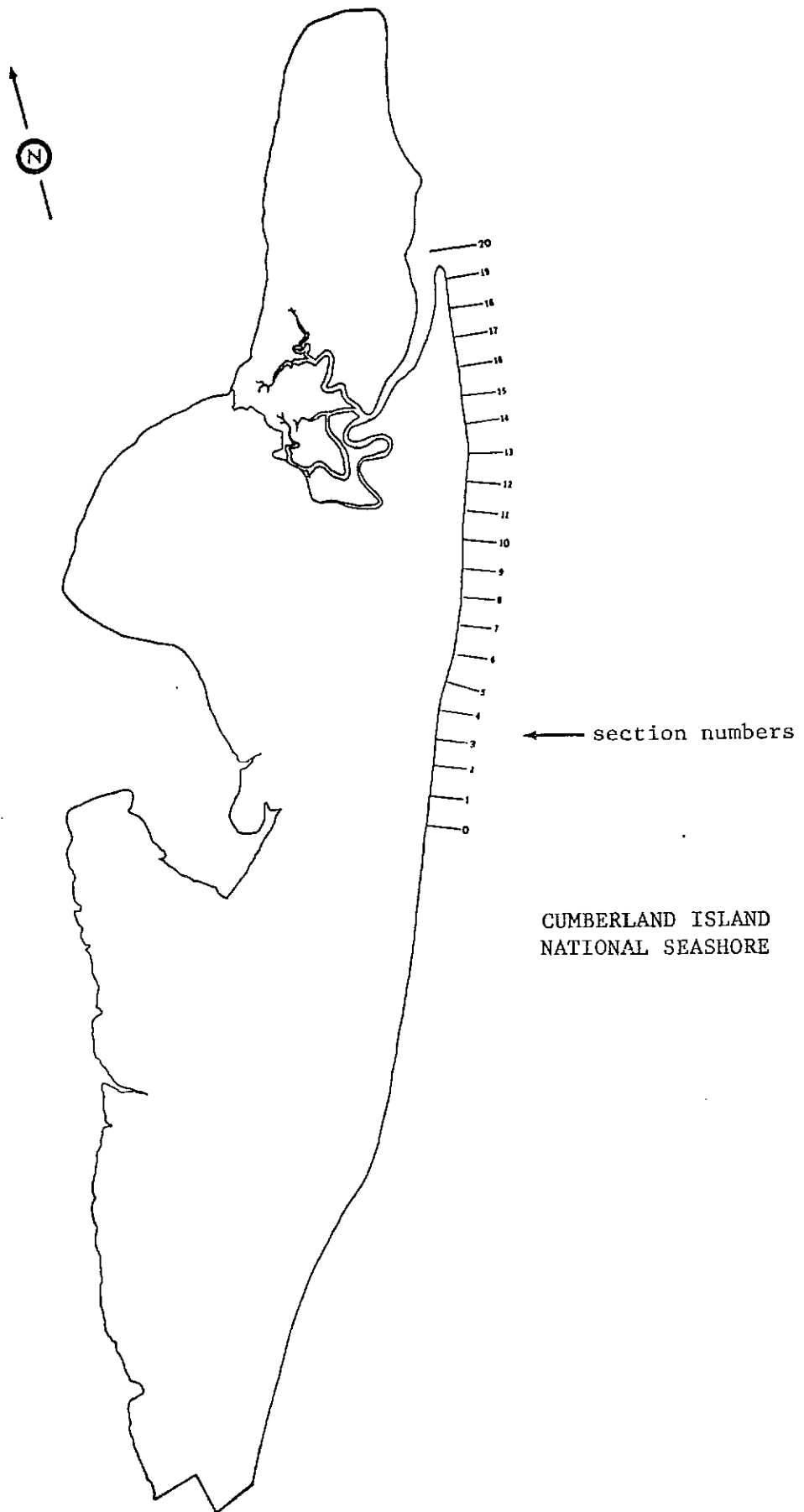


Figure 4. Location map of intensive study site at Cumberland Island National Seashore

TABLE 3. Summary of 1979 Loggerhead Sea Turtle Data for Cumberland  
Island National Seashore

|                                    |                 |
|------------------------------------|-----------------|
| Total Crawls                       | 498             |
| Total Nests                        | 287             |
| Total False Crawls                 | 211             |
| Total Turtles Encountered          | 91              |
| Total Tagged First Time            | 37              |
| First Crawl                        | 7 May 1979      |
| Last Crawl                         | 21 Aug 1979     |
| Tag Numbers Issued                 | GA0465 - GA1167 |
| Total Hatchlings                   | 1,166           |
| Nest Predation (Total)             | 57              |
| Raccoons                           | 14              |
| Ghost Crabs                        | 43              |
| Other                              | 0               |
| Dead Turtles Observed on the Beach | 76              |

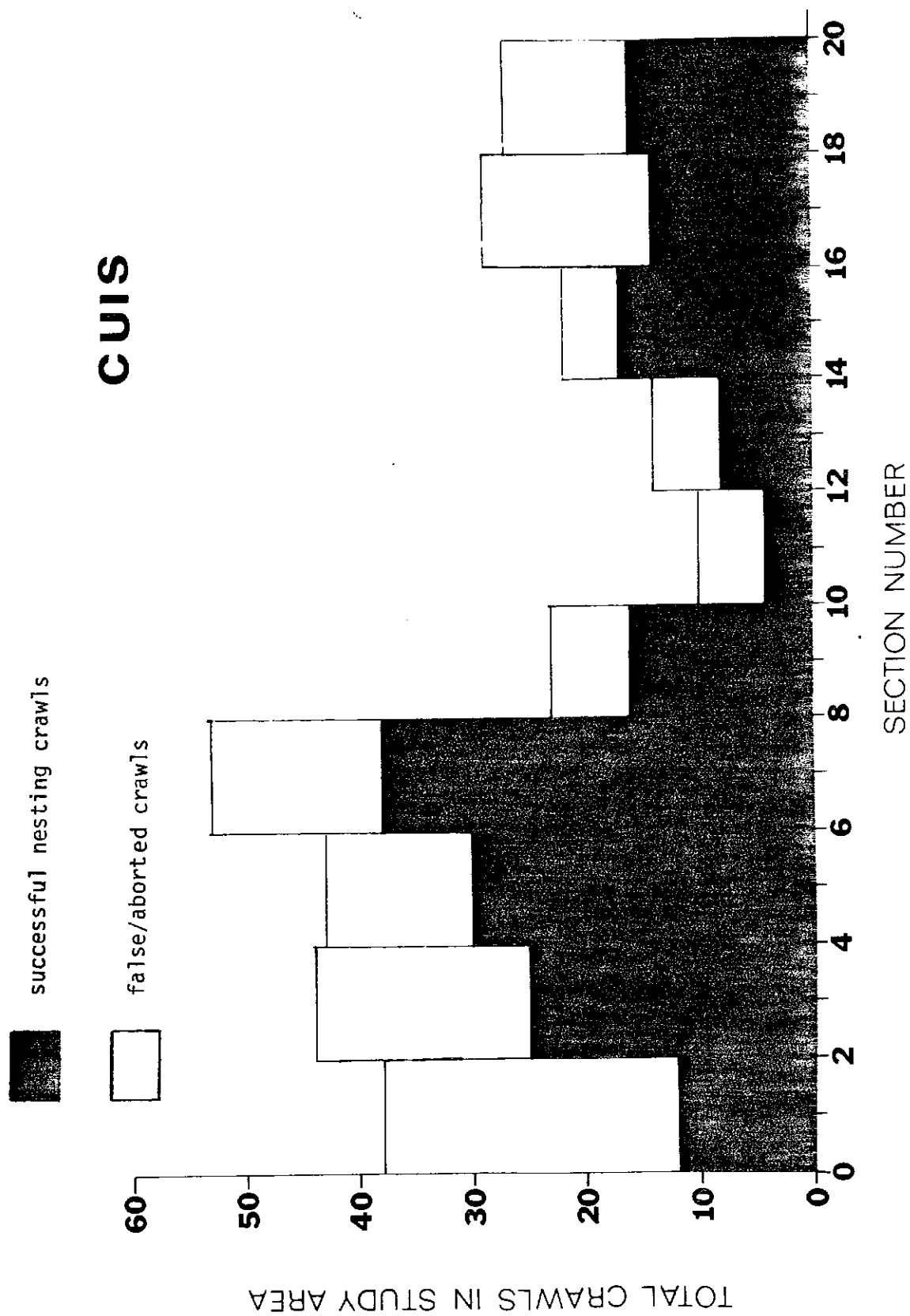


Figure 5. Density of false/aborted crawls and successful nesting crawls distributed throughout the Cumberland Island intensive study site

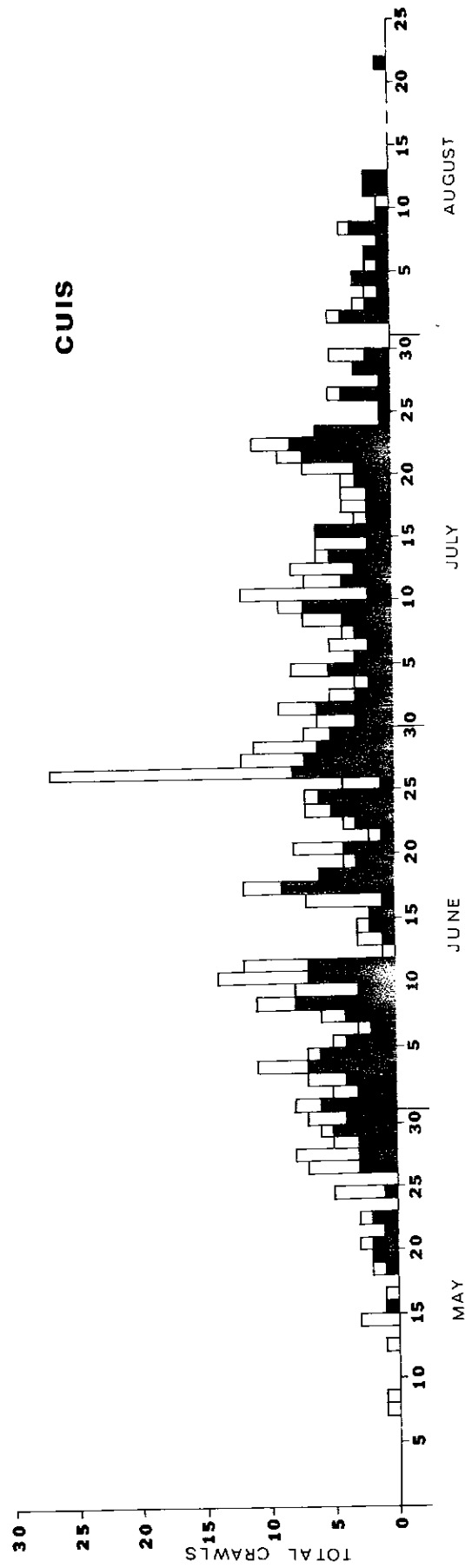
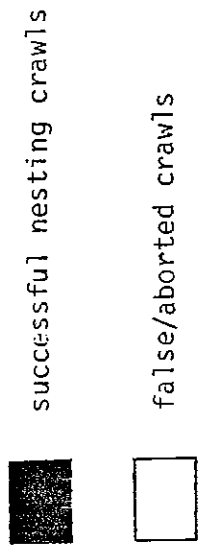


Figure 6. Temporal distribution of false/aborted crawls and successful nesting crawls observed in the Cumberland Island intensive study site



## Cape Lookout National Seashore

Nightly patrols were conducted at Cape Lookout National Seashore from June 12, 1979 through August 8, 1979. The location and demarcation of the seven-mile study sites are presented in Figure 7. Table 4 contains the data summary of the 1979 field work. Figures 8 and 9 show the number of false/aborted crawls and successful nesting crawls according to location and date of occurrence, respectively.

An aerial survey of the Core and Shackleford Banks beaches, outside the intensive seven-mile study site, was conducted by park personnel three days a week. The location of sea turtle crawls were noted and the presence or absence of a nest was determined. (To obtain further information on this valuable method of activity monitoring, contact the Superintendent, Cape Lookout National Seashore.) The preliminary results of this effort suggest that Core Banks has greater significance as a sea turtle rookery beach than was previously thought. This aerial survey should be continued because it is a test of advanced techniques and has provided additional, as well as new, information.

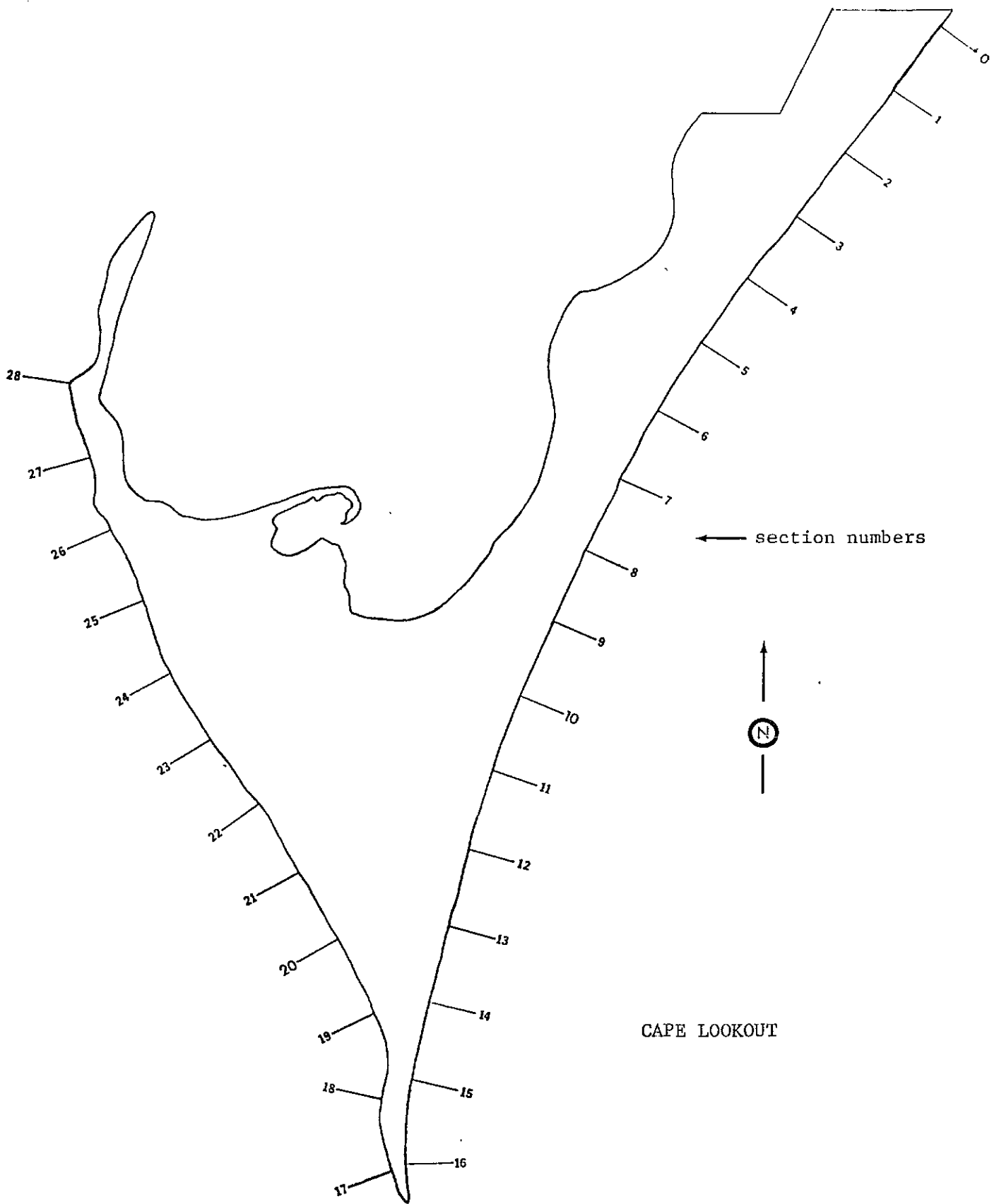


Figure 7. Location map of intensive study site at Cape Lookout National Seashore

TABLE 4. Summary of 1979 Loggerhead Sea Turtle Data for Cape Lookout  
National Seashore

|                                    |                 |
|------------------------------------|-----------------|
| Total Crawls                       | 64              |
| Total Nests                        | 32              |
| Total False Crawls                 | 32              |
| Total Turtles Encountered          | 15              |
| Total Tagged First Time            | 15              |
| First Crawl                        | 28 May 1979     |
| Last Crawl                         | 3 Aug 1979      |
| Tag Numbers Issued                 | NC0010 - NC0039 |
| Total Hatchlings                   | 472             |
| Nest Predation (Total)             | 1               |
| Raccoons                           | 0               |
| Ghost Crabs                        | 1               |
| Other                              | 0               |
| Dead Turtles Observed on the Beach | 0               |

# CALO

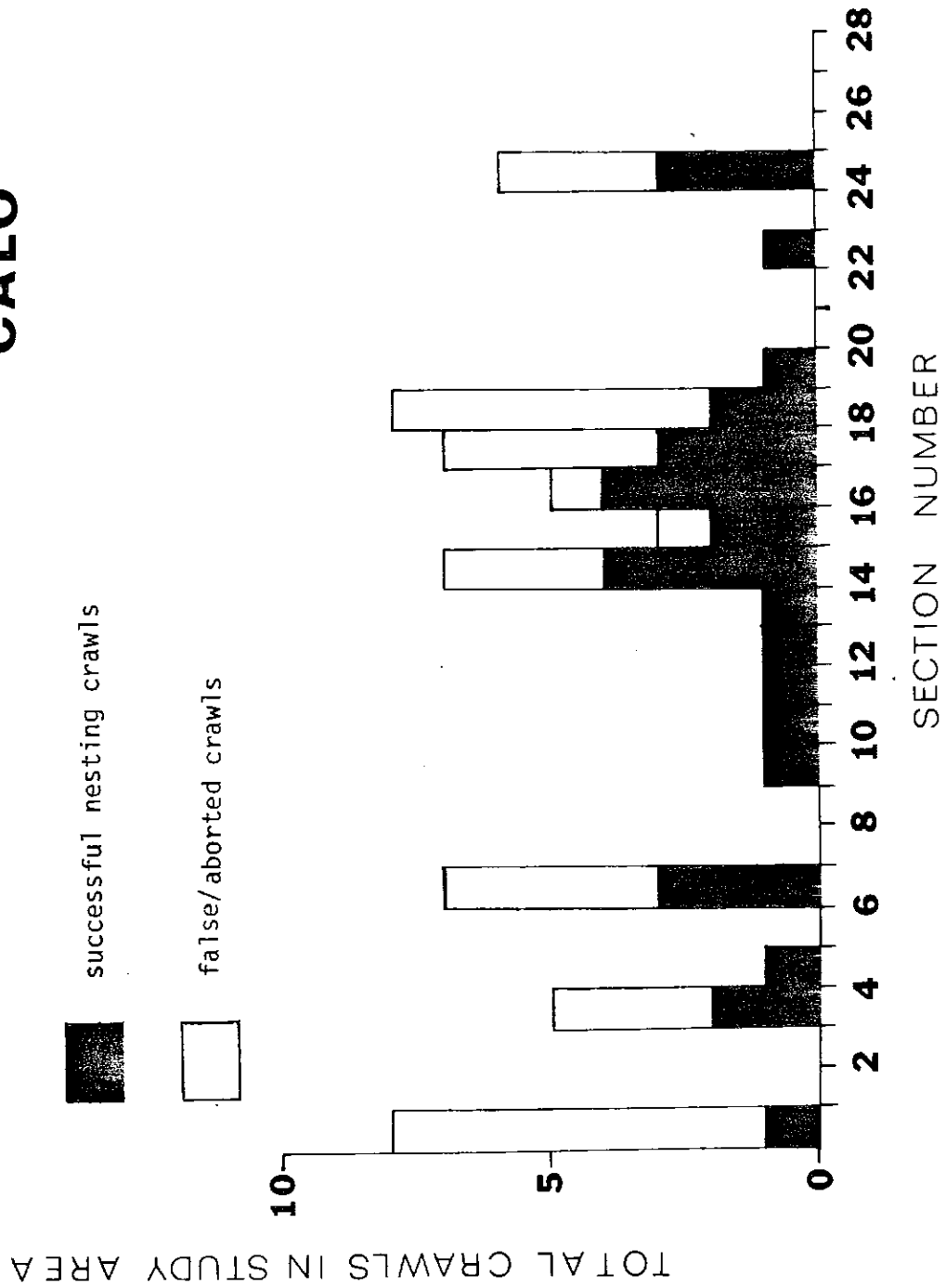


Figure 8. Density of false/aborted crawls and successful nesting crawls distributed throughout the Cape Lookout intensive study site

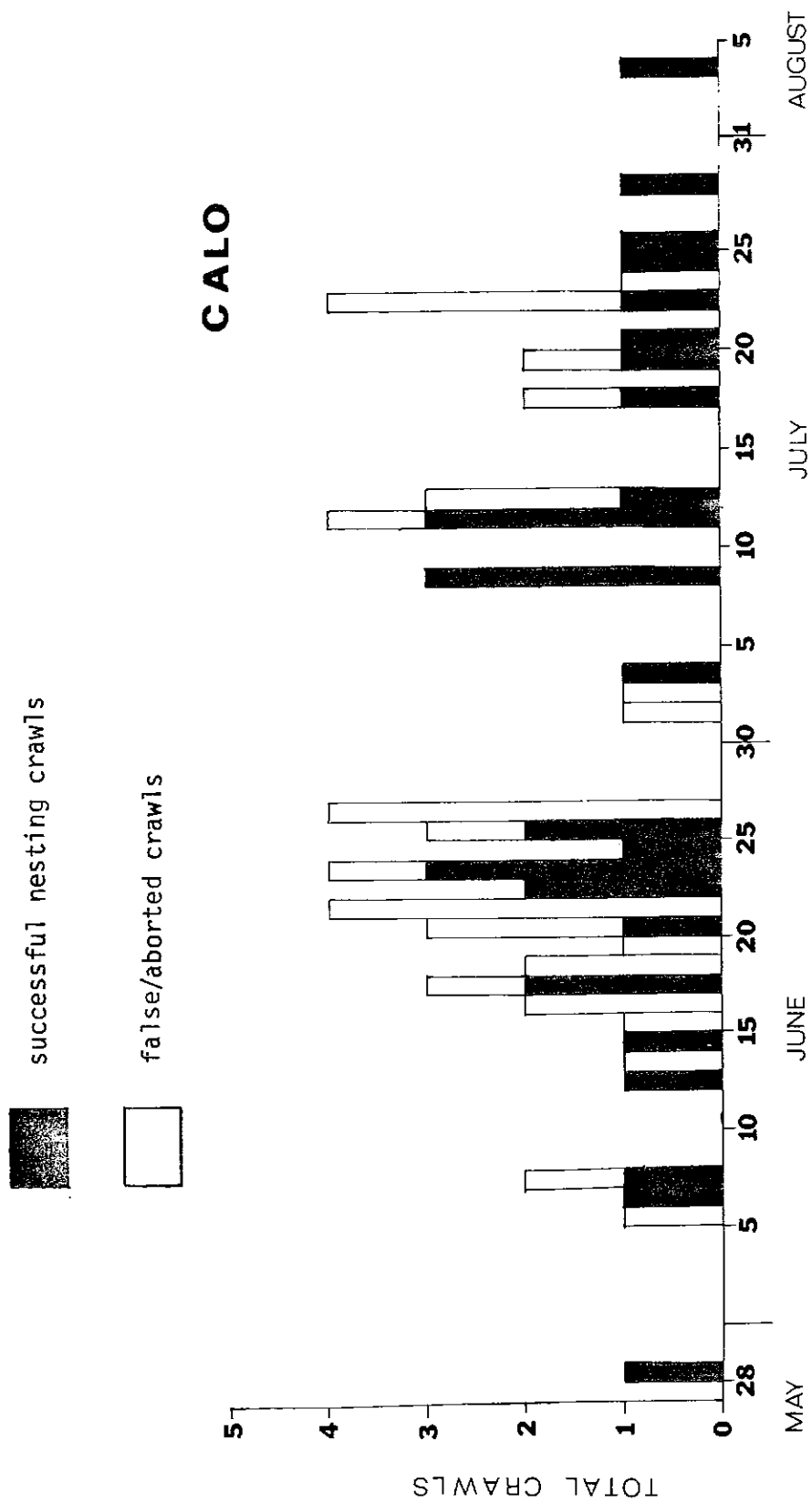


Figure 9. Temporal distribution of false/aborted crawls and successful nesting crawls observed in the Cape Lookout intensive study site

## CONCLUSIONS/MISCELLANEOUS OBSERVATIONS ON FIELD WORK

A record interesting migration was observed during the course of the 1979 field work. One female loggerhead, tagged at Cape Lookout after laying eggs there, renested at Canaveral following a 19-day, 725-km move down the Atlantic coast.

A related sub-project involving satellite telemetry of loggerhead interesting movements was successfully conducted at Cumberland Island during the 1979 nesting season. Decisions are currently being made about continuing this project.

Natural nest temperatures were successfully recorded in another related sub-project at Cape Lookout. A similar project is being planned for Cumberland Island during the 1980 nesting season.

Data were also collected, at all three parks, which indicate that loggerhead sea turtles select their nest sites from a beach temperature stimulus. A study is presently being planned to determine the importance of this observation. This particular project, if successful, could be crucial to the identification of critical loggerhead nesting habitat.

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For detailed descriptions of the related sub-projects mentioned above, refer to the list of additional publications on the next page.

Additional Publications - - by D.L. Stoneburner, National Park Service  
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Satellite Telemetry of Internesting Movements of Loggerhead Sea Turtles  
at Cumberland Island National Seashore. Report for the Superintendent,  
November, 1979.

Heavy Metal Concentrations in Loggerhead Sea Turtle Eggs at Canaveral,  
Cumberland Island, Cape Lookout and Cape Hatteras National Seashores.  
Report for the Superintendent, November, 1979.

The Role of Beach Sand Temperature in Loggerhead Sea Turtle Nest Site  
Selection. Report for the Superintendent, November, 1979.