

Sea Turtle Habitat Survey of Northeastern Mississippi  
Sound: A Comparison with Waccasassa Bay, Florida

Jeffrey R. Schmid

Directed Research  
Robert Shipp, Ph.D.  
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## INTRODUCTION

The use of turtle tangle nets has proven to be a viable method in the study of immature sea turtles in Florida coastal waters. The capture and tagging efforts on the east coast have characterized populations of juvenile loggerheads, Caretta caretta, and green turtles, Chelonia mydas, in the Indian River Lagoon system (Ehrhart and Yoder, 1978; Mendonca, 1981; Mendonca and Ehrhart, 1982; Ehrhart, 1983, 1984; Mendonca, 1983). On the west coast of Florida, the Kemp's ridley sea turtle, Lepidochelys kemp, is the target species with occasional captures of C. caretta and C. mydas. These tagging studies are part of a long-term research effort to establish migratory patterns, seasonal occurrence, distribution and growth of nearshore foraging populations of juvenile sea turtles (Ogren, unpubl.).

The netting methods utilized on either side of Florida differ due to dissimilarities in the two study sites. ~~L. M. Ehrhart and his associates have concentrated their efforts in the protected waters of the Indian River and Mosquito Lagoon where tidal currents are relatively weak. As a result, a long tangle net (455m) is set perpendicular to the shoreline at 2-3 m depth or, in some cases, set across the length of a shallow embayment. Conversely, research conducted by Ogren and myself has focused on Waccasassa Bay, between the Cedar Keys and Crystal River, on the west coast of Florida. Our technique involves shorter nets, due to strong tides, which are usually set in pairs either across a channel or off the end of a sandbar.~~

The research activities at Cedar Key began in 1985 and are

modeled after an earlier study by Carr and Caldwell (1956). The previous study was based on turtles which were caught commercially, whereas the current study involves contracting experienced turtle fishermen to assist NMFS personnel in capturing sea turtles. This has eliminated error in the reporting of recaptures and biasedness due to the fishermen's preference for a particular size and species of sea turtle. Even though the study is relatively new, a great deal of information has been gathered on the sea turtle populations. For example, Kemp's ridleys are caught in the vicinity of crustacean-rich oyster bars found in northwestern Waccasassa Bay, compared to the capture of green turtles on seagrass covered shoals in eastern areas of the bay (Figure 1). This observed preference for a particular habitat provides the basis for my surveys in Mississippi Sound.

#### METHODS AND MATERIALS

Communications with local residents and navigational charts were used in the determination of potential sea turtle habitats. Surveys were then conducted in Grand Bay and off Cedar Point. Depth and bottom type were determined by sounding with a cane pole. The tangle net consists of large mesh webbing (20 inch stretch mesh, 50 m in length) with braided polyethylene cork and lead lines, held in place by two 30 lb. yachtsman anchors. The cork line is suspended in the water by four large buoys.

When a suitable location has been found (determined by sounding), the net is set in the following manner: the first anchor is placed overboard, the net is then fed off the bow until the

other end is reached, the net is pulled taught and the other anchor is placed overboard. The net is then "tripped" by pulling the webbing down the length of the net. This is to remove any tangles or fouling objects from the net. To prevent drowning of sea turtles that are unable to surface, the net is checked hourly at which time stingrays are removed.

#### RESULTS AND DISCUSSION

After the first survey, it became apparent that the methods used at Cedar Key would have limited applicability in Mississippi Sound. Cedar Key has mixed tides, two highs and two lows of unequal amplitude, compared to the diurnal tides found in this part of the Gulf of Mexico. The standard procedure of setting a six hour tide is rendered useless by the twelve hour tides of Mississippi Sound. In addition, the tides at Cedar Key are the strongest of any area in the Gulf of Mexico (Schroeder, pers.comm.). The set net used requires a strong tide to operated efficiently. It is my opinion that the tidal differences are responsible for the observed topographic differences between the two areas. Waccasassa Bay and Mississippi Sound are similar in that both are shallow, turbid embayments, however, the strong tides of Cedar Key have formed distinct channels or "sloughs" among the flats. It is across these channels that the tangle net is set in order to capture turtles as they move along "the most favorable highway" in the area (Carr and Caldwell, 1956). A difference in turbidity was also noted, Waccasassa Bay being more turbid, and is attributed to the distinct tides of each area.

Despite these differences, there are striking similarities between the two areas. There is a broad channel west of Point Aux Pins, in Grand Bay, that is similar to the sloughs of Waccasassa Bay (Figure 2). The netting technique used in the Indian River Lagoon system would be more appropriate for this location. The abundance of crab trap buoys observed in Grand Bay is indicative of a possible food source for Kemp's ridleys. The oyster bars of Cedar Point are comparable, though not as extensive, to those found in Waccasassa Bay (Figure 3). A report of a Kemp's ridley being caught off Cedar Point pier suggest their presence in this location (Shipp, pers. comm.).

#### CONCLUSIONS AND RECOMMENDATIONS

While no sea turtles were captured or sighted during the surveys, their presence is confirmed by the Sea Turtle Stranding and Salvage Network. During 1988, eleven loggerheads, five Kemp's ridleys, one green turtle and several unidentified species were reported from Baldwin and Mobile counties. The stranded Kemp's ridleys measured from 11 to 25 inches total carapace length which is the same range observed in Cedar Key. It appears that Mobile Bay represent the eastern boundary of the juvenile Kemp's ridley inshore habitat that is centered in Louisiana waters. Their coastal distribution is then resumed in Apalachicola Bay southward to the Florida keys. It is unclear why this gap exists in their distribution. Perhaps it is due to lack of major river drainages and muddy bottom from Pensacola to Port St. Joe. A similar gap exists on the western Atlantic coast of Florida, where juvenile

Kemp's ridleys are captured offshore but not in the Indian River or Mosquito Lagoon.

The results of this study were severely limited due to scheduling difficulties and bad weather. Considerable time and effort is needed to accurately document the occurrence of sea turtle populations. The fact that turtles do inhabit this area warrants a closer examination of their abundance and distribution. Subsequent projects should apply different capture methods, such as strike gill nets or trawls, to effectively sample the waters of Mississippi Sound.

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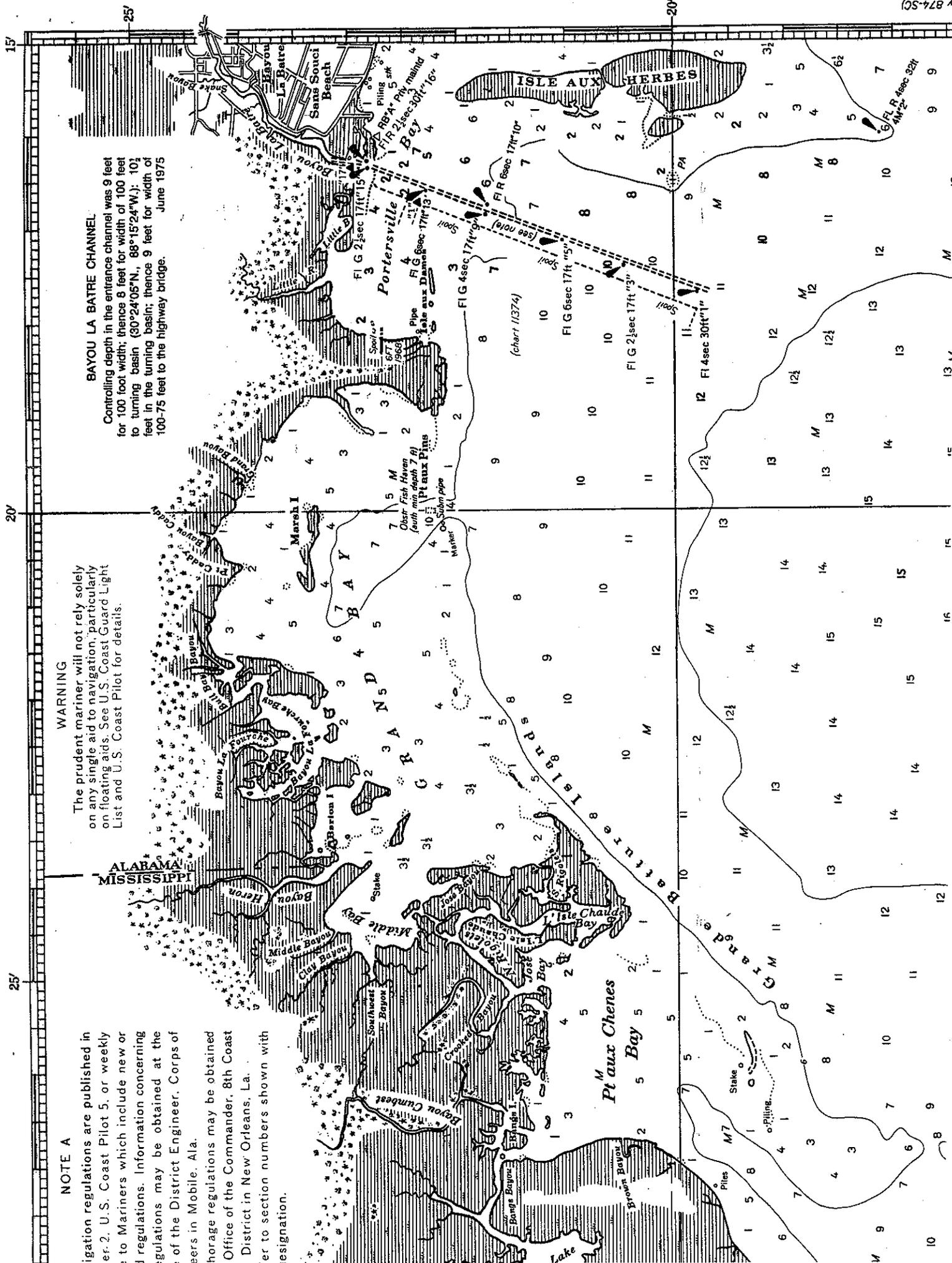
Figure 1) Waccasassa Bay, Florida

- I. Corrigan Reef - oyster bars and hard bottom site of Kemp's ridleys captures.
- II. Waccasassa Reefs - seagrass shoals with deep channel, site of green turtle captures.



Figure 2) Grand Bay, Alabama

- I. Broad channel, numerous crab trap buoys.
- II. Shoals with unidentified seagrass species.



**BAYOU LA BATRE CHANNEL.**  
 Controlling depth in the entrance channel was 9 feet for 100 foot width; thence 8 feet for width of 100 feet to turning basin (30°24'05"N., 88°15'24"W.); 10½ feet in the turning basin; thence 9 feet for width of 100-75 feet to the highway bridge. June 1975

**WARNING.**  
 The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

**NOTE A**  
 Regulations are published in U.S. Coast Pilot 5, or weekly to Mariners which include new or regulations. Information concerning regulations may be obtained at the District Engineer, Corps of Engineers in Mobile, Ala. Information may be obtained from the Office of the Commander, 8th Coast District in New Orleans, La. Refer to section numbers shown with designation.

Figure 3) Oyster Reefs of Cedar Point, Alabama

