

MANATEE GRAZING SURVEY OF CUMBERLAND ISLAND, 1989

INTRODUCTION

Manatees (Trichechus latirostris manatus) are known to frequent Georgia coastal waters, particularly Cumberland Sound. Zoodsma and Valade (1987) reported radio tagged manatees in several areas of the Cumberland Sound region from March to September: the North River, Kings Bay Nuclear Submarine Base, Marianna Creek marsh, Crooked River, Old House Creek Marsh, Tiger Island marsh system, and Fernandina Beach waterfront on the Amelia River. They note the Cumberland Sound for its importance as a travel corridor for manatees moving between these locations. In 1988, Zoodsma and Lefebvre reported radio tagged manatees in Cumberland Sound from February to September, they observed that the manatees moved north via Cumberland Sound to coastal Georgia waters during the warm season. Baugh et al. (1989) describe manatees feeding on Spartina alterniflora in Cumberland Sound and note the importance of Spartina in the diet of manatees in Georgia. Manatees have also been documented in waters immediately surrounding Cumberland Island by Zoodsma and Bratton (1986).

Cumberland Island National Seashore, located within Cumberland Sound, is 36,415.09 acres in size and is separated from the mainland by several kilometers of salt marsh, river, and sound.

Although Georgia's coastal salt marshes have been identified as an important manatee habitat (Zoodsma and Valade, 1987; Zoodsma

and Lefebvre, 1988; Zoodsma and Bratton, 1986), manatee use of Cumberland Island salt marshes has never been studied. It is vital for park managers to understand manatee use of Cumberland Island National Seashore if the National Park Service is to develop management policies conducive to the survival of manatees.

A survey of manatee grazing on Spartina alterniflora and Ulva sp. was conducted along the west coast of Cumberland Island. Spartina sp. is a rigid, fibrous, cordgrass which readily exhibits damage from grazing pressure. Manatees browse on leaves, shearing them cleanly off (Buagh et al, 1989). Ulva sp., a marine algae often found growing on docks and other floating objects, demonstrates grazing pressure by reduction in overall algal length or by conspicuous absences in algal growth. Ulva sp. has been reported growing on the Sea Camp and Dungeness docks of Cumberland Island (Richardson, pers. comm.), and manatees have been witnessed feeding on Ulva sp. in the past (Zoodsma and Straut, unpublished data).

STUDY AREA

The survey area extended from the north end of Cumberland Island at the Plum Orchard dock south to and including Beach Creek (Fig. 1). River and creek banks and docks located at Plum Orchard mansion, Greyfield Inn, the Copp property, Sea Camp Visitor Center, Dungeness and the Grange were germane to this study.

The study area is an intertidal estuarine system, dominated by the emergent, persistent plant, Spartina alterniflora (USFWS

1979). The wetlands are regularly flooded by tidal waters.

METHODS

The survey was conducted opportunistically from 28 June 1989 to 30 August 1989. A jon boat equipped with a Johnson eight horse power motor and a Boston Whaler equipped with a Johnson forty horse power motor were used to navigate the coastline. When water levels were just below the base of the Spartina sp. (to allow entire plants to be inspected), observers situated in the boat would slowly advance parallel to the shoreline so that grazing damage could be readily detected. A distance from the shoreline of approximately one to ten feet was maintained at all times and observers used binoculars to aid in detecting grazing evidence at the longer distances.

Survey areas were classified subjectively on a scale of 0 to 4; 0 representing a grazing free area, and 4 representing areas of heaviest grazing. All areas were located, classified and plotted on a reproduction of a USGS quadrant map during the grazing surveys.

This survey was based on a through visual inspection of the entire marsh coast line as opposed to compiling data from random points in a marsh system.

Areas void of Spartina sp. or Ulva sp. and areas dominated by oyster bars were plotted accordingly (Fig. 2).

RESULTS AND DISCUSSION

Grazing damage was found to be most extensive in Old House Creek and Beach Creek (Fig. 3), and was noticeable at the docks between Old House and Beach Creeks. All grazing in Beach Creek, with the exception of two locations, occurred on the west bank, while grazing was comparable on both banks of Old House Creek.

Grazing that rated 2 to 3 was found on sloped Spartina sp. islands on either side of the southernmost Copp dock (Dubose' dock). Ulva sp. growing on the nearby floating dock was between 4 and 18 inches in length and was assumed to have been free from grazing pressure.

The other area of shoreline that exhibited browse damaged Spartina alterniflora was located to the north of the mouth of Beach Creek. This area is characterized by small islands of Spartina sp. slumping off the shoreline.

Docks with short or cropped algal lengths included those at the Grange, Dungeness, Sea Camp, and Greyfield. Short algal length on the Grange dock may be due to a significant amount of suspended particles in the water column, reducing the amount of light which Ulva sp. requires to grow. A manatee was sighted in this area on 23 Aug, and since manatees had been reported feeding on Ulva sp. growing under the floating docks of Dungeness, Sea Camp and Greyfield docks, the possibility of feeding from the Grange dock could not be ruled out.

Oyster bar formations and shoaled areas were associated with large sections of coast, primarily spanning the area between

Greyfield Dock and the mouth of Old House Creek (Figure 2). Oyster bars present at the mouth of Old House Creek extended northward almost continuously into the cove created by Flood Island.

The area around Flood Island and the cove created by it are of special note. The coast line was inaccessible by boat or on foot because it is a shoaled marsh. Inspection was attempted at great distances using binoculars; grazing was not apparent and it is not known whether this area of coast is accessible to manatees.

A sea wall extends south from Dungeness Dock and, similarly, a sea wall extends north and south of Seacamp Dock. These areas are for the most part void of Spartina sp. and, save for Salicornia sp., offer no other source of vascular plants for manatees to feed on. The shoreline between Dungeness and Sea Camp is an eroding uplands forest habitat and is also void of Spartina sp.

DISCUSSION

Not only has the Cumberland Sound provided an important corridor for manatees travelling in southern Georgia, but it has now been shown that manatees graze in the rivers, off the docks and from the unprotected coastal areas of Cumberland Island. As the data indicate, grazing is heaviest and most frequent in Beach Creek and Old House Creek where there is some protection from boat traffic. Although these creeks are not free from boaters, the frequency of use is considerably less than in the Cumberland Sound and Intercoastal Waterway (ICW).

The survey data also indicate that the dock areas between Old

House Creek and Beach Creek provide a grazing area for manatees. This can be an indication of two things; manatees have a preference for Ulva sp. or they associate docks with the availability of fresh drinking water. Either grazing or fresh water may draw the manatees to the dock areas, but it is important to note that dock areas are high in boat traffic and a potential hazard to the manatee. Since there is little to be done to prevent manatees from feeding on Ulva sp. and other types of algae that grow on floating docks, it is suggested that people should refrain from altering their behavior by providing fresh water.

FUTURE SURVEYS

The west coast of CUIS should be surveyed annually for signs of manatee browse. Preferably the data could be collected twice annually and be compiled with sightings by park visitors and those conducting official surveys in the area.

In an effort to improve protocol, the author suggests that these surveys be conducted in a continuous manner rather than opportunistically. This will limit the likelihood of grazing occurring in areas already surveyed prior to survey completion.

Some methodology should be adapted to record physical characteristics of river and creek banks. I suggest a protocol adapted from Zoodsma and Lefebvre (unpublished data). The adaptation could be in either a continuous or random manner using 100m segment points and 10m subsegment points. Recordings at each point would consist of monitoring the presence and measurement or

absence of microcliff; and a description of marsh edge; continuous, cove-like, indented or island-like. In this manner, preferential marsh edge can be identified and the area of preferred marsh edge type located in CUIS be determined.

Because relatively little was known about Ulva sp. in general and manatee feeding on Ulva sp. specifically at the onset of this survey, there was no distinction made between U. rigida and U. fasciata. It is now known (J. Richardson, personal communication) that U. rigida does not typically grow to the lengths recorded in U. fasciata and therefore could have been misconstrued as browse damage. It is essential that Ulva sp. be distinguished as either U. rigida or U. fasciata before determining that overall length is due to grazing rather than to the nature of the algae. A third variety, Ulva carvatta is often found growing on river bottoms and may be seen floating freely in rivers in the Cumberland Sound region. In future surveys, samples of Ulva sp. should be collected for identification when grazing is suspected.

ACKNOWLEDGEMENTS

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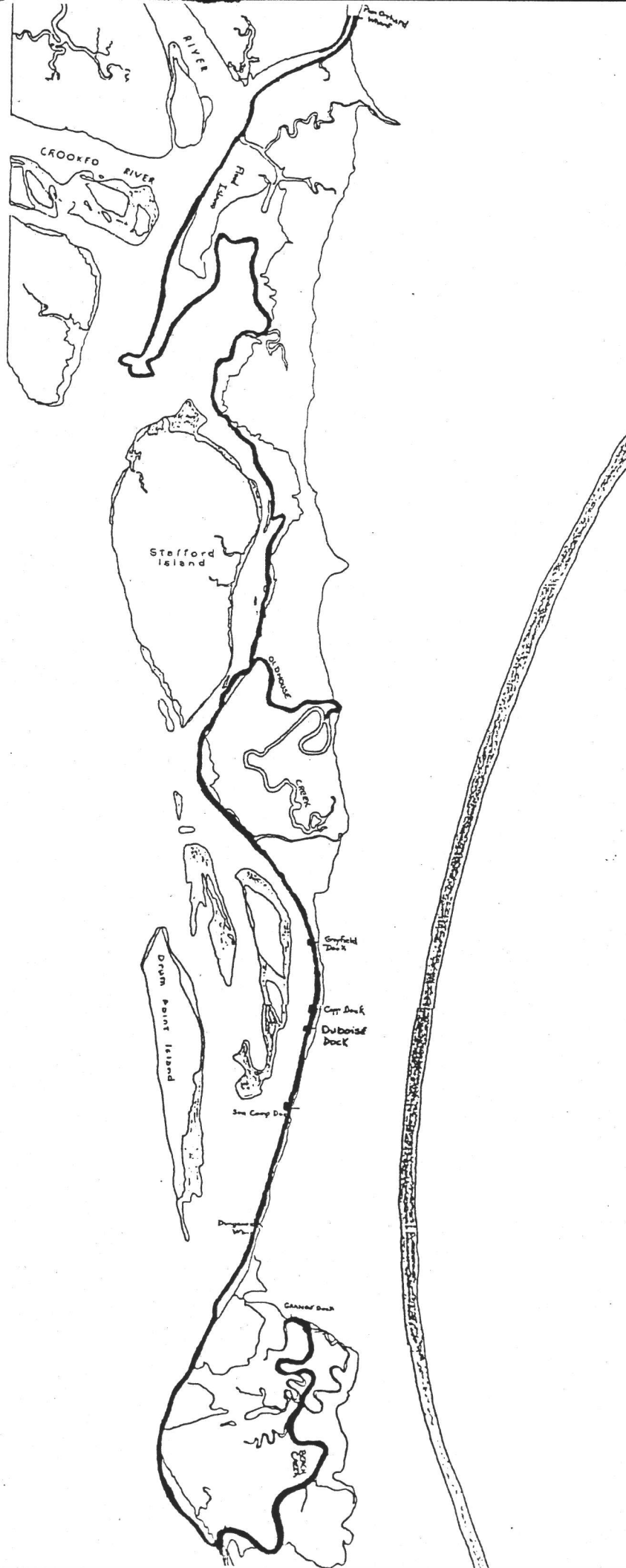


Figure 1
Bold line indicates
survey area

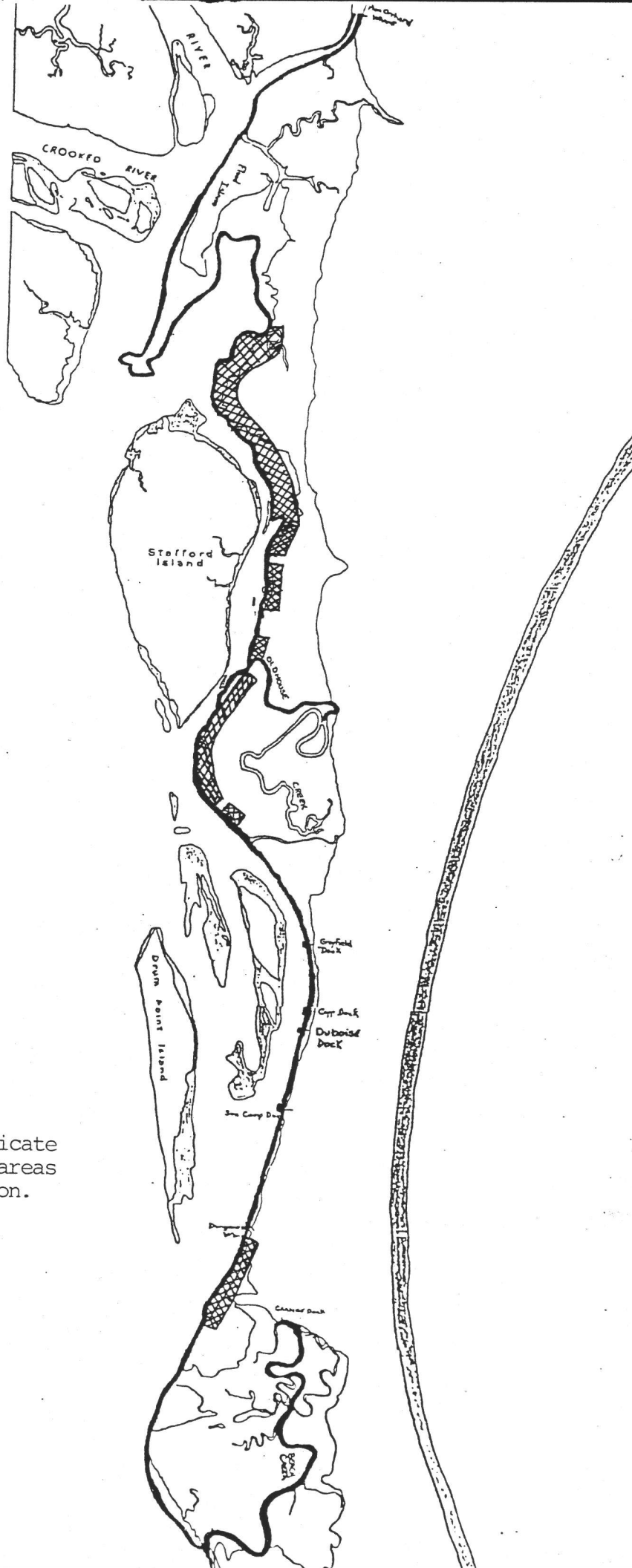


Figure 2

Shaded areas indicate
oyster bars and areas
free of vegetation.

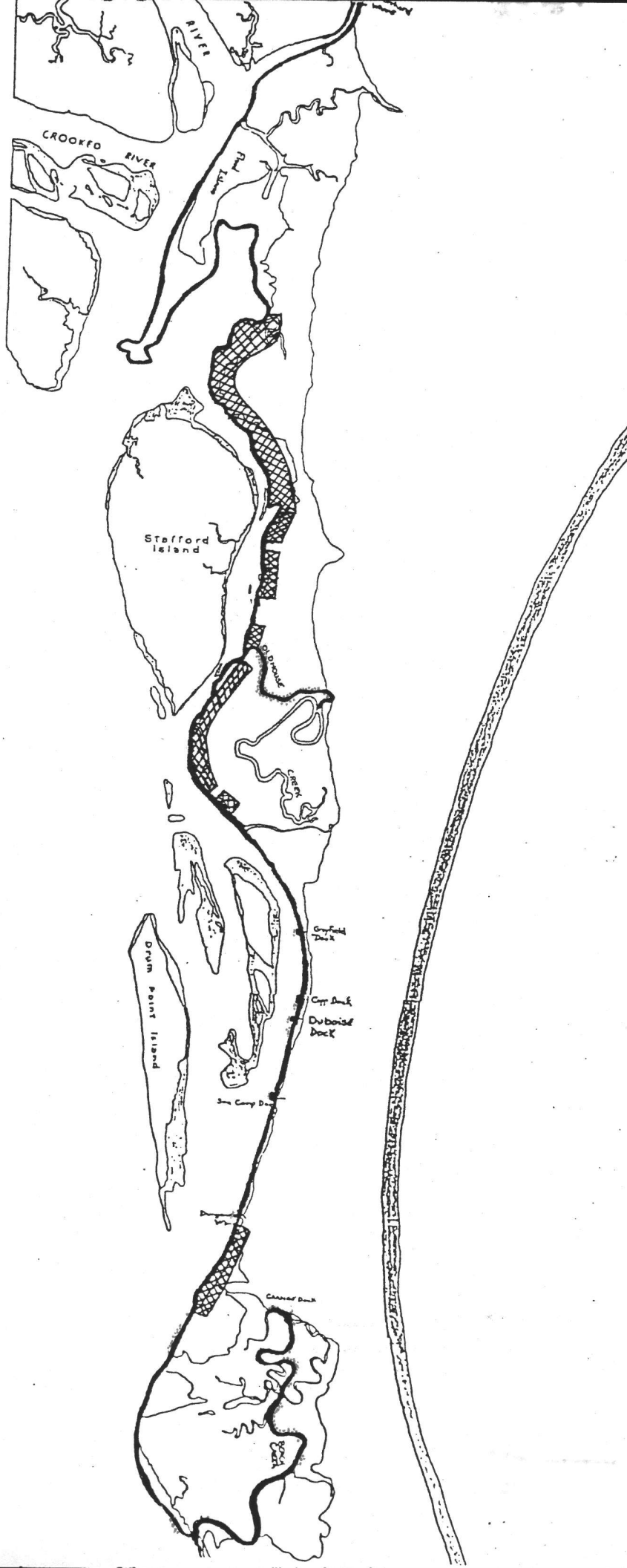


Figure 3

Red dots indicate
grazed areas