Commercial Trotline Fishery in Upper Laguna Madre and Nueces Bay, June-August 1990

by
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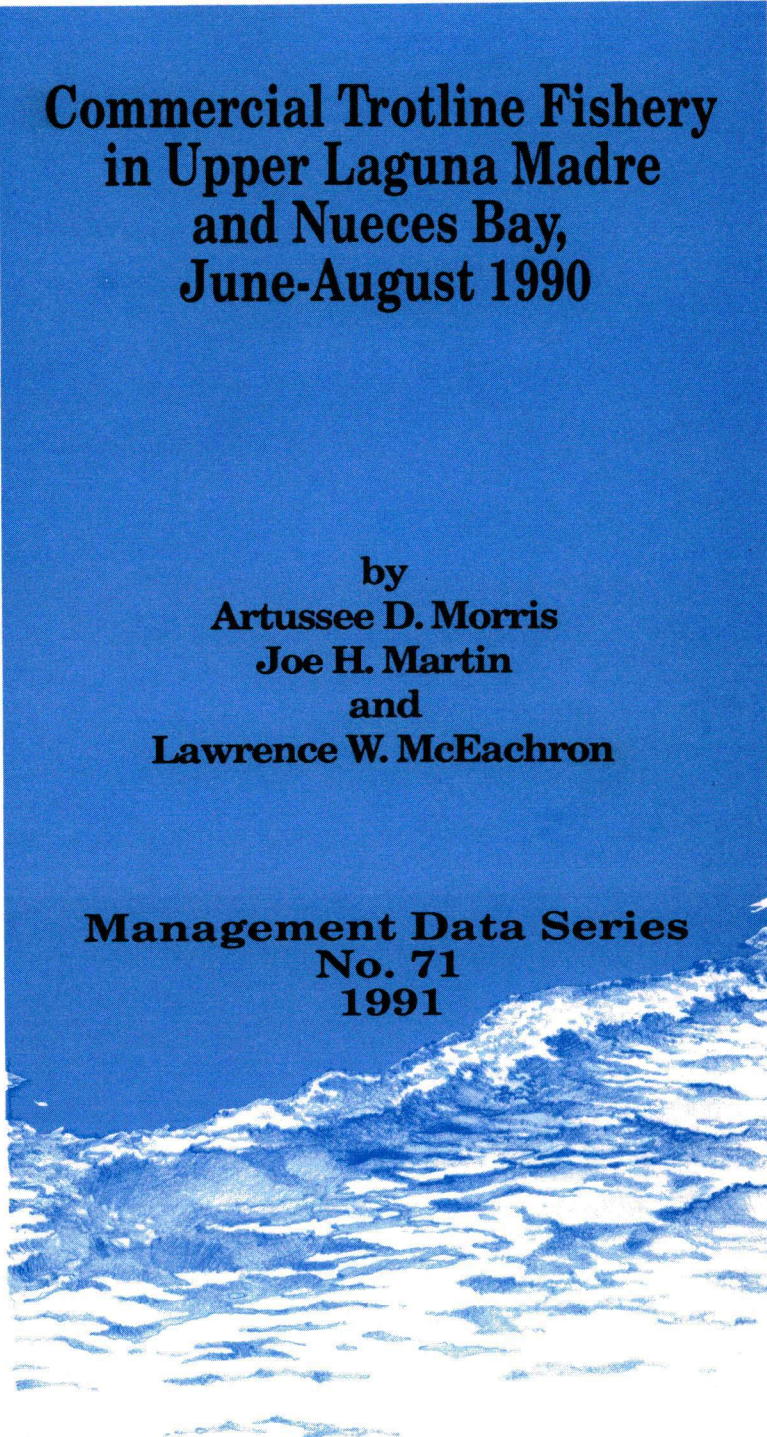**Management Data Series
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ABSTRACT

To determine finfish trotline catch during summer, 75 commercial trotlines used by 14 different commercial fishermen were examined in upper Laguna Madre and Nueces Bay during June-August 1990. Of 552 fish observed on trotlines, 315 were hardhead catfish (<u>Arius</u> <u>felis</u>), 167 were black drum (<u>Pogonias</u> <u>cromis</u>) and 40 were red drum (<u>Scienops</u> <u>ocellatus</u>). Oak leaves were the predominate bait used on trotlines. Number of trotlines counted in each bay ranged from 4-23/day in upper Laguna Madre, and from 32-84/day in Nueces Bay. Coastwide commercial trotline counts revealed 54 trotlines, 46 of which were observed in Corpus Christi Bay, and 4 each in upper and lower Laguna Madre.

INTRODUCTION

Trotlines have been used in the commercial finfish fishery in Texas since the early 1930's (Martin et al. 1987). Prior to 1981 red drum (_Sciaenops ocellatus_) and spotted seatrout (_Cynoscion nebulosus_) were targeted by commercial trotliners (Hamilton 1981). With the sale of these species banned in September 1981, fishermen redirected their efforts toward black drum (_Pogonias cromis_) (Hamilton and Saul 1984). However, red drum and spotted seatrout continued to be caught as a by-catch of black drum trotline operations (McEachron et al. 1987).

Most commercial trotlining in Texas occurs in Corpus Christi Bay (Figure 1) and in upper and lower Laguna Madre (Figures 2 and 3). These areas account for over 85% of Texas' reported black drum landings (Quast et al. 1989). Although trotlining occurs throughout the Laguna Madre (Simmons 1957, Breuer 1962) trotlining in Corpus Christi Bay is limited primarily to Nueces Bay.

Regulations restricting trotline gear type, bait type, fishing time and fishing area have been used by the Texas Parks and Wildlife Commission (TPWC) to reduce by-catch and prevent overharvest (McEachron et al. 1987). In May 1990 the TPWC enacted two regulations designed to protect spotted seatrout populations which were severely reduced by freezes in February and December 1989. One regulation increased the minimum size limit of spotted seatrout from 356 to 381 mm to allow for increased spawning potential of surviving fish. The other prohibited trotlining in all Texas bays during June-August beginning in 1991 to eliminate by-catch of spotted seatrout on trotlines.

During public hearings in April 1990, commercial fishermen testified trotline methods had changed since the last trotline studies were conducted by the Texas Parks and Wildlife Department (TPWD) and that spotted seatrout comprise a small portion of the by-catch. Fishermen also testified trotlining activity was heavy during summer, especially in upper Laguna Madre and Nueces Bay.

The present study was conducted to 1) determine finfish catch on trotlines in upper Laguna Madre and Nueces Bay during June-August 1990; and 2) estimate the extent of trotline activity in Texas bays during summer.

MATERIALS AND METHODS

Commercial trotline surveys were conducted one day/week alternating between upper Laguna Madre and Nueces Bay during 26 June-29 August 1990. On each sampling day up to 10 commercial trotlines were checked by TPWD coastal fisheries and Law Enforcement personnel prior to being run by commercial fishermen. Data recorded for each trotline included number and size of hooks, number of fish caught by species, bait type, position of trotline in water column, trotline tag number and fisherman's name. Trotlines not inventoried were counted. In upper Laguna Madre trotline counts were restricted to the vicinity of inventoried trotlines. All trotlines were counted in Nueces Bay.

Coastwide trotline ccunts were made in conjunction with routine TPWD sampling in nine Texas bay systems during 1 June-31 August 1990. During coastwide counts a straight line of stakes or floats commonly used on trotlines were counted. They were not checked to see if the mainline was attached.

RESULTS

Thirty-nine trotlines in upper Laguna Madre and 36 trotlines in Nueces Bay were inventoried. Oak leaves was the predominant trotline bait (Table 1). Of 552 fish on trotlines, 315 were hardhead catfish (_Arius_ _felis_), 167 were black drum, 40 were red drum, 26 were gafftopsail catfish (_Barge_ _marinus_), two were ladyfish (_Elops_ _saurus_), one was an Atlantic croaker (_Micropogonias_ _undulatus_) and one was a southern flounder (_Paralichthys_ _lethostigma_)(Table 1). Trotlines of 14 different commercial fishermen were checked. Seven fishermen had lines in upper Laguna Madre and seven had lines in Nueces Bay. Number of trotlines counted in upper Laguna Madre and Nueces Bay ranged from 4-23/day and 32-84/day, respectively (Table 2).

Coastwide trotline counts revealed 54 trotlines, of which 46 were in Corpus Christi Bay, four in upper Laguna Madre and four in lower Laguna Madre (Table 3).

DISCUSSION

Lack of spotted seatrout caught on trotlines during this study could be due to one or more factors. Low population abundance due to freezes, use of oak leaves as bait and a small sample of commercial trotlines may all have contributed to the 0 catch of spotted seatrout. It is not possible at the present time to single out the one or combination of factors that caused the lack of catch. Generally, methods used by commercial trotliners were similar to previous studies (McEachron et al. 1987) except for the extensive use of oak leaves as bait. A similar bait (oleander leaves) used in a previous study resulted in the second highest catch of spotted seatrout for four baits used on summer trotlines (Martin et al. 1987). It is unclear as to why no spotted seatrout were caught on oak leaves in the present study.

Coastwide summer commercial trotline activity appeared to be minimal, except for Corpus Christi Bay and upper and lower Laguna Madre. This probably is due to the high population of black drum in these areas. This also is reflected in the commercial black drum landings for the Texas coast.

The 381 mm minimum size achieved increased recruitment of juvenile spotted seatrout based on staff investigations during July through November 1990. Adult abundance was expected to remain low in summer 1991, therefore, catches of spotted seatrout in the existing trotline fishery would be low as well.

Based on the present study, closing the summer trotline fishery in 1991 would have little effect on the by-catch of spotted seatrout. Therefore, the summer ban on trotline use was repealed in March 1991.

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Table 1. Description of commercial trotlines fished in Nueces Bay and upper Laguna Madre with associated catch (no.) by species during summer 1990. ND = no data; fish already taken off trotline.

Area	Date	Depth range (m)	Hooks	Bait type	Black drum	Gafftop sail catfish	Hardhead catfish	Red drum	Other	Total
Nueces Bay										
	03 Jul	1.5-1.5	75	Oak leaves	2	0	1	0	0	3
		1.5-1.5	75	Oak leaves	0	3	6	0	0	9
		1.6-1.6	75	Oak leaves	6	3	8	0	1	18
		1.6-1.6	75	Oak leaves	5	1	10	0	0	16
		1.5-1.5	75	Oak leaves	7	1	8	0	0	16
		1.7-1.7	75	Oak leaves	2	3	5	0	1	11
		1.4-1.4	144	Grapes	ND	ND	ND	ND	ND	ND
		1.5-1.5	144	Grapes	ND	ND	ND	ND	ND	ND
		1.4-1.4	120	Grapes	2	1	7	0	0	10
		1.7-1.7	100	Oak leaves	ND	ND	ND	ND	ND	ND
		1.6-1.6	100	Oak leaves	ND	ND	ND	ND	ND	ND
	17 Jul	2.8-2.8	75	Oak leaves	3	0	2	0	0	5
		2.3-2.3	75	Oak leaves	1	1	2	0	0	4
		2.7-2.7	75	Oak leaves	0	1	5	0	0	6
		3.0-3.0	75	Oak leaves	0	1	4	3	0	8
		2.6-2.6	75	Oak leaves	0	1	7	1	0	9
		1.5-1.5	75	Oak leaves	0	0	1	5	0	6
		2.6-2.6	144	Oleander leaves	0	1	3	1	0	5
		2.6-2.6	144	Oleander leaves	1	0	0	0	0	1
		2.6-2.6	144	Oleander leaves	0	0	0	3	0	3
		2.4-2.4	144	Oleander leaves	0	1	2	0	0	3
	31 Jul	1.5-1.5	180	Oak leaves	2	2	7	1	0	12
		1.6-1.7	180	Oak leaves	9	0	8	0	0	17
		1.6-1.7	180	Oak leaves	7	0	9	0	0	16
		1.6-1.6	180	Oak leaves	4	0	8	0	0	12
		1.6-1.7	180	Oak leaves	3	1	4	1	0	9
		1.6-1.6	180	Oak leaves	10	2	6	0	0	18
		1.6-1.8	180	Oak leaves	11	3	16	0	0	30
	29 Aug	1.7-1.8	190	Oak leaves	0	0	1	2	0	3
		1.6-1.7	190	Oak leaves	5	0	2	1	0	8
		1.6-1.6	190	Oak leaves	6	0	4	0	0	10
		1.7-1.7	190	Oak leaves	4	0	3	1	0	8
		1.3-1.5	190	Oak leaves	1	0	2	3	0	6
		1.0-1.5	190	Oak leaves	0	0	1	2	0	3
		0.9-1.3	95	Oak leaves	1	0	1	0	0	2
		1.3-1.3	70	Oak leaves	3	0	0	1	0	4

Table 1. (Cont'd.)

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Area	Date	Depth range (m)	Hooks	Bait type	Black drum	Gaftop sail catfish	Hardhead catfish	Red drum	Other	Total
Upper Laguna Madre										
	26 Jun	0.9-0.9	90	Oak leaves	3	0	5	0	0	8
		0.9-0.9	78	Oak leaves	2	0	4	0	0	6
		0.9-0.9	96	Oak leaves	ND	ND	ND	ND	ND	ND
	10 Jul	0.6-1.3	129	Oak leaves	2	0	4	1	0	7
		0.9-1.3	103	Oak leaves	2	0	2	0	0	4
		0.6-1.3	109	Oak leaves	0	0	4	1	0	5
		0.9-1.3	93	Oak leaves	7	0	2	0	0	9
		1.0-1.3	117	Oak leaves	2	0	6	0	1	9
		1.1-1.3	128	Oak leaves	7	0	11	0	0	18
		0.8-0.9	110	Oak leaves	4	0	2	0	0	6
		0.9-0.9	124	Oak leaves	4	0	14	1	0	19
		0.9-1.3	129	Oak leaves	3	0	16	1	0	20
		1.3-1.3	114	Oak leaves	2	0	8	1	0	11
	24 Jul	1.5-1.5	85	Oak leaves	0	0	0	0	0	0
		1.1-1.4	178	Oak leaves	1	0	13	1	0	15
		1.3-1.5	80	Oleander leaves	1	0	0	2	1	4
		1.2-1.5	102	Oleander leaves	3	0	1	0	0	4
		0.9-1.3	103	Oleander leaves	1	0	2	0	0	3
		1.3-1.4	97	Oleander leaves	2	0	4	1	0	7
		1.3-1.6	78	Oleander leaves	0	0	3	1	0	4
		1.4-1.4	73	Oak leaves	0	0	8	0	0	8
		1.3-1.3	113	Oak leaves	3	0	13	0	0	16
		1.0-1.2	112	Oak leaves	1	0	3	0	0	4
	07 Aug	1.2-1.3	99	Oleander leaves	2	0	10	0	0	12
		1.3-1.4	80	Oleander leaves	2	0	1	0	0	3
		1.2-1.2	110	Oak leaves	0	0	7	2	0	9
		1.3-1.3	96	Oak leaves	1	0	9	0	0	10
		1.4-1.5	114	Oak leaves	1	0	8	1	0	10
		1.3-1.5	75	Oak leaves	1	0	6	0	0	7
	20 Aug	1.4-1.4	108	Oak leaves	3	0	0	0	0	3
		1.4-1.4	91	Oak leaves	5	0	1	1	0	7
		1.4-1.4	89	Oak leaves	0	0	2	0	0	2
		1.4-1.4	73	Oak leaves	2	0	0	0	0	2
		1.4-1.4	79	Oak leaves	0	0	0	0	0	0
		1.4-1.4	92	Oleander leaves	0	0	0	0	0	0
		1.5-1.5	108	Unknown	0	0	1	1	0	2
		1.3-1.3	110	Oleander leaves	5	0	0	0	0	5
		1.2-1.2	90	Oleander leaves	0	0	1	0	0	1
		1.2-1.2	90	Oleander leaves	0	0	1	0	0	1

Table 2. Number of total trotlines observed on each
survey day during summer 1990. Total includes those
"ran" and those observed. ND = no data.

Date	Nueces Bay	Upper Laguna Madre
26 Jun	ND	4
03 Jul	32	ND
10	ND	20
17	26[a]	ND
24	ND	16
31	84	ND
07 Aug.	ND	12
20	ND	23
29	77	ND

[a]Entire bay not included because of thunderstorms.

Table 3. Coastwide trotline counts conducted during
routine sampling by bay system during June-August
1990.

Bay Group	1990
Sabine	
Grids	112
Trotlines	0
Galveston	
Grids	187
Trotlines	0
East Matagorda	
Grids	92
Trotlines	0
Matagorda	
Grids	152
Trotlines	0
San Antonio	
Grids	165
Trotlines	0
Aransas	
Grids	136
Trotlines	0
Corpus Christi	
Grids	149
Trotlines	46
Upper Laguna Madre	
Grids	82
Trotlines	4
Lower Laguna Madre	
Grids	143
Trotlines	4
Combined	
Grids	1,106
Trotlines	54

Figure   1.   Corpus Christi Bay System.

Map showing Redfish Bay, Corpus Christi Bay, Nueces Bay, and Corpus Christi*
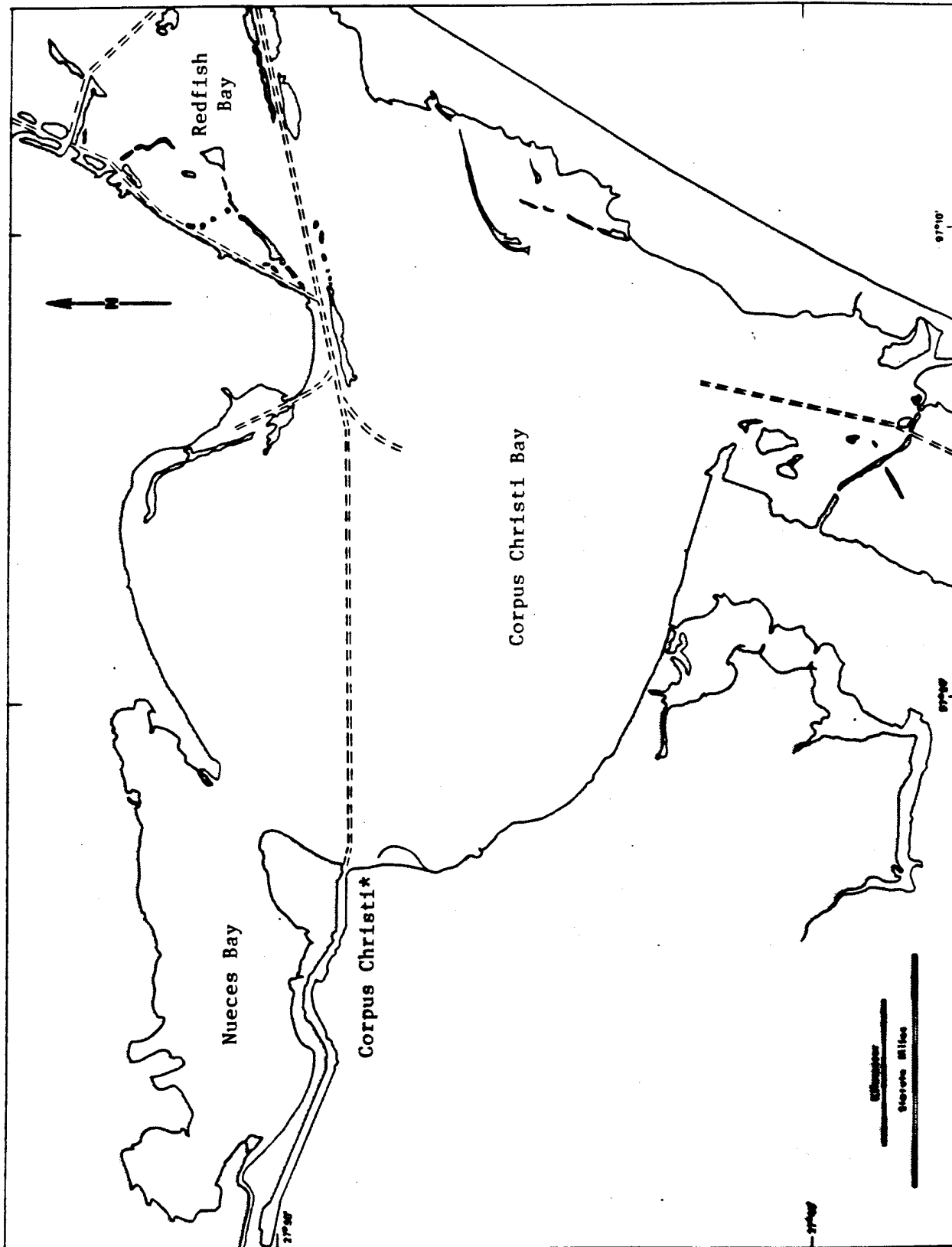
Figure 2. Upper Laguna Madre System.

A (Lower Laguna Madre)

Scatuto Miles

Kilometer

South Bay

* Port Isabel
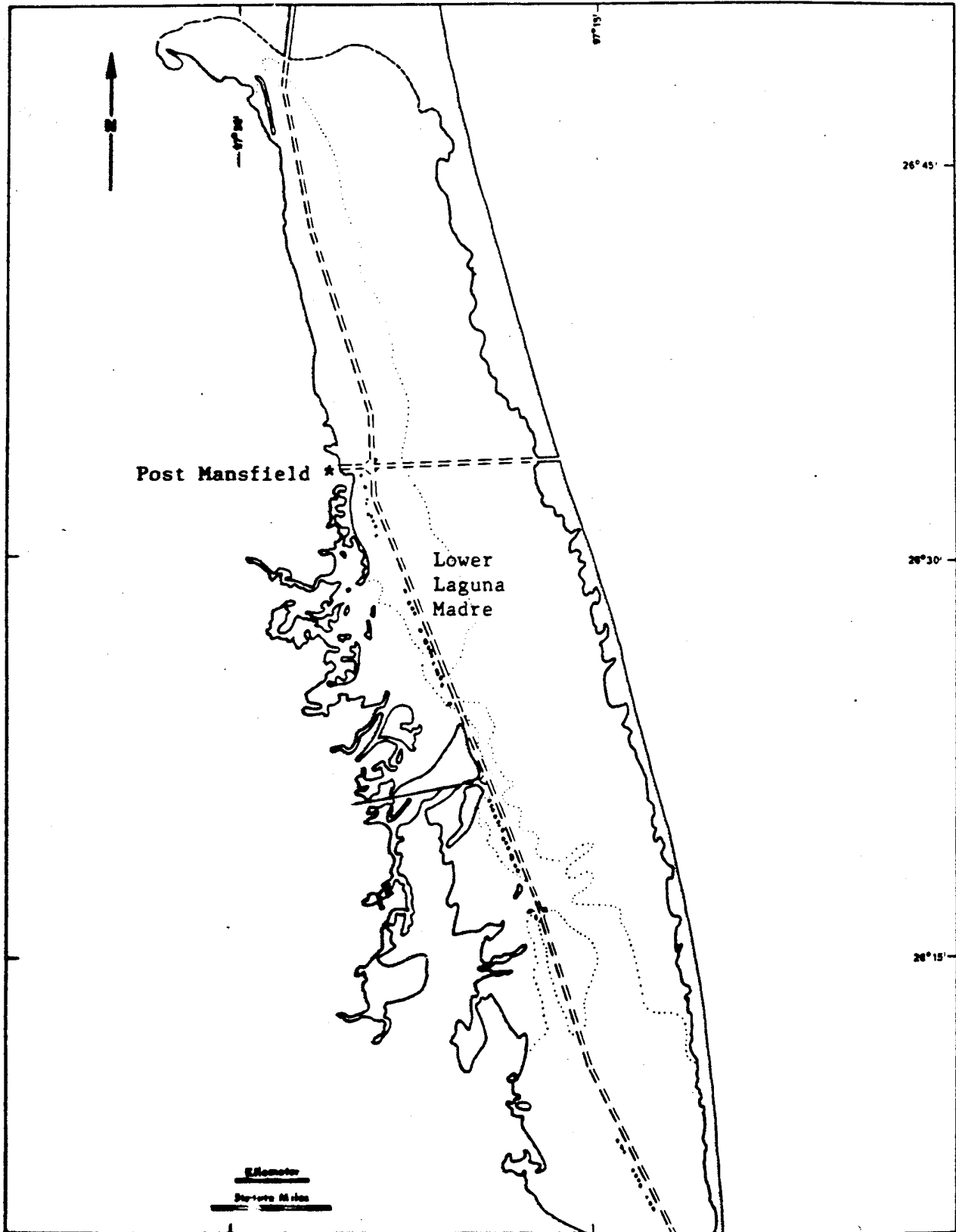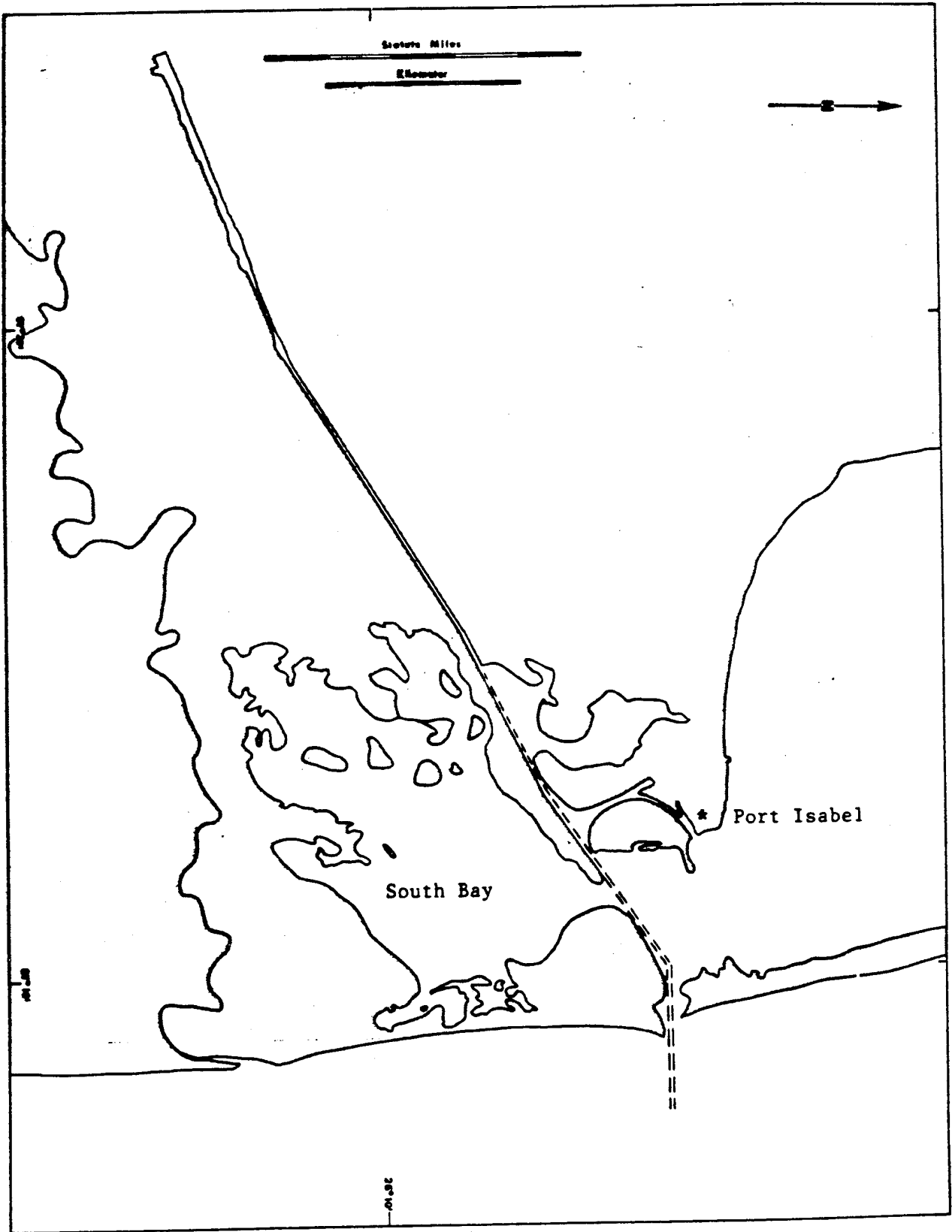
B (South Bay)

PWD-RP-N3400-384-7/92