

Job Report

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Project Name: A Study of Texas Shrimp Populations
Period Covered: September 1, 1961 to December 31, 1962 Job No. 8

Populations of Juvenile Shrimp in the Upper Laguna Madre

Abstract: Similar trawls made twice each month over the past two years show shrimp catches to be slightly lower in the 1961-1962 season than they were the preceding seasons. Most shrimp caught in the upper Laguna Madre were brown shrimp, 60 to 100 mm. in length. They were most abundant in late spring. Pink shrimp appeared more tolerant to cold water and were found in the area in early winter and spring. Schools of white shrimp usually enter the lagoon in the fall but did not do so in 1962.

Objectives: To determine the seasonal abundance and size of juvenile shrimp in the upper Laguna Madre.

Procedure: On the first and fifteenth days of each month samples were taken at 3 stations (Figure 1) with a 10-foot trawl, lined with one-fourth of an inch stretch mesh. One of these stations was in 3 to 4 feet of water east of Pita Island. The other two stations were in water 12 feet deep and were located in the Intracoastal Waterway at Marker 23 and at the north end of the Land Cut. Fifteen-minute samples were taken at night with a 20-foot trawl of 1 1/2-inch stretch mesh when bait shrimpers were trawling at night. A 60-foot bag seine and a push net were used to obtain shrimp for length-frequency measurements. Shrimp were measured from the rostrum tip to the tip of the telson. Water temperature and salinity were measured and recorded for each station sampled.

Findings and

Discussion: Table 1A summarizes data collected at regular sampling stations with the 10-foot trawl.

Table 1B presents the results of five nighttime samplings. Of 5 similar samples taken in late afternoon, 4 failed to catch any shrimp. One trawl in the afternoon caught 261 browns and 49 pinks.

Figure 2 compares day trawl catches in 1961-62 with those of the 1960-61 season.

Figure 3 shows maximum, minimum and modal lengths of brown and pink shrimp caught in the upper Laguna Madre from September 1961 through December 1962.

Penaeus aztecus - Brown shrimp were present in the upper Laguna Madre throughout the year except in the cool winter months and in August when salinity and water temperatures were the highest. They were most common in November 1961 and May 1962 as noted in Figure 1. Large numbers of browns

from the lagoon entered Packery Channel in May 1962. Browns were more concentrated, 22 per 10-foot trawl sample, in the area in May 1962 than they were during any other month in 1961 or 1962. However, their population peak was reached fast and declined sharply, as illustrated by Figure 2. The 1961 brown shrimp population was not as concentrated as the 1962 population but maintained its peak numbers over a longer period of time, 14 shrimp per 10-foot trawl in May and 16 shrimp per trawl in June. Salinity averaged 43 ppt. in June 1961 and 42 ppt. in June 1962.

Length-frequency modes indicate a growth of roughly 30 mm. between April and May in 1962. By June these shrimp had left the area. Smaller browns moved into the lagoon as the larger shrimp migrated out. Monthly size modes of brown shrimp as shown in Figure 3 illustrate this point.

Penaeus duorarum - Pink shrimp were most abundant in the upper Laguna Madre in April and May of 1962. They were also present in November and December. This species is caught mostly at night and therefore did not appear in many daylight samples. While pinks did not remain in the lagoon for long periods of time, they appear to withstand cold water better than browns do, because they are the most common species caught in the colder months.

Penaeus setiferus - There were practically no white shrimp caught in the area in 1962. A small population of whites was found in a dead-end channel at Tropic Isle in July and they remained there until September. In late fall of each year at least one school of whites usually enters from Corpus Christi Bay. Such a school was found at Marker 31 in November 1961. Two 15-minute drags with a 20-foot trawl caught 625 whites with a modal size of 125 mm.

Conclusions: Browns and pinks were the only penaeid shrimp present in large numbers in the upper Laguna Madre in 1962. Both species reached their population peaks in springtime, left the area in July and returned in late fall. The fact that grooved shrimp were present for longer periods of time in 1961 and the presence of a fall white shrimp run that year indicate 1961 to have been a better year for shrimp in the area than was 1962.

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Table 1A
Ten-foot Standard Trawl Catches for September 1961 Through December 1962

	1962															
	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
Trawls	5.0	6.0	3.0	2.0	0.0	2.0	4.0	4.0	5.0	4.0	4.0	6.0	4.0	5.0	5.0	3.0
S/T	1.4	4.5	23.7	3.5	0.0	0.0	0.0	7.5	24.6	6.5	0.8	0.0	0.5	1.0	1.8	0.3
Brown	7.0	20.0	42.0	7.0	0.0	0.0	0.0	27.0	105.0	26.0	3.0	0.0	2.0	5.0	6.0	0.0
White	0.0	7.0	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.0
Pink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0	18.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 1B
Twenty-foot Night Trawl Catches for September 1961 Through December 1962

	1962															
	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Mar.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>
Trawls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
S/T	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.5	14.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0
Brown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.0	20.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
White	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Pink	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0	8.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0

Trawls = Number of trawl samples made each month.
S/T = Average number of shrimp caught per 15-minute trawl.

Figure 1
 Locations of Shrimp Stations in the Upper Laguna Madre

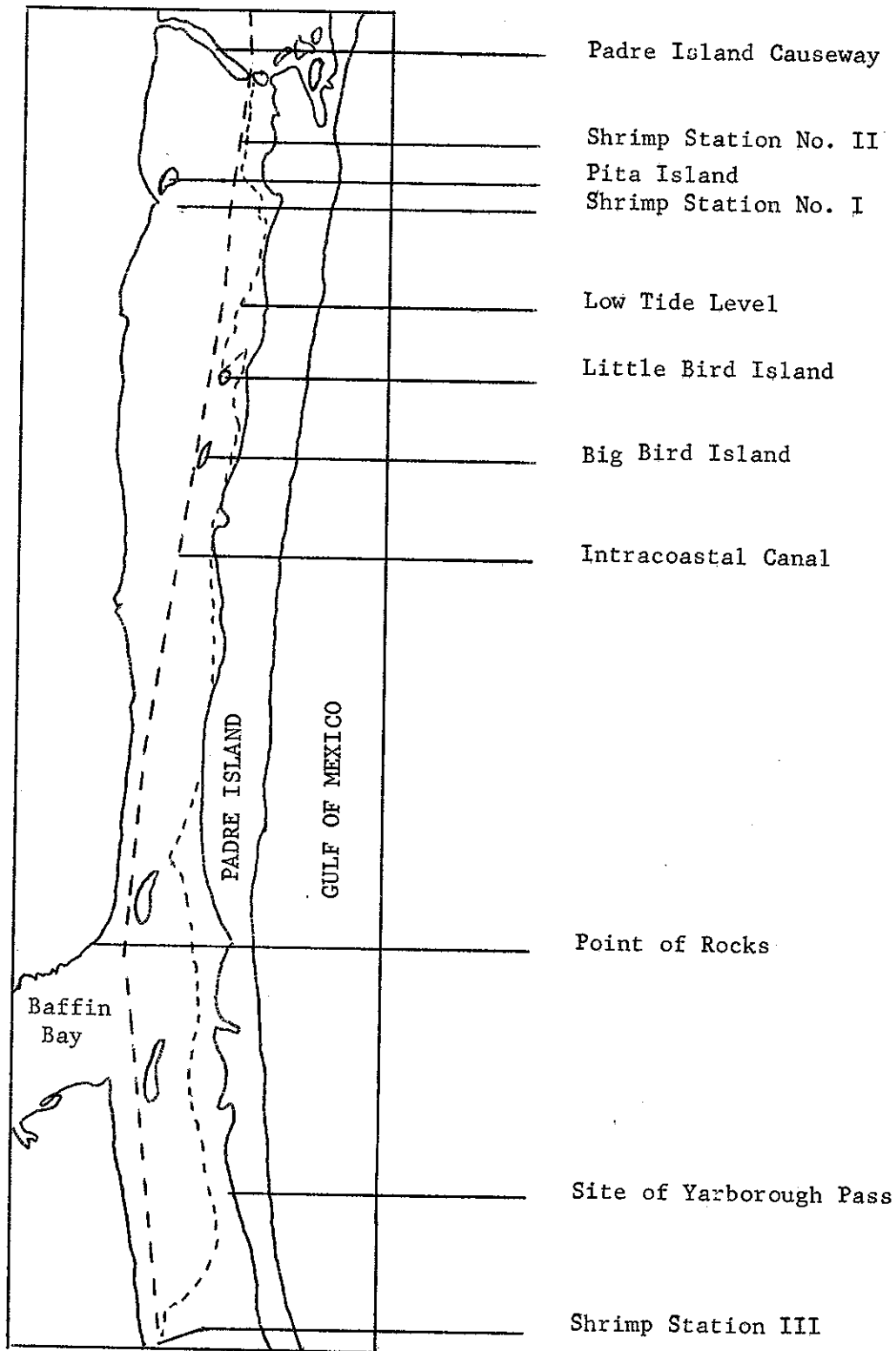


Figure 2
 Shrimp Caught Per 10-Foot Trawl Sample From
 September 1, 1960 to December 31, 1962

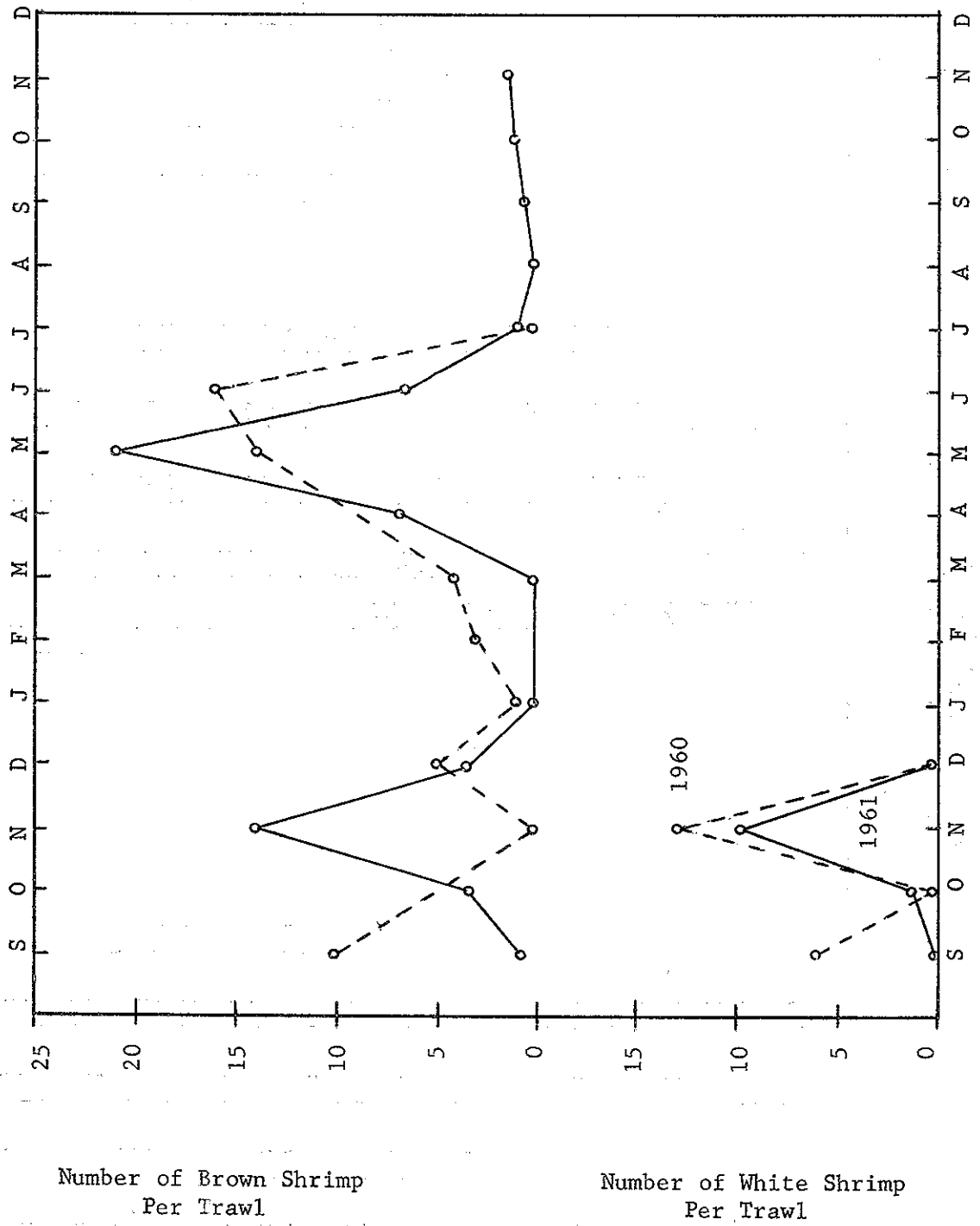


Figure 3
 Maximum, Minimum and Modal Lengths of Grooved Shrimp Caught in the Upper Laguna Madre
 September 1961 - December 1962

