

Job Report

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Project Name: A Study of Texas Shrimp Populations
Period Covered: January 1, 1963 to December 31, 1963 Job No. 6

A Study of Populations of Juvenile Shrimp in the Corpus Christi Bay Complex

Abstract: Brown shrimp (*Penaeus aztecus*) were 30.2 per cent less abundant in 10-foot trawl samples in 1963 than in 1962. White shrimp (*Penaeus setiferus*) were 34.4 per cent less abundant. The first juvenile brown shrimp of the year appeared in the April 1st samples. This group was followed by a second wave in July and a third one in August.

Juvenile white shrimp were first taken in the mid-July samples, 15 days later than in 1962. White shrimp reached a peak of abundance in August with 27.4 shrimp per unit of effort and another peak in November with 28.3 shrimp per unit of effort.

Objectives: To determine the seasonal abundance and size of juvenile shrimp in the Corpus Christi Bay area.

Procedure: On the first and fifteenth of each month (plus or minus 2 days) a 15-minute sample was taken at each of six previously established stations (Figure 1) in Corpus Christi, Nueces, Oso, and Redfish Bays with: 1. A 10-foot trawl of 1 1/4 inch stretch mesh with a bag liner of one-half of an inch stretch mesh in primary, secondary, and tertiary bay stations; 2. A 20-foot trawl of 1 1/2 inch stretch mesh used in the areas being worked by the commercial shrimp fleet.

Salinity and water temperature were recorded at each station. Salinities were calibrated with specific gravity hydrometers and the use of Knudsen's Hydrographic Tables.

Findings and Discussion

Penaeus aztecus: Brown shrimp were present in the Corpus Christi Bay area throughout the study period; however, they were extremely scarce during March when only 5 were taken in 10 samples (Table 1).

The first wave of brown shrimp showed up in the April 1st samples in the tertiary (Oso Bay) nursery grounds when 55 juveniles were taken. This group had a size range from 36 mm to 77 mm with a mode of 50-60 mm (Figure 2).

A considerably larger wave entered the bays in May when brown shrimp reached their peak of abundance of 49.9 per unit of effort (Figure 3). A unit of effort is one 15-minute trawl sample. This species remained relatively abundant from May through August.

In comparison with 1962, there was a decline of 30.2 per cent in brown shrimp per unit of effort in 1963. There was also a corresponding decline in rainfall in 1963 (Figure 3).

Penaeus setiferus: White shrimp were first taken in the mid-July samples, 15 days later than in 1962, in the tertiary bay area. This was a relatively small wave of white shrimp ranging from 35 mm to 75 mm in length. A second, and more numerous, wave entered the secondary (Nueces) and primary bay (Corpus Christi) areas in August. The catch per unit of effort at this time was 27.4 (Table 1). Abundance of white shrimp then dropped to 16.5 in September and to 8.0 in October. During November, there was a peak of 28.3 white shrimp per unit of effort. This last group of whites was made up of relatively larger shrimp (100-110 mm) which were on their way out of Nueces Bay.

White shrimp were 34.4 per cent less abundant in 1963 than in 1962, but the ones that were present attained a larger size before leaving the area.

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Figure I Location of Shrimp Sampling Stations

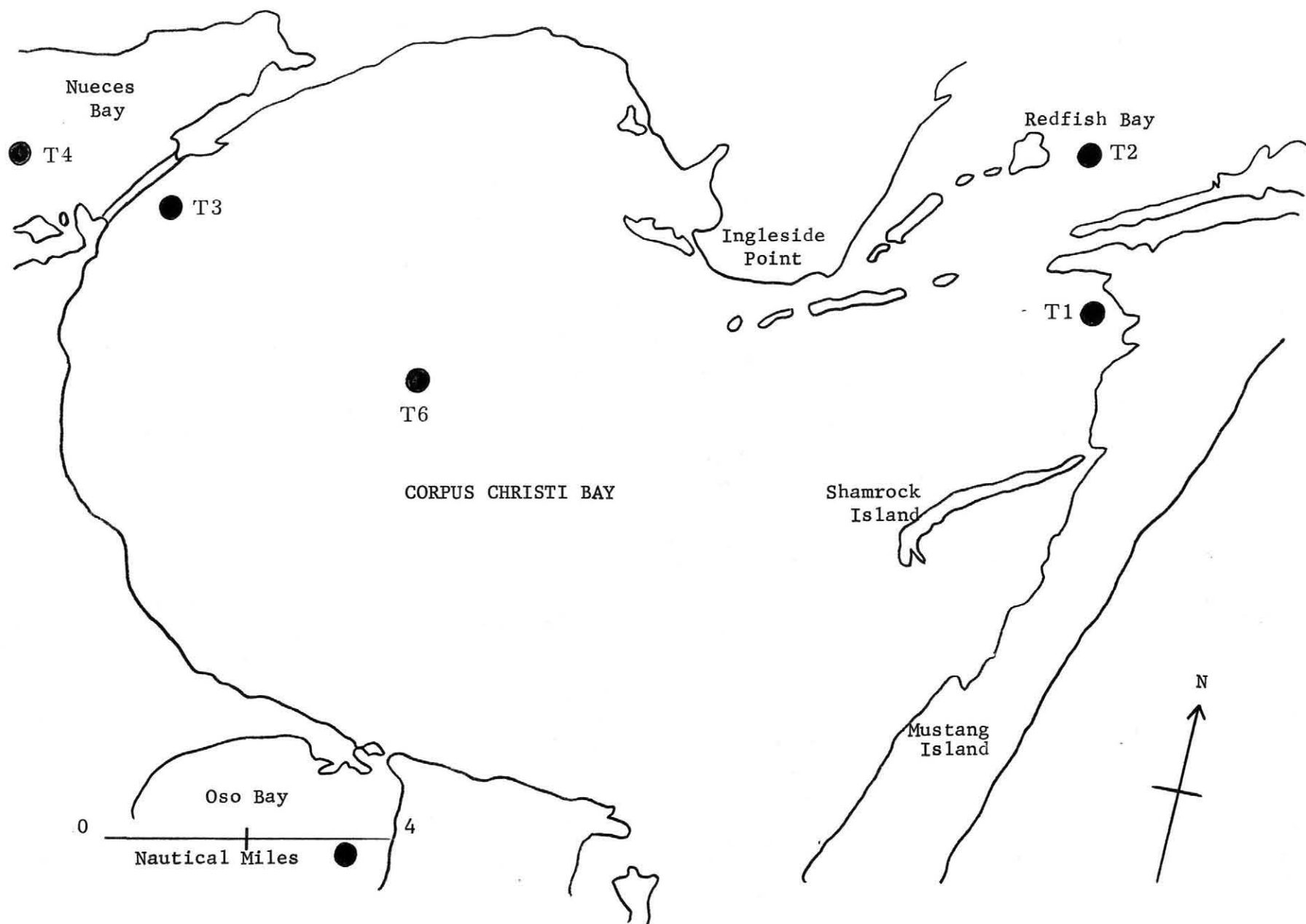


Figure 2

Maximum, Minimum and Modal Lengths of White and Brown Shrimp Caught in the Corpus Christi Bay System (1963).

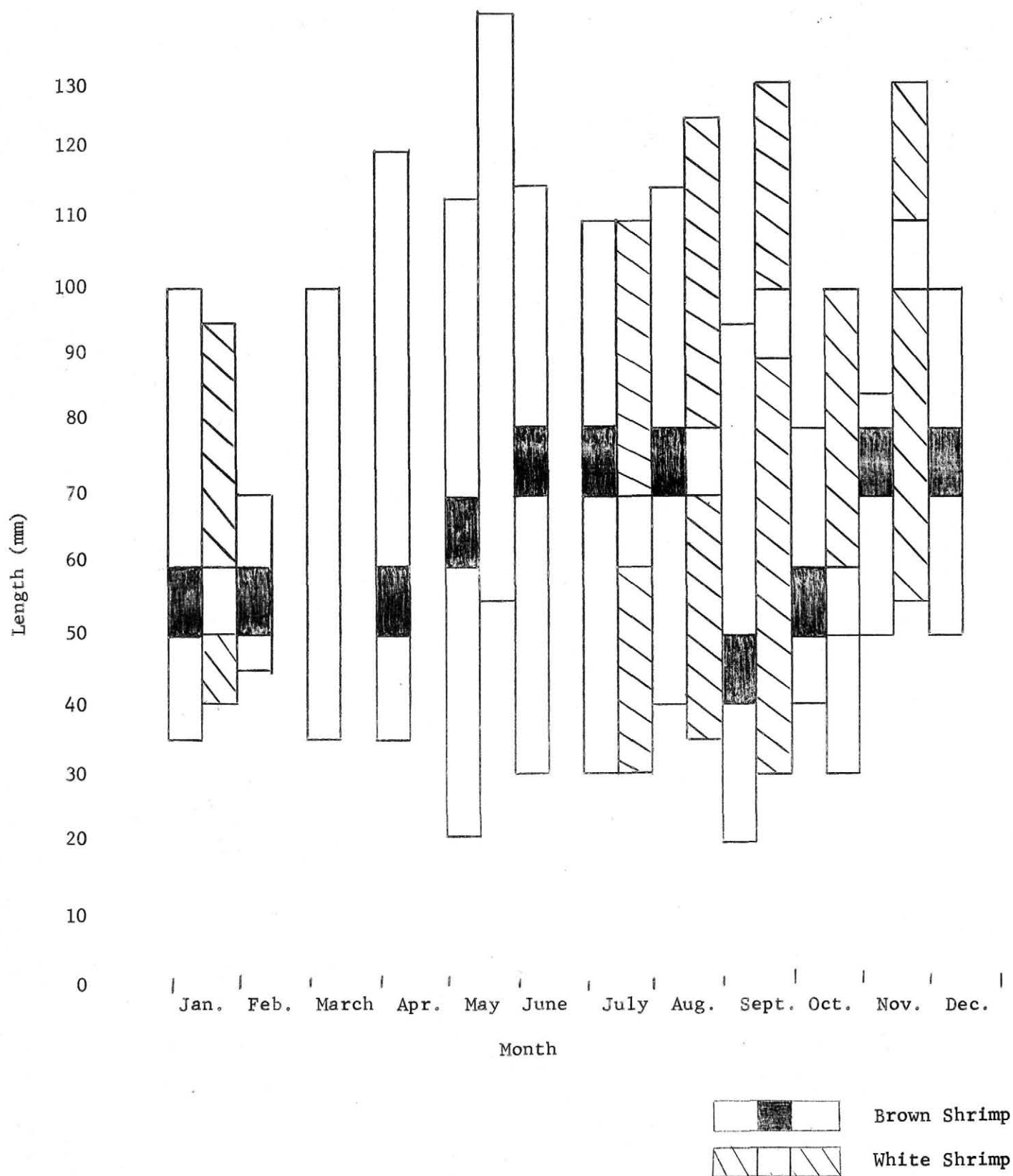
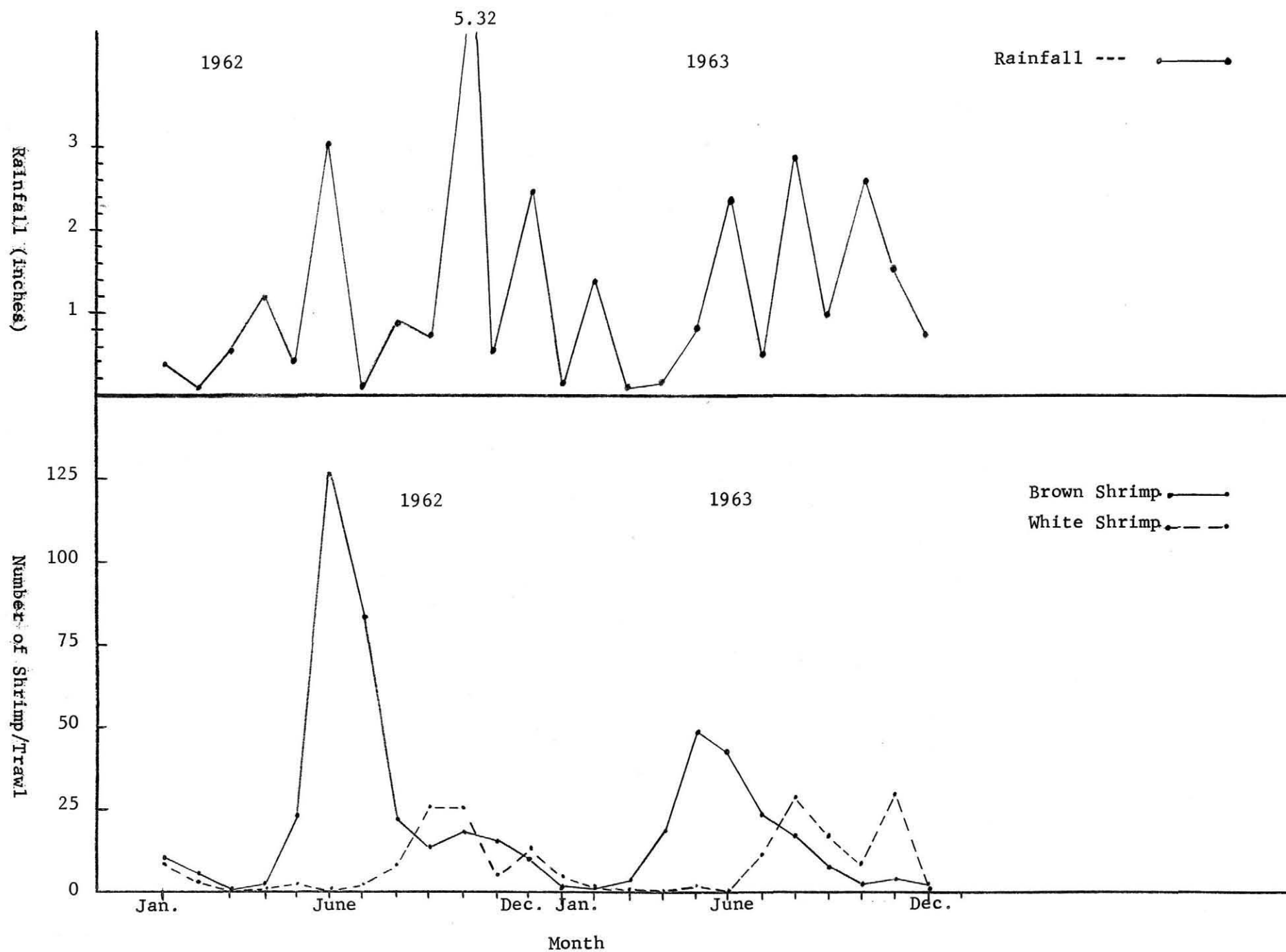


Figure 3

A Monthly Comparison of White and Brown Shrimp Catch Per Unit of Effort
as Related to Rainfall in 1962 and 1963 (based on 16-trawl data).



	<u>T1</u>		<u>T2</u>		<u>T3</u>		<u>T4</u>		<u>T5</u>		<u>T6</u>		<u>Total*</u>		<u>No.</u> <u>Samples</u>	<u>Whites</u> <u>Per Trawl*</u>	<u>Browns</u> <u>Per Trawl*</u>
	W	B	W	B	W	B	W	B	W	B	W	B	W	B			
January	2	1	5	3	7	0	9	0	3	4	--	--	26	8	10	2.6	0.8
February	0	4	1	10	0	2	0	0	0	0	--	--	1	16	10	0.1	1.6
March	0	0	0	0	0	1	0	4	0	0	--	--	0	5	10	0.0	0.5
April	5	5	0	3	0	6	0	45	0	54	--	--	0	113	6	0.0	18.8
May	0	32	0	108	1	173	0	71	0	115	--	--	6	499	10	0.6	49.9
June	0	31	0	122	0	105	0	130	0	69	0	32	0	457	10	0.0	45.7
July	3	9	0	136	20	43	18	35	31	17	47	84	116	240	10	11.6	24.0
August	3	3	42	33	69	38	125	75	35	16	168	70	274	165	10	27.4	16.5
September	0	18	0	30	31	12	44	2	32	3	58	20	165	65	10	16.5	6.5
October	0	6	0	3	14	4	18	0	8	0	40	20	80	13	10	8.0	1.3
November	0	3	0	2	124	12	159	13	0	0	3	0	283	30	10	28.3	3.0
December	0	2	0	0	0	0	0	8	0	0	--	--	0	10	5	0.0	2.0

T1 = Trawl Station 1 on East Flats
 T2 = Trawl Station 2 in Redfish Bay
 T3 = Trawl Station 3 at Causeway

T4 = Trawl Station in Nueces Bay
 T5 = Trawl Station in Oso Bay
 T6 = Roving Trawl (20-ft.)
 W = White shrimp
 B = Brown shrimp

* Does not include Trawl Station T6