

JOB REPORT

Donald S. Day  
Marine Biologist

Project No. M-4-R-1 . Date: August 15, 1959

Project Name: General Ecological Survey of the Matagorda Bay Area

Period Covered: June 15, 1958 to June 30, 1959. Job No. B-2

Inventory of Invertebrate Forms Present with Annotations on the  
Commercial Species of Shrimp

Objective: To prepare a checklist of the forms present and their relative abundance in Area M-4 during the year.

Procedure: Samples of invertebrates collected by trawl, minnow seine, or push net will be made at stations to be determined in Area M-4. Collections will be made in conjunction with Jobs No. A-2 and C-2.

Findings: A checklist of invertebrate forms collected in Area M-4 is included in this report. Forty two species were identified during this project year.

Checklist of Invertebrate Forms Collected from June, 1958 Thru June, 1959  
In Area M-4

Porifera

Clionidae

Cliona sp?

Coelenterata

Pelagidae

Dactylometra quinquecirrha

Rhizophysaliidae

Physalia pelagica

Rhizotomae

Stomolophus meleagris

Carybdeidae

Chiropsalmus quadrumanus

Pennatulacea

Renilla mulleri

Actiniidae

Bunodosoma cavernata

Ctenophora

Beroida

Beroé ovata

Arthropoda

Alpheidae

Crangon heterochelis

Porcellanidae

Petrolisthes armatus

Xanthidae

Menippe mercenaria

Panopeus herbsti

Leucosiidae

Persephone punctata

Portunidae

Callinectes sapidus

Callinectes danae

Pilumnidae (Xanthidae)

Eurypanopeus depressus

Pinnotheridae

Pinnotheres ostreum

Maiidae

Libinia dubia

## Mollusca

## Pelecypoda

## Mytilidae

Mytilus exustus

## Arcidae

Arca campechiensis

## Ostreidae

Crassostrea virginica

## Corbulidae

Corbula contracta

## Veneridae

Venus mercenaria

## Mactridae

Rangia cuneata

## Gastropoda

## Naticidae

Polinices duplicata

## Thaisidae

Thais haemastoma

## Nassariidae

Nassarius acutus

## Neptuneidae

Busycon perversumBusycon canaliculatum

## Loliginidae

Loliguncula brevis

## Arthropoda

## Paguridae

Clibanarius vittatusPagurus floridanus

## Peneidae

Penaeus aztecusPenaeus duorarumPenaeus setiferusXiphopenaeus constrictusSciyonia dorsalis

## Palaemonidae

Mysidopsis bigelowi

## Squillidae

Squilla empusa

## Echinodermata

## Porcellanasteridae

Ctenodiscus crispatus

## Phanerozonia

Luidia clathrata

## Clypeastroidae

Mellita quinquiesperforata

This discussion is based on data shown in Table I.

Penaeus aztecus

No boat was available in June, 1958; so nine shore seining stations were established and sampled. June showed a large population of brown shrimp along the shores of the secondary bays. During July, 1958, the brown shrimp population along the shores and in the bays decreased rapidly. Since the boat was not available until the latter part of July, the brown shrimp migration reported by local bait dealers could not be followed. This migration started on or about July 9, in the Intracoastal Canal at Oyster Lake. In August there was a definite increase of small brown shrimp moving in to the shore areas. There was no increase of brown shrimp taken by trawl. The boat was not available August 26 to September 24. High tides prevailed throughout the area the entire month, thus no shore seining could be accomplished. The number of brown shrimp taken in the trawl in September nearly doubled the amount taken in August with one-third of the effort. This indicates a population of another spawning peak was entering the bay. A few young brown shrimp were still moving

TABLE I

Summary Data of *Panæus aztecus* and *Panæus setiferus* Population in Area M-4  
June 1958 - June 1959

Month of Project Year	Shore Seine				Trawl				
	<i>Panæus aztecus</i>		<i>Panæus setiferus</i>		Total		Major size		
	No. Hauls	Total No. class in mm.	Total No. class in mm.	No. of Trawls	No. class in mm.	No. class in mm.	Total No.	Major size class in mm.	
<u>1958</u>									
June	34	1775	45-54	2033	30-39	No boat			
July	22	101	40-44	2183	30-35	22	27	none	1649
August	9	100	35-44	101	30-34	63	51	70-74	2255
September	none	(High Tides)				23	97	60-64	434
October	9	81	30-35	736	25-34	47	57	65-74	333
November	9	5	26-56 (range)	87	40-49	57	158	55-79	1290
December	5	1	40	100	30-49	29	32	75-79	31
<u>1959</u>									
January	0					21			
February	0		(Low Tides)			29	5	61-95 (range)	1
March	9		(Low Tides)			No boat			
April	9	162	30-34			No boat			
May	9	411	35-44	6	24-31 (range)	29	256	60-64	31
June	10	487	35-39	181	30-34	12	568	70-84	228
									150-164
									60-64 & 160-179

into the shore areas in October. A definite decrease from September in numbers was obtained by trawl (approximately one-half as many with twice as much effort). During November the brown shrimp population in the shore areas decreased rapidly from 81 total in October to five in November. There was an increase in the number found in the trawl samples. Five were taken in the seine and 32 in the trawl in December, thus indicating a November migration of brown shrimp from the bay.

No brown shrimp were taken during January, 1959. February trawl samples yielded five brown shrimp. Only these five were taken in February, however extremely low tides prevented any shore seining in January and February. The boat was not available March, 1959 to April 30, 1951.

Shore seining revealed no brown shrimp in March but by April 29, a large influx of brown shrimp had occurred. The population tripled in abundance in May. There were approximately twice as many along the shore areas as in the bays according to sampling. During the first two weeks of June the number of brown shrimp sampled along the shore areas remained equal in number to the shore samples taken in May. The number in trawl samples doubled during the first two weeks of June. The boat was not available the last two weeks of June. It was reported by a local bait dealer that the brown shrimp were in the Intracoastal Canal at the Oyster Lake area in late June and then left the bay.

#### Penaeus setiferus

During June and July, 1958 there was a large concentration of small white shrimp along the shore areas. The boat was not available in June. July showed an abundance of white shrimp in the bay. During August the shore population decreased to one-tenth the amount found in July. The number in the trawl samples remained approximately the same. These two months were the only period a growth rate could be obtained. The growth rate was approximately 25 mm. to 40 mm. per month. (a relatively stable population and only light trawl pressure permitted a growth rate approximation).

August 26, 1958 a group of white shrimp with a major size class of 120 mm. - 130 mm. was located moving off Carancahua Pass and in central Matagorda Bay. Because there was very little trawling pressure on this group of white shrimp, it is believed this was a natural migration from the bay to the gulf. The boat was not available August 26, 1958 to September 24, 1958, therefore the migration was not followed. After the boat was returned, trawl sampling disclosed a decrease of about 20 mm. in the major size class. A few small white shrimp started to move in to the shore areas in September, but were not checked because of the extreme high tide.

Compared to August the October shore seining yielded seven times as many white shrimp per unit effort. This increase showed a second spawning peak probably occurring in September. In October there was approximately ten times the amount of shrimp per unit effort along the shores as compared to the deeper part. Trawling in Matagorda Bay during October revealed one-half the number of white shrimp per unit effort as compared to September.

November seining compared to October yielded one-eighth the number of white shrimp along the shore. This decrease in the number of white shrimp inshore and a fourfold increase offshore indicates a movement from inshore to offshore in November.

As shown by Table I the relative abundance of the white shrimp population collected by trawl was 20 times greater in November than in December. There were no white shrimp taken in January; therefore a mass migration had taken place during December. One 82 mm. white shrimp was taken in shallow water in February. The boat was not available March 1, 1959 to April 30, 1959. Seining in March and April showed no small white shrimp moving into the area.

Six small white shrimp were seined May 28, 1959. A large migration of small white shrimp moved in to the shore areas between May 28, 1959 and June 5, 1959. This population represented the first spawning peak of the year.

A population of large (120 mm. to 179 mm.) white shrimp occurred at, and were restricted to, the north shore of Matagorda Bay and scattered throughout Tres Palacios Bay. The main concentrations were located at The Cedars and Carancahua Pass. June 2, 1959, Carancahua Pass was checked and large white shrimp were present. When the boat was returned June 22, 1959, no large white shrimp were found. A population of white shrimp with a major class of 60 mm. - 64 mm. moved in to Tres Palacios Bay during June.

Comments: The brown shrimp in this area showed two main spawning peaks during the project year. These spawning peaks seemed to occur in March and August. There is a small number of young brown shrimp continually moving in to the shore areas throughout the spring, summer and fall seasons.

According to the time of occurrence and abundance of the young white shrimp, two spawning peaks occurred. It is indicated that the first peak occurred during April and May and the second peak in September. Young white shrimp were present except in March and April, January and February being unknown. These spawning peaks coincided in time of year with those reported in Bulletin 36, "The Texas Shrimp Fishery", September, 1957.

Prepared by Donald S. Day

Approved by

Howard T. Lee  
Howard T. Lee

Marine Biologist

Date Approved

17 Sept. 1959