

Job Report

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Project No. MC-R-2 Date: May 26, 1964
Project Name: Studies of the Blue Crab Populations of the Texas Coast.
Period Covered: January 1, 1963 to December 31, 1963 Job No.: 1

Coordination of the Blue Crab Studies of
the Texas Coast

Abstract:

Commercial production was reported from three areas: Galveston, Matagorda, and Aransas. Production increased to over twice the production of 1962 in the Galveston Area, while decreasing approximately one third in the Matagorda and Aransas Areas.

A total of 1,307 samples were used to obtain information for this report. Of these, 734 were trawl samples, 188 trammel, gill, or drag seine net samples, and 385 were seine or pull seine samples. These samples caught 5,046 blue crabs. There were 2,477 males (49.1 per cent) and 2,569 females (50.9 per cent). This is 39.4 per cent less than was caught in 1962 (8,328 crabs).

Catch per unit of effort was down considerably in all areas except the Matagorda-San Antonio Bay area where data indicate only a slight reduction of catch per unit of effort from 1962.

Comparison of catch, by gear, indicates seines caught slightly more crabs than other types of gear used.

The sex ratio of crabs in sample data remained practically the same as in 1962. In 1962 it was 50.4 per cent females, and in 1963, 50.9 per cent females.

Peaks of abundance of crabs were found during the months of March, August, and October for the Texas coast.

Trawl samples taken in Gulf Area 20 indicate a spawn could have occurred in late June or July. The catch was entirely female during the months of June through September. In June, 20 per cent of the females were ripe, and in July, 50 per cent. In August no ripe females were taken.

Population modes, when data provided sufficient information, are shown in individual bay reports (Project MC-R-2, Job Nos. 2 through 9).

Results of crab tagging are discussed. No tags were returned from crabs that had been tagged more than 47 days, or had moved over 10 miles.

Objectives: To coordinate all coastal crab jobs and to summarize and interpret coastwide crab data received from area biologists.

Procedures: Field biologists from the seven Texas Bay areas sampled crab populations twice monthly with a standard 6-foot bar-seine (one-half inch mesh) and a 10-foot shrimp trawl (1 1/4 inch mesh with a one-half of an inch cod end liner). A 20-foot shrimp trawl was used once each month in the area of the bay in which commercial shrimpers were working. Varying numbers of collections were made each month with standard 60-foot minnow seine (three-fourths of an inch stretched mesh), and 1200-foot trammel net or drag seine (3-inch mesh). All samples were taken in conjunction with the shrimp and fish jobs. In some areas, crab traps were used experimentally. Blue crabs were also sampled in Gulf Area 20 with a 42-foot shrimp trawl (2-inch mesh) in conjunction with shrimp sampling. All crabs collected were measured by carapace width, sexed, and a "catch per unit effort" record was maintained.

Findings and Discussion: Table 1 lists numbers and sex of all crabs taken in samples, by month and area. It further shows total numbers caught and a comparison with 1962.

Figure 1 shows commercial landings by area, from September 1961 through December 1963.

Figure 2a through 2d, shows a comparison of catch by gear in each bay area.

Figure 3a through 3e, is a "catch per unit effort" comparison of study years 1961, 1962, and 1963, and a comparison of the male-female ratios.

Commercial production* of blue crabs in Texas was mainly from the Galveston Bay, Matagorda Bay, and the Aransas Area. Some production was also noted from Sabine Lake. There was no known production from the Laguna Madre.

The Galveston Bay Area produced a reported 957,597 pounds (live weight) of blue crabs in 1963. Peak months of production were June and July, with 214,872 pounds and 171,028 pounds, respectively. There was a gradual increase from 7,127 pounds in January to the June high for the year. After this time, production decreased to 1,900 pounds in December. This is over twice the 1962 reported production** of 377,296 pounds.

The Matagorda Area (including East Matagorda Bay) had a reported production of 864,451 pounds of blue crabs in 1963. Peak months of production were April, with 157,448 pounds, and July, with 158,931 pounds. January had a production of 45,500 pounds; there was then a sporadic increase to the July high, then a gradual decrease to 7,444 pounds in December.

The 1963 reported production is less than one-half of the 1962 figure of 1,878,423 pounds. Peak production in 1962 was in the month of May with 252,411 pounds.

* All commercial production data were supplied by Mr. Farley, U. S. Dept. of the Interior, Fish and Wildlife Service Bureau of Commercial Fisheries, Branch of Statistics, Galveston, Texas, and Mr. Tom Scott, Parks and Wildlife Dept., Rockport, Texas.

** Texas Landings -- U. S. Department of the Interior, Bureau of Commercial Fisheries and the Texas Parks and Wildlife Department.

The Aransas Area (includes Aransas, Lavaca, San Antonio, and Corpus Christi Bays) had the largest reported production of blue crabs. In 1963 1,019,289 pounds were reported. Peak production months were March and May, with 145,735 and 146,100 pounds, respectively. April and June were only slightly less productive.

Sampling and Catch Data:

Sampling gear was combined as to types in this report. "Trawls" here means both 10-foot and 20-foot trawls. "Nets" means trammel, gill, and drag seine nets. "Seines", as used here, means minnow seines and pull seines or hand trawls.

Sampling intensity has increased slightly since 1962. During this study, a total of 1,307 samples were taken in the Texas bays and Gulf Area 20. Of these, 734 were trawl samples, 188 net samples and 385 were seine samples.

Catch per unit of effort by gear varied, somewhat, from bay to bay. Data show that, in Galveston Bay, most crabs were caught in seines, with trawls second, and nets last. In the Matagorda-San Antonio Bay area, seine and net catches were comparable in numbers caught (but not in size--nets catch mostly large, and seines mostly small crabs), while trawl catches were about one-third less.

In the Aransas-Corpus Christi Bay Area, seine catches were highest, trawls next, and nets last.

In the Laguna Madre Area, seines and nets were about equal in catch, while very little was caught in trawls.

"Catch per unit of Effort" (all types of sampling devices used) data shows all bay area samples had less crabs than in 1962. This was very evident except in the Matagorda-San Antonio Bay Area, where catch per unit of effort was only slightly less than in 1962.

Sex ratios remain unchanged when compared to 1962. In 1962, the per cent of females was 50.4 and 50.9 in 1963.

Data show more females present in samples in April in the Matagorda and Aransas Areas, but about equal the remainder of the study.

Data show that blue crabs for all bays of the Texas Coast, were less abundant than in 1962. Sample catches indicate that this is true of all size groups, as reported in individual Job Reports (Project MC-R-2, Job Nos. 2 thru 9). This would indicate that environmental conditions, as associated with spawning and survival, rather than commercial fishing pressures, are responsible for the decrease in sample catch.

Data from Gulf Area 20 is incomplete for the year, but indicates one spawning period starting in June, reaching a peak in July, then ceasing abruptly. In June and July only females were captured. Of these, 20 per cent in June, and 50 per cent in July were ripe.

In mid-August, most bay areas had recruitment of small crabs (15 to 45 mm).

During this study, crabs were tagged in all bay areas, from and including, Galveston and Aransas.

In Galveston Bay 398 crabs were tagged and released. In Matagorda Bay, 257 were tagged. Lesser numbers were tagged in San Antonio and Aransas Bay areas.

Tag return data from Galveston Bay (Project MC-R-2, Job No. 2), shows no tag returns more than 10 miles from release site. None had been placed more than 47 days prior to return. Greatest per cent of returns were from adult crabs ranging in size from 150 mm to 180 mm.

These data suggest greatest return for tagging effort would be realized if only adult crabs 140 to 180 mm wide were tagged.

Recommendations and Comments:

To improve the study the following recommendations are suggested:

1. Sampling in Gulf Area 20 should be extended to cover the entire year.
2. Larval crabs should be sampled in all bay areas of the Texas Coast. Sampling should be conducted with a 1-millimeter mesh sampler in gulf surf or in passes to the Gulf of Mexico.
3. The number of seine samples should be increased in all bay areas to better sample juvenile crabs.
4. Crab sampling should be conducted independent of fish sampling, when and where necessary.

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4

Table 1

Numbers and Sex of Blue Crabs Taken in Samples

	Galveston Area		Matagorda & San Antonio		Aransas-Corpus Christi Area		Laguna Madre		Gulf Area		Total	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
Jan.	0	0	4	4	9	10	0	0			13	14
Total		0		8		19		0				27
Feb.	3	3	13	18	5	7	12	2			33	30
Total		6		31		12		14				63
Mar.	62	61	191	190	38	51	18	0			309	302
Total		123		381		89		18				611
Apr.	38	34	117	152	29	87	13	2	3	0	200	275
Total		72		269		116		15		3		475
May	24	26	142	146	75	78	45	7	8	7	294	264
Total		50		288		153		52		15		558
June	50	27	66	64	31	48	17	9	0	65	164	213
Total		77		130		79		26		65		377
July	28	17	97	79	23	34	26	13	0	60	174	203
Total		45		176		57		39		60		377
Aug.	43	59	163	188	15	31	45	13	0	37	266	328
Total		102		351		46		58		37		594
Sept.	78	64	49	84	30	43	6	1	0	3	163	195
Total		142		133		73		7		3		358
Oct.	133	109	165	83	14	22	27	17			339	231
Total		242		248		36		44				570
Nov.	135	165	127	108	2	4	32	2			296	170
Total		291		235		6		34				566
Dec.	56	57	159	171	5	12	6	4			226	244
Total		113		330		17		10				470
1963	650	613	1,293	1,287	276	427	247	70	11	172	2,477	2,569
Total		1,263		2,580		703		317		183		5,046
1962	1,066	1,019	1,881	1,644	754	1,035	399	445	27	58	4,127	4,201
Total		2,085		3,525		1,789		844		85		8,328

Percent Males 1963 ----- 49% 1962 --- 49.6%
 Percent Females 1963 --- 50.9% 1962 --- 50.4%
 1963 sample catch is 39.4 percent less than in 1962

Figure 1

Commercial Landings of Blue Crabs - 1961, 1962, 1963

(520)

-5a-

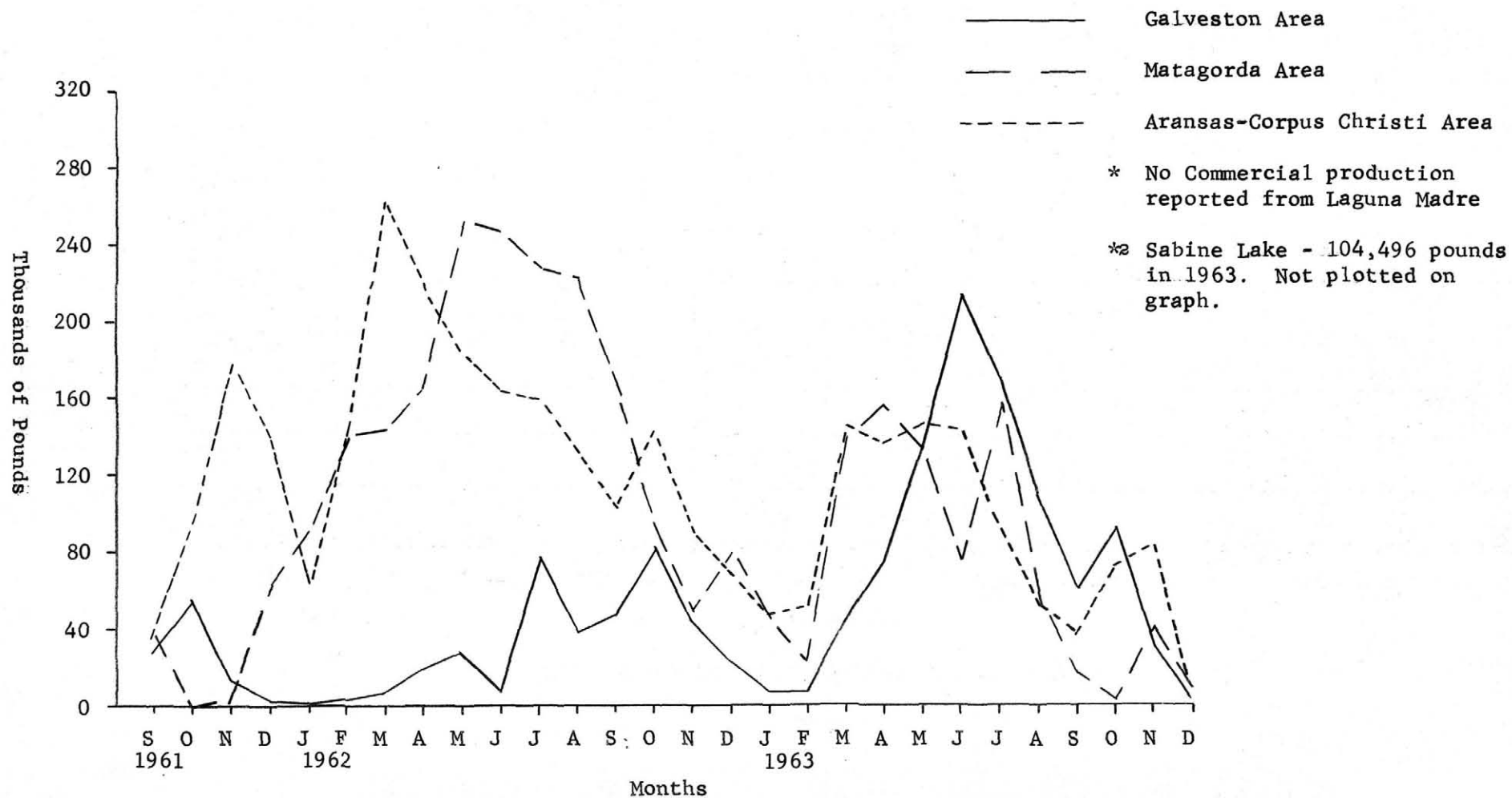


Figure 2a

Galveston Bay Area
Comparison of Catch by Gear - Number Per Sample

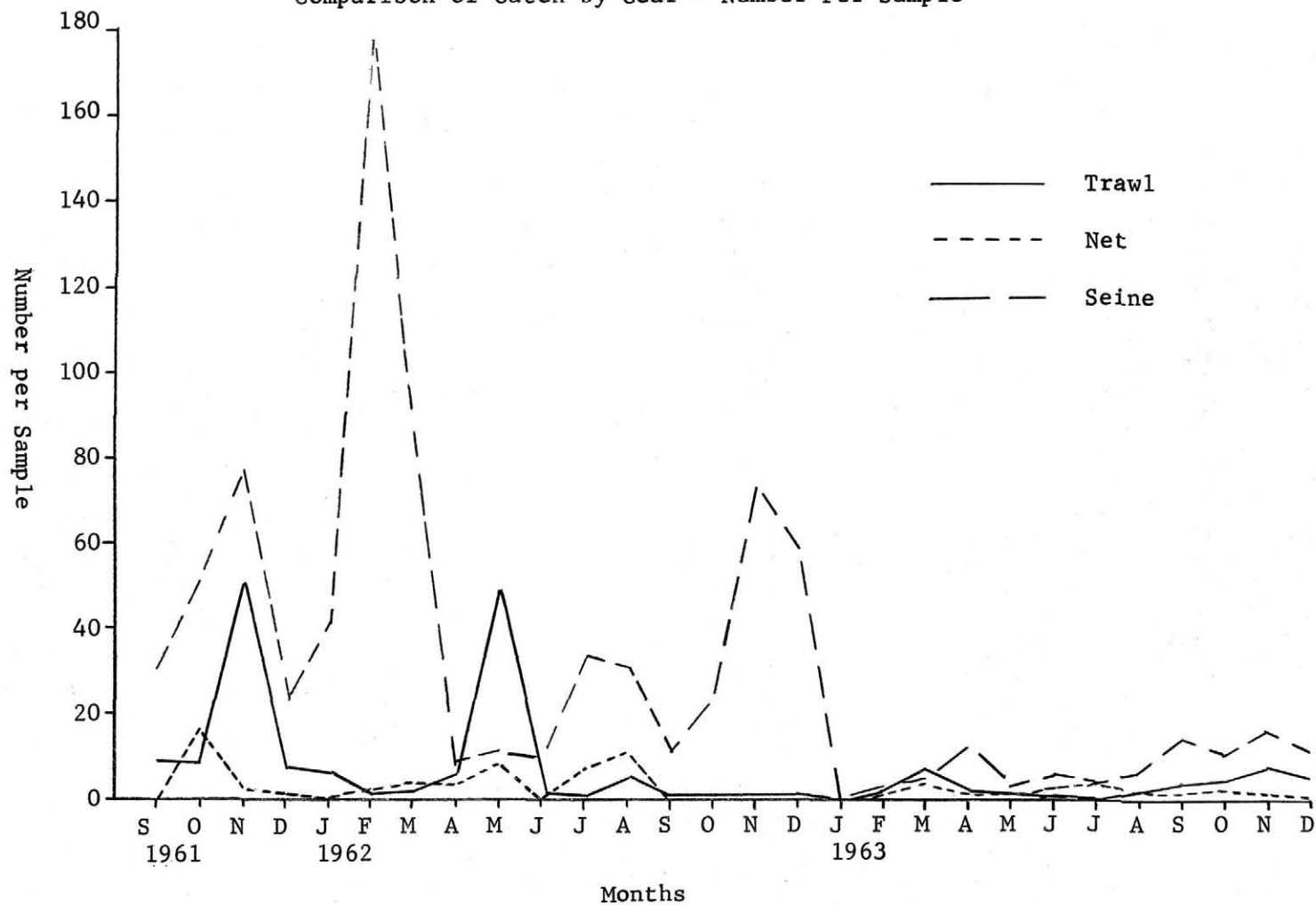


Figure 2b

Matagorda - San Antonio Bay Area
Comparison of Catch by Gear - Number Per Sample

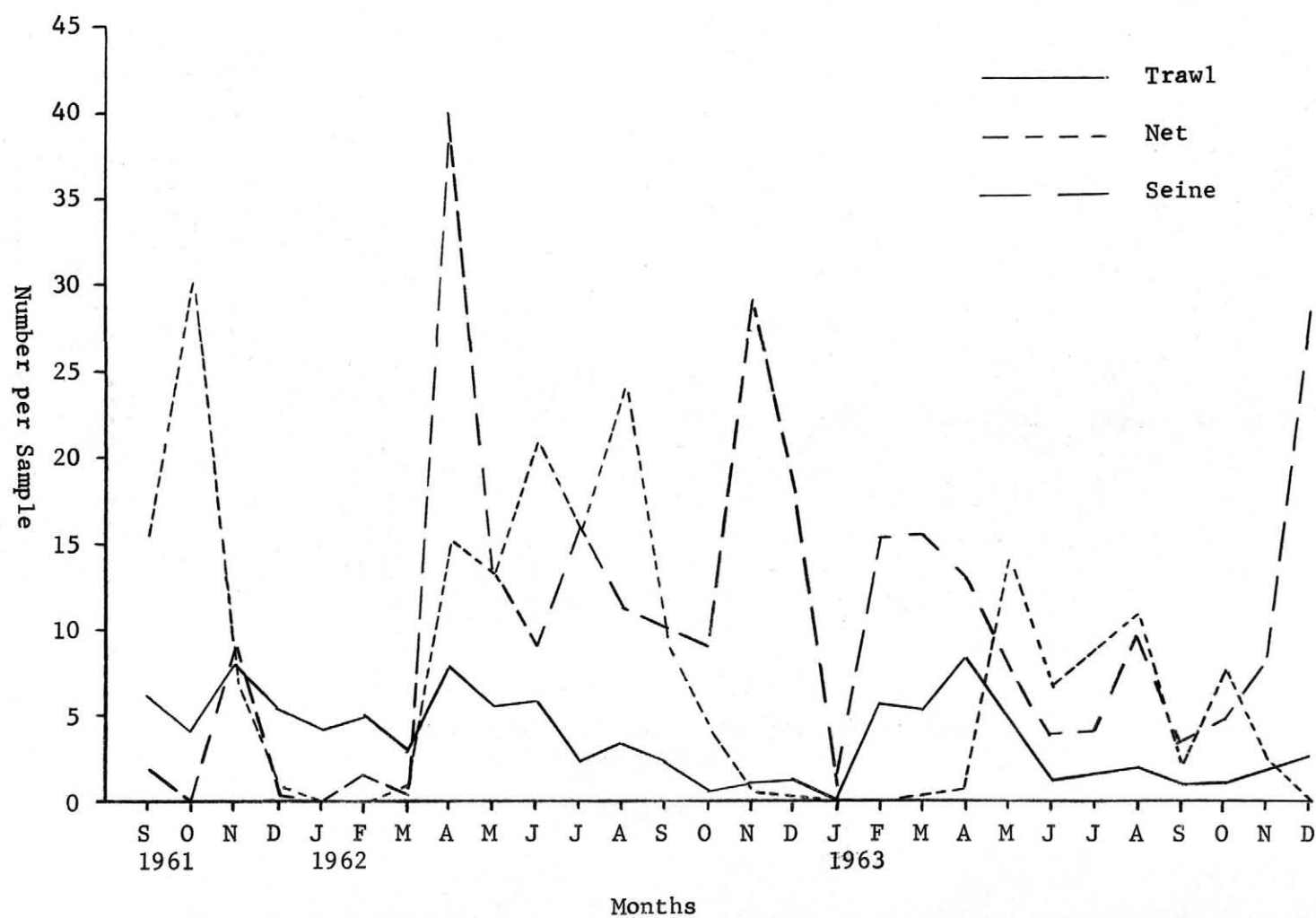


Figure 2c

Aransas - Corpus Christi Bay
Area

Comparison of Catch by Gear - Number Per Sample

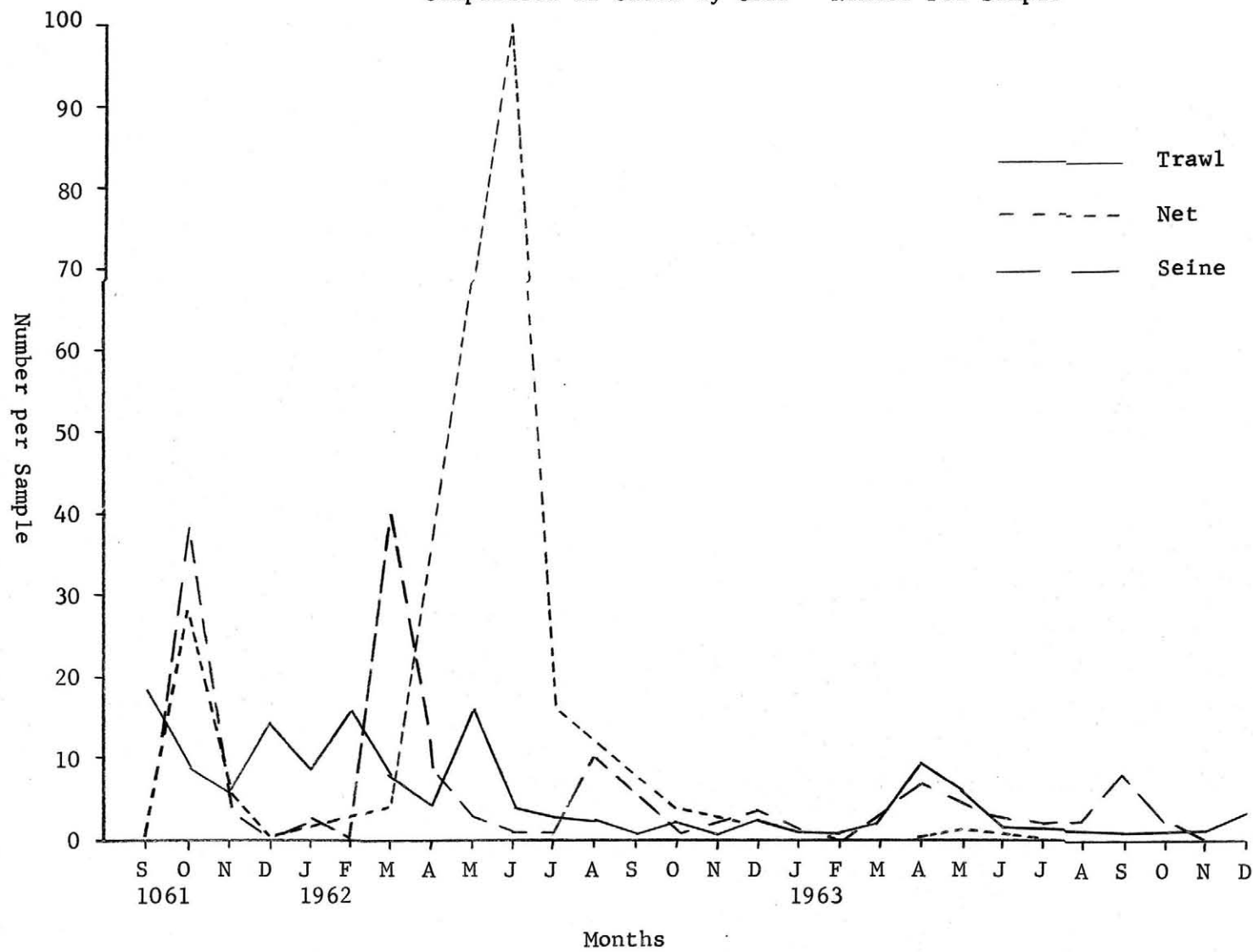
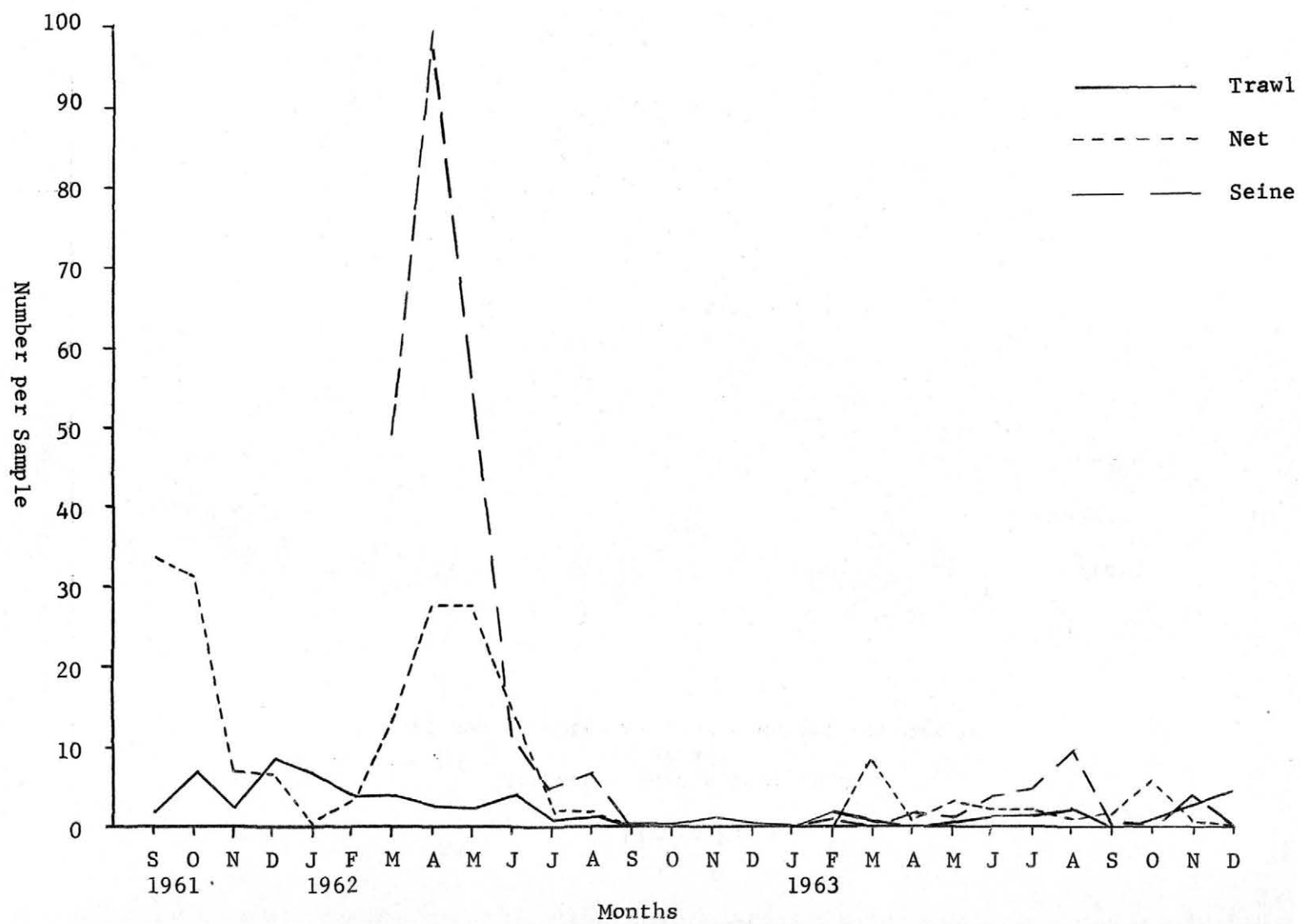


Figure 2d

Laguna Madre Area
Comparison of Catch by Gear - Number per Sample



(524)

Figure 3a

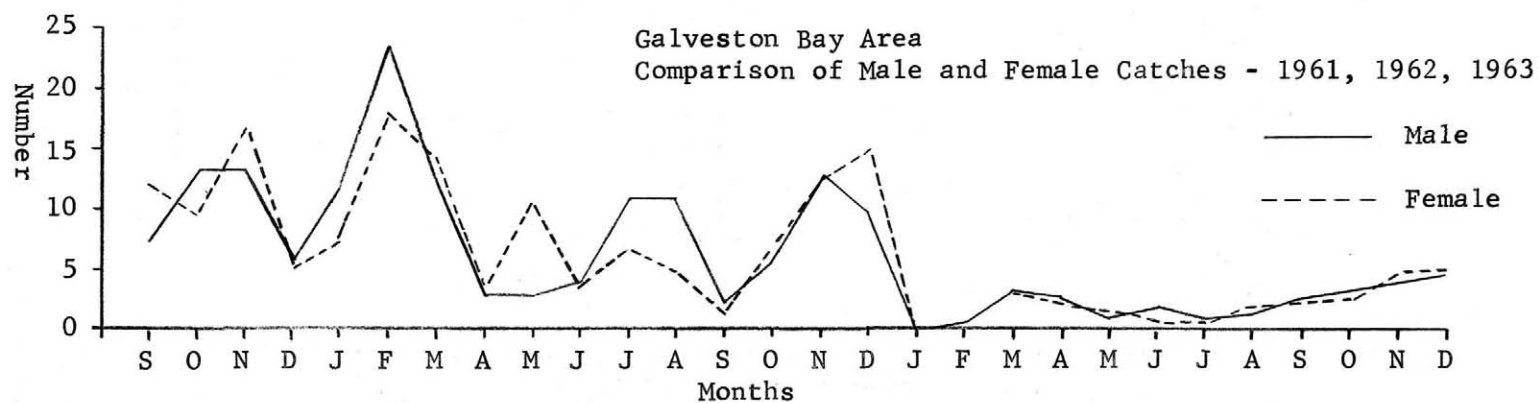
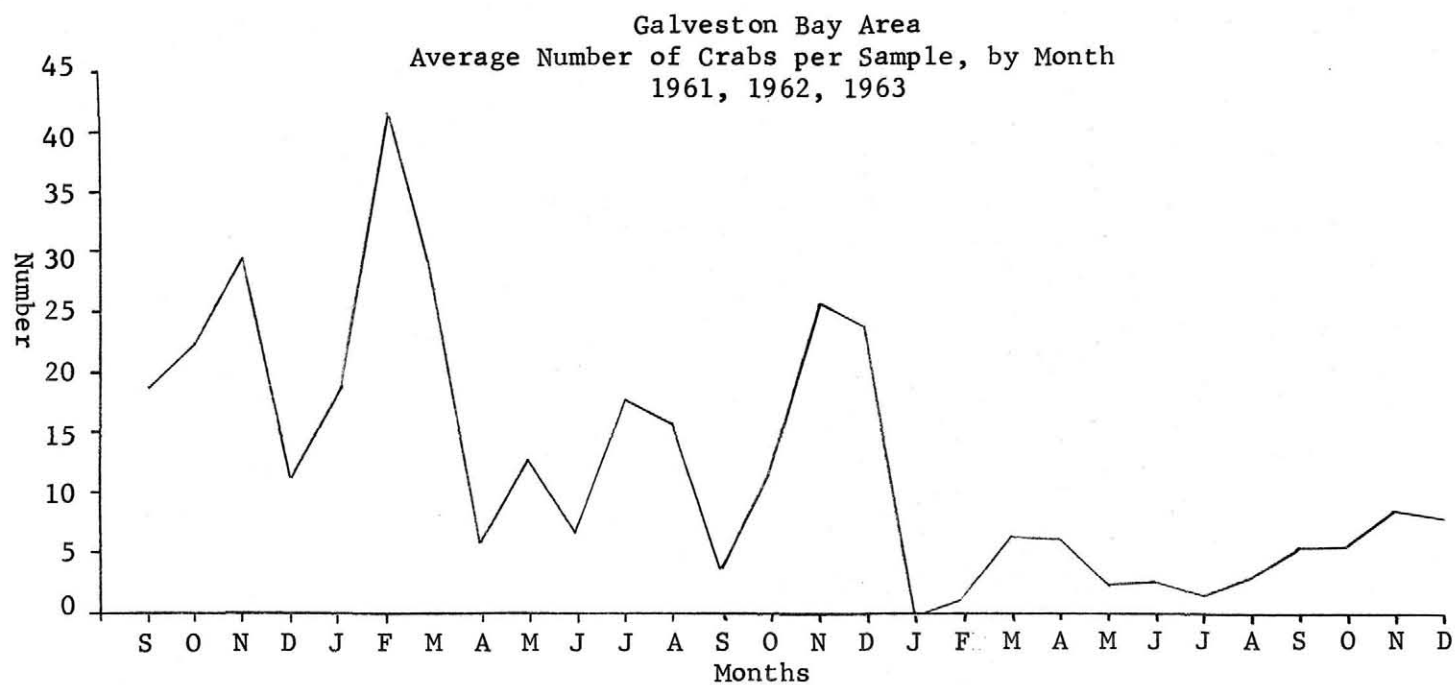
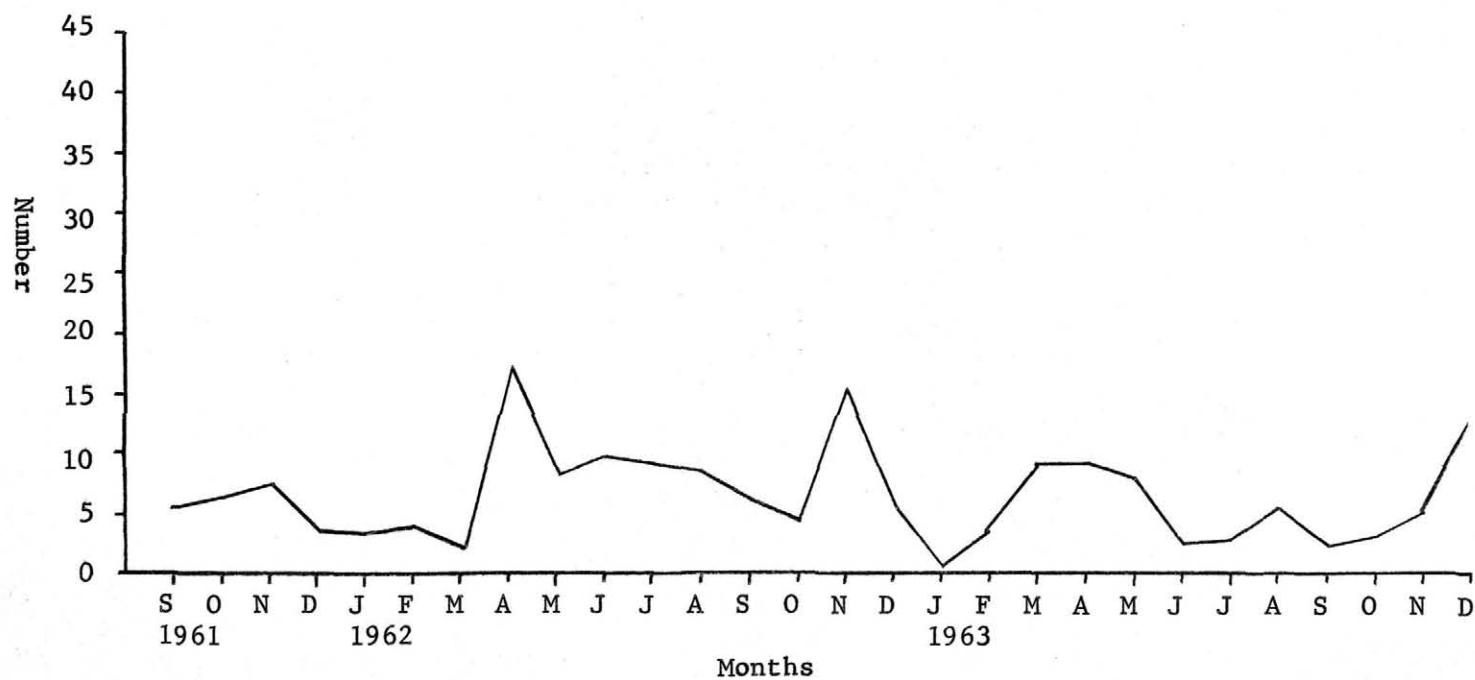
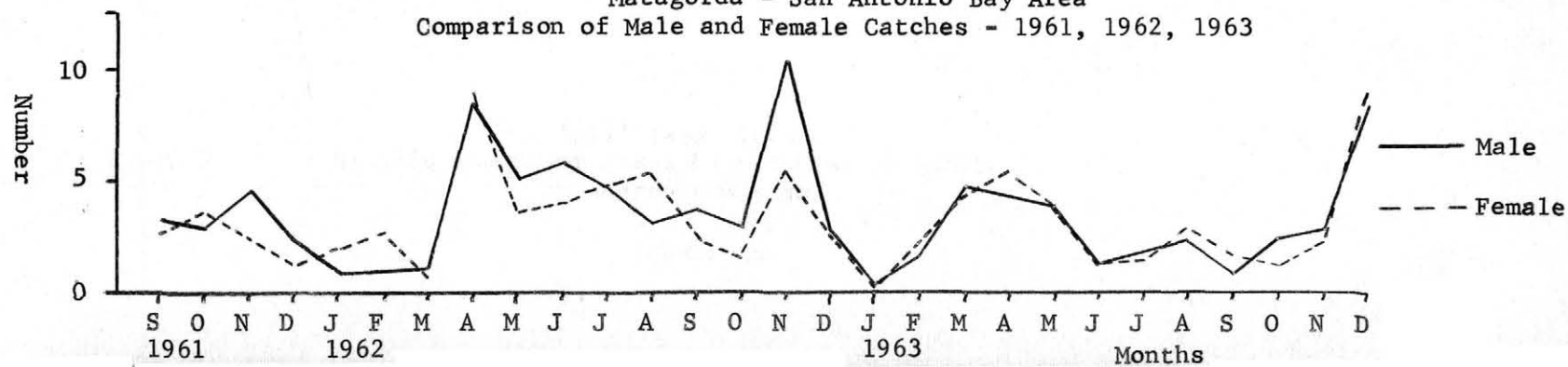


Figure 3b
Matagorda - San Antonio Bay Area
Average Number of Crabs Per Sample, By Month - 1961, 1962, 1963



Matagorda - San Antonio Bay Area
Comparison of Male and Female Catches - 1961, 1962, 1963



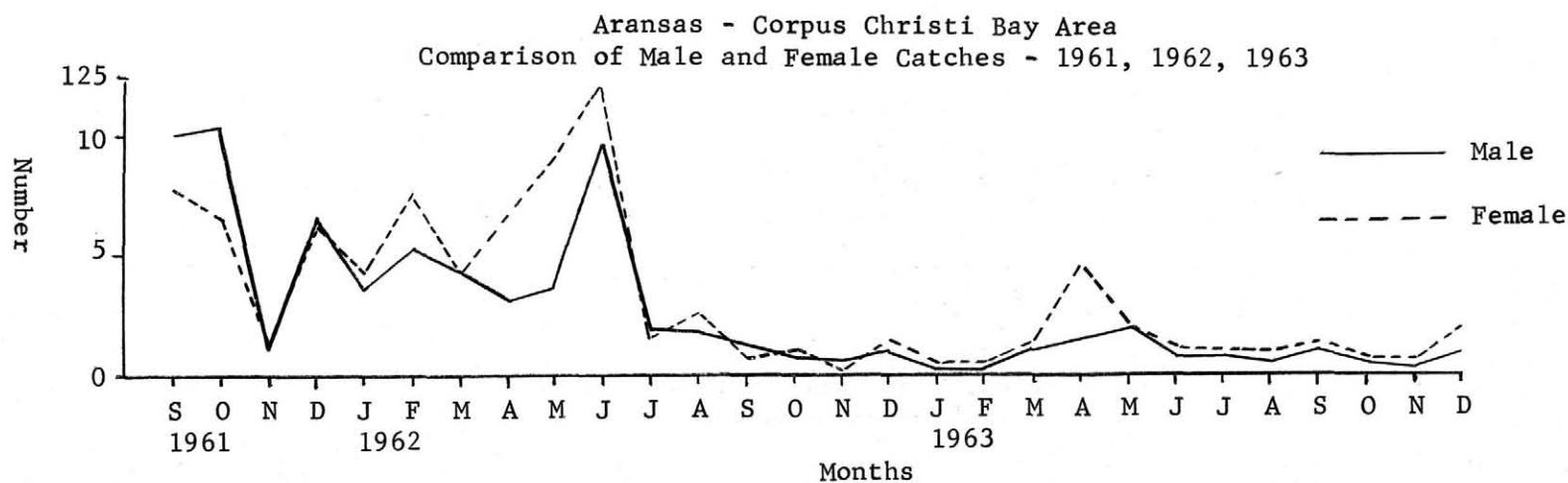
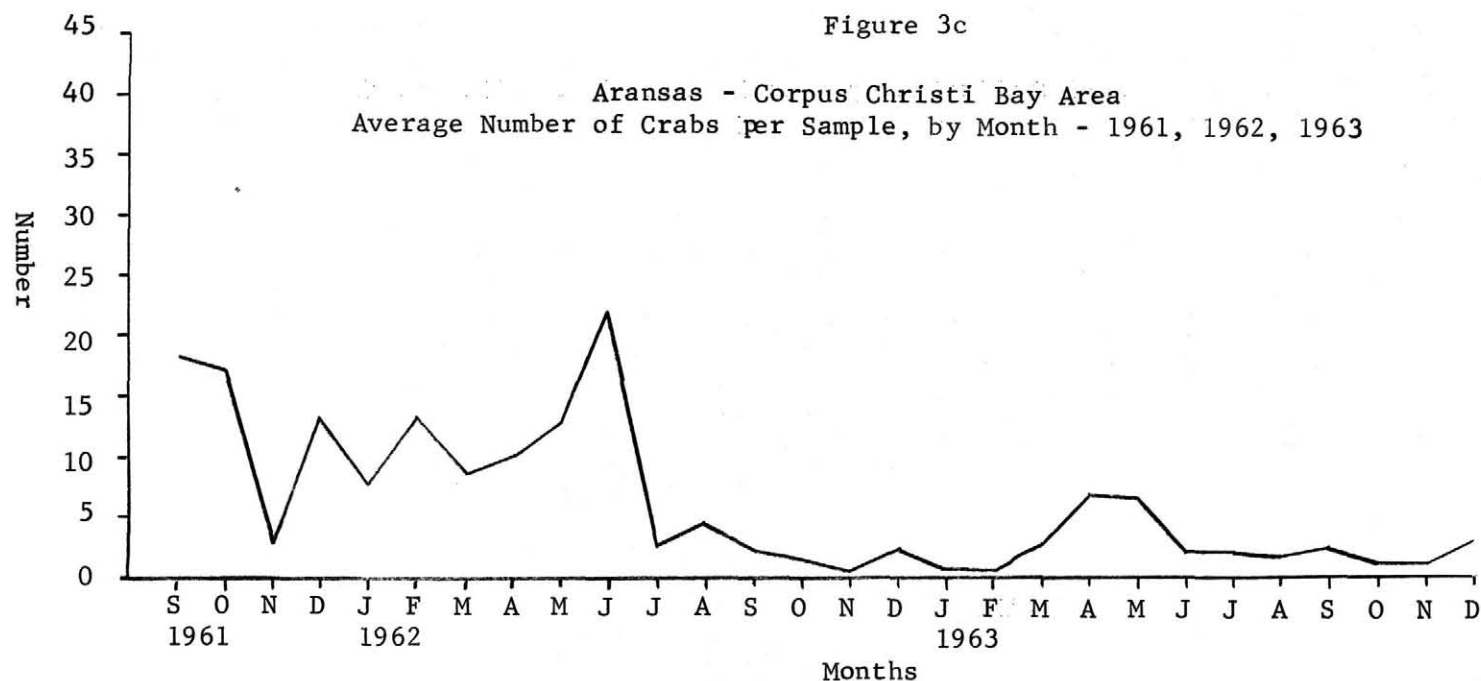


Figure 3d

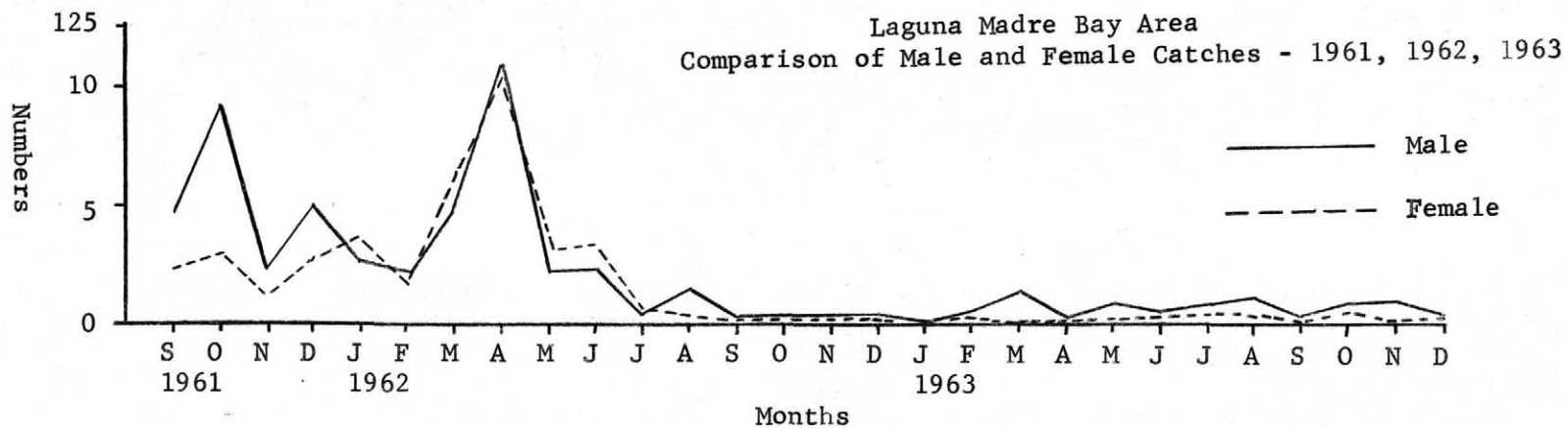
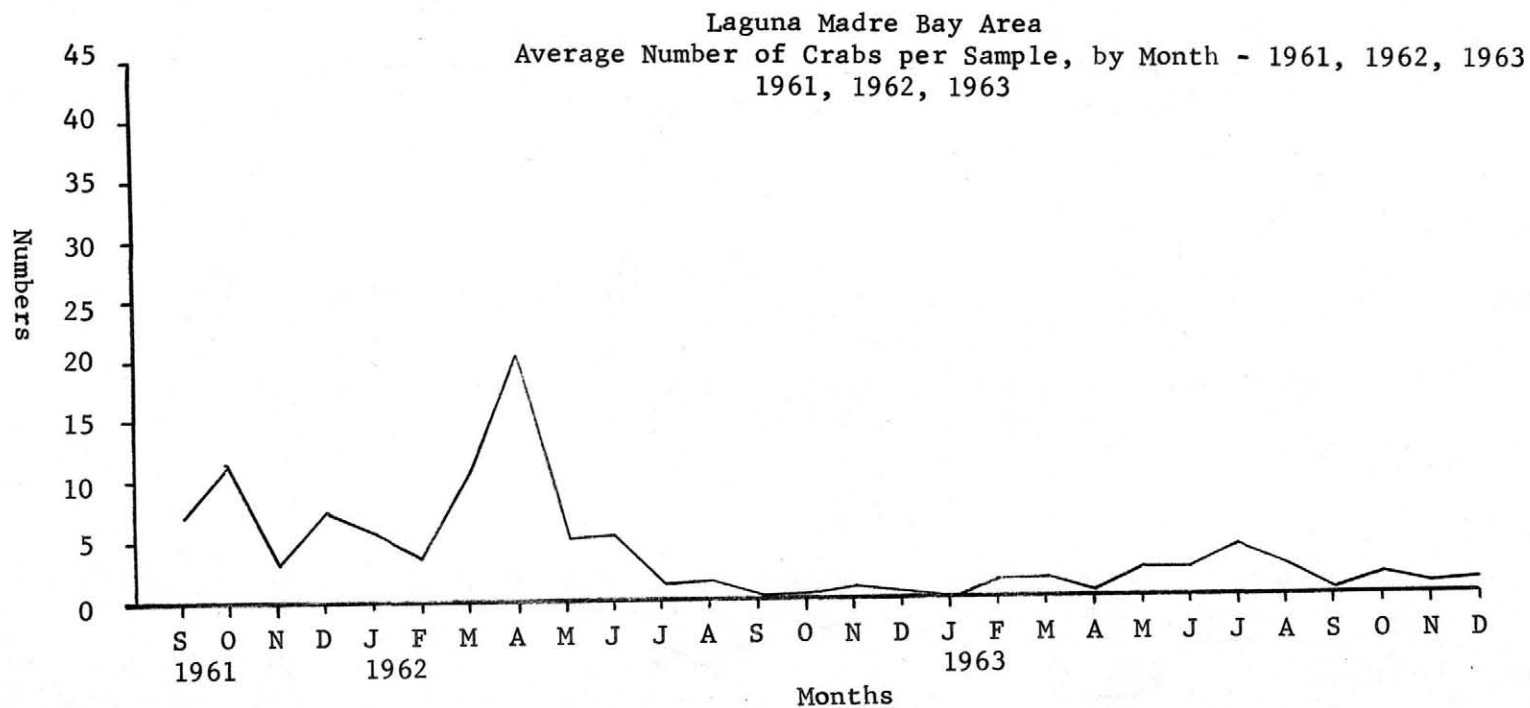
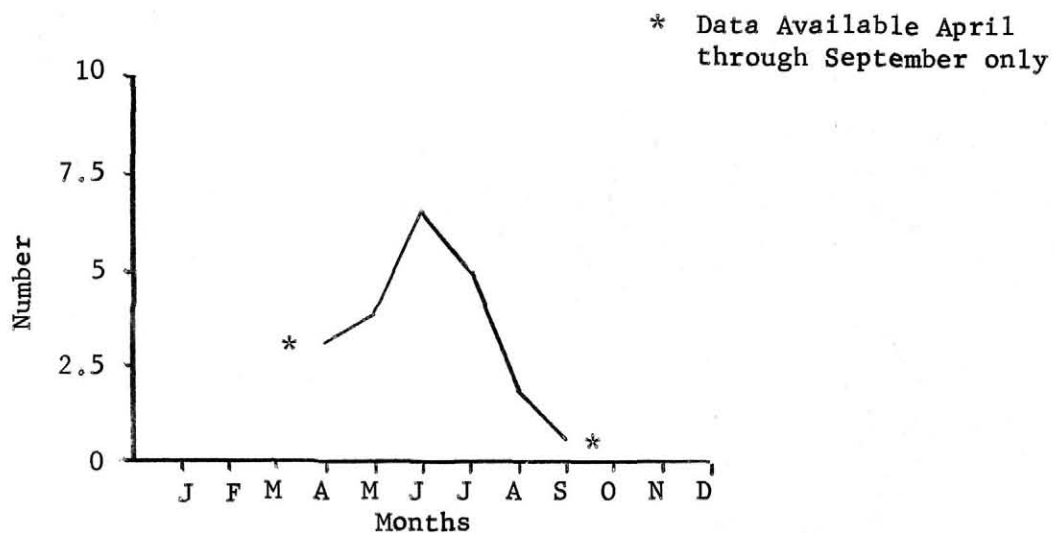


Figure 3e

Gulf Area 20
Average Number of Crabs Per Sample, by Month



Gulf Area 20
Comparison of Male and Female Catches

