Job Report

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Project No. MO-R-5 Date: October 20, 1964

Project Name: Survey of Oyster Populations and Associated Organisms

Period Covered: January 1, 1963 to December 31, 1963 Job No. 4

Abstract: Population studies conducted in Aransas, Mesquite, and Copano Bays have shown a decline in oyster abundance as a result of high mortalities in Aransas Bay and Mesquite Bay.

Poor spawning and setting success in the three-bay area have been attributed to increased salinities and lack of fresh water.

Objectives: To obtain data on reef conditions and oyster population characteristics in Aransas, Mesquite, and Copano Bays for use in making management recommendations.

Procedure: Monthly population samples were obtained with an oyster dredge pulled by a power boat. Each sample consisted of one U. S. standard bushel (2,150 cubic inches) of unculled oysters. All oysters in the bushel sample were measured in millimeters. Measurements were grouped into five millimeter classes and the classes were grouped under the headings of Spat (0-25 millimeters in length), Seed (26-75 millimeters in length), and Market (76 millimeters and larger). Data pertaining to hydrography, associated organisms and techniques were also recorded.

Samples taken during the year were obtained from previously established stations used during 1961 and 1962 (Heffernan, 1961-62).

Ten oysters from each monthly population sample were examined at the Marine Laboratory in Rockport for the presence of Dermocystidium marinum. Results of this study are presented in Job Report No. 5 under Project MO-R-5.

Findings and Discussion: Mortalities in April and May 1963, and in October, November and December 1963 depleted oyster populations on many of the major reefs in Aransas and Mesquite Bays. Copano Bay suffered little loss of its oyster population but reefs reached such a degree of over-population that the commercial quality of

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an increase of 4.75 inches over the 1962 total of 20.32 inches for 1963 was approximately forty per cent below normal and was increased salinities in all bay areas. Salinities ranged as h Copano Bay, 40 °/oo in Aransas Bay, and 38 °/oo in Mesquite Ba

Population

Spat setting in Aransas Bay reached a peak in June 1963. Survival rate of the young spat was very slight. During the same period of C. virginica spawning, the "Gulf oyster," Ostrea equestris, also spawned, making the spat counts of June, July, and August questionable as to which species of oysters was being counted. All spat were counted in June and July. In August, the larger spat 15 to 25 millimeters in length were examined to determine species. In all samples the ratio of O. equestris to C. virginica was approximately nine to one.

In October, November, and December additional mortalities appeared in Aransas Bay. This mortality was closely studied through the use of tray-held oysters. Findings of this study are presented in Job Report No. 6 under Project No. MO-R-5.

There was some effect from the abnormally high salinities on spat survival during June and July. However, later mortalities of established survivors of the 10-30 mm groups was believed from an unknown causative organism. This feature of the mortality varied from former mortalities attributed to Dermocystidium marinum in which only the larger oysters of 65 mm, and larger, were killed.

Comments: Since Dermocystidium marinum had been at epidemic levels in Aransas Bay, causing serious losses among the market oysters, the size limit was changed from three and one-half inches to three inches in length. The change was made by proclamation of the Parks & Wildlife Commission effective August 1, 1963.

Reduction in size limit would have made available to the oyster fishermen a larger amount of harvestable oysters under "normal" conditions. However, heavy fall and winter mortalities caused by an unidentified organism practically depleted the oyster population in Aransas and Mesquite Bays, forcing the local fishermen to turn elsewhere for their harvest.

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References:

Heffernan, Thomas L. 1961-62. Study of oyster growth and population structure in Aransas, Copano and Mesquite Bays. Project Report Mar. Fish. Division, Texas Game & Fish Comm.

Table 1: The number and percentage of spat, seed and market oysters collected at five sample stations during 1963

Long Reef

	Spat		Seed		Market		
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Total
January	132	19.19	540	78.49	16	2.32	688
February	152	21.90	526	75.80	16	2.30	694
March	146	20.05	574	78.85	8	1.10	728
April	11	5.67	181	93.30	2	1.03	194
May	24	22.22	80	74.08	4	3.70	108
June	955	86.98	129	11.75	14	1.27	1098
July	947	88.59	119	11.13	3	.28	1069
August	*		82		11		93
September	130	52.21	118	47.39	1	.40	249
October	49	29.17	116	69.05	3	1.78	168
November	45	18.67	188	78.01	8	3.32	241
December	6	5.26	97	85.09	11	9.65	114

(* no spat counted - ratio of virginica to equestris 9:1)

Half Moon Reef

	Spat		Seed		Market		
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Total
January	294	42.98	378	55.26	12	1.76	684
February	260	40.00	384	59.08	6	.92	650
March	408	40.56	590	58.65	8	.79	1006
April	97	22.15	317	72.37	24	5.48	438
May	12	4.82	219	87.95	18	7.23	249
June	952	79.60	233	19.48	11	.92	1196
July	645	96.70	22	3.30	0	0.00	667
August	484	84.91	85	14.91	1	.18	570
September	126	70.00	54	30.00	0	0.00	180
October	207	62.16	126	37.84	0	0.00	333
November	147	44.14	186	55.86	0	0.00	333
December	91	35.41	165	64.20	1	.39	257

Bray's Cove

	Spat		Seed		Market		
	Number	Per	Number	Per Cent	Number	Per Cent	Total
January	332	51.23	310	47.84	6	.93	648
February	238	37.54	388	61.20	8	1.26	634
March	920	69.70	362	27.42	38	2.88	1320
April	6	5.36	82	73.21	24	21.43	112
May	8	11.11	62	86.11	2	2.78	72
June	1693	94.26	89	4.96	14	.78	1796
July	251	85.96	40	13.70	1	.34	292
August	No Samples August through December						
September							
October							
November							
December							

Table 1 continued:

Lap Reef

	Spat		Seed		Market		
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Total
January	142	20.76	524	76.61	18	2.63	684
February	86	10.77	694	86.97	18	2.26	798
March	155	18.79	666	80.73	4	.48	825
April	94	15.80	491	82.52	10	1.68	595
May	3	.80	366	97.08	8	2.12	377
June	356	54.27	291	44.36	9	1.37	656
July	624	61.18	387	37.94	9	.88	1020
August	329	63.76	180	34.88	7	1.36	516
Septtmber	147	30.95	325	68.42	3	.63	475
October	87	25.22	250	72.46	8	2.32	345
November	157	33.55	303	64.74	8	1.71	468
December	39	10.95	296	83.15	21	5.90	356

Pintail Reef

	Spat		Seed		Market		
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Total
January	150	35.29	234	55.06	41	9.65	425
February	114	26.03	292	66.67	32	7.30	438
March	324	44.50	380	52.20	24	3.30	728
April	12	8.11	124	83.78	12	8.11	148
May							
June	3116	98.64	40	1.27	3	.09	3159
July	598	97.87	13	2.13	0	0.00	611
August	*		10		0		
September	No Samples Taken After August						
October							
November							
December							

* No spat counted - ratio of <u>virginica</u> to <u>equestris</u> estimated as 9:1