

JOB REPORT

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Project Name: Survey of Oyster Populations and Associated Organisms
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Survey of the Oyster Parasite, Dermocystidium marinum

Abstract:

The fungus disease, Dermocystidium marinum was found among oysters in all bay areas sampled with the exception of South Bay. In Galveston, Matagorda, San Antonio and Aransas Bays, there appeared to be a seasonal pattern of incidence with two peaks, one in the spring and the other in late summer. A general decrease in incidence was noted during June, July and August.

Objectives:

To determine the distribution of the parasitic fungus, Dermocystidium marinum, and its effect upon oyster populations on the Texas coast.

Procedure:

Tissue sections of the posterior gut of ten oysters from each monthly population sample were collected by area biologists. Sections were placed in individual culture tubes containing approximately 10 millimeters of fluid thioglycollate medium. Mycostatin and Chloromycetin were used as bacterial retardants. A dilution of 1 cc of each (100,000 units) was added to each culture tube at time of tissue insertion. Dermocystidium marinum samples from Matagorda Bay, San Antonio Bay, Aransas Bay, and South Bay were analyzed at the Marine Laboratory at Rockport. Galveston Bay samples were analyzed at the Seabrook Marine Laboratory.

Tissue sections were examined after culturing the thioglycollate medium from a period of seven to twenty days.

Each tissue section was placed on a standard one-by-three inch glass microscope slide, flooded with Lugal's iodine and teased apart. After five minutes of infiltration time, the tissue was drained, reflooded with iodine, covered with a No. 1 cover slip and examined under a 1 power objective microscope.

Each slide was given an infection value of 0 through 5, rated on D. marinum cell intensity. A tissue section with a value of 0 has no apparent infection. A value of 0.5 is given when the fungus cells number less than 10 in an entire tissue section. This is a very light infection. A light infection is rated a value of 1 when the fungus cells number between 10 and 100. A value of 2 is a light to moderate infection. A moderate infection is a 3 value and one in which the tissue is heavily infiltrated with the fungus cells in some areas but lightly scattered in others. A value of 4 is an intermediate between a moderate and heavy infection. A heavy infection is rated 5 and is one which has an extremely heavy concentration of fungus cells throughout the tissue section.

Incidence recordings are the average of the values of the ten tissue samples from each station.

Findings and Discussion: The weighted incidence of infection and the percentage of oysters infected by Dermocystidium marinum in each monthly sample are given in Tables 1-5.

Of the five bay areas sampled, only oysters in South Bay appeared to be free of infection. In other bay areas, although infection levels varied, a general pattern could be found. The weighted incidence of infection usually attained a peak during April or May. This was followed by a drop below epidemic level (2.0) during June, July or August. A sharp increase in incidence of infection occurred again in September. In Galveston Bay the September peak appeared to be greater than the spring peak but was less than the spring peak in San Antonio and Aransas Bays. A gradual decline in incidence occurred after September as water temperatures cooled.

The decline in incidence during the early summer months can not be explained. It does not appear to be influenced either by salinity or temperature changes.

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Table 1: The weighted incidence of infection and the per cent infection of Dermocystidium marinum in monthly samples of ten oysters from six reefs in Galveston Bay, 1963.

	<u>Bart's Pass</u>		<u>Redfish Reef</u>		<u>Hanna's</u>		<u>Todd's Dump</u>		<u>Beasley's Reef</u>		<u>Scott's</u>	
	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I
January												
February	.35	20	1.40	100	.20	40	.30	50	0.00	0	1.60	90
March	.15	30	.40	60	.25	40	.25	40	.05	10	1.20	90
April	.10	20	1.65	100	1.30	70	2.40	100	.20	30	3.50	100
May	1.05	50	2.15	80	1.20	70	.85	70	.35	40	3.05	100
June	0.00	0	1.65	100	.70	80	.75	60	0.00	0	2.90	100
July	----	---	.50	50	.60	60	1.35	80	----	---	1.90	80
August	.40	40	1.50	70	.90	60	.65	40	.50	60	2.05	80
September	2.66	100	3.50	100	3.40	100	2.85	100	.90	100	2.95	100
October	----	---	----	---	----	---	----	---	----	---	----	---
November	----	---	----	---	----	---	----	---	----	---	----	---
December	2.40	100	2.00	90	2.65	90	2.60	100	2.40	90	2.20	90

W.I. = Weighted Incidence
 %I = Percent Infection

Table 2: The weighted incidence and per cent infection of Dermocystidium marinum in monthly samples of ten oysters from two reefs in Matagorda Bay, 1963.

	<u>Middle Ground Reef</u>		<u>Sand Point Reef</u>	
	W.I.	%I	W.I.	%I
January	2.10	100	.25	20
February	0.00	0	0.00	0
March	0.10	20	0.00	0
April	3.00	100	0.00	0
May	0.00	0	0.05	10
June	2.00	100	0.10	10
July	1.00	90	0.00	0
August	1.05	90	0.00	0
September	2.75	100	0.00	0
October	1.65	100	0.00	0
November				
December				

Table 3: Weighted incidence and per cent infection of Dermocystidium marinum in monthly samples of ten oysters from four reefs in San Antonio Bay, 1963.

	<u>Panther Pt.</u>		<u>Chicken Ft.</u>		<u>Mosquito Pt.</u>		<u>Josephine</u>	
	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I
January	----	---	----	---	----	---	----	---
February	----	---	----	---	----	---	----	---
March	.75	60	.30	40	0.0	0	.25	40
April	1.95	90	2.65	80	.05	10	1.15	70
May	----	---	----	---	----	---	----	---
June	1.35	50	1.55	70	.2	30	1.75	80
July	0.00	0	.30	30	0.0	0	.85	50
August	.80	60	.60	80	0.0	0	.40	30
September	1.25	100	.35	60	0.0	0	1.80	100
October	----	---	----	---	----	---	----	---
November	.65	60	1.30	60	0.0	0	1.15	50
December	.55	50	1.00	90	----	---	1.05	70

Table 4: Weighted incidence and per cent infection of Dermocystidium marinum in monthly samples of ten oysters from five reefs in Aransas Bay, 1963.

	<u>Pintail Reef</u>		<u>Long Reef</u>		<u>Half Moon Reef</u>		<u>Brays Cove</u>		<u>Lap Reef</u>	
	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I	W.I.	%I
January	.40	40	.90	90	.65	90	1.30	90	.65	70
February	0.00	0	1.05	60	.70	60	.95	70	1.40	90
March	.15	30	.80	70	.65	80	1.60	70	1.65	90
April	.80	100	1.80	80	2.25	80	2.05	90	1.25	70
May			1.80	100	.95	90	1.35	90	.80	60
June	.15	20	1.65	90	.25	50	1.20	70	.20	30
July			.70	60			.70	40	1.10	90
August			.55	50	.30	60			.15	20
September			1.80	100					.60	60
October										
November										
December			1.40	80					.05	10

Table 5: Weighted incidence and per cent infection of Dermocystidium marinum in monthly samples of ten oysters from South Bay, 1963.

	<u>D.m. Incidence</u>	<u>% Infection</u>
January	0.0	0
February	0.0	0
March		
April	0.0	0
May	0.0	0
June	0.0	0
July	0.0	0
August	0.0	0
September	0.0	0
October		
November		
December		