Charleston

OYSTER MORTALITY STUDY

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OYSTER MORTALITY STUDY

ABSTRACT

Oyster mortality data collected from suspended trays at three subtidal locations in Yaquina Bay disclosed an unusually high 26.5% Pacific oyster *(Crassostrea gigas)* mortality during the study year. Almost all of this mortality resulted from culling damage which occurred previous to introduction of the oysters into trays. Native oyster mortality was 22.1%, 1.5% higher than the average mortality of the previous 4 years. Mortality of bay mussels was 44.2%. No evident causes for this high mortality were noted. Mussels were not monitored in previous years.

Pacific oyster mortality in intertidal trays was 7.3% at the Tillamook Bay station; 6.7% at the Coos Bay station.

A total of approximately 1,750 oysters and mussels were collected during the study year and sent to the National Marine Fisheries Service (NMFS) Oxford Laboratory for histological examination.

INTRODUCTION

Objectives of Oregon's oyster mortality study for the past year, ending in March 1971, were similar to those of previous years:

(1) To monitor oyster mortality in Yaquina, Tillamook, and Coos bays.

(2) To furnish oysters to the NMFS laboratory in Oxford, Maryland, for histological examination.

MATERIALS AND METHODS

Mortality Stations

Mortality data were collected at three subtidal stations in Yaquina Bay (Figure 1) and at single intertidal locations in Tillamook and Coos bays.

Suspended trays at each Yaquina Bay station initially contained 150 Pacific oysters (*Crassostrea gigas*), 300 native oysters (*Ostrea lurida*), and 150 bay mussels (*Mytilus edulis*). These stations were checked monthly for mortalities.

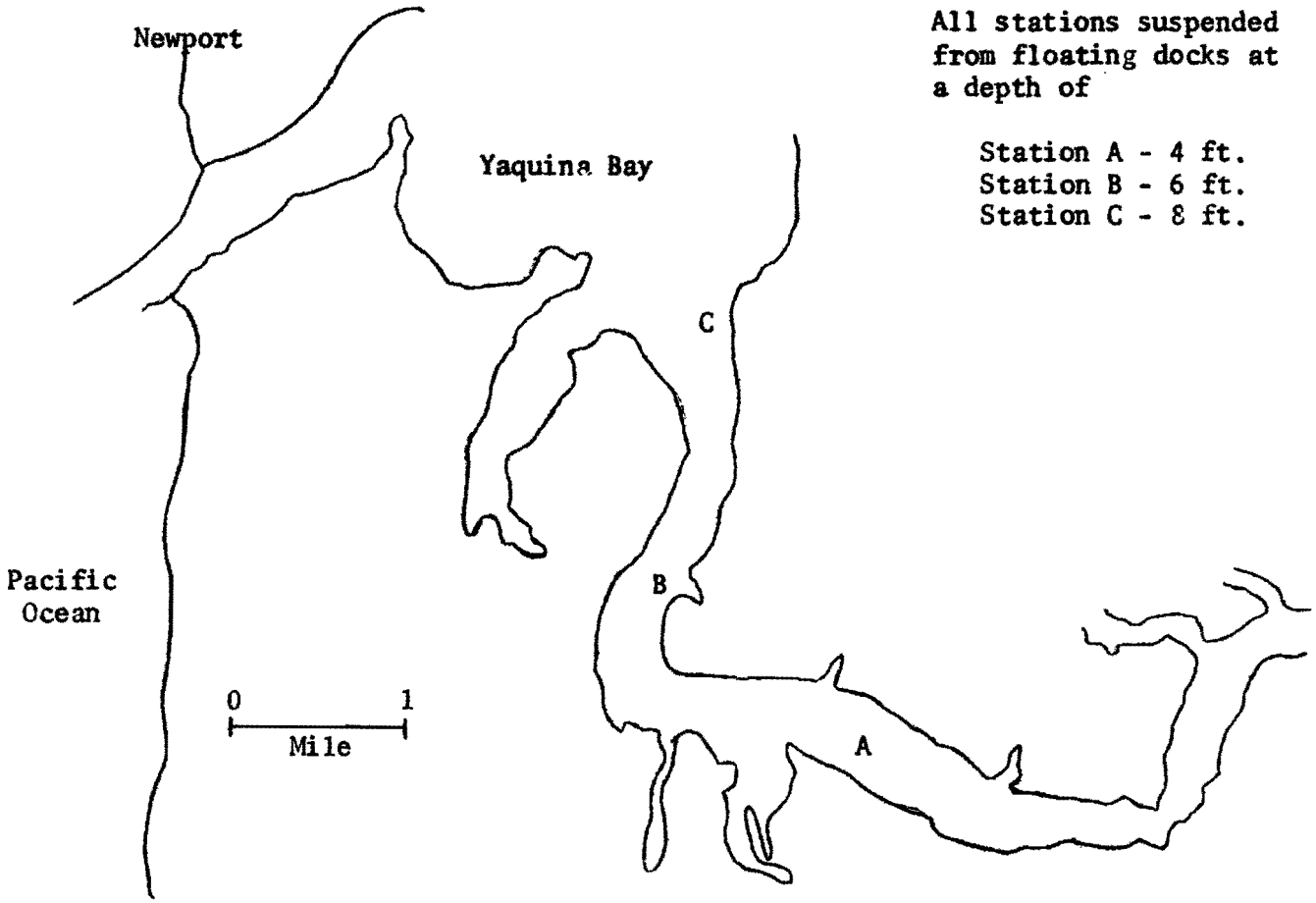

Figure 1. Locations of the Oyster Mortality Stations in Yaquina Bay

Tillamook and Coos Bay stations each initially contained 150 Pacific oysters. These trayed oysters, along with those on the surrounding commercial beds, were checked every 3 months for mortalities.

Histological Samples

Pacific oysters and bay mussels from Yaquina, Tillamook, and Coos bays and native oysters from Yaquina Bay were sent to the NMFS Oxford Laboratory for histological examination.

RESULTS AND DISCUSSION

Mortality Stations

Pacific oyster mortality (1-year-old animals) was 26% at the Yaquina Bay stations during the past year (Table 1). This unusually high mortality resulted from culling damage which occurred prior to introduction into the trays. Less than 1% was from other causes. Shell breakage was evident in all of the dead animals; shell repair was noticed in many of the remaining live oysters. The oysters that died were not able to build new shell across broken areas fast enough to prevent the invasion of marine organisms into the mantle cavities.

Pacific oyster mortalities reported for previous years were 8.6% during 1969-70, 1.1% during 1968-69, 1.5% for 1967-68, and 1.8% during 1966-67.

Native oyster mortality in Yaquina Bay (various ages) was 22.1% during the study year (Table 2). About one-third of this mortality occurred at the uppermost bay station (A) following a long period of low salinities during the winter. Mortalities during previous years were 26.5% for 1969-70, 28.2% during 1968-69, 9.6% during 1967-68, and 18.2% for 1966-67.

Table 1. Pacific Oyster Mortality in Yaquina Bay by Station and Quarterly Period, April 1970-March 1971

Date	Number Dead Oysters Station A	Station B	Station C	Total	Total Percentage Mortality by Quarter
1970					
April-June	28	9	33	70	15.6
July-September	10	2	33	45	11.8
October-December	1	0	0	1	0.3
1971					
January-March	1	0	0	1	0.3
Total	40	11	66	117	
Total Percentage Annual Mortality					26.0

Table 2. Native Oyster Mortality in Yaquina Bay by Station and Quarterly Period, April 1970-March 1971

Date	Number Dead Oysters Station A	Station B	Station C	Total	Total Percentage Mortality by Quarter
1970					
April-June	20	6	15	41	4.6
July-September	27	12	26	65	7.6
October-December	20	14	12	46	5.8
1971					
January-March	39	8	1/	47	8.6
Total	106	40	53	199	
Total Percentage Annual Mortality					22.1

1/ *Tray lost January 15, 1971.*

Bay mussel mortality (1-year-old animals) in suspended trays was 44.2% during the past year in Yaquina Bay (Table 3). There was no apparent reason for this mortality; and it cannot be said to be high or low since mussel mortality was not monitored in previous years.

Table 3. Bay Mussel Mortality in Yaquina Bay by Station and Quarterly Period, April 1970-March 1971

Date	Number Dead Mussels Station A	B	C	Total	Total Percentage Mortality by Quarter
1970					
April-June	2	1	1	4	0.9
July-September	27	31	51	109	24.4
October-December	15	27	29	71	21.1
1971					
January-March	14	1	1/	15	7.6
Total	58	60	81	199	
Total Percentage Annual Mortality					44.2

1/ *Tray lost January 15, 1971.*

At the Tillamook Bay station, 7.3% of the tray held animals died (Table 4). This compares to 2.1% during 1969-70 and 4.6% for 1968-69.

In Coos Bay 6.7% of the experimental oysters died (Table 4). Mortality during the 2 previous years was 6.9% in 1969-70 and 27.1% for 1968-69.

Table 4. Pacific Oyster Mortality in Tillamook and Coos Bays by Quarterly Period, April 1970-March 1971

Date	Station: Tillamook Bay — No. Dead	Tillamook Bay — Total Percentage Mortality by Quarter	Coos Bay — No. Dead	Coos Bay — Total Percentage Mortality by Quarter
1970				
April-June	1	0.7	1	0.7
July-September	7	4.7	5	3.4
October-December	0	0	2	1.4
1971				
January-March	3	2.1	2	1.4
Total	11		10	
Total Percentage Annual Mortality		7.3		6.7

Histological Samples

Monthly samples of shellfish sent to the Oxford Laboratory totaled 900 native oysters, 150 Pacific oysters, and 700 bay mussels. Histological findings will be published by NMFS pathologists in a separate report.