

Reports

1987

Oyster Shoal Survey - Fall 1987

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Recommended Citation

Whitcomb, J. (1987) Oyster Shoal Survey - Fall 1987. Virginia Marine Resource Report No. 87-12. Virginia Institute of Marine Science, College of William and Mary. <https://doi.org/10.21220/V5DG66>

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OYSTER SHOAL SURVEY, FALL 1987

BY

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GLOUCESTER POINT, VIRGINIA 23062

DECEMBER 3, 1987

VIRGINIA MARINE RESOURCE
REPORT NO. 87-12

OYSTER SHOAL SURVEY

FALL 1987

JAMES P. WHITCOMB

The survey of oyster shoals in the fall attempts to measure mortalities in the summer months, recruitment in the current setting period, and the condition of market and seed oysters on selected shoals.

The sample unit was three samples on each station with a twenty-four inch (opening) dredge with three inch teeth, running either down current or up current on parallel tracks, and retention of a one-half bushel measured sample representative of each haul. An additional sample was taken if the relationship between the variances and the mean bushel counts fell outside an acceptable range. The acceptable range in variance was based upon experiential knowledge and principle. The principle has been described in a memo dated April 2, 1986 (see Appendix).

The data collection included: the count of market oysters (over 3" in length), the count of small oysters (less than 3" in length but larger than the previous year's set), the count of spat, count of old boxes, count of new boxes (attached shell clear of meat), count of gapers (dying oysters still containing meat), list of predators, a description of fouling, bottom temperatures, bottom salinities and observations of the condition of the oysters and the bottom. The data summary of each shoal included: the average count of oysters per bushel, the percent mortality based upon the numbers of gapers and all boxes except the current year's set, a list of predators retained in the dredge, a description of fouling and a characterization of the reef as a seed oyster or market oyster reef. Seed are the small oysters including spat.

The mortalities of oysters in Virginia, caused by disease, have resulted in a shortage of market oysters and the sale of oysters from the James River to meet demands for market oysters have resulted in a shortage of disease-free seed oysters. Overall the 1987 setting season was better than the average year. However, the only shoals which could be classified as excellent sources of seed are Point of Shoal and Horsehead. At Horsehead the bushel count was 1103 oysters per bushel with 358 small oysters and 693 spat. At Point of Shoal the bushel count was 966 with 227 small oysters and 690 spat. Overall these two shoals have an average count of 51 market oysters, 3" or larger, per bushel.

The mortalities in the James River ranged from three (3) percent at Point of Shoal to fifty-four (54) percent at Thomas Rock. The mortality calculations included the spat counts and a recalculation of mortalities, minus the spat count, produces a mortality of thirteen (13) percent at Horsehead. The large number of recent boxes, average 49, in the Horsehead samples raise the question of additional sampling for disease related deaths at deeper sites near Horsehead.

In the York River only Aberdeen Rock was sampled. It would be correct to describe this shoal as depleted because of the low level of market and small oysters.

One of the areas seriously affected by the increase in the incidence of disease mortalities was Mobjack Bay. A single station at Pultz Bar showed an 85 percent mortality and very few spat. This station was classified as depleted.

The bushel counts of samples in the Piankatank River have continued the downward trend from the highs in 1985. The mortalities ranged from 20 to 44 percent. The Palace Bar sample was classified as below average for seed but

the remaining shoals are of no value as seed or markets at present. The mortalities of market and small oysters at Ginney Point, the upriver station, was 54%.

The mortalities in the Rappahannock River ranged between 6 and 74 percent. It is apparent that the impact of disease is present as far upriver as Morattico Bar. Bowler's Rock and Morattico are the only stations that will support the harvesting of markets; however, the fouling at both stations will lower the yield per bushel substantially. Recruitment in the lower river was good and did lower the percentages of mortalities. Overall 63% of the market and small oysters have died up to, and including Morattico. The average recruitment from Morattico Bar to Broad Creek is 103 spat per bushel but 63% of all the spat were at one station, Broad Creek. In the Rappahannock River recovery of the river will require separate management options for areas demarcated by a line from Hog House Bar to Towles Point.

Middle Ground, in the Corrotoman River, lost 51% of the small and market oysters and had an average set of 100 spat per bushel. It is not, at present, a good source of seed and there is, on the average, only one market oyster per bushel. It should be managed with the lower part of the river since its condition is similar to the condition of Drumming Ground.

The bushel counts in the Great Wicomico River ranged from 622 to 2018 oysters/bushel. The mortalities ranged from 8 to 20 percent based upon the total bushel count. On basis of count, the shoals would be classed as satisfactory to excellent as sources of seed. However, dropping the high spat count, which averages 745 spat/bushel overall, we find that 43 percent of the markets and small oysters have died. In addition, at Fleet's Point only 10 percent of last year's set has survived. All of the shoals were a

source of markets in spring 1986, and, in the fall 1987 only 16 markets were harvested all together. Therefore, the shoals sampled were heavily infected, probably *Perkinsus mar.*, among the larger oysters. Any management options for moving the seed should be deferred for at least one year.

The mortalities in Pocomoke Sound range from 39 to 100% but more important is the almost complete absence of recruitment below P. G. #10. In addition, based on counts, there are no market oysters areas left in Pocomoke Sound that would attract more than a single vessel. Recovery from the disease mortalities is not possible within the management area with out closing the area for several seasons. Outside the management area recovery might proceed, with hand tong exploitation, at about the normal expected rate.

The data collected is shown in Table 1; and, Table 2 presents the average bushel counts, percent mortality, evidence of predations, description of fouling and characterization of the shoal. The appendix shows the locations of stations in each river sampled.

Table 1. Summary, Fall 1987 Oyster Bar Survey¹

| BAR | OYSTERS | | | BU. COUNT | MEAN COUNT | GAPER | BOXES | | | FOULING | BOTTOM | | TIME | TIDE | MEAN DEPTH | LORAN COORD. | OBSERVATIONS, SAMPLE PREC., ETC. |
|--------------------|---------|-----|------|-----------|------------|-------|-------|-----|--------------|-------------------------------|--------|------|------|------------|------------|--------------|----------------------------------|
| | MKT. | SM. | SPAT | | | | REC. | OLD | PRED. | | °C | ‰ | | | | | |
| <u>James River</u> | | | | | | | | | | | | | | | | | |
| Horsehead | 70 | 460 | 478 | 1008 | | None | 24 | 12 | Turbellarian | Barnacles; light to moderate. | 18.1 | 12.6 | 1430 | Early Ebb | 6.5' | 27346.0 | Seas light. |
| | 40 | 252 | 1082 | 1374 | | None | 88 | 16 | None | | | | | | | 41333.2 | Wind WNW 10K. |
| | 48 | 368 | 534 | 950 | | None | 40 | 18 | None | | | | | | | | |
| | 50 | 352 | 676 | 1078 | 1103 | None | 42 | 24 | None | | | | | | | | |
| Pt. of Shls. | 48 | 304 | 768 | 1120 | | None | 16 | 12 | Mud Crabs | Barnacles; light. | 18.3 | 12.5 | 1250 | Late Flood | 7.5' | 27344.0 | Seas light. |
| | 60 | 170 | 460 | 690 | | None | 8 | 10 | Mud Crabs | | | | | | | 41310.6 | Wind WNW 10K. |
| | 30 | 192 | 700 | 922 | | None | 22 | 8 | Mud Crabs | | | | | | | | |
| | 62 | 240 | 830 | 1132 | 966 | None | 10 | 12 | Mud Crabs | | | | | | | | |
| Wreck Shl. | 20 | 58 | 182 | 260 | | None | 42 | 116 | Mud Crabs | Barnacles; light. | 18.5 | 16.8 | 1100 | Max. Flood | 9.5' | 27326.0 | Seas calm. |
| | 16 | 38 | 240 | 294 | | None | 42 | 66 | Mud Crabs | | | | | | | 41301.8 | |
| | 16 | 58 | 308 | 382 | 312 | None | 54 | 76 | Mud Crabs | Cliona; light. | | | | | | | |
| Thomas Rock | 8 | 34 | 104 | 146 | | None | 54 | 234 | Mud Crabs | Barnacles; light. | 18.5 | 17.9 | 1300 | Early Ebb | 7.0' | 27302.7 | Seas calm. |
| | 4 | 32 | 200 | 236 | | None | 48 | 206 | Mud Crabs | Cliona; light. | | | | | | 41288.4 | |
| | 10 | 48 | 238 | 296 | 226 | None | 24 | 240 | Mud Crabs | | | | | | | | |
| Ridge | 12 | 18 | 144 | 174 | | None | 14 | 92 | Mud Crabs | Cliona; mod. | 18.0 | 19.3 | 1030 | Late Flood | 8.8' | 27280.6 | Seas light. |
| | 14 | 58 | 184 | 256 | | None | 30 | 64 | Mud Crabs | Barnacles; light. | | | | | | 41218/8 | Wind SW 10K. |
| | 16 | 40 | 178 | 234 | | None | 36 | 50 | Mud Crabs | Hydroides. | | | | | | | |
| | 8 | 50 | 262 | 320 | 246 | None | 44 | 22 | Mud Crabs | | | | | | | | |
| <u>York River</u> | | | | | | | | | | | | | | | | | |
| Aberdeen Rk. | 0 | 8 | 24 | 32 | | None | 0 | 6 | Mud Crabs | Microciona; heavy. | 21.2 | 20.2 | 1020 | Late Ebb | 4.5' | 27368.3 | Seas rough. |
| | 4 | 0 | 22 | 26 | 29 | None | 2 | 4 | Eupleura | Barnacles; light. | | | | | | 41501.2 | Wind NW 25K. |
| | | | | | | | | | | Crepidula, | | | | | | | Microciona dominant. |
| | | | | | | | | | | Anomia and Molgula. | | | | | | | |

1. Volume of each sample is 1 Virginia bushel (50 quarts).

| BAR | OYSTERS | | | BU. COUNT | MEAN COUNT | GAPER | BOXES | | | FOULING | BOTTOM | | TIME | TIDE | MEAN DEPTH | LORAN COORD. | OBSERVATIONS, SAMPLE PREC., ETC. |
|-------------------------|---------|-----|------|-----------|------------|-------|-------|-----|---------------|------------------------------|--------|------|------|-------------|------------|--------------|----------------------------------|
| | MKT. | SM. | SPAT | | | | REC. | OLD | PRED. | | °C | ‰ | | | | | |
| <u>Mobjack Bay</u> | | | | | | | | | | | | | | | | | |
| Pultz Bar | 2 | 8 | 0 | 10 | | None | 0 | 80 | Mud Crabs | Hydroids, Cliona Anomia, | 16.4 | 22.4 | 1045 | Late Ebb | 12' | 27310.6 | Seas calm. |
| | 4 | 8 | 4 | 16 | | None | 0 | 72 | Mud Crabs | | | | | | | 41534.6 | Hydroids dominant. |
| | 2 | 8 | 0 | 10 | | None | 0 | 56 | Mud Crabs | Crepidula; mod. Blood clams. | | | | | | | |
| <u>Piankatank River</u> | | | | | | | | | | | | | | | | | |
| Ginney Pt. | 4 | 34 | 36 | 74 | | 2 | 20 | 78 | Mud Crabs | Molgula; heavy. | 16.2 | 18.9 | 1300 | Mid Flood | 8.5' | 27347.4 | Seas light. |
| | 2 | 76 | 52 | 130 | | None | 12 | 102 | Mud Crabs | Mussels; mod. | | | | | | 41659.7 | Wind N 20K. |
| | 10 | 98 | 68 | 176 | | None | 36 | 98 | Mud Crabs | Barnacles, | | | | | | | Molgula dominant. |
| | 6 | 124 | 104 | 234 | 154 | 1 | 30 | 114 | Mud Crabs | Hydroids; light. | | | | | | | |
| <u>Palace Bar</u> | | | | | | | | | | | | | | | | | |
| | 8 | 22 | 120 | 150 | | None | 14 | 66 | Mud Crabs | Microciona, | 15.2 | 19.2 | 1120 | Early Flood | 13' | 27338.1 | Seas moderate. |
| | 4 | 80 | 248 | 332 | | 1 | 20 | 58 | Mud Crabs | Molgula; | | | | | | 41658.3 | Wind N 20K. |
| | 0 | 188 | 306 | 494 | | None | 14 | 26 | Mud Crabs | heavy. | | | | | | | Microciona dominant. |
| | 2 | 126 | 134 | 262 | 310 | None | 22 | 92 | Mud Crabs | Hydroides, Bryozoans; mod. | | | | | | | |
| Burton Pt. | 0 | 4 | 2 | 6 | | None | 2 | 72 | Urosalpinx | Hydroides, | 18.0 | 19.3 | 1315 | Ebb | 9.7' | 27326.0 | Seas moderate. |
| | 0 | 0 | 6 | 6 | | None | 4 | 144 | Mud Crabs | Microciona; heavy. | | | | | | 41652.9 | Wind NW10-15K. |
| | 0 | 4 | 352 | 356 | | None | 46 | 108 | Callinectes, | Molgula; light. | | | | | | | Hydroides dominant. |
| | 0 | 4 | 246 | 250 | 155 | None | 48 | 46 | Juvenile | Crepidula. | | | | | | | |
| <u>Rappa. River</u> | | | | | | | | | | | | | | | | | |
| Bowler's Rk. | 64 | 14 | 64 | 142 | | None | 0 | 0 | Mud Crabs | Molgula; | 19.8 | 13.2 | 1030 | Ebb | 7.5' | 27472.4 | Seas light. |
| | 48 | 8 | 20 | 76 | | None | 0 | 14 | Turbellarians | heavy. | | | | | | 41847.3 | Wind S 10K. |
| | 48 | 22 | 20 | 90 | 103 | None | 2 | 4 | | Barnacles, Mussels; mod. | | | | | | | Molgula dominant. |

| BAR | OYSTERS | | | BU. COUNT | MEAN COUNT | GAPER | BOXES | | | FOULING | BOTTOM | | TIME | TIDE | MEAN DEPTH | LORAN COORD. | OBSERVATIONS, SAMPLE PREC., ETC. |
|--------------------|---------|-----|------|--------------|---------------|-------|-------|-----|-------------|---|--------|------|------|------------|---------------|--------------------|--|
| | MKT. | SM. | SPAT | | | | REC. | OLD | PRED. | | °C | ‰ | | | | | |
| Morattico | 114 | 66 | 30 | 210 | | None | 16 | 40 | Mud Crabs | Barnacles, Mussels, Molgula; light. | 20.3 | 14.7 | 1230 | Ebb | 14.5' | 27446.8 41819.8 | Seas moderate. Wind S 10-15K. |
| | 56 | 46 | 10 | 112 | | None | 16 | 22 | Mud Crabs | | | | | | | | |
| | 66 | 72 | 8 | 146 | | None | 14 | 42 | Mud Crabs | | | | | | | | |
| Smokey Pt. | 84 | 38 | 10 | 132 | 150 | None | 4 | 38 | Mud Crabs | Molgula, Mussels; light to mod. Barnacles; light. Anemones, Anadera. | 18.0 | 16.1 | 1015 | Late flood | 13' | 27417.8 41779.0 | Seas calm. 1/3 of shell was black. |
| | 22 | 10 | 12 | 44 | | None | 4 | 66 | Mud Crabs | | | | | | | | |
| | 26 | 22 | 10 | 58 | | None | 14 | 66 | Mud Crabs | | | | | | | | |
| | 24 | 16 | 14 | 54 | 52 | 1 | 6 | 82 | Mud Crabs | | | | | | | | |
| Hog House | 12 | 16 | 10 | 38 | | 1 | 2 | 72 | Mud Crabs | Mussels; mod. Banacles; light. Anadera, Mya. | 19.2 | 18.3 | 1120 | High slack | 15' | 27398.3 41725.8 | Seas calm. |
| | 6 | 12 | 10 | 28 | | None | 0 | 74 | Mud Crabs | | | | | | | | |
| | 6 | 8 | 12 | 26 | 31 | None | 6 | 102 | Mud Crabs | | | | | | | | |
| Drumming Ground | 0 | 12 | 116 | 128 | | None | 4 | 52 | Mud Crabs | Bryozoan, Molgula; med. Mussels, Barnacles, Hydroides, light. | 19.3 | 18.3 | 1300 | Early Ebb | 12' | 27377.8 41738.1 | Seas calm. |
| | 0 | 8 | 146 | 154 | 141 | None | 0 | 70 | Urosalpiux | | | | | | | | |
| Parrot Rk. | 0 | 24 | 116 | 140 | | None | 30 | 46 | Mud Crabs | Molgula; heavy. Mussels, Barnacles; light. | 16.2 | 18.4 | 1200 | Late Flood | 8.5' | 27361.9 41710.4 | Seas light. Wind NE 10K. |
| | 6 | 12 | 94 | 112 | | None | 30 | 64 | Mud Crabs | | | | | | | | |
| | 2 | 10 | 96 | 108 | 120 | None | 28 | 66 | Callinectes | | | | | | | | |
| Broad Ck. | 4 | 20 | 360 | 384 | | None | 20 | 96 | Mud Crabs | Barnacles, Mussels, Molgula; light. | 16.0 | 19.2 | 1000 | High slack | 14' | 27329.5 41696.3 | Molgula dominant. Seas light. Wind N 10K. |
| | 0 | 30 | 402 | 432 | | None | 18 | 94 | Turbel- | | | | | | | | |
| | 0 | 8 | 402 | 410 | 409 | None | 8 | 122 | larians | | | | | | | | |

| BAR | OYSTERS | | | BU. COUNT | MEAN COUNT | GAPER | BOXES | | | FOULING | BOTTOM | | TIME | TIDE | MEAN DEPTH | LORAN COORD. | OBSERVATIONS, SAMPLE PREC., ETC. |
|----------------------|---------|-----|------|--------------|---------------|-------|-------|-----|---------------|---|--------|------|------|-------------|---------------|-----------------|--|
| | MKT. | SM. | SPAT | | | | REC. | OLD | PRED. | | °C | ‰ | | | | | |
| <u>Corrotoman R.</u> | | | | | | | | | | | | | | | | | |
| Middle | 2 | 46 | 92 | 140 | | None | 2 | 86 | Mud Crabs | Molgula; | 19.5 | 17.6 | 1345 | Early Ebb | 11' | 27386.2 | Seas calm. |
| Ground | 0 | 134 | 104 | 238 | | None | 4 | 60 | Mud Crabs | light to heavy. | | | | | | 41763.0 | |
| | 2 | 76 | 118 | 196 | | None | 2 | 96 | Mud Crabs | Barnacles; | | | | | | | |
| | 0 | 68 | 86 | 154 | 182 | None | 6 | 82 | Mud Crabs | light; Microciona. | | | | | | | |
| <u>G.R. WICOMICO</u> | | | | | | | | | | | | | | | | | |
| Haynie Pt. | 0 | 294 | 574 | 868 | | None | 32 | 130 | Mud Crabs | Gracilaria; | 15.5 | 19.3 | 1300 | Flood | 15' | 27366.9 | Seas light. Wind N15-25K. |
| | 2 | 254 | 444 | 698 | | None | 74 | 162 | Mud Crabs | mod. Barnacles. Mussels, | | | | | | 41881.6 | |
| | 0 | 264 | 486 | 750 | 772 | None | 36 | 130 | Mud Crabs | Hydroides; light. | | | | | | | |
| Whaley's E. | 2 | 274 | 372 | 648 | | None | 46 | 122 | Mud Crabs | Barnacles, | 15.0 | 19.3 | 1120 | Low slack | 8.5' | 27361.6 | Gracilaria dominant. Seas moderate. Wind N15-20K. |
| | 6 | 290 | 294 | 590 | | None | 20 | 130 | Mud Crabs | Mussels; | | | | | | 41867.3 | |
| | 6 | 278 | 344 | 628 | 622 | None | 34 | 116 | Mud Crabs | light. | | | | | | | |
| Fleet Pt. | 0 | 122 | 2062 | 2184 | | None | 60 | 162 | Mud Crabs | Barnacles, | 14.0 | 19.2 | 0945 | Late Ebb | 10.5' | 27358.3 | Seas moderate. Wind N 15-20K. |
| | 0 | 106 | 1810 | 1916 | | 1 | 76 | 48 | Turbellarians | Mussels, | | | | | | 41868.9 | |
| | 0 | 92 | 1862 | 1954 | 2018 | None | 42 | 110 | | Bryozoans; light. | | | | | | | |
| <u>Pocomoke Snd.</u> | | | | | | | | | | | | | | | | | |
| P. G. #9 | 16 | 12 | 60 | 88 | | 1 | 10 | 38 | Mud Crabs | Molgula, | 13.8 | 20.3 | 1400 | Early Flood | 5' | Loran out | Seas calm. |
| | 16 | 28 | 50 | 94 | | None | 4 | 52 | Turbellarians | Hydroides, Bryozoans, | | | | | | | |
| | 4 | 28 | 38 | 70 | 84 | None | 14 | 40 | | Anemones, light. Mussels, Sabellidae. | | | | | | | |
| P. G. #10 | 2 | 18 | 34 | 54 | | None | 4 | 72 | Mud Crabs | Molgula, | 14.0 | 20.3 | 1545 | Flood | 8' | Loran out | Seas light. Wind NW 5-10K. |
| | 2 | 20 | 40 | 62 | | None | 2 | 74 | Mud Crabs | Hydroides Barnacles; light. | | | | | | | |
| | 6 | 22 | 38 | 66 | 61 | None | 8 | 100 | Mud Crabs | Mussels, Sabellaria. | | | | | | | |

| BAR | OYSTERS | | | BU. COUNT | MEAN COUNT | GAPER | BOXES | | | FOULING | BOTTOM | | TIME | TIDE | MEAN DEPTH | LORAN COORD. | OBSERVATIONS, SAMPLE PREC., ETC. |
|--------------|---------|-----|------|--------------|---------------|-------|-------|-----|------------|---|--------|------|------|-----------|---------------|-----------------|--|
| | MKT. | SM. | SPAT | | | | REC. | OLD | PRED. | | °C | ‰ | | | | | |
| Marshall Rk. | 0 | 10 | 0 | 10 | | None | 0 | 32 | Mud Crabs | Hydroides; mod. Barnacles, | 14.0 | 20.0 | 1010 | Max. Ebb | 12' | Loran out | Seas calm. Hydroides dominant. |
| | 0 | 4 | 0 | 4 | | None | 0 | 36 | Urosalpinx | | | | | | | | |
| | 0 | 2 | 0 | 2 | 5 | None | 0 | 14 | Mud crabs | Molgula, Crepidula, Cliona, Sabellidae, Anomia. | | | | | | | |
| Bird Rk. | 0 | 0 | 0 | 0 | | None | 0 | 2 | Mud Crabs | Hydroides, Molgula Cliona, | 15.5 | 20.5 | 1100 | Max. Ebb | 15' | Loran out | Seas calm. Hydroides dominant. |
| | 0 | 0 | 0 | 0 | 0 | None | 0 | 2 | Urosalpinx | | | | | | | | |
| Island Rk. | 0 | 0 | 0 | 0 | | None | 0 | 20 | Mud Crabs | Hydroides, Molgula, Sabellidae, Crepidula, Cliona | 15.0 | 20.3 | 1130 | Late Ebb | 13.5' | Loran out | Seas calm. Hydroides dominant. |
| | 0 | 0 | 0 | 0 | 0 | None | 0 | 10 | Mud Crabs | | | | | | | | |
| Robin Hood | 0 | 0 | 2 | 2 | | None | 0 | 16 | Mud Crabs | Hydroides, Molgula, Anomia, Cliona, | 15.8 | 20.6 | 1230 | Low slack | 18' | Loran out | Seas calm. Hydroides dominant. |
| | 4 | 0 | 6 | 10 | | None | 0 | 20 | Mud Crabs | | | | | | | | |
| | 2 | 0 | 0 | 2 | 5 | None | 0 | 8 | Mud Crabs | Bryozoans, Anadara. | | | | | | | |

Table 2. Bushel count and condition of oyster on each bar.

| <u>Bar</u> | <u>Average Bu. Count</u> | <u>Percent Mortality</u> | <u>Evidence of Predation</u> | <u>Fouling</u> | <u>Classification</u> |
|--------------------|------------------------------|------------------------------|----------------------------------|--|-------------------------|
| <u>James R.</u> | | | | | |
| Horsehead | 1103 | 6 | Turbellarian | Barnacles; light to mod. | Seed; excellent. |
| Point of Shoals | 966 | 3 | Mud Crabs | Barnacles; light. | Seed; excellent. |
| Wreck Shoals | 312 | 28 | Mud Crabs | Barnacles; light. | Seed; below average. |
| Thomas Rock | 226 | 54 | Mud Crabs | Barnacles, Cliona; light. | Seed; below average. |
| Ridge | 246 | 32 | Mud Crabs | Cliona; mod. Barnacles; light, Hydroids. | Seed; below average. |
| <u>York R.</u> | | | | | |
| Aberdeen Rock | 29 | 17 | Mud Crabs Eupleura | Microciona; heavy. Barna- cles; light. Crepidula, Anomia and Molgula. | Depleted. |
| <u>Mobjack Bay</u> | | | | | |
| Pultz Bar | 12 | 85 | Mud Crabs | Hydriods, Cliona, Anomia, Crepidula; mod. Blood Clams. | Depleted. |

| Bar | Average Bu. Count | Percent Mortality | Evidence of Predation | Fouling | Classification |
|----------------------|----------------------|----------------------|----------------------------|---|-------------------------|
| <u>Piankatank R.</u> | | | | | |
| Ginney Point | 154 | 44 | Mud Crabs | Molgula; heavy Mussels; mod. Barnacles, hydroids; light. | No value at present. |
| Palace Bar | 310 | 20 | Mud Crabs | Microciona, Molgula; heavy. Hydroides, Bryozoan, mod. | Seed; below average. |
| Burton Point | 155 | 43 | Mud Crabs Urosalpinx | Hydroides, Microciona; heavy. Molgula; light. Crepidula. | No value at present. |
| <u>Rappa. R.</u> | | | | | |
| Bowler's Rock | 103 | 6 | Mud Crabs Turbellarians | Molgula; heavy Barnacles, Mussels; mod. | Market; 51% market. |
| Morattico | 152 | 24 | Mud Crabs | Barnacles, Mussels, Molgula; light. | Market; 53% market. |
| Smokey Point | 52 | 61 | Mud Crabs | Molgula, Mussels; light to mod. Barnacles; light Anemones, Anadera. | Market; 46% market. |

| <u>Bar</u> | <u>Average</u> <u>Bu. Count</u> | <u>Percent</u> <u>Mortality</u> | <u>Evidence of</u> <u>Predation</u> | <u>Fouling</u> | <u>Classification</u> |
|-----------------------|------------------------------------|------------------------------------|--|--|-------------------------|
| Hog House | 31 | 74 | Mud Crabs | Mussels, mod. Barnacles light. Anadera, Mya. | No value at present. |
| Drumming Ground | 141 | 31 | Mud Crabs Urosalpinx | Bryozoan, Molgula; mod. Hydroides; light. Microciona, Anadera. | No value at present. |
| Parrots | 120 | 42 | Mud Crabs Callinectes | Molgula; heavy. Mussels, Barnacles; light. | No value at present. |
| Broad Creek | 409 | 22 | Mud Crabs Turbellarians | Barnacles, Mussels, Molgula; light. | No value at present. |
| <u>Corrotoman R.</u> | | | | | |
| Middle Ground | 182 | 32 | Mud Crabs | Molgula; light to heavy. Barnacles; light. Microciona. | No value at present. |
| <u>Great Wicomico</u> | | | | | |
| Haynie Point | 772 | 20 | Mud Crabs | Gracilaria; mod. Barnacles, Mussels, Hydroides; light. | Seed; Excellent. |
| Whaley's E. | 622 | 20 | Mud Crabs | Barnacles, Mussels; light. | Seed; Excellent. |

| Bar | Average Bu. Count | Percent Mortality | Evidence of Predation | Fouling | Classification |
|-----------------------|----------------------|----------------------|----------------------------|--|-------------------------|
| Fleet Point | 2018 | 8 | Mud Crabs Turbellarians | Barnacles, Mussels, Bryozoans; light. | Seed, satisfactory. |
| <u>Pocomoke Sound</u> | | | | | |
| P. G. #9 | 84 | 39 | Mud Crabs Turbellarians | Molgula, Barnacles, Hydroides, Bryozoans, Anemones; light. Mussels, Sabellidae. | Market, 14% markets. |
| P. G. #10 | 61 | 59 | Mud Crabs | Sabellidae. Molgula, Hydroides, Barnacles; light. Mussels, Sabellaria. | No value at present. |
| Marshall Rock | 5 | 84 | Mud Crabs Urosalpinx | Hydroides; mod. Barnacles Molgula, Crepidula, Cliona, Sabellidae, Anomia. | Depleted. |
| Bird Rock | 0 | - | Mud Crabs Urosalpinx | Hydroides, Molgula, Cliona, Anomia, Sabellidae, Anadara. | Depleted. |

| Bar | Average Bu. Count | Percent Mortality | Evidence of Predation | Fouling | Classification |
|-------------|----------------------|----------------------|--------------------------|--|----------------|
| Robin Hood | 0 | - | Mud Crabs | Hydroides, Molgula, Sabellidae, Crepidula, Cliona. | Depleted. |
| Island Rock | 5 | 75 | Mud Crabs | Hydroides, Molgula, Anomia, Cliona, Bryozoan, Anadera. | Depleted. |

APPENDIX

Locations of stations in the rivers in the fall 1987.











