

1-1973

# Oyster Spatfall on Shellstrings in Virginia Rivers: 1972 Annual Summary

Virginia Institute of Marine Science

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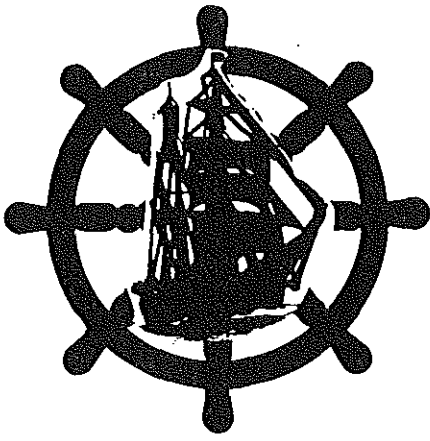
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VIRGINIA INSTITUTE OF MARINE SCIENCE



# MARINE RESOURCE INFORMATION BULLETIN

SPECIAL REPORT

JANUARY, 1973

## 1972 Annual Summary

### OYSTER SPATFALL ON SHELLSTRINGS IN VIRGINIA RIVERS

Oyster setting in Virginia river systems dipped to the lowest levels on record during 1972, according to scientists at the Virginia Institute of Marine Science who regularly monitor oyster grounds for set.

A heavy set occurred on the seaside of Virginia's Eastern Shore and limited setting was observed in tributary rivers of the Mobjack Bay, but elsewhere the number of oysters setting on shellstrings and on the bottom in lower Chesapeake Bay in 1972 was far lower than for the previous year, and the lowest overall set ever recorded.

Tropical Storm Agnes, which swept through Virginia in June, is largely to blame for poor set. The 18 inches of rain dumped by the storm on the up-bay watershed resulted in drastic reduction in salinities in the estuaries. This was followed two or three weeks later by catastrophic mortalities of oysters in the Potomac and Rappahannock rivers and kills of less severe proportions in the James and York rivers. Deaths also occurred in tributary creeks of the lower Potomac.

In Chesapeake Bay oysters typically begin spawning in July -- the period when salinities were depressed to the greatest extent by fresh water from the great 1972 storm. The freshwater conditions reduced larval populations and intensity of set in a number of ways:

- Oysters killed in the upper sections of the estuaries in 1972 died before spawning. Therefore, larvae ordinarily resulting from these populations were not present in 1972.

- Below the mortality zone, salinities were depressed during July and August to such an extent (below 5 parts per thousand) that oysters were inactive and did not spawn.

- The excessive freshwater inflow into Chesapeake Bay during July and August altered the normal patterns of water transport, nutrient levels, silt load and dissolved oxygen. The total effect of these altered conditions on larvae which may have been in the Bay system was unfavorable.

When salinities in Chesapeake Bay returned to near normal levels by late August, setting did not occur, either because it was too late for the oysters to spawn or because of high mortalities in larvae prior to setting.

In evaluating the effects of Tropical Storm Agnes, it is pointed out that certain areas including the Rappahannock, York and Potomac rivers typically have low spatfalls. Populations of oysters are maintained there by an occasional year of moderate to heavy sets.

The information in this report was obtained through surveys conducted weekly by the Virginia Institute of Marine Science from June through early October. Spat counts are made from oyster shells strung on wire and suspended from stakes at collecting areas established on public and private beds. The average number of spat which set in one week on the smooth side of the shells is tabulated.

Using the number of spat counted on shells during each week of the spawning season, it is possible to estimate the potential of a particular area for receiving a strike and to predict the weeks when the strikes occur. This information is useful because shells planted just before the period of maximum set have the best chance of getting a good strike.

A good strike on shellstrings usually indicates that a strike has taken place on bottom shells. However, a good strike on shellstrings in some locations may not be accompanied by good spatfall on the rock. One reason for such a failure is that bottom shells can become so fouled by other marine life that no room is left for small spat to attach. Even with a reasonable spatfall, survival on the bottom in the saltier waters may be extremely low due to predators such as screwborers which kill many small oysters soon after attachment.

The following report on setting in Virginia river systems deals primarily with spatfall on shellstrings. However, some information is given for natural strikes as they occurred on bottom cultch as of October and November 1972.

JAMES RIVER - The important seed rocks in the lower James, including Wreck Shoals, now receive only about 10 percent as much set as they did before 1960. This decline is thought to be associated with MSX which reduced the brood stock in the lower river. Sets in the upper river at Deep Water Shoals have not declined to the same extent.

In 1972, shellstrings showed that practically no set occurred in the James River before late August. The set which occurred in September at all six stations from Deep Water Shoals to the Tax Office was rated as poor. At all stations the 1972 set was much lower than it was last year.

The generally low set on shellstrings was reflected by the poor set which occurred on the natural bottom in 1972. Bottom material collected at representative public rocks showed the following numbers of small spat per bushel: Deep Water Shoals 0; Point of Shoals 26; Wreck Shoals 18; Thomases Rock 20; and Gun Rock 18.

A state shell planting made in September 1972 at Brown Shoals showed 192 spat per bushel.

NANSEMOND RIVER - The only set which occurred in 1972 in the Nansemond River was observed in September. This was rated as poor and far below that seen in 1971.

YORK RIVER - No set occurred on shellstrings in the York River during June, July and August. The few which did attach were observed in September. The set at Clay Bank and VIMS Pier in 1972 was far lower than that observed in 1971.

An examination of bottom cultch in the York showed a very poor set. The following counts of spat in bushel samples of bottom material were made: Bells Rock 0; Aberdeen Rock 8; Pages Rock 4; and Green Rock 4.

PIANKATANK AND MILFORD HAVEN - Practically no set occurred on shellstrings in this system in 1972. A much higher set at all stations was observed last year.

RAPPAHANNOCK RIVER - No set was observed at any station in 1972. A study of bushel samples of bottom cultch from Bowlers Rock, Morattico Bar, Smokey Point, and Hogg House Bar showed no spat at any station.

MOBJACK BAY AREA - The Mobjack Bay area seems to have been the only system within the bay which was not influenced by effects of the tropical storm.

North River - The setting season in this river extended from mid-June to mid-September in the upper river and was rated fair to good. In general, set in 1972 was higher than in 1971. Downriver at Cedar Point, there was a poor set which occurred in late August and early September.

East River - Setting occurred from the first of July to mid-September with fair to good sets occurring at the upriver stations during July. Downriver near the mouth, set was poor. In general set at the three upriver stations seemed slightly higher in 1972 than in 1971. Downriver, the 1972 set was lower than it was in 1971.

#### NEW POINT COMFORT AREA

Pepper Creek - Setting extended from late July to early September and was rated as poor. It was much lower than in 1971.

Dyer Creek - Only a scattered set was seen in the creek from mid-July to mid-September. The set was considered poor and was lower than that observed in 1971.

Horn Harbor - A poor set which lasted from mid-July to October occurred near the mouth of this area. In general, it was about the same as for 1971. Upriver at Mitchum's Crab House the set was nearly zero -- a drop from counts obtained in 1971.

Winter Harbor - Set in this area was nearly zero at the two stations sampled. It was at this same level in 1971 at C. B. Hurst's but was much higher at Public Landing in 1971.

GREAT WICOMICO - Set was nearly zero at all stations sampled. In comparing this season set with that of 1971 it is noted that set was lower at every station than last year. Although the 1971 set was rated below average, it was still higher than set recorded for 1972.

During 1971 and 1972 dissolved oxygen has been low in the deeper water of the Great Wicomico River. In 1971 this condition was first noted in July, and it lasted to mid-August. In 1972 it started in mid-July and persisted through early September. The extent to which low oxygen contributed to the low set in 1972 is unknown, but laboratory studies to date suggest that a hydrogen sulfide build-up associated with low dissolved oxygens is harmful to developing larvae.

No survey has yet been made of bottom shells in the system.

EASTERN SHORE - The set on shellstrings on the seaside of the Eastern Shore was good at all six stations sampled and reports indicate that many areas there received high sets on bottom materials.

No set was recorded at Pocomoke Sound.

POTOMAC RIVER - There was no set on the shellstrings put out and retrieved weekly between June 19 and October 3 from the Coan River to Kingcopsico Point. No set was observed last year either. Surveys of bottom cultch in this area also revealed no set.

Spat per shell counts which indicate the average number of spat on the smooth side of an oyster shell are shown in the tables on pages 6-12. Data is given for 1971 and 1972. The key below, ranging from "Poor" to "Good", is used with the summary tables. Please refer to the map on page 5 for location of stations sampled for the survey.

VIMS wishes to acknowledge the valuable assistance of the Virginia Marine Resources Commission in setting out, collecting and returning to the laboratory many of the shellstrings examined for this study.

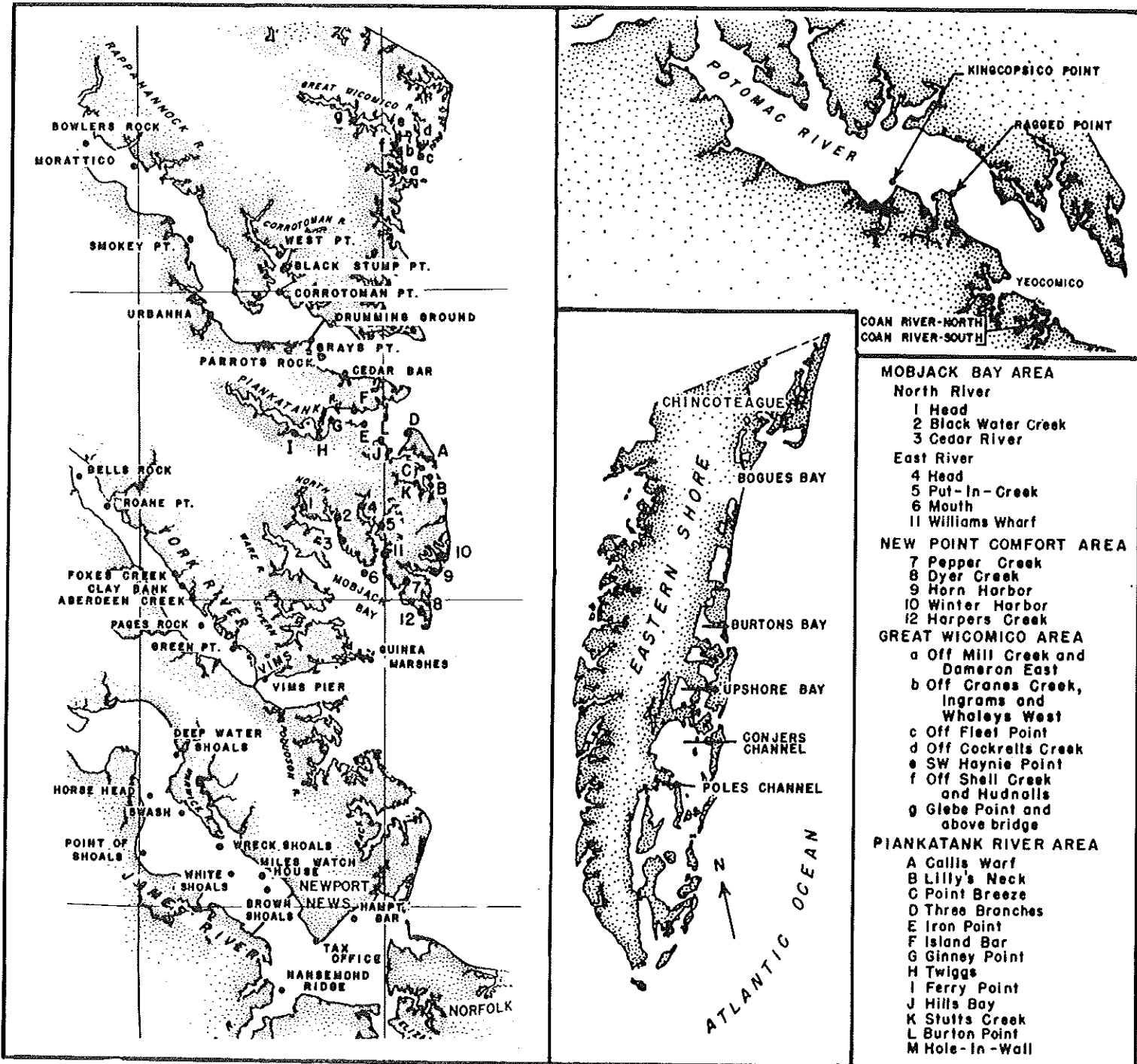
For more information on oyster setting, contact Dexter Haven, Department of Applied Biology, Virginia Institute of Marine Science, Gloucester Point, Va. 23062.

SPAT PER SHELL	0 TO 1 SPAT PER SHELL = POOR SET
	2 TO 10 SPAT PER SHELL = FAIR SET
	11 TO 100 SPAT PER SHELL = GOOD SET



OYSTER SHELLSTRING

# SHELLSTRING SURVEY STATIONS



- MOBJACK BAY AREA**  
 North River  
 1 Head  
 2 Black Water Creek  
 3 Cedar River  
 East River  
 4 Head  
 5 Put-In-Creek  
 6 Mouth  
 11 Williams Wharf
- NEW POINT COMFORT AREA**  
 7 Pepper Creek  
 8 Dyer Creek  
 9 Horn Harbor  
 10 Winter Harbor  
 12 Harpers Creek
- GREAT WICOMICO AREA**  
 a Off Mill Creek and Dameron East  
 b Off Cranes Creek, Ingrams and Wholeys West  
 c Off Fleet Point  
 d Off Cockrells Creek  
 e SW Haynie Point  
 f Off Shell Creek and Hudnalls  
 g Glebe Point and above bridge
- PIANKATANK RIVER AREA**  
 A Callis Warf  
 B Lilly's Neck  
 C Point Breeze  
 D Three Branches  
 E Iron Point  
 F Island Bar  
 G Ginney Point  
 H Twiggs  
 I Ferry Point  
 J Hills Bay  
 K Stuffs Creek  
 L Burton Point  
 M Hole-in-Wall

VIRGINIA INSTITUTE OF MARINE SCIENCE  
 SPATFALL ON SHELLSTRINGS  
 ANNUAL SUMMARY  
 1971-1972

James River

1972 Date Exposed**	Brown Shoals		Wreck Shoals		Horsehead	
	1971	1972	1971	1972	1971	1972
June 15-19	---	0	0.2	0	0	0
June 19-26	0.1	0	0	0	0	0
June 26-July 2	0	0	0	0	0	0
July 2-10	0	---	0	0	0	0
July 10-17	0	0	0	0	0	0
July 17-25	0	0	0	0	0	0
July 25-Aug. 1	0.2	0	0.1	0	0	0
Aug. 1-7	0.7	0.1	3.4	0.2	7.7	0
Aug. 7-14	2.0	---	2.6	0	2.5	0
Aug. 14-21	2.7	0	0.3	0	0.2	0
Aug. 21-28	17.0	0	2.2	0.8	1.1	0.6
Aug. 28-Sept. 4	6.1	0	0.4	0	0.1	0.3
Sept. 4-11	1.5	0.3	0	0	0	0.1
Sept. 11-18	0.4	0.3	0.1	1.2	0.2	1.1
Sept. 18-25	0.4	Lost	0	0.6	0.2	0.7
Sept. 25-Oct. 2	Lost	0	0.4	0.2	0	0.5

1972 Date Exposed**	Point of Shoals		Deep Water Shoals		Hampton Flats	
	1971	1972	1971	1972	1971	1972
June 15-19	0	0	0	0	---	0
June 19-26	0	0	0	0	0	0
June 26-July 2	0	0	0	0	---	---
July 2-10	0	0	0	0	0.1	---
July 10-17	0	0	0	0	---	0
July 17-25	0	0	0	0	0	0
July 25-Aug 1	0	0	0	0	0	0
Aug. 1-7	4.4	0	3.2	0	1.2	---
Aug. 7-14	1.0	0	2.6	0	10.9	0
Aug. 14-21	0.5	0	0.2	0	7.3	0
Aug. 21-28	0.7	0.6	1.0	0	Lost	0
Aug. 28-Sept. 4	0	0	0	Lost	6.5	0
Sept. 4-11	0	0.3	0.1	0	Lost	0.2
Sept. 11-18	0	1.1	0	0.2	4.0	0.7
Sept. 18-25	0	0.3	Lost	0.5	2.2	0.2
Sept. 25-Oct. 2	0	0.2	0	0.2	---	0.2

1972 Date Exposed**	Newport News Tax Office	
	1971	1972
June 21-28	---	0
June 28-July 6	---	0
July 6-14	---	0
July 14-21	0	0
July 21-28	0	0
July 28-Aug. 4	0.5	0
Aug. 4-11		3.2
Aug. 11-18	18.3	0
Aug. 18-28	10.9	0
Aug. 28-Sept. 4	33.2	0
Sept. 4-11	2.2	0.5
Sept. 11-18	11.7	---
Sept. 18-25	5.2	0.3
Sept. 25-Oct. 2	1.4	0.2

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.

Nansemond River

1972 Date Exposed**	<u>Nansemond Ridge</u>		<u>Larkin's Rock</u>		<u>Half Pone</u>	
	1971	1972	1971	1972	1971	1972
June 16-26	---	0	---	0	---	0
June 26-July 3	---	0	---	0	---	0
July 3-10	---	Lost	---	0	---	Lost
July 10-18	---	0	---	0	---	0
July 18-25	0	0	0	0	0	0
July 25-Aug. 1	0	0	0	0	0	Lost
Aug. 1-8	0.6	Lost	9.2	Lost	6.2	0
Aug. 8-15	11.2	0	7.5	0	22.7	0
Aug. 15-22	2.9	0.2	1.5	0	2.0	Lost
Aug. 22-29	2.9	0.1	0.9	0	7.5	0
Aug. 29-Sept. 4	4.4	Lost	0.2	Lost	Lost	Lost
Sept. 4-25	3.0	1.0	1.1	0.2	1.0	0.1

York River

1972 Date Exposed**	<u>Foxes Creek</u>		<u>Claybank</u>		<u>VIMS Pier</u>	
	1971	1972	1971	1972	1971	1972
June 23-July 26	0	0	0	0	0	0
July 6-14	0	0	0	0	0	0
July 14-21	0	0	0	0	0	0
July 21-28	0	0	0	0	0.1	0
July 28-Aug. 4	0	0	0	0	0.2	0
Aug. 4-11	0	0	0.3	0	1.9	0
Aug. 11-18	0.1	0	0.6	0	0.6	0
Aug. 18-25	0	Lost	0.2	Lost	0.9	Lost
Aug. 25-Sept. 1	0	0	0.1	0.2	3.9	0
Sept. 1-8	0.1	0.1	0.4	0	17.2	0.3
Sept. 8-15	0	0	1.2	0.1	53.2	Lost
Sept. 15-25	0	0	1.4	0	1.6	0

Piankatank River and Milford Haven

1972 Date Exposed**	<u>Lilly's Neck Station 2</u>		<u>Point Breeze Station 3</u>		<u>Stutts Creek Station 11</u>	
	1971	1972	1971	1972	1971	1972
June 20-27	0	0	0	0	0.1	0
June 27-July 5	0.3	0	0.8	0	0.3	0
July 5-12	0	0.1	0	0.1	0	0
July 12-19	0	0	0	0	0	0.1
July 19-25	0	0	0	0	0	0
July 25-Aug. 1	0	0	0.1	0	0	0
Aug. 1-8	0	0	0	0	0	0
Aug. 8-15	0	0	0.3	0	0	0
Aug. 15-22	0.1	0	0	0	0.1	0
Aug. 22-29	6.3	0	0	0	0.3	0
Aug. 29-Sept. 5	7.9	0	0.8	0	1.8	0
Sept. 5-12	3.0	Lost	0.8	0	1.4	Lost
Sept. 12-19	1.4	0	0.4	0	1.0	0
Sept. 19-26	0.4	0	0	Lost	0.2	0
Sept. 26-Oct. 2	0	0	0	0	0	0

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.



Piankatank River and Milford Haven

1972 Date Exposed**	Three Branches Station 4		Hill's Bay Station 1		Burton Point Station 5	
	1971	1972	1971	1972	1971	1972
June 20-27	Lost	0	0	0	0	0
June 27-July 5	---	0	0.4	0	0.2	0
July 5-12	0.8	0	0	0.2	0	0
July 12-19	0.1	0	0.5	0	0.3	0
July 19-25	0	0	0	0	0	0
July 25-Aug. 1	0.5	0	0.1	0	0.9	0
Aug. 1-8	0	0	0	0	0.1	0.
Aug. 8-15	0.1	0	0	0	0.3	0
Aug. 15-22	0	0	0	0	0.8	0
Aug. 22-29	12.8	0	0.1	0	2.1	0
Aug. 29-Sept. 5	14.8	0	1.0	0	3.2	0
Sept. 5-12	Lost	0	0	0	0.2	0
Sept. 12-19	Lost	0	0.4	0	0.6	0
Sept. 19-26	Lost	0	0	0	0	0
Sept. 26-Oct. 2	Lost	0	0	0.2	Lost	0

1972 Date Exposed**	Palace Bar Station 6		Island Bar Station 7		Ginney Point Station 8	
	1971	1972	1971	1972	1971	1972
June 20-27	0	0.1	0	0.1	0	0.1
June 27-July 5	0	0	0.3	0	1.3	0
July 5-12	3.9	0	5.0	0	25.9	0.8
July 12-19	0.2	0	2.3	0.2	1.3	0.1
July 19-25	0.4	0	0.7	0	1.8	0
July 25-Aug. 1	Lost	0	2.2	0	3.4	0
Aug. 1-8	0	0	0.1	0	0.1	0
Aug. 8-15	1.6	0	5.8	0	13.5	0
Aug. 15-22	0.4	0	0	0	12.2	0
Aug. 22-29	0.9	0	4.5	0	1.1	0
Aug. 29-Sept. 5	1.8	0	3.2	0	4.6	0
Sept. 5-12	Lost	0	0.4	0	3.2	0
Sept. 12-19	1.8	0	0.8	0	2.8	0
Sept. 19-26	0.4	0	Lost	0	Lost	0
Sept. 26-Oct. 2	0	0	0	0	0	0.2

1972 Date Exposed**	Twigg Branch Station 9		Ferry Point Station 10	
	1971	1972	1971	1972
June 20-27	0	0	0	0
June 27-July 5	---	0	0.6	0
July 5-12	0	0.4	1.6	0
July 12-19	1.9	0	0.8	0
July 19-25	0.7	0	0.8	0
July 25-Aug. 1	0.7	0	0	0
Aug. 1-8	0.1	0.6	0	0
Aug. 8-15	19.6	0	8.9	0
Aug. 15-22	7.9	0	3.9	0
Aug. 22-29	11.9	0	10.4	0
Aug. 29-Sept. 5	0.6	0	Lost	0
Sept. 5-12	2.8	0	0.8	0
Sept. 12-19	0.8	0	0	0
Sept. 19-26	0	Lost	0.2	0
Sept. 26-Oct. 2	0	0	0	0

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.

Rappahannock River (Data for 1972 only)

1972 Date Exposed	Broad Creek Inshore	Broad Creek Offshore	Corrotoman	Greenvale
June 26-July 3	0	0	0	0
July 3-10	0	0	0	0
July 10-17	0	0	0	0
July 17-24	0	-	0	0
July 24-31	-	-	0	0
July 31-Aug. 7	0	-	0	0
Aug. 7-14	0	-	0	0
Aug. 14-21	0	-	0	0
Aug. 21-28	0	0	0	0
Aug. 28-Sept. 5	Lost	0	0	0
Sept. 5-12	0	Lost	0	0
Sept. 12-19	Lost	Lost	0	0
Sept. 19-26	Lost	Lost	0	0
Sept. 26-Oct. 2	Lost	Lost	0	0

Mobjack Bay

1972 Date Exposed**	North River Head		North River Blackwater Cr.		North River Cedar Point	
	1971	1972	1971	1972	1971	1972
June 13-20	3.2	0.1	0.3	0	0.6	0
June 20-27	9.8	0	0	0	0	0
June 27-July 5	1.9	0.8	0	0.4	0	0
July 5-12	0	24.3	0	9.2	0	0
July 12-19	1.8	7.3	0	3.3	0	0
July 19-25	0.1	0.7	0	0	0	0.2
July 25-Aug. 1	0.1	0.6	0	0.3	0	0
Aug. 1-8	1.0	0.1	0.9	0	0.2	0
Aug. 8-15	0.1	0.6	Lost	0	0.1	0
Aug. 15-22	0	0	Lost	0	0	0
Aug. 22-29	0	0	Lost	0.1	0	0.1
Aug. 29-Sept. 5	0	0.4	Lost	0.9	0.2	0.8
Sept. 5-12	0	0.1	0	0	0	0.3
Sept. 12-19	0.6	0.1	0.8	0	1.0	0
Sept. 19-26	0	0	0	0	0.2	0
Sept. 26-Oct. 2	0	0	0.2	0	0	0

1972 Date Exposed**	East River Head		East River Put-in-creek		East River Williams Wharf		East River Mouth	
	1971	1972	1971	1972	1971	1972	1971	1972
June 13-20	2.8	0	0.5	0	0.4	0	---	---
June 20-27	5.6	0	6.6	0	1.8	0	0.1	0
June 27-July 5	0.5	0.1	0.6	0	0.1	0	0	---
July 5-12	2.2	10.8	0	12.2	0	7.3	0	0.3
July 12-19	0.9	5.0	0.3	4.5	0.1	2.8	0.1	0.7
July 19-25	0.1	7.5	0	2.3	0	8.6	0	0.2
July 25-Aug. 1	0	1.7	0.4	1.5	0.2	0.9	0	0
Aug. 1-8	0.2	0	0.6	0	0.2	0	0.1	0.3
Aug. 8-15	0.1	0	0	0	0	0	0.1	0
Aug. 15-22	0	0.7	0	0	0	0	0.4	0
Aug. 22-29	0	0	0	0	0	0	0.8	0
Aug. 29-Sept. 5	0	0.9	0.3	0.7	3.5	0.1	5.2	0.4
Sept. 5-12	0	0	0	0	0.4	0.1	8.2	0.1
Sept. 12-19	0.4	0	0.8	0.1	0.6	0	2.4	0
Sept. 19-26	0	0	0.4	0	0	0	3.6	0
Sept. 26-Oct. 2	---	0	---	0	---	0	1.0	0

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.

New Point Comfort Area

1972 Date Exposed**	Pepper Creek		Dyer Creek	
	1971	1972	1971	1972
June 13-20	0.1	---	0	0
June 20-27	0.2	0	0.3	0
June 27-July 5	0.1	0	0.2	0
July 5-12	0	0	0.1	0
July 12-19	0.2	0	0	0
July 19-25	0.2	0.3	0.1	0.1
July 25-Aug. 1	0	0	0.6	0.2
Aug. 1-8	0.6	0	1.3	0
Aug. 8-15	0.1	0.4	0.2	0
Aug. 15-22	0.3	0.1	0	0
Aug. 22-29	10.4	0.1	0.1	0.2
Aug. 29-Sept. 5	37.0	0.9	0.2	0
Sept. 5-12	4.9	0	0.2	0
Sept. 12-19	5.6	0	1.6	0.1
Sept. 19-26	2.4	0	0	0
Sept. 26-Oct. 2	1.0	0	---	0

Horn Harbor

1972 Date Exposed**	Old Barge		Mitchum Crab House	
	1971	1972	1971	1972
June 13-20	0	0	0.7	0
June 20-27	0.6	0	0.8	0
June 27-July 5	0.6	0	3.2	0
July 5-12	0	0	1.1	0
July 12-19	0	0.2	0	0
July 19-25	0	0	0	0.2
July 25-Aug. 1	0	0	0	0
Aug. 1-8	3.2	0	1.3	0
Aug. 8-15	0	0	0	0
Aug. 15-22	0.5	0	0	---
Aug. 22-29	0.4	1.0	0.3	0
Aug. 29-Sept. 5	0.5	0.8	0.3	0
Sept. 5-12	0	0	0	0
Sept. 12-19	0.2	0.2	1.0	0
Sept. 19-26	0	0.5	0	0.1
Sept. 26-Oct. 2	0	0.1	0	0

Winter Harbor

1972 Date Exposed**	Public Landing		C.B. Hurst	
	1971	1972	1971	1972
June 13-20	0	0	0	0
June 20-27	0	0	0	0
June 27-July 5	0.6	0	0	0
July 5-12	0	0	0	0
July 12-19	0	0	0	0
July 19-25	0.1	0	0	0
July 25-Aug. 1	0	0	0	0
Aug. 1-8	1.0	0	0	0
Aug. 8-15	0.4	0	0	0
Aug. 15-22	0.6	0	0	0
Aug. 22-29	4.4	0.1	0	0
Aug. 29-Sept. 5	11.6	0	0	0.1
Sept. 5-12	0.8	0.1	0	0
Sept. 12-19	13.8	0	0	0
Sept. 19-26	0.2	0	0	0
Sept. 26-Oct. 2	1.2	0	0	0

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.

Great Wicomico

1972 Date Exposed**	Dameron East & West Station 1&2		Mill Creek Station 3		Cranes Creek Station 7	
	1971	1972	1971	1972	1971	1972
	June 5-12	0	0	0	0	0
June 12-19	0	0	0	0	0	0
June 19-26	0.1	0	0	0	0	0
June 26-July 3	0	0	0.5	0	0.2	0
July 3-10	0	0	0	0	0.5	0
July 10-17	0	0	0	0	0	0
July 17-24	0	0	0	0	0	0
July 24-31	0	0	0	0	0	0
July 31-Aug. 7	0	0	0	0	0	0
Aug. 7-14	0.4	0	0.2	0	0.9	Lost
Aug. 14-21	0.4	0	0.5	0	1.0	0
Aug. 21-28	3.1	0	1.4	0	0.4	0
Aug. 28-Sept. 5	0.2	0	0.3	0	0	0
Sept. 5-11	0	0	0	0	0	0
Sept. 11-18	0	0	0	0	0	0
Sept. 18-25	0.2	0	0	0	0	0

1972 Date Exposed**	Fleets Point Station 8		Station 9		Station 10	
	1971	1972	1971	1972	1971	1972
	June 5-12	0	0	0	0	0
June 12-19	0	0	0	0	0	0
June 19-26	0	0	0	0	0.3	0
June 26-July 3	0	0	0	0	0.2	0
July 3-10	0	Lost	0.2	0	0	0
July 10-17	0	0	0	0	0.2	0
July 17-24	0	0	0	0	0	0
July 24-31	0	0	0.2	0	0	0
July 31-Aug. 7	Lost	0	0	0	0	0
Aug. 7-14	0.1	0	0	0	2.3	0
Aug. 14-21	0.3	0	1.3	0	1.2	0
Aug. 21-28	0.6	0	Lost	0	3.5	0
Aug. 28-Sept. 5	0.8	0	0	0	0.2	0
Sept. 5-11	0	0	0	0.1	0	0
Sept. 11-18	0	0	0	0	0	0
Sept. 18-25	0.2	0	0	0	0.2	0

1972 Date Exposed**	Station 11		Station 12		Glebe Point Station 13	
	1971	1972	1971	1972	1971	1972
	June 5-12	0	0	0	0	0
June 12-19	0	0	0	0	0	0
June 19-26	0	0.3	0.3	0.4	0	2.0
June 26-July 3	5.3	0.2	9.8	0	0	0.8
July 3-10	2.6	0	1.4	0	20.0	0
July 10-17	0.4	0	0.1	0	0	0
July 17-24	0	0	0	0	0	0
July 24-31	0	0	0	0	0	0
July 31-Aug. 7	0.1	0	0	0	Lost	0
Aug. 7-14	0.8	0	1.1	0	0.4	0
Aug. 14-21	1.3	0	2.2	0	18.8	0
Aug. 21-28	1.0	0	1.7	0	3.3	0.2
Aug. 28-Sept. 5	0	0	0.2	0	0.2	0
Sept. 5-11	0.2	0	0.2	0	0	0
Sept. 11-18	0	0	0.4	0	0	0.1
Sept. 18-25	0	0	0	0	0	0

Data Given: \* Shows spat per shell (smooth side only).  
 \*\* 1971 exposure date approximately the same.

Eastern Shore

Seaside

Dates Exposed	<u>Poles</u>	<u>Upshur</u>	<u>Bogues</u>	<u>Burtons</u>
	<u>Channel</u>	<u>Bay</u>	<u>Bay</u>	<u>Bay</u>
	<u>1972</u>	<u>1972</u>	<u>1972</u>	<u>1972</u>
June 28-July 6	0	0	0	0
July 6-19	0	0.1	---	0
July 19-Aug. 11	14.1	34.3	13.6	38.3
Aug. 11-23	9.5	37.5	Lost	46.4

Bayside

Dates Exposed	<u>Congers</u>	<u>Chinco-</u>	<u>Pocomoke</u>
	<u>Channel</u>	<u>teague</u>	<u>Sound</u>
	<u>1972</u>	<u>1972</u>	<u>1972</u>
June 28-July 6	0	---	---
July 6-19	1.0	---	0
July 19-Aug. 11	12.8	149.0	0
Aug. 11-23	9.5	19.7	0

(There is no record of spatfall in 1971.)

