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Oyster Spatfall in Virginia Rivers: 1985 Annual Survey

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MARINE RESOURCE SPECIAL REPORT



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VIRGINIA SEA GRANT COLLEGE PROGRAM
Virginia Institute of Marine Science Gloucester Point, Virginia 23062

1985 Annual Summary

OYSTER SPATFALL IN VIRGINIA RIVERS
by
James Whitcomb

The Virginia Institute of Marine Science (VIMS) conducts weekly surveys from June through early October to obtain oyster spatfall information. Spat counts are made on oyster shells strung on wire and suspended from stakes on public and private beds. The number of spat on shells is counted each week of the spawning season to determine the potential of a particular area for receiving a strike and to predict the most likely period the strikes will occur.

A moderate or heavy strike on shellstrings usually indicates a significant strike on exposed bottom cultch. This is especially true for cultch planted a week or two prior to the peak set.

However, a good strike on shellstrings in some localities may not always be accompanied by a good spatfall on naturally occurring bottom shell material or on shells planted too early or too late in the season. Bottom shells are often so fouled by other marine life that no room is left for small spat to attach. Moreover, even with a reasonable spatfall, survival of spat on the bottom in saltier waters may be extremely low due to predators, such as oyster drills, which eat the small spat.

Usually a light set of spat on shellstrings indicates a poor set on bottom cultch. During certain exceptional years, due probably to the absence of predators and fouling, a light set on our shellstrings may be accompanied by an above average set on the natural bottom.

The number of spat which set in one week on the smooth side of 10 shells is determined by microscopic examination; the average of the 10 shells is shown in this report as spat-per-shell-per-week. Weekly set is arbitrarily rated as follows: fair, 0.1 to 1.0; moderate, 1.1 to 10; heavy, 10.1 to 100. As an index of total seasonal spatfall, the weekly sets are summed in this report for each station (total seasonal set). In evaluating setting levels, it should be recognized that in certain rivers, such as the Rappahannock, York and Potomac, the set is typically very low or zero in many sections and only fair in others. Other systems, including the lower James and Piankatank Rivers, Mobjack Bay and Seaside of the Eastern Shore, typically receive a moderate or heavy set and, as a result, often produce quantities of seed oysters or market oysters.

The tabular summaries of spat-per-shell-per-week were produced by a computer program which approximates more closely one week periods. Therefore, the values shown in previous annual reports are not recaptured exactly in this report.

Acknowledgements

We wish to express appreciation to the Virginia Marine Resources Commission personnel who did the work of putting out and collecting the shellstrings in the Mobjack Bay area, in the Piankatank River, Great Wicomico River and the Potomac River. Shellstrings were collected by VIMS personnel at Wachapreague. The cooperation and assistance of all the above and their supervisors is gratefully acknowledged.

Summary of Setting for 1985

Generally, with exceptions, 1985 set on shellstrings was higher than 1984. However, setting was clearly lower in 1985 in the Great Wicomico River and Potomac River than the 1982 set. The James River set on shellstrings was lower in 1985 than the 1983 set.

Except for Pepper Creek, the setting in shellstrings in Mobjack Bay and its tributaries fell below 1984. The station at the VIMS pier in Wachapreague showed a set below the previous three years.

James River

The potential for setting, as observed on shellstrings, was similar to the high levels of setting in the 1980s, except for several upriver stations. Shellstring setting began in the third full calendar week in June and extended for 19 weeks. Setting peaked in the middle of July, five weeks earlier than in 1984, and dropped to a very low level in the third full calendar week in August.

Secondary setting peaks occurred in the first week in September and the first two weeks in October.

In 1985 the setting was better than in 1984 at downriver stations and at stations southwest of the channel below Burwell Bay. Stations upriver, and on the northeast side of the channel above the James River Bridge, were generally below the average of the 1980-84 period.

York River

Setting began in the middle of July at the VIMS pier station and some set occurred during 17 weekly periods continuing into November. Setting peaked at the end of August and again at the end of September. The total set for 1985 was the highest since 1980.

Mobjack Bay

The shellstring off Browns Bay began to register continuous setting in the middle of July and continued until October. The total set was higher than in 1984, but below any other year since 1978.

The station at Tow Stake set intermittently for one- or two-week periods from June to October, but the total set was the lowest since 1978.

Ware River

The shellstring off Wilson Creek registered set between the middle of July and the middle of August. The set on shellstrings reached the level of 1.0 per shell per week in just one weekly period. The total set was the lowest since 1978.

East River

Setting was scattered in ten separate weekly periods from June to October, but 96 percent of the setting occurred between the middle of July and the first full week in September. The total set was the lowest since 1978, but the distribution of four weeks above 1.0 spat/shell/week may result in an average set on available bottom cultch.

Pepper Creek

Setting began in the middle of July and continued for 12 weeks peaking the first full calendar week in August and again the first full week of September. Setting on shellstrings was the highest since 1980.

Piankatank River

Setting began in June and continued until the beginning of September peaking the third full calendar week in July. At Burtons Point the set stopped the first week of September, but peaked again at the upriver stations, Palace Bar and Ginney Point, the third week in September. At all of the stations the level of setting was typical of the high levels in the 1980s.

Rappahannock River

Shellstring stations were not in place in the Rappahannock River in 1985.

Great Wicomico River

Ninety-six percent of the set on shellstrings in the Great Wicomico occurred in a six-week period beginning the second full week in July and ending August 19. Although the highest set occurred at Fleet Point, the setting occurred an additional two weeks upriver above Sandy Point and was better distributed upriver.

All of the stations had better set on shellstrings than in 1984 but, with the exception of Fleet Point, lower than the average for the 1980s. Fleet Point had a total set higher than any set since 1978.

Potomac River

Although setting was still sporadic the last week of September, 87 percent of the setting in the Potomac River on shellstrings occurred between the second full calendar week in July and August 19. At Jones Shore and Cornfield setting on shellstrings was less than in 1982, but higher than all other years since 1980. At Great Neck the total set was higher than any year since 1979.

The period of setting was earlier than in any other year in the 1980s.

Eastern Shore Seaside

Setting at the Wachapreague station began the second full calendar week in July and registered during 14 separate weekly periods continuing until the middle of October. The peak in setting was the first full calendar week in September. However, the total set was the lowest since 1981 at this station.

VIRGINIA INSTITUTE OF MARINE SCIENCE
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Spatfall on Shellstrings*
Annual Summary
1982-1985

JAMES RIVER

Dates Exposed**	Nansemond Ridge				Naseway Shoal				Brown Shoal			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 1-8	0.4	0.0	0.4	0.0	0.9	0.2	0.1	1.3	0.3	0.0	0.3	0.4
Jul 8-15	1.8	1.5	0.4	5.1	5.3	7.7	0.0	29.8	4.1	1.6	0.1	2.1
Jul 15-22	1.2	2.4	0.7	50.9	19.6	7.7	1.2	292.3	5.1	4.2	0.2	8.8
Jul 22-29	3.4	9.4	0.6	2.5	20.6	57.8	1.9	104.6	1.2	10.0	1.2	5.1
Jul 29-Aug 5	2.7	14.5	0.6	2.5	21.6	41.1	0.7	10.8	3.3	8.5	1.1	0.9
Aug 5-12	3.3	10.4	0.2	0.9	8.9	39.2	0.4	0.0	1.6	2.1	0.3	0.3
Aug 12-19	2.8	0.1	3.0	0.6	10.2	4.8	5.5	2.2	3.3	0.3	1.1	0.7
Aug 19-26	1.7	1.2	3.5	0.1	3.9	19.4	13.3	0.0	1.0	1.3	6.2	0.1
Aug 26-Sep 2	1.7	0.6	3.4	0.0	2.6	5.1	13.3	2.2	3.6	0.5	6.0	0.8
Sep 2-9	1.7	2.5	2.0	5.5	2.6	20.4	4.4	15.9	0.6	0.7	2.2	2.5
Sep 9-16	0.6	2.6	0.1	0.3	1.3	18.1	0.1	3.1	2.6	0.7	0.0	0.1
Sep 16-23	0.6	0.6	0.1	0.1	3.1	2.1	0.1	0.3	0.5	1.2	0.0	0.1
Sep 23-30	0.3	0.4	0.1	0.1	1.7	0.6	0.0	0.1	1.3	0.1	0.0	0.0
Sep 30-Oct 7	1.0	0.3	0.0	0.3	1.3	0.3	0.0	0.1	0.5	0.1	0.0	0.2
Oct 7-14	0.0	0.2	0.0	0.2	0.2	0.2	0.0	0.4	0.0	0.0	0.0	1.1
Oct 14-21	0.1	0.0	0.0	0.3	0.0	0.0	0.0	2.6	0.0	0.0	0.0	2.8
Oct 21-28	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3
Oct 28-Nov 4	0.0	---	---	0.1	0.0	---	---	0.1	---	---	---	0.3
Nov 4-11	---	---	---	0.0	---	---	---	0.0	---	---	---	0.0
Nov 11-18	---	---	---	0.0	---	---	---	0.0	---	---	---	0.0
TOTALS	23.4	46.7	15.1	69.7	103.8	224.7	41.0	465.9	29.0	31.3	18.7	26.6

* Shows spat per shell [smooth side only].

** Dates shown are for 1985. Dates in other years were approximately the same.

--- Data not received.

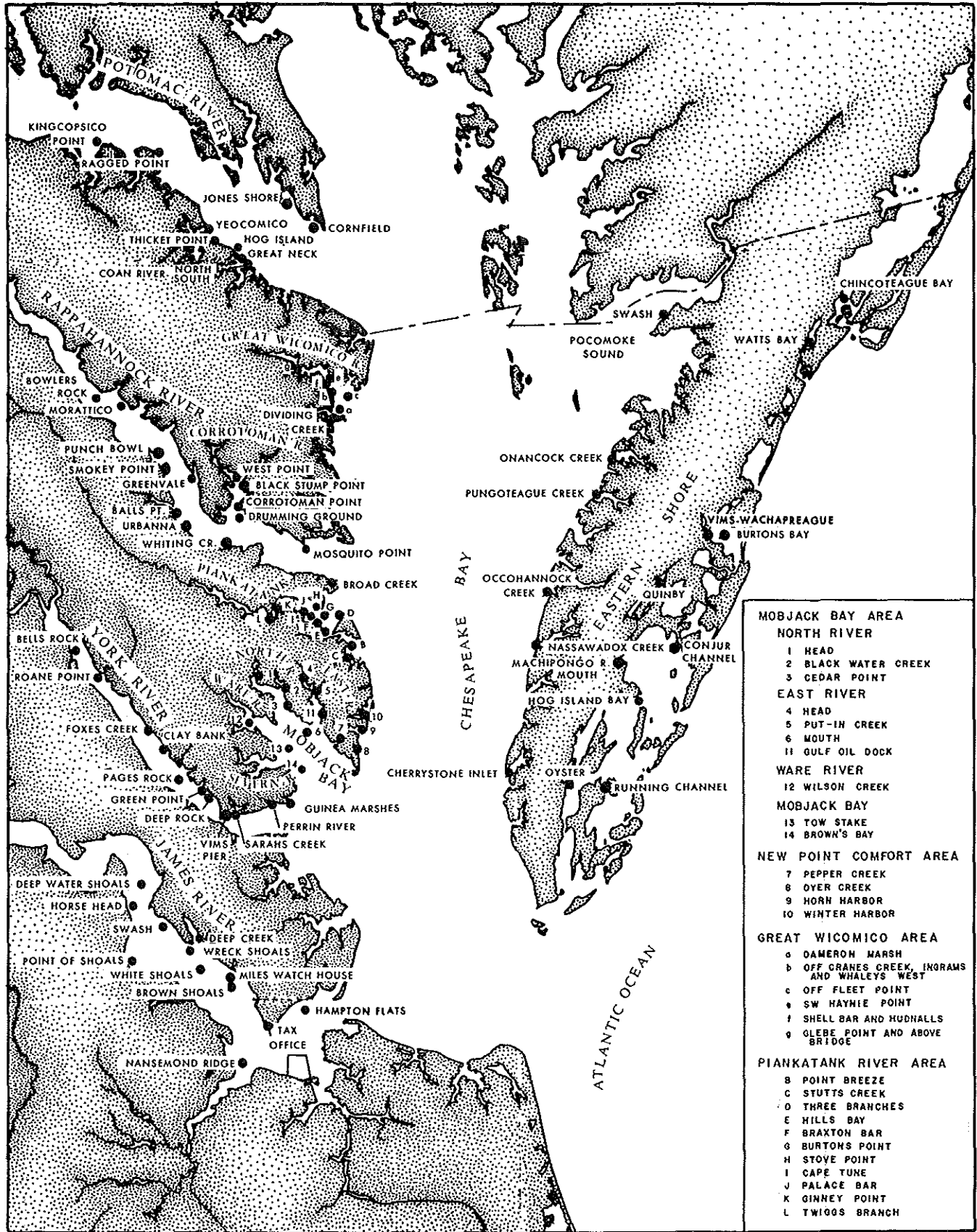
General Guide to Setting:

0.1 to 1.0 spat per shell = fair

1.1 to 10.0 spat per shell = moderate

10.1 to 100 spat per shell = heavy

SHELLSTRING SURVEY STATIONS



- MOBJACK BAY AREA**
- NORTH RIVER**
- 1 HEAD
- 2 BLACK WATER CREEK
- 3 CEDAR POINT
- EAST RIVER**
- 4 HEAD
- 5 PUT-IN CREEK
- 6 MOUTH
- 11 GULF OIL DOCK
- WARE RIVER**
- 12 WILSON CREEK
- MOBJACK BAY**
- 13 TOW STAKE
- 14 BROWN'S BAY
- NEW POINT COMFORT AREA**
- 7 PEPPER CREEK
- 8 OYER CREEK
- 9 HORN HARBOR
- 10 WINTER HARBOR
- GREAT WICOMICO AREA**
- a DAMERON MARSH
- b OFF GRANES CREEK, INGRAMS AND WHALEYS WEST
- c OFF FLEET POINT
- d SW HAYHIE POINT
- e SHELL BAR AND HUDHALLS
- f GLEBE POINT AND ABOVE BRIDGE
- PIANKATANK RIVER AREA**
- 8 POINT BREEZE
- c STUTTS CREEK
- o THREE BRANCHES
- e HILLS BAY
- f BRAXTON BAR
- g BURTONS POINT
- h STOVE POINT
- i CAPE TUNE
- j PALACE BAR
- k GINNEY POINT
- l TWIGGS BRANCH

JAMES RIVER

Dates Exposed**	Horsehead Bar				Mulberry Swash				Point of Shoal			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Jul 1-8	1.6	0.0	0.0	1.0	0.1	0.0	0.0	0.5	0.5	0.0	0.1	1.7
Jul 8-15	0.6	5.7	0.0	2.4	3.7	0.0	0.0	1.7	0.3	4.4	0.0	6.1
Jul 15-22	1.3	15.5	0.0	17.7	3.7	15.5	0.7	27.1	1.6	18.3	0.3	14.7
Jul 22-29	4.8	8.3	2.9	9.1	7.6	15.9	10.3	0.9	1.9	9.0	2.7	3.9
Jul 29-Aug 5	2.2	36.2	2.2	2.5	16.4	218.0	1.8	3.2	2.6	10.9	2.2	2.7
Aug 5-12	1.7	14.1	1.1	0.3	7.3	49.8	3.6	2.2	2.7	9.1	4.0	0.1
Aug 12-19	0.7	1.4	2.3	0.3	2.1	2.5	2.5	2.2	0.3	1.7	4.1	0.5
Aug 19-26	0.0	8.8	9.0	0.0	1.3	15.2	7.6	0.0	0.2	10.2	4.8	0.0
Aug 26-Sep 2	1.6	2.4	9.0	0.0	12.1	7.5	7.6	0.0	4.4	3.2	4.8	0.3
Sep 2-9	0.2	2.6	0.8	1.1	0.8	7.8	2.6	0.0	1.3	7.6	0.2	0.6
Sep 9-16	0.1	1.1	0.4	0.3	0.1	0.5	0.3	0.0	1.3	2.5	0.1	0.1
Sep 16-23	0.0	0.5	0.0	0.0	0.4	1.1	0.2	0.0	0.7	0.4	0.0	0.0
Sep 23-30	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0
Sep 30-Oct 7	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Oct 7-14	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.5
Oct 14-21	—	0.0	0.0	0.0	—	0.0	0.0	0.1	—	0.0	0.0	0.0
Oct 21-28	—	0.0	0.0	0.0	—	0.0	0.0	0.0	—	0.0	0.0	0.0
Oct 28-Nov 4	—	—	—	0.0	—	—	—	0.0	—	—	—	0.0
Nov 4-11	—	—	—	0.0	—	—	—	—	—	—	—	0.0
Nov 11-18	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	15.0	96.6	28.1	36.0	55.6	333.8	37.2	38.1	18.1	77.4	23.5	31.2

JAMES RIVER

Dates Exposed**	Miles Watch House				White Shoal				Wreck Shoal Offshore			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Jul 1-8	0.5	0.0	0.1	0.4	0.8	0.0	0.1	—	1.0	0.0	0.1	0.7
Jul 8-15	0.7	4.2	0.0	5.3	2.5	1.8	0.0	0.5	2.9	4.0	0.1	3.9
Jul 15-22	1.9	8.5	0.2	4.9	1.5	7.7	1.8	4.9	3.5	10.0	0.9	10.0
Jul 22-29	2.3	5.4	0.2	1.8	5.9	15.3	0.9	4.4	4.3	13.3	1.9	3.9
Jul 29-Aug 5	1.7	16.3	1.0	2.0	5.2	35.7	1.2	0.6	6.6	55.2	1.8	0.6
Aug 5-12	4.4	6.3	0.7	0.7	2.5	11.6	1.0	0.4	4.1	12.3	0.4	0.1
Aug 12-19	0.4	0.3	2.8	0.5	2.8	1.2	1.4	0.4	2.2	0.1	2.2	0.4
Aug 19-26	1.1	1.5	5.7	0.1	2.2	3.3	6.3	0.0	1.9	3.5	5.5	0.1
Aug 26-Sep 2	3.6	1.0	5.6	0.6	2.4	2.5	6.3	0.2	6.2	2.2	5.5	0.1
Sep 2-9	0.7	1.0	0.3	1.4	2.6	2.9	1.4	1.1	0.7	2.3	2.2	3.6
Sep 9-16	0.0	2.1	0.0	0.2	0.3	1.6	0.0	0.2	0.6	1.3	0.3	1.1
Sep 16-23	0.0	0.2	0.0	0.0	1.0	0.3	0.0	0.2	0.2	0.1	0.2	0.1
Sep 23-30	0.0	0.0	0.0	0.8	0.1	0.4	0.1	0.0	0.1	0.3	0.0	0.0
Sep 30-Oct 7	0.0	0.0	0.1	0.4	0.2	0.2	0.0	0.1	0.0	0.2	0.1	0.1
Oct 7-14	—	0.0	0.0	1.6	0.0	0.1	0.0	0.3	0.0	0.0	0.0	1.6
Oct 14-21	—	0.0	0.0	0.1	0.0	0.0	0.0	0.4	—	0.0	0.0	0.0
Oct 21-28	—	—	—	0.0	—	—	—	0.4	—	—	—	0.0
Oct 28-Nov 4	—	—	—	0.1	—	—	—	—	—	—	—	—
Nov 4-11	—	—	—	0.0	—	—	—	—	—	—	—	—
Nov 11-18	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	17.3	46.8	16.7	20.9	84.6	20.6	20.4	14.3	34.3	104.8	21.2	26.3

Dates Exposed**	YORK RIVER				WARE RIVER				EAST RIVER			
	VIMS Ferry Pier				Off Wilson's Creek Station 12				Mouth Station 6			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	—	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
Jun 24-Jul 1	—	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.1
Jul 1-8	0.3	0.2	0.0	0.0	20.1	0.1	0.1	0.0	1.7	3.5	0.3	0.0
Jul 8-15	1.3	0.1	0.0	0.1	2.2	0.1	1.2	0.0	0.6	0.5	1.1	0.0
Jul 15-22	0.9	0.0	0.0	0.1	0.3	0.1	31.4	0.1	5.7	1.2	3.6	1.6
Jul 22-29	0.5	0.0	0.1	0.1	0.8	0.7	2.0	0.2	6.1	2.7	3.6	1.2
Jul 29-Aug 5	0.2	0.1	0.1	0.1	0.3	0.9	0.7	0.1	2.3	2.5	1.2	3.1
Aug 5-12	1.6	0.0	0.2	0.2	0.8	7.0	0.1	0.0	0.5	6.5	0.3	0.7
Aug 12-19	3.7	0.0	0.6	0.0	0.1	0.0	0.2	1.0	11.8	0.7	1.0	0.0
Aug 19-26	0.3	0.1	0.6	3.2	0.0	0.2	2.6	0.0	2.0	1.1	2.0	0.2
Aug 26-Sep 2	1.8	0.6	0.3	4.2	0.0	0.3	0.6	0.0	1.0	1.0	0.5	0.8
Sep 2-9	2.8	1.5	0.0	4.1	0.0	1.0	0.3	0.0	1.0	0.6	0.1	1.4
Sep 9-16	1.4	2.4	0.3	0.5	0.0	0.6	0.0	0.0	0.7	4.1	0.0	0.0
Sep 16-23	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.2	1.4	0.0	0.0
Sep 23-30	0.0	0.7	0.0	3.2	0.0	0.0	0.0	0.0	0.2	1.0	0.0	0.0
Sep 30-Oct 7	0.0	0.5	0.0	1.2	—	0.0	0.1	0.0	—	0.0	0.0	0.2
Oct 7-14	0.0	0.0	0.0	1.1	—	0.0	—	0.0	—	0.0	0.0	0.0
Oct 14-21	0.1	0.0	0.0	0.3	—	—	—	—	—	—	—	—
Oct 21-28	0.1	0.0	—	0.2	—	—	—	—	—	—	—	—
Oct 28-Nov 4	0.1	—	—	0.1	—	—	—	—	—	—	—	—
Nov 4-11	—	—	—	0.1	—	—	—	—	—	—	—	—
TOTALS	15.1	6.2	2.2	20.5	24.6	11.0	39.3	1.7	33.9	26.8	14.1	9.4

JAMES RIVER

Dates Exposed**	Deepwater Shoal			
	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0
Jul 1-8	0.3	0.0	0.0	0.2
Jul 8-15	0.8	9.0	0.0	—
Jul 15-22	0.7	17.9	0.0	—
Jul 22-29	2.4	7.8	0.3	0.5
Jul 29-Aug 5	2.2	6.4	0.1	—
Aug 5-12	1.9	9.2	0.0	0.1
Aug 12-19	0.4	0.2	0.3	0.0
Aug 19-26	0.3	7.7	1.0	0.0
Aug 26-Sep 2	2.2	0.6	1.0	0.0
Sep 2-9	0.5	2.2	0.0	0.0
Sep 9-16	0.1	0.5	0.0	0.0
Sep 16-23	0.0	0.5	0.0	0.0
Sep 23-30	0.0	0.0	0.0	—
Sep 30-Oct 7	0.0	0.0	0.0	0.0
Oct 7-14	0.0	0.0	0.0	0.3
Oct 14-21	—	0.0	0.0	—
Oct 21-28	—	0.0	0.0	—
Oct 28-Nov 4	—	—	—	—
Nov 4-11	—	—	—	—
Nov 11-18	—	—	—	—
	—	—	—	—
TOTALS	11.8	62.0	2.7	1.1

Dates Exposed**	PIANKATANK RIVER Burton Point Station G				PIANKATANK RIVER Three Branches Station D			
	1982	1983	1984	1985	1982	1983	1984	1985
	Jun 17-24	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.3	0.0	0.0	0.1	0.7	0.0	0.0	—
Jul 1-8	1.5	0.1	0.0	1.5	2.4	0.0	0.0	—
Jul 8-15	2.4	0.1	0.2	3.9	5.2	0.0	0.0	—
Jul 15-22	1.4	0.0	12.1	66.0	1.3	6.9	1.8	—
Jul 22-29	1.1	9.3	1.3	—	0.3	3.1	2.1	—
Jul 29-Aug 5	0.8	3.9	9.6	12.7	1.6	6.6	1.6	—
Aug 5-12	0.7	1.1	9.5	0.9	28.6	0.4	9.4	—
Aug 12-19	0.6	1.7	5.0	0.2	1.9	1.2	1.7	—
Aug 19-26	0.7	1.6	0.5	0.0	1.4	1.2	0.6	—
Aug 26-Sep 2	14.0	0.9	0.4	0.4	0.5	2.0	0.0	—
Sep 2-9	0.5	4.2	0.1	0.0	0.8	4.2	0.2	—
Sep 9-16	0.1	4.0	0.1	0.0	0.0	1.4	0.2	—
Sep 16-23	0.0	0.2	0.0	0.0	0.1	0.2	0.0	—
Sep 23-30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Sep 30-Oct 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
Oct 7-14	—	0.0	0.0	0.0	—	0.0	0.0	—
TOTALS	24.2	27.1	38.8	85.7	44.8	27.2	17.6	—

Dates Exposed**	PEPPER CREEK				MOBJACK BAY							
	Mouth				Off Brown's Bay				Tow Stake			
	Station 7				Station 14				Station 13			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Jun 24-Jul 1	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 1-8	0.1	0.0	0.0	0.0	0.9	0.2	0.0	0.1	17.5	0.9	0.0	0.0
Jul 8-15	0.4	6.5	0.0	0.0	1.2	0.7	0.0	0.0	12.5	1.4	0.3	0.0
Jul 15-22	1.8	1.8	0.3	5.5	3.5	1.9	1.0	1.0	7.3	0.5	2.6	0.3
Jul 22-29	2.8	1.6	0.2	8.9	1.5	1.0	0.5	0.5	2.7	1.2	5.4	0.1
Jul 29-Aug 5	5.9	1.2	2.1	19.6	5.8	1.0	0.1	1.2	9.5	1.9	2.9	0.0
Aug 5-12	0.6	0.8	4.9	36.1	0.8	3.5	0.4	0.3	0.5	6.4	0.5	0.0
Aug 12-19	10.0	1.0	1.3	2.6	4.7	0.0	0.0	0.1	5.8	0.5	0.0	0.0
Aug 19-26	5.6	0.7	5.7	3.7	5.4	0.4	1.5	0.2	1.5	0.5	1.8	0.0
Aug 26-Sep 2	6.5	0.2	0.3	5.4	2.3	1.0	0.0	0.3	1.0	0.3	0.0	1.1
Sep 2-9	3.6	21.8	2.8	21.0	6.2	30.5	0.7	2.1	0.1	1.6	0.7	0.6
Sep 9-16	3.0	47.8	0.7	2.7	1.4	31.3	0.2	0.3	1.8	2.9	0.0	0.0
Sep 16-23	5.1	3.5	0.0	1.7	1.0	0.6	0.2	0.4	0.2	0.6	0.0	0.0
Sep 23-30	0.6	0.2	0.0	1.9	0.9	—	0.0	0.2	0.2	0.0	0.0	0.0
Sep 30-Oct 7	—	0.2	0.0	3.4	—	—	0.0	0.2	—	0.1	0.1	0.0
Oct 7-14	—	0.2	—	0.0	—	—	—	0.2	—	0.0	—	—
Oct 14-21	—	—	—	—	—	—	—	—	—	—	—	—
Oct 21-28	—	—	—	—	—	—	—	—	—	—	—	—
Oct 28-Nov 4	—	—	—	—	—	—	—	—	—	—	—	—
Nov 4-11	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	46.1	87.5	18.3	112.5	36.0	71.1	4.6	7.1	60.6	18.8	14.3	2.5

Dates Exposed**	PIANKATANK RIVER				PIANKATANK RIVER			
	Palace Bar				Ginney Point			
	Station J				Station K			
	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1
Jun 24-Jul 1	0.1	0.0	0.0	0.6	0.1	0.2	0.0	0.6
Jul 1-8	3.4	0.4	0.0	4.5	3.2	0.3	0.0	3.0
Jul 8-15	6.4	0.4	0.4	16.0	6.2	0.2	0.4	29.7
Jul 15-22	4.0	1.0	9.2	87.8	15.1	2.5	0.3	27.8
Jul 22-29	1.7	24.3	25.5	—	4.2	34.9	65.6	—
Jul 29-Aug 5	9.6	89.3	12.3	5.5	11.0	67.3	19.6	12.7
Aug 5-12	23.7	2.6	1.5	7.1	0.8	7.5	4.8	2.1
Aug 12-19	4.5	1.2	3.8	0.3	6.6	1.4	7.4	0.4
Aug 19-26	2.1	1.2	2.2	0.2	2.1	1.3	11.2	0.0
Aug 26-Sep 2	6.5	6.7	3.4	0.5	9.1	15.8	3.6	0.2
Sep 2-9	0.7	17.8	0.2	0.0	0.5	35.8	3.1	0.1
Sep 9-16	0.5	0.3	0.1	0.0	0.3	2.2	3.1	0.0
Sep 16-23	0.2	0.7	0.1	1.5	0.2	2.2	3.1	3.4
Sep 23-30	0.0	0.2	0.5	0.3	0.0	0.1	2.6	2.6
Sep 30-Oct 7	0.0	0.0	0.5	0.0	0.0	0.0	1.8	0.0
Oct 7-14	—	0.1	0.0	0.0	—	0.0	—	0.0
TOTALS	63.4	146.2	59.7	124.5	59.5	171.7	126.6	82.7

Dates Exposed**	GREAT WICOMICO RIVER											
	Dameron Marsh Station a				Cranes Creek Station b				Fleet Point Station c			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0	2.4	0.0	0.0	—	0.0	0.0	0.0	0.0
Jul 1-8	2.6	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.2	0.0	0.0	0.1
Jul 8-15	0.4	0.0	0.3	0.1	2.3	0.0	0.0	0.4	1.5	0.0	0.0	0.1
Jul 15-22	8.2	0.0	0.0	1.3	8.9	0.0	0.0	0.2	4.5	0.0	0.1	0.1
Jul 22-29	6.4	0.0	0.0	1.5	19.3	0.0	0.0	0.8	0.7	0.1	0.0	9.2
Jul 29-Aug 5	4.5	0.0	0.1	3.1	10.1	0.3	0.1	2.8	2.5	0.1	0.1	68.3
Aug 5-12	0.7	0.0	0.4	2.4	1.0	0.0	0.3	1.5	1.2	0.4	0.1	0.2
Aug 12-19	6.9	0.6	0.0	0.0	12.9	0.7	0.2	—	18.8	0.0	0.7	0.0
Aug 19-26	0.9	0.5	0.0	0.0	8.3	0.0	0.0	0.0	5.3	1.6	0.5	0.2
Aug 26-Sep 2	3.4	9.2	0.0	0.2	3.8	1.9	0.2	0.6	9.4	14.3	0.0	0.0
Sep 2-9	1.7	0.0	0.0	0.0	1.4	0.3	0.0	0.0	4.9	11.3	0.2	0.1
Sep 9-16	0.3	2.4	0.1	0.0	0.1	2.5	0.5	0.0	1.6	14.3	0.0	0.1
Sep 16-23	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	1.1	0.2	0.0	0.0
Sep 23-30	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	1.1	0.4	0.0	0.0
Sep 30-Oct 7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
TOTALS	36.1	12.7	0.9	8.6	72.6	6.7	1.3	6.3	53.4	42.7	1.7	78.4

GREAT WICOMICO RIVER

Dates Exposed**	Whaley Flats Station b				Haynie Point Station e				Shell Bar Station f			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Jun 24-Jul 1	0.2	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Jul 1-8	2.3	0.0	0.0	0.0	16.2	0.0	0.0	0.0	25.1	0.0	0.0	—
Jul 8-15	1.8	0.0	0.0	0.0	3.8	0.0	0.0	1.8	3.9	0.0	0.5	7.6
Jul 15-22	12.4	0.0	0.0	0.5	13.9	0.0	0.2	0.2	18.9	0.0	2.3	4.4
Jul 22-29	3.5	0.0	0.0	1.0	10.9	0.0	0.0	0.4	10.3	0.0	0.9	2.6
Jul 29-Aug 5	2.9	0.0	0.0	0.3	8.0	0.1	0.0	3.8	47.8	0.0	0.2	1.8
Aug 5-12	0.3	0.0	0.1	0.3	6.6	0.1	0.0	1.1	6.4	0.0	0.1	6.8
Aug 12-19	5.3	0.0	0.1	0.1	2.6	0.4	0.1	0.0	1.6	0.9	0.1	1.5
Aug 19-26	1.2	0.2	0.2	0.0	7.9	0.1	0.0	0.0	5.2	1.1	0.5	0.9
Aug 26-Sep 2	3.3	2.0	0.0	0.1	10.0	2.6	0.0	0.2	0.3	23.3	0.6	2.4
Sep 2-9	2.7	0.0	0.0	0.0	1.7	5.0	0.2	0.1	0.1	8.0	0.0	0.0
Sep 9-16	0.3	2.0	0.0	0.0	1.3	4.5	0.2	0.0	0.0	23.0	0.3	0.1
Sep 16-23	0.3	0.0	0.0	0.0	0.3	0.1	0.0	0.0	2.7	1.2	0.2	0.0
Sep 23-30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.2	0.0
Sep 30-Oct 7	0.0	0.0	—	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0
TOTALS	36.5	4.2	0.4	2.3	85.7	12.9	0.7	7.6	124.3	57.7	5.9	28.1

GREAT WICOMICO RIVER

Dates Exposed**	Hudnall's Dock				Glebe Point			
	Station f				Station g			
	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0
Jun 24-Jul 1	21.9	0.0	0.0	0.0	76.2	0.0	0.0	0.0
Jul 1-8	9.5	0.0	0.0	0.0	49.8	0.0	0.0	0.0
Jul 8-15	11.0	0.0	0.1	1.8	11.1	0.0	0.1	3.3
Jul 15-22	20.7	0.0	0.7	3.0	24.7	0.0	0.2	2.3
Jul 22-29	23.5	0.0	0.6	1.0	61.8	0.0	1.3	1.7
Jul 29-Aug 5	16.0	0.0	0.6	1.6	123.0	0.0	0.2	1.2
Aug 5-12	8.5	0.0	0.4	6.0	3.3	0.0	0.3	1.6
Aug 12-19	13.3	0.5	0.3	0.3	3.9	0.0	0.0	0.4
Aug 19-26	3.6	0.0	0.1	0.1	4.3	0.0	0.1	0.2
Aug 26-Sep 2	8.6	2.1	0.3	0.3	5.3	0.3	0.0	0.0
Sep 2-9	1.1	9.8	0.0	0.0	0.8	0.2	0.0	0.2
Sep 9-16	0.3	3.8	0.0	0.1	0.0	0.1	0.0	0.0
Sep 16-23	2.0	0.1	0.2	0.0	0.5	0.0	0.0	0.0
Sep 23-30	1.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Sep 30-Oct 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	141.0	16.3	3.3	14.2	365.0	0.6	2.2	10.9

Dates Exposed**	POTOMAC RIVER											
	Cornfield				Jones Shore				Great Neck			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 1-8	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 8-15	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Jul 15-22	0.4	0.0	0.1	0.1	0.3	0.0	0.2	0.2	0.0	0.0	0.0	0.0
Jul 22-29	0.3	0.0	0.0	15.8	0.7	0.0	0.1	5.8	0.0	0.0	0.0	0.4
Jul 29-Aug 5	4.8	0.0	0.0	12.1	1.6	0.2	0.0	5.4	0.2	0.0	0.0	0.2
Aug 5-12	7.9	0.0	0.0	0.6	4.1	0.0	0.3	7.2	0.2	0.0	0.0	0.8
Aug 12-19	12.2	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Aug 19-26	66.9	0.4	0.1	0.0	45.8	0.2	0.0	0.0	0.9	0.0	0.0	0.0
Aug 26-Sep 2	117.3	3.0	0.0	0.8	177.8	0.0	0.1	1.1	0.7	1.4	0.0	0.5
Sep 2-9	21.1	5.7	0.0	0.0	12.2	3.1	0.0	0.0	1.0	0.2	0.0	0.0
Sep 9-16	6.4	9.0	0.0	0.0	68.8	6.3	0.0	0.0	0.0	0.2	0.0	0.0
Sep 16-23	7.2	3.1	0.0	0.0	62.6	3.8	0.0	0.0	0.0	0.0	0.0	0.0
Sep 23-30	0.5	1.6	0.0	0.0	1.0	0.5	0.0	0.8	0.1	0.1	0.0	3.2
Sep 30-Oct 7	0.0	0.1	0.0	0.1	0.1	0.4	0.0	—	0.0	0.0	0.0	0.0
Oct 7-14	0.1	0.0	—	0.0	0.0	0.0	0.0	—	0.0	0.0	0.0	0.0
TOTALS	246.0	22.9	0.2	29.5	381.1	14.5	0.7	20.6	3.1	1.9	0.0	5.2

Dates Exposed**	POTOMAC RIVER											
	Coan				Hog Island				Thicket Point			
	1982	1983	1984	1985	1982	1983	1984	1985	1982	1983	1984	1985
Jun 17-24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 24-Jul 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 1-8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 8-15	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jul 15-22	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Jul 22-29	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.0	0.0	0.0
Jul 29-Aug 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aug 5-12	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.5	0.2	0.0	0.1	0.0
Aug 12-19	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aug 19-26	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Aug 26-Sep 2	1.1	0.2	0.0	0.0	0.4	0.0	0.1	0.3	0.0	0.0	0.0	0.0
Sep 2-9	0.9	0.6	0.0	0.0	0.3	1.0	0.1	0.0	1.1	0.1	0.0	0.0
Sep 9-16	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	—	0.2	0.0	0.0
Sep 16-23	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	—	0.0	0.0	0.0
Sep 23-30	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.1	—	0.8	0.0	0.1
Sep 30-Oct 7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0	0.0
Oct 7-14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—	0.0	0.0	0.0
	—	—	—	—	—	—	—	—	—	—	—	—
TOTALS	4.2	0.9	0.0	0.0	1.9	1.5	0.3	1.7	1.8	1.1	0.1	0.2

EASTERN SHORE, SEASIDE

VIMS Pier at

Wachapreague

Dates Exposed**	1982	1983	1984	1985
Jun 17-24	—	0.0	0.0	0.0
Jun 24-Jul 1	—	0.0	0.0	0.0
Jul 1-8	—	0.5	0.1	0.0
Jul 8-15	0.9	2.0	0.3	0.2
Jul 15-22	4.9	23.1	0.0	0.2
Jul 22-29	2.1	12.5	0.0	0.1
Jul 29-Aug 5	4.9	33.0	1.7	0.5
Aug 5-12	19.7	1.6	0.8	0.5
Aug 12-19	13.2	1.1	2.2	0.4
Aug 19-26	4.7	2.6	5.1	5.5
Aug 26-Sep 2	0.4	2.7	15.2	2.6
Sep 2-9	0.4	30.7	24.8	13.0
Sep 9-16	1.5	9.9	4.4	2.7
Sep 16-23	0.6	0.7	0.3	5.3
Sep 23-30	1.3	0.6	0.3	0.0
Sep 30-Oct 7	1.2	0.0	1.2	0.4
Oct 7-14	—	0.0	0.0	0.3
Oct 14-21	—	0.0	0.0	0.2
	—	—	—	—
TOTALS	55.8	121.0	56.4	31.9



VIMS

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Virginia Institute of Marine Science
Gloucester Point, VA 23062

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