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Oyster Spatfall in Virginia Rivers: 1987 Annual Summary

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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

1987 Annual Summary

December 15, 1987

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. 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 more closely approximates 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 Plankatank 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 1987

The setting on shellstrings was above the average for the past four years at stations monitored, except for Mobjack Bay and the Potomac River. Setting at the Mobjack Bay stations was below average; however, the Pepper Creek station had one week of high setting in July and August. The stations in the Potomac River near the Virginia shore had low set; however two stations near the Maryland shore, in the lower Potomac, had the highest set in the past four years.

James River

The setting was high at all stations in the James River. Setting began the week of June 15th at Wreck Shoals offshore and extended to the week of October 5th down river at Cruiser Shoal. Ninety-nine percent of the set occurred in a twelve week period beginning July 6th and ending September 27th.

York River

The setting at the VIMS Ferry Pier began June 15th and extended until October 15th, or, the end of the monitoring program. The setting was bi-modal with a peak in the middle of July and another peak in the middle of August. The set was good but not as high as 1986.

Mobjack Bay

Setting began June 15th at the Wilson Creek Station and about July 1st at the remaining stations. The Wilson Creek and Tow Stake stations showed a medium level of set but Pepper Creek had a medium level with two separate weeks of high set. The 1987 setting on shellstrings was below the average in the past four years.

Piankatank River

The Piankatank River stations were monitored for about nine weeks beginning about July 1st. Our stations were not in place at the beginning of setting. All of the stations, except Three Branches, set for the entire monitoring period. All of the stations peaked in the middle of July. Setting was moderate to high but at a lower level than in 1986.

Rappahannock River

Setting began about July 1 in the lower Rappahannock River. The monitoring program was not in place at the onset of setting. The setting was low for six to eight weeks at Locklies and Sturgeon Bar. Setting was moderate to high at Windmill Point and peaked in the middle of July.

Great Wicomico River

Setting began the last week of June and extended to the end of August at Dameron Marsh and Haynie Point. Setting began in the middle of June at Fleet Point and extended one additional week. At the remaining stations setting began the third or fourth week of June and extended two or three weeks into September. The set reached a high level at Fleet Point and Hudnall's and was moderate at the remaining stations.

Potomac River

The set was high for a two week period in mid-July at Cornfield and Jones Shore. The remainder of the setting in the lower Potomac, at all stations was typically light. The Coan River station did not have any set on the shellstrings.

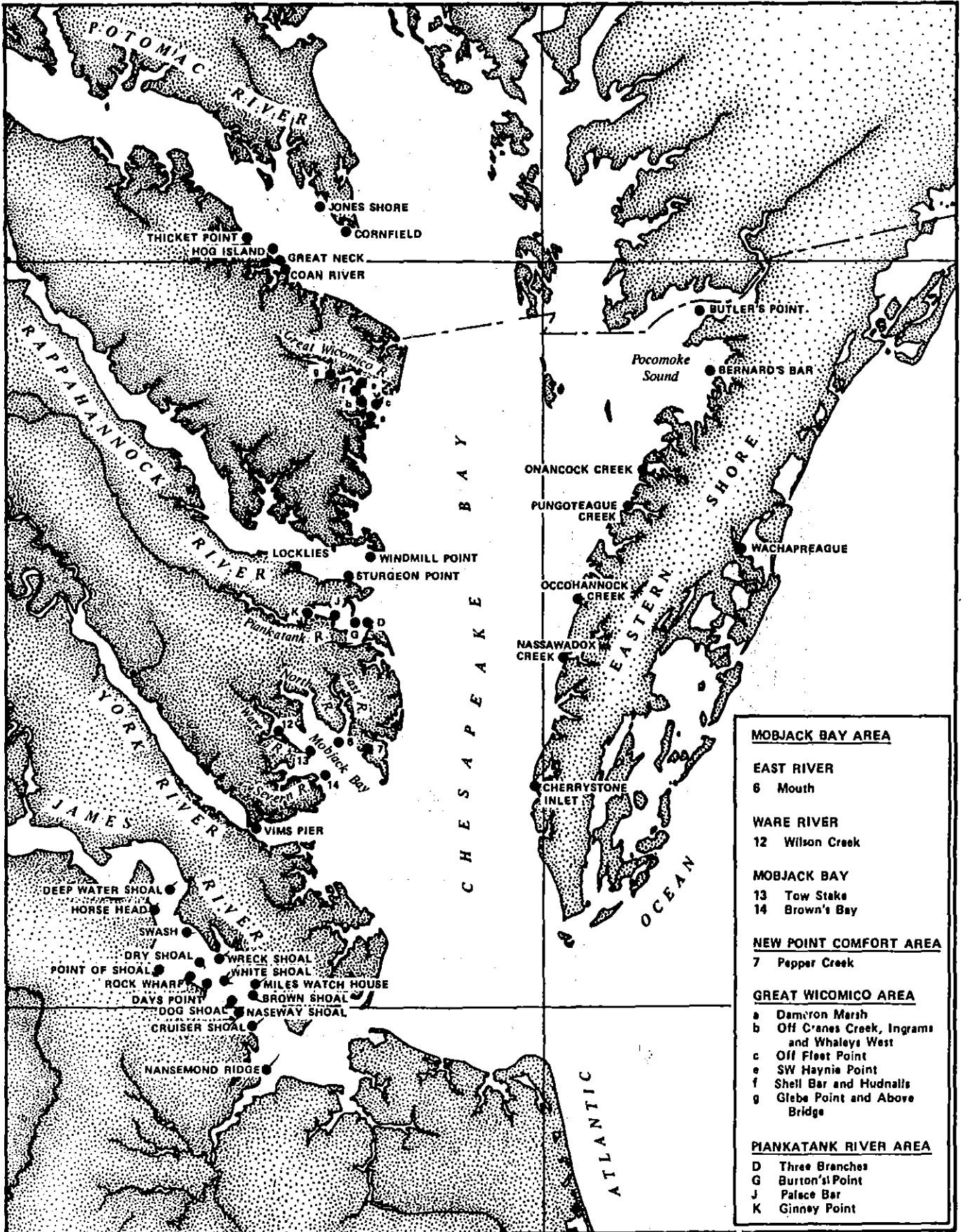
Eastern Shore, Bayside

The set began the middle of July at Bernard's Bar and extended to the end of August. There was no set at the Butler's Point Station.

Eastern Shore, Seaside

The station was not in place at the onset of setting; however, there were at least eleven weeks of setting ending October 4th. The setting was moderate and near the average for the station in the past four years.

SHELLSTRING SURVEY STATIONS



VIRGINIA INSTITUTE OF MARINE SCIENCE
 AND
 SCHOOL OF MARINE SCIENCE
 THE COLLEGE OF WILLIAM AND MARY
 GLOUCESTER POINT, VIRGINIA 23062

Spatfall on Shellstrings*
 Annual Summary
 1984-1987

JAMES RIVER

Dates Exposed**	Nansemond Ridge				Cruiser Shoal				Naseway Shoal			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14								0.0				
Jun 15-21	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Jun 22-28	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Jun 29-Jul 5	0.4	0.0	0.0	0.5	0.3	3.8	0.2	0.1	0.1	1.3	0.5	0.0
Jul 6-12	0.4	5.1	0.6	0.8	0.1	7.3	1.2	0.1	0.0	29.8	1.9	3.3
Jul 13-19	0.7	50.9	1.0	3.4	2.3	192.1	1.6	23.2	1.2	292.3	2.6	66.1
Jul 20-26	0.6	2.5	0.7	1.8	2.3	13.2	0.3	7.6	1.9	104.6	2.9	97.3
Jul 27-Aug 2	0.6	2.5	0.7	3.3	2.1	--	0.4	13.1	0.7	10.8	2.8	82.2
Aug 3-9	0.2	0.9	0.5	3.3	5.8	0.3	1.2	10.6	0.4	0.0	0.8	29.4
Aug 10-16	3.0	0.6	2.0	1.6	6.7	3.9	4.2	3.7	5.5	2.2	8.2	6.0
Aug 17-23	3.5	0.1	2.0	0.6	6.6	0.0	4.0	2.5	13.3	0.0	11.2	5.4
Aug 24-30	3.4	0.0	0.6	0.4	1.9	0.1	0.7	1.2	13.3	2.2	3.3	2.1
Aug 31-Sep 6	2.0	5.5	0.3	0.1	0.1	1.9	1.5	8.5	4.4	15.9	3.4	0.2
Sep 7-13	0.1	0.3	0.1	0.0	0.1	1.2	0.9	3.4	0.1	3.1	1.5	0.1
Sep 14-20	0.1	0.1	0.1	1.4	0.0	0.1	0.1	2.5	0.1	0.3	0.3	2.9
Sep 21-27	0.1	0.1	0.1	0.9	0.0	0.1	0.3	1.7	0.0	0.1	0.4	1.5
Sep 28-Oct 4	0.0	0.3	0.1	0.2	0.0	1.0	0.3	0.4	0.0	0.1	0.2	0.1
Oct 5-11	0.0	0.2	--	0.1	0.0	0.7	0.0	0.1	0.0	0.4	0.0	0.0
Oct 12-18	0.0	0.3	--	0.0	0.0	1.7	0.0	0.0	0.0	2.6	--	0.0
Oct 19-25	--	0.2	--	--	0.0	--	--	--	--	0.1	--	--
Oct 26-Nov 1	--	0.1	--	--	--	--	--	--	--	0.1	--	--
Nov 2-8						0.0						

* Shows spat per shell (smooth side only).

** Dates shown are for 1987. 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

JAMES RIVER (CONTINUED)

Dates Exposed	Dog Shoal				Miles Watch House				Day's Point			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14												0.0
Jun 15-21	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 22-28	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Jun 29-Jul 5	1.1	3.2	0.9	0.1	0.1	0.4	0.1	0.1	0.1	0.7	2.1	0.0
Jul 6-12	1.0	11.9	4.0	0.2	0.0	5.3	0.1	0.1	0.0	19.1	3.7	0.0
Jul 13-19	1.4	276.0	5.6	66.7	0.2	4.9	0.1	2.6	1.0	78.0	2.2	108.2
Jul 20-26	3.9	225.3	2.2	136.3	0.2	1.8	0.4	7.3	4.0	6.0	1.1	140.5
Jul 27-Aug 2	1.6	16.3	0.5	89.7	1.0	2.0	0.8	9.4	1.6	1.7	1.6	150.8
Aug 3-9	5.2	0.6	1.8	35.6	0.7	0.7	1.2	4.2	3.0	0.6	1.1	47.2
Aug 10-16	3.9	3.4	4.4	9.4	2.8	0.5	2.4	4.5	2.4	0.6	3.5	15.1
Aug 17-23	7.0	0.0	3.2	5.4	5.7	0.1	2.6	3.6	4.9	0.0	3.6	6.2
Aug 24-30	7.0	5.8	1.5	2.0	5.6	0.6	1.2	0.8	4.8	3.6	0.5	1.8
Aug 31-Sep 6	5.9	9.4	4.0	2.0	0.3	1.4	0.5	0.1	2.2	5.9	0.5	4.2
Sep 7-13	0.1	3.3	2.6	0.9	0.0	0.2	0.0	0.1	0.2	0.8	0.2	4.9
Sep 14-20	0.1	0.4	0.1	5.6	0.0	0.0	0.0	0.6	0.1	0.2	0.7	1.9
Sep 21-27	0.0	0.3	0.6	2.6	0.0	0.8	0.2	0.2	0.1	0.1	1.0	0.7
Sep 28-Oct 4	0.1	0.7	0.5	0.3	0.1	0.4	0.2	0.0	0.0	0.6	0.3	0.1
Oct 5-11	0.0	1.5	0.1	0.1	0.0	1.6	0.0	0.0	0.0	2.4	0.1	0.0
Oct 12-18	0.0	5.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0	—	0.1	0.0
Oct 19-25	0.0	2.5			—	0.0	—	—	0.0	—		
Oct 26-Nov 1		2.5			—	0.1	—	—		0.0		
Nov 2-8		0.0								0.0		
										0.0		

JAMES RIVER (CONTINUED)

Dates Exposed	Rock Wharf Shoals				Wreck Shoal Offshore				Wreck Shoal Inshore			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14				0.0				0.0				
Jun 15-21	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 22-28	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 29-Jul 5	0.1	--	1.2	0.1	0.1	0.7	0.2	0.0	0.0	0.3	0.1	0.0
Jul 6-12	0.1	--	1.9	1.1	0.1	3.9	0.2	0.1	0.0	8.6	0.3	0.7
Jul 13-19	1.4	138.2	1.2	63.0	0.9	10.0	0.2	1.7	1.2	10.2	0.3	4.0
Jul 20-26	5.3	14.3	0.3	119.7	1.9	3.9	--	11.5	1.8	2.9	0.1	39.2
Jul 27-Aug 2	2.4	7.7	0.1	56.1	1.8	0.6	0.1	11.0	0.6	1.0	0.2	30.0
Aug 3-9	3.2	0.6	0.2	18.6	0.4	0.1	0.6	5.8	0.5	0.7	0.7	8.2
Aug 10-16	7.4	0.9	1.6	14.9	2.2	0.4	1.7	1.6	1.6	0.5	1.6	1.6
Aug 17-23	8.3	0.0	2.1	7.2	5.5	0.1	2.0	0.6	13.3	0.0	2.6	0.5
Aug 24-30	8.3	0.2	0.5	1.4	5.5	0.1	1.2	0.5	13.3	0.7	2.2	0.1
Aug 31-Sep 6	2.2	0.1	1.2	0.1	2.2	3.6	1.0	0.1	0.3	1.4	0.4	0.0
Sep 7-13	0.0	0.0	0.7	0.2	0.3	1.1	0.3	0.1	0.1	0.0	0.0	0.1
Sep 14-20	0.0	0.2	0.0	2.1	0.2	0.1	0.0	1.4	0.1	0.0	0.0	1.7
Sep 21-27	0.0	0.2	0.2	0.8	0.0	0.0	0.2	0.5	0.0	0.0	0.1	0.9
Sep 28-Oct 4	0.0	0.0	0.2	0.3	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.1
Oct 5-11	0.0	0.0	0.0	0.1	0.0	1.6	0.0	0.0	0.0	--		0.0
Oct 12-18	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0
Oct 19-25	0.0	0.5			--	0.0	--		0.0	0.0		
Oct 26-Nov 1		0.0			--	--	--			0.1		
Nov 2-8		0.0								0.1		

JAMES RIVER (CONTINUED)

Dates Exposed	Dry Shoal				Point of Shoals				Mulberry Swash			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14				0.0								
Jun 15-21	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 22-28	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 29-Jul 5	0.0	2.8	0.2	0.1	0.1	1.7	0.1	0.0	0.0	0.5	0.2	0.0
Jul 6-12	0.0	5.0	0.8	0.1	0.0	6.1	0.3	0.0	0.0	1.7	1.2	0.1
Jul 13-19	0.5	50.7	1.1	12.9	0.3	14.7	0.4	3.9	0.7	27.1	1.4	8.2
Jul 20-26	1.4	5.4	0.4	114.9	2.7	3.9	0.1	18.9	10.3	0.9	0.5	6.6
Jul 27-Aug 2	1.9	7.3	0.6	76.2	2.2	2.7	0.0	25.3	1.8	3.2	0.6	24.7
Aug 3-9	3.2	0.3	1.7	21.1	4.0	0.1	0.4	18.2	3.6	2.2	0.8	25.8
Aug 10-16	2.8	1.3	2.7	3.2	4.1	0.5	1.2	5.2	2.5	2.2	1.9	8.2
Aug 17-23	6.3	0.0	3.4	3.2	4.8	0.0	1.4	2.0	7.6	0.0	1.4	1.6
Aug 24-30	6.3	2.9	3.8	0.8	4.8	0.3	0.1	0.9	7.6	0.0	0.7	0.6
Aug 31-Sep 6	1.1	3.6	1.8	0.1	0.2	0.6	0.2	0.3	2.6	0.0	0.3	0.4
Sep 7-13	0.3	1.1	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.0	0.0	0.1
Sep 14-20	0.1	0.1	0.1	2.6	0.0	0.0	0.1	0.2	0.2	0.0	0.0	2.1
Sep 21-27	0.1	0.1	0.0	2.3	0.2	0.0	0.1	0.2	0.0	0.1	0.1	1.0
Sep 28-Oct 4	0.0	0.1	0.0	0.5	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1
Oct 5-11	0.0	6.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.1	0.0	0.0
Oct 12-18	0.0	0.2	0.0		0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Oct 19-25	0.0	0.1			--	0.0	--	--	--	0.0	--	--
Oct 26-Nov 1		0.0			--	0.0	--	--	--	0.0	--	--

JAMES RIVER (CONTINUED)

Dates Exposed	Horsehead Bar				Deepwater Shoal			
	1984	1985	1986	1987	1984	1985	1986	1987
Jun 15-21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Jun 22-28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 29-Jul 5	0.0	1.0	0.1	0.0	0.0	0.2	0.1	0.0
Jul 6-12	0.0	2.4	1.0	11.3	0.0	--	0.4	0.0
Jul 13-19	0.0	17.7	1.4	15.8	0.0	--	0.5	--
Jul 20-26	2.9	9.1	0.2	4.9	0.3	0.5	0.0	0.2
Jul 27-Aug 2	2.2	2.5	0.1	29.5	0.1	--	--	10.6
Aug 3-9	1.1	0.3	0.3	24.1	0.0	0.1	0.2	9.0
Aug 10-16	2.3	0.3	0.7	7.8	0.3	0.0	0.2	5.8
Aug 17-23	9.0	0.0	1.1	2.7	1.0	0.0	0.3	2.8
Aug 24-30	9.0	0.0	1.4	0.9	1.0	0.0	--	0.4
Aug 31-Sep 6	0.8	1.1	0.7	0.2	0.0	0.0	0.2	0.6
Sep 7-13	0.4	0.3	0.1	0.0	0.0	0.0	0.1	0.2
Sep 14-20	0.0	0.0	0.1	1.9	0.0	0.0	0.0	0.7
Sep 21-27	0.0	0.2	0.1	0.8	0.0	--	0.0	0.3
Sep 28-Oct 4	0.4	0.2	0.0	0.1	0.0	0.0	--	0.0
Oct 5-11	0.0	0.9	0.0	0.0	0.0	0.3	--	0.0
Oct 12-18	0.0	0.0	0.0	0.0	0.0	--	--	--
Oct 19-25	--	0.0	--	--				
Oct 26-Nov 1	--	0.0	--	--				

PIANKATANK RIVER

Dates Exposed**	Three Branches Station				Burton Point Station G			
	1984	1985	1986	1987	1984	1985	1986	1987
Jun 15-21	0.0	--	0.0		0.0	0.0	0.7	
Jun 22-28	0.0	--	0.0		0.0	0.1	0.1	
Jun 29-Jul 5	0.0	--	14.1	0.0	0.0	1.5	60.6	1.7
Jul 6-12	0.0	--	58.0	0.3	0.2	3.9	124.2	8.4
Jul 13-19	1.8	--	14.1	61.2	12.1	66.0	29.7	29.9
Jul 20-26	2.1	--	5.1	3.0	1.3	--	14.5	2.4
Jul 27-Aug 2	1.6	--	2.7	0.4	9.6	12.7	15.3	0.4
Aug 3-9	9.4	--	1.5	0.0	9.5	0.9	4.5	0.3
Aug 10-16	1.7	--	1.2	0.0	5.0	0.2	1.8	0.1
Aug 17-23	0.6	--	0.9	0.0	0.5	0.0	1.1	0.3
Aug 24-30	0.0	--	0.2	0.0	0.4	0.4	0.2	0.4
Aug 31-Sep 6	0.2	--	0.1		0.1	0.0	0.1	
Sep 7-13	0.2	--	0.0		0.1	0.0	0.0	
Sep 14-20	0.0	--	0.0		0.0	0.0	0.0	
Sep 21-27	0.0	--	0.0		0.0	0.0	0.0	
Sep 28-Oct 4	0.0	--	0.0		0.0	0.0	0.0	
Oct 5-11	0.0	--	0.0		0.0	0.0	0.0	

PIANKATANK RIVER (CONTINUED)

Dates Exposed**	Palace Bar Station J				Ginney Point Station K			
	1984	1985	1986	1987	1984	1985	1986	1987
Jun 15-21	0.0	0.2	0.1		0.0	0.1	0.0	
Jun 22-28	0.0	0.6	0.1		0.0	0.6	0.2	
Jun 29-Jul 5	0.0	4.5	108.0	10.4	0.0	3.0	7.4	2.3
Jul 6-12	0.4	16.0	169.5	35.7	0.4	29.7	46.2	11.5
Jul 13-19	9.2	87.8	57.0	146.9	0.3	27.8	117.3	76.9
Jul 20-26	25.5	--	21.2	31.2	65.6	--	24.8	16.9
Jul 27-Aug 2	12.3	5.5	10.4	9.4	19.6	12.7	3.0	17.2
Aug 3-9	1.5	7.1	2.7	2.6	4.8	2.1	2.7	4.4
Aug 10-16	3.8	0.3	3.2	2.5	7.4	0.4	1.7	0.9
Aug 17-23	2.2	0.2	3.7	2.6	11.2	0.0	0.8	1.5
Aug 24-30	3.4	0.5	0.4	2.6	3.6	0.2	0.1	1.7
Aug 31-Sept 6	-0.2	0.0	0.1		3.1	0.1	0.0	
Sep 7-13	0.1	0.0	0.1		3.1	0.0	0.0	
Sep 14-20	0.1	1.5	0.0		3.1	3.4	0.0	
Sep 21-27	0.5	0.3	0.0		2.6	2.6	0.0	
Sep 28-Oct 4	0.5	0.0	0.0		1.8	0.0	0.0	
Oct 5-11	0.0	0.0	0.0		--	0.0	0.0	

RAPPAHANNOCK RIVER

Dates Exposed**	Windmill Point	Sturgeon Point		Locklies	
	1987	1986	1987	1986	1987
Jun 15-21		0.1		0.0	
Jun 22-28		0.3		0.1	
Jun 29-Jul 5	0.2	0.3	0.0	0.1	0.1
Jul 6-12	3.2	9.7	0.4	2.1	0.4
Jul 13-19	4.4	11.2	0.3	5.4	0.6
Jul 20-26	23.6		0.0	6.0	0.8
Jul 27-Aug 2	8.2		0.1	5.9	0.2
Aug 3-9	2.0		0.1	5.9	0.1
Aug 10-16	2.0		0.1	1.4	0.1
Aug 17-23	2.0		0.1	0.5	0.1
Aug 24-30	0.3		0.0	0.2	0.1
Aug 31-Sep 6	0.0		0.0	0.1	0.1
Sep 7-13	0.0		0.0	0.0	0.1
Sep 14-20	0.0		0.0	0.0	0.1
Sep 21-27	0.0		0.0	0.0	0.0
Sep 28-Oct 4				0.0	
Oct 5-11				0.0	

GREAT WICOMICO RIVER

Dates Exposed**	Fleet Point Station a				Dameron Marsh Station b				Cranes Creek Station c			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14				0.0				0.0				0.0
Jun 15-21	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jun 22-28	0.0	0.0	0.0	--	0.0	0.0	0.0	0.2	0.0	--	0.0	0.0
Jun 29-Jul 5	0.0	0.1	2.1	2.2	0.0	0.0	1.5	1.4	0.0	0.0	4.7	7.0
Jul 6-12	0.0	0.1	2.1	2.2	0.3	0.1	20.4	9.2	0.0	0.4	50.4	9.8
Jul 13-19	0.1	0.1	1.1	76.7	0.0	1.3	4.0	8.2	0.0	0.2	21.0	6.5
Jul 20-26	0.0	9.2	4.5	67.7	0.0	1.5	2.5	4.5	0.0	0.8	8.1	2.3
Jul 27-Aug 2	0.1	68.3	10.7	7.8	0.1	3.1	6.1	1.9	0.1	2.8	19.9	1.1
Aug 3-9	0.1	0.2	12.0	0.0	0.4	2.4	6.6	0.3	0.3	1.5	5.9	0.0
Aug 10-16	0.7	0.0	7.0	0.1	0.0	0.0	1.6	1.8	0.2	--	3.4	1.7
Aug 17-23	0.5	0.2	2.6	0.5	0.0	0.0	0.5	0.8	0.0	0.0	6.0	1.5
Aug 24-30	0.0	0.0	0.6	0.5	0.0	0.2	0.1	0.8	0.2	0.6	2.1	0.3
Aug 31-Sep 6	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Sep 7-13	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Sep 14-20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Sep 21-27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Sep 28-Oct 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oct 5-11	--		0.0	0.0	--	--	0.0	0.0	--	0.0	--	0.0

GREAT WICOMICO RIVER (CONTINUED)

Dates Exposed**	Haynie Point Station e				Hudnall's Dock Station f				Glebe Point Station g			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14				0.0				0.0				0.0
Jun 15-21	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 22-28	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1
Jun 29-Jul 5	0.0	0.0	5.1	0.1	0.0	0.0	33.9	13.2	0.0	0.0	24.0	2.6
Jul 6-12	0.0	1.8	92.8	1.9	0.1	1.8	73.2	14.2	0.1	3.3	84.2	1.6
Jul 13-19	0.2	0.2	28.0	3.2	0.7	3.0	30.8	13.5	0.2	2.3	94.5	1.0
Jul 20-26	0.0	0.4	17.6	0.6	0.6	1.0	20.1	1.5	1.3	1.7	45.1	3.9
Jul 27-Aug 2	0.0	3.8	10.8	0.7	0.6	1.6	146.1	0.2	0.2	1.2	79.0	0.4
Aug 3-9	0.0	1.1	8.1	0.7	0.4	6.0	16.2	1.2	0.3	1.6	19.6	1.8
Aug 11-16	0.1	0.0	3.3	2.1	0.3	0.3	7.6	3.6	0.0	0.4	2.8	5.7
Aug 17-23	0.0	0.0	3.5	0.2	0.1	0.1	7.0	1.0	0.1	0.2	9.0	1.1
Aug 24-30	0.0	0.2	1.3	0.4	0.3	0.3	2.5	1.5	0.0	0.0	5.5	1.0
Aug 31-Sep 6	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.4	0.0	0.2	0.8	0.8
Sep 7-13	0.2	0.0	0.0	--	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5
Sep 14-20	0.0	0.0	--	--	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1
Sep 21-27	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Sep 28-Oct 4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oct 5-11	--	--	0.0		--	--	0.0	0.0	--	--	0.0	0.0

POTOMAC RIVER

Dates Exposed**	Cornfield				Jones Shore				Great Neck			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Jun 8-14								0.0				0.0
Jun 15-21	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Jun 22-28	0.0	0.0	0.0		0.0	-0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Jun 29-Jul 5	0.0	0.0	0.2		0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Jul 6-12	0.0	0.0	0.3		0.0	0.1	0.6	0.0	0.0	0.0	0.4	0.0
Jul 13-19	0.1	0.1	0.5	23.6	0.2	0.2	2.4	12.9	0.0	0.0	0.5	0.3
Jul 20-26	0.0	15.8	0.3	23.6	0.1	5.8	0.6	12.9	0.0	0.4	0.8	0.3
Jul 27-Aug 2	0.0	12.1	0.3	1.1	0.0	5.4	1.3	0.5	0.0	0.2	0.4	0.1
Aug 3-9	0.0	0.6	0.6	1.1	0.3	7.2	3.4	0.5	0.0	0.8	2.3	0.1
Aug 10-16	0.0	0.0	0.6	0.0	0.0	0.0	2.8	--	0.0	0.1	0.4	0.2
Aug 17-23	0.1	0.0	0.6	0.1	0.0	0.0	1.5	0.1	0.0	0.0	0.3	0.5
Aug 24-30	0.0	0.8	0.2	0.1	0.1	1.1	2.4	0.1	0.0	0.5	0.3	0.2
Aug 31-Sep 6	0.0	0.0	0.0	--	0.0	0.0	1.2	0.1	0.0	0.0	0.1	0.1
Sep 7-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Sep 14-20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sep 21-27	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	3.2	0.0	0.0
Sep 28-Oct 4	0.0	0.1	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0	0.0	0.0
Oct 5-11	--	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0	0.0	0.0	0.0
Oct 12-18				0.0				0.0				0.0

EASTERN SHORE BAYSIDE
POCOMOKE

Dates Exposed	Butler's Point	Bernard's Bar
	1987	1987
Jun 8-14		0.0
Jun 15-21	0.0	---
Jun 22-28	0.0	0.0
Jun 29-Jul 5	0.0	0.0
Jul 6-12	0.0	0.0
Jul 13-19	0.0	0.1
Jul 20-26	0.0	0.1
Jul 27-Aug 2	0.0	0.6
Aug 3-9	0.0	0.5
Aug 10-16	0.0	0.3
Aug 17-23	0.0	0.2
Aug 24-30	---	0.1
Aug 31-Sep 6	---	0.0
Sep 7-13	0.0	0.0
Sep 14-20	0.0	0.0
Sep 21-27	0.0	0.0
Sep 28-Oct 4		0.0
Oct 5-11		0.0
Oct 12-18		0.0

EASTERN SHORE, SEASIDE

Dates Exposed**	VIMS Pier at Wachapreague			
	1984	1985	1986	1987
Jun 15-21	0.0	0.0	0.1	0.2
Jun 22-28	0.0	0.0	0.1	0.4
Jun 29-Jul 5	0.1	0.0	0.2	2.9
Jul 6-12	0.3	0.2	0.5	0.1
Jul 13-19	0.0	0.2	1.0	1.2
Jul 20-26	0.0	0.1	8.7	1.0
Jul 27-Aug 2	1.7	0.5	21.8	3.1
Aug 3-9	0.8	0.5	19.4	2.0
Aug 10-16	2.2	0.4	10.8	1.5
Aug 17-23	5.1	5.5	2.0	3.2
Aug 24-30	15.2	2.6	0.7	3.5
Aug 31-Sep 6	24.8	13.0	0.2	0.2
Sep 7-13	4.4	2.7	0.2	1.6
Sep 14-20	0.3	5.3	0.1	3.4
Sep 21-27	0.3	0.0	0.7	4.2
Sep 28-Oct 4	1.2	0.4	0.2	1.2
Oct 5-11	0.0	0.3	0.0	0.0
Oct 12-18	0.0	0.2	0.0	