

# BULLETIN

VIRGINIA INSTITUTE OF MARINE SCIENCE

Vol. 2 No. 10

August 25, 1970

## COW-NOSE RAYS ATTACK OYSTER BEDS IN RAPPAHANNOCK

The Cow-nose Ray, a sporadic and unpredictable visitor to the Chesapeake Bay, has appeared in unusual abundance in the Rappahannock River this month, causing extensive damage to oyster beds in the region between Bowers Rock and McKans Bay.

Vic Burrell, VIMS extension officer, was notified by oystermen of the damaging activities of the ray. According to Burrell, the feeding rays crush the oyster with powerful paired jaws. Both seed and market size oysters have been attacked, but examination of the oyster beds revealed that seed oysters were more heavily damaged.

Dexter Haven, head of the Applied Biology Department in the VIMS Division of Marine Science and Ocean Engineering, examined a four and a half acre oyster bed in the Rappahannock where oystermen first reported damage. Using diving gear, he surveyed the oyster grounds and reported that the bottom looked as if it had been stirred with a giant shovel. He said there were holes in the river bottom a foot deep and four feet across. Oysters measuring up to four inches in length had been crushed or broken, and four-fifths of the seed oysters planted in that bed in April were destroyed.

Haven said part of the bottom was the sandy type where soft shell clams might be found, and speculated that oysters might have been eaten as the rays searched for clams in that area. The Cow-nose Ray feeds largely on mollusks, and clams are apparent favorites.

The rays migrate up and down the Atlantic Coast and area watermen have reported observing large schools churning up the water. Large schools have been sighted in the Rappahannock in other recent years, but this is the first report of extensive damage done by these intruders.

According to Haven, various methods of control have been suggested, but so far none have proven successful. He urged any oystermen knowing of successful control methods to contact the Institute.

Burrell said damage appears localized in the Rappahannock between Bowers Rock and McKans Bay and there have been no more reports of destruction since it was discovered earlier this month; however, oystermen in other rivers have been advised to check for damage caused by the predator.

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WEEKLY OYSTER SPATFALL ON SHELLSTRINGS IN VIRGINIA  
JULY-AUGUST 1970

Spat per shell count is derived figure denoting the average number of spat set on the smooth side (one side only) of a shell. Spat counts are obtained from oyster shells strung on wire and suspended from stakes. The number of spat which set in one week on the smooth side of each shell on the string are tabulated.

To obtain approximate number of sets on both sides of oyster shells on shellstrings, total and spat per shell counts may be doubled. Figures are presented here for one side only because it is difficult to accurately count spat on the rough side of an oyster shell.

Explanation of how surveys are made to determine how many spat set on shells each week and how this information may be used has appeared in several recent issues of the Bulletin. If you would like a copy of this information, write David Garten, Information Officer, VIMS.

To provide information on the actual situation on the rocks, a companion survey of spatfall on bottoms will be issued in November 1970. This will help in determining the success of this year's strike on bottom shells.

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Dr. William J. Hargis, Jr., VIMS Director. Robert S. Bailey, Head, Information and Education Department. Editorial staff: David Garten, Editor; Robert S. Bailey and Fred C. Biggs. Jane Davis and Kay B. Stubblefield. Illustrators. Virginia Camechis and Becky Ashe, Typists.

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0 to 1 spat per shell = poor set  
2 to 10 spat per shell = fair set  
11 to 100 spat per shell = good set

Questions concerning setting  
and spatfall may be addressed to:

MR. DEXTER HAVEN  
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GLOUCESTER POINT, VIRGINIA 23062

The following table shows average number of spat on a single oyster shell (smooth side only) at stations in various rivers in Virginia. See charts on pages 6 and 7 for locations. Note that numbers to the left of certain river areas correspond to numbers on the charts to identify locations.

SPAT PER SHELL COUNTS				
	July 20 to July 27	July 27 to Aug. 3	Aug. 3 to Aug. 11	Aug. 10 to Aug. 17
<b>JAMES RIVER</b>				
Brown Shoals	0	0.3	6.0	2.8
Wreck Shoals	0	0.2	9.2	1.5
Horse Head	0.2	0.3	7.6	3.8
Point of Shoals	0.4	0.1	8.4	1.5
Deepwater Shoals	0	0.2	2.8	0.8
	July 23 to July 29	July 29 to Aug. 5	Aug. 5 to Aug. 12	Aug. 12 to Aug. 19
<b>YORK RIVER</b>				
VIMS Pier	0	0	1.0	0.1
Clay Bank	0	0	0.6	0
Foxes Creek	0	0	0	0
	July 23 to July 30	July 30 to Aug. 6	Aug. 6 to Aug. 13	Aug. 13 to Aug. 20
<b>MOBJACK BAY AREA</b>				
1 North River head	2.2	0	3.5	0
2 North River Black Water Cr.	0	0	0.4	.1

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(Cont. from Page 3)

SPAT PER SHELL COUNTS				
	July 23 to July 30	July 30 to Aug. 6	Aug. 6 to Aug. 13	Aug. 13 to Aug. 20
MOBJACK BAY AREA - cont.				
3 North River Cedar River	0	0	0.2	.1
4 East River head	0.2	0	0.5	19.9
5 East River Put-In Creek	0	0	1.1	10.8
6 East River mouth	0	0	0.2	8.6
11 Williams Wharf	0	0	0.3	0.6
	July 23 to July 30	July 30 to Aug. 6	Aug. 6 to Aug. 13	Aug. 13 to Aug. 20
NEW POINT COMFORT AREA				
7 Pepper Creek	0	0	0.3	0.8
8 Dyer Creek	1.0	1.3	1.3	0.1
9 Horn Harbor	0	1.2	0.3	0.2
10 Winter Harbor	0.1	0.2	0.6	3.9
Stutts Creek	0.3	0.1	2.3	0.8
	July 21 to July 28	July 28 to Aug. 4	Aug. 4 to Aug. 12	Aug. 12 to Aug. 18
PIANKATANK RIVER AREA				
1 Milford Haven	0.1	0.9	0.7	0.7
2 Stoakes Creek	0.3	2.0	1.1	5.0
3 Point Breeze	0.1	2.7	0.5	7.2
4 Three Branches	0.1	0.2	0.7	3.9
5 Iron Point	2.4	0.5	0	N.S.*
6 Island Bar	2.8	0.1	0.4	0.3
7 Ginney Point	11.2	1.8	0.1	0.1
8 Twiggs	12.7	0.7	0.4	1.8
9 Ferry Point	23.9	0	0	0.1
10 Hill Bay	0.2	0.1	0	0.8
11 Burton Point	1.4	1.8	1.7	0.3

\*Not Sampled

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(Cont. from page 4)

SPAT PER SHELL COUNTS				
	July 20 to July 27	July 27 to Aug. 3	Aug. 3 to Aug. 10	Aug. 10 to Aug. 17
GREAT WICOMICO RIVER				
3 Off Mill Creek	0.5	0.3	1.4	0.4
7 Off Cranes Creek	2.6	0.5	2.6	0.6
8 Off Fleet Point	0	0	0.3	0.6
9 Off Cockrells Cr.	1.7	0.1	0.3	0.1
10 SW Haynie Point	2.9	0.6	1.9	0.3
11 Off Shell Creek	4.2	3.9	1.8	0.2
13 Glebe Point	9.8	N.S.*	1.2	1.4
	July 20 to July 29	July 29 to Aug. 5	Aug. 5 to Aug. 12	Aug. 12 to Aug. 19
NANSEMOND RIVER				
Nansemond Ridge	0.2	1.2	N.S.*	1.8
Larken's Rock	0.2	1.4	2.9	0.8
Half Pone	0	1.1	3.9	1.5
	July 22 to July 29	July 29 to Aug. 5	Aug. 5 to Aug. 12	Aug. 12 to Aug. 19
RAPPAHANNOCK RIVER				
1 Grey's Point Br.	0.6	0	0.7	0.1

\*Not Sampled

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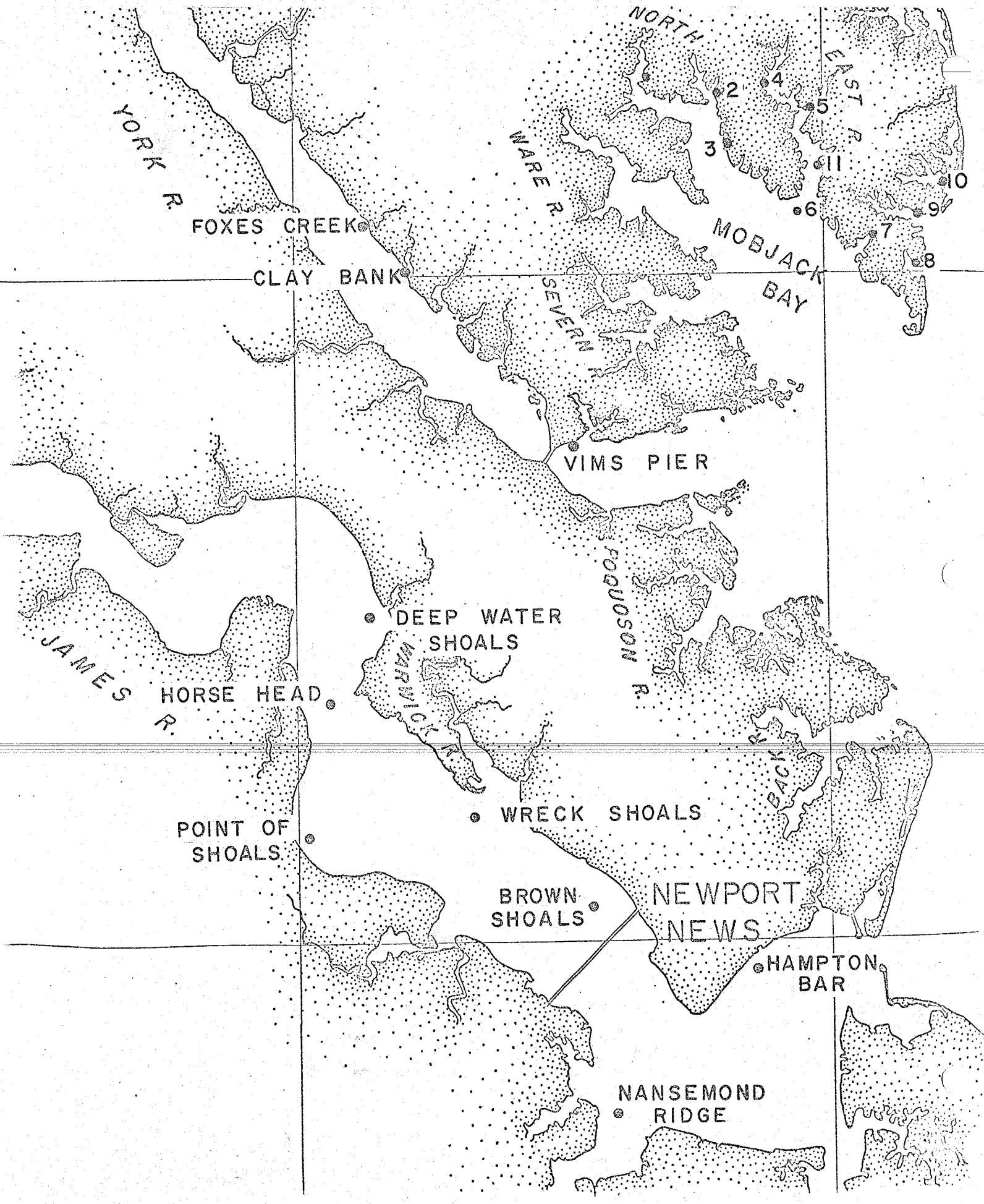
HARD CLAM PROTECTION DESCRIBED

A new method for protecting hard clam seed from natural enemies is described in the current VIMS Marine Resource Advisory Series.

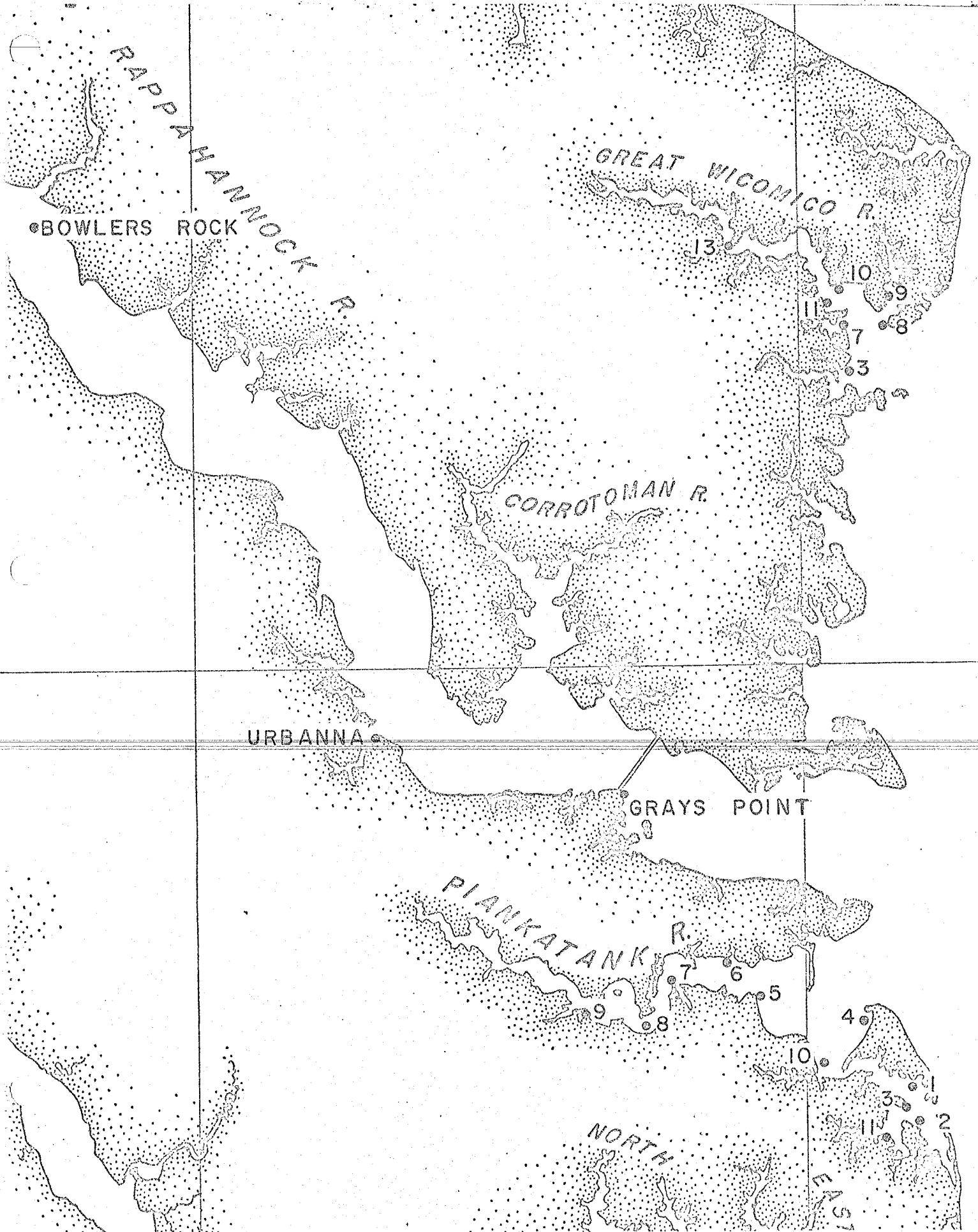
Entitled "Hard Clam Culture Method Developed at VIMS", the article explains the method which involves spreading shell, gravel or other materials -- referred to as aggregates -- over sand or mud bottoms before planting of seed. Suggestions for clambers who may wish to initiate trial plantings with aggregates are included.

Copies of the publication are available upon request from the Information and Education Department, VIMS.

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OYSTER MEATS QUALITY INDEX  
AUGUST 1970

EXPLANATION OF QUALITY INDEX

The Index number is obtained by comparing the actual size of oyster meats with the amount of space inside an oyster's shell cavity. The higher the Index number, the greater the amount and quality of meats that can be expected from a bushel of oysters. Using the Index, one can compare the potential meat yield of oysters of the same size 1) from different growing areas, and 2) from one season to the next.

A more detailed explanation of the Oyster Meats Quality Index is available upon request from the Information and Education Department, VIMS.

THE SURVEY

Surveys to determine the condition of oysters in Virginia rivers are directed by Dexter Haven, Head, Department of Applied Biology in VIMS Division of Applied Marine Science and Ocean Engineering. Representative stations on public rocks are established and sampled, beginning at the mouth of each river and proceeding to the transition zone between fresh and salt water. (See maps on pages 10 and 11 for locations). Oysters on private beds are not examined for this survey.

AUGUST INDEX SUMMARY

Oysters for meat quality were collected from all rivers during the first two weeks in August.

With the exception of the upper James River, the general trend in August was a slight decline in quality for the James, York and Rappahannock rivers. This decline was expected since oysters are spawning during this period and ~~the quality of oyster meats invariably decreases during the time that spawning occurs.~~ A further decline in quality is expected in the September samples.

In the Rappahannock River, quality is still above average in all sections, even with the decline due to spawning.

York River oysters are average with no difference in quality in the upper and lower parts of the river.

Oysters in the lower part of James River showed the expected decrease in quality associated with spawning. In the upper James, oysters from Point of Shoals and Deep Water Shoals were still above average in quality and even showed an increase in quality at Deep Water Shoals. These high indices suggest that oysters in these regions still retained considerable qualities of spawn during the first two weeks in August.

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OYSTER MEATS QUALITY INDEX

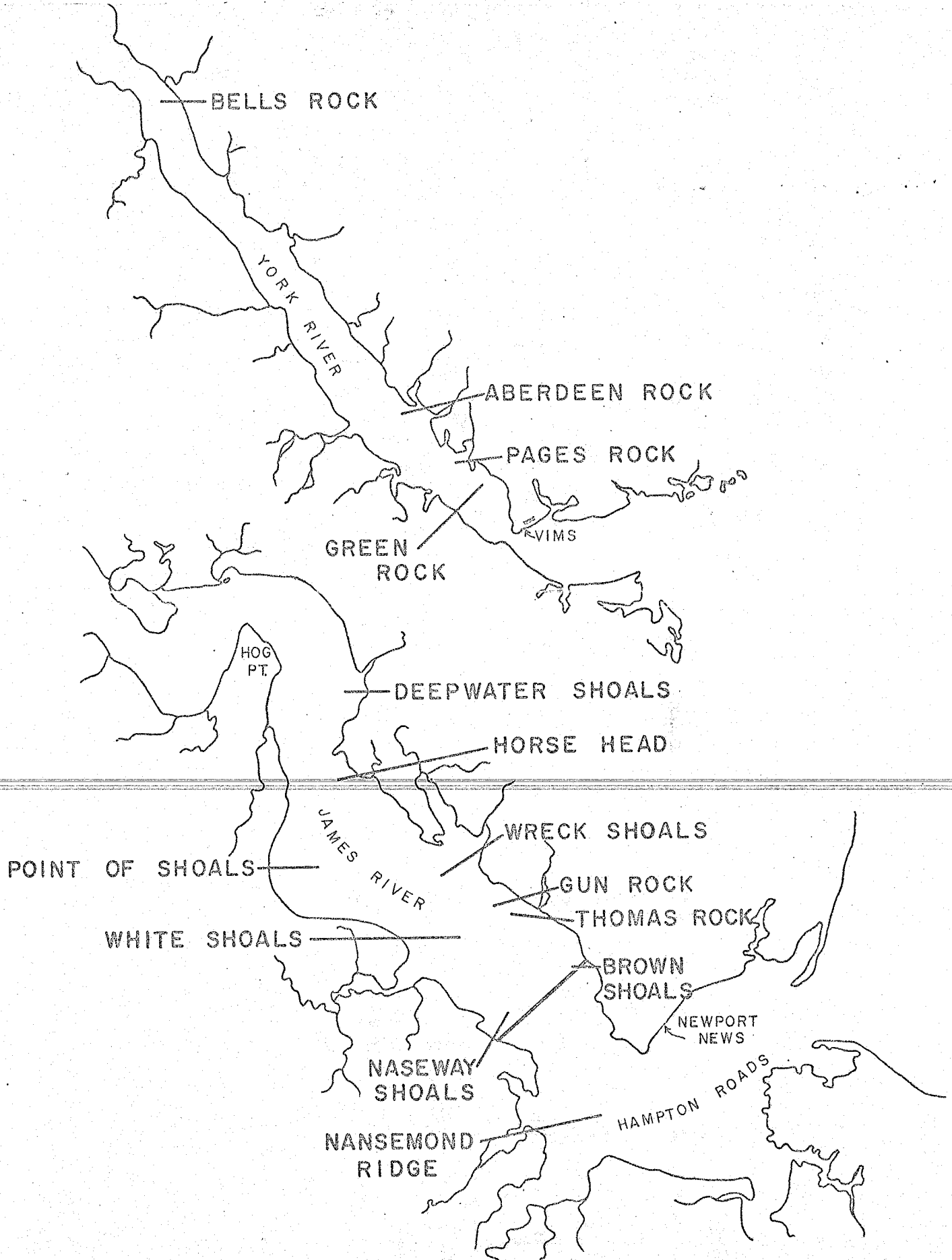
(Please refer to maps on pages 10 and 11)

	May 1970	June 1970	July 1970	August 1970
<b>JAMES RIVER</b>				
Brown Shoals	5.9	7.1	7.8	6.7
White Shoals	N.S.*	N.S.*	8.4	6.8
Wreck Shoals				
shallow	N.S.*	N.S.*	6.6	6.5
deep	6.2	6.7	7.6	6.2
Point Shoals	6.6	7.8	9.6	9.7
Horsehead	4.7	6.1	6.8	6.6
Deepwater Shoals	5.5	6.3	7.2	9.0
 <b>YORK RIVER</b>				
Green Rock	7.1	7.3	9.0	8.3
Pages Rock	6.4	7.2	8.9	7.9
Aberdeen Rock	6.7	7.5	9.1	8.3
Bells Rock				
deep	7.2	7.8	8.2	7.2
 <b>RAPPAHANNOCK RIVER</b>				
Urbanna	12.0	11.8	10.1	9.1
Smokey Point				
shallow	10.7	10.1	10.0	8.0
deep	N.S.*	N.S.*	N.S.*	8.9
Morattico Bar				
deep	8.9	9.1	9.7	8.4
Bowlers Rock				
shallow	10.7	11.9	10.1	9.6
deep	N.S.*	N.S.*	N.S.*	9.5

\*Not sampled

<p>KEY TO INDEX NUMBERS</p> <p>3.0 to 5.5 -- Below average</p> <p>5.6 to 7.5 -- Average</p> <p>7.6 and up -- Above average</p>
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