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Virginia Marine Resource Bulletin

Virginia Sea Grant

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## Marine Resource Information Bulletin, Vol. 3, No. 5

Virginia Sea Grant

Virginia Institute of Marine Science

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**BULLETIN**  
**VIRGINIA INSTITUTE of MARINE SCIENCE**

Vol. 3, No. 5

March 12, 1971

Annual Summary for 1970

## OYSTER SPATFALL ON SHELL BAGS IN VIRGINIA RIVERS

Scientists in the VIMS Department of Applied Biology, Division of Applied Marine Science and Ocean Engineering, studied seasonal aspects of setting of oysters on shells in the summer of 1970 by placing small strings of shells in the water and examining them weekly for set. This study was reported in the November 20, 1970 issue of the Bulletin.

Additional studies were carried out by placing wire bags containing about 1/5 bushel of shells in the water to monitor set and survival for longer periods. Bags are usually placed in the water prior to the beginning of the setting period in June and then removed in late fall. Additional bags are also set in the water in mid-summer and allowed to remain until fall. In this manner scientists may tell whether setting and survival were better on shells placed in the water in early summer or in late summer.

In late fall all bags were removed from the water and all oysters on 100 shells (approximately 1/5 bu.) counted. Spat per bushel was estimated by multiplying the count by five.

Shell bag sets are lower than that which is obtained on shell strings since the bags quickly become covered with marine fouling such as algae and barnacles. These organisms may cut down on setting by smothering set and by being so abundant that there is not room for the oyster larvae to attach. Therefore, shell bag studies more clearly describe what might be occurring on the bottom where shells also become fouled with material which reduces setting.

When bags were collected in late fall, bushel samples of the shells and other material found naturally on the bottom also were examined at selected stations and numbers of spat per bushel were recorded. It was found that set on material scattered on the bottom is often lower than in bags since bottom shells often become heavily fouled.

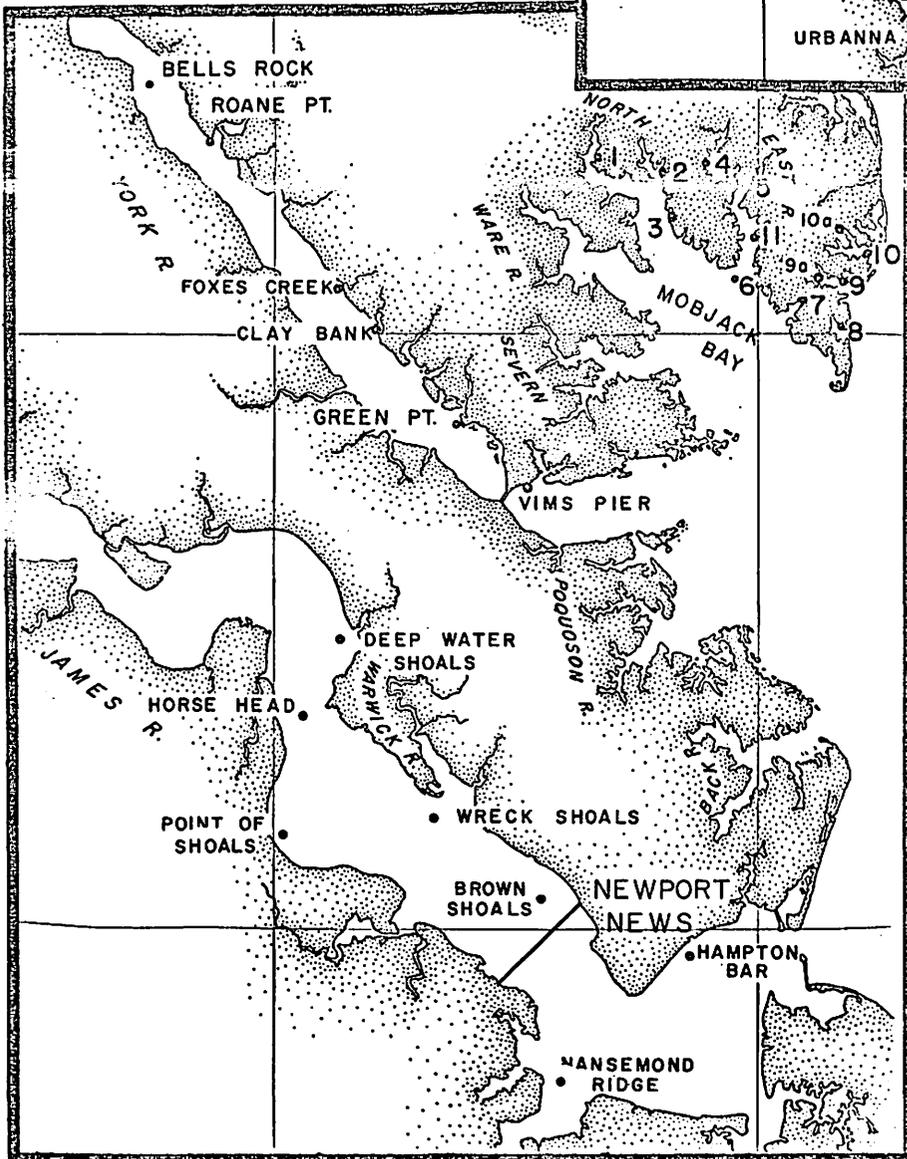
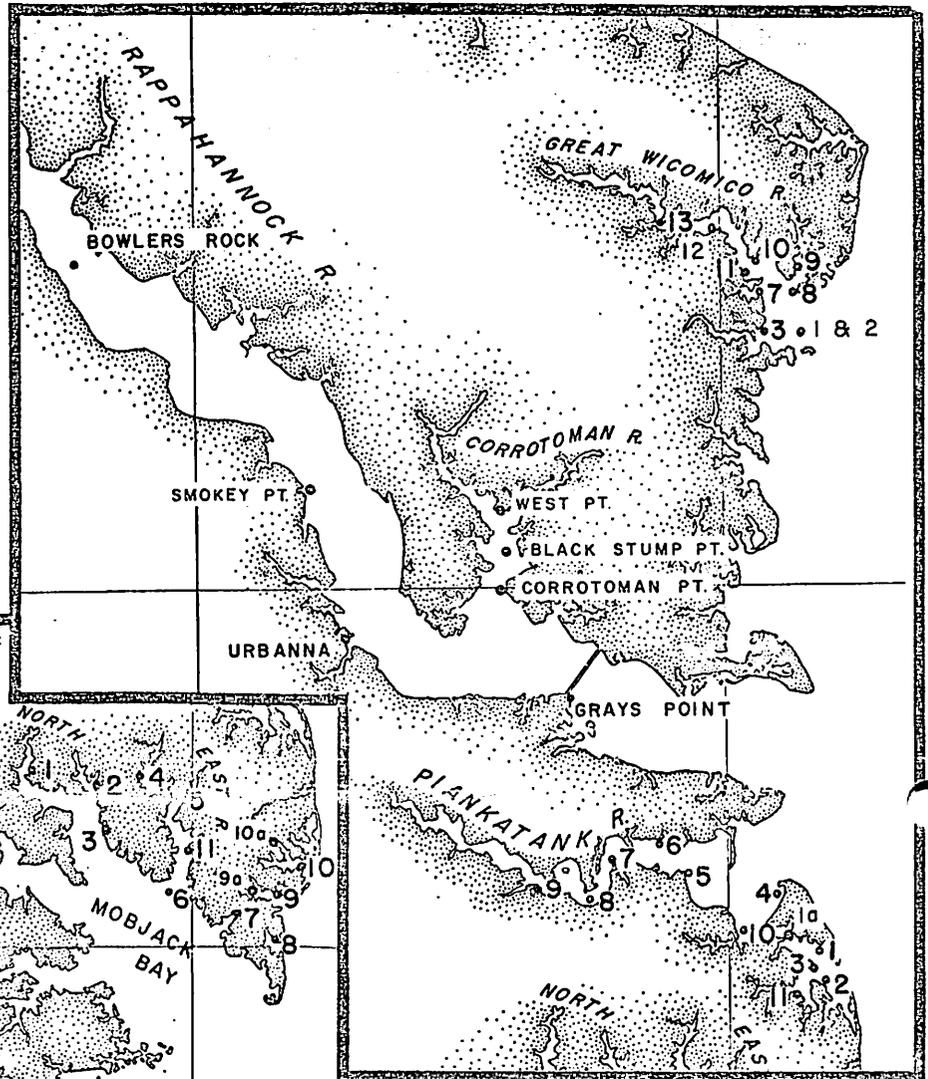
The following observations were made on sets in Virginia rivers:

JAMES RIVER -- Set on bags was generally moderate to high in the upper stations, but this dropped to low levels in the lower river. Shell bags placed in the James on August 31 had almost as many oysters in October as those placed in the water in mid-July which emphasized the importance of placing cultch in the water at the proper time to take advantage of larvae in the water and in order to avoid as much fouling as possible. Bottom samples collected adjacent to shell bags showed a similar setting pattern. Sets on natural shells on the bottom were as follows: Deep Water Shoals,

STATIONS IN  
 VIRGINIA RIVERS WHERE  
 REGULAR SURVEYS OF  
 OYSTER "SETTINGS" ARE  
 CONDUCTED

PIANKATANK

- 1 Milford Haven
- 1a Callis Wharf
- 2 Lilly Neck
- 3 Point Breeze
- 6 Horse Point
- 7 Ginney Point
- 9 Ferry Point
- 10 Hills Bay



**MOBJACK BAY AREA  
 EAST RIVER**

- 4 Head East River
- 5 Put-In-Creek Cove, Dock
- 5a Mouth, Put-In-Creek
- 6 No. 1 Beacon Pultz Bar
- 11 Williams Wharf

**NORTH RIVER**

- 1 North River Head
- 2 Black Water Creek
- 3 Cedar Point

**HORN HARBOR**

- 9a Mitchum's Crab House
- 9 Old barge

**WINTER HARBOR**

- 10 Public landing
- 10a C. B. Hurst

**DYER CREEK**

- 8 Walter C.

\*\*\*\*\*

2140 spat per bushel; Point of Shoals, 450 spat per bushel; Wreck Shoals, 65 spat per bushel; Brown Shoals, 0 spat per bushel.

CORROTOMAN RIVER -- Set on bags was low at all stations. Set on natural bottom cultch was also very low and ranged from 50 to 130 spat per bushel.

YORK RIVER -- Set on bags at Bells Rock and Roane Point at the upper stations in the York was negligible. Bags at three stations in the mid-river received only very light sets. The single shell bag placed at Gloucester Point in late fall had 1155 spat per bushel.

Bottom samples collected adjacent to the bags all had very low counts ranging from 0 to 30 spat per bushel.

RAPPAHANNOCK RIVER -- No set occurred on bags at Bowers Rock and Urbanna in the Rappahannock. The set at Smokey Point contained only a very few spat. Bottom samples collected adjacent to these stations on the natural bottom cultch had very low counts ranging from 0 to 26 spat per bushel.

PIANKATANK AND GWYNN ISLAND -- Placement of bags differed slightly in this region since the first group of bags placed in the river on June 30 were removed on September 3. A second group of bags were then placed in the river and remained there until November.

The group placed early in the year received a moderate to heavy set with maximum numbers being recorded at Horse Point and Ginney Point. There was a light late fall strike. Set on bags placed in the river in fall was highest in the mid portion of the river at Hills Bay.

EAST RIVER -- This river presented a complex setting pattern on shell bags. Bags placed in the river in early summer and allowed to remain there all season showed moderate to heavy surviving set on bags up river and only a very light set down river. Bags placed in the river in early September showed moderate to heavy strike in the lower river but almost none on bags at the upper stations.

NORTH RIVER -- Strike was light on bags in the North River. That which did attach to bags was most abundant at the downriver stations.

HORN HARBOR -- There was only a light strike at each of the two stations. A late light strike was obtained on bags set out in early September.

WINTER HARBOR, DYER CREEK, HARPER CREEK -- All three stations showed the same pattern of light strikes on shells which were set out in late June and allowed to remain in the water until November. However, strikes were generally higher on bags set out in early September, ranging from light to moderate. This late strike again emphasizes the fact that shells set out early in the season do not necessarily obtain the highest set. The reason is that shells placed in the river in June may by mid-summer become too fouled for a late set to attach.

Owners of small acreages adjacent to places reported receiving moderate to heavy strikes are in the best position to make practical use of the study results. Knowing the best time and place to expect strikes, they can set out shell bags to obtain seed oysters for their own use or for commercial sale to planters since seed supplies are becoming more difficult to obtain.

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Shell bags studies show the ability of an area for receiving strikes but do not necessarily imply that similar sets will occur every year. Studies of set on shell bags and bottom material have been carried out by VIMS for many years, which has made it possible to divide rivers into areas of light, moderate or heavy strikes. Most studies have been done in the York, James and Rappahannock rivers, and in the Great Wicomico and Piankatank rivers to a lesser extent. Those interested in past setting histories in these rivers should contact Dexter Haven, Division of Applied Biology, VIMS.

In the vicinities of Milford Haven, Winter Harbor, Horn Harbor and Mobjack Bay, bags were put down in the late 50's and early 60's to determine setting patterns. Many of the locations had strikes similar to those observed in the 1970 study; however, in certain locations sets several times higher were observed in earlier studies.

Bags similar to the ones used in this study but holding approximately 1/2 bushel of shells are now being used by growers to obtain seed oysters. Quantity set out by growers is not known, but it is estimated that over 40,000 bags were placed in the Great Wicomico River and elsewhere in Virginia in 1970. The exact set per bushel needed to make bagged oysters commercially saleable is best judged by the grower, but counts of 500 per bushel or over for seed are considered satisfactory by private growers. For commercial sale, higher sets may be required.

The following table shows the set of oysters on shell bags at selected stations in Virginia rivers during 1970. Note that numbers to the left of certain stations (e.g. Stutts Creek) correspond to numbers on the maps on page 2 to identify locations.

SET OF OYSTERS ON SHELL BAGS IN VIRGINIA  
 Spat Per Bushel\*

	<u>James River</u>	
<u>Station</u>	July 14 - Oct. 19	Aug. 31 - Oct. 19
Deep Water Shoals	--	440
Horse Head	1490	2435
Point of Shoals	1185	--
Wreck Shoals	635	295
Miles Watch House	310	120
Brown Shoals	205	185
	<u>Corrotoman River</u>	
<u>Station</u>	July 28 - Dec. 1	
Corrotoman Point	145	
West Point	155	
Black Stump	225	
	<u>Rappahannock River</u>	
<u>Station</u>	July 10 - Nov. 9	
Bowlers Rock	0	
Urbanna	0	
Smokey Point	15	

\*Based on spat per 100 shells x 5

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York River

<u>Station</u>	July 8 - Nov. 18	Aug. 28 - Oct. 12
Bells Rock	0	--
Roane Point	0	--
Foxes Creek	15	--
Clay Bank	225	220
Green Point	20	--
Gloucester Point	--	1155

Piankatank and Gwynn Island

<u>Station</u>	June 30 - Sept. 3	Sept. 3 - Nov. 13
11 Stutts Creek	460	--
1 Milford Haven	540	265
1a Callis Wharf	600	80
2 Lilly Neck	705	--
3 Point Breeze	180	115
10 Hills Bay	685	395
Burton Point	1445	25
Bland Point	450	--
6 Horse Point	2430	305
7 Ginney Point	1965	--
9 Ferry Point	390	--

East River

<u>Station</u>	July 2 - Nov. 13	Sept. 4 - Oct. 15
4 Head East River	510	15
5 Outside (N. side)		
Put-In-Creek Cove	1125	--
5 Outside (N. side)		
Put-In-Creek Dock	95	30
Long Point	160	5
5a Mouth (S. side)		
Put-In-Creek	15	40
11 Williams Wharf	40	20
Poplar Pond	30	230
Raines Creek	75	440
Weston Creek	85	145
Tabbs Creek	140	440
6 No. 1 Beacon Pultz Bar	0	2380
No. 2 Beacon	0	935

North River

<u>Station</u>	June 25 - Oct. 8	Sept. 4 - Oct. 15
1 North River Head	45	20
2 Black Water Creek	80	130
3 Cedar Point	450	--

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Horn Harbor

<u>Station</u>	June 25 - Oct. 10	Sept. 4 - Oct. 15
9a Mitchum's Crab House	230	30
9 Old Barge	95	110

Winter Harbor

<u>Station</u>	June 25 - Oct. 8	Sept. 4 - Oct. 15
10 Public Landing	345	730
10a C. B. Hurst	70	175

Dyer Creek

<u>Station</u>	June 25 - Nov. 13	Sept. 4 - Oct. 15
8 Walter C	70	625

Harper Creek

<u>Station</u>	June 25 - Nov. 3	Sept. 4 - Oct. 15
Wharf	170	210

Questions concerning setting and spatfall may be addressed to:  
 Mr. Dexter Haven, Virginia Institute of Marine Science, Gloucester  
 Point, Virginia 23062.

\* \* \* \* \*

SURVEILLANCE OF FOREIGN FISHING OFF U.S. REPORTED

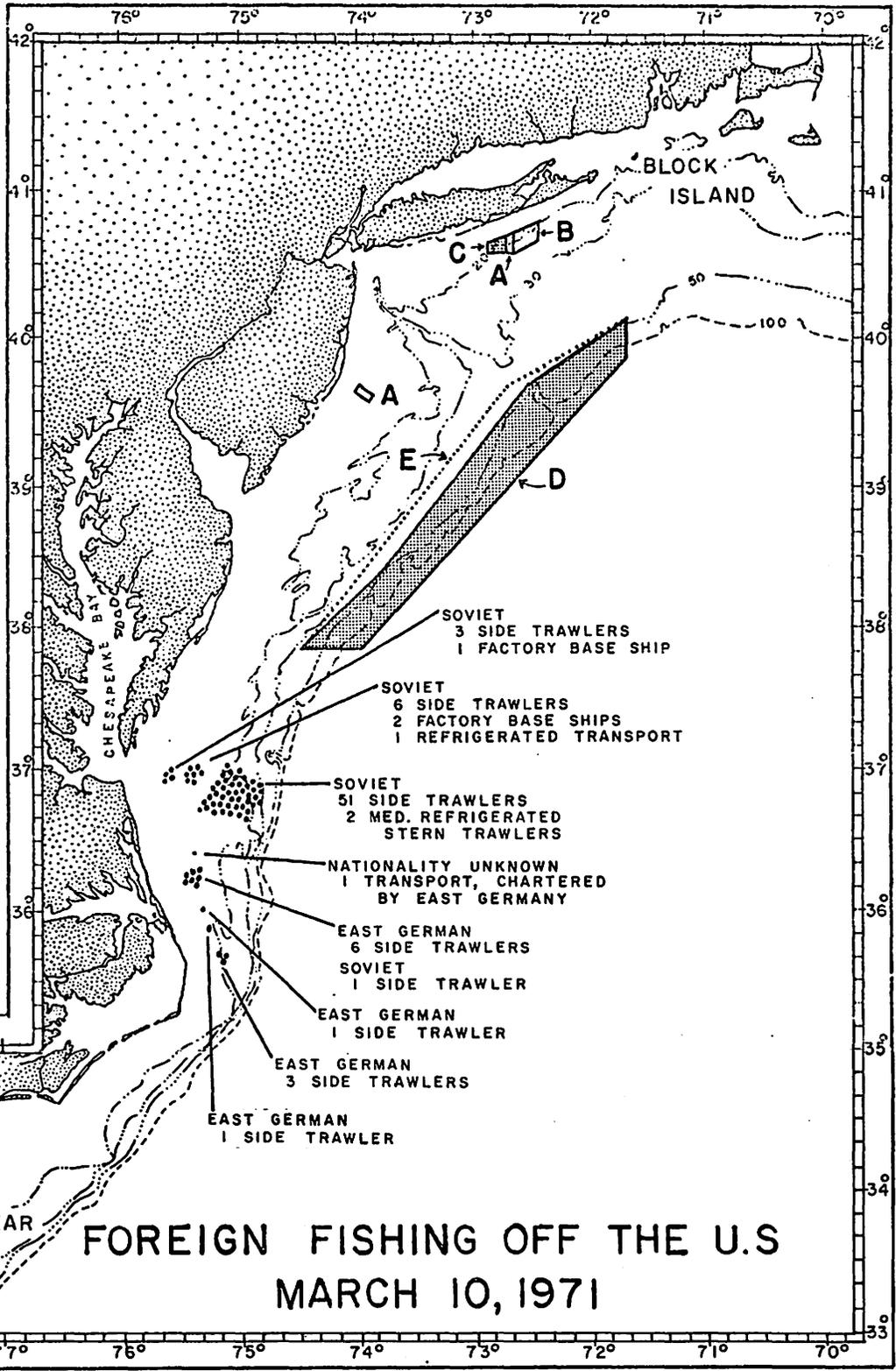
On March 10, 1971 an observer from VIMS accompanied personnel of the U.S. Coast Guard and the National Marine Fisheries Service on another surveillance flight over the area from Cape Hatteras, N.C. to Wachapreague Inlet Eastern Shore of Virginia, from the 12 mile limit to 50-60 miles offshore. This flight was terminated at Wachapreague Inlet instead of Ocean City because the area between was closed to air traffic at that time. The weather was clear with 20-25 mile visibility. Total number of vessels operating in the area were: Soviet-67; East German-12. No U.S. vessels were observed. (See map on page 7.)

Most of the fishing vessels were operating 16-60 miles offshore, with the largest concentration east of Chesapeake light tower. Not many fish were sighted aboard the fishing vessels but those observed from the altitude of 200 feet appeared to be herring and mackerel. There were three factory base ships in operation east of Chesapeake light tower.

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**AREA COVERED BY  
 THE FISHERIES  
 AGREEMENT  
 BETWEEN THE  
 U.S. AND U.S.S.R.**

- A. Loading zone,  
1968 agreement.
- B. Loading zone added  
by 1970 agreement.
- C. Fishing zone
- D. Closed to vessels  
longer than 110 ft.  
Jan. 1 - Apr. 15.
- E. Formerly closed  
Jan. 1 - Apr. 1;  
opened by the  
1970 agreement.



**FOREIGN FISHING OFF THE U.S  
 MARCH 10, 1971**

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VIMS CREATES ENVIRONMENTAL AND ENGINEERING DATA CENTER

The Virginia Institute of Marine Science is developing a comprehensive data system which will provide industry and government with the most up-to-date information available on oceanography of Chesapeake Bay and Virginia coastal waters, according to Dr. William J. Hargis, Jr., director of the institute.

The data system, called Marine Environment and Resources Research and Management System (MERRMS), will be a depository whereby all available information about hydrography, chemistry, geology, and biology of the Chesapeake Bay area can be stored, retrieved and utilized by planners, engineers and management agencies. A unique feature of the system will be the visual presentation of information which will enable the viewers to make quick assessment of many relevant factors operating on a given environment.

To help supply much of the basic information, a Remote Sensing Unit will be integrated with MERRMS. This unit also will provide an in situ monitoring system which VIMS has had under development for a long time. It will continue to employ traditional methods of aerial surveillance and photography, and will utilize newer techniques of aerial sensing development by NASA, the Department of Defense and others. Satellite sensing will also be evaluated and utilized where applicable.

The value of remote sensing from airplanes and satellites lies in being able to record much detail from over a large land or water surface at relatively low cost, but the usefulness of the data recorded depends on the ability of trained personnel to recognize specific areas or conditions recorded as photographs or in other ways as being areas or conditions they have observed at close hand. In situ monitoring is necessary, in many instances, to permit evaluation of aerial and satellite observation, provide "ground truth", and to comprehend in detail the condition of the environments and resources involved.

Development of ways to interpret data requires the establishment of "ground truth" data at the time remote sensing apparatus is making its record, and in the same locality. This will necessitate careful measurements in the field and interpretation by trained scientists.

\* \* \* \* \*

CERTIFIED CRAB MEAT PLANTS  
IN NORTH CAROLINA\*

The following crustacea meat plants have been added to the list of plants certified for the 1971 calendar year by the North Carolina State Board of Health. Certificates expire December 31, 1971 unless revoked prior to that date.

<u>Name</u>	<u>Address</u>	<u>Plant No.</u>
Baker Crab Co.	Belhaven	N.C. #5
Currituck Crab Co.	Barco	N.C. #25
C. B. Caroon Crab Co.	Southport	N.C. #22

\*Prepared by members of the Tri-State Seafood Committee as an aid to seafood buyers in locating certified crab meat suppliers. Other plants will be listed as they are certified.

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