



Marine Resource Bulletin

A Sea Grant Advisory Service

Vol. X, No. 3

VIMS, May/June 1978

CRABBING 1978

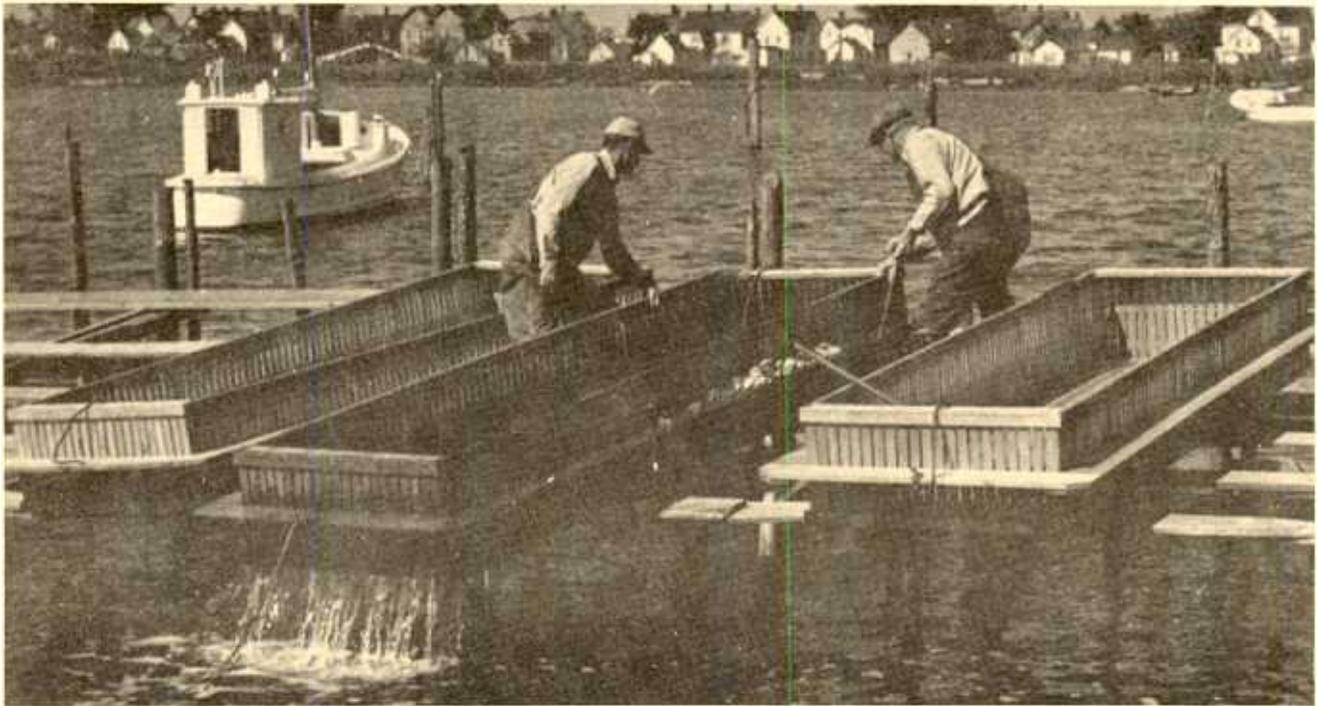
by Jim Zaborski, Marine Fisheries Specialist

The crabbing season is upon us and many who live, work or play around the Chesapeake Bay will soon be searching in earnest for *Callinectes sapidus*, commonly known as the blue crab. Many Bay watermen make a decent living by crabbing each summer, marketing their prized catch in either the hard or soft shell stage. For others, the blue crab yields a source of recreation, with the added benefit of a tasty meal as reward for their day's effort.

Whatever the reason, the Atlantic blue crab has held the interest of people living around the Bay since earliest settlement. Because crabbing is both an industry and a popular source of recreation for

many people, it is important that we understand a little more about the fishery and the laws regulating it.

Since 1955, the Virginia Institute of Marine Science has conducted surveys of the juvenile crab populations in the James, York and Rappahannock Rivers. These surveys, under the direction of Willard Van Engel, head of the Department of Crustaceology, serve as the basis for an estimate of the abundance of crabs that will be available to the fishery the following year. Monthly samples are collected from May through November in the deep channels (20-40 feet) of the nursery areas in these rivers.



These watermen haul their crab-shedding floats out for cleaning. As Chesapeake Bay waters warm, blue crabs will begin to shed, much to the delight of seafood gourmets and those who market the catch, alike.



Thousands of Tidewater visitors and residents eagerly await summer, and one reason is the blue crab. Whether you take him in a pot, by baited string from the end of a pier or by dip net, (above) the crab provides recreation and fine eating.

The sampling gear is a 30-ft. semi-balloon otter trawl with a 1¼ inch stretched mesh cod end. Two 5-minute tows are made over each of the thirteen sampling locations. The catch is returned to the water after being counted, measured and identified for sex. The size of the crabs taken ranges from ½ to 4 inches, with a 50-50 mix of males and females.

Van Engel predicts a good catch through August or September, then a rise to levels higher than any year since 1972. This upsurge will be the result of large numbers of crabs from the 1977 year class entering the fishery for the first time. Van Engel points out, however, that this increase is relative to last year's catch and will still fall short of the average catch from 1950-1974.

According to the National Marine Fisheries Service statistics, the average landings of hard crabs for that period from Maryland and Virginia waters was 70 million pounds.

The laws regulating harvest of blue crabs were established to protect the species and enable it to

reproduce so it might remain abundant for future generations. These laws and regulations may be found in *Laws of Virginia Relating to Fisheries of Tidal Waters*. The publication is available from the Virginia Marine Resources Commission at \$3.00 per copy. One of the laws which might be of particular interest to recreational fishermen relates to the size of crabs that may be taken. No more than 10 percent of the total catch may measure less than five inches from tip to tip of the longest spikes.

A second law, designed to establish a spawning sanctuary at the mouth of the Bay off Virginia Beach, prohibits commercial crabbing in that area between May 15 and September 15. A description of the boundary area is found in the March 21, 1978 revision of Section 28.1-170 of the "*Laws of Virginia.*"

Adherence to these and other laws and regulations, combined with efforts to control pollution in the Bay, should ensure a sustained crab fishery for years to come.



BOAT OWNERS GET HEAD BREAK by Jon Lucy, Marine Recreation Specialist

Boats up to 65 feet in length (small vessels) have recently been waived indefinitely from the federal requirement to either install or upgrade their marine head to a Type II device. Agreed by the Coast Guard's Commandant and the Administrator of the Environmental Protection Association (EPA), the waiver on Type II marine sanitation devices means that boat owners can continue to install Type I units indefinitely until such time as a practical Type II device can be developed. The waiver also cancels the requirement for owners of existing boats (those built prior to January, 1975) to maintain proof of a "firm commitment to purchase" a Type I MSD.

Presently, only one Coast Guard certified Type II head is available, and that device is relatively large, being unsuitable for many small to medium size boats with installed toilets aboard.

Whenever a practical and workable Type II device for small vessels is developed, the waiver will be rescinded, and a reasonable compliance schedule established for installation of the better treatment units on boats. The Coast Guard is implementing a research and development program to hasten the availability of a more practical Type II device.

The issuance of the waiver, soon to appear in the Federal Register, does not prohibit the installation of the existing Type II device or Type III devices (holding tanks) on small vessels. Boats greater than 65 feet in length do not come under the waiver. Owners of these larger vessels still must meet the Coast Guard's timetable for installation of Type I devices by January 30, 1979 (device must have been purchased before January 30, 1978), and Type II devices (see MSD Compliance Schedule in Marine Resource Bulletin, Vol. IX, No. 3, May/June, 1977). As with small vessels, Type III devices can be installed any time on boats over 65 feet in length.

States may continue to apply to EPA to prohibit sewage discharges from vessels where local environmental conditions require additional protection. However, adequate facilities for the safe and sanitary removal and treatment of sewage for all vessels must be reasonably available.

The State Health Department of Virginia has recently gone to court against ten operators of marinas in rural areas of the state to force the businesses to install boat pumpout facilities. The Health Department feels that extensive no-discharge zones are necessary in all shellfish growing areas to prevent further major condemnations of such areas. To obtain EPA certification for the



Most of the boats at Virginia's marinas are under 65 feet in length, and therefore are waived indefinitely from the federal requirement calling for marine head modification.

no-discharge zones, the State must demonstrate that adequate pumpout facilities are available.

Marina operators, along with many boat owners, oppose the Health Department's no-discharge regulations. They feel that holding tanks and pumpout stations in Virginia will not result in a significant improvement in water quality, since boats contribute such a minimal amount of the pollution load of Chesapeake Bay. Also, marina operators feel that the Health Department is exceeding its statutory authority in requiring private marinas to provide pumpout service for the public. 

Additional details on the federal waiver of Type II MSD's for small vessels can be obtained by contacting Jon Lucy of VIMS Sea Grant Marine Advisory Services (804/642-2111).

NEW SEAFOOD INDUSTRY ORGANIZATION

The Mid-Atlantic Fisheries Development Foundation, the first organization representing all segments of the seafood industry in the mid-Atlantic states, was formed the latter part of April in Ocean City, MD. The Foundation includes members from New York, New Jersey, Pennsylvania, Delaware, Maryland and Virginia. The Foundation will be eligible for federal funds to conduct various fisheries projects that hopefully will enhance the industry's growth and economic position.

Among the principal speakers who addressed the three-day convention were: William C. Gordon, Northeast Regional Director, National Marine Fisheries Service; Joseph W. Slavin, Director, Fisheries Development, National Marine Fisheries Service; Keith Porter, Gulf & South Atlantic Fisheries Development Foundation, Inc.; Howard W. Nickerson, Executive Director, New England Fisheries Steering Committee; Warren Rathjen, Program Manager, New England Fisheries Development Program; John T. Everett, Alaska Fisheries Development Corporation; and John P. Mulligan, Pacific Tuna Development Foundation.

Congressman Robert E. Bauman (R-Md.) spoke on the need for fisheries development in the mid-Atlantic area and pending legislative bills now in Congress.

During the business section, delegates adopted a set of by-laws and charter for the new organization. The Foundation will have up to 24 trustees in the region with a maximum of four per state. Newly elected trustees from Virginia are: J. Keith Porter, Virginia Seafood Council; George Washington, Virginia Watermen's Association; and Western Conley, Jr., Virginia Oyster Planters and Packers Association.

Elected to serve as the Foundation's first officers were: Richard H. Miller, President, New York; Luther R. Jefferies, Vice-President, New Jersey; and W. Robert Prier, Secretary-Treasurer, Maryland.

The establishment of the Mid-Atlantic Fisheries Development Foundation was a project of the National Marine Fisheries Services and the Maryland Department of Economic and Community Development, Seafood Marketing Authority. 

NORFOLK'S HARBORFEST

Norfolk's waterfront will be the scene of a spectacular maritime celebration called Harborfest June 23-25.

Beginning Friday, June 23, numerous unique

sailing vessels will be berthed along the waterfront for visitors to view and board. The boats will have just completed the Baltimore to Norfolk Mayor's Cup Race, which begins June 20 and ends June 22 in Norfolk. Approximately 40 boats are expected to participate in the race. Some of the vessels that will be on display for public visitation are the 179' barkentine *Gazela Primeior*, the world's oldest square rigger; the *Pride of Baltimore*, a 130' Baltimore Clipper; the 57' brig *Meka II*; the 95' *America*, a replica of the first America's Cup winner; and an original Chinese junk.

On Friday evening, sailing movies from the voyages of the brig *Meka II* will be featured, along with a Street Fest complete with street dancing and international foods. *Meka II*, the nation's only commissioned privateer, received its papers during the Bicentennial and normally guards the harbor of Beaufort-Morehead, North Carolina under the command of Captain Horatio Sinbad.

Saturday and Sunday, June 24-25, feature a number of fun and interesting activities to whet the adventure appetites of kids both young and old. Rowing races with 1-8 man racing shells begin on Saturday at mid-day, followed by a full water ski show with jumps and hang-gliders, then concerts, a Coast Guard air/sea rescue demonstration, and a pirate battle with cannons and water balloons. Later in the evening a concert by the Continental Army Band will lead into a spectacular fireworks display (9:00 p.m.) by Boom-Boom Zambelli (Zambelli handled President Carter's inaugural ball display) and a Pirates' Costume Ball (tickets \$5/person).

Sunday's pace doesn't slack off. Beginning at noon the rowing races continue, followed by a tugboat face-off, a repeat of the water ski show, a Navy Underwater Demolition Team demonstration (jumps from helicopters and pick-ups by boats), a Navy hydrofoil demonstration (reaching speeds of 90 mph), and a sky jump by the Fort Monroe Area Parachute Club. These events will have interspersed among them concerts by disco, country-western and Navy bands. At 4:00 p.m. a Parade of Sail begins, marking the beginning of the American Sail Training Association Race from Norfolk to Newport, Rhode Island, which will last approximately 10 days. More detailed information on the events of Harborfest can be obtained from the City of Norfolk's Department of Conventions and Marketing, 801 City Hall, Norfolk, VA 23501 (804/441-5145).

If you want to experience some of what makes Virginia a great maritime state, come visit the Norfolk waterfront June 23-25. VIMS Sea Grant Marine Advisory Services will be there, both to participate, and to learn. 

Wavelets

Virginia Institute of Marine Science, Sea Grant Marine Advisory Services

ADVENTURE IN "INNER SPACE"--PART I

by MARY SPARROW



OUTER SPACE - STAR WARS, Star Trek, Operation UFO--today's movies and TV programs bring to life imaginary creatures and lands far away and very different from our Earth and we Earthlings. Probably, most of us will never see such places. But, did you know there is a mystery world right here on our own planet Earth? Scientists call it "Inner space."



Inner space, our ocean, is a world of living creatures every bit as fascinating as outer space. Best of all, we Earthlings can see and learn some things about the ocean right in our homes...with an aquarium.



Bringing inner space beings into our homes will take some planning and patience. Like any good host, we want our guests to know we are friendly, and we want to make them as comfortable as possible.



What kind of home do they need? How much space? How many ocean visitors can we have? Do they need light, air, food and plants? Can we have their friends? Their enemies? Can we use tap water? Is the ocean, their home, like tap water? How does it taste? Can we add something to tap water to make it more like the ocean?



The marine or saltwater aquarium is a perfect home away from home for some of our smaller ocean creatures. Sea anemones, starfish, sea urchins, hermit crabs, feather dusters -- these are some of the inner space beings waiting to visit you. All you have to do to enjoy watching them is set up an aquarium.



If we were going to make a trip to outer space or inner space, we would need to take our own oxygen, light and food. All living things, on land or in water, have four basic needs -- space, oxygen, light and food. Inner space creatures have a special need: Salt water. When you set up your aquarium you must be sure that all these needs will be met.



Would you like to have to play and live in a closet all the time? Probably not. You wouldn't have enough space. Aquarium animals need space to play and exercise in, too. So before you visit the pet or discount store to buy your aquarium, you must decide what size to get. Ocean animals also need room to breathe. Since they take oxygen from the water, too many animals in a too small aquarium will quickly use up the oxygen. So the size of your tank will control the number of animals you can have in it.

A ten-gallon tank can hold about five invertebrates (animals without backbones), such as hermit crabs, shrimp, snails, starfish and sea urchins, and five small (2 to 2½ inches) marine fish. A twenty-gallon tank will hold another five fish.

In nature, winds, plants and currents add oxygen to the ocean. In the aquarium, an air pump and the subgravel filter take the place of the wind and currents. The subgravel filter is a plastic plate full of holes which sits on the bottom of the tank under the gravel. The air pump and filter work together creating currents which bring the water to the surface where it can pick up oxygen from the air. You can use plants in the marine aquarium, but they must be of a special kind that live in salt water.

You have met two basic needs so far: Space and oxygen. Light, another basic need, can be added by using sunlight or artificial light. If you use sunlight, it should be indirect sunlight for 2-3 hours. Do not set the aquarium right in front of a window where sunlight hits it all day. Too much light causes too much algae, a green or brown plant, to grow in the tank. This makes your aquarium look messy.

Light also means heat, and too much light, natural or artificial, can make the water too warm. Most of your marine fish like the temperature of their home to be between 68° F and 75° F. Artificial lights can be bought that fit right on the top of the aquarium.

Marine animals and plants are special because they can live in salt water, so we need to use salt water in our aquarium. The best way is to make salt water using artificial ocean salt which you can buy at the pet store. It comes in packages to be used with a certain size tank. So if you have a 20-gallon tank, you want a bag of salt for a 20-gallon tank. Don't use table salt. Artificial ocean salt contains other minerals. A simple piece of equipment called a hydrometer can help you tell how much salt you have in the water and how much you need.

Your house would not be much of a home without furniture. Your aquarium will not be very pretty or exciting with just animals, plants and water. The ocean is more than animals, plants and water. There are rocks, gravel and shells. The animals will need these in the aquarium to

make them feel at home. They will walk and crawl and swim on and around this "furniture." Try to keep your aquarium as natural as the ocean; try not to use plastic plants and rocks. Some types of plastics can make saltwater animals sick.

We Earthlings have been patiently waiting for hundreds of years to meet beings from outer space. Now that your aquarium is put together, you must wait patiently to meet the creatures from inner space. You should let your aquarium set with the pump running for three to four weeks before putting animals in it.

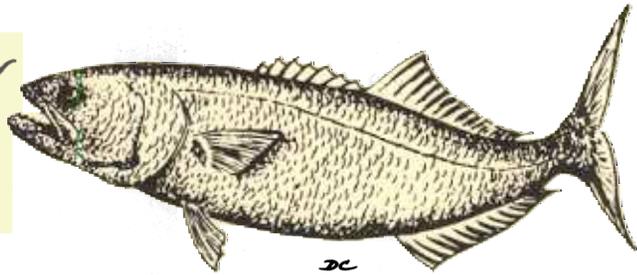
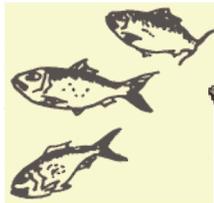
While you wait you can put some saltwater plants in and watch closely. Remove quickly any that die. Make sure the tank doesn't leak, that everything is working properly, and check the temperature with a thermometer. If the temperature changes often, it might be because of a breeze around the tank or too much light. If you think you should move the tank, take out all the water first. **NEVER MOVE A TANK FULL OF WATER: IT MIGHT CAUSE IT TO LEAK.**

Where can you first meet the inner space visitors? You can use dip nets, shovels and scrapers at the ocean or a saltwater river and collect them yourself. They might not be healthy, though. The best way is to buy them from a pet store or fish supply store. You can be pretty sure these animals are healthy. Make sure by watching them several minutes before picking the ones you want.

Healthy fish are brightly colored. The skin should not have any whitish spots or scrapes. Watch the gill movements. If a particular fish seems to be breathing hard, don't buy it; it might be sick. If a fish hides for a long period of time or seems afraid to explore the aquarium, he is probably timid and unable to take up for himself. **(TO BE CONCLUDED IN JULY/AUGUST ISSUE)**

For complete details on setting up a saltwater aquarium, write to: Sea Grant Marine Advisory Services, Virginia Institute of Marine Science, Gloucester Point, VA 23062.

THE FISH HOUSE KITCHEN



Right now is a good time to plan bluefish into your food budget...it's inexpensive and plentiful, and mighty tasty eating to boot. Blues move into the Chesapeake Bay in the spring, and throughout the summer and autumn are one of the most abundant food fishes available. They are easy to catch, easy to clean and here are a couple of recipes that will have you coming back for more.

CHARCOAL GRILLED BLUEFISH

2 lbs. fillets or steak OR 3 lbs. dressed bluefish
1 charcoal grill, any type
30 to 36 charcoal briquets
1 hinged wire hand grill, well-greased
 $\frac{3}{4}$ to 1 c. basting sauce (your favorite or Spicy Marinade*)
1 basting brush

Make fire with charcoal briquets. When coals are white hot, spread evenly over bottom of grill. Wash and dry fish. Cut fish into serving-size portions and place in well-greased, hinged wire hand grill. Baste fish with sauce and place, skin side down, about 4 inches from moderately hot coals. Cook, baste, and turn fish as follows: Fillets or steaks: Cook 5 minutes, baste, turn; Cook 5 minutes, baste, turn; Cook until done, about 15 minutes. Dressed: Cook 8 minutes, baste, turn; Cook 8 minutes, baste, turn; Cook until done, about 20 to 25 minutes.

Fish is done when flesh flakes easily when tested with a fork.

NOTE: If fire flames up, remove fish from coals until flames die down, as fire will dry and toughen fish.

Cooking times are approximate: Every fire behaves in a different way, depending on the type of equipment used, wind, air temperature, humidity and fuel. Therefore the cooking times are a guide only.

If seafood becomes dry, baste more frequently.

* SPICY MARINADE

$\frac{1}{4}$ c. margarine or butter
 $\frac{1}{2}$ c. dry white wine (or water)
 $\frac{1}{2}$ t. prepared mustard
 $\frac{1}{2}$ t. lemon and pepper seasoning
 $\frac{1}{4}$ t. seafood seasoning
 $\frac{1}{8}$ t. tarragon
 $\frac{1}{8}$ t. rosemary

Melt margarine or butter in a small pan. Add rest of ingredients and cook over low heat until seasonings are blended and mixture is warm. Makes about $\frac{3}{4}$ cup marinade.

BLUEFISH SALAD SUPREME

Poached bluefish, or other fish
2 T. finely chopped onion
2 T. finely chopped green pepper
 $\frac{1}{2}$ c. salad oil
 $\frac{1}{4}$ c. wine vinegar
 $\frac{1}{8}$ t. garlic powder
 $\frac{1}{4}$ t. oregano
2 t. parsley flakes
Salt and pepper to taste
 $\frac{1}{4}$ c. sour cream or mayonnaise

Remove skin and dark layer under skin. Cut bluefish into very small pieces. Put into a bowl and add all ingredients except sour cream; toss gently. Just before serving, stir in sour cream or mayonnaise. Makes about 4 cups salad.

SUN TIPS



From Hawaii, the authoritative land of the sun, comes some advice on how not to fry crisp at the beach this summer. That is, if Virginia ever gets over it March, April, May, etc. showers long enough for sunburn to be a threat.

Sea Grant Advisory Services at Hawaii recommends Pre-Sun brand as the most effective, thoroughly tested and cosmetically acceptable sunscreen on the market today. This product contains 5% PABA (para-amino-benzoic acid) in 55% alcohol base. PABA gels, not as drying as the alcohol base Pre-Sun, include Pre-Sun Gel and PABA-Gel. Be sure to follow manufacturer's directions for applying. 

"Don't Waste That Fish"

A booklet on the basic techniques of properly identifying, handling and cooking saltwater sportfish is now available through VIMS Sea Grant Marine Advisory Services. Entitled "Don't Waste That Fish," the booklet was prepared by the University of North Carolina's Sea Grant Program.

Because the publication is applicable to all major marine sportfish in Virginia waters, VIMS has elected to purchase a limited number of copies for distribution in the state. Topics covered include proper chilling of the catch, various cleaning methods (steaking, filleting, etc.), and various cooking preferences (pan frying, baking, planking, broiling, poaching and charcoaling). To order, send 25 cents per copy to cover postage and handling to the Publications Office, Sea Grant Marine Advisory Services, Virginia Institute of Marine Science, Gloucester Point, VA 23062.

SEA GRANT PUBLICATIONS AVAILABLE

The Oyster Industry in Virginia: It's Status, Problems and Promise -- Dexter S. Haven, William J. Hargis, Jr. and Paul C. Kendall. *Softbound book*, \$16.00.

Manual for Design and Operation of an Oyster Seed Hatchery -- John L. Dupuy, Nancy T. Windsor and Charles E. Sutton. *Book*. Hardbound copy -- \$10.00 and loose-leaf notebook copy -- \$7.50.

Tidal Wetland Plants of Virginia -- Gene Silberhorn. *Booklet*, \$3.00.

Biology and Identification of Rays in the Chesapeake Bay -- Joseph W. Smith and J. V. Merriner, Ph.D. *Booklet*, 50 cents.

Rays of the Chesapeake Bay. *Poster*, 50 cents.

Don't Waste That Fish. *Booklet*, 25 cents.

The Pea Crab. *Paper*, 25 cents.

Legal Symposium on Wetlands--An Executive Summary. *Paper*, 25 cents.

Advisory No. 8, Methods of Handling and Shedding Blue Crabs, Callinectes sapidus. *Paper*, 25 cents.

VIMS Sea Grant Advisory Services. *Leaflet*, Free.

Sea Source. *Catalog*, Free.

Spring Resource -- The American Shad -- William Kriete and John Merriner. *Leaflet*, Free.

The above publications can be ordered from the Sea Grant Communications Office, Virginia Institute of Marine Science, Gloucester Point, VA 23062.

Marine Resource Bulletin

A Sea Grant Advisory Service

DICK COOK

EDITOR

Marine Resource Bulletins are produced by the Virginia Institute of Marine Science as a Sea Grant Advisory Services project. Subscriptions are available without charge on written request to the editor.

William J. Hargis, Jr.

Director

1977 SPATFALL SUMMARY

Each year, researchers at the Virginia Institute of Marine Science conduct surveys to determine the degree of oyster reproduction in the various tributaries which empty into the Chesapeake Bay. To accomplish this end, oyster shells are strung on wire and suspended from stakes on public and private oyster beds.

The number of free-swimming oyster larvae that attach to the shell strings, thus becoming "spat", are counted each week from June through early October. Such spat counts aid in determining the potential of a particular area for receiving a strike, and also help predict the most likely times a strike will occur. Shells planted just before the period of maximum set stand the best chance of receiving a good strike.

The following is a general summary of results from the 1977 spatfall count in Virginia waters.

In the JAMES RIVER, where the public rocks annually supply more than 77% of the seed oysters planted commercially in the state, setting began in mid-July. In the lower river, counts were still only 10% of that recorded before 1960. With only two exceptions, the 1977 counts in the lower James were below figures recorded in the previous 3 years. The dropoff after 1960 is thought to be associated with the decline in brood stocks due to MSX, a one-celled organism which destroys oysters. Other factors contributing to this decline may have been chlorine in treated sewage or some other environmental aspect.

In the mid and upper seed areas, counts on shell strings were higher than in the previous 3 years, but still far below pre-1960 figures.

At the two stations in the POQUOSON RIVER, setting began early in July and peaked fair to moderate in mid-August. The 1977 counts in the YORK RIVER were higher at every location than counts from 1976. Spatfall in the York peaked from early through late September. At Gloucester Point the total spatfall was the highest in 6 years; upriver at Claybank, the 1977 set was the best in the last 4 years.

In MOBJACK BAY, spatset for most of the season was only fair, although the total season set was higher than that in 1976. The 1977 set in the WARE RIVER started 3 weeks later than in 1976 and was still in progress when monitoring stopped in September.

The total spatset in the NORTH RIVER was higher than in 1976 at two of the three surveys stations, but was lower at all stations compared to 1974-75 figures. Setting began in the EAST RIVER during the last half of July, peaking the third week at the Gulf Oil Dock. Setting levels

in 1977 were equal to or higher than 1976 levels, continuing the upward trend since 1970.

Spatset in the NEW POINT COMFORT area (Horn Harbor, Dyer Creek and Winter Harbor) was fair except in Winter Harbor, where above average sets have been noted since 1973. Most of the set in the MILFORD HAVEN area occurred during August and September, with the results reaching a "fair" level.

Setting began in the PIANKATANK RIVER the second week of July, with the peak occurring in August. Set levels ranged from moderate to heavy. Examinations of bottom samples indicated a strike



Paul Kendall, research assistant in the Department of Applied Biology, retrieves a shellstring from the VIMS pier at Gloucester Point on the York River.

that was well above average at Burton Point, Island Bar, Palace Bar and Ginny Point.

Sporadic setting began in late July at seven stations in the GREAT WICOMICO RIVER, with higher results than in 1975-76. Spatset in DIVIDING CREEK was less than 1975-76.

Eight out of ten locations monitored in the POTOMAC RIVER in 1977 showed a better set than 1976, and six showed better than 1975. Setting was fair to moderate on the BAYSIDE OF THE EASTERN SHORE and was still underway when monitoring ceased in September. Off the EASTERN SHORE, SEASIDE, a heavy set occurred at every station monitored. There was an improvement in spatset over 1976 in three seaside locations, and in most places it was above the average for the last four years.

For more specific information on particular locations monitored in 1977, inquiries are directed to Dexter Haven or Paul Kendall, Department of Applied Biology, Virginia Institute of Marine Science, Gloucester Point, VA 23062. 

ABOUT "WAVELETS"

In case you're wondering about the extra page in your Marine Resource Bulletin this issue...it's for the younger members of the family. We're trying to help foster a concern, interest and awareness of the marine environment in upcoming generations...reaching out to them with a variety of marine-related subjects.

Included will be projects, such as the aquarium in Series 1 and 2, and later, various biographical sketches of marine life and wise use of some of our precious marine resources.

Most of the "Wavelets" will be complete in one page. Our aim is to cover the subject interestingly and briefly, so that the information will be used. Any constructive feedback, pro and con, is appreciated... the Editor.

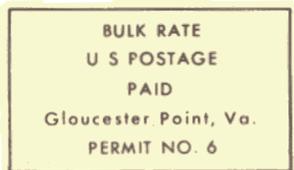
NEW OYSTER BOOK

"The Oyster Industry of Virginia: Its Status, Problems and Promise" is a 1,078-page study, comprehensive in scope, by Dexter S. Haven, William J. Hargis, Jr. and Paul C. Kendall.

The publication, designated "VIMS Special Paper in Marine Science No. 4," includes 120 tables and illustrations, and contains chapters dealing with history, production, extent of public and leased bottom, setting of oysters, diseases, predators and recommendations for improving the industry.

In addition, the paper explores many of the fundamental problems which have affected the Virginia oyster industry, and most specifically with the catastrophic drop in state-wide production since 1960.

Copies are available at a cost of \$16.00 each through the Sea Grant Advisory Services Office, Virginia Institute of Marine Science, Gloucester Point, VA 23062.



ADDRESS CORRECTION REQUESTED