



Marine Resource Bulletin

A Sea Grant Advisory Service

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MARINE ICING HAS LASTING EFFECTS

The effects of this winter's record cold wave in the eastern United States, including Virginia, didn't stop at the water's edge. The severe temperatures caused serious icing conditions in the Chesapeake Bay and its tributaries. The ice is gone now that spring has arrived, but the damage that the weather inflicted on stocks of fish and shellfish in Virginia waters will continue for a few years.

Oysters were particularly hard hit by the winter weather. During the period of the most severe cold,



This aerial photograph shows icing at Cape Charles on the Bay side of the Eastern Shore. The town is near the center of the picture.

they were essentially dormant, and the mechanism by which oysters rid themselves of dirt and silt was inactive. The winter storms tended to bury or cover the oysters which were bedded on marginal bottoms, smothering them. In other shallow areas, the oysters were exposed to ice, snow, and bitter winds, due to abnormal tides which this year were sometimes as much as two feet below normal.

These conditions combined to produce losses far in excess of normal winter kills of oysters. The losses were greatest on the sea side of the Eastern Shore, where many of the seed rocks are intertidal. In that area, losses sometimes approached 100%. On leased seed rocks where growers had taken up 25% of their catch before the cold weather, all that was not harvested was lost. In the Chesapeake Bay, losses were high in depths of under four feet. The Rappahannock River experienced mortalities of 30 to 40%. Losses of similar size were reported in shallow waters of the James and York Rivers, although one bed in the James reported a loss of nearly 100%.

The extremely cold water temperatures also increased mortality rates among blue crabs. In the area of the mouth of the Potomac River, up to 75% of the blue crabs were killed; as many as 50% may have been lost at the York River mouth; and around 10% died at the Virginia Capes. Almost all the dredge catches were made in deep water, and few crabs were found in the usually productive grounds 25 to 40 feet deep.

Most of the dead crabs were from the hatch of 1975, an unusually small crop even before the winter kill. As a result crabs will be extremely scarce until the 1976 year class becomes available in midsummer. The outlook for young crabs born during the 1976 hatch year appears to be better, with large numbers from that year's big class surviving the winter unscathed.

The effect of the weather on finfish of interest to anglers and the seafood industry is an open

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A CLOSER LOOK.

at the DEPARTMENT OF APPLIED BIOLOGY

VIMS Department of Applied Biology conducts studies on the basic biology of molluscs so that the resource may be better managed. This means bigger, better, and cheaper clams and oysters for consumers.

The department has been organized for 12 years and presently has a staff of 10. Research centers around the physiology, ecology, and distribution of molluscs. Over half the work is done in the field, as scientists and technicians collect samples and gather data in the state's rivers and estuaries.

The following are among projects undertaken by the Department of Applied Biology:

- Researchers conducted a basic study on the distribution of hard and soft clams in the state, and mapped and charted the clam beds.
- A mechanical oyster harvester was developed which uses the escalator system from a conventional soft clam harvester. However, it has a completely new harvester head designed to rake oysters from the bottom with minimal damage to the beds. This gear is more efficient and cheaper than the commonly used dredge, and presents a solution to the decrease in skilled oyster tongs.
- Researchers studied the distribution of oysters on public seed areas, and established for the first time the density of oysters per acre. Oyster growers must have seed from these state bottoms to plant on their leased grounds, and the VIMS data help managers determine its availability.
- The department monitors the density and seasonal setting of oysters on public rocks. This information is published so oyster growers and management agencies may put shells down just before the spatfall has traditionally been heaviest. Department personnel, with the aid of the Virginia Marine

Resources Commission, check almost 90 stations weekly.

- The staff determines the damage done to shellfish beds after large storms, and aids federal and state agencies by examining the impact of construction of bridges, tunnels, and navigation facilities on molluscs and fishery resources.
- One of the department's most ambitious projects to date is the recently completed comprehensive review of the oyster industry, including current problems and possible solutions. Oystermen have been increasingly hampered by rising labor and equipment costs, coupled with a lack of efficient harvesting methods. The report should give renewed focus to one of Virginia's oldest industries.

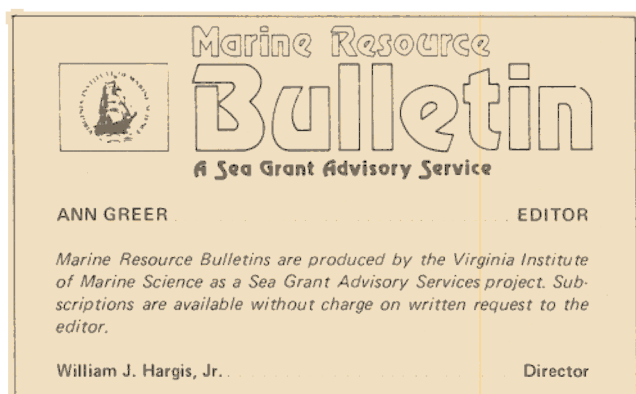
VIMS COSPONSORS SEAFOOD MERCHANDISING WORKSHOP

VIMS, along with the Virginia Seafood Council and Virginia Polytechnic Institute & State University, held a workshop for seafood retailers on March 23. Approximately 65 people representing small and large businesses attended.

Specialists suggested ways to improve merchandising efforts. To properly promote a product, businessmen must select a market they want to focus on, such as homemakers or families. Next they should develop a product mix tailored to the chosen market, and a promotion strategy to appeal to the market.

The speakers gave other tips on problems concerning seafood marketing. Sanitation standards should be set and strictly observed. The average American consumer is not familiar with types of fish and how to prepare them. Beef or poultry is often chosen at the market, even though most seafood compares favorably in price and nutrition. This problem can be dealt with by providing coupons for fish, distributing recipes and flyers on how to cook different species, and using the media for promotional purposes.

A publication from the Pacific Sea Grant Advisory Program, "Operations Manual for Seafood Retailers", may be ordered from the University of California Marine Advisory Program, University of California, Davis, CA 95616.



THE FISH HOUSE KITCHEN

It's a sure sign that spring has arrived when shad becomes available in East Coast fresh fish markets. These fish are caught as they make their annual spawning migration from the ocean to rivers from Florida to Canada.

Shad roe is valued for its flavor, while shad bones are cursed for their number. Try this Bay-style roe recipe, or this alternative way to deal with the battle of the bones.

SHAD ROE BAY STYLE

1 pair roe
Salt, pepper
Butter

Chopped parsley
Lemon wedges
1 T. browned butter

Wipe raw roe with damp towel. Season with salt and pepper. Melt butter in small iron skillet — butter should be about ¼ inch deep. Slip roe into melted butter, cover, and cook slowly so roe won't pop and spatter. Takes about 25 minutes to cook through.



"BONELESS" BAKED SHAD

Clean shad and place a bay leaf in cavity. Sprinkle with garlic salt, pepper, and lemon juice. Wrap tightly in aluminum foil and bake in 250° oven about 5–6 hours for a 4½- to 5-pound shad. The bones will become like those in canned salmon.

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question. Most finfish species were not present in the Bay during the period of the most extreme temperatures, but juvenile croaker may have been affected in upriver nursery areas. If the 1976 year class of croakers was lost, it will mean a shortage of pan sized fish next year and a scarcity of larger sizes in the two years following.

Newly hatched menhaden were also entering the river nursery areas in January and February. The harm to menhaden won't be known until further field sampling is conducted.

To deal with the economic effects of the cold weather, a state of disaster was declared for the region including the Chesapeake Bay fishery. The federal Small Business Administration (SBA) made available a loan program to aid fishermen who had

suffered economic damage as a result of ice in the waterways. The assistance program provided loans up to \$500,000.

At the beginning of April, around 700 loan applications had been requested. Of these, around 220 were returned, and 105 were approved. The program covers physical damages (repairs to nets, boats, docks, etc., due to the ice and cold) and economic injury (to aid fishermen, seafood processing plants, etc., incurring fixed obligations even though they weren't able to fish). The deadline for application for physical damage relief was April 28. The deadline for economic injury assistance has been extended to November 28.

For more information about loans, call the SBA in Richmond at (804) 782-2617.



A VIMS educational service

marine mailbag

Q I am doing a science fair project on marine mammals. I would appreciate any information on this topic.

Christine Byrum, Suffolk, VA

A Whales, dolphins, seals, sea lions, walruses, and sea otters are all marine mammals. Like man and other land mammals, marine mammals breathe air, nurse their young, and are warm-blooded.

It is believed that these mammals once lived on land and have adapted to the sea. Due to this drastic change in environment, many adjustments had to be made for life in the sea. The bodies of marine mammals are streamlined to enhance movement in the water. Limbs used for locomotion on land are modified to become flippers. The tails of whales and dolphins, unlike fishes, are horizontal, enabling them to dive and surface easily and gracefully. All marine mammals are insulated against the cold with a layer of blubber, a coat of hair, or a combination of the two.

Whales and dolphins are probably the most fas-

cinating of the sea mammals to man. Both species are members of the order Cetacea, which is divided into two groups: *toothed whales* — dolphins, beaked whales, sperm whales and killer whales; *baleen whales* — blue whales, right whales, fin whales, and California gray whales.

In place of teeth, baleen whales have a calcareous structure with fringe hanging down from it which sieves or strains plankton, small shrimp, and small fish. Toothed whales eat fishes, squids, octopuses, and occasionally other large mammals.

The brain size and structure of dolphins and whales are comparable to man's. Much research with these mammals has been undertaken, especially in the area of communication with one another, and man is trying to communicate with them.

Recently, the United States passed an act protecting marine mammals. Under this law, no whales or dolphins may be caught for commercial use, and no products using by-products of the Cetaceans may be marketed. Russia and Japan, however, still commercially hunt for whales, even though many species are close to extinction. There is a concerted effort by several conservation groups to stop all whaling worldwide.

VIMS OFFERS REWARD FOR TAGGED LOBSTERS

One thousand lobsters are being tagged and released in offshore waters by Virginia scientists as part of a state-federal lobster management program sponsored and funded by the National Marine Fisheries Service.

The tagging program is being conducted from mid-April until the end of June in lobster catch areas 70 miles off the coasts of Virginia and Maryland. VIMS scientists are working from vessels which trap lobsters commercially. All sizes of male and female lobsters are being tagged and released near the area of capture.

The study has several objectives. Fishing mortality rates (the percentages of lobsters taken from the population by fishing) may be estimated and used to approximate the total number of lobsters in the offshore population. Growth rate will be determined from differences in size at release and recapture. Direction and speed of movements of the lobsters between release and recapture locations will be obtained.

Although fishing regulations prohibit capture of lobsters under minimum legal size and egg-bearing females, these categories are included in the tagging program. Fishermen have permission to land any

VIMS-tagged lobster found offshore from New Jersey to North Carolina. A reward of \$5.00 will be paid for the return of the lobster and tags; \$2.00 will be paid for the tags alone. It is requested that the lobster be returned with tags since growth data may not be obtained if only the tags are returned.

Upon capture of a tagged lobster the fisherman should keep the lobster alive or frozen with tags in place, and keep a log of the tag numbers, the date, and the location of capture. On returning to port, the fisherman should call VIMS collect (804) 642-2111 to report the capture. As a convenience to the fisherman, cooperating lobster buyers may place the telephone call to VIMS, pay the rewards and keep the lobster until it can be examined by scientists.

VIMS personnel will either examine the lobster or will make arrangements with scientists in neighboring states to make the examination. Legal-size lobsters will be returned to the fishermen or lobster buyer.

Posters showing location of the tags on the lobsters are being placed at various ports in the coastal states from New Jersey to North Carolina.

SHAD DEBONER SEEKS BUSINESS IN VIRGINIA

With the hands of a skilled surgeon, Gus Wirth, a twenty-year veteran of the New York and Philadelphia docks, is embarking on a novel enterprise. He is probably the only man who commercially debones that bony critter shad.

Wirth follows the shad up the East Coast from Florida to Virginia during mid-January to early June. His goal is to set up a market for shad in Virginia.

"I would like to sell in Virginia the 2,000 pounds of shad per day that we fillet and debone.



Commercial shad deboner Gus Wirth demonstrates his skill.

Right now I'm having a hard time convincing area restaurants and fish markets it can be done," explained Wirth.

Wirth, who can debone a shad with 14 cuts, is assisted by his son who does the filleting. According to Wirth it takes 8–18 years to develop the speed and dexterity to debone shad.

Marketing boned shad isn't Wirth's only problem. He recently spent a day just trying to find some shad to buy. Wirth, who is now located at the old King Seafood building in Rescue near Smithfield, has been getting most of his shad from the York River.

According to VIMS scientists, Wirth's problem is not uncommon. Due to environmental changes as a result of water pollution, increasing marine construction, and the pressure exerted by foreign fishing fleets, experts say shad may decrease throughout the East Coast.

This prospect doesn't discourage Wirth, who travels with his son in camper trucks. What does concern him is finding supplies of shad.

"I've got to get the word out that I'm looking for shad and that I want to distribute my product throughout the state," said Wirth.

Most of his boned shad is shipped to Philadelphia. He has been able to sell shad roe more widely since it is considered a delicacy.

"I have men in Philadelphia who are just waiting for the word from me to come down to fillet and bone shad," he stated. "I can't do anything right now because the restaurant and fish distributor markets haven't opened up."

EDITOR'S NOTE: If you would like to try deboning shad, there's a publication that can help. "A Very Special Fish", produced by the University of North Carolina Sea Grant College Program, discusses the deboning process step by step and includes large illustrations. Copies are available from UNC Sea Grant, 1235 Burlington Labs., N.C. State University, Raleigh, NC 27607. VIMS also has a limited number of copies.

NEW IDEA FOR MARINA OPERATORS

Marine Resource Advisory No. 13, "Dry Stack Storage—A Promising Marina Alternative", is now available without charge from VIMS Sea Grant Publications Office. The advisory describes basic features of this relatively new concept in storing and launching boats of up to approximately 26 feet in length. Included in the publication are the results of a survey conducted at stack storage marinas in Virginia, Maryland and North Carolina. Survey data discussed includes initial storage capacities, expansion rates of existing marinas, stack storage customer travel patterns, marina site characteristics and the most common stack storage methods and problems observed in the three-state area.

CRM DOCUMENT FOSTERS PUBLIC COMMENT

Two years ago the Commonwealth of Virginia began developing a Coastal Resources Management (CRM) Program to improve the use of coastal land and water resources.

On February 1, 1977, CRM staff issued the publication "Alternatives for Coastal Resources Management in Virginia". This document is being distributed to state agencies, regional planning district commissions and their advisory groups, local governments, wetlands boards, libraries, universities, and other organizations for review and comment.

The document discusses the following eight problem areas which reflect the concerns of citizens and government officials at the state, regional, and local levels: fisheries management, discharges and spills, non-point pollution, energy resource development, water use permitting, shoreline erosion, land and water use relationships, and governmental organization and coordination. Understanding these issues should lead to solutions for improving coastal resources management.

The federal Coastal Zone Management Act of 1972 outlined the following six basic study areas for consideration in the development of a management program: permissible land and water uses, priority of uses, areas of particular concern, national interest and federal consistency, and ideas

and suggestions for management and boundaries. "Alternatives for Coastal Resources Management in Virginia" discusses these national study areas. The 1976 amendments to the Coastal Zone Management Act added three more study areas: public access to beaches, shoreline erosion, and the impact of energy facility siting on coastal resources. These study areas are now being incorporated into Virginia's plan.

A primary purpose of the CRM document is to encourage and stimulate input from Virginia's government officials, interest groups, businesses, and citizens. The review and comment phase of the draft will include a two-day workshop to be held in Tidewater on June 23-24, 1977. All comments and recommendations from this meeting will be considered by CRM staff in their preparation of a new "public hearing draft" which should be ready for circulation and review in September 1977. The public will then have an opportunity to comment on this new draft at public hearings scheduled for October 1977. After the public hearings, a final plan will be prepared and forwarded to the federal government in January 1978 for their review.

For further information write or call: Office, Secretary of Commerce and Resources, Richmond, VA, 23219, Tel: (804) 786-7652.



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