



# MARINE RESOURCE INFORMATION BULLETIN

A SEA GRANT ADVISORY SERVICE

Virginia Institute of Marine Science, Gloucester Point, Virginia 23062

## Is Shoreline Erosion Your Problem? Here's A New Solution

The small cinderblock house clung precariously to its little piece of Eastern Shore Virginia. Its foundation came closer and closer to the waves of the Chesapeake Bay.

A few weeks later it was destroyed.

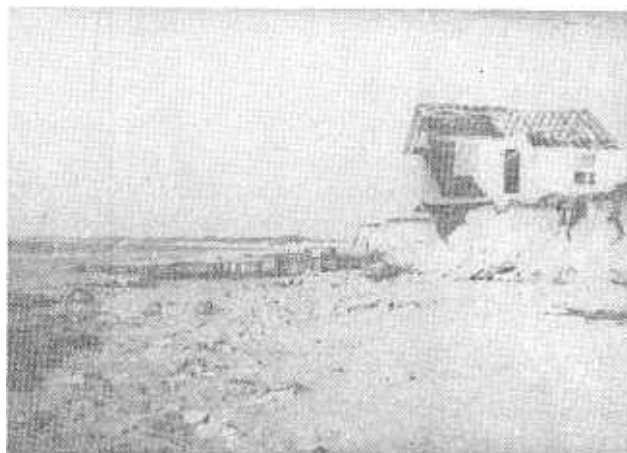
The scene is a familiar one. People are building nearer to the shoreline. Also, the erosion rate has increased in many areas. Often attempts at shore protection with rip-rap, groins (jetties) or bulkheads are unsuccessful.

With funding from Sea Grant, two VIMS coastal specialists found another solution to Bay erosion. Gary Anderson and Dr. Robert Byrne employ a sill, an intertidal structure placed parallel to shore usually no more than 50 feet from mean high water.

A sill is made of individual nylon Dura-bags (13 ft. long, 5 ft. wide, 2 ft. high) dipped in polyvinylchloride for strength. The bags are pumped full of sand and placed on the beach to trap eroding materials. Sills are cheaper than other methods and can bring dramatic results.

A shoreline farm in Northampton County near Eastville is a case in point.

Five groins costing \$7,500 were installed when the beach was 20-25 feet wide. The updrift groins were successful and made their section of the beach



This house on the Eastern Shore was no match for Chesapeake Bay erosion. The photographs were taken about 1½ months apart.

approximately 60 feet wide. But in nine months the shoreline retreated 20 feet past the last two downdrift groins, leaving a beach of only 2 to 5 feet at high tide.

Continued on page 8

# 200-Mile Fishery Zone Becomes A Reality

On April 13, 1976, President Ford signed the Fisheries Conservation and Management Act.

Rapid depletion of national coastal resources by foreign fleets and lack of international agreement on granting nations control of their coastal resources prompted Congress to act independently to protect fishery resources and the domestic fishing industry. Virginia Representative Thomas N. Downing co-sponsored the bill.

The Act, which goes into effect March 1, 1977, extends federal control of fisheries activities from a 9-mile zone (3 to 12 miles offshore) to a 197-mile zone (3-200 miles offshore). Within this zone, the United States has management authority for all fish, except highly migratory species such as tuna. Management of groundfish and shellfish such as cod, haddock, and surf clams is very probable; management of migratory coastal species such as striped bass (rockfish) and bluefish is less likely. The states will maintain jurisdiction over inshore species such as oysters and blue crabs.

The coastal states will also have considerable input into management plans developed for federal waters. The Act creates regional councils to determine regulations for species in their region. In the Mid-Atlantic area (Va., Md., Del., Penn., N.J., N.Y.), the council will have 19 members. Members will include


each state's Commissioner of Marine Resources, the National Marine Fisheries Service (NMFS) regional director, and 12 members selected by the Secretary of Commerce from nominees suggested by the state governors. There must be at least one member selected from each state. The governor's nominees must be "knowledgeable or experienced with regard to the management, conservation, or recreational or commercial harvest, of the fishery resources of the geographical area concerned."

Technical committees for each region will provide the necessary biological, economic and social information for councils to design regional plans. The actual composition of the committees has not been determined, but they will most likely include biologists, economists, lawyers, and industry officials.

The procedure to obtain permits to fish offshore will vary according to the management plan and whether the application is from a U. S. or a foreign vessel. The management plan for each species will determine council approval of domestic applications, whereas foreign approval will be based on the domestic capability to harvest the resource.

Domestic fishermen will be given first preference to the resource. When there is no capability for domestic boats to catch the available resource, foreign vessels may receive permits. They will probably be charged a fee on the basis of dollars per ton caught. The regional councils, Department of Commerce and Department of State will be involved in the permit procedure.

At this time, there is optimism that the new legislation will assist in preserving the offshore resources and restoring the domestic fishing industry. It will take time, informed leadership and active participation on the part of domestic fishing interests.



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ANN GREER EDITOR

Marine Resource Information Bulletins are produced by the Virginia Institute of Marine Science as part of a Sea Grant Advisory Services project under P.L. 89-688. Subscriptions are available on written request to the editor.

William J. Hargis, Jr. Director

## Environmental Concerns To Be Discussed

Two symposia of interest to the marine community have been organized by the Environmental Science Section of the Va. Academy of Science. The symposia will be part of the Academy's 54th annual meeting at George Mason University in Fairfax.

May 13 at 2:00 p.m. the environmental aspects of coastal zone management will be discussed. Senator Joseph V. Gartlan, Jr. (D-Fairfax), chairman of the Va. Coastal Study Commission, will serve as moderator. The panel will include specialists in state planning, coastal zone management administration, seafood industries, and environmental law.

A symposium on the environmental concerns of outer continental shelf development will be May 14 at 9:30 a.m. Maurice P. Lynch, an assistant director at VIMS, will moderate a panel consisting of representatives from the Office of Technology Assessment, the Bureau of Land Management, the Va. Energy Office, and VIMS.

Interested persons are invited to attend these sessions, which will be in Robinson Hall, Room 2244.

## Tide Recording Station Will Aid In Flood Warnings

An automatic tide recording station was installed on the Chesapeake Bay Bridge Tunnel April 10. It will be used to improve technology involved in the measurement of tides and water levels.

The station is the result of three years' effort by the National Ocean Survey, the National Weather Service, the U.S. Army Corps of Engineers, and the Chesapeake Bay Bridge Tunnel Commission. It will be maintained by the Survey's Atlantic Marine Center in Norfolk.

The station's tide recorder will automatically telemeter water levels to the National Weather Service at the Norfolk Airport, providing information to aid in warning the public of rising water levels from winds or heavy rains. It will provide data not only for the immediate area, but also the Upper Bay areas where flood waters are a chronic threat to residents of low lying sections.

Information transmitted to the U.S. Army Corps of Engineers in Norfolk will assist in the design of construction projects and allow additional time to establish precautionary measures during flood periods.

## Free Medical Care For Fishermen

Commercial fishermen who work aboard a documented fishing vessel of 5 gross tons or over, and who have engaged in commercial fishing activities for at least 60 days, are eligible for free medical care through the U.S. Public Health Service's Outpatient Clinics. Also eligible are fishermen who are injured in the course of their duties, even if they have not worked 60 days prior to their application for free medical care. Owners of documented fishing vessels are eligible only if they are involved in the actual operation of the vessels.

To obtain the medical benefits, each commercial fisherman should obtain a Master's Certificate of Service from his local office of the U.S. Public Health Service. The form must be signed by the captain of the boat on which the fisherman works. The fisherman retains the form and presents it to the nearest Public Health Service Outpatient Clinic when applying for treatment.

Further information on this program can be obtained by contacting any Public Health Service office.

# CZM Program Gains Legislative Attention

Virginia's coastal zone planning program recently received a much needed vote of support from the State Legislature. During the last session, Senator Joseph V. Gartlan, Jr., sponsored Senate Joint Resolution Number 39 which directs the year-old Coastal Study Commission to study and advise the Governor and General Assembly on the State's coastal zone management (CZM) program, particularly in the area of policy and legislative recommendations. The CZM program is assessing Virginia's capabilities for effectively managing its valuable coastal resources in relation to both existing and potential resource problems. Providing the best possible balance between environmental quality and economic growth in the coastal area is the overall program objective.

In 1975, the Virginia General Assembly created the Coastal Study Commission (comprised of seven state legislators, two local government representatives, one industry spokesman, and one environ-

mentalist) to study and identify possible offshore, interface and onshore effects of the impending exploration and development of Mid-Atlantic Outer Continental Shelf (OCS) oil and gas resources. Faced with limited time and resources, the Commission was required to submit an interim report by December 1, 1975, and a final report and recommendations by December 1, 1976. Joint Resolution No. 39 resulted from the interim report recommendations. The Resolution identifies the state's CZM program as the best means of accomplishing the advanced planning needed to minimize potential OCS impacts on Virginia.

In the course of the Commission's CZM study it is also directed to:

- 1) "Consider what Virginia's role might be in working for and with the interests of coastal communities as the CZM planning program continues ..."

Continued on page 5

## Marine Industry Seen As Good Investment

Almost 100 marine dealers, marina and boatyard operators, and bankers participated in the Virginia Marine Trades Seminar April 14 at Gwynn's Island.

The Sea Grant Program at VIMS and the Virginia Federation of Marine Trades sponsored the day-long seminar. Topics included investment opportunities in the marine industry, how marine businessmen should approach their bankers, government guaranteed loans for construction of fishing vessels over 5 net tons, marine insurance for marine dealers and marina operators, coastal zone management planning in Virginia and shoreline permit applications.

The seminar's financial presentations emphasized that the marine industry, with

its commercial and recreational components, is stable and highly flexible. Lending institutions should look to the marine industry for its investment potential.

At the same time, marine businessmen should take time to explain to lenders the nature of marine business. The businessman should be prepared to show the lender that the marine industry's rate of return on dollars invested far surpasses that of its chief competitor for investment dollars, the automobile industry.

You may get a more detailed account of financial and other portions of the seminar by contacting Jon Lucy at VIMS.

# Oyster Meat Quality Average At Most Stations

Oyster meat quality in the Rappahannock River was average or above average at all stations. It was highest at Urbanna where a value of 9.0 was recorded. Quality has declined since December and is slightly lower than a year ago.

Indices in the York River were average at all stations.

In the James River, oyster quality in March was below average at all sta-

tions. This condition has persisted since November 1975. Values for 1976 are substantially below those of February 1975.

Oysters do not feed during the winter. Therefore, condition indices in all systems remain the same or decline slightly from December to March. Oyster quality is expected to increase as oysters begin to feed in mid-March.

	November		December		February		March	
	1974	1975	1974	1975	1975	1976	1975	1976
<b>JAMES RIVER</b>								
White Shoals	-	4.0	6.0	4.3	6.1	-	-	3.1
Wreck Shoals								
shallow	-	4.1	6.7	3.1	6.6	-	-	3.0
deep	-	4.4	5.9	3.8	6.4	-	-	2.9
Point of Shoals	-	3.4	6.6	3.6	6.6	-	-	3.5
Horse Head	-	3.0	4.3	2.8	4.2	-	-	2.1
<b>YORK RIVER</b>								
Green Rock	7.4	6.8	7.1	6.3	-	-	-	6.6
Pages Rock	8.0	7.5	7.9	7.0	-	-	-	7.6
Aberdeen Rock	8.0	7.3	7.6	7.1	-	-	-	6.4
Bells Rock	-	8.5	8.1	-	-	-	-	6.3
<b>RAPPAHANNOCK RIVER</b>								
Urbanna	-	11.6	10.8	11.0	-	-	11.2	9.0
Smokey Point								
shallow	-	8.2	8.3	8.6	-	-	8.8	8.8
deep	-	9.9	9.7	9.5	-	-	7.8	7.3
Morattico	-	9.0	9.8	8.9	-	-	8.2	8.0
Bowlers Rock	-	8.9	10.9	8.9	-	-	9.1	8.3



High index number (7.6 and up) for good quality oyster. Meat fills shell.



Medium index number (6.0 to 7.5) for fair quality oyster. Meat does not fill shell.



Low index number (4.0 to 5.9) for poor quality oyster. Much unfilled space in shell and meats are watery.

## CZM Continued from page 4

2) "To facilitate communications between all concerned with the CZM program ..."

3) "To work in concert with the CZM planners (the Division of State Planning and Community Affairs, The Virginia Institute of Marine Science and the Virginia Marine Resources Commission) to guarantee all local interests access to the program,"

The Commission's recommendations concerning Virginia's coastal zone manage-

ment program are to be included as part of its final report to the General Assembly in December 1976.

Those wishing further information on the Coastal Study Commission or the Coastal Zone Management Planning Program should contact, respectively, Mr. Bragdon R. Bowling, Division of Legislative Services, P.O. Box 3-AG, Richmond VA 23208 (804/786-3591) or Mr. Ronald L. Schmied, Virginia Institute of Marine Science, Gloucester Point VA 23062 (804/642-2111, extension 190).



A VIMS educational service

## marine mailbag

- Q. I am doing a term paper on dolphins and would appreciate any information you may have on this subject. I am especially interested in any research that has been done on their intelligence.

Donna Wenk  
Linden, New Jersey

- A. There are two groups of animals known as dolphins: the fishes of the genus Coryphaena, which are cold-blooded relatives of the bass and perch; and the warm-blooded mammals which are grouped with whales and porpoises in the great order Cetacea. The fish dolphins lay eggs, have small brains, gills and scales. They are highly regarded by sportsmen and are excellent for eating. The mammalian dolphins have their young alive, nurse them, have no scales, and breathe air with lungs much as we do. Most remarkably, their brain is comparable in size to a human brain and is well developed. All marine mammals are protected by federal law, and will not be found on restaurant menus in the United States.

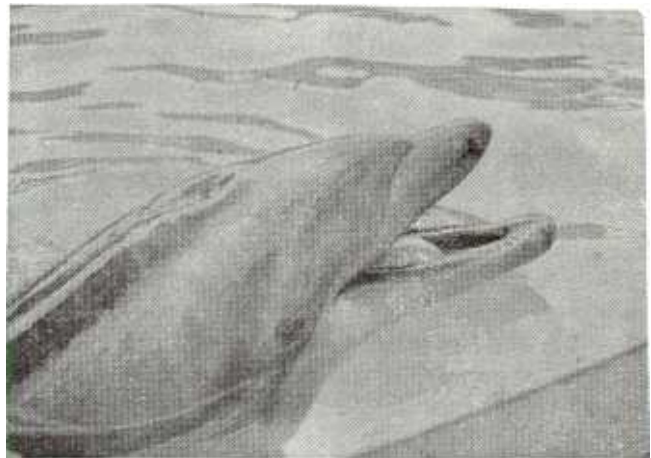
Dr. John Lilly, one of several researchers studying dolphins' intelligence, believes he will be able to communicate with the bottle-nose dolphin, Tursiops, in a few years.

Dr. Lilly says that a minimum brain size of about 1,000 grams is necessary for an animal to be considered capable of speaking in the way normal human beings do. Among earth animals other than man, only elephants and Cetaceans have such a large brain. A comprehensive book on the scientist's work is Lilly on Dolphins, published in paperback by Anchor in 1975.

Dr. Lilly has also contributed a chapter to a more general work on Cetaceans, Mind in the Waters, which

celebrates the consciousness of whales and dolphins. "Consciousness" is used instead of "intelligence" because of our lack of understanding of the real nature of intelligence, even in man. The book is edited by Joan McIntyre of Project Jonah, an international organization seeking protection for whales and other Cetaceans.

Mind in the Waters is a large format, well-illustrated book with sections on the brains and consciousness of whales, as well as myths, observations, poems, and a plan of action for saving these animals.



This bottle-nose dolphin at Sea World in San Diego seems to be asking for a fish or a back rub. The public usually supplies plenty of both to these appealing animals.

If you wish to help Ms. McIntyre and others save the whales, you may contact them at Project Jonah, Box 476, Bolinas CA 94924. You may also wish to contact The Whale Campaign, New York Zoological Society, New York NY 10460.

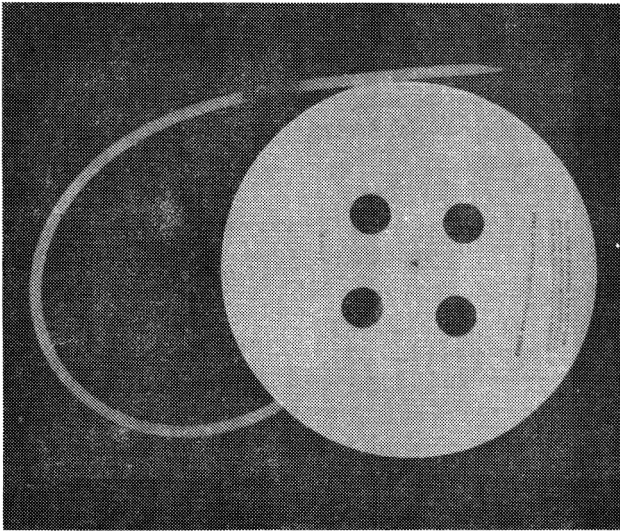
Many anecdotes supporting the "intelligence" of the dolphins can be found in the chapter on "Intelligence Under the Sea" in Dolphins, the Myth and the Mammal, by Anthony Alpers, published in 1961 by the Houghton Mifflin Company.

- Q. While my friend and I were searching through a part of my attic, we

found a wierd-looking toy with your address on the attached sticker. Please tell me what it is and what it is used for.

Thomas Larsen  
Richmond, Virginia

- A. The "weird toy" which you found in your attic is a plastic "seabed drifter" used in a completed study of ocean currents near the mouth of Chesapeake Bay. The drifters were released from a known point on a particular date, and returns of the information requested on the sticker enabled scientists here at VIMS to get a general idea of where the currents had carried them.



Floating bottles were used to study surface currents, while the seabed drifters were weighted to sink into the bottom drift.

## Funding For Fishermen Explained

A booklet for commercial fishermen about a program which allows them to accumulate funds for construction or improvement of their fishing vessels has been published by the National Marine Fisheries Service.

"Capital Construction Fund" is a 24-page booklet of most asked questions,

and detailed answers, concerning the NMFS program which provides tax deferrals for commercial fishermen to construct, reconstruct, or, under limited circumstances, acquire fishing vessels. The program permits fishermen to defer payment of Federal taxes on taxable income from the operation of their fishing vessels, thus, in effect, giving them an interest-free loan from the Government for the construction or improvement of fishing vessels.

The Department of Commerce booklet may be obtained from the National Marine Fisheries Service, Financial Assistance Division, Washington, D.C. 20235.

## A Few Announcements

Four universities will offer a course June-August for teachers and other interested persons on conservation of Virginia's natural resources.

The three-week session is scheduled on different dates at Va. Polytechnic Institute & State University at Blacksburg and Reston, Va. State College, and The College of William and Mary. Study of geology, marine life, soil and water, forests, and wildlife will be emphasized. The course may be taken for credit.

For an application form and further information, contact the Va. Resource - Use Education Council, c/o E. W. Mundie, Seitz Hall, VPI & SU, Blacksburg VA 24061.

The Shellfish Institute of North America and National Shellfisheries Association Convention will be held June 20-24 at the Americana of Bal Harbour, Miami Beach, Florida. If you would like more information, contact Everett Talley, Executive Director, Shellfish Institute of North America, Suite 9, 212 Washington Ave., Baltimore MD 21204.

The Sixth National Marine Education Conference is scheduled for October 26-29 at the Asilomar Conference Grounds, Pacific Grove, CA. The conference is for educators in marine-related fields from kindergarten to graduate school. For further information, write Thayer C. Shafer, Coordinator, 546-B Presidio Blvd., San Francisco CA 94129.

## Shoreline Erosion Continued from page 1

One house on the property fell into the Bay. If the situation had been allowed to continue, erosion would have caused all groins to separate from the shoreline within two years.

In June 1974, Anderson installed a sill on the same property. The landowner spent \$50 each for 16 bags, which was one-half to one-fourth the cost of alternative structures. Each bag weighs five tons when filled, and cannot be moved by waves occurring in the Chesapeake Bay.

Within three weeks the area between the first two of three eroding sections of the installation gained 200 cubic yards of sand. The beach width was doubled, from 30 to 60 feet. Three months after installation the beach width in the remaining section had increased from 5 to 65 feet with the addition of 800 cubic yards of sand. The back portion of the beach was heightened four feet. The sill was so successful that the owner of the adjacent property installed one in November.

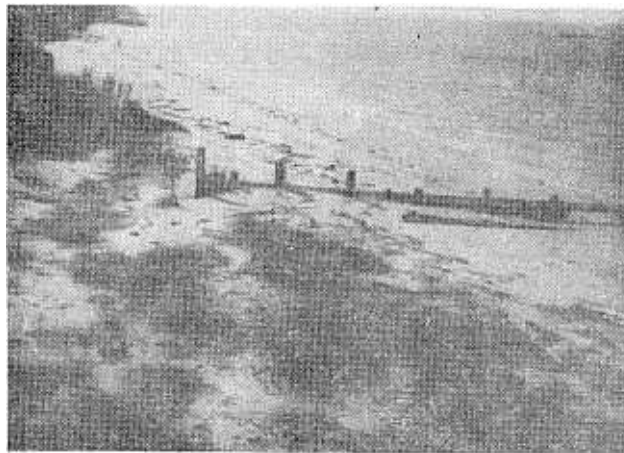
The storm of March 16, 1976, was the real test for the sill. Water levels were four feet above mean high water and winds were in excess of 60 m.p.h. The unprotected coast lost 12 feet of cliff in one day. The section of the beach with groins retreated 60 feet and water reached the base of the cliff. But the water never got closer than 20 feet to shoreline protected by the sill.

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ADDRESS CORRECTION REQUESTED

There are ten sills on the Chesapeake Bay, each laid out to suit the criteria of the area. Before you decide that a sill is just the thing for your eroding shoreline, check with Gary Anderson at VIMS. Different types of protection are suited for different shorelines, and study of the property is needed to determine the best system and the construction design.



A section of the eroding Northampton County beach restored by the sill. Vegetation has appeared on this natural-looking shoreline.

A sill is especially beneficial when used for erosion in an area with no other shoreline structure. Once the sill has corrected the problem and elevated the profile of the beach, normal processes continue. Dunes can appear as well as vegetation and animals. The beach, with the sill hidden under the sand, can increase the wildlife habitat and have a natural appearance.

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