

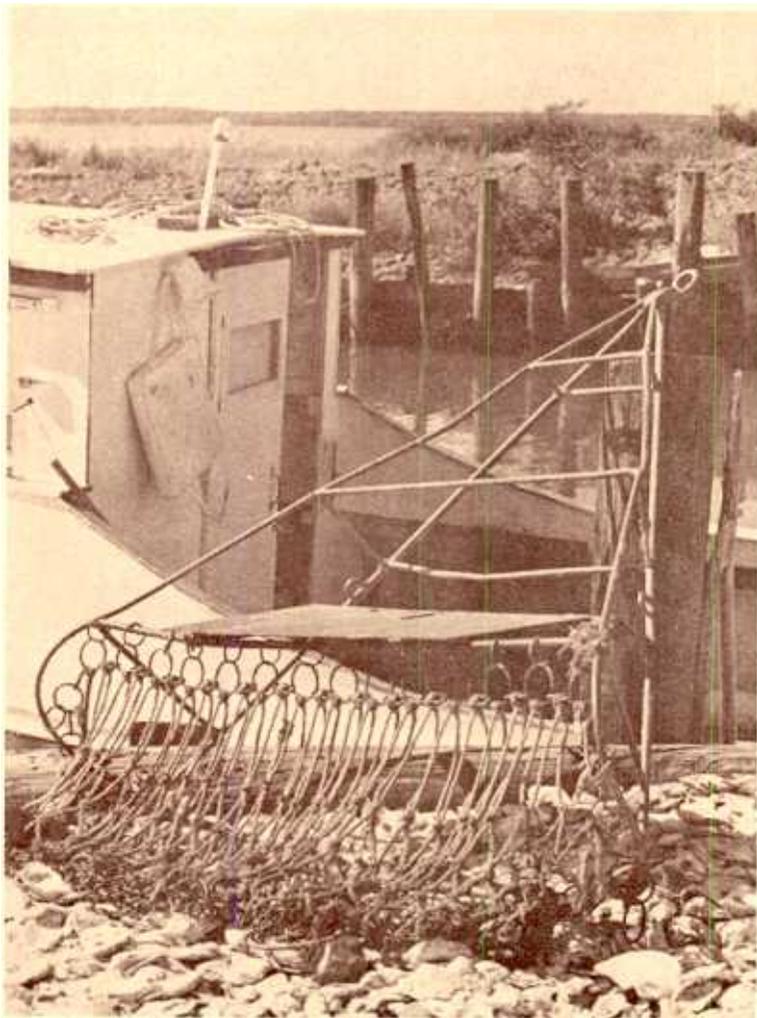
Marine Resource Bulletin

A Sea Grant Advisory Service

Vol. X, No. 6

November/December 1978

THE AMERICAN OYSTER



During the 1950-60 decade, prior to depletion by MSX, about 80 percent of Virginia's average oyster production came from leased grounds, traditionally harvested by dredge (foreground). Today, overall production from these areas is down due to MSX, but unfavorable economic conditions and antiquated production systems also are major factors.

WHAT GOLD IS TO FORT KNOX, the oyster is to those who make their living on the waters of Chesapeake Bay and similar Mid-Atlantic estuaries. From the time of earliest colonization, the American oyster (*Crassostrea virginica*) has been chronicled as the Number One shellfish of

the Mid-Atlantic Seaboard, and for good reason. Whether consumed in the half shell at a raw bar, roasted, fried, stewed, in a pie or frittered, there just isn't any way this shellfish doesn't taste delicious. Heated discussion may arise over which way is the best to prepare the animal, but

there is little dispute over its overall lofty position as a premier seafood.

When Indians were the sole inhabitants of North America, oysters were plentiful all along the Atlantic Coast and formed a staple in the diets of coastal tribes. It has been estimated that a single mound of discarded shell near an historic Indian encampment in Maine contained 7 million bushels.

Once demand for oysters increased with colonization and later, statehood, the irregular reproduction and slow growth associated with cold northern waters became inadequate to fill market demand. Necessarily, commercial production had to shift its emphasis south. Today, Virginia and Maryland are the two principal

oyster industry. Levels of production for the State remain at record low levels. There are, however, some signs of recovery.

During the past nine years, production from Virginia's 243,000 acres of public bottoms has increased from 192,000 bushels to about 561,000 bushels during the 1977 to 1978 season. This increase is largely due to the repletion activities of the Virginia Marine Resources Commission, the absence of oyster drills in many high salinity areas since 1972 and a favorable set of young oysters.

The situation for production from leased bottoms continues to be bleak. During the 1950 to 1960 period (prior to MSX) about 80 percent of the State's average annual production of 2.8



Adult oysters that have demonstrated resistance to MSX in the laboratory may soon provide seed from hatchery operations.

oyster-producing states, primarily because of the productive waters of Chesapeake Bay. The National Marine Fisheries Service has reported the 1977 commercial harvest in Virginia, and those landed from the Potomac in Virginia, at more than 4.2 million pounds of meats worth in excess of \$4.7 million.

(The following synopsis by Dexter Haven, associate Marine Scientist at VIMS and a specialist where oyster economics and production are concerned, is a realistic view of the industry as it exists today).

Since 1960, MSX, pollution and economic conditions have continued to plague the Virginia

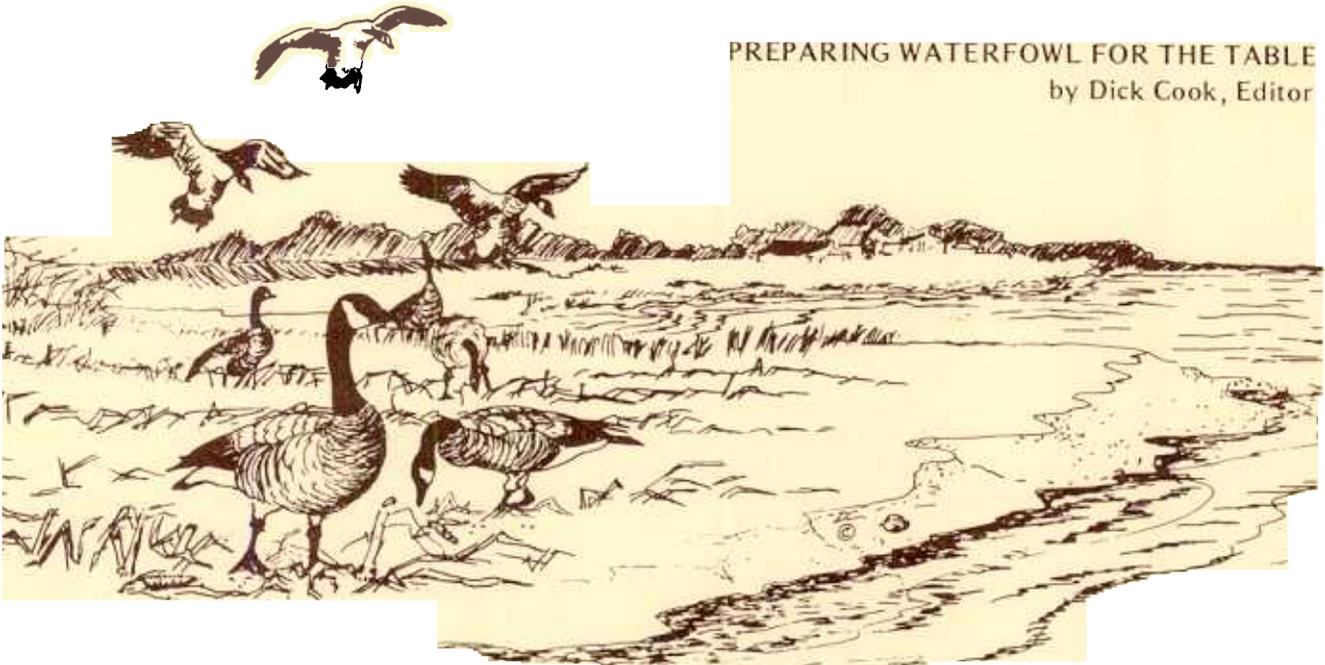
million bushels came from leases. Available data indicates that for the 1977-1978 season, landings from these once productive bottoms were on the order of only 350,000 bushels.

Overall production from these leases is down due to MSX, but an unfavorable economic pattern, coupled with antiquated production systems also played a major role.

There is still hope for increasing production in Virginia. MSX-resistant seed raised in a hatchery may soon be available. Moreover, an increasing number of planters are modifying their production facilities and designing new gear to cut production costs. Additionally, changes in harvesting laws and regulations are being considered by management agencies.

PREPARING WATERFOWL FOR THE TABLE

by Dick Cook, Editor



WHEN WE THINK OF the natural bounty of Virginia's marine environment, especially where food is concerned, we are apt to consider only those animals that live in the water. Fish, crabs, oysters and scallops are what come to mind immediately. At this time of the year, however, there are thousands of ducks and geese using the tidal marshes, bays and rivers of the Old Dominion. Those hunters fortunate enough to bag some of these fine game birds often are at a loss as to how to prepare the birds for the table.

The first step in the right direction is selecting a proper bird to eat. The season has been closed for several years in the Atlantic Flyway on canvasback and redhead, so we can't consider those two fine ducks. Scoters, oldsquaws and similar sea ducks are less than premier when it comes to eating them, and buffleheads, blue-bills and mergansers often take special treatment to have the majority of your diners coming back for seconds.

This in no way detracts from the birds' value as fine sporting animals, but with the thought in mind that one should eat what one shoots, or find someone who will, let's concentrate on the best available. Where Chesapeake Bay and its tidal tributaries are concerned, these include the teal, wood duck, pintail, mallard, black duck and Canada goose. All of these waterfowl species are excellent food, and a corn-fed goose or mallard---a pintail, woodie or black duck that has been feeding on wild rice, is tops.

Ducks and geese do not spoil as quickly as

upland game birds, but still it is a good idea to field dress the birds if you're going to be hunting all day, especially if the weather is warm. It isn't necessary to pluck the feathers from the entire bird, or even remove the wings, head and feet to accomplish this. Simply eviscerate the bird from the rear and hang it by the neck in the shade to drain. If you're only going to be out for a couple of hours and the weather is typically cold, you can wait until you get home to do the cleaning.

Once you've dry-plucked your ducks and geese, it's an easy trick to singe them over some balled-up newspaper that you've set afire in a bucket. An alternate method of feather and down removal is the use of melted paraffin. This involves so much mess and bother, however, it's probably better in the long run to pay someone to dry-pick your birds if you don't want to handle it yourself.

Often, when ducks and geese are shot, feathers are driven into the meat by pellets. These should be removed with clean tweezers or a darning needle. Then the birds may be soaked in salted water (several Tbsp. per gal.) in the refrigerator overnight to remove any blood remaining in the muscle tissue. They can then be rinsed off, patted dry and cooked or frozen for future meals. Handled in this manner, your ducks and geese will credit your table and embellish your reputation as a game chef.

Try some of the recipes in this issue's FISH HOUSE KITCHEN and see. 

PUMPOUT REQUIREMENTS CHALLENGED

by Jon Lucy, Marine Recreation Specialist

VIRGINIA MARINA OPERATORS went into court in late October to test the State Health Department's authority to require private marinas to install pumpout facilities for boat holding tanks - and lost. The test case involved two Middlesex marina operators.

The court ruled that pumpout facilities be installed as required by Health Department regulations, regardless of the fact that neither operator berthed a boat that had a holding tank.



The conflict over head pumpout facilities at Virginia's marinas is now in the courts.

The Health Department is requiring that pumpout facilities be installed initially at 50 designated marinas in order to obtain a "No-Discharge" exemption for shellfish growing waters from the Environmental Protection Agency. To obtain this exemption from federal regulations that would allow use of both Coast Guard certified flow-through treatment and sewage retention devices in such waters, Virginia must demonstrate that adequate pumpout facilities are in operation to serve boaters in the affected area.

If the case is not appealed to the Supreme Court of Virginia, the Health Department would eventually enforce the regulations at all marinas that could not qualify for a variance under the regulations. A variance may be granted if the hardship imposed by the regulations outweighs the benefit of the regulations, or there is no potential or actual public health hazard at the marina in question.

Several interesting situations were clarified during the trial: The state cannot require that installed pumpout facilities at marinas actually

be operated. In addition, a spokesman for EPA stated that under federal law, certified flow-through treatment devices were allowable in designated "No Discharge" zones as long as they were secured while a boat passed through such zones. This situation, while not yet actually tested in court, raises the question as to the future demand for pumpout facilities in navigable waters. Finally, it was pointed out that while other states requiring pumpout facilities had publically funded at least some of the facilities, Virginia had not offered to install pumpout stations at any state-maintained public wharf or boat ramp.

Interestingly, while the State Health Department and private marina operators were in court, the federal government (Corps of Engineers) was simultaneously declaring its position on pumpout facilities at marinas.

Although not brought out in the Middlesex County court case, the Baltimore District of the Army Corps of Engineers declared via a public notice on October 25, 1978, that, henceforth, new marinas and marinas proposing major modifications will be required to install and maintain adequate vessel sewage reception facilities to assist in the problem of disposal of sewage from vessels which moor at the facility. This condition must be met by such marinas in order to secure Section 10 permits authorizing their construction activity. It is expected that other Corps districts will be coming forth with similar public announcements in the near future.

Inspection of marinas as to compliance with the new conditions will be carried out primarily by U.S. Coast Guard personnel from Boating Safety Detachments or a district Marine Safety Office. Violations will be reported to Corps of Engineers personnel who then will take appropriate action to ensure compliance. The Corps of Engineers is not requiring existing marinas to install pumpout facilities; however, it does encourage such operators to do so to meet the expected demand for such facilities.

New or expanding boat-mooring facilities that consider themselves to not qualify for needing pumpout facilities, e.g. small boat rental businesses, should clarify their status by contacting the appropriate District Corps of Engineers (Regulatory Function Branch) and the U.S. Coast Guard (Marine Environment Protection Office).

THE FISH HOUSE KITCHEN

FISH HOUSE KITCHEN, quite naturally you say, should have seafood recipes as its bread and butter. However, this issue of the Bulletin we shall expand those exclusive borders to include a selection of waterfowl recipes and sauces. The ducks and geese that annually feed and rest in the Chesapeake Bay area and its tidal tributaries are the main focus of a hunting tradition that goes back to earliest settlement. Small wonder this area has a reputation for fine recipes. Here's hoping you get to try your hand (and fork) at preparing ducks and geese this season.



BROILED BREAST OF DUCK (or GOOSE)

This is a fast, simple recipe to curb the bear-like appetites of tired hunters coming in from the marsh or bay. Allow one large duck breast or ½ goose breast per person. Mallards and black ducks are ideal.

Filet out halves of each breast, cutting straight down alongside of breastbone, then carefully making lateral cut to free meat. "Butterfly" each breast fillet by cutting almost all the way through laterally, then laying open fillet. Retain leg, wing and back meat for another recipe.

BASTING SAUCE

Butter or margarine - 1 T. per fillet
Seasoned salt - 2 shakes per fillet
Coarse ground pepper - to taste
Lemon juice - 1 t. per fillet
Red pepper sauce - 5 drops

In a saucepan over low heat combine all ingredients except pepper sauce and stir until blended. Lay filets out on broiler pan covered with foil. Baste fillets generously with sauce. Broil close to flame until meat sputters and starts to char (approximately 5-6 minutes). Turn filets over. Baste again and add a dash more salt and pepper for good measure. Broil for 4-5 minutes more. Remove filets. Pour drippings into small bowl

and add pepper sauce. Stir and pour over filets. Serve hot on fresh sesame seed buns or slice thinly, place in chafing dish, pour sauce over slices and use as hors d'ouvres.

ROAST DUCK WITH ORANGE SAUCE

Stuff six large, plucked, cleaned ducks (or three geese) with quartered oranges. Place in roasting bags (two ducks or one goose per bag is about right) with ¼ cup orange juice per bag. Roast at 350° F for two hours or until done. Remove from oven and set aside to cool while you make the orange sauce.

ORANGE SAUCE

¼ c. melted butter or margarine
8 oz. jar red currant jelly
1 T. grated orange rind
¾ c. dry sherry

Combine butter and jelly in saucepan. Heat and stir until blended. Add sherry and orange rind. Stir and set aside.

After birds have cooled down a bit, remove skin from carcasses and discard, then remove meat in bite-sized strips and chunks, placing same in a large casserole dish. Pour orange sauce over meat and serve about five to ten minutes later. Serves ten.

ROAST BREAST OF GOOSE WITH CRANBERRY GLAZE

Remove the breast meat from two 7-8 lb. geese (or three smaller geese). Reserve the remainder of the birds for another use. Put the breasts skin side up in a roasting pan, season with salt and pepper, and brown in a preheated very hot oven (450° F) for 15 minutes. Reduce the heat to slow (300° F) and roast the breasts for 30 to 40 minutes, or until a meat thermometer registers 130° F. Roast the breasts, basting them every 10 minutes with cranberry glaze, for 30 minutes more, or until a meat thermometer registers 160° F. Transfer the breasts to a cutting board and let them cool for 30 minutes. Slice the breasts and arrange on a heated platter. Serves 8. (*Gourmet Magazine*).

CRANBERRY GLAZE

In a saucepan cook 1 pound picked-over and stemmed cranberries in $\frac{3}{4}$ cup orange juice over moderately high heat for 5 minutes, or until the cranberries begin to burst. Remove the pan from the heat, stir in $1\frac{1}{2}$ c. fine granulated sugar, and let the glaze cool. Makes about 2 cups. (*Gourmet Magazine*).

CUMBERLAND SAUCE

In a small saucepan blanch 3 shallots, minced, in boiling water to cover for 3 minutes, drain them and reserve them. Peel 1 orange and 1 lemon with a vegetable peeler and cut the peels into julienne strips. In a saucepan, blanch the strips in boiling water to cover for 5 minutes, drain them and reserve them. In another saucepan combine $\frac{1}{3}$ c. each of red currant jelly, orange juice and Tawny Port and 2 tablespoons lemon juice and simmer the mixture, stirring for 10 minutes. Add the reserved shallots and orange and lemon strips and season the sauce with salt and pepper. In a small dish dissolve $1\frac{1}{2}$ teaspoons cornstarch in 1 tablespoon cold water, whisk the mixture into the hot sauce and continue to whisk the sauce until it is thickened. Let the sauce cool. Serve the sauce chilled with roast wild duck or roast goose. Makes about 1 cup. (*Gourmet Magazine*).

SEA GRANT PUBLICATIONS AVAILABLE

Storm Surge-Wave Interaction Model -- M. J. Carron and V. Goldsmith. *Paper*, \$2.00.

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

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.

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

The Pea Crab. *Paper*, 25 cents.

Sensing the Sea. *Curriculum Guide, Grades Two-Three*. \$2.00.

The VIMS Sea Grant Marine Education Program. *Booklet*. Free.

Publications Available from Sea Grant Advisory Services. *Booklet*. Free.

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



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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

Wavelets

SEDIMENTS AND SEA LEVEL

by PAMELA PEEBLES

DID YOU KNOW THAT Chesapeake Bay is actually a drowned river valley? It's true. Scientists known as marine geologists tell us that four times in the past two million years the world's oceans were 150 feet deeper than they are today. Not only that, but at certain times the water depth was 400 feet shallower than today. How can this have happened? What caused the sea level to rise and fall so much? The answer is climate.

Over a long period of time the world's climate slowly changes from warm weather to cold weather, and then back again. These changes may take thousands of years to occur, but evidence left in the sediments offer proof. Sediments are materials that settle to the bottom and remain there even after the water is gone.

As the world's climate turned cold, more and more moisture evaporating from the seas and falling as snow was trapped in glaciers. Those great ice sheets that we see in the polar regions now, at various times have extended as far south as the State of Indiana. This caused the sea level to drop. As the climate changed to warm again, much of this water trapped as ice melted, raising the sea level. The most recent rise in sea level occurred 10,000 years ago, causing Chesapeake Bay to reach the level we see now.

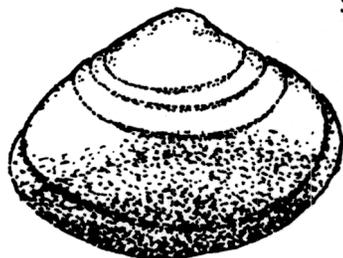
The Susquehanna River which flows out of Pennsylvania forms the main channel of Chesapeake Bay. Underneath all that salty Bay water the river channel remains, perhaps waiting to be cut afresh with the coming of another ice age. The Susquehanna carved out its channel 25,000 years ago in the same manner any upland river cuts its channel now.

What do you think would happen to the animals in Chesapeake Bay today if the water level dropped 400 feet? Some could simply swim or crawl to new places as the water went down, couldn't they? These include the fish, crabs and jellyfish, to name a few. What about the oysters and clams? These shellfish attach to the Bay floor or burrow in the mud at the bottom. They probably could not survive a change in sea level. Scientists have estimated that if all the ice on land were to melt now, sea level would probably rise about 180 feet above its present mark.

We can see places even now where thick layers of scallop shells, coral (a tropical animal) and oyster shells have been left far above the present sea level. Several places you may see these in Virginia include Marlbank (an abandoned marl pit on Marl Ravine Road, State Road No. 1201) and Cornwallis Cave at Yorktown; the river banks at Carter's Grove and at Kingsmill on the James in James City County, the Rice Memorial Museum and Fossil Pit in



Hampton, the bluffs three miles upriver from Mogart's Beach on the James River in Isle of Wight County and the bluffs at Claremont Beach on the James in Surry County.



Spisula



Crepidula

Rice Memorial Museum and Fossil Pit contains 175 species of fossils which have been identified and are now displayed. These include many of the species found in other areas, also.

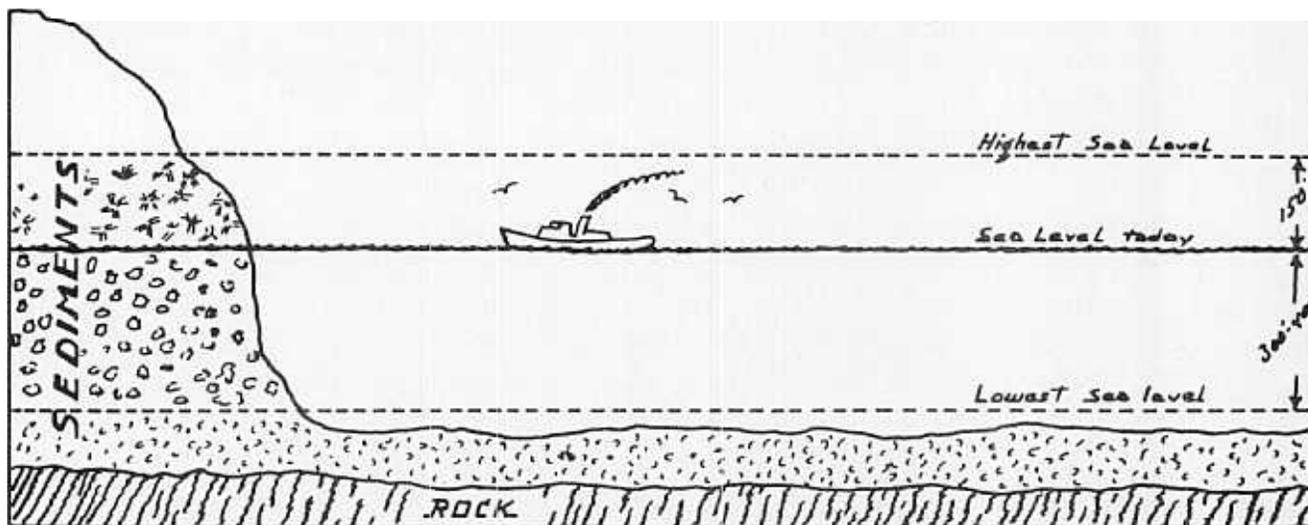
At Cornwallis Cave the ancient broken shells have formed into rock which we call coquina. Most of the shells belong to a group of animals called "Mollusca", which means "soft-bodied." Tender animals lived inside these hard shells at the time. Depending on what type of animal it was, it would have lived together in colonies or would have burrowed into the sediments. The mollusks called Spisula and Crepidula are the main fossils you will see at Cornwallis Cave.



Panope

Marlbank contains a wide variety of mollusks. The fossils are scattered now, thrown out of their living conditions by waves and currents. One fossil called Panope can still be seen in living position, though.

Today's climate is somewhere in between the extremes of hot and cold. This is one reason why man, who has been on Earth only a short period of geological time, is able to survive. The secret to his survival as a race will be his ability to adapt to more extreme changes as they come.



MARINE RECREATIONAL INDUSTRIES COME OF AGE IN VIRGINIA

REPRESENTATIVES OF VIRGINIA'S boating industry met during October in Roanoke to attend the Southwest Virginia Marine Trades Seminar and to reorganize their statewide association. Sponsored by the Southwest Virginia Boat Dealers Association and VIMS Sea Grant Marine Advisory Services, the seminar primarily addressed two issues of concern to boat dealers.

These included pros and cons of a state-controlled boat titling program and the data-handling capabilities of the Virginia Game Commission's boat registration program.

Following the seminar, the Virginia Federation of Marine Trades held its quarterly business meeting to reorganize into a more effective statewide association. Changing its name to the Virginia Association of Marine Industries, the organization will represent boat dealers, marina operators, suppliers of boating equipment and boat repair businesses.

The new association has secured the services of Easter Associates of Charlottesville to handle its administrative affairs and provide legislative representation.

Basically the association will continue the efforts of its founding local trade associations to work towards improvements in boating facilities and regulations affecting the industry throughout the state. A business joining the statewide association also will become a member of a local association chapter.

Persons interested in learning more about the association should contact Kay Robertson, Easter Associates, Inc., 301 East Market Street, Charlottesville, VA 22901

BOATING ADVISORY COMMITTEE FORMED

by Jon Lucy, Marine Recreation Specialist

RECREATIONAL BOATING HAS achieved long overdue recognition in Virginia. The number of boat owners, dollars spent and suppliers of facilities and services has grown rapidly over the past several decades. To improve state government's understanding of the effects its actions have on the boating community, the legislature has established a Boating Advisory Committee.

The Committee is to advise and make recommendations to the Office of Commerce and Resources and its associated state agencies.

The Boating Advisory Committee is composed of representatives from the boating public, the U.S. Power Squadron, the U.S. Coast Guard Auxiliary, the Chesapeake Bay Yacht Club Association and the Office of Commerce and Resources. Representatives from the Commission of Game and Inland Fisheries, Marine Resources Commission, State Water Control Board and Virginia Institute of Marine Science (Sea Grant Marine Advisory Service) regularly attend the committee's meetings. Representation from the U.S. Coast Guard also is invited.

Persons interested in bringing matters to the attention of the Virginia Boating Advisory Committee should contact Colonel Breen, Assistant to the Secretary, Office of Commerce and Resources, Ninth Street Office Building, Room 511, Richmond, VA 23219 (804/786-7831).

RECREATIONAL FISHING SURVEY

THE NATIONAL OCEANIC and Atmospheric Administration has awarded contracts totaling \$1.3 million to Human Sciences Research, Inc., McLean, VA, and Clapp and Mayne, Inc., San Juan, Puerto Rico, to collect data on the fish catch by marine recreational anglers. The survey is being conducted for the National Marine Fisheries Service.

The recreational fishery statistical survey will be done on the Atlantic and Gulf coasts, Hawaii, Guam, American Samoa, Alaska, Puerto Rico and the Virgin Islands. The results of the survey, to be conducted between November 1, 1978, and October 31, 1979, will be available in February 1980.

The Virginia firm was awarded a \$1,192,404 contract, while the San Juan company's contract was for \$117,924.

The survey will provide estimates of participation, catch and effort by marine recreational anglers for each geographical region and State described. Included will be information on finfish and selected shellfish by species, by state or region, the number of marine anglers, number and length of fishing trips, number of days spent fishing, total catch by weight and numbers, method of fishing used and what the anglers did with their catch.

The information obtained during the survey will be used in the development of fishery management plans by the Regional Fishery Management Councils.

COLD WATER SURVIVAL

by Jon Lucy, Marine Recreation Specialist

FALL AND WINTER ARE eagerly anticipated by many hardy boaters, fishermen and water-fowl hunters. It is a time when coastal waters and shorelines take on a different kind of beauty that can be enjoyed in much greater solitude than is the case in summer.

Unfortunately, the water in colder seasons is not quite as forgiving to those who happen to fall in. Falling overboard or swamping a boat in waters as warm as 70°F can quickly result in a condition known as hypothermia, a cooling of the body core temperature. Drowning or heart attack may follow.

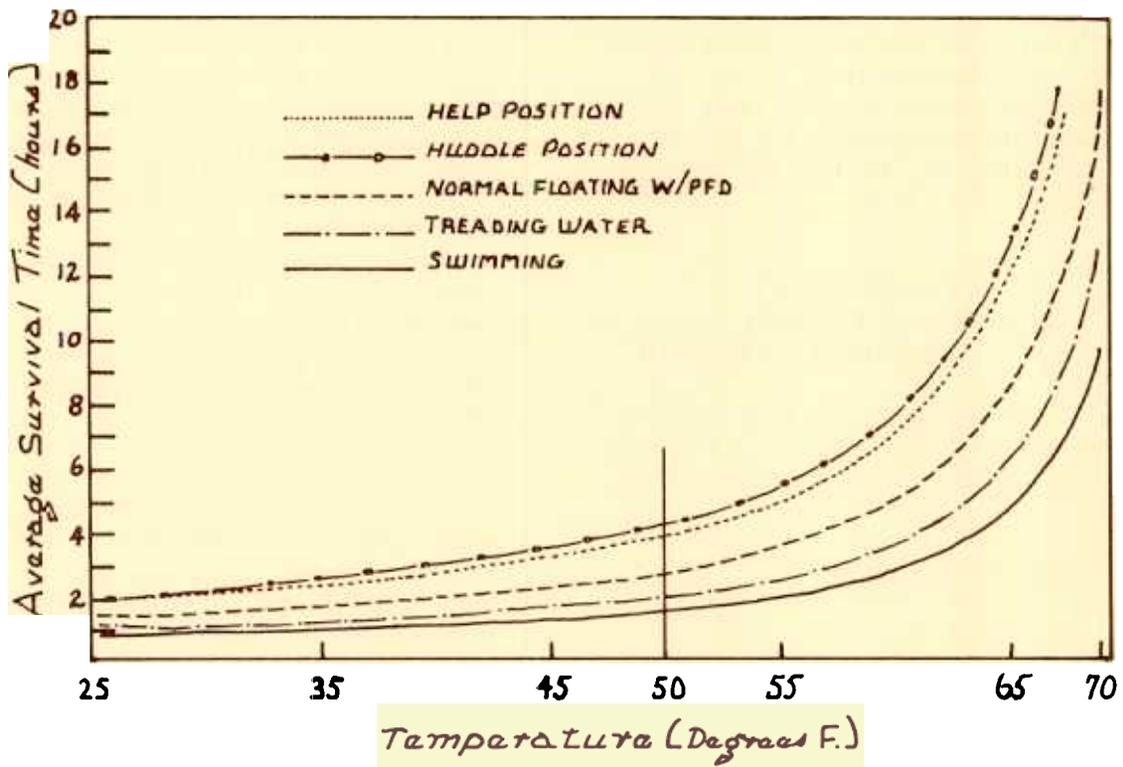
A drop in body core temperature of as little as 6°F can result in death. It may take 10-15 minutes in chilly waters (under 70°F) before the temperature of critical organs, the heart and the brain, begins to drop. It doesn't take long however for a person to deteriorate from a shivering condition to one of loss of manual dexterity and muscle rigidity.

As cooler and cooler blood circulates to the brain, a state of mental confusion can develop, rendering a person powerless to help himself. Unconsciousness follows, generally at a body core temperature around 90°F. If the victim doesn't drown due to losing consciousness, when core temperature reaches 85°F, heart failure usually occurs.

In 50°F water, which Virginia generally experiences by November, a person can tread water for approximately two hours before deep chilling of the body results in heart failure.

How can you prolong survival time in cold water? Obviously, the first step is to be prepared. More and more winter boaters are wearing close fitting, garmet type, foam flotation jackets on their outings. These jackets, as with standard life jackets, enable a person to float rather than having to tread water or swim to keep from going under. In 50°F water these two activities provide a predicted survival time

COMPARATIVE COLD WATER SURVIVAL TIMES



of only two hours, while just holding still using flotation extends survival time to 2.7 hours.

The important thing to remember in cold water is to protect the major heat loss areas of the body -- the head, chest cavity and groin. *The drownproofing survival method, when the head is periodically allowed to go under water, should never be used in cold water.* In 50°F water, rapid heat loss from the head during drownproofing reduces survival time to 1.5 hours. Another hour can be gained by holding still and using flotation.

A relatively new method for preventing heat loss from critical body areas has been developed by Canadian authorities. Called H.E.L.P. (Heat Escape Lessening Position) the method can only be used by a person wearing a flotation device. The arms are crossed and kept tightly against the sides of the chest, reducing heat loss from the heart and lungs. Also, the ankles are crossed and the knees drawn up to reduce heat loss from the groin area. *Survival time using H.E.L.P. increases to approximately 4.0 hours in 50°F water, compared to 2.7 hours if you let your limbs relax.* If two or more people are in the water and wearing flotation devices, they can form a tight huddle, facing towards one another, and also extend survival time to approximately four hours.

A person pulled from cold water needs special care to quickly reverse the deep-chilling trend the body is undergoing. Shivering denotes mild hypothermia, while persons acting confused, semi-conscious or unconscious are experiencing severe hypothermia. Immediate rewarming is imperative to prevent "after drop" caused by cold stagnant blood from the extremities returning to the core of the body.

Victims should be handled carefully, not be allowed to walk and have heat applied to the central core of the body (head, neck, sides and groin).

Wet clothing should be removed from the victim's body because it will draw away more heat. If warm water (105°F) is available, warm moist towels or hot water bottles can be applied but must be constantly rewarmed. Heated or electric blankets can also be used. An excellent field method for warming a hypothermia victim is for rescuers to remove their own clothing and use their bodies to warm the victim's naked body.

Most important, if the victim appears dead, heart massage and mouth-to-mouth resuscitation should be administered. Sea Grant researchers at the University of Michigan have documented cases showing that some persons submerged in water colder than 70°F for up to nearly an hour can be revived with aggressive resuscitation and rescue breathing, without apparent brain damage. The younger the person and colder the water, the better the chances for complete recovery of the victim. All hypothermia victims should be seen by a doctor.

Information on cold water survival is available from several sources. Limited copies of pamphlets entitled "Cold Water Drowning" (CG-513) and "Hypothermia and Cold Water Survival" (AUX-202) are available from Commander (OB) 5th Coast Guard District, 431 Crawford Street, Portsmouth, VA 23702 (804/398-6207). Also, members of Boating Safety Team 5, at the same address, will provide hour-long slide presentations or two-hour training classes on cold water survival. Preferring to address groups, the Team can be contacted in writing or by calling 804/398-6202.

A less formal and shortened slide presentation (15 minutes) on survival in cold water is available from VIMS Sea Grant Marine Advisory Services, Gloucester Point, VA 23062 (804/642-2111, ext. 190). Finally, the November 1978 issue of *Chesapeake Bay Magazine* contains a comprehensive article on the subject written by Janet Groene.

WATERMEN'S TAX GUIDE

THE "1978 TAX GUIDE for Commercial Fishermen" is now available free through the Sea Grant Advisory Services Office at VIMS. Designated IRS Publication No. 695, the Tax Guide is specifically for aiding commercial fishermen in filing their income tax returns. For your copy, simply send your request to Sea Grant Advisory Services Office, Virginia Institute of Marine Science, Gloucester Point, VA 23062.

FISH .D. BOOKS

Fishes of Chesapeake Bay -- Hildebrand and Schroeder; Smithsonian Institute Press; Room 2280, Arts and Industries Bldg., Washington, D.C. 20560. Tel. (202) 381-5143. (\$8.00).

Guide to Fishes of the Temperate Atlantic Coast -- Michael J. Ursin; E. P. Dutton and Co., Inc., 201 Park Ave., South, New York, NY 10003. Tel. (212) 674-5900. (\$5.95).

COMMERCIAL FISHING EXPO

VIRGINIA WATERMEN WON'T want to miss the Fifth Annual Delmarva Commercial Fishermen's Exposition January 26-28 in Ocean City, MD. The trade show will be held in the Ocean City Convention Center and will feature the latest equipment in the commercial fishing line. Also on the agenda are seminars on various industry-related subjects by staff members of the Maryland Department of Natural Resources, Virginia Institute of Marine Science, University of Delaware and University of Maryland.

Among the subjects covered will be financial assistance programs, electronics in the fishing industry, LORAN A to C change, the future of clam culture and marine extension programs.

COASTAL STRUCTURES 79

THE AMERICAN SOCIETY of Civil Engineers, the US Army Coastal Engineering Research Center and the US Naval Facilities Engineering Command are sponsoring a specialty conference on 14-16 March 1979 in Washington, DC. The conference is "Coastal Structures 1979". Among the major categories of papers approved for presentation are: Small craft harbors; break-water damages; environmental effects on coastal structures; outfalls and pipelines; and port and harbor, shore protection, tidal inlet and floating structures.

For a copy of the complete program or other information on the conference, address all inquiries to: CERC, Kingman Bldg., Fort Belvoir, VA 22062.

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VIRGINIA INSTITUTE OF MARINE SCIENCE
Gloucester Point, Virginia 23062

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