



Marine Resource Bulletin

A Sea Grant Advisory Service

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VIMS, September/October 1978

TRAWL SURVEYS AND FISH POPULATIONS



This commercial trawler makes a good haul on spot and croaker. These are only two of the species surveyed twice a year by VIMS researchers.

EACH YEAR, RESEARCHERS in the Department of Ichthyology at the Virginia Institute of Marine Science conduct otter trawl surveys to determine fish populations. The trawls are made at selected sampling sites in Chesapeake Bay and its tributary rivers.

Information gathered from both winter and summer surveys of this type are instrumental in helping scientists keep track of the population dynamics of the important fish species in Virginia's marine environment. The following report by assistant marine scientist Frank J. Wojcik is typical.

Survival of young croakers spawned over the last two years has been very low. Our average catch was less than $\frac{1}{2}$ fish per tow in 1978. This compares with catches of more than 15 fish per tow during the 1976 survey. This summer's data

reconfirm the small number of live juvenile croakers taken during the winter trawl surveys of 1977 and 1978. Most juvenile croakers taken in January and February were dead, indicating a very high mortality rate due to the extreme cold weather conditions.

Numbers of spot, both young of the year as well as older fish, appear to be at about the same high levels as they were in 1976, and juvenile trout were slightly more abundant this year than in 1976.

Still no great increase in striped bass was noted. While a percentage increase was noted over previous years, the actual number of individuals captured was small. Juvenile beach seine data seem to provide a better measure of year class success of stripers than do trawl samples.

The 1977 year class of white perch appears to be extremely abundant...approximately 400 times greater this year than in 1976. Catfish stocks appear steady.

Estimates of menhaden populations by otter trawl are poor since this fish is pelagic in its life style and moves about in dense schools at the surface, while the trawl works deep.

Alewife and blueback herring numbers appear

to be higher. The greatest increase was in bluebacks, but the increases were mainly attributable to the oxbows in the upper James, areas which were not sampled in 1976. Shad also showed a "paper" increase.

Numbers of summer flounder appear low but relatively constant since 1976. Abundance of other species such as anchovies, hogchokers, butterflyfish and eels appears unchanged.



VIMS AWARDED INTERNATIONAL WAVE STUDY GRANT

Dr. Victor Goldsmith has Sea Grant approval to head up a cooperative U.S.-Israeli team to accumulate ocean wave data.



A 2-YEAR INTERNATIONAL GRANT in the amount of \$131,400 has been awarded to the Virginia Institute of Marine Science (VIMS), director William J. Hargis announced recently. The project will be a cooperative effort between VIMS and Israel Oceanographic and Limnological Research, Limited in Haifa.

As part of their new international program, the Office of Sea Grant, a division of the National Oceanic and Atmospheric Administration in the Department of Commerce, has recently under-

written an ocean wave study to be conducted by Dr. Victor Goldsmith, a VIMS physical oceanographer.

The Federal Government will pay 100% of the cost of the project, entitled "Improvement and Application of Ocean Wave Data Acquisition and Modeling Techniques for the Facilitation of Coastal Management Decisions in Israel and the United States."

"We're proud of this recognition, of course," Hargis said, "that techniques developed by VIMS scientists are deemed important enough to be internationally useful. In return, the additional experience Dr. Goldsmith and his associates gain from the study will add to the store of knowledge Virginia and U. S. decision makers may draw upon."

Dr. Maurice P. Lynch, Director of Sea Grant programs for VIMS, emphasized the practical application of the knowledge to be gained in the 2-year study.

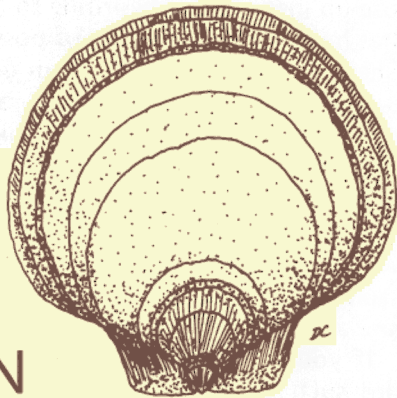
"When the information Goldsmith and his co-workers come up with is run through a computer, the results will allow the formation of a wave action model which will help planners predict areas of high erosion potential," he explained. "This will affect site selection for such things as offshore oil fields, deepwater ports, shallow water ocean mining and spoil deposits."

In past work Goldsmith has designed a wave climate model of the mid-Atlantic continental shelf and shorelines and has done similar work on a storm surge-wave interaction model for the Atlantic seaboard from Cape Hatteras, N.C. north to Cape Henlopen, Del.

Goldsmith returned this spring from a 5-month personal visit to Israel where he conducted wave studies concerned with erosion and deposition of shoreline sediment.



THE FISH HOUSE KITCHEN



THE SEA SCALLOP, taken in large numbers by dredging off the east coast of the U.S., is just one more delight in Virginia's bountiful supply of seafood. These delicious shellfish, normally shucked and bagged aboard the fishing vessel, reach your seafood counter ready to cook. Here are several ways to use them in rich fall menus.

FRENCH FRIED SCALLOPS

- 2 lbs. scallops
- 2 eggs, beaten
- 2 T. milk
- 1 t. salt
- Dash of pepper
- 1 c. dry bread crumbs

If scallops are large, cut in half. Combine eggs, milk and seasonings. Roll scallops in crumbs, dip in egg mixture and again roll in crumbs. Fry in deep fat, 375° F 2 to 5 minutes, or until golden brown. Drain on paper towel. Serve hot with catsup, tartar sauce or lemon.

DEVEILED SCALLOPS

- 1 lb. scallops
- 1 clove garlic, chopped
- 2 T. butter or other fat, melted
- 2 T. flour
- ½ t. dry mustard
- 2 t. prepared horseradish
- ½ t. celery salt
- 2 T. chopped parsley
- 1 T. lemon juice
- Few grains pepper
- ½ c. buttered crumbs
- Paprika

Rinse scallops well to remove any sand. If large, slice them. Cook garlic in butter or other fat until golden. Remove garlic and discard. Blend in flour and seasonings. Add scallops and cook from 4 to 5 minutes, stirring constantly. Place in 4 greased individual shells or custard cups. Top each shell with 2 T. buttered crumbs. Garnish with paprika. Bake in moderate oven (350° F) for 20 minutes. Serves 4.

SCALLOP CASSEROLE

- 1 lb. scallops
- 1 can (10 oz.) condensed cream of mushroom soup
- ¼ c. fine dry bread crumbs, buttered

Separate scallops and rinse to remove any sand. Slice if large. In a greased 1-½ qt. casserole, stir soup until smooth. Mix in scallops and top with bread crumbs. Bake in a hot oven (450° F) for 20 minutes or until hot and bubbly. Serves 4-6.

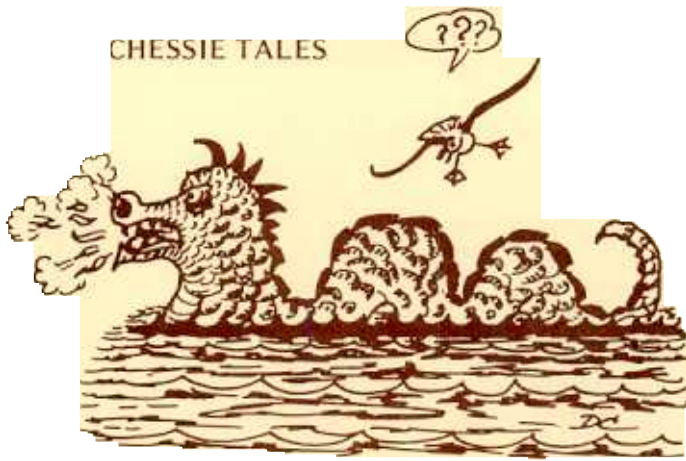
RARE WHITE EEL

A WHITE EEL, "about 95% albino" according to VIMS marine scientist Marion Hedgepeth, was recently taken in an eel pot in the York River. Gloucester County residents Donald West and Bobby Williams caught the unusual fish at Bell Rock near West Point August 28.

Hedgepeth, currently involved in an eel depuration study at the request of eel processors, was the logical choice to receive the fish. She complimented West and Williams on their care of the eel, saying it arrived in "fine shape."

The eel is about 20 inches long and pure white, except for some slight brown and yellow mottling along the dorsal fin and on the snout. As far as Hedgepeth has been able to determine, it is the first such albino (or near albino) example of the common American eel noted. Only the European eel and a freshwater species from India have been cited as exhibiting albinism in the scientific literature.

This rare fish may be seen in an aquarium in the exhibit hall at the VIMS installation at Gloucester Point.



EVER SINCE THE LATE July reports of a “sea monster in Chesapeake Bay” started gaining news media attention, VIMS staff have repeatedly been contacted for their best guess and explanation of the phenomenon.

Most all of these queries are directed to Dr. John Merriner, a senior marine scientist in the Department of Ichthyology. Merriner has amassed a thick folder of newsclips, letters and memos concerning “Chessie”, the Bay’s very own version of a creature(s) described as being from 10-36 feet long, snakelike, without fins, gray colored, 18 inches in diameter and capable of surface or near surface speeds of 7 mph.

This phenomenon has variously been sighted either singly or in groups (up to 5 individuals) in the lower Potomac and the lower Rappahannock and has reportedly left proof of its passing (18” tracks) in a field in Maryland, to name just a few instances.

No photographs have been taken of any creature, nor have any of the several dozen menhaden fleet spotter planes reported anything unusual (as requested by VIMS). There has been one report from a vessel captain who did not alter course to investigate his discovery further. The remainder of the reports have been “land-based”, that is, from persons on shore observing an object or objects in the water. One person shot at what he saw.

There have been no reports from the thousands of watermen, sailors and sportfishermen who daily crisscrossed the rivers of note, nor have any pound nets, seines or other types of fishing gear in the Bay yielded any such unusual creature. The VIMS Research Vessel “Langley” was operating in the Potomac at approximately the time and place the “creature” was supposed to be there, and the crew of observers noted nothing unusual.

“Even so, we will continue to maintain a file on reported sightings,” Merriner said. “We encourage detailed observation and notes of such a sighting, and request that observers get a photo, if possible.

Whatever the creature is, it should not be molested.”

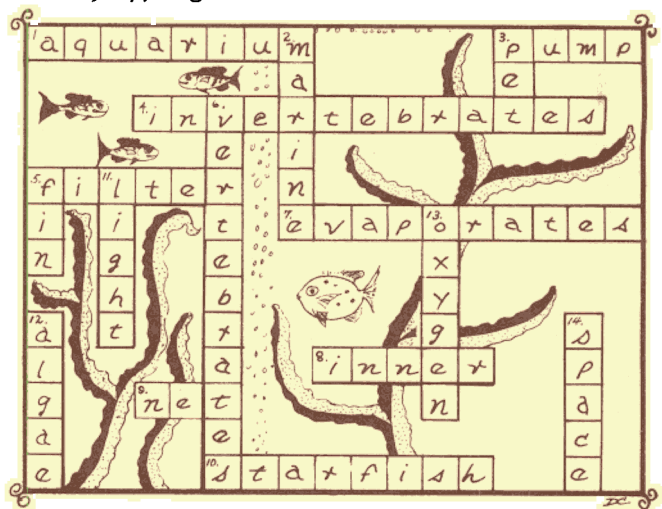
So far, there has been no report of a really close-up inspection, according to Merriner. From what he’s gathered, the list of possibilities include: “Chessie”; pound net poles; an oar fish; trees or stumps; common water snakes; an escaped anaconda; alligator (caiman); porpoises; sea turtles; loons or other diving birds; river otters; stingrays; waves or optical illusions.


In order to help dispel any mystery surrounding such an event, factual information gathered through careful observation is needed. Only then can an intelligent opinion be rendered.

If you happen to be fortunate enough to record such a sighting, please contact Fisheries Division Office at VIMS immediately (804) 642-2111, ext. 268 or 269.

WAVELETS PUZZLE ANSWERS

Below are the answers to the crossword puzzle which appeared at the end of the “Wavelets” insert in the July/August issue of the MRB.





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DICK COOK
EDITOR

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William J. Hargis, Jr.
Director

Wavelets

AQUARIUM FISHES OF CHESAPEAKE BAY

by JIM LANIER



IF YOU HAVE FOLLOWED THE FIRST two issues of Wavelets, you may have set up a saltwater aquarium and stocked it with beautiful fishes from the pet store. On the other hand, you might have been surprised at how much of your allowance it takes to buy the colorful tropical species found in most stores. In this issue of Wavelets, we are going to tell you about some fishes you can find practically in your back yard, and collect for yourself.



You may know all about fishing with a hook and line, but have you ever caught anything with a beach seine or minnow trap? These will be the best methods for stocking your aquarium with the fascinating fishes of the Chesapeake Bay area.



Beach seines come in a variety of styles and sizes, but the easiest for you to buy will probably be a "common-sense minnow seine" available from most fishing supply stores. It is simply a rectangular piece of net about six feet long and perhaps three feet wide with floats along the top and weights along the bottom. Two people pull the net through the water by poles tied to each end, netting fishes as they go. Remember...you can keep only a few animals in your aquarium, so be sure to return all the extra animals you catch to the water.



You can use a minnow trap all by yourself, baiting it with a piece of meat or bread. Look for plastic traps for use in salt water since these will not rust like the metal ones. You will probably find that a weight, such as a brick, is useful for keeping the trap in place on the bottom.



Place your trap in a marsh inlet if there is one nearby, and in a short while you will have more fishes than you can use. If you leave your trap for a long period, be sure it is set deep enough that it will not be out of the water at low tide. Again, be sure to return excess animals to the water immediately.



Before collecting fishes with either a net or trap, you should write a letter explaining where and what you are collecting, and what equipment you are using, to: Virginia Marine Resources Commission, P. O. Box 756, 2401 West Avenue, Newport News, VA 23607 -- ATTN: Law Enforcement Division. Phone: (804) 245-2811.



The Commission is responsible for protecting our marine life by enforcing fisheries laws in tidal waters. VIMS helps by doing research and advising the Commission; you can help by being careful with our valuable marine life and making sure that whatever you take is approved by the Commission.

The minnow the indians called "mummichog" is one of the fishes you are most likely to catch, and it is probably the best to start your marine aquarium. It is a very hardy and

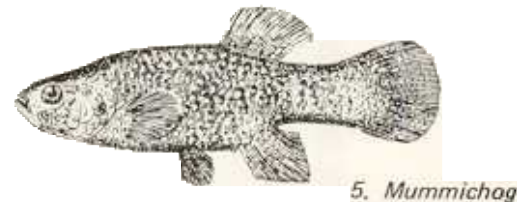
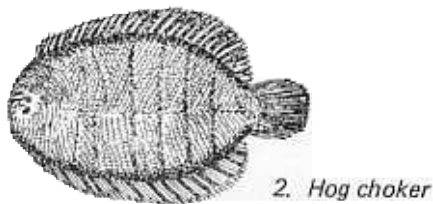
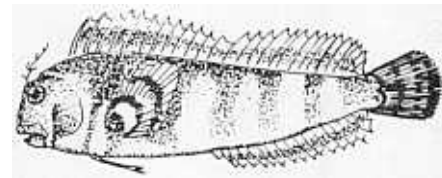
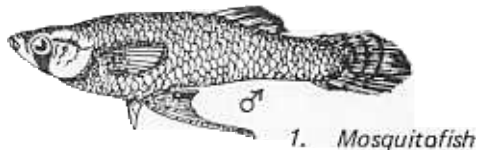
active fish, and males in breeding colors are beautiful. Mummichogs are often seen in sporting goods stores as live bait.

The striped killifish is a close relative of the mummichog, and is found in some of the same areas. Do not let the name scare you, since the "kill" comes from a Dutch word meaning "river channel or shallow water area". Killifishes never

Imagine a fish that can barely swim, has boney plates instead of scales, no tail fin and no stomach!

Like their relative the more common pipefish, seahorses like live food such as brine shrimp. Also, they can be spawned in captivity. Females lay their eggs in the males' brood pouches, where they remain until they develop into miniatures of the adults.

Illustrations by Dick Cook



get big enough to kill anything much larger than a fly, although they themselves are important food for larger fishes.

Another of the hardy and abundant killifishes is a stubby little fighter known as the sheepshead minnow. The males have beautiful blue markings on their backs and orange on their abdomens at breeding time. Although these fishes seldom grow as large as 76 millimeters (3 inches), they will fight fishes more than twice their size. Be careful about putting any local bullies in with expensive tropicals.

All these small fishes help us by eating mosquito larva, but one is so well known for this trait that it has been named "mosquitofish." Although not so colorful as the tropical guppy, mosquitofish are similar in size and also have their young alive. Males are easily distinguished by their long anal fin which is used to fertilize the female. Look for mosquitofish in quiet or stagnant fresh or brackish water.

Beds of eelgrass are home to some of the strangest and most interesting fishes you are likely to find in Virginia. The seahorse, which is not very common, is probably the most unusual of all.

The 4-spined stickleback is another likely candidate for your marine aquarium. Like the seahorse, the male stickleback also cares for its young, but in nests of debris which he builds among the blades of eelgrass. Sticklebacks prefer live food, too.

Empty shells are often home to the blennies, gobies and clingfishes. You can catch a supply by leaving a plastic laundry basket full of whelk shells on the bottom overnight. When you pull up the basket, the fishes retreat into the shells. It is a simple job for you to dump them into your pail.

Some of the fishes you are likely to catch will not be good pets for one reason or another. Silversides and anchovies are often found in large schools in shallow water, but do not survive handling very well. Eels are difficult to keep in the tank, and while there they usually hide behind shells or burrow in the gravel. Hogchoakers, while hardy for short periods, will not usually eat in captivity. Resist the urge to take these fishes home!

There is a variety of other interesting fishes which are suitable for use in larger aquariums, but be careful not to collect any undersized striped bass, cobia, croaker or summer flounder.

MARINE ENVIRONMENTAL CAMPING by Dick Cook, Editor

FOR TWO WEEKS THIS SUMMER the tidal marshes and barrier islands of Virginia's eastern shore hosted a mini-invasion. Not too many residents took notice, but around 45 young Virginians from all over the state probably came away with more nature facts than their parents have managed to gather in years.

Thanks to a cooperative effort by the Virginia Wildlife Federation (VWF) and the Virginia Institute of Marine Science (VIMS) two groups of youngsters, ages 12-14 and 15-17, spent a busy week tripping out of Wachapreague on the eastern shore. They went to conduct trawl and dredge surveys, wade the mudflats to collect clams and other natural fauna and otherwise gain an insight into the complexity and interaction of marine life.

It was a biology lesson at its best, spiced with healthy doses of fishing, seafood feasts and boat rides over smooth ocean swells. At night, films and lectures were capped with a stroll up the street to take in a small local carnival.

According to Tom White, chairman of the VWF Youth Summer Camp Program, the object of the cooperative effort at the VIMS eastern shore facility was not to create young scientists, but young citizens who will develop an awareness and appreciation of the natural world, hopefully to carry it through life.

While billeted out of the two-story frame dormitory at Wachapreague, the youngsters were given a tour of the VIMS laboratory, where they were acquainted with aquaculture methods involving hard clams and bay scallops. Other activities during each group's stay included shoreline seining, marsh studies, a visit to a heron rookery and on-the-spot lectures concerning the erosion and deposition of sand, plant succession, wave and current studies and water chemistry tests.

Enthusiasm for all of the activities ran high among the participants. There was very little of "hanging back and looking on." When a trawl was hauled, the kids did it. They got in up to their knees digging out hard clams and they cleaned their own flounder and spot, then cooked them. They took care of their own housekeeping chores, too, and did a creditable job.

Staff personnel associated with VIMS Sea Grant Advisory Services Department provided guidance and kept their program moving on schedule, no easy task with all that went on. Their job challenge will increase as the program grows. In only its second season, there were many more applicants than program space could accommodate. —

HURRICANE AWARENESS MAPS AVAILABLE by Jon Lucy, Marine Recreation Specialist

VIRGINIA'S HURRICANE SEASON extends from June 1 to November 30, peaking between mid August and the first week of October. At present, Virginia is one of only two states on the Eastern Seaboard providing coastal residents detailed hurricane awareness maps. Florida also provides this service.

The maps show land elevations and major road systems that should be used if evacuations are warranted due to high water associated with a hurricane. In addition, evacuation instructions for specific shoreline areas, necks and points are printed on the maps for hurricanes of different intensities. A hurricane survival checklist is printed on the reverse side of the 18 X 25 inch maps.

The National Weather Service categorizes hurricanes according to several basic features, two of which are sustained wind speeds and maximum height of the storm surge generated. A Category I hurricane (minimal damage) has sustained wind speeds of 83 mph and can produce a storm surge 4-5 feet above mean sea level (MSL). The Category II hurricane (moderate damage) has sustained winds of 100 mph and can generate a storm surge of 6-9 feet above MSL -- the category of the 1933 storm. Category III hurricanes (extensive damage) pack sustained winds of 120 mph and can produce storm surges up to 12 feet above MSL. It is unlikely that coastal Virginia will ever encounter a hurricane more severe than Category III.

Virginia's Office of Emergency and Energy Services (OEES) worked closely with the National Weather Service in Norfolk to make the hurricane awareness maps available. Present maps cover counties and cities bordering Chesapeake Bay from the Mathews-Gloucester area south to Sandbridge, including most of Northampton County on the Eastern Shore.

For these localities base maps were already available from the National Oceanic and Atmospheric Administration showing land elevations. During the next two years OEES hopes to develop the same type of base maps for Middlesex, Lancaster and Northumberland counties, as well as for the upper portion of the Eastern Shore, to bring these areas into the system.

Copies of the existing maps have been posted in prominent public places in the localities covered and have been publicized by area newspapers. Copies also may be available from local civil defense coordinators or county administrators, if their limited supplies have not already been exhausted.



NEW OYSTER BOOK PUBLISHED

"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 statewide production since 1960. Copies are available at a cost of \$16.00 each through the Sea Grant Publications Office, Virginia Institute of Marine Science, Gloucester Point, VA 23062.

BOOK REVIEW

"Development of Fishes of the mid-Atlantic Bight - An Atlas of Egg, Juvenile and Larval Stages" is an excellent six-volume reference set recently released by the Fish and Wildlife Service (FWS), U. S. Department of the Interior. A product of the power plant project of the FWS Biological Services Program, the volumes should enable researchers to conduct more efficient and accurate environmental assessments related to electric power development. These books are generously illustrated with black and white photos and accurate line drawings; however, the mixture of these illustrations leaves a bit to be desired where eye appeal is concerned. They pretend to be nothing more than they are - a solid set of references books for the serious researcher or advanced student.

The entire set may be ordered for \$62.25 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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