

Marine Resource Bulletin

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A SEA GRANT ADVISORY SERVICE OF THE COLLEGE OF WILLIAM AND MARY

Sea Grant Resource Economics

Helping Solve Problems on the Waterfront

In 1980, the VIMS Sea Grant Advisory Service initiated a Resource Economics program in order to interpret and help solve the economic problems related to marine resources utilization in Virginia.

"There are pressing needs to develop local fisheries input-output models, economic feasibility studies of underdeveloped and new fishery resources, and economic information on a multitude of problems and questions that are the result of Virginia's re-emergent offshore fisheries," says Dr. W.D. DuPaul, Head of Sea Grant Marine Advisory Services.

Since the program's start, workshops, publications, and research projects have assisted Virginia's financial community in understanding the needs and opportunities in both inshore and offshore fisheries. At the same time, extensive educational programs have further served to inform the commercial industry not only of loan sources, terms, and opportunities, but also methods to effectively seek financial assistance and improve business decision-making.

"Basically, what we do is identify problems on the water front and conduct research and education programs to solve those problems," says Marine Resource Economist Tom Murray. "The long range goal of the Sea Grant Resource Economics program is a more efficient commercial fishing industry."

ADVISORY PROGRAMS

A major effort of the Resource Economist is the implementation of

advisory programs to close the gap between the commercial seafood industry, financial institutions, and government support agencies — "a kind of circular feedback loop," explains Murray.

The Resource Economist conducts numerous group and one-on-one workshops dealing with tax management, record keeping, and loan preparation. In February, 1981, Sea Grant and the Rappahannock Community College sponsored a workshop in Warsaw, Virginia, to acquaint Chesapeake Bay watermen with the Farm Credit System. Over 200 individuals attended to learn about the availability of Production Credit Association (PCA) aquatic loans.

PCA is the only private bank that has a lending program specifically for commercial fishermen, but prior to the Warsaw workshop PCA had made only a few of these specialty loans in Virginia. As a result of the workshop, says PCA's Jim Johnson, several watermen applied for and obtained loans, and PCA is now more active in Virginia's marine market and anticipates further growth in commercial fishing credit in the future.

"Due to the pressure of rising business costs, marine credit workshops like the one in Warsaw provide a valuable service to watermen," says Fred Biddlecomb, president of the Virginia Watermen's Association. "A waterman who used to make a living with a 30 foot boat and 75 crab pots now needs a 75 foot boat, 300 crab pots, and a substantially larger investment."

Working extensively with the bank-

ing community to help them understand Virginia's seafood industry is another major advisory effort. In August 1980, Sea Grant, the Coastal Plains Regional Commission, and the Virginia Bankers' Association sponsored the seminar "Lending Opportunities in the Commercial Seafood Industry." For the first time, members of Virginia's financial community and commercial seafood industry were brought together.

"Bankers benefit from a meeting like this because they understand the fishing industry better," says Murray. "In turn, we learn how the fishing industry can improve its chances of obtaining needed capital."

Results of the seminar were so encouraging, that plans for a second 'Venture Capital Seminar' are underway says VBA vice-president Wayne Tilman. "We feel that we have opened the line of communication between lending institutions and various components of the Virginia seafood industry."

ANALYTICAL STUDIES

By conducting analytical studies, the Resource Economist assists industry and management agencies in evaluating existing problems or areas of potential concern.

The disposal of hard crab waste generated by Chesapeake Bay blue crab picking operations became an acute industry problem in early 1980. Reportedly, the traditional market for crab meal had become no longer profitable as competitive meal products, principally soybean meal, experienced

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Dr. W. D. DuPaul, Head, Sea Grant Marine Advisory Services

marked decreases in price. Crab processors had been throwing their crab scrap into landfills, but landfills began refusing the scrap. Processors needed to investigate alternatives to dispose of crab scrap, and at the request of the Regional Fisheries Development Foundation and industry members, Murray developed an enterprise budget for a commercial crab meal processing plant.

"Everybody assumed that crab meal production was not economically feasible," says Murray. "We found that crab meal production is the only economic method of managing hard crab waste in the long run. Our conclusion is that a crab scrap drying facility can pay for itself in a very short period of time in large industry centers like Hampton, Virginia, and Cambridge, Maryland."

The report, 'Feasibility of Crab Meal Processing in the Chesapeake Bay Region,' looks at the crab meal processing business in a realistic way, says Wes Conley, owner of RCV Seafood, Inc., in Morattico, Virginia. "It's a good yardstick for people thinking about getting into the operation."

As a result of the report, a crab meal processing plant for red crab waste is being built in Gloucester, Massachusetts, and crab meal processors in Crisfield, Maryland, are using the study's findings as an alternative to their own processing problems.

In another case, management agencies called upon the Resource Economist when watermen became concerned that use of a mechanical escalator dredge to harvest hard clams would flood Virginia's clam market and lower prices. The Virginia Marine Resources Commission asked Murray to develop a clam price flexibility model to show what, if any, effect more hard clams would have on Virginia's hard clam prices. The study showed that, contrary to watermen's fears, more Virginia hard clams on the market could actually increase dock-side prices received. Completion of an

economic analysis of the hard clam fishery will result in publication of a comprehensive Sea Grant report on the biology and management of the hard clam.

A series of offshore fishing case studies is another analytical study of the Resource Economics program. For example, the studies use years of data to document the economic impact and effects of a cyclic fishery, such as sea scallops, on the region's economy. A great amount of money was reinvested in the sea scallop and offshore fishery in the late 70's. The potential for excess profits brought a dramatic increase in the number of offshore fishing vessels into the region. Reduced stocks and high fuel costs have since caused a significant relocation of vessels and fishing effort.

"Case studies like this are of interest to industry, finance, and management people as a lesson in the cyclical nature of the fishing industry," says Murray.

DESCRIPTIVE ANALYSES

Describing the economic characteristics of the important users of the Chesapeake Bay is the focus of descriptive analysis studies. The Resource Economist is currently producing 'Marine Economic Data Sheets' depicting the costs and returns of major fisheries.

"The biggest complaint of bankers is that they don't know how much business boats generate in a year and what financial returns to expect," explains Murray. "These data sheets will help to better inform lending institutions and therefore reduce the uncertainty which has traditionally inhibited the flow of capital into the State's fishing industry."

The economist points out that when fishermen provide information about their operations, they are helping document the importance of their industry. "This type of descriptive information will aid the fisherman in better understanding his position relative to others in the industry and

provide better information for business management decisions. Such knowledge of specific costs and returns of the industry in Virginia will lead to projections of the economic importance of fisheries to the Commonwealth".

In another descriptive analysis study, the Governor's Boating Advisory Committee requested Sea Grant Recreation and Economics Specialists to initiate a study of Virginia's pleasure boating industry. The study will describe Virginia's boating fleet in terms of hull construction, activities, types of boaters, etc. "In estimating the nature and extent of Virginia's recreational boating public, the study will quantify the importance of another major marine resource user group," says Murray.

In the works also is a publication on the landing trends of 17 Virginia counties that illustrates the relative shares of counties in the statewide fishing industry. The report, published in conjunction with Virginia Polytech Institute and State University, will provide specific county-by-county data that will help depict the economic impact of the Bay fisheries. "This information on the nature, extent, and recent trends of local fisheries will be of particular interest to planning commissions and local county governments," says Murray.

"In total, we feel information and advisory efforts will serve to increase overall productivity of Virginia's fisheries," the Resource Economist says. "Through improved industry and government management, benefits from State fishery resources will be maximized and will provide the greatest value to the Commonwealth."

"Active Marine Resource Economics programs like this are common in many other coastal states, but this has never been done in Virginia. We're not breaking all new ground in Virginia, we're just trying to get to the point where our research and information efforts provide true service to important marine user groups like our Commercial Fishing Industry."

— Kym Young

FISH HOUSE KITCHEN

the SOFT SHELL CRAB

This Fish House Kitchen was reprinted from the new Sea Grant brochure "succulent seafare... THE SOFTSHELL CRAB ." by Michael J. Oesterling. Order your free brochure today, along with "making the most of your catch... THE BLUEFIN TUNA" and "poor man's lobster... THE MONKFISH."

Soft-shell crabs are not a separate species of crab, but are blue crabs (*Callinectes sapidus*) that have shed (molted) their hard outer shells in preparation for growth. The hard shells of blue crabs do not allow for the continual size increases associated with growth of fish and other animals. In order for the crab to grow, this hard exoskeleton must be shed; a soft, pliable, crab emerges, expands its soft new shell and "grows into" its new body. At this time, when the crab emerges from the old shell, it is known as a soft-shell crab or more simply, a "soft crab".

Recreationally, soft crabs can be collected from the hiding places they seek out for protection while in the soft state. Just about any sea creature will devour soft crabs, so shedders will seek out protected areas around pilings, along the edges of coves or in shallow, grassy flats. A dip net or push net and a sharp eye are all that is necessary to catch a soft crab. The best time to look for them is after the tide has been going out for a while on a day when visibility to the bottom is good. Hunting soft crabs may be done either from a shallow-draft boat or simply wading.

Although it may seem that the preparation of a soft-shell crab is a difficult task, in actuality it is a very simple affair. This is because almost all of the crab is edible, including the legs. There are some parts, however, that should be removed prior to cooking. Some people like to remove the top shell completely and clean out the digestive structures more thoroughly, but this is not necessary. It is just a matter of personal preference.

Once you've cleaned the soft crab, you're ready to enjoy this gourmet's delight. The most common preparation technique is fried, either pan fried or deep-fat fried. Other methods of cooking will give equally tasty results.

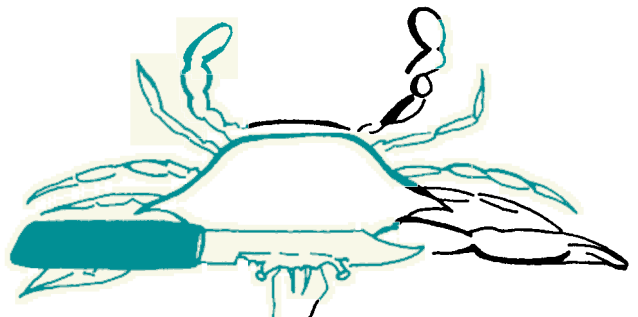
BASIC FRIED SOFT-SHELL BLUE CRABS (for 6)

12 soft crabs
¼ cup milk
¾ cup flour
2 eggs, beaten
2 teaspoons salt
¾ cup dry bread crumbs

Dress fresh crabs or thaw frozen crabs. Rinse in cold water; drain. Combine eggs, milk and salt. Combine flour and crumbs. Dip crabs in egg mixture and roll in flour/crumb mixture. For heavier breading, let crabs sit several minutes and repeat dipping-rolling procedure. Additional spices, such as cayenne pepper and garlic, may also be added.



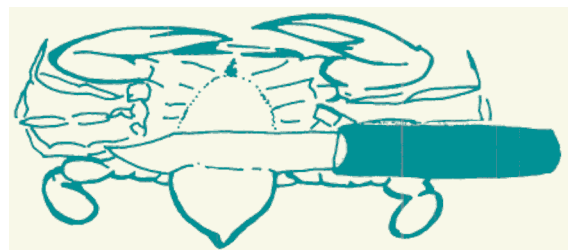
Lift the large lateral spines of the shell top, and scrape off the gills (grayish white feathery structures).



Remove the eyes and mouth parts by making one cut across the front of the crab just behind the eyes.



Remove and drain the fluids from the stomach area by twisting and pulling from the cut made to remove the face.



Remove, at its base, the apron from the underside.

Marine Schoolhouse Series no. 13
by Elizabeth A. Cornell

EXPLORING the WORLD of WATER :

Aquarium Worksheet



This worksheet may be used at a pet store, park, museum, aquarium or wherever you may find aquatic creatures. We hope that this worksheet will help you look at animals from oceans, lakes, rivers, ponds and streams in new and different ways.

Upon completing the worksheet, we hope that you will better understand and enjoy the "critters" that live in the water.

snail



urchin



Take a quick look at all the tanks in the aquarium. If you could be an animal that lives in the water, what would you like to be? _____

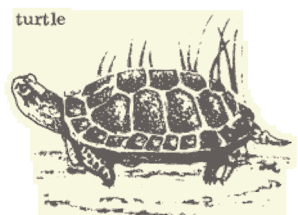
Name three (3) differences between you and a fish: _____

How many fins does a fish have? Count them. _____

Do all fish have the same number of fins? _____

How many legs does a crab have? Count them. _____

How many toes does a turtle have on each foot? _____



seahorse



Can you find a fish with stripes? Name it. _____

Can you find a fish with spots? Name it. _____



salamander

Which animal moves through the water as gracefully as a bird flies through the air? _____

Which animal is clumsy when it moves? _____

Which animal looks the slimiest? _____

blenny



softest? _____

hardest? _____

spiniest? _____



hermit crab

Which fish would you like to enter in a race of speed? _____

Draw the shape of the fast fish's tail.

Which fish is a "slow poke"? _____

Draw the shape of the slow fish's tail.



pufferfish

Some animals have their skeletons on the outside of their bodies in the form of a shell. Some examples are crabs, turtles, clams and shrimp. Can you find something with a skeleton on the outside?

Can ocean fish live in a lake or pond? yes or no (circle one) Why or why not? _____

A keeper at the aquarium feeds the animals and cleans their tanks. How do fish in the ocean get their meals? _____

Name four (4) ways all fish are alike. _____

SEA GRANT PUBLICATIONS

The publications listed in this section are results of projects sponsored by the VIMS Sea Grant Marine Advisory Service. Order publications from Sea Grant Marine Advisory Service, Publications Office, Virginia Institute of Marine Science, Gloucester Point, VA 23062. Make checks payable to: VIMS Sea Grant.



MANUAL FOR GROWING THE HARD CLAM (*mercenaria*) - Michael Castagna, John N. Kraeuter. SRAMSOE No. 249, 110 pages. \$3.00

THE PRESENT AND POTENTIAL PRODUCTIVITY OF THE BAYLOR GROUNDS IN VIRGINIA (Vols. I and II)- Dexter S. Haven, James P. Whitcomb and Paul C. Kendall. SRAMSOE No. 243, Vol. I, 167 pages, Vol. II 154 pages plus 64 charts. \$10.00 for both volumes.

AUDIOVISUAL AIDS AND PUBLICATIONS AVAILABLE FROM THE VIMS SEA GRANT MARINE EDUCATION CENTER. 40 pages. \$1.00

FISHY ACTIVITIES FOR YOUR SMALL FRY - Mary E. Sparrow and Frances L. Lawrence. Educational Series No. 28, 36 pages. \$2.00

POTENTIAL EFFECTS OF THE 1980-81 DROUGHT ON OYSTER DISEASES AND PREDATORS - J.D. Andrews. Advisory No. 20. Free.

SALINITY PROJECTIONS FOR THE JAMES, YORK, and RAPPAHANNOCK RIVERS - Dr. Albert Kuo and Michael J. Oesterling. Advisory No. 21. Free.

Six new FISH PROMOTIONAL LEAFLETS! - Chesapeake King...THE BLUE CRAB, Bountiful Bivalve...THE HARD CLAM, Pearl of the Chesapeake...THE AMERICAN OYSTER, Succulent Seafare...THE SOFTSHELL CRAB, Poor Man's Lobster...THE MONKFISH, and Making the Most of Your Catch...THE BLUEFIN TUNA. Free

SHORELINE EROSION IN VIRGINIA- S. Hardaway and G. Anderson. Educational Series No. 31, 25 pages. \$1.00

HANDLE WITH CARE: SOME MID-ATLANTIC MARINE ANIMALS THAT DEMAND YOUR RESPECT. - Jon Lucy, Educational Series No. 26, 13 pages. \$1.00

THE CHESAPEAKE: A BOATING GUIDE TO WEATHER. Jon Lucy, Terry Ritter, and Jerry LaRue. Educational Series No. 25, 22 pages. \$1.00

THE ECONOMIC IMPACT AND STATUS OF THE OFFSHORE FISHING INDUSTRY IN VIRGINIA. William DuPaul and Samuel Baker. SRAMSOE No. 225, 27 pages. First copy free to Virginia residents; all others \$1.00.

A DESCRIPTION OF THE COMMERCIAL MARINE FISHERIES OF VIRGINIA. - James Zaborski. SRAMSOE No. 233, 24 pages. First copy free to Virginia residents; all others \$1.00

A PRELIMINARY EVALUATION OF THE POTENTIAL FOR A SHARK FISHERY IN VIRGINIA. - J. A. Colvocoresses and J.A. Musick. SRAMSOE No. 234, 39 pages. First copy free to Virginia residents; all others \$1.00

COMMERCIAL FISHING NEWSLETTER. Published quarterly. Free subscription obtained by written request.

TIDE GRAPHS FOR HAMPTON ROADS, VIRGINIA and TIDE GRAPHS FOR WACHAPREAGUE, VIRGINIA. Published quarterly. Free subscription obtained by written request.

HEALTH CARE FOR SEAFARERS. Public Health Service Publication No. HSA 80-2016. Free.

TAX GUIDE FOR COMMERCIAL FISHERMEN. Department of the Treasury, Internal Revenue Service Publication 595 (Rev. Nov. 80). Free.



Illustration: Dick Cook

THE MARINE TURTLES OF VIRGINIA J.A. Musick. Educational Series No. 24, 17 pages. \$1.00.

SENSING THE SEA: CURRICULUM GUIDES FOR GRADES KINDERGARTEN - ONE and GRADES TWO-THREE - Ellen Odell-Fisher, Ronald N. Giese, and Mary E. Sparrow. K-1 Educational Series No. 23, 44 pages. 2-3 Educational Series No. 21, 53 pages. \$2.00 each.

National Conference on Seafood Industrial Parks

Scheduled for September 30 - October 1

The first National Conference on Seafood Industrial Parks is scheduled for September 30 - October 1, 1981, at the Omni International Hotel in Norfolk, Virginia. Sponsors of the conference are the Coastal Plains Regional Commission, the Gulf and South Atlantic Fisheries Development Foundation, and the Sea Grant Program of the Virginia Institute of Marine Science.

The two-day conference will include a complete review and analysis of seafood industrial parks in Europe by Eric Norgaard of Copenhagen, Denmark. Topics include design, operational analysis, financing, economic analysis, and concepts that can be transferred to the U.S. industry.

Other conference topics are:

- . Update on Seafood Industrial Parks in the U.S.
- . Economic Impact of Seafood Industrial Parks.
- . Fishery Resources, Stock Assessments and the Seafood Industrial Park Concept.
- . Mixed Fisheries and Multiple Seafood Products - Harvesting and Processing Problems.
- . Education, Training and Employment Opportunities.
- . Port Operations and Management.
- . Site Selection and Support Facilities.
- . Engineering Aspects of Refrigeration, Freezing Plants, Waste Disposal, Berthing, and Vessel Size Constraints.
- . Seafood Industrial Parks and National Goals in Fisheries Development.
- . The Development of the Seafood Industrial Park Concept in the U.S.

For complete program information and registration forms, call or write Dr. William D. DuPaul, Sea Grant Marine Advisory Services, Virginia Institute of Marine Science, Gloucester Point, VA 23062. (804) 642-2111, Ext. 126.

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A Sea Grant Advisory Service

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Cover Note

Boats on Brown's Bay in Severn, Virginia.

Photograph by Kym Young.

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