

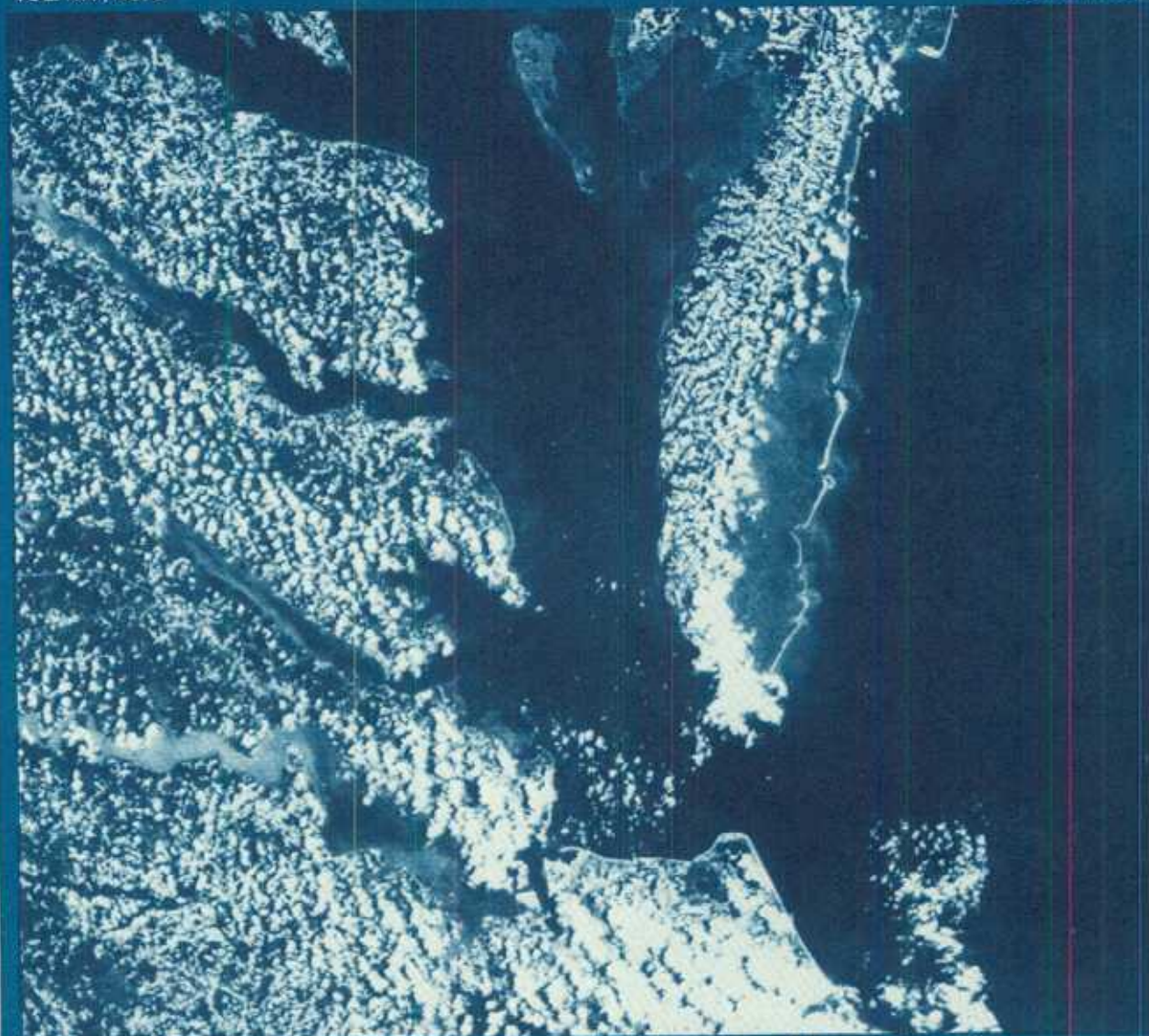


Marine  
Resource

# Bulletin

VOL. XIV, NO. 3

SUMMER 1982



*In This Issue -- improved weather forecasting • blue crab recipes  
• sea 'greens' • new work for old power*

Virginia Sea Grant at VIMS/College of William & Mary

# WEATHER WATCH

Jon Lucy



*A severe thunderstorm bears down on a small sailboat caught unawares on lower Chesapeake Bay.*

On July 21, 1981, an outbreak of heavy thunderstorms in central Virginia moved through the Richmond Area with wind gusts of 48 miles per hour. Weather-watchers were anxious to find out what the storm system would do once it reached the Chesapeake Bay and Eastern Shore.

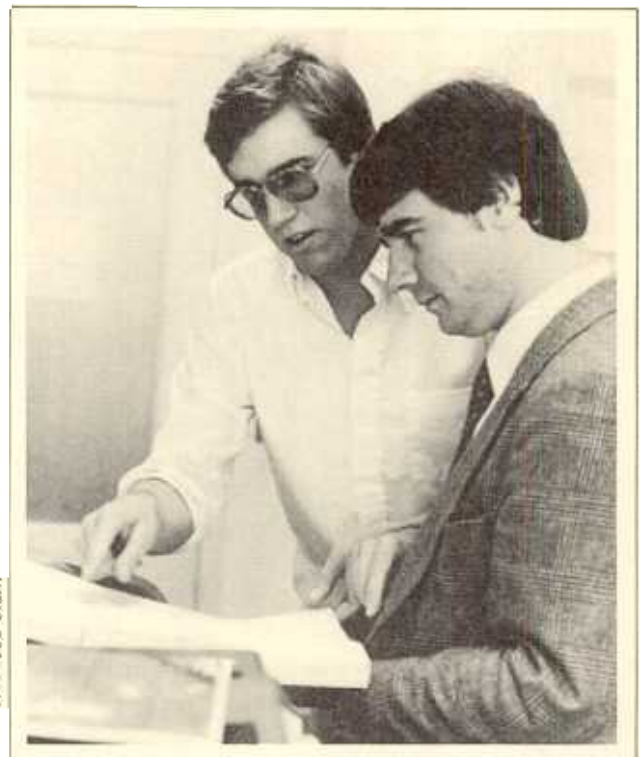
In response to this development, the National Weather Service (NWS) issued a severe thunderstorm watch for the entire eastern half of Virginia. In reality, the severe weather was confined to a small area, from Richmond to Tidewater. Winds in Norfolk reached 95 miles per hour.

State Climatologist Patrick Michaels, Research Assistant Professor at the University of Virginia, used the example to illustrate the rationale behind his Sea Grant project, "High Resolution Weather Forecasting in the Chesapeake Bay." He said, "The type of analysis we're doing we hope will eventually aid in the process of making more specific weather forecasts for important events around the Bay."

As the use of Virginia's waterways grows, so will the need for more detailed and complete weather forecasts. As Tidewater's coaling facilities expand, for example, "more and more craft will be subject to the vagaries of the weather, heightening the probability of collision," Michaels said. The Sea Grant project is intended to focus more on the Bay area because it is one of the most widely used waterways in the world.

The main objective is to increase understanding of the eastern Virginia climate system, by using a combination of statistical and mathematical models to "fine tune" forecasting for Eastern Virginia.

Rebecca Clark



*Project leader Patrick Michaels, right, confers with University of Virginia graduate student Chris Meyer in a Sea Grant sponsored attempt to devise methods for more accurate storm warnings.*

Researchers Bob Gerzoff and Carol McIvor took 28 years of weather records from 89 selected reporting stations across Virginia. The stations were chosen for the completeness of their records. Gerzoff and McIvor extracted information about severe thunderstorm activities from those records, and then analyzed the data with a technique known as "principal component analysis," or PCA. PCA is a statistical method for determining patterns within a set of data. In this instance, it was used to describe the patterns of thunderstorm occurrence across Virginia.

This August, the data on severe thunderstorms in eastern Virginia will be sent to Colorado State University with graduate student Jeff McQueen, who will spend the next year setting up the data on a mesoscale model to create daily forecasts for the Chesapeake Bay.

McQueen will join Dr. Roger Pielke, another investigator on the project, who has transferred from UVA to Colorado State's Department of Atmospheric Science. Pielke's mesoscale model will be used to relate statistical patterns to the atmosphere.

The model is actually a series of equations that describe motion in the Earth's atmosphere. Any inconsistencies between the model and the statistics will be adjusted by varying the parameters of the model. Parameters are factors such as topography or temperature.

"So far," McQueen said, "we've found some interesting facts through our statistics. With our forecasting model in Colorado, we can simulate atmospheric conditions over the Bay to see if we come up with the same patterns we found in this summer's research."

Investigators say that the Bay is a significant determinant of weather, but the scale of the current NWS forecast is too large to take advantage of its peculiar properties. Because their forecast area is so large, NWS forecasts may not be detailed enough.

According to Terry Ritter, NWS meteorologist-in-charge in Norfolk, "Thunderstorms pose a considerable danger to boats because of their strong gusty winds and lightning. They are formed by rising air currents and normally occur during midafternoon through early evening."

Writing in their publication "The Chesapeake A Boating Guide to Weather," Ritter and Jon A. Lucy said, "During spring and early summer, about six days of each month include thunderstorms. These storms develop to the west over land, and most often move out of the southwest at speeds averaging 25-30 knots. A particularly

careful watch should be kept on the occasional storm approaching out of the northwest. Such thunderstorms have proven to be especially severe. As an example, one struck Norfolk in June 1977 and capsized a head boat and tore away the end of a fishing pier."



*The high commercial and recreational use of Chesapeake Bay, now and in the projected future, will subject more and more craft to the vagaries of the weather, thereby increasing the need for timely forecasts.*

In the Spring 1982 issue of Virginia Climate Advisory, Michaels said, "Forecasting severe weather in eastern Virginia, particularly near the Chesapeake Bay, has always been a problem because of the interplay between the mountains to the west, the rolling Piedmont, and the water."

Indeed, the geography of the state has a major impact upon the weather and climate patterns. In Michaels' words, the change in elevation between the Blue Ridge and the Piedmont "is one of the most climatically significant in the United States because of the length and general homogeneity of the chain."

Researchers have also found that a need exists to improve the resolution levels of weather forecasting with respect to space and time. "Standard analytical techniques are often too slow to detect storm formation in time to provide adequate warnings," Michaels said.

At present, there are 16 NWS forecast zones for Virginia. This has recently been increased from 10, thereby decreasing the size of the zones. Researchers hope to enhance their knowledge of the mesoscale climatology of the Chesapeake Bay and estuarine Virginia, in order to improve these higher resolution forecasts. — Rebecca Clark

# 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.*



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

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

**"FISH " LEAFLETS (shad, black sea bass, croaker, spot, clam, oyster, soft crab, blue crab, flounder, tuna, sea trout, monkfish and bluefish)** - Life history, recreational and commercial importance information, plus tempting recipes for each! Free.

**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, Frances L. Lawrence and Ronald N. Giese. Educational Series No. 28. 36 pages. \$2.00.

**CLIMATE SCALE ENVIRONMENTAL FACTORS AFFECTING YEAR CLASS FLUCTUATIONS OF CHESAPEAKE BAY CROAKER, *Micropogonias undulatus*** - B.L. Norcross and H.M. Austin. Special Scientific Report No. 110, 72 pages. \$2.00.

**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.

**WATERFRONT FESTIVALS: Catalysts for Maritime Heritage and Waterfront Redevelopment** - Jon Lucy. VIMS Contribution No. 1017. 8 pages. 25 cents

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

**NONTRADITIONAL MARINE EDUCATION ACTIVITIES: a planning guide** - Elizabeth A. Cornell. Educational Series No. 32. 11 pages of text, plus 9 MSM (Marine Science Methods) insert lesson plans. \$1.50 per issue inclusive.

**THE MARINE TURTLES OF VIRGINIA: with notes on identification and natural history** - John A. Musick. A field guide. 24 pages. \$1.00.

**RECREATIONAL BOATING IN VIRGINIA: a preliminary analysis** - Tom Murray and Jon Lucy. SRAMSOE No. 251. 31 pages. \$1.00.

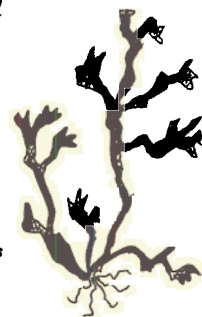
**AN ANNOTATED BIBLIOGRAPHY OF CLIMATE AND FISHERIES INTERACTIONS** - Herbert M. Austin, Brenda L. Norcross and Merton I. Ingham. SRAMSOE No. 263. 65 pages. \$3.00.

**HANDLE WITH CARE: SOME MID-ATLANTIC MARINE ANIMALS THAT DEMAND YOUR RESPECT** - Jon Lucy, Educational Series No. 25. 22 pages. \$1.00.

**VIRGINIA'S CHARTER AND HEAD BOAT FISHERY: analysis of catch and socioeconomic impacts** - Anne R. Marshall and Jon A. Lucy. SRAMSOE No. 253. 90 pages. \$2.00.

This publication represents the first documentation of the charter and head boat industry in Virginia, a \$6 million - plus business. Vessels and equipment, economic structure, effort and catch and factors affecting the future are explored. Valuable to fisheries and resource managers.

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



*Irish Moss*

This worksheet is designed to discover how familiar you are with unusual seafoods and to introduce you to some incredible edibles from the sea. Answer "yes" or "no" to the questions and fill in the blanks.

Let's consider what kinds of seafood you eat.

1. Do you eat finfish, like flounder or tuna?

Do you eat crabs or lobsters?

Do you eat shellfish, like oysters, clams, scallops or mussels?

Do you eat fish eggs, like caviar or shad roe?

2. Do you eat unusual things from the sea, like:

squid?

shark?

skate or ray meat?

seaweed or marine algae?

3. Do you eat really unusual things from the sea, like:

raw sea slugs?

whelks?

periwinkles?

raw urchin eggs?

fermented fish sauce?

dried raw fish?

horseshoe crabs?

octopus-in-its-ink soup?

## Incredible Edibles from the Sea

(Part 1)



*California  
Giant Kelp*



*Dulse*



*Sea Lettuce*

4. How many of the foods in the following list do you eat? Count how many and write the number here. \_\_\_\_\_

Mrs. Butterworth's syrup  
Sealtest polar bars  
Enfamil Nursette infant formula  
Carnation instant breakfast  
Cake Mate decorating icing  
Wish-Bone creamy Italian dressing  
Kraft creamy Russian dressing  
Hollywood light bread  
Saunders fudge and caramel toppings  
Royal and Jello brand chocolate pudding  
Kraft chocolate éclair ice cream  
Reddi Whip  
Sarah Lee pecan and apple coffee cakes  
Sara Lee New York cheese cake  
Herb Magic gypsy salad dressing  
Rich's chocolate eclairs  
Dawn Fresh mushroom steak sauce  
Hostess filled cupcakes  
Sealtest eggnog  
Weight Watchers imitation cream cheese  
Kraft marshmallow topping

5. Does anyone in your family other than yourself eat any of these products? Ask them. Count how many different ones they eat, and write the number here. \_\_\_\_\_

6. Did you know that each of these materials contains a substance that came from a marine organism? YES\_\_\_ NO\_\_\_ Well, they do!

7. Can you guess what marine organism that is?

Why is it used in these products?

Can you define: agar, carrageenan and algin?

All of the food products listed contain edible seaweeds or marine algae. While seaweed may not be as obvious in the diets of people in the continental U.S. as it is in other geographic areas such as Hawaii or Asia, algal derivatives are found in many foods: ice cream, puddings, salad dressings, cheese spreads, sauces, fruit juices, baby foods, baby formulas, yogurt, dehydrated mixes and toppings. Most of these foods contain thickeners or stabilizers derived from one of three seaweed extracts: Algin, agar and carrageenan. Algin is from brown algae; agar and carrageenan are from the red algae.

Algal derivatives leave no taste. The seaweed is dried and bleached and therefore has no taste or odor of its own and adds no flavor to the product it enhances. Agar is one form of seaweed which you can buy in a health food store to make your own gelatins, desserts and jellies. It comes in bar or flake form.

Vegetarians especially appreciate the use of algal derivatives over animal byproducts. Vegetarians can buy animal-free products in health food stores; products such as shoe polish, tooth pastes, laxatives, chewing gum, teas, gravy mixes, soup mixes, vitamins and drugs, fabric sizing, dietetic slenderizing foods, soaps, shampoos, creams, lotions and gelatins, which usually feature an animal byproduct such as beef tallow or other animal fats.

The use of seaweeds or algal derivatives as additives is one story, but another use of seaweeds for their own qualities, such as flavor and appearance, is another. Many cultures use seaweeds much as we use garden vegetables: for flavor, nutrition, color, texture and so on. For example, our own local sea lettuce or green laver (*Ulva lactuca*) can, as its common name suggests, be substituted for lettuce in salad. Collected fresh off the beach, sea lettuce should be washed and patted dry before using. Like many seaweeds, sea lettuce may be eaten fresh, steamed like greens, mixed with rice or other vegetables for flavoring, dried and used as a seasoning or battered and fried to create seaweed tempura.

Seaweeds not only add variety and interest to the diet, but also add significant amounts of vitamins and minerals.

Eastern cultures are committed to eating seaweeds as part of the daily diet. Americans and Europeans generally do not eat seaweeds directly, but do utilize algal derivatives. Europeans are more inclined to use seaweeds as animal feed, and Americans are more inclined to use seaweed as fertilizer.

(Don't miss the next Wavelets for Incredible Edibles, Part II)

## the BLUE CRAB

*The Atlantic blue crab is readily available to Virginia seafood fanciers on a year-round basis.*

*Market forms of blue crab include: live crabs, whole steamed crabs, fresh-picked crab meat, pasteurized crab meat and canned crab meat. Any of these forms may be used in the following recipes.*

### Imperial Crab

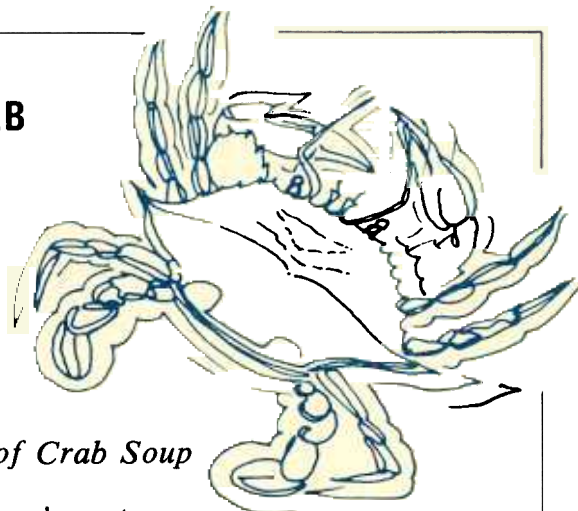
1 pound crab meat  
 2 tablespoons chopped onion  
 2 tablespoons chopped green pepper  
 3 tablespoons butter or other fat, melted  
 2 tablespoons flour  
 1/2 cup milk  
 1/2 teaspoon salt  
 Dash pepper  
 1/4 teaspoon Worcestershire sauce  
 2 hard-boiled eggs, chopped

*Remove any shell or cartilage from crab meat, being careful not to break the meat into small pieces. Cook onion and green pepper in butter until tender. Blend in flour. Add milk gradually and cook until thick, stirring constantly. Add seasonings; egg and crab meat. Place in 6 well-greased, individual shells or 5-ounce custard cups. Bake in a moderate oven, 350° F., for 20 to 25 minutes or until brown. Serves 6.*

### Spaghetti with Crab Sauce

1 pound crab meat  
 1/2 cup chopped onion  
 1/2 cup chopped celery  
 2 cloves garlic, finely chopped  
 2 tablespoons chopped parsley  
 1/4 cup butter or other fat, melted  
 1 cup canned tomatoes  
 1 can (8 ounces) tomato sauce  
 1/4 teaspoon salt  
 1/2 teaspoon paprika  
 Dash pepper  
 3 cups cooked spaghetti  
 Grated Parmesan cheese

*Remove any shell or cartilage from crab meat. Cook onion, celery, garlic and parsley in butter until tender. Add tomatoes, tomato sauce and seasonings. Simmer for 20 minutes, stirring occasionally. Add crab meat; heat. Serve over spaghetti. Garnish with cheese sprinkled over the top. Serves 6.*



### Cream of Crab Soup

1 pound crab meat  
 1 chicken bouillon cube  
 1 cup boiling water  
 1/4 cup chopped onion  
 1/4 cup butter or other fat, melted  
 3 tablespoons flour  
 1/4 teaspoon celery salt  
 1 teaspoon salt  
 Dash pepper  
 1 quart milk  
 Chopped parsley

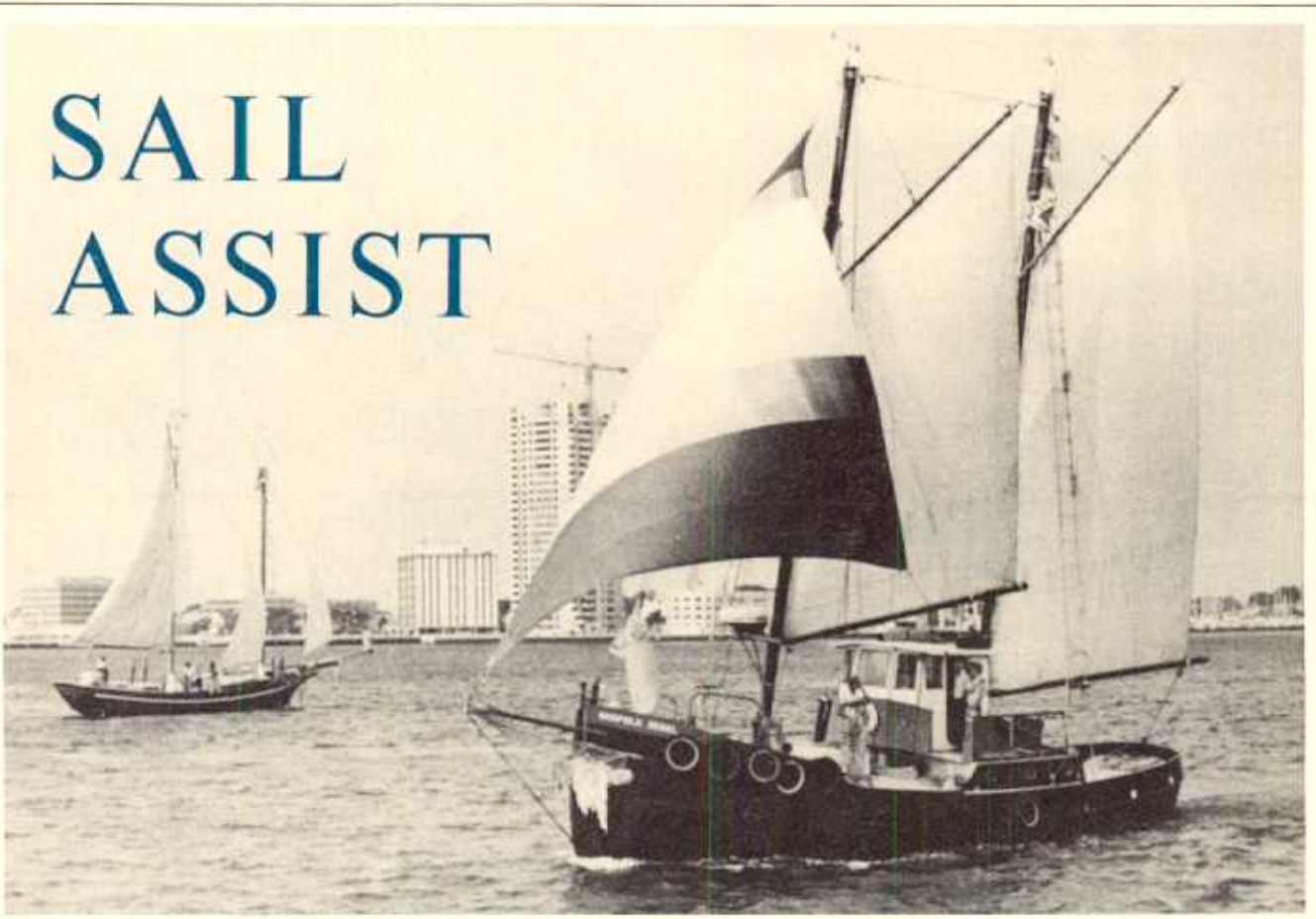
*Remove any shell or cartilage from crab meat. Dissolve bouillon cube in water. Cook onion in butter until tender. Blend in flour and seasonings. Add milk and bouillon gradually; cook until thick, stirring constantly. Add crab meat; heat. Garnish with parsley sprinkled over the top. Serves 6.*

### Crab Appetizers

1 pound crab meat  
 1 tablespoon grated onion  
 1/4 cup butter or other fat, melted  
 1/4 cup flour  
 1 cup milk  
 1 egg yolk, beaten  
 1/2 teaspoon Worcestershire sauce  
 1/4 teaspoon salt  
 Dash pepper  
 3/4 cup dry bread crumbs

*Remove any shell or cartilage from crab meat. Cook onion in butter. Blend in flour. Add milk gradually and cook until thick, stirring constantly. Combine egg yolk and seasonings. Stir a little of the hot sauce into egg yolk; add to remaining sauce, stirring constantly. Add crab meat; blend into a paste and cool. Portion crab mixture with a teaspoon. Shape into small balls. Roll in crumbs. Fry in a basket in deep fat, 375° F., for 2 minutes or until brown. Drain on absorbent paper. Serve on toothpicks. Makes approximately 84 appetizers.*

# SAIL ASSIST



Dick Cook

## Relief from the Oil Crunch?

The men who “go down to the sea in ships” have, for the past 50 years, mostly made the trip in vessels which burned coal, oil or gas as fuel. Before that, wind was the prime mover and a sail was the machine it played against. The shift to coal, and then to cheap, plentiful oil, eventually spelled the demise of most commercial sailing vessels.

By 1930 the role of sailing ships, with a few longlived exceptions, became one of recreation or sail training. From that time to the present, large fishing and freight-hauling vessels worldwide depended almost entirely on petroleum fuels. But now a change is occurring.

Today’s vessel operations, plagued with the rising prices and uncertain future of oil, are looking toward wind power again. Several modern pioneering efforts have demonstrated that sail-assisted power, while possibly not feasible for all classes and sizes of vessels, has a place in modern marine commerce and fishing.

Such were the conclusions arrived at May 19-

21, 1982 at a unique conference and workshop held at the Omni International Hotel in Norfolk, Virginia. The purpose of the conference was to provide a forum for discussion and evaluation of sail-assisted power as it is now being used on vessels or may be used in the not-too-distant future.

Conference coordinator Jon Lucy, marine recreation and trades specialist with the Virginia Sea Grant Program at VIMS, said he was very pleased at the interest in the conference from both the U.S. and abroad. “Obviously, we were correct in our assessment that there was a need to convene such a forum,” Lucy said. Approximately 150 individuals attended the meeting, including persons from Norway, Canada, England and Hawaii. French interests were represented by embassy officials.

Sponsors of the conference included VIMS (through the Virginia Sea Grant Program); the Florida Sea Grant College Program; Mid-Atlantic Fisheries Development Foundation in cooperation with Mobil Corporation; National Marine Fisheries Service; University of South Florida



College of Engineering; and Sail-Assist International Liaison Associates (SAILA).

The conference's early sessions were highlighted by presentations on the realistic feasibility of wind propulsion for American merchant marine vessels. Lloyd Bergeson, President of Wind Ship Development Corporation, keynoted the conference with a discussion of his 1981 study on this subject conducted for the U.S. Maritime Administration. The issues surrounding Coast Guard stability criteria were thoroughly discussed, both during formal and informal sessions. Jim Brown, a design consultant from North, Virginia who works primarily with Third World fishery projects, delivered an enlightening luncheon address and slide program. Brown's message was that some third world nations are beginning to use sail-assisted multihull vessels for fishing, cargo and transportation that are essentially modern creations of basic boat forms used in their part of the world for centuries.

As the conference turned to nuts and bolts panel discussions, it became evident that many of the people concerned with designing and operating various types of vessels had committed to sail assist as a result of their own convictions.

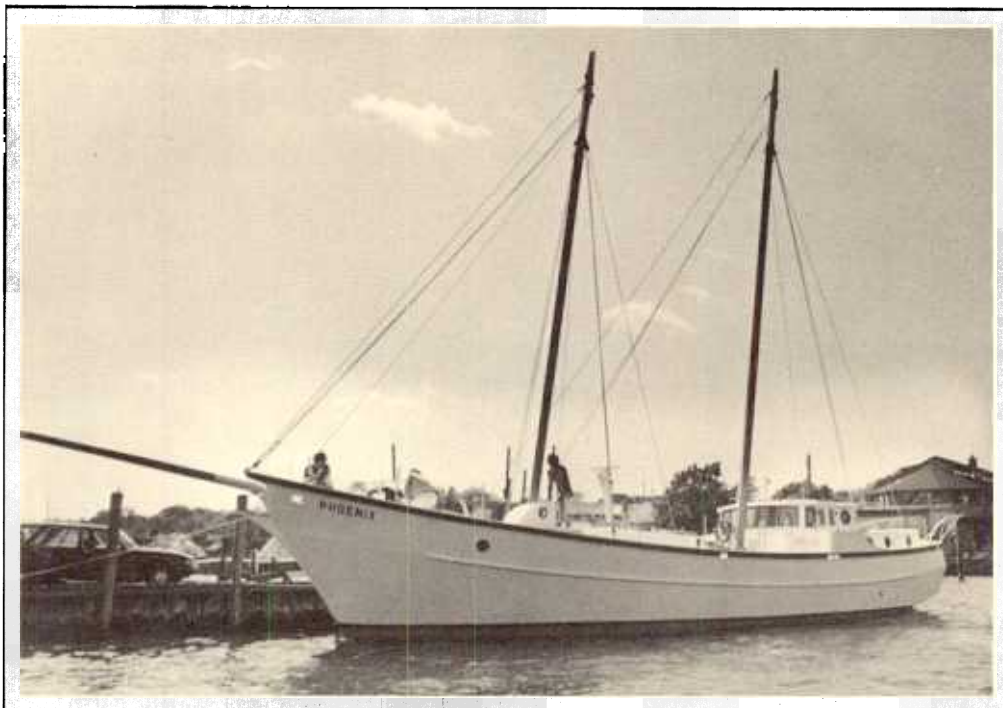
One of these pioneers is Captain Lane Briggs of Norfolk, VA. Briggs and his son, Captain Jesse Briggs, operate Rebel Marine Service, a towing and salvage business. Having broken into sail-assisted power in 1975 by jerry-rigging a 46-foot tug with sails as a joke for their marina's regatta, the father-son team made a full commitment to

the concept in 1978 with the laying of the keel of the 52-foot tug/fishing vessel NORFOLK REBEL. Designed by naval architect Merritt Walter, the vessel, launched in 1980, is gaff-rigged with a retractable bowsprit to allow for pushing barges. So what does one call such a vessel? Briggs settled on TUGANTINE®. NORFOLK REBEL is a tri-purpose vessel; it can be used for towing, salvage, and with minimum rigging, commercial fishing.

The National Marine Fisheries Service (NMFS) believed enough in what Briggs was trying to do to provide him with a small grant to finish fitting out the boat and demonstrate its fuel-saving fishing capabilities. Assisted by VIMS in analyzing his vessel's performance, Briggs is realizing a 20-30 percent average reduction in fuel consumption with the use of sails. NMFS Director Bill Gordon addressed the conference during its second day, stressing that sail-assisted power is beginning to prove itself to be one of several major technological applications leading to improved harvesting efficiency in the nation's fisheries.

Among those conferees who feel they have found a particular niche for sail-assisted cargo hauling is Greg Brazier of East Islip, N.Y., master/builder of the 57-foot packet schooner PHOENIX, also designed by Merritt Walter. Dozier plans to make short hauls between various ports around Long Island Sound, competing with commercial trucking which has to take the long way around.

Joe and Sharon Spivey of Deltaville, VA are



*The 57' packet schooner PHOENIX is now being used on Long Island Sound as a short-haul cargo vessel. Master/builder Greg Brazier will compete with commercial trucking.*

Bill Moriarty--ICON Photo

co-owners of the cargo schooner SHARON VIRGINIA, the largest (72 feet overall) sail-assisted commercial vessel operating out of an East Coast port. The Spiveys, who envision owning several such schooners in the future if all goes well, have become mired down in federal regulations regarding Coast Guard certification of their vessel.

Not having worked closely with the Coast Guard during their vessel's design and construction phases, the Spiveys have been unable to achieve post-construction certification for the craft as a sail-assisted cargo vessel. In conjunction with this dilemma, Sharon Spivey testified at hearings last year of the Subcommittee on Coast Guard and Navigation of the House Committee on Merchant Marine and Fisheries (Oversight Hearing on Marine Safety). The Subcommittee report recommended that the Coast Guard change its regulations to specifically address sail-assisted cargo vessels. However, the Coast Guard expressed concern that by implementing such regulations without the benefit of considerable research and practical experience, they well might be seriously inhibiting development of sail-assisted technology.

Gordon Baxter, master/owner of the 65-foot schooner MEMORY was another conferee who shed some light on the tribulations of the emerging sail-assist industry. Baxter and MEMORY have lately returned from the West Indies where the ship was profitably used in inter-island trade for 18 months. When he tried to sell a cargo of Haitian artifacts dockside in Baltimore and Annapolis, however, he says he spent 6 weeks "battling city hall" concerning licenses and zoning issues. His frustrations have him refitting MEMORY for charters.

The schooners MEMORY and SHARON VIRGINIA, designed by Tom Colvin of Miles, Virginia, were built by Paul Mooney, Mooney Marine Inc. of Deltaville, VA Both vessels are constructed of steel.

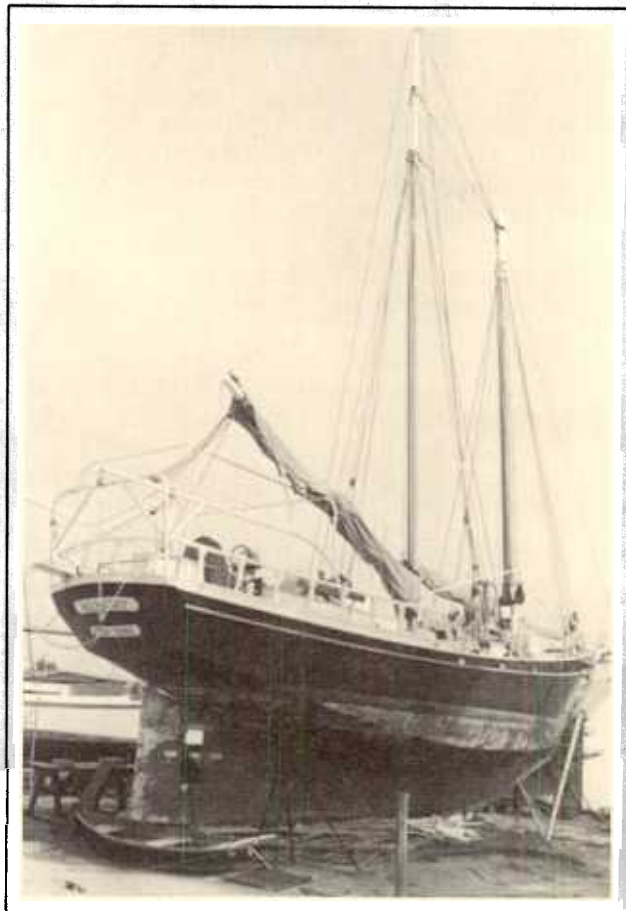
Another steel-hulled sail-assisted vessel was just launched on Hampton Roads. Carrying cruise passengers on Chesapeake Bay in summer and general cargo in the Caribbean inter-island trade in winter, the NORFOLK ROVER is a 63-foot topsail schooner owned and built by naval architect Merritt Walter, president of Rover Marine, Inc. in Norfolk.

On the West Coast, where the greatest number of sail-assisted vessels work, the emphasis is on fishing rather than cargo and passenger hauling. Bernie Arthur is president of Skookum Marine

Construction, Inc. in Port Townsend, Washington. Arthur says he has built 45 sail-assist vessels since 1974, boats which are used in Northwest waters for tuna and salmon, potting dungeness crab and longlining halibut and cod. Sails are primarily used while traveling to and from fishing areas up to 1,000 miles from port.

A check of the publication "Sail-Assisted Commercial Marine Vessels, Bibliography and Abstracts" by Jack Shortall, III, published for the conference by the Florida Sea Grant College Program, shows that an ever-increasing number of commercial fishermen are turning to sail assist in order to extend their operating range and prolong engine life. A current estimate is that there may be as many as 200 sail-assisted fishing vessels in use or planned for use in the Pacific.

Under Shortall's direction, the University of South Florida College of Engineering also has a continuing research program concerned with computer-aided design of sail-assist fishing vessels. Boats being monitored are those of the snapper-grouper fishing industry, and preliminary reports on stone crab lobster boats are encouraging, al-



Dick Cook

*MEMORY, here hauled for cleaning and refitting, did well in the West Indies inter-island trade but hit a trade impasse in Baltimore and Annapolis, says her master/owner Gordon Baxter.*

though projected savings there are not so great as for the snapper-grouper category.

Although certain larger vessels just over 200 feet in length are experimenting with sail-assist (the 3,000 DWT Greek cargo ship MINI LACE and the 1,600 DWT Japanese motor tanker SHIN AITOKU MARU - both discussed at the conference), the most immediate adaptation of the concept seems to be better suited for smaller vessels. Overall investment to either retrofit or design and construct really large vessels for sail assist would be so great, most conferees agreed, as to limit a quick response to the sail-assist alternative.

However, Wind Ship Development Corporation's award-winning retrofit sail design for the MINI LACE appears to be providing the vessel enough fuel savings that a reasonable payback period will result.

With the overall purpose of the conference being to achieve a realistic appraisal of sail-assisted power applications, the advantages and disadvantages of the concept were summarized.

Among the advantages, those which seem to be distinct are a reduction in the impact of fuel availability and associated high costs, increased stability under sail, longer trips, larger payloads and longer engine life. Oceanographic research ships, some now in the the planning stage, are seen by sail-assist proponents as being especially suited for the "marriage of technologies."

Problems associated with the use of sail-assist

power included bridges at major ports limiting mast height; resistance to new concepts by management, governments, the insurance industry and possibly unions; and the Coast Guard's lack of research funds to adequately study the certification stability criterion as it relates to sail-assist vessels.

In the conference's wrap-up session, with approximately half of the conferees remaining in attendance, two recommendations received votes of support.

The first was the need for a Coast Guard review of the stability criterion for certification of sail-assist vessels. The point made was that relatively small sail-assist vessels need to be evaluated differently from large ships.

Secondly, conferees endorsed U.S. Senate Bill 1356. This bill, co-sponsored by Senator John Warner (R-Virginia) and Senator Spark Matsunaga (D-Hawaii) would allow energy investment credits for masts, sails and rigging on sail-assist vessels.

With the many complex issues associated with what appears to be a budding working sail industry, it was appropriate that the conference also served to formally launch SAILA (Sail Assist International Liaison Associates). A non-profit organization serving as an information clearinghouse on working sail, SAILA can be contacted at 1553 W. Bayville Street, Norfolk, VA 23503.

According to Jon Lucy, he and others are already working with Jack Shortall in Florida on plans for a 1983 follow-up conference. This

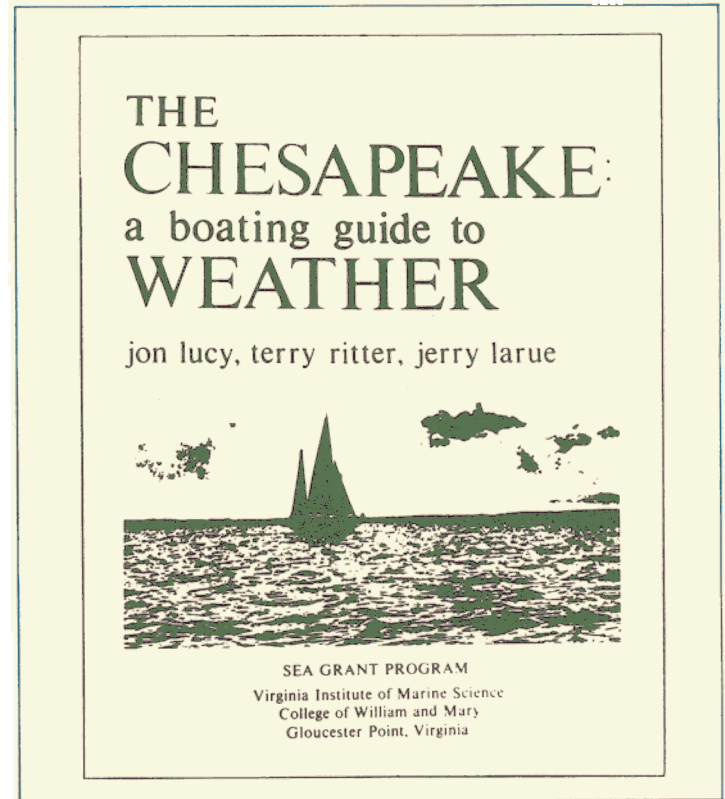


*The Greek cargo ship MINI LACE is working out of New Orleans in the Caribbean tramping trade. Her 214' length is helped along by a fully automated sail, providing fuel savings.*

conference would likely provide an international focus on wind power applications for fishing vessels.

A special conference report entitled "New Working Watercraft: A Return to Former Capabilities" by Jim Brown, may now be ordered through VIMS Sea Grant Communications Office (\$8.50 per copy). The report was the basis for Brown's conference address.

Finally, a published proceedings of the Norfolk conference will be available sometime in the fall of 1982. The proceedings, produced through the Virginia Sea Grant Program at VIMS with assistance from the National Marine Fisheries Service, will be available through Jon Lucy, Marine Advisory Services, VIMS, Gloucester Point, VA 23062



A valuable aid to Bay users, "The Chesapeake, a Boating Guide to Weather" currently is available from the VIMS Sea Grant Communications Office for \$1.00 per copy.

**Marine Resource Bulletin**  
A Sea Grant Advisory Service

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VOL. XIV, NO. 3      SUMMER 1982

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The Marine Resource Bulletin is a quarterly publication of the Marine Advisory Service of the Virginia Sea Grant Program, which is administered by the Virginia Graduate Marine Science Consortium, with members at William and Mary, Old Dominion University, University of Virginia and Virginia Polytechnic and State University. Subscriptions are available without charge. Address all inquiries and comments to the editor.

Dick Cook . . . . . Editor

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**Cover Note**

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Picture proof that Chesapeake Bay can create its own weather. In early June, the relatively cool air temperature over water inhibits cloud formation (white puffs) during late morning and afternoon. In fall, the opposite effect results. NASA LANDSAT Photo.

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