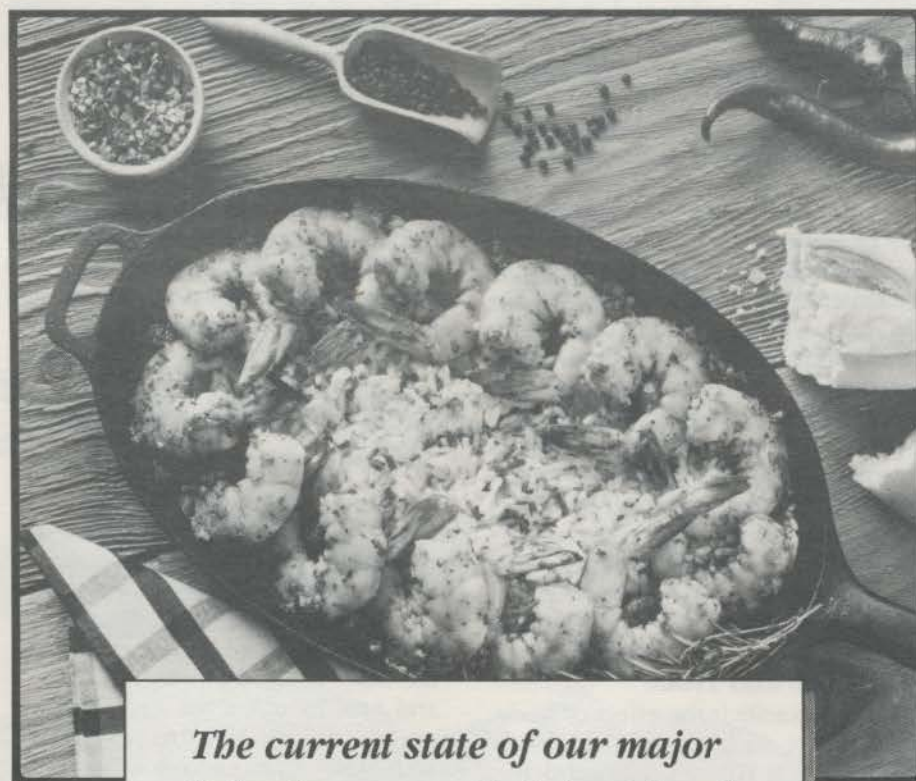


# MARINE NOTES

## SPOTLIGHT ON WORLD TRADE

# Desperately Seeking Seafood Increasing Demand, Declining Resources



*The current state of our major fisheries means that, in spite of intense fishing efforts, U.S. demand for seafood exceeds what its fishermen are able to catch.*

**W**hen it comes to seafood, the United States faces a predicament. On the one hand the U.S. is catching the majority of its commercial fish and shellfish species at capacity — or beyond capacity — and on the other hand it still relies on imports to put shrimp, fish and other seafood on the nation's dinner tables. In 1992, for example, over 40% of the seafood consumed in the United States came from foreign fishermen.

According to Bruce Norman, fisheries expert with the Chesapeake Bay Office of the National Oceanic and Atmospheric Administration (NOAA), there are precious few Atlantic fish species that are not, in the parlance of fisheries scientists, either "fully utilized or over utilized." Of these, says Norman, only the Atlantic mackerel is available in numbers high enough to make a measurable impact on our fishery balance sheet.

The current state of our major fisheries means that, in spite of intense fishing efforts, U.S. demand for seafood exceeds what its fishermen are able to catch. Since our exports of seafood are significantly less than our imports, we are left with a seafood trade deficit. Both Norman and University of Maryland marine economist Doug Lipton agree that the U.S. has faced a deficit for some time and that it is likely to persist.

That deficit is substantial. As recently as 1987 the U.S. deficit in edible fish was close to \$4 billion, according to Norman. Though that figure had dropped to \$2.2 billion by 1992, early figures for 1993 show an upturn to \$2.8 billion. "The gap in seafood trade has narrowed in recent years," Norman says, "but it is unlikely to close."

*(Continued on page 2)*



*Far beyond the shores of fishing grounds like the Chesapeake Bay lies a great sea of trade regulations and the uncertain future of a developing world.*

## **Seafood, continued**

Just how significant is the nation's seafood deficit? In terms of our relative prosperity, according to Norman, the deficit alone may not tell us much. "The deficit is too much of an aggregate indicator," he says, "to serve as the measurement of our accomplishment." Norman points out that the deficit responds to macro-economic policy and exchange rates, and not simply to who is producing or buying more fish. Much of what affects U.S. seafood produc-

ers may happen "at the margin." Here the deficit may be affected as we export more fishery products, compete directly with like imported products in our own market, or "sop up" excess domestic demand through marketing and new products. In other words, we can nibble at the edges of the seafood deficit, but far beyond the shores of fishing grounds like the Chesapeake Bay lies a great sea of trade regulations, economic booms and busts, and the uncertain future of a developing world.

Here the deficit may affect us in more indirect ways.

### **Of Tariffs and Trade**

What exactly is the effect of trade agreements, such as NAFTA and GATT, on the nation's seafood deficit?

First a word about these two trade agreements. NAFTA, the North American Free Trade Agreement, which took effect January 1, 1994, represents an attempt to even out trade relations among its partners — Mexico, Canada and the U.S. According to Norman, Mexico, for example, has had a 20% tariff on

fishery imports. NAFTA will phase out such tariffs and increase demand — for seafood, for example — in Mexico. NAFTA will also work to eliminate import prohibitions and measures that could restrict trade. "Already, U.S. fishery exports to Mexico are increasing," Norman says, "with the growing prosperity of the Mexican economy." The new trade agreement should help to boost this trend.

For now, Norman says, the U.S. has the comparative advantage. Despite higher wages in the U.S., better equipment, including better processing and canning facilities, gives the American seafood industry the competitive edge. How long this remains the case will, he says, depend on how fast the Mexican economy grows, and how fast it adapts to economic reform and free trade.

NAFTA should open up opportunities for investment in aquaculture in Mexico, including shrimp aquaculture. It will not, however, have much effect on coastal fishing, since the trade agreement liberalizes fishing restrictions only for Mexicans (reducing, for example, the hold of the powerful cooperatives) but it does not ease limitations on foreigners fishing in the Mexican exclusive economic zone (EEZ). But then, the U.S. has not eased restrictions on foreign fishing in its coastal waters either.

The other major trade agreement in recent headlines is called the "Uruguay Round" — seven years of negotiations which led to changes in GATT, the General Agreement on Tariffs and Trade. GATT becomes more important when one thinks of the U.S.'s relationship with Europe and Asia, though it has had some unexpected effects on trade relations with Mexico and Canada as well.

For U.S. seafood dealers Europe is a mixed bag. While it is the U.S.'s second-largest trading partner, the European Union (EU) — which used to be known as the European Community (EC) — is still significantly protected by tariffs. These tariffs, which may hover around 15%, are augmented by a system of other

*(Continued on page 4)*

# Seafood Trade and the Environment: Balancing a Shrinking Resource

**T**he question arises: even if seafood demand remains moderately strong, will current stocks be able to feed a growing world population?

In a recent *Washington Post* article ("Today's Catch — and Tomorrow's," Outlook section, Sunday, March 20, 1994), Jessica Mathews, a senior fellow at the Council on Foreign Relations, argues that 13 of 17 major species worldwide are depleted or in serious decline. The other four are fully exploited, or overexploited. Since 1989, she states, the global fish harvest has been dropping, despite intense effort (and the use of improved technology).

The picture painted by Mathews is bleak indeed: "The catch of 9 of the 12 Atlantic groundfish stocks has collapsed. The take of such species as cod, haddock and flounder is down by 70 to 85 percent. Clam and

*Thirteen of  
seventeen major  
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oyster catches are down by half. Pacific salmon are nearing commercial or biological extinction."

Only rigorous fisheries management, say Mathews and others, can save the stocks. But with world population expected to double by 2035, even brilliant and downright harsh fisheries management will have a tough time preserving stocks and providing seafood to a hungry world. At present seafood accounts for about one-sixth of the world's animal protein, protein which is in short supply — or at least widely unavailable — given that some 800 million people are malnourished.

In addition to concerns about food, there are also other environmental issues which relate to trade agreements such as GATT, according to policy expert Peter Brown, of the

University of Maryland's School of Public Affairs.

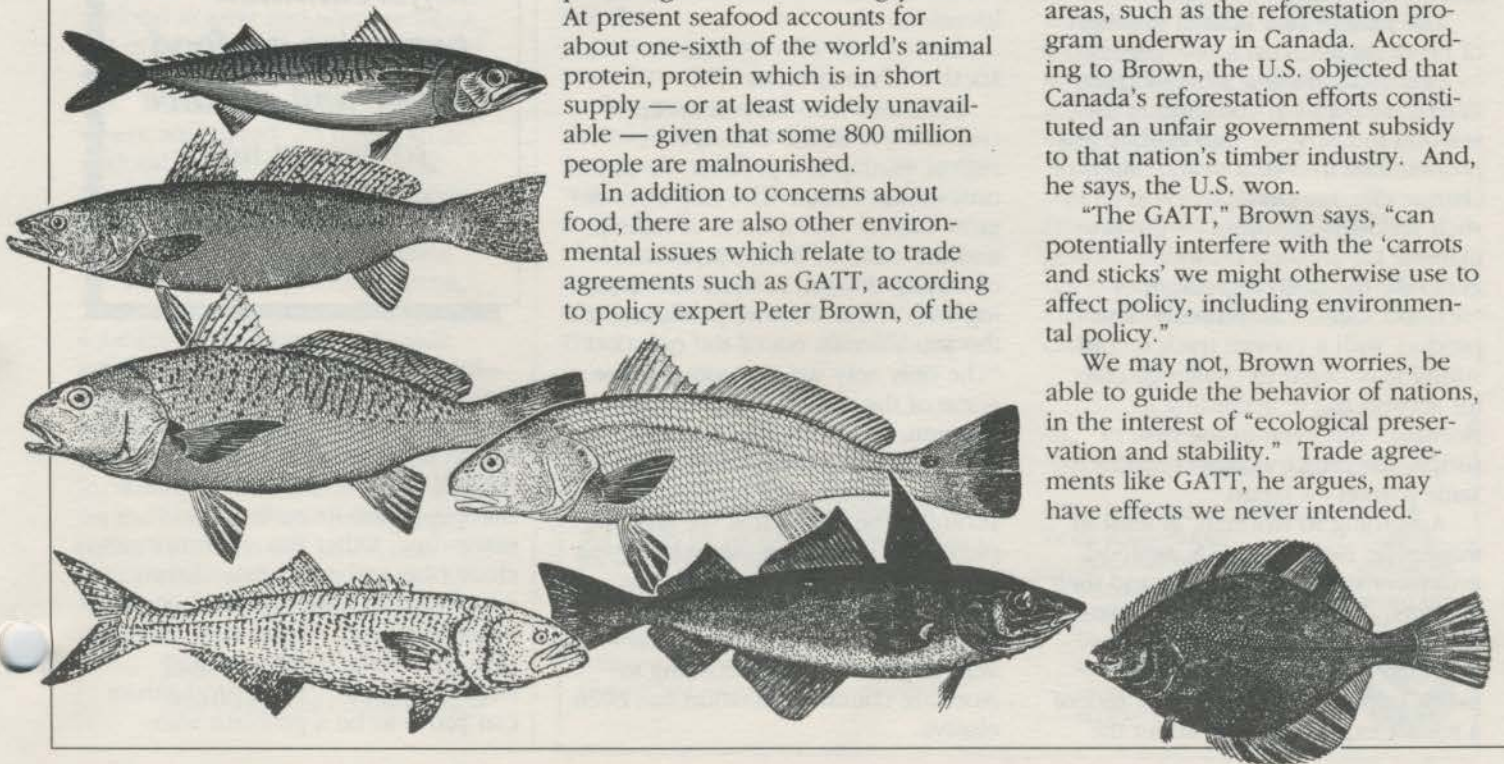
"I don't agree with the world view of which this [trade agreement] is the progeny," Brown says. GATT, according to Brown, places too much emphasis on the old "neoclassical" approach to economics, an approach that has often led us to overexploit natural resources such as fish stocks. GATT, according to Brown, may actually hurt our efforts to address pressing environmental questions.

"Take the tuna controversy," Brown says. In that case the U.S. said that it would no longer import tuna from Mexico, because current fishing practices were inadvertently killing large numbers of porpoises. Mexico complained, through the GATT mechanism, that this constituted a "restraint to trade." Mexico won that round, according to Brown.

The impact of such policies, Brown says, is also apparent in other areas, such as the reforestation program underway in Canada. According to Brown, the U.S. objected that Canada's reforestation efforts constituted an unfair government subsidy to that nation's timber industry. And, he says, the U.S. won.

"The GATT," Brown says, "can potentially interfere with the 'carrots and sticks' we might otherwise use to affect policy, including environmental policy."

We may not, Brown worries, be able to guide the behavior of nations, in the interest of "ecological preservation and stability." Trade agreements like GATT, he argues, may have effects we never intended.



## Seafood, *continued*

(non-tariff) measures which Norman calls "Byzantine." In addition, according to Norman, European seafood businesses, like other European businesses, may receive significant support from the government, a fact that has caused heartburn among their American competitors.

At present the EU does not export much seafood, and the U.S. does not have major barriers to seafood trade to begin with — and since we do not have barriers, we do not have much to "bargain" with in trade discussions. Still, Norman says, "What happens with Europe will be very important for the American seafood industry, in that it represents the major opportunity for growth."

Asia is another matter. Japan already represents 64%, by value, of the U.S. seafood export market. The Japanese especially like our salmon and crabs, which represent 24% and 13% respectively, by value, of what we export to them. Norman points out that Chesapeake crabbers should not worry which of their Atlantic neighbors are getting rich selling crabs to the orient. Japan buys mostly king and Tanner crabs from Alaska, according to Norman.

The pattern of a limited number of products aimed at a few markets — essentially putting all your crabs in one basket — is common in the seafood industry, though slightly less pronounced in recent years. Signs of change can, for example, be seen in such products as surimi — the raw material for artificial crab meat, generally the main ingredient of "seafood salad." A relatively new product with a proven track record, surimi may begin to challenge crab for second place, according to Norman. But even in the case of surimi, the primary target remains the same market — Japan.

According to Norman, at least in the Pacific Northwest U.S. seafood providers are looking to expand their markets. He feels that smaller markets, such as Korea, Scandinavia, Australia and New Zealand will prove important in the overall mix of a robust export strategy under the

new GATT regime. "Further down the road," he says, both China and Russia will be joining GATT, lowering tariffs and other barriers, and adopting new rules against unnecessary restraints. China and Russia, depending how fast and how well their economies expand, could prove to be major new markets.

Meanwhile, the U.S. continues to be a major customer at the stalls of the world's seafood market. And the stall we like most is the one where they sell shrimp. Shrimp, almost all of it cultured, represents 35%, by value, of our seafood imports. We get shrimp from all over the world, from Central America, from Ecuador, from Thailand, and increasingly from China. Since we do not have tariffs on shrimp, we have little to bargain there — the U.S. is wide open for shrimp imports . . . which is good news for shrimp lovers.

### **In the Chesapeake**

For those who harvest and process seafood in the Chesapeake region, shrimp is a product we can only dream about. The Bay does not grow commercial species of shrimp, and the weather makes aquaculture of shrimp difficult at best. Competing with warm-weather producers to the south seems out of the question. "The only way we can compete for some of the shrimp market," says Norman, "is to develop a surimi product that is like shrimp."

The problem with producing surimi in the Bay is that we lack the plentiful, cheap, non-oily white-meat fish most popular for making the seafood substitute. Experiments have been tried with menhaden — a very oily fish — but according to Norman, commercialization has been elusive.



*The best hedge against changing trends and tastes is "product differentiation" — providing seafood in new and creative forms, in new packages, new recipes.*

Ironically, the very oil that makes menhaden unsuitable for most food applications also makes it a primary export from the Bay region — in the form of fish oil. This oil is sent to Europe, where its main use is in margarine. Other Bay exports include blue crabs and eels. Farm-raised striped bass (rockfish) could become a major export item, Norman says, especially if local markets become glutted. "High productivity can prove to be a problem with

farm-raised fish," Norman says. He points to Norway's pioneering salmon aquaculture industry, and to U.S. catfish farmers, who are also actively seeking new markets for their increasing production.

Oysters, the Bayfood that once left towns like Crisfield by the trainload, could re-establish their traditional niche, Norman says, perhaps as a specialty item in the upscale half-shell market. There are, however, two problems. The first is the well-publicized collapse of the Bay's oyster stocks due to overfishing, declines in water quality and most recently, disease. Until the disease problem is solved, for example, bringing oysters back will prove difficult.

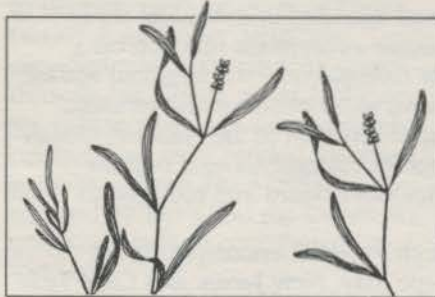
The second problem with oysters lies on the demand side. "Substantial declines in production have been paralleled by substantial declines in imports," Norman says. In other words, not only are we producing fewer oysters; we are also importing fewer, perhaps because of health concerns or changes in the American palate. "We could be witnessing an overall decline in demand for oysters in the U.S. market," Norman says.

The best hedge against changing trends and tastes is "product differentiation," Norman says — providing seafood in new and creative forms, not only surimi, but also traditional species in new packages, new recipes. But this brings us back to where we started: to differentiate seafood products there must be product to begin with. The Bay's seafood harvest is ultimately limited by the limits of Bay's production.

"It may be," says Doug Lipton, "that the best way out of the double squeeze of shrinking stocks and increasing consumer demand will be the advent of new technologies, including aquaculture and biotechnology." Without new ways of increasing the availability of seafood on the one hand and protecting native stocks on the other, the nation's seafood deficit may be followed by a seafood collapse.

— JACK GREER  
Maryland Sea Grant College

## Underwater Grasses Increase 85% Since 1984



According to a recent issue of the *Chesapeake Bay Barometer*, a fact sheet produced by the Chesapeake Bay Program, submerged or underwater grasses have begun to make a comeback in the Chesapeake Bay. While the underwater grasses, which are essential as shelter and food for many aquatic Bay species, remain well below their former abundance, they have shown a steady recovery in comprehensive surveys performed in 1978 and from 1984 to the present. In 1992, over 70,000 acres of underwater grasses were recorded, an increase of 85% from the low of 38,000 acres observed in 1984. Researchers believe that water quality improvements over the last several years have influenced their recovery.

Bay grasses are flowering plants rooted to the ground which grow underwater and often reach up to the water's surface. They are important to the Bay's ecosystem in a number of ways. They provide shelter and nursery areas for fish, crabs and other aquatic life; serve as food for a variety of Chesapeake Bay life, espe-

cially certain migratory waterfowl; absorb nutrients such as phosphorus and nitrogen; and trap sediments, reduce erosion and help make the water clearer by lessening the impacts of wave action.

The Chesapeake Bay Program, the multigovernmental partnership committed to restoring the Bay, is working toward an "interim" recovery goal of 114,000 acres for the Bay's underwater grasses, according to the fact sheet. If current rates of recovery continue, the Bay Program expects to reach that goal by the year 2005. This goal, agreed to by the Chesapeake Bay Program partners (the District of Columbia, Maryland, Pennsylvania and Virginia) last year, represents the areas in the Bay watershed that have supported vegetation at one time or another since the early 1970s when complete mapping of grasses in the Bay began.

Chesapeake Bay Program scientists and managers estimate that grasses might once have covered 400,000 to 600,000 acres of the Bay watershed. Based on this potential, the Chesapeake Bay Program is developing new underwater grass recovery goals beyond the initial goal of 114,000 acres.

For a copy of this fact sheet or others, call the Chesapeake Bay Program, 1-800-YOUR BAY. For general information about the Bay, call the Chesapeake Regional Information System (CRIS), 1-800-662-CRIS.

### Maryland Marine Notes

*Maryland Marine Notes* is published ten times per year by the Maryland Sea Grant College for and about the marine research, education and outreach community around the state.

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## Research

### Mid-Atlantic Marine Research Program Publishes Plan

Marine research is conducted at a number of institutions and laboratories located at universities and in federal and local agencies in individual states around the country. Since marine and estuarine ecosystems function on a regional scale rather than on a state-wide or national one, the Regional Marine Research Program (RMRP) was created to form more effective and efficient resource management. Funded under an appropriation to the National Oceanic and Atmospheric Administration, the Program established nine regions around the nation, each directed by an 11-member board and required to produce a comprehensive research plan.

The Mid-Atlantic Regional Marine Research Program encompasses the coastal and near-coastal waters between Cape May, New Jersey and Cape Fear, North Carolina and includes the states of New Jersey, Delaware, Maryland, Virginia and North Carolina.

The Mid-Atlantic RMRP has prepared and published a research plan detailing the criteria for regional research in the Mid-Atlantic. In addition, a comprehensive inventory of marine research related to water quality, ecosystem health and coastal processes within the Mid-Atlantic region was compiled. The *Mid-Atlantic Research Plan*, a 164-page booklet, contains an analysis of this inventory. Both the research document and a one-page executive summary of the plan are available free upon request. Send requests to: Sherri Cooper, Assistant Director, Mid-Atlantic Regional Marine Research Program, 2200 Symons Hall, University of Maryland, College Park, Maryland 20742.

## Conferences

### Aquaculture Conference

The Land Grant and Sea Grant universities and state aquaculture associations of six states and the District of Columbia will join together to sponsor "Aquaculture in the Mid-Atlantic '94," on May 31, June 1 and 2 in Fredericksburg, Virginia. Having evolved from a one-day conference in Maryland on oysters in 1979, this yearly conference is now the largest aquaculture education program in the region. It is being sponsored by Maryland, Virginia, Delaware, New Jersey, Pennsylvania, West Virginia and the District. Presentations at the conference will focus on production, finance, economics, marketing and seafood products. There will also be a trade show with exhibits of the latest industry equipment and supplies. For a conference brochure, call Maryland Sea Grant Extension Agent Don Webster, (410) 827-8056.

## AAAS Elects Colwell President

Rita R. Colwell, president of the University of Maryland Biotechnology Institute (UMBI), has been named president-elect of the American Association for the Advancement of Science (AAAS), the world's largest



scientific organization, by a vote of the AAAS membership. A research scientist and educator whose career spans some 30 years, Colwell is a Professor of Microbiology at the University of Maryland College Park and is known nationally and internationally as a proponent of the science of marine biotechnology. She has championed the growth of biotechnology-related research in Maryland and was a leader in establishing in 1985 the University of Maryland Biotechnology Institute to serve as a catalyst for furthering the state's scientific and economic development. Colwell is also one of the visionaries behind the Columbus Center, a \$160 million research, training and exhibition facility for the marine

sciences scheduled to open to the public in Baltimore's Inner Harbor in 1995.

Colwell is a strong advocate for investing in basic research as a means to advance our national and international competitiveness and is committed to enhancing science education at all levels. She is also active in encouraging women and minorities to pursue careers in science and engineering, addressing the need for a scientifically literate public and strengthening international scientific cooperation. In addition to her professorship in microbiology, Colwell served as director of the University of Maryland Sea Grant College from 1977 to 1983 and Vice President for Academic Affairs for the University of Maryland System from 1983 to 1987 before moving to her present post as president of UMBI.

Donald N. Langenburg, Chancellor of the University of Maryland System and past president of AAAS, commenting on Colwell's election, says, "We've had 40 years of science dominated by physicists, space scientists and engineers. I think it is particularly significant, in the era of genetic engineering and its powerful contributions to the world society, that the AAAS membership has chosen Dr. Colwell, a prominent life scientist, as its incoming president."

## Noteworthy

### Lab Space Available

The building which formerly housed the Johns Hopkins University's Chesapeake Bay Institute in Shady Side, Maryland is now owned privately and is available for rent as laboratory space as well as for retail and office use. The Rich Financial Group, which owns the property is looking for anyone interested in renting the 4500 square feet of lab space on the premises for \$4-8 per square foot. Wet lab facilities include an 18 megohm reverse osmosis, high purity water system with three hundred gallons of storage capacity, two culture rooms, a dark-room, corrosive-resistant plumbing and safety showers. The facility is part of what will eventually be Draketail Village, an 80,000-square-foot complex on 6.3 acres fronting on the Chesapeake Bay. For more information about renting lab or office space, call (800) 538-7424.

### Request for Proposals

NOAA National Undersea Research Center, University of North Carolina at Wilmington. Preproposals are due by May 17, 1994. For details about proposal submission, contact the Center at (910) 256-5133.

## Oyster Disease Research

The NOAA Chesapeake Bay Office will issue its 1995 Request for Proposals for research in the area of oyster diseases in mid-May. Those interested in receiving a copy of the RFP should call the NOAA Bay Office at (410) 267-5660.



### MIPS Program Accepting Proposals

The Maryland Industrial Partnerships (MIPS) Program at the University of Maryland pairs University researchers with Maryland companies to develop new products or manufacturing methods. MIPS has awarded over 300 matching grants through June 1993. A total of thirty-six million dollars in joint research partnerships were funded for those projects — with \$12.3 million contributed by MIPS and the University and \$24.2 million contributed by industry.

Projects are selected for funding on the basis of their potential to create or retain jobs, develop or improve products or services, modernize manufacturing processes or operations, or to promote economic development in other ways. Projects supported by MIPS have included those in the following research fields: aerodynamics, agriculture and aquaculture, biotechnology and genetic engineering, chemical engineering, combustion engineering, communications, electronics, energy, laser technology, manufacturing technology, materials, medical instrumentation, physics, reliability engineering, robotics and software development.

MIPS accepts proposals twice a year. The next application deadline is *May 2, 1994*. The maximum grant per company is \$70,000 (\$50,000 for start-up firms) and can be renewed for an additional year. Small and start-up firms have reduced requirements for matching funds. To find out more about the MIPS Program and how to submit a proposal, call the MIPS office in the Engineering Research Center at UMCP, (301) 405-3891.

### Teaching Assistant Program

The Center for Teaching Excellence at UMCP will again offer the Undergraduate Teaching Assistant (UTA) program for fall 1994. Selected students work with a faculty mentor and provide services while they learn about teaching. Students take 4 credits of classwork focusing on teaching and assist the faculty member for about 9-10 hours per week.

To be selected, students must have (1) junior standing by the beginning of the semester, (2) have a cumulative grade point average of at least 3.0, and (3) have earned a grade of A in the course in which they will be assisting. To request an application, due *May 25, 1994*, call the Center at (301) 405-9368.

## Spring Tree Planting



One way to help restore the Chesapeake Bay is to plant more trees, which help reduce soil erosion and slow down runoff, throughout the watershed.

Tree-Mendous Maryland, a state of Maryland-sponsored program that promotes tree planting to improve the quality of the environment, offers help to community or neighborhood associations who want to plant trees in public open space.

These groups may order Tree-Mendous containerized or balled and burlapped trees for a cost of about \$15.00 for a 5-8-foot tree. Trees must be planted on commonly held areas such as parks and road easements. Call the Maryland Department of Natural Resources at (410) 974-3776 for a complete list of trees. In addition, those interested in actively promoting planting and caring for trees in their communities can request help from urban forestry personnel. Call the same number for information about this, or for general information about the Tree-Mendous Maryland program.

# Publications

## Marine Sanctuaries

*Marine Sanctuary* is the name of a semiannual report covering the National Marine Sanctuary Program. It features articles aimed at defining marine sanctuaries and their role in protecting the nation's marine resources. The National Marine Sanctuary Program and the Santa Barbara Museum of Natural History have joined together to produce this magazine-style publication spotlighting several of the nation's 13 marine sanctuaries. To request this publication, call the NOAA Sanctuaries and Reserves Division, Office of Ocean and Coastal Resource Management, (301) 713-3125.

## Policy Updates

*Legislative Alert!* This quarterly fact sheet, published by the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management describes current legislation facing federal congressional committees and the possible impacts on coastal management. To receive the free publication, call Maria Manzie at (301) 713-3087.

# Calendar

## April 18-20 — Water Resources Conference

Richmond, Virginia. The 1994 Virginia Water Resources Conference will be held at the Marriott. The Virginia Water Resources Research Center and the Virginia Lakes Association are sponsoring the conference. For registration information, call (703) 620-6168.

## April 27 — Joint Sea Grant/Comb Lecture on Marine Biotechnology

Baltimore, Maryland. Penny Swanson of the National Marine Fisheries Service will give a lecture on "Functions and regulations of salmon gonadotropins" at the University of Maryland's Center of Marine Biotechnology in Baltimore's Inner Harbor. Light refreshments will be available immediately preceding the 4:00 p.m. lecture in COMB's seminar room. For more information, contact Russell Hill, (410) 783-4817 or Rosemary Jagus, (410) 783-4889.

## May 31-June 2 — Aquaculture Conference

Fredericksburg, Virginia. Aquaculture in the Mid-Atlantic '94 Conference is the largest education program in the region. Sessions will cover production, finance, economics, marketing and seafood

products. A trade show will exhibit the latest equipment and supplies. For conference and registration information call Don Webster at (410) 827-8056.

## June 1-3 — Chesapeake Research Conference

Norfolk, Virginia. The Chesapeake Research Consortium is holding a conference called "Toward a Sustainable Coastal Watershed: The Chesapeake Experiment." The conference will draw together scientists, environmental managers, legislators, students, business leaders and citizens to review the latest research findings about the Chesapeake Bay and its watershed. Over 100 presenters from 35 academic and research institutions will participate in the conference. The invited keynote speaker is USEPA Administrator Carol Browner. One of the conference highlights will be the presentation of the Mathias Science Medal at a dinner cruise aboard the *Spirit of Norfolk*. Registration for the entire conference costs \$125.00. Register by May 13 to avoid a late registration fee. To find about prices for individual days and events, student rates and hotel registration, request a conference brochure from the Chesapeake Research Consortium, (410) 326-6700.



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