University of North Carolina Sea Grant Program

NEWSLETTER

NOVEMBER, 1975

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More mileage from our resources

We'd like to have our cake and eat it too.

We want an environment rich in raw materials, clean air and water, lush foods and eye-pleasing scenery. But our mouths water for resources that nourish a richer life.

We realize that use sometimes turns to abuse. And with some resources getting short, we want to get the most mileage from our lands, water, minerals and wildlife.

University scientists whose work is supported by the UNC Sea Grant Program are looking for ways to stretch the mileage we get from coastal resources. They are seeking knowledge that will enable us to continue getting fat on the earth's bounty without being unwise and wasteful. Ultimately they hope their findings will someday help improve the economic and environmental quality of life for people in the coastal zone.

This newsletter describes the projects UNC Sea Grant-supported researchers at N.C. State University, East Carolina University, UNC at Wilmington and Chapel Hill will do during 1976 to provide information needed for making the most of our unique resources in coastal North Carolina.

Counterattacking shellfish viruses

Put one first grader with measles in with 30 others and you're likely to get a room full of red-splotched faces.

Shrimp and crab don't get measles. But they are subject to many diseases that spread at least as fast as measles among first graders. Disease can present real problems for anyone trying to culture shellfish in a confined area. An entire population can be quickly wiped out if a fatal disease invades a culture tank.

Biologist Charles Bland has been a pioneer in identifying and controlling fungal diseases of blue crab and shrimp in aquaculture. But his Sea Grant supported research is of little use if it never gets beyond the door of his East Carolina University lab. That's why his goal for 1976 is to get his findings into a form that anyone who farms shellfish can use to identify and treat disease. He plans to develop two handbooks. One will describe fungi affecting shellfish and provide keys to identifying disease. The other will focus on diagnosing and controlling shellfish diseases caused by fungi. Meanwhile Bland will continue building on his knowledge through continued study of the biology of shrimp fungi and chemical and biological control methods.

Local governments in coastal North Carolina are in the midst of drawing up plans for how their lands will be used in the future. Sea Grant research projects aimed at bringing together information useful in managing coastal lands should be helpful to planners, citizens and local officials.

UNC law professor Tom Schoenbaum is taking a legal look at how counties and municipalities put plans for land use outside of "areas of environmental concern" into effect. Development within those specially-designated environmentally sensitive areas will be regulated by a permit system, administered by the counties and state. But it will be up to the counties to implement land use plans outside of "areas of environmental concern." From his study Schoenbaum will make recommendations on the legal tools governments can use to implement planning. Schoenbaum will also look at how government red tape can be reduced and other problems relating to the legalities of planning.

A study that got underway in August and will continue through June promises to provide a handy tool for formulating development policy that reflects the ecological characteristics of different types of coastal environments. A handbook for the non-scientist, a major product of the study, will describe and provide scientific information on ecological processes at work in various types of shore environments. It will also describe alternative development policies that are compatible with specific environments. Policies to be described in the book will take ecological processes into consideration. Led by David Brower of UNC-Chapel Hill's Center for Urban and Regional Studies, the project brings together expertise from marine science, law and planning.

In their ongoing research, ECU scientists Mike O'Connor, Vince Bellis and Stan Riggs will map shoreline erosion along the estuarine shores of counties in the eastern Albemarle and southeastern Pamlico regions. From their maps, small property owners will be able to determine the approximate rate of shoreline erosion on their land, geologic and biologic processes influencing erosion and alternative methods for coping with shoreline erosion.

Research that is already providing data useful in managing the state's coastal waterbirds will be further developed by biologists Jim Parnell and Bob Soots of UNC-Wilmington and Campbell College. Census techniques developed by the researchers in 1975 will be used. A count of the number of birds today will be useful for future comparisons to determine the changing status of bird populations.

Ernie Seneca and Steve Broome, NCSU botanist and soil scientist, are developing further know-how for creating new marsh with plantings of marsh grasses on dredge spoil. During the year, they'll also keep an eye on the growth of mixed beach grasses they planted in earlier years to stabilize dunes.

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A network operating between you and the lab

A lot of research findings never get beyond the laboratory door. But through a network of advisory services agents, most of whom live and work on the coast, findings from Sea Grant and other marine research programs are taken from the lab to people who can use and benefit from them. In turn, advisory agents help keep Sea Grant in tune with the real needs of coastal citizens by relating problems they see and hear to program organizers.

During 1976, UNC Sea Grant will continue its wide-ranging advisory work and will add a specialist to assist coastal recreation industries. Jim McGee, Sumner Midgett and Hughes Tillett will keep working with commercial fishermen, updating them on equipment and methods, business management and new kinds of fishing.

Ted Miller, Dave Hill, Frank Thomas and Skipper Crow will maintain close contact with finfish and crab processors seeking to upgrade product quality and meet government standards.

Walt Jones, John Foster and Bill Rickards will develop and disseminate information on how to farm eels in enclosed ponds at their New Bern eel demonstration unit.

Land-use advisory agent Simon Baker will be available to assist local and state governments in developing land-use plans and to provide information to make their planning more complete. A directory of aerial photography for 44 eastern North Carolina counties which Baker is compiling should prove a useful tool for counties and municipalities engaged in land-use planning.

Untangling the salt marsh food web

Laws regulating man's activities in marshlands were passed as we began to realize that the push to develop marsh might be destroying an essential food source for many kinds of fish.

Just how important marsh grasses are to fish production needs further study if we are to make sound decisions on man's activities inside and on the fringe of marsh. Two Sea Grant projects for 1976 should help fill the gaps in our knowledge about the transfer of food energy within marsh and from marsh to open estuaries.

UNC ecologists Allen Stiven and Ed Kuenzler are looking at the relationship between decaying marsh grass particles (detritus) and small marsh animals. A major goal is to determine if man, by manipulating the marsh grass grown and detritus produced, could influence fish productivity.

John Hobbie, NCSU ecologist, is examining the role of bacteria and other microbes which attach to and break down marsh grasses in the diet of marsh organisms. Study results should shed light on the importance of protein-rich bacteria in the salt marsh food web.

Toward better seafoods from Tarheel waters

Improved seafood quality and a bigger chunk of the seafood dollar for North Carolina are the goals of several Sea Grant projects in 1976.

Mark Sobsey of the UNC School of Public Health is seeking improved methods for detecting viruses harmful to humans found in clams and oysters and the waters where they grow. Some 700,000 acres of the state's shellfishing grounds have been closed because waters do not meet quality standards which are based on bacteria counts. Sobsey believes that coliform bacteria counts provide less than an adequate picture of viruses in shellfish waters. His goal is to come up with more sensitive, reliable and practical ways to determine quantities of harmful viruses in shellfish and their estuarine habitats.

NCSU food scientists Neil Webb, Frank Thomas and Ted Miller will continue analyzing the properties of deboned fish meat to gain information important in developing new products using the minced tissue. A related project which seeks to pinpoint areas in crab meat processing which contribute to sanitation problems promises to help crab processors meet new, more stringent quality

Should we depend on the ocean?

Coastal county and town officials faced with disposing of increasing amounts of sewage are looking at each other and asking, "Where do we go from here?" With a finger pointed to crowded septic tanks and municipal sewage plants as a major pollution source forcing nearly 700,000 acres of the state's shellfishing grounds closed, many are looking to the ocean for a solution.

Some states have already built ocean outfalls, sewage pipelines into the sea. Some have found them suitable. Others, where currents have washed effluents back to shore, have found outfalls less than the perfect answer.

Drs. L. J. Pietrafesa and C. C. Tung, NCSU oceanographer and ocean engineer, have Sea Grant support to find out if ocean outfalls built off the state's fast-growing southeastern corner into Onslow Bay would work. Plans in 1976 are to continue measuring physical characteristics, waves, current, wind, salinity, temperature and other factors that determine where things dumped in the ocean are likely to go and how fast they will travel.

As measurements are made over the seasons and throughout the Bay, data will be fed into a computer. It will be up to the computer to predict the pathways effluents dumped in Onslow Bay might take.

Information from this research is critical as the state develops policies on ocean outfalls. Other agencies such as those regulating water pollution and power plant and superport construction should also find the results useful.

requirements. Researchers will also examine the effects of processing on crab meat quality and storage time. A series of publications is planned to relate findings to the industry.

Marvin Speck of the NCSU food science department is seeking better methods of detecting disease-causing bacteria in seafoods. Improved detection

(See page 4)

Panel reviews 1976 UNC Sea Grant projects

Twenty-six projects proposed by the UNC Sea Grant Program for 1976 were reviewed September 30 and October 1 by a panel of marine scientists and specialists from federal agencies, universities and the private sector. This year's site visit was held at Atlantic Beach.

Now approaching its sixth year in North Carolina, the Sea Grant Program proposed coastal and marine research and advisory services projects totaling $985,600. Funds for Sea Grant are awarded by the U.S. Commerce Department's National Oceanic and Atmospheric Administration (NOAA) and matched by the N.C. Department of Administration. Federal funds make up 67 per cent of the program budget. Approved funding will be announced later.

In opening remarks Dr. E. Walton Jones, UNC associate vice president for research and public service programs, welcomed the site panel and spoke to the University's interest in an ongoing Sea Grant Program. Dr. Ernie Carl, director of the N.C. Office of Marine Affairs, expressed the state's support for a Sea Grant Program directed to pressing needs in the coastal area.

N.C. Secretary of Administration Bruce Lentz, in after-dinner remarks, reiterated the state's support for Sea Grant. But, he said, in a time of tough budget decisions, Sea Grant must address top priority problems in the coastal zone to provide much-needed information for management decisions on state and local levels.

Members of the panel were David B. Duane, associate program director, National Sea Grant Office; William N. Shaw, assistant program manager, NOAA Marine Advisory Service; Donald H. Rosenberg, director, Alaska Sea Grant Program; James H. Wakelin Jr., Research Analysis Corporation; Ted Rice, director, Atlantic Estuarine Fisheries Center, Beaufort; Daniel A. Hunt, U.S. Food and Drug Administration; C. J. Kirby, U.S. Army Waterways Experiment Station; Robert Baker, Cornell University Institute of Food Science and Marketing; George Benton, Johns Hopkins University; and Abram Bernstein, National Advisory Committee on Oceans and the Atmosphere.

Representing the four UNC campuses in the Sea Grant Program were acting chancellor Jackson A. Rigney, N.C. State University; Robert Holt, vice-chancellor and dean, East Carolina University; Dirk Frankenberg, director of marine sciences at UNC-Chapel Hill and Charles Cahill, vice-chancellor, UNC-Wilimington.

Toward better seafoods

(Continued from page 3)

methods should help processors and food safety analysts carry out more effective processing sanitation programs. Another phase of the study will examine the value of coliform bacteria as an indicator of disease-carrying bacteria in seafood.

NCSU food scientist George Giddings will collect data on nutrients and chemical contaminants in North Carolina seafoods and will seek to determine how processing changes levels of nutrients and contaminants. Such information should help assure the safety and optimal nutritional value of processed seafoods.

Upcoming conferences

Energy from the Oceans: Fact or Fantasy. January 27-28. Hilton Inn, Raleigh, N.C. Sponsored by UNC Sea Grant, Coastal Plains Center for Marine Development Services and the NCSU Center for Marine and Coastal Studies. Contact UNC Sea Grant for more information.

Annual Conference on Marine Resources in the Coastal Plains States. December 11-12. DeSoto Hilton Hotel, Savannah, Ga. Sponsored by the Coastal Plains Center for Marine Development Services, Wilmington, N.C. in cooperation with Virginia, North Carolina, South Carolina, Georgia and Florida. Contact Phil Hill at the Center at (919) 791-6432 for further information.

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