ALBEMARLE-PAMLICO ADVOCATE

. . . the newsletter of the Albemarle-Pamlico Estuarine Study

Vol. 1, No. 1 July 1988

From The Public Coordinator

We're very excited about the first issue of our APES newsletter, *The Albemarle-Pamlico Advocate*. With the close of the first year of the APES, there was much to be shared. It is our intention to publish the Advocate on a quarterly basis. Our format will include several regular features with occasional articles on timely issues. In addition to the Coordinator's Message, we will include a column and calendar of Upcoming Events, a Technical Corner with articles from contributing sources, input from the Citizens' Advisory Committees, Highlights/Status of the Technical and Public Participation Projects, an Ask An Expert column to facilitate two-way communication between public inquiry and technical expertise, and a look at the History and Lifestyles of the area we cover. We hope that the variety in our format will lend much to "spreading the word" about APES!

As you know, much of the success of the Albemarle-Pamlico Estuarine Study lies with the public's participation. The purpose of our newsletter is to facilitate communication and thereby gain greater participation. We shall endeavor to work closely on national, state and local levels with those involved in pursuing our program. We ask that you frequently and freely submit questions, comments and other forms of input intended to further the goals and objectives of the APES. Every effort will be made to respond in a timely and complete manner.

Effective, responsible and efficient management of our waterways and habitats is important to each of us. We hope, through the publication of this newsletter, that an important step in that direction can occur.

In an effort to acquaint those of you who may not be familiar with the Albemarle-Pamlico Estuarine Study, and to refresh those who are, we have included the following background information for your convenience:

Purpose

The purpose of the Albemarle-Pamlico Estuarine Study is to enable resource managers to better preserve the natural productivity of the estuarine area by expanding relevant knowledge about the impact of human uses upon its physical, biological and social systems.

Description

The Albemarle-Pamlico Estuarine Study (APES) is a joint effort of the State, federal government and local interests, intended to facilitate effective management of the very valuable, productive resources in the major estuaries of northern and central North Carolina. It combines scientific research and evaluation of potential management alternatives to ensure the long-term productivity of our estuarine waters.

APES is funding research intended to allow better management of our estuaries. Scientists are examining environmental problems to identify causal connections to human activities in the watersheds draining into the sounds. Examples are activities such as farming, land-clearing and drainage, waste disposal, urbanization and habitat conversion. Other funded projects examine methods by which the processes contributing to the problems can best be managed to allow continued balanced use of our rich natural resources.

In addition to research by social and environmental scientists, APES is supporting the establishment of a comprehensive information management system, so that policy and management decisions can be based on the best available information. Finally, program funds are used to encourage public participation in this effort.

APES was recognized as the first Natural Estuary Program in the country to be designated consistent with the Clean Water Bill of 1987. A designation agreement was signed on October 20, 1987, laying out specific milestones for the remainder of the program. The most important milestones are a Comprehensive Report on Status and Trends in Water Quality and Living Resources (October, 1990) and a Comprehensive Conservation and Management Plan (November, 1992).

Program Structure

The Albemarle-Pamlico Estuarine Study is administered by four administrative boards: the **Policy Committee**, the **Technical Committee, and two Citizens' Advisory Committees.** The Policy Committee functions to establish major policy guidelines, approve complete budgets, approve large fiscal actions and appoint members to the Technical Committee and the Policy Committee. The Policy Committee will provide the final approval for the Comprehensive Conservation and Management Plan when it is issued. **Members of the Policy Committee include:**

- Mr. S. Thomas Rhodes, Secretary, NC Department of Natural Resources & Community Development, (Co-chairman)
- Mr. Lee DeHihns, Deputy Regional Administrator, EPA Region IV (Co-chairman)
- Mr. Dan Ashe, Committee on Merchant Marine & Fisheries, US Congress
- Mr. Derb Carter, Chairman, Pamlico Citizens' Advisory Committee
- Dr. Parker Chesson, Chairman, Albemarle Citizens' Advisory Committee
- Dr. John Costlow, Director, Duke University Marine Laboratory
- Dr. Bud Cross, Director, National Marine Fisheries Service, Beaufort Laboratory
- Dr. Dirk Frankenburg, Chairman, UNC Curriculum on Marine Sciences
- Ms. Mike Gantt, Field Supervisor, Division of Ecological Services, US Fish & Wildlife Service

Month-to-month administration is conducted by the Technical Committee, subject to Policy Committee approval in certain circumstances. The Technical Committee is charged by the Policy Committee with implementing the Albemarle-Pamlico Estuarine Study program by overseeing the issuance of calls for proposals, the review of proposed projects, and the choice of projects for funding in all areas of program development. In addition, the Technical Committee reviews and approves all final documents released by the program, and will direct the evaluations necessary to produce the Status and Trends

Report and the Comprehensive Conservation and Management Plan. **Technical Committee members include:**

Mr. Bruce Barrett, Director, EPA Water Management Division (Co-chairman)
Dr. Ernie Corl, Depury Secretary, NC Dept. of Natural Resources and Community Development (Co-chairman)
Mr. Mark Alderson, EPA/OMEP Water Resources Manager
Mr. Keith Buttleman, VA Council on the Environment
Dr. B.J. Copeland, Director, UNC Sea Grant Program
Mr. Tom Ellis, N.C. Dept. of Agriculture
Mr. Richard C. Hamilton, Deputy Director, NC Wildlife Resources Commission
Dr. William Hogarth, Director, NRCD Division of Marine Fisheries
Mr. Bobbye Jack Jones, US Soil Conservation Service
Dr. Ernie Larkin, Vice-chairman, Pamlico Citizens' Advisory Committee
Mr. Harry Layman, Director, NRCD Division of Forest Resources
Dr. Alvin Morris, US Environmental Protection Agency/Region III
Dr. Michael Orbach, Chairman, NC Marine Science Council
Mr. Dave Owens, Director, NRCD Division of Coastal Management
Mr. Larry Saunders, US Army Corps of Engineers
Mr. David Sides, Director, NRCD Division of Soil and Water Conservation
Mr. John Stallings, Vice-chairman, Albemarle Citizens' Advisory Committee
Dr. James M. Stewart, Associate Director, Water Resources Research Institute, NC State University
Mr. James Turner, Jr., District Chief, US Geological Survey
Mr. Poul Wilms, Director, NRCD Division of Environmental Management

The program also is responsive to two 30-member Citizens' Advisory Committees, who are appointed by the Policy Committee to represent specific geographic areas and a broad spectrum of interests, those being: education, industry, public office, tourism, development, commercial fishing, recreational fishing, agriculture, engineering, environmental groups and private citizens.

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The Citizens' Advisory Committees have the responsibility to direct the public involvement portion of the program by making recommendations on public involvement projects and reviewing proposals submitted in the area. Citizens' Advisory Committee also review and make recommendations about pertinent technical projects and review all documents before they become final. The Citizens' Advisory Committees serve the role of catalyst in enlisting public support for the program and its recommendations among the people affected. They are the persons, along with the Public Participation Coordinator, Joan Giordano, whom you should contact should you have comments or questions pertaining to the APES.

Program Staff

The program is conducted by a staff of four: the Project Director, the Public Participation Coordinator, the EPA Project Officer, and the Program Office Secretary.

The Albemarle-Pamlico Estuarine Study acknowledges and thanks Dr. Doug Rader for his commitment to the APES program. Dr. Rader was the Program Director of the APES for the past sixteen months and has recently accepted a position with the Environmental Defense Fund at their newly established office in Raleigh. He will be their Senior NC Scientist and National Coastal Scientist. Dr. Rader's efforts on behalf of the APES will serve us now and for generations to come!!

With Dr. Rader's departure, there emerges a new person on staff. He is Dr. Robert "Bob" Holman, the new APES Project Director. Dr. Holman has the specific responsibility to execute all directives of the Policy Committee and Technical Committee to implement all aspects of the program: information acquisition, information management and public involvement. He must produce all reports requested by those bodies, oversee scientific research, direct budgetary considerations, and conduct program liaison with the

Coming together is a beginning;

Environmental Protection Agency (EPA), other federal and state agencies, the legislature, other states' officials and the other national estuary programs. **Dr. Holman** may be contacted at the APES program office, **919/733-0314.** The director is aided in this responsibility by the full-time EPA project officer, **Mr. Ted Bisterfeld.** Mr. Bisterfeld, of EPA Region IV, is available at any time at **404/347-2126.**

The Public Participation Coordinator, **Mrs. Joan Giordano,** is located at **1424 Carolina Avenue, Washington, NC 27889,** the Regional Office of NRCD, and may be contacted at **919/946-6481.** She is available at any time to address citizen or local government comments, inquiries, or reports of environmental problems. She directs the public involvement portion of the study, staffs the Citizens' Advisory Committees, and conducts liaison with local governments, the press, citizen groups and oversees public involvement grants under the program.

The program office secretary is **Mrs. Kathy Norris,** and she is located in Raleigh at the Department of Natural Resources and Community Development. Mrs. Norris conducts day-to-day administration of office matters, coordinates communications and answers citizen inquiries about programmatic matters. She can be reached at **919/733-0314.**

An Information Management Coordinator is anticipated in the near future and will be located in Raleigh.

Citizen Advisory Committee Chairman's Message

by Parker Chesson, Chair
Albemarle Citizen Advisory Committee

What a difference a decade makes. In 1974, I was appointed as a charter member of the North Carolina Coastal Resources Commission. Over the next five years, the commission guided the development of a comprehensive land use planning program for twenty coastal counties and implemented a permit program to control development in sensitive environmental areas. Followers of the coastal program will recall that these accomplishments were controversial, leading at times to legislative attempts to weaken the program.

Little was heard in those early years about water quality as a specific issue. Most of our energy was focused on developing a new program, reacting to legislative and development critics, and defending the program from judicial challenges. From time to time, the need for more specific water quality criteria was noted as development permits were either approved or denied.

About the time I left the Coastal Resources Commission in 1984, water quality issues were coming to the front burners as a matter of public concern. Citizen action groups were emerging all along the coast, with some of them making vocal demands for better protection of our coastal waters. For example, the North Carolina Coastal Federation was developing into a vocal proponent of improved water quality regulations and better enforcement of existing regulations.

During the past few years, this development of citizen interest and involvement in water quality issues has continued to grow. The establishment of the Albemarle-Pamlico Estuarine Study program is, in my opinion, a timely and critical development in efforts to protect our coastal waters. Existing research will be analyzed and coordinated, new research will be performed, and public information and citizen involvement activities will be emphasized.

The Albemarle Citizens' Advisory Committee was created in the summer of 1987. Organizational meetings have been held and the committee is now ready to help shape the future of this multi-year estuarine study. The success or failure of the program will depend on how well the public is educated about water quality issues and how actively average citizens across the coastal region get involved in the program. As chairman of the Albemarle Citizens' Advisory Committee, I encourage all citizens to follow the program and to make your feelings known to me and other members of our committee.

Ask An Expert

Nursery Areas in the Estuary

by Terry Sholar, Biologist
Division of Marine Fisheries

What are nursery areas and why are they important?

North Carolina has a rich coastal fishing heritage dating back to the early colonial period. Its fishing industries are as diverse as its coast in both types of fisheries and species caught. Most share a common link — they depend on estuaries and especially nursery areas.

We rank 7th nationally in the commercial catches of seafood, with approximately 300 million pounds landed annually, worth about $60 million to fishermen and some $200 million to the economy.

North Carolina's estuaries support one of the most important fishing industries in the nation, both commercial and recreational. Fishermen catch a wide variety of species such as blue crabs, spot, croaker, flounder, trout, menhaden, shrimp, clams, and oysters.

So, more than two million acres of estuaries are the basis for some of the most productive fisheries in the nation. Estuaries, those places where the fresh water meets the sea, are some of the most productive places on Earth. Nursery areas (the shallow creeks, rivers and bays) are a special part of an estuary. Ninety percent of the state's seafood landings are in some way dependent upon its estuaries, and especially upon primary nursery areas.

Definition

Primary nursery areas are unique habitats, essential for the continued success of North Carolina's fishing industries. Due to their unique physical and biological characteristics, the initial growth and development of most economically-important species occur here.

Primary nursery areas are located in the upper portion of the creeks and bays. They are generally surrounded by marshes which form a critical link to the food web. They are shallow in depth and have soft, muddy, highly organic bottom types. In addition, they have ideal salinity (or salt conditions) for young finfish and shellfish.

Most of the major species caught commercially and recreationally in the state, such as spot, croaker, shrimp, and blue crabs, have about the same life history. Spawning occurs at sea in the open ocean. The larvae, or recently hatched organisms, are brought inshore by tides

and currents into the upper portions of the creeks and bays — the primary nursery areas — where they undergo their initial growth and development. The major nursery utilization occurs from February through August.

As they develop and grow, they seek different habitats and move out of the primary nursery areas by mid to late summer and into what is known as the secondary nursery areas. Secondary nurseries are the lower portions or more open water portions of the creeks and bays and contain a mix of various sizes of shrimp, crabs, and fish.

With declining temperatures in the fall, most young will migrate to the ocean to later mature and reproduce, thus completing the cycle.

Sampling Techniques

The Division of Marine Fisheries initiated the primary nursery area system in the early 1970's. The purpose of the program is to (1) identify areas; (2) monitor the long-term health; and, (3) monitor the annual abundance of economically important species.

Approximately 150-200 stations are sampled monthly, coastwide, from March through November. The standard sampling device is a 10½ foot otter trawl with quarter-inch webbing in the body and an eighth-inch webbing in the tailbag. The net is towed one minute, at a speed calibrated to cover 75 yards. As a result of standardized sampling, comparisons can be made from area to area, month to month, and year to year.

Each sample is sorted and individuals of each species are counted and recorded. In addition, individual length measurements are recorded for the economically important species. Salinity and temperature are taken with each sample. These environmental factors are important for species abundance.

The trawl samples are composed primarily of small individuals, such as spot, croaker, flounder, blue crabs, shrimp, menhaden, and trout.

How Designated

In 1977, realizing the overwhelming importance of these areas, the Marine Fisheries Commission adopted regulations designating nursery areas, thus protecting them from certain fishing activities.

Of North Carolina's 2.2 million acres of internal coastal waters, approximately 77,000 acres of primary nursery areas have been legally designated. That means that a major portion of North Carolina's seafood production is dependent on essentially 4% of its estuarine area. Since the original 1977 designations, a few areas have been added and deleted as part of an ongoing process, but the total acreage remains about the same.

After sampling an area for a minimum of one season, the data is then analyzed to determine if the number and size of the organisms caught compare favorably to other primary nursery areas. If so, the Marine Fisheries Commission, through the public hearing process, legally designates it a primary nursery area. The area is then protected by the Division of Marine Fisheries.

Problems

Due to the extreme importance and sensitive nature of primary nursery areas, they require special protection from man's abuse. Dredging or filling of the nursery habitat itself can be very damaging. Protection of these areas and their surrounding adjacent marshlands or wetlands from alteration is essential.

In addition to the destruction of the habitat, protection from certain fishing activities is also necessary. Bottom-disturbing fishing devices, such as trawls and dredges, are prohibited from primary nursery areas. However, some activities such as crab pots and gill nets, which do not disturb the bottom, and are selective in what they catch, are allowed.

A major concern which needs special attention is the potential degradation of water quality. We now realize that what happens on the land can have a significant effort on our waters. We know that fresh water itself can potentially be a pollutant in estuarine waters. Proper salinity levels are essential in nursery areas, and critical for the production of fish, shrimp, and crabs. Whereas runoff in the coastal area was at one time a slow overland process, direct canals have changed the runoff characteristics. The rate is much faster, which, after all, is the purpose of drainage canals. The resultant runoff characteristics create very erratic and unstable salinity conditions which lower overall fisheries production. In addition to the freshwater, drainage water contains nutrients, sediments, and other chemicals that can be harmful to nursery area water quality.

Land use changes in the coastal area by clearing the drainage are believed to be a major contributor to the problem. However, to the shrimp in the nursery area, it makes no difference whether the water is from a corn field, a peat mine, or a parking lot. The effect is the same. Potentially, most coastal development can contribute to the problem.

If our coastal lands are to be developed, drainage considerations will be essential due to the low elevation and high water table of the area.

We must further develop and implement innovative ways to utilize the land, yet assure good water quality conditions in nursery areas.

Summary

As we have seen, primary nursery areas are a unique habitat within an estuary, critical to North Carolina's fishing industries. Since the initial growth and development of many economically important species occur there, they are vulnerable to man's impacts. Protection of nursery areas from physical alteration, detrimental fishing activities, and water quality degradation is essential to maintaining North Carolina's rich fishing heritage and viable fishing industries.

A 12-minute videotape of this presentation with appropriate visual can be borrowed from the Division of Marine Fisheries by organizations or clubs.

Technical Corner

Success of the APES is not only incumbent upon the EPA, but also upon other cooperative efforts as evidenced by the following U.S. Fish and Wildlife Service endeavors.

U.S. Fish and Wildlife Service Baseline Contaminants Study on the Albemarle-Pamlico Estuarine Study

In 1987, the Fish and Wildlife Service, Raleigh Field Office, initiated a baseline assessment of contaminants in fish and wildlife on the Albemarle-Pamlico peninsula. The purpose of this monitoring effort was to assess the relative impacts of agriculture and peat mining by determining if differences in contaminant levels existed between developed and undeveloped drainage areas or watersheds. The drainages studied included the Alligator, Pungo and Scuppernong Rivers. In addition, samples also were collected from Swanquarter National Wildlife Refuge (NWR) and Otter Creek in Hyde County.

Fish, bird eggs, snapping turtles, clams and sediments were collected and analyzed for this project. Long-nose gar, giz-

zard shad and white catfish were the most abundant fish species and were collected from the sampling sites in all three rivers. Large-mouth bass, striped bass, bowfin, carp and pumpkinseed also were collected from some of the rivers. The specimens are being analyzed for a variety of chemicals, including organochlorine pesticides, polychlorinated biphenyls (PCB's), metals, and polycyclin aromatic hydrocarbons (PAH's). The laboratory analyses were completed in April, 1988, and the U.S. Fish and Wildlife Service is awaiting the results.

Beginning in March 1988, the Raleigh Field Office started its second field season of baseline contraminants monitoring. The drainages to be studied include the Roanoke, Chowan and Pasquotank Rivers and Currituck Sound at Mackey Island NWR. The field sampling program was completed on June 24, 1988. If you have questions regarding the monitoring study, please contact **Kate Benkert,** Contraminant Staff Specialist, at: U.S. Fish and Wildlife Service, P.O. Box 25039, Raleigh, NC 27611-5039 (telephone: **919/856-4520).**

National Wetlands Inventory

The U.S. Fish and Wildlife Service's National Werland Inventory (NWI) has been allocated $175,000 to complete wetlands mapping in coastal North Carolina, with priority being given to the APES study area. Mapping of the APES study area should be completed in September, 1988. The National Wetlands Inventory is mapped at a scale of 1:24,000 on U.S. Geological Survey topographic quadrangles. The wetlands initially are identified and classified from 1:58,000 color infrared National High Altitude Photography. Ground truthing is conducted during the initial photointerpretation and again during the review of the draft map.

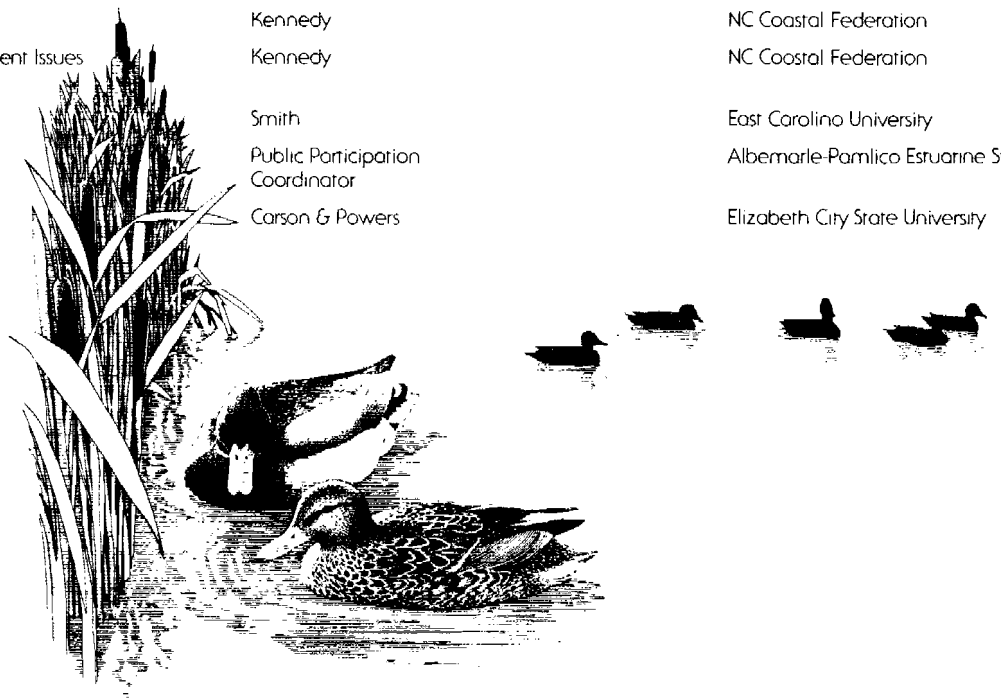
For further information on the NWI program and the availability of draft maps, contact: Kevin Morehead, NC Department of Natural Resources and Community Development, Division of Soil and Water, P.O. Box 27687, Raleigh, NC 27611-7687 (Telephone: 919/733-2302) or John Hefner, U.S. Fish and Wildlife Service, 75 Spring Street, S.W., Suite 1276, Atlanta, GA 30303 (Telephone: 404/331-6343).

Project Highlights

The following projects were approved by the Technical and Policy Committees for first year funding. Due to funding and other delays, *some will continue into the second year funding cycle.*

First Year Public Involvement Projects

SUBJECT	PRINCIPAL/ INVESTIGATORS	INSTITUTIONS
Citizen's Monitoring Network (Pilot Study)	McNaught	Pamlico-Tar River Foundation
State of Estuaries Booklet	Okun/Tursi	UNC Institute for Environmental Studies
Public Service Announcements	Okun	UNC Institute for Environmental Studies
Media Tour	Kennedy	NC Coastal Federation
Workshops on Management Issues & Guidebook	Kennedy	NC Coastal Federation
Videotape/Slide Show	Smith	East Carolina University
Newsletter	Public Participation Coordinator	Albemarle-Pamlico Estuarine Study
Public Meetings	Carson & Powers	Elizabeth City State University
Total Costs: $100,136		



First Year Technical Projects

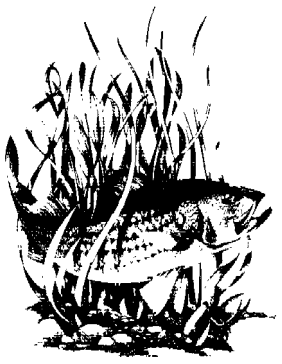
SUBJECT	PRINCIPAL/ INVESTIGATORS	INSTITUTIONS
Environmental Determinants of Oyster Bed Success	Sutherland, Ortega & Peterson	Duke University Marine Laboratory & UNC Institute for Marine Sciences
Data Requirements for Fisheries Stock Assessment	Mercer & Street	NC Division of Marine Fisheries
Value of Recreational Fishing	Smith & Palmquist	North Carolina State University
Analysis of Nursery Area Data	Street	NC Division of Marine Fisheries
Ecological Function of Fringe Swamps	Brinson	East Carolina University
Potential for Eutrophication & Nuisance Algal Blooms	Paerl	University of North Carolina
Nutrient Reduction by Coastal Swamps	Kuenzler	University of North Carolina
Baseline Demographic Trends (Permanent & Seasonal Populations)	Tscherter	East Carolina University
Analysis of Existing Hydrologic & Water Quality Data	Bales	US Geological Survey
Offsite Effects of Best Management Practices	Bales	US Geological Survey
Flows & Flow Patterns in the Neuse & Pamlico River Systems	Bales	US Geological Survey
Excluder Devices in the Inshore Shrimp Fishery	Pearce	Mariner's Marine
Obstructions to Migration of Anadromous Fish	Collier	US Fish & Wildlife Service
Distribution of Submersed Aquatic Vegetation	Davis	East Carolina University
Aerial Survey of Submerged Aquatic Vegetation	Thayer	US National Marine Fisheries Service
Water Column & Bottom Sediment Dynamics	Wells	UNC Institute for Marine Sciences
Hyde County Soil Survey Cost Share	Philen	NC Division of Soil & Water Conservation

Total Costs: $878,000

Results of the projects funded by the APES will be made available on an "as need" basis to interested parties and also on an annual basis at the APES annual meeting.

The Albemarle-Pamlico Estuarine Study is a joint effort of the state, federal government and local interests, intended to facilitate effective management of the very valuable, productive resources in the major estuaries of northern and central North Carolina.

The Albemarle-Pamlico Advocate is the quarterly newsletter of the APES. For questions or comments, contact Joan Giordano, Editor, 1424 Carolina Ave., Washington, N.C. 27889 or call 946-6481.



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