

Pamlico Citizens' Advisory Committee
Washington Civic Center
Washington, NC

October 25, 1989
7:00 pm

Attendance - See Attachment A

In Chairman Carter's absence Vice Chairman, Dr. Ernie Larkin called the meeting to order at 7:00 pm. and welcomed those present. He asked for self-introductions around the table for the benefit of the 5 new members attending the meeting for the first time.

Consideration of Minutes - Dr. Larkin presented the minutes of the previous meeting (August 24, 1989) for approval. A motion by Frank Sommerkamp and seconded by Dick Leach, approved the minutes as written. Motion carried.

Program Update - Dr. Bob Holman presented his report. See Attachment B. He elaborated on the Status and Trends Report and said the second draft of the technical version (~400 pages) would be sent to all committees members during the week of November 6. The final version of the technical document and the ~40 page public version will be sent out by mid-December.

Dr. Holman displayed three new documents which are ready for distribution. They are the projects done for the A/P Study by Dr. Kerry Smith, Dr. Randy Ferguson and Dr. Paul Tschetter (The Value of Recreational Fishing in the Albemarle and Pamlico Estuaries; Submerged Aquatic Vegetation in the Albemarle-Pamlico Estuarine System; and Characterization of Baseline Demographic Trends in the Year-Round and Recreational Populations in the Albemarle-Pamlico Estuarine Study Area, respectively).

Discussion of the Federal Consistency Document (a program milestone) ensued. Dr. Holman informed the group that an extension of the due date will be requested from EPA since no guidance from EPA in how to prepare the document has been provided.

Public Participation Update - Joan Giordano presented her report. See Attachment C. She informed the group that no one from their ranks had come forward requesting to participate in the Citizens' Volunteer Monitoring Conference being held in New Orleans the first week of December. She therefore urged the committee to endorse sending Cal Yaggy from New Bern, a non P-CAC member, but a very participatory member of the A/P Study Citizens' Monitoring Network, administered by PTRF. Dick Leach made a motion to endorse

Mr. Yaggy's attendance at the meeting and Vince Bellis seconded. The motion carried with the stipulation that Mr. Yaggy report back to the committee on his involvement. Mrs. Giordano agreed to make Mr. Yaggy aware of the decision.

In other discussion, Joan Giordano called upon Tom Stroud from PTRF to briefly outline his Educational/Community Outreach efforts to date.

Finally, Mrs Giordano asked for input on the poster/bumper stickers concepts which were distributed earlier in the month to the committee. Discussion ensued with concentration on what we wanted the posters/bumper stickers to communicate. Many comments concerning target audiences, message and focus were shared. It was agreed that education and awareness should be tied together as the focus and that keeping that in mind, rough-ups of a few ideas could be submitted for approval. Mrs. Giordano agreed to work with PTRF (the project contractor) to prepare the rough-ups.

She then recognized Dr. Tom Hoban, NCSU Ag Extension representative, who briefly outlined his proposed work .

4th Cycle Request for Proposals - Attention turned to the draft public participation CFP and the draft technical acquisition CFP. See Attachment D.

Much discussion ensued with several attempts to prioritize and rank the proposals areas/topic. Finally Vice Chairman Larkin reminded the group that there would be ample opportunity to rank the individual proposals when they were all submitted, and that the exercise that night was to ensure a complete effort in noting all areas for which solicitation was being sought. John Van Duyn made a motion to accept all eight topics for proposal solicitation and any others that might be submitted. Luther Daniels seconded the motion. Motion Carried.

A similar exercise was employed in approving the technical acquisition draft CFP. During discussion of the fisheries issues the question of trawling came up. A motion by John Van Duyn and seconded by Frank Longinois was passed (with 2 dissenting votes), to communicate to the Technical Review Sub-Committee and to the Technical Committee that the "P-CAC has as its number one priority (solicitation) of a study of the habitat effects of trawling with a thorough review of all available literature."

Dick Leach made a motion to accept the draft technical acquisition CFP (with the addition of the trawling issue) and David O'Neal seconded. The motion carried.

There being no further business the meeting was adjourned at 10:30 pm. The next meeting will be in February at a time and place to be arranged.

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Pamlico Citizens' Advisory Committee
Washington Civic Center
2nd & Gladden Streets
Washington, NC
October 25, 1989
7:00 pm

AGENDA

Call to Order	Derb Carter
Consideration of Minutes	
Program Update	Dr. Holman
Public Participation Update	Joan Giordano
4th Cycle Request for Proposals Draft	Joan Giordano
Questions/Answers/Comments	
Adjourn	

P-CAC Attendance Attachment A

10-25-89

<u>NAME</u>	<u>AFFILIATION</u>
Greg Bernard	A/P Study Staff
Robert Holman	"
Vince Belles	PCAC
JOHN T. SPAGNOLLO	PCAC
Ellis Heryles Jr	PCAC
John VanDyke	PCAC
Lucie H Daniels	PCAC
Pat Hooper	DIV OF SOIL & WATER CONSERVATION
Frank Sommerkamp	PCAC
Ernie Rankin	T-CAC
Jim Clifton	VISITOR -
Denny Clapp	"
Sharon B. Gibbs	Hyde Co. Comm. - P-CAC
Clark Rodman	PCAC
Frank Longino	GRADY-WHITE BOATS
Dick Seach	P-CAC
Jeff Funness	P-CAC (For Ron Carpenter)
David O'Neil	P-CAC
Tom Stroud	PTRF/A/P Study
DALLAS Ormond	Commair Fishing
Bob Herrmann	Weyerhaeuser
Charles H. Clark	Visitor
Betty Gray	Washington Daily News
RUSSELL WATERS	CITY OF WASHINGTON
BILLY JACKSON	PCAC

DIRECTOR'S REPORT

CITIZEN ADVISORY COMMITTEES
October 25-26, 1989

1) EARLY DEMONSTRATION PROJECTS

- a) Greenville Urban BMP project now has a contract and they are beginning their work.
- b) OMEP did not provide second round funding for the remaining four projects.

2) INFORMATION MANAGEMENT

- A) GIS Coordinator is currently developing the software for the interactive system between the LRIS system and the user community. Demonstration of preliminary system was given at the Annual Researchers' Review Workshop.
- b) Land Resources Information Service (LRIS) has developed an atlas of all the information layers that are currently available from the geographic information system (GIS) for the A/P Study area.

3) TECHNICAL SUBCOMMITTEES

Technical Review and Citizens Affairs Subcommittees have been busy developing the draft Call For Proposals for 1990-91.

4) MEETINGS

- a) Sept. 11 - Meeting with Army Corp Engineers (Wilmington)
- b) Sept. 13 - State and Federal Interaction Meeting (Washington)
- c) Sept. 14 - Annual Researchers' Review Workshop (Washington)
- d) Oct. 05 - Presentation to Raleigh Rotary Club (Crabtree)
- e) Oct. 19 - VA/NC Interaction Meeting (Elizabeth City)

5) STATUS AND TREND REPORT (STR)

- a) A second draft of the technical STR will be sent out to all committee members to comment on the week of November 6, 1989.
- b) A draft of the public STR (executive summary) should be available for the Annual Public Meeting on November 4, 1989.

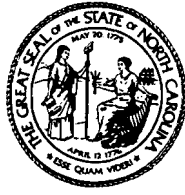
6) FY 1989-90 PROJECTS

- a) All cooperative agreements and contracts have been sent out for this year's projects except the contract with RTI for the Federal Consistency Report.
- b) Legislative Research Committee - Surface Water Quality and Resource Issues - Members not appointed yet, but will consist of five members from the Senate, five members from the House of Representatives and two lay members appointed by each side. Membership of the committee will total fourteen members.

PUBLIC INVOLVEMENT COORDINATOR'S REPORT
OCTOBER 1989

1. Citizens' Advisory Committees are meeting regularly (on a quarterly basis), meeting notices and agendas are sent to all public officials and interested citizens residing in the meeting areas.
2. A/P Study exhibit was displayed and staffed by Public Involvement Coordinator at Marine Expo '89 in Wilmington during the first weekend in October. (estimated: 5000 persons attended)
3. A/P Study Exhibit was displayed at Roanoke-Chowan Technical College during mid-September.
4. Public Involvement Coordinator met regularly with State Fair Coordinators to assist with the Departments entry. Also contributed to the staffing, building , and dismantling of EHNH's entry. A/P Study State Fair Exhibit is available for travel since the fair has ended (10-22-89). Public Involvement Coordinator has a 20 minute video entitled "Nursery Areas in The Estuary" which complements the exhibit nicely.
5. Public Involvement Coordinator has met with Melva Okun, principal investigator for "State of the Estuaries Booklet" to determine photos and graphics as well as photo captions for the publication. Completion date of the booklet has been revised to the end of November.
6. Public Involvement Coordinator and Executive Director made presentations at the Board of Directors meetings at all three COGs (Albemarle Commission, Mid-East Commission, and Nuese River Council of Governments) during late August and early September.
7. Public Involvement Coordinator continues to meet with the Community Outreach representatives from PTRF and AEA to develop educational and governmental strategies.
8. Public Involvement Coordinator organized and staffed meetings for development of 4th cycle Public Participation RFP with Citizens' Affairs Subcommittee.
9. Public Involvement Coordinator assisted in staffing and organizing Roundtable/Policy Committee meetings (Aug 31 & 31) and the State, Federal and Researchers Review Meetings (Sept 13 & 14) and Second Annual Meeting (Nov 4) planning committee.
10. Public Involvement Coordinator is working closely with all 3rd year Public Participation Project principal investigators to ensure timely, quality controlled delivery of products.

11. Public Involvement Office is developing a distribution network for delivery of several educational products to 459 schools in the A/P Study area.
12. Public Involvement Office continues to accept and process inquiries into the A/P Study resulting from Newsletter distribution, T.V. PSAs, and general awareness of the program.



State of North Carolina
Department of Natural Resources and Community Development

Albemarle-Pamlico Estuarine Study
Public Involvement Office
1424 Carolina Avenue, Washington, North Carolina 27889

James G. Martin, Governor
William W. Cobey, Jr., Secretary

Robert E. Holman, Director
Joan Giordano, Public Involvement Coordinator

November 13, 1989

TO: Policy Committee Members
Technical Committee Members
Albemarle Citizens' Advisory Committee Members

FROM: Joan Giordano *Joan*

RE: Attachment to A-CAC Minutes of October 26, 1989

Enclosed is Attachment D which was inadvertantly left out of the minutes recently sent to you. Please insert it in the minutes of the A-CAC meeting held on October 26, 1989 as sent.

I regret any inconvenience this omission may have caused.

P.O. Box 1507, Washington, North Carolina 27889-1507 Telephone 919-946-6481

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DRAFT

CALL FOR PROPOSALS FOR 1990-91 APES PUBLIC PARTICIPATION PROJECTS

The activities funded under the category of Public Participation are intended to accomplish two purposes: 1) to create effective avenues for disseminating information about the need for planning, conservation and management of the Albemarle-Pamlico Sounds and watershed; and 2) to obtain advice and input from the public concerning APES activities. The projects funded in 1990-91 will build on the projects funded in the earlier years of the program. For 1990-91, proposals will be entertained on the following specific topics, in addition to any proposals that facilitate public participation in the APES program.

1) The development of citation, or award program that recognize the involvement of constituent groups such as agriculture, forestry, fisheries, industry, municipalities and private citizens in effective conservation and environmental protection in the APES study area. Such programs should emphasize broad participation rather than single "winners", and should include specific provisions for citations or awards to be recognized in public forums.

2) Public Service Announcements (PSAs) targeted to specific audiences. Such PSAs could be in any media, and should direct their message concerning the need for and solutions to environmental planning and conservation to specific audiences such as farmers, fishermen, homeowners, and other groups. The PSAs should emphasize what each particular group can do to help.

3) Public Education Displays. There is a need for broader display of educational and interpretive material concerning the APES estuaries and watershed in either permanent or travelling formats. Locations such as waterfronts, public libraries, municipal buildings, parks and major tourist destinations should be considered in display siting.

4) Fact Sheets. A series of concise, readable, attractive and informative fact sheets should be developed to provide the general public with accurate information concerning the sounds and watershed. These fact sheets should be produced in a format and quality suitable for durability in outdoor displays and outdoor activities.

5) The development of public outreach programs, specifically including increased interaction between the APES program and local governments in the APES study area.

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6) Model Estuarine Education Curricula for Public Schools. Proposals must demonstrate the involvement of, and support from appropriate components of the public school system as a prerequisite for funding.

7) Interactive Media Projects. Proposals should provide direct opportunities for the public to interact through electronics or print media with technical experts, public officials and resource managers.

8) Family-oriented Estuarine Educational Camps. Proposals on this area should emphasize opportunities to provide education about the estuaries in the APES area in a family setting. Programs that focus on direct, "hands on" activities of more than a single day duration in outdoor environments are preferred.

ALBEMARLE-PAMLICO ESTUARINE STUDY

INFORMATION ACQUISITION CALL FOR PROPOSALS - FY 1990

1) Identify submerged aquatic vegetation beds

Utilize aerial photography to characterize submerged aquatic vegetation (SAV) in the Currituck Sound and Albemarle Sound areas. SAV patch shape and size will be estimated by tracing all SAV habitat on the aerial photography. Species composition of each habitat area will be estimated based on ground comparisons. Ground comparisons will consist of collecting representative biomass samples at each site visited and verifying species composition and reproductive mode. Final products of the SAV survey will be information in table form as well as each SAV habitat area overlayed onto U.S. Geological Survey 7.5 topographic base maps. Existing photography can also be evaluated and mapped as a separate component of this project to provide further information on SAV habitats that do not already exist within the A/P Study area.

2) Compile existing data on toxicants in the water, sediment and animal tissue

Inventory all existing data for effluents, water, sediment and animal tissue from the entire A/P Study area. Toxicants will be defined as metals, toxic elements and organic chemicals. Toxicant budgets will be prepared when possible (e.g. copper, zinc and lead). A literature search using such data bases as DIALOG and SARA Title 3 will be undertaken. In addition, the data will be mapped and examined to determine "hot spots", investigate trends, identify data gaps and recommend strategies for toxicant reduction. Another aspect of this topic would be to evaluate the alteration of "biomarker species" physiology as an indication of toxic problems.

3) Develop nutrient loadings and budgets for all major tributaries including land use based nonpoint source loadings

Develop nutrient budgets (nitrogen and phosphorus) utilizing both land use loadings rates and flow-based budgets to provide a separate budget for both point sources and nonpoint sources. These nutrient budgets will be determined for major tributaries of the Neuse, Pamlico, Chowan and Roanoke Rivers. A literature survey will be conducted to develop loading rates by land use utilizing data bases such as DIALOG and for flow-based information utilizing data bases such as STORET. A nutrient budget also needs to be developed for atmospheric input into the Albemarle-Pamlico Estuarine System. All budgets developed will be put onto a computerized system as to be updated easily and all budgets are to be documented in the same manner for direct comparison.

4) Flow and flow patterns for the Albemarle Sound Estuary

Collect and interpret hydrologic data from the mouth of the Chowan and Roanoke Rivers to the two bridges (Rt. 64/264) connecting Roanoke Island to the Outer Banks and mainland. The study will consist of long-term continuous data collections, short-term intensive field studies, data analysis and interpretation to provide information on flow and flow patterns. A two or three dimensional hydrodynamic and transport model will be utilized in the analysis and interpretation of this phase of the study. Information gained from this study will be used to determine nutrient budgets, water flow characteristics, sediment movement, cumulative impacts, algal bloom conditions, effect on striped bass development and a preliminary waste-load allocation model. Sensitivity analysis of certain A/P Study areas should also be conducted with ~~three~~ ^{three} dimensional data base.

5) Fisheries Issues

- a) Evaluate existing fishing practices employed throughout the A/P Study area which causes any directed mortality. Determine the direct and indirect impacts by fishing practice on standing biomass within the fished area and sustained yield capacity of each fished species. Identify the habitat necessary to support each fished species by fishing practice and determine if the fishing practice employed reduces the fished populations ability to maintain sustained yield and/or reduces the necessary supporting habitat and its food supply of each fished species throughout its life cycle. Identify all compatibilities and conflicts which exist both in habitat, food supply and fished species sustained yield terms between various fishing practices by location and time. Minimally the following species must be addressed: blue crab, striped bass, flounder, oysters, clams, spotted sea trout, shrimp, and large mouth bass.
- b) Determine the real value in 1989 dollars of all returns to the A/P Study area for various fishing practices. All required determinations must include both direct and indirect analysis for each component. Determine the values various fishing practices over the last 10 years have as a tourism attraction in total dollar value and exchange, and contrast to the red tide event. Map the areas and time duration of shellfishing waters lost by all events in the last 10 years and detail all economic losses incurred. Determine the number of individuals, families or groups, which are dependent on each fishery by gear type, practice and time, and identify each ones catch per unit effort in ones total economic returns within the A/P Study area. Determine all conflicts both economically and socially between the less than full

time fisherman (include all who sell their catch) and recommend regulatory, legislative measures to reduce each conflict consistent with the sustained yield available by species fished and fishing practices over the last 10 years. Minimally the following species and gear must be included:

Species
Clams
Shrimp
Blue Crab
Flounder

Gear
Pot
Trawl
Gill Net
Hook & Line

6) Social and Economic Factors

- a) Project to analyze the public attitudes about the Albemarle-Pamlico Estuarine System. Evaluate peoples' attitudes about management alternatives designed to protect these resources. Provide scientifically valid description and comparison of the attitudes of different segments of the public and opinion leaders about the importance of the Albemarle-Pamlico resources and appropriateness of particular management alternatives. Also to determine attitudes about the effectiveness and equity of specific programs and policies aimed at improving water quality in the study area that would be tied to the management alternatives. This public attitude survey should encompass the entire state not just the A/P Study area.
- b) A project to evaluate both successful/failure of management strategies nationwide and identify elements that can be applied to the Albemarle-Pamlico Estuarine System successfully. Efforts should not focus solely on the national estuarine programs or the estuarine setting but rather on successful management elements that can be utilized in the estuarine environment. The resulting report will document the specific management strategies and recommend how these elements can be incorporated into the A/P Study's Comprehensive Conservation Management Plan.

7) Currituck Sound Watershed Management Plan

A research project is needed on the hydrology of Currituck Sound which will bring together all known information about inflows and outflows at the Sound and develop additional flow measurements to fill in the extensive data gaps that exist. After this basic information is assembled, a hydrologic model for the Sound should be developed that will allow the simulation of various weather patterns and also the effect of the

many man-made changes in the hydrology of the Sound that are occurring and are expected to occur in the future. All of these efforts should be consistent with the fisheries management plan adapted by the Wildlife Resources Commission.

8) Greenville Urban BMP Follow-up Projects

- a) Provide a means of determining actual flow input and output rates through the detention pond constructed by the City of Greenville. Flow rates will be coupled with another study to further determine the toxicants found in the runoff and the effectiveness of the detention pond in removing these pollutants.
- b) Develop a study to further define the toxicants and other pollutants found in the runoff reaching the detention facility. Also determine the effectiveness of the detention pond in removal of specific pollutants and more closely evaluate the land use of the watershed and sources of pollution.

9) Early Demonstration Projects

- a) Construction and evaluation of alternative on-site domestic wastewater disposal systems. Project should focus on disposal systems that utilize ground absorption/plant uptake as an alternative method to failing on-site systems and soil limited site situations. This effort must be conducted within the A/P Study area and the final report will include a plan to implement this system over the entire study area.
- b) Investigate forestry BMPs in the coastal plain of North Carolina. Especially focus on practices that appear to be effective during harvest operations. Design and construct a series of BMPs that have the potential of significantly reducing the impact to the surrounding habitats during the harvest.

(A\cfpitems.doc)
11/08/89

Attachment E

Charles M. Clark
Rt 2 Box 29.B
Belhaven, N.C. 27810

October 25, 1989

I have been interested in our estuarine areas for many years. In 1987, my neighbors circulated a petition asking the Division of Marine Fisheries to have trawling stopped in Pungo Creek. Sometime later, I called the DMF to inquire about the petition, and was told of a public hearing scheduled on this issue. I wrote to Congressman Walter Jones and Mr. Floyd Lupton, expressing my concern and requested some charts for study; his response included information on the Albermarle Pamlico Estuarine Study. I felt that this would be an organization that would be concerned with conservation of habitat and the water resources of our estuarine system.

In May of 1989 a public hearing, on trawling in Pungo Creek and several other creeks, was held in Washington, N. C.. At this meeting I had the opportunity to meet Dr. Boone Mora, Dallas Ormond and Wilton Smith, who had sent a report to the DMF, which asked for a ban on trawling. I read the report and decided that trawling was harmful to more habitat than just the creeks and bays which had been my interest. I began to look for information that would help others see the need, for better management practices by the DMF. On June 3, Betty Gray, staff writer for The Washington Daily News, who is to be commended on her excellent coverage on these issues, reported that trawling had been banned in six creeks which empty into the Pamlico and Pungo rivers. It was later reported that the closed areas had been designated Special Secondary Nursery Areas, which gives the Director of the DMF, authority to open these areas by proclamation and that the areas would be closed effective Sept. 1989. On Sept 1, Dr. Hogarth, Director of DMF, declared five of these creeks, open for trawling, which in effect have not been closed since being made Special Secondary Nursery areas.

In July of this year, while on vacation in Chollowee, N. C., I spent part of three days at Western Carolina University looking for information about the effects of trawling. I also read on this subject at East Carolina University, and obtained information from the States of Georgia, South Carolina and Virginia. In response to a request by Congressman Jones, Dr. Hogarth, Director of the DMF, sent me a copy of the DMF's, (October 1988) Response to "Report of the Waterman's Subcommittee on the Resources of the Pamlico-Tar River and Pamlico Sound", which had been compiled by Dr. Mora, Mr. Ormond and Mr. Smith.

In August, I was made aware of Governor Martin's authority to make several new appointments to the Fisheries Commission, which I felt could help change the direction of the DMF. Using information I had been compiling, I completed a report, which I hoped would help the Governor see the need for a change in direction by the Fisheries Commission. I sent or gave the report to Governor Martin, Congressman Jones, Senator Basnight, Rep. Chapin, APES, N. C. Dept of Natural Resources, PTRF, DMF, Sea Grant, and to several others.

In late August, Dr. Mora gave me a copy of a letter, he had written, May 22 1989, to Mr. David Williams, Environmental Engineer, N. C. Dept. of Natural Resources. He had attended a meeting in Raleigh a few days earlier, where Mr. Williams had discussed, the nutrients in the Pamlico-Tar Rivers and the Sound. Dr. Mora agreed with Mr. Williams that nitrogen, not phosphate is the limiting nutrient in the system. He showed how oysters have the ability to remove nitrogen and help clean these waters, by filtering; one adult oyster will filter up to 130 gallons of water per day.

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He also went on to show that some trawlers are capable of dragging a chain and net, covering an area wider than a football field is long and that these trawlers can disturb up to 4,000 acres of bottom in a 24 hour period. The silt and sediment, which is stirred by the trawler nets, destroys oyster habitat, and in turn finfish habitat, it destroys all types of nursery stock and juveniles by the millions daily and prevents oysters from setting. Dr. Mora further showed that with proper conditions, the oyster could generate more economic benefit to North Carolina than all the other fisheries combined.

To further emphasize the economic value and importance of the oyster let me quote the (1964) North Carolina Shell Survey N.C. Cons. Dev., Div. Comm. Fish.; Special Scientific Report No. 1. p. 9.

Without a doubt, the second most striking observation was the vast areas where oysters can be grown. The oyster industry potential for North Carolina is virtually unlimited. ...It is not necessary for North Carolina to engage in a large seed production effort, since prudent shell plantings can restore most of the former oyster areas to full production. ...North Carolina's oyster growing potential is so large that these waters could be the foremost oyster center in the world.

The above information has been available to the DMF. since 1964, yet they continue to plant shells to restore the oyster industry and permit trawlers to disturb the bottom near these sites. This causes silt to settle on and kill many of the oysters, and oyster spats that are unable to find suitable habitat. In my opinion, allowing trawling voids the hundreds of thousands of dollars spent by the DMF's oyster program.

In September, The Marine Fisheries Commission held a workshop in Washington, which was to address the trawling issue as well as other issues and a briefing of the work being done by the DMF. On two occasions, Vice Chairman Caroon asked the DMF if trawling was harmful. He was told, in effect, not enough to merit change in present management practices. I went home and wrote to the Governor, quoting eight studies on effects of trawling, I felt should have received some consideration by the DMF and MFC.

Let me also quote (1972) A Study of North Carolina Scrap Fishery N. C. Spec. Sci. Rep. No. 20.

"It is quite possible that one of the more destructive forces in our estuarine areas today is trawling by our commercial and sport shrimpers and crabbers."

In October, I received an answer to my August Report from the DMF. In the letter Dr. Hogarth stated, "Recent research in the Chesapeake Bay has examined the role oysters play in water quality protection. I have attached a copy of some recent literature pertaining to this work". The literature which I received was a September 1989, Maryland Sea Grant article, "Poor Water

quality--Oysters to the Rescue" in Marine Notes . The article says, They believe that oysters and other benthic feeders play a major role in maintaining a productive Bay ecosystem and that by increasing the abundance of oysters,----- Bay water will improve.-----This is the same kind of information Dr. Mora discusses in his letter to Mr. David Williams, Environmental Engineer, N. C. Dept. of Natural Resources in May of this year.

We are all aware of the decline of fish and oysters in the Pamlico Sound and its tributaries over the last 15 years.

We are all aware of the need for cleaner water, not only for our estuarine areas but for human consumption.

We are all aware that trawling has been on the increase for the last 30 years, with larger boats, larger nets, and more sophisticated gear and electronic equipment.

Watts, Gilmore and Pelleirn in "Marine Fisheries Review No. 44" (1982) estimates the finfish to shrimp ratio for trawls in waters less than 10 fathoms to be 49 to 1 in 1981.

The bycatch ratio can run lower or higher, depending on the area being trawled. The shrimp trawler captain is more concerned with the number of shrimp caught than the amount of bycatch and therefore would trawl in heavy concentrations of other fishes and in oyster habitat or wherever, if it was profitable to him and he was permitted to do so by the DMF.

I personally think, it is time for the Dept. of Marine Fisheries, The Albemarle Pamlico Estuarine Study, The Pamlico-Tar River Federation, the sport fishermen, the full time commercial fishermen the, part commercial fishermen, and all who can see the need for change, to exert some effort to make our sounds and rivers once again the useful resources they have the potential to be.

Tomorrow night the DMF will hold a public meeting on additional Licensing Fees. with moneys derived to be spent:

- 65% for resource management and development

- 15% for enforcement

- 10% for public information, communications, and educational activities

- 10% for administration, license production and documentation, and license agents fees

I am opposed to any new license fees, that are not to be used primarily for the purpose of enhancing, protecting, and promoting all our fisheries resources. I would like to see more evidence of concern for these values by management, before additional fees are imposed.

It is my opinion that: If the management policys of the N. C. Marine Fisheries Commission and the N. C. Division of Marine Fisheries, are to remain the same as at present, the only effect to be caused by the additional income from such fees. would be to increase the bureaucracy.



Sound FACTS

July 10, 1989

To the Editor and Readers:

Do you know that some large trawlers, fishing in the inside waters of North Carolina, pull nets that cover an area wider than the length of a football field? Thats over 300 ft wide.

ONE of

Do you know that in a 24 hour period, *one of* these trawlers can stir up the bottom of about 4,000 acres of the Pamlico Sound?

Do you know that, silt, stirred up by the trawlers, settles on marine life on the bottom, thereby disturbing its natural habitat and reducing its chance of survival?

Do you know that on normal hauls, by trawlers, the PERCENTAGE OF DESTROYED fish and other marine life, can run higher than 90% OF THE TOTAL CATCH?

Do you know that DECAYING ORGANIC MATTER is a major cause for the DEAD WATERS in the Pamlico River and Pamlico Sound?

Do you know that the TONS OF DEAD FISH discarded by the trawlers becomes DECAYING ORGANIC MATTER?

Do you know that excepting Louisiana's restricted trawling, North Carolinas IS THE ONLY STATE that now permits trawling in its inside waters?

Do you know North Carolina allows OUT OF STATE trawlers to work in our inside waters?

Do you know that DRUGS are being brought into North Carolina, by some of the trawlers that are permitted to work in the inside waters of North Carolina.

Do you know that the Oyster business, in North Carolina, once was a major seafood business, which during Oyster Season, weekly shipped thousands of gallons of oysters out of State in the 1940s and 1950s?

Do you know that the Pamlico Sound has the potential to make the OYSTER BUSINESS more profitable than ALL OTHER KINDS of commercial fishing, combined?

Do you know that the Oyster is a filter feeder that can filter 130 gallons of water in a 24 hour period and could help clean up the



Post to Pamlico
Route 2, Box 401
Washington, NC 27889
May 22, 1989

Mr. David B. Williams, Environmental Engineer
North Carolina Department of Natural Resources
P. O. Box 27687
Raleigh, NC 27611

Dear David:

I especially enjoyed your discussion on the nutrients in the Pamlico-Tar Rivers and the Sound. I would like to ask if you have copies of the tables and graphs or the material that you presented, but not in slide form. If so, I would appreciate having a copy.

I appreciate very much the clear documentation that you presented showing that nitrogen, not phosphate, is the limiting nutrient in the system. It has been that way since before Texas Gulf, however every time there is a fish kill, or no fish, or a disease, everyone jumps immediately on Texas Gulf. It is bad enough that it is unfair but of much greater importance is that it misdirects our efforts and our limited resources and all that to no avail. That part concerns me the most! I sincerely hope your discussion will help some of the "powers" get on the right track so that we can, both get the job done and conserve our time, energy, and money.

As I see it the single most devastating influence to our sound, rivers, and their tributaries is trawling. At first you might wonder how trawling is related to nutrient pollution. I can appreciate your skepticism but please keep an open mind. Listed below are some of the effects of trawling:

1. Destroys habitat - One 85-foot trawler pulling four 80-foot nets (320 feet) at five knots per hour covers approximately 4,000 acres per 24-hour period.

2. Kills all types of nursery stock and juveniles by the millions daily and prevents oysters from setting.

3. Stirs up silt thereby reducing the dissolved oxygen content of the water. When trawlers worked this year in our area we all had a few hard crabs die in our pots even before the hot weather came.

4. Destroys the filter feeders and their habitat and prevents reproduction.

It is this fourth effect that I was trying to call to your attention at the meeting. I call it the "flip side of nutrient pollution". Let's face it, pristine water will not produce abundantly. Nutrients in some amount are needed and indeed are, in the proper amount and in a healthy system, convertible via a food chain to mature harvestable food (i.e. protein containing both nitrogen and phosphate). A healthy harvest and an out-migration of mature, usable animals from the waters then balances the nutrient (nitrogen) input from the natural decay of plants, animal waste, lightning, etc. found in runoff.

I have done a little calculating just for oysters in the Pamlico Sound. As you know different references give different figures. In most cases I have used the figures that give my contention the worst results.

According to the Division of Marine Fisheries there are approximately 150,000 acres of prime oyster bottom in the Pamlico Sound. The remaining area I have estimated to be equivalent to approximately 50,000 acres bringing the total to 200,000 acres for easy calculations. One acre is 210 feet x 210 feet = 44,100 feet²; 44,100 feet² x 200,000 acres = 8,820,000,000 feet² of prime oyster bottom. Now if one grew only one oyster per square foot, that would be 8,820,000,000 oysters. With 100 oysters per bushel that would be 88,200,000 bushels of oysters and at only \$10 per bushel that would be \$882,000,000 per year. That is well beyond the \$500,000,000 per year generated by all of the fisheries of North Carolina including everything and more than 800 times the \$1,400,000 per year from oysters.

I have not calculated the amount of protein and therefore the amount of nitrogen and phosphates that that many oysters would contain but such calculations are easily within your or my grasp. What I did calculate, however, is the filtration that that many oysters would provide.

One mature oyster will filter approximately 130 gallons of water per 24 hours. The Sound is approximately 1,318 million acres and approximately is 16 feet deep. A second source said the Sound was 1,074,560 acres and 14.7 feet average depth. I used the larger figures. $1,318,000 \text{ acres} \times 44,100 \text{ feet}^2 \text{ per acre} = 58,141,440,000 \text{ feet}^2$ ($\times 16 \text{ feet deep} = 9.3026304 \times 10^{11} \text{ feet}^3 \text{ water}$) ($\times 7.4 \text{ gallons per feet}^3$) = 6.89×10^{12} gallons water in Pamlico Sound. Now 8.82×10^9 oysters $\times 1.30 \times 10^2$ gallons of water filtered per day per oyster = 1.15×10^{12} gallons water filtered per day. Therefore:

$$\frac{6.89 \times 10^{12} \text{ gallons of water in Pamlico Sound}}{1.15 \times 10^{12} \text{ gallons of water filtered per day}} = 5.99 \text{ days}$$

In summary then just one oyster per square foot of prime oyster bottom (200,000 acres) would filter the amount of water equivalent to all the water in the Sound once every six days. As you know one oyster per square foot of prime oyster bottom is minuscule compared to the real potential on one square foot of prime oyster bottom. Surely it is not unreasonable to believe that oysters alone could provide a filter system that would turn the water over daily and as you know while the flush of the sound is low the dynamics of back and forth currents backwashes water from the ocean at least 60 miles inland. Thus filtration or cleansing of water in the sound will affect the water quality in the rivers and tributaries and dilute the nutrients gathered from runoff, downpour, and discharge.

If you add all the other filter feeders to the list--barnacles, mussels, clams, etc. you realize that the health of our natural nutrient processing system is of major importance in our waters. The integrity of this nutrient processing system is destroyed by the trawling process. Trawling is so destructive of the filter feeders and their habitat. Even the silt they stir up drifts by currents and affects the habitat even where they don't trawl. I strongly suspect that if you could nullified all nutrient input from man but retained the trawling effects at the present level there would be a nutrient overload. However given the fact that nutrients are contributed by man to the Pamlico it is doubly vital that the integrity of the nutrient removing system be maintained at a high degree of efficiency and that mature fish and shellfish be harvested or allowed to out-migrate and not die within the system. This need is completely incompatible with trawling.

I urge you to help bring this line of reasoning to the fore--because we as a government have the power to do something about trawling, whereas much if not most of the current nutrient input is virtually untouchable.

We believe that trawlers can be responsibly phased out of our inside waters. All other states have achieved this. We suggest that larger trawlers be relegated to the outside waters, that the remaining trawlers be licensed for the inside waters. A moratorium could then be put on any new licensure, eliminate out-of-state trawlers--this will not cause a reciprocity problem because no other state permits trawling in inside waters. We believe that the state could, with incentives and subsidies, phase out all trawling in inside waters of North Carolina within three years. After that an aggressive program to get the oyster grounds seeded would eventually restore our sound and rivers to a clean and productive resource.

I have not seen any other proposal that would do the job. If you know of one, please send me information.

I have double spaced this letter and left wide margins for easy note making. I would be grateful and receptive to any feedback from you.

Sincere best wishes,

Boone Mora

W. Boone Mora