



ANNUAL REPORT OF THE LAKE
ERIE PROGRAMS

at

THE OHIO STATE UNIVERSITY
1981-1982

CENTER FOR LAKE ERIE AREA RESEARCH
FRANZ THEODORE STONE LABORATORY
OHIO SEA GRANT PROGRAM

COLLEGE OF BIOLOGICAL SCIENCES
AND
OFFICE FOR RESEARCH AND GRADUATE STUDIES
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO

NOVEMBER 1982



The Ohio State University

Center for Lake Erie Area Research
Franz Theodore Stone Laboratory
Ohio Sea Grant Program

College of Biological Sciences
484 West 12th Avenue
Columbus, Ohio 43210

Phone 614 422-8949

Dr. Patrick R. Dugan, Dean
College of Biological Sciences
The Ohio State University
Columbus, Ohio 43210

Dear Dean Dugan:

I am pleased to transmit with this letter the 1981-1982 Annual Report of the Lake Erie Programs at The Ohio State University. All three components, CLEAR, Sea Grant and Stone Lab, have again been extremely successful in fulfilling their missions.

I appreciate the continued support of the College of Biological Sciences during the past year. As this new academic year begins, I look forward to continued improvements.

Sincerely,

A handwritten signature in cursive script that reads "Charles E. Herdendorf".

Charles E. Herdendorf
Director

CEH/g-ls

cc: William Collins

Field Station Address:
Put-in-Bay, Ohio 43456
Phone 419 285-2341
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305 E. Shoreline Drive
Sandusky, Ohio 44870
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LAKE ERIE PROGRAMS
AT
THE OHIO STATE UNIVERSITY

The Ohio State University has fostered a program of Lake Erie research and education for 87 years. In 1895, the University opened a Lake Laboratory in Sandusky, Ohio. To accommodate a growing interest in aquatic sciences, the program was moved to Put-in-Bay, Ohio where the Franz Theodore Stone Laboratory was dedicated on Gibraltar Island in 1929. With the goal of expanding research opportunities, the Center for Lake Erie Area Research (CLEAR) was created in 1970 with facilities at Stone Laboratory and on the Columbus Campus. As a member of a national network, the Ohio Sea Grant Program was established in 1977 within the university to support instruction, research and advisory services directed toward the wise utilization of Great Lakes and marine resources. Today, all three components (Stone Laboratory, CLEAR and Sea Grant) are administered by the Center for Lake Erie Area Research as the Lake Erie Programs within the College of Biological Sciences.

Franz Theodore Stone Laboratory

Lake Erie facilities include the Franz Theodore Stone Laboratory located on Gibraltar Island and other satellite buildings on South Bass Island and at Port Clinton. Courses of instruction are offered here which are designed to provide students with a blend of classroom, laboratory, and field experience unavailable at an inland campus. Subject matter includes a comprehensive review of the body of knowledge pertaining to freshwater systems, particularly large lakes. The goals of programs at Stone Laboratory include:

1. To provide the facilities and logistical support necessary for the effective presentation of courses designed to offer a blend of classroom, laboratory, and field experience unavailable at an inland campus.
2. To provide the facilities and logistical support required for research projects on Lake Erie and its coastal zone.
3. To promote a balanced curriculum in the aquatic and environmental sciences which utilizes the unique setting of the laboratory.
4. To promote individual and multidisciplinary research projects which utilize the facilities and setting of the laboratory.
5. To foster close relationships between the instructional and research programs to the mutual benefit of each activity.
6. To maintain a current library on subjects related to instructional and research topics at the laboratory.
7. To collect routine environmental data in the vicinity of the laboratory and maintain records of these observations.

8. To provide facilities for workshops, seminars, and other group meetings and field trips.
9. To serve as a public information center for information relating to Lake Erie.
10. To preserve segments of the Lake Erie shoreline in a natural state for educational and research purposes.

Fourteen advanced courses were offered at Stone Laboratory by the Departments of Botany, Entomology, Microbiology and Zoology during Summer Quarter 1982 (Table 1). In addition, Individual Studies and Thesis/Dissertation Research were offered for advanced students and an introductory Aquatic Ecology course was presented in conjunction with the University of Akron. Enrollment for 1981 included 30 graduate and continuing education, 28 undergraduate, and 2 Program 60 students (Table 2).

An integral part of the Stone Laboratory curriculum is the Guest Lecture Series. Topics are selected to enhance the classroom instruction. Guest speakers from several institutions presented lectures in 1982 (Table 3). This year a special symposium on the "Limnology of Lake Erie" was presented by several scientists from the Canada Centre for Inland Waters (Table 3). Funds for the off-campus speakers were graciously provided by the Graduate School.

In addition to the regular instructional program offered each summer, many workshops and group field studies are conducted at Stone Laboratory in the spring and fall. This year 45 such events took place at the laboratory, many of them conducted by faculty associated with the Lake Erie Programs (Table 4). All workshops held at Stone Laboratory are coordinated by the Ohio Sea Grant Advisory Service. The faculty and staff of Stone Laboratory in 1982 is presented in Table 5. Important milestones in the development of University facilities at Lake Erie are listed in Table 6. This year marked the beginning of a new organization, "The Friends of Franz Theodore Stone Laboratory," founded to support the objectives of the Laboratory.

Ohio Sea Grant Program

The overall objective of the Ohio Sea Grant Program is to enhance development and improve management of state and regional aquatic resources. The program seeks the wise utilization of marine and aquatic resources, particularly those resources associated with the Great Lakes, to enhance the quality of life in Ohio and our surrounding states. This mission is being implemented through comprehensive research, education and advisory service programs. To accomplish this, support and resources are being provided to the university community in order to: 1) research Great Lakes problems and to develop critically-needed information while maintaining the highest level of academic excellence; 2) establish a statewide Sea Grant advisory services network to transfer this and other information to government, industry and the general public; and 3) continue to build understanding and appreciation for marine and aquatic resource values and to provide career training for marine technologists among the people of Ohio through education programs.

Results obtained through ongoing research and development projects will be transmitted to industry, agencies and the general public through appropriate

publications and other media in a timely fashion. Special information, advisory and education programs will be conducted to move these findings rapidly to various users and to create awareness and involvement on the part of institutions and the general public in Great Lakes problems and opportunities.

In the five years that the Ohio Sea Grant Program has been in existence, it has successfully addressed its objectives in research, education and advisory services within the University community and in the context of the State of Ohio and the Great Lakes Region. Table 7 traces the history of the Ohio Sea Grant Program from its inception in 1977 with a single education project to 1982, with 12 projects embracing all three components of the program.

One of the most valuable recent accomplishments has been the development of a link between the Sea Grant Advisory Service and Ohio Cooperative Extension Service which resulted in the placement of a Sea Grant Agent in the following cities along the Lake Erie shoreline: Fremont, Elyria and Painesville. These agents, each working in an 8 to 10 county area, take research results to industries and other audiences where they are needed. This is accomplished through news releases, seminars, radio and T.V. spots and workshops, many of which have been conducted at Stone Laboratory (Table 4). In addition, over 200 marine advisory service functions were conducted at the mainland locations, reaching a direct audience of over one million citizens (Table 8).

Center for Lake Erie Area Research

The coordinating unit of the Programs is the Center for Lake Erie Area Research (CLEAR) which serves the University as a focal point for action directed toward solutions of scientific and engineering problems of the lake as well as societal and economic conditions of the adjacent coastal zone. CLEAR's objective is to encourage and promote individual and multidisciplinary research on all aspects of Lake Erie. The center coordinates sponsored research in several major areas of man's concern, contemporary examples of which are: 1) food resources from the lake, 2) energy generation facilities and energy conservation, 3) mineral resources from the lake basin, 4) water quality, 5) coastal zone management, 6) shore erosion control, and 7) lake-related recreation. The research phase of the Lake Erie Program is closely linked to instruction by providing students with financial support and stimulating topics for thesis, dissertation, and other individual study efforts.

In the twelve-year history of CLEAR, approximately \$9 million of sponsored research has been conducted by the Center. Major federal agencies which have supported Lake Erie research include: 1) U.S. Environmental Protection Agency, 2) U.S. Department of Interior -Fish and Wildlife Service, and Office of Water Resources and Technology, 3) U.S. Department of Commerce, NOAA - Office of Sea Grant, Office of Coastal Zone Management, and National Marine Fisheries Service, 4) U.S. Army Corps of Engineers, and 5) National Aeronautical and Space Administration.

During the period 1981-1982, the Center coordinated 43 sponsored research projects with a commitment of \$2.8 million (Table 9). A total of 46 faculty and 30 graduate students actively participated in these projects. In addition to these investigators, CLEAR has technical staff including post-graduate research associates, research assistants and undergraduate students. The Center is administered by a Director and Associate Directors with funds provided by the Graduate School and the College of Biological Sciences (Table 10).

The Lake Erie Programs are non-degree-granting units of the University. However, 11 graduate degrees were awarded to students participating in Lake Erie research projects by cooperating academic departments (Table 11). Lake Erie researchers made 41 presentations at scientific meetings (Table 12), organized 35 Limnolunch presentations (Table 13), and 40 manuscripts for publication (Table 14). In the past twelve years, the Center has produced 264 technical reports (Table 15). A list of publications produced by the Ohio Sea Grant Program (Table 16) and the Franz Theodore Stone Laboratory (Table 17) are also included in this report. The University committees providing guidance to the Lake Erie Program are indicated in Table 18.

TABLES

TABLE 1

COURSE OFFERINGS AT F. T. STONE LABORATORY
SUMMER 1982First TermBotany 610 FIELD BOTANY

Collection, preservation, field and laboratory identification, and local distribution of plants of the major groups. Dr. R. L. Stuckey.

Botany 620 COMMUNITY ECOLOGY AND ECOSYSTEMS

A qualitative and descriptive approach to the establishment, development, succession, and dynamics of plant communities and their interrelations with historic, climatic, soil, and biotic factors. Dr. R. E. J. Boerner.

Entomology 611 FIELD ENTOMOLOGY

Deals primarily with collecting, identification, and field methods; field trips are made to various islands of Lake Erie and the mainland. Dr. N. W. Britt.

Microbiology 692-W MICROBIOLOGICAL ASPECTS OF WATER POLLUTION

Methods of study and roles played by microorganisms as pollutants, as indicators of pollution, and as agents involved in the removal of pollutants. Dr. C. I. Randles.

Zoology 621 ICHTHYOLOGY

Study of the distribution and classification of fishes which includes methods of identification, collection and preservation. Dr. T. M. Cavender.

Zoology 624 ADVANCED ORNITHOLOGY

Topics include instinctive behavior in the life of birds, the breeding cycle, social relations, territory, ecology, characteristics of population, and techniques in field study of birds. Dr. L. S. Putnam.

Zoology 651 FIELD ZOOLOGY

Field and laboratory identification of aquatic and terrestrial vertebrates and invertebrates of the region, in relation to habitats occupied. Dr. B. D. Valentine.

Zoology 652 LIMNOLOGY

Study of physical, geological, chemical and biological factors influencing freshwater life; field and laboratory techniques for determining lake morphometry, chemistry, and biological productivity are emphasized. Dr. D. A. Culver and Dr. C. E. Herdendorf.

Second TermBotany 611 HIGHER AQUATIC PLANTS

Aquatic plants, other than algae of Great Lakes region; field and laboratory work on their identification, and ecological and geographical relations.
Dr. R. L. Stuckey.

Botany/Zoology 647 PLANKTON

Identification, quantification, distribution and control of freshwater plankton.
Dr. D. E. Rathke.

Entomology 612 AQUATIC ENTOMOLOGY

Designed for preparation in the teaching of biology or for research on aquatic resources; taxonomy and ecology of immature and adult aquatic insects are emphasized. Dr. N. W. Britt.

Microbiology 662 PHYSIOLOGY AND ECOLOGY OF AQUATIC MICROORGANISMS

The nature and significance of major physiological processes in aquatic systems, with particular attention to those in planktonic and benthic microorganisms, including effects of pollutants. Dr. C. I. Randles.

Zoology 653 FISH ECOLOGY

Field and laboratory studies of life histories and interspecific relationships of fishes and of the various factors influencing their abundance. Dr. J. M. Reutter.

Zoology 750 GREAT LAKES LIMNOLOGY

Advanced discussion of limnologic processes in large lakes of the world, with emphasis on the Laurentian Great Lakes. Comparative study of physical and biotic factors. Dr. C. E. Herdendorf.

TABLE 2

ROSTER OF FRANZ THEODORE STONE LABORATORY
 COURSE AND RESEARCH STUDENTS, SUMMER 1982

<u>Name</u>	<u>Major</u>	<u>Rank</u>	<u>Institution</u>
1) Patricia-Lee Achorn	Zoology	M.S.	Ohio State University
2) Charles Armbrust	Wildlife Management	Senior	Ohio State University
3) Michael Barrows	Wildlife Management	Senior	Ohio State University
4) Timothy Bartish	Environmental Biology	M.S.	Ohio State University
5) Sirinimit Boonyuen	Environmental Biology	M.S.	Ohio State University
6) Lu Bowe	Zoology	Program 60	Ohio State University
7) Rachel Brown	Microbiology	Senior	Ohio State University
8) David Brumfield	Physical Education	Graduate	University of Akron
9) Mark D'Aversa	Zoology	Senior	Ohio State University
10) Wayne Davis	Zoology	Ph.D.	Ohio State University
11) Barbara Dawicke	Biology	Junior	Kent State University
12) Jeffrey Defreest	Geology	Junior	Ohio State University
13) Richard Dremann	Biology	Graduate	University of Akron
14) Linda Farrell	Biology	Senior	University of Akron
15) Peter Ferron	Zoology	Senior	Ohio State University
16) Craig Furlong	Zoology	Junior	Ohio State University
17) John Hageman	Fisheries	Junior	Ohio State University
18) R. Scott Hale	Fisheries	Senior	Ohio State University
19) Janet Heffelfinger	Science Education	M.S.	Ohio State University
20) Kristine Hoffman	Biology	Senior	Ohio University
21) Karen Holycross	Zoology	Senior	Ohio State University
22) Tamara Hughes	Zoology	Senior	Ohio State University
23) Matthew Joy	Zoology	Senior	Ohio State University
24) Glenn Kell	Biology	Graduate	University of Akron
25) Rosmarie Kelly	Zoology	M.S.	Ohio State University
26) Richard King	Zoology	M.S.	Purdue University (CIC)
27) Gary Kirkpatrick	Wildlife Management	Senior	Ohio State University
28) Jane Kost	Botany	M.S.	Ohio State University
29) Gary Lambacher	Wildlife	Graduate	University of Akron
30) Joyce Lathrop	Zoology	M.S.	Ohio State University

<u>Name</u>	<u>Major</u>	<u>Rank</u>	<u>Institution</u>
31) Don Leonard	Zoology	M.S.	Ohio State University
32) Charlotte Martinez	Botany	Senior	Ohio State University
33) Eric Mast	Biology	Graduate	University of Akron
34) Elizabeth Masters	Biology	Graduate	University of Akron
35) John Mergo	Zoology	Ph.D.	Ohio State University
36) Mark Monaco	Environmental Biology	M.S.	Ohio State University
37) John Monk	Science Education	Ph.D.	Ohio State University
38) John Navarro	Fisheries Management	Senior	Ohio State University
39) Elizabeth Obara	Environmental Biology	Ph.D.	Ohio State University
40) Theresa O'Malley	Biology	Post graduate	Ohio State University
41) Mary Jo O'Neil	Wildlife Management	Senior	Ohio State University
42) Bill Palmer	Fisheries Management	Junior	University of Wyoming
43) Bruce Rich	Fisheries Management	Senior	Ohio State University
44) Mark Sanders	Biology	Graduate	University of Akron
45) Michael Sapper	Biology	Graduate	University of Akron
46) Theresa Schutte	Environmental Biology	M.S.	Ohio State University
47) Kenneth Seeley	Botany	Junior	Ohio University
48) David Slifko	Industrial Arts	Graduate	University of Akron
49) Frances Spofford	Biology	Program 60	Ohio State University
50) Barbara Stiver	Environmental Biology	M.S.	Ohio State University
51) Susan Strohofer	Biology	Senior	University of Akron
52) David Thrush	Zoology	M.S.	Ohio State University
53) Allyson Talbert	Zoology	Senior	Miami University
54) C. J. Washington	Zoology	M.S.	Ohio State University
55) Bob Weisenberger	Zoology	Junior	Ohio State University
56) David White	Zoology	Senior	Ohio State University
57) Kathleen Wilk	Biology	Senior	University of Akron
58) A. Jerry Wilson	Zoology	Senior	Ohio State University
59) Joseph Youngs	Environmental Biology	M.S.	Wright State University
60) Manuel Zuniga	Zoology	Post graduate	Ohio State University

TABLE 3

GUEST LECTURE SERIES AT F. T. STONE LABORATORY
SUMMER 1982FIRST TERM

- 24 June Interpreting the Geology of the Erie Islands. Jane L. Forsyth, Department of Geology, Bowling Green State University.
- 1 July The Risk of Walleye Fishing. Walter E. Carey, Departments of Mechanical Engineering and Zoology, The Ohio State University.
- 8 July Ohio's Lake Erie Region, A Social and Economic Overview. Henry L. Hunker, Department of Geography and School of Public Administration, The Ohio State University.
- 15 July Biological Energetics. Loren S. Putnam, Department of Zoology, The Ohio State University.

SECOND TERM

- 21 July Water born transportation of Giardiasis. Thomas Braidech, U. S. Environmental Protection Agency, Drinking Water Branch, Denver, Colorado.
- 28 July Physics of Lake Erie. Paul Hamblin, Canada Centre for Inland Waters, Burlington, Ontario.
- 28 July Water Chemistry of Lake Erie. Andy Fraser, Canada Centre for Inland Waters, Burlington, Ontario.
- 28 July Trend Evaluation and Sampling Strategy of Water Quality Analysis in Lake Erie. Abdul El-Shaarawi, Canada Centre for Inland Waters, Burlington, Ontario.
- 28 July Water Chemistry in the Western Basin of Lake Erie. Timothy Bartish, Center for Lake Erie Area Research, The Ohio State University.
- 29 July Algae of Lake Erie. Mohi Munawar, Canada Centre for Inland Waters, Burlington, Ontario.
- 29 July Phosphorus Dynamics in Lake Erie. David Lean, Canada Centre for Inland Waters, Burlington, Ontario.
- 29 July Significance of Contaminants in the Great Lakes. Wayland Swain, USEPA, Large Lakes Research Station, Grosse Ile, Michigan.
- 29 July History of Lake Erie Fish Populations over the Past Two Centuries. Milton B. Trautman, Professor Emeritus of Zoology, The Ohio State University.

TABLE 3 CONT.

SECOND TERM CONT.

- 30 July Sediments of Lake Erie. Rich Thomas, Canada Centre for Inland Waters, Burlington, Ontario.
- 30 July Fishes of Lake Erie. Joe Leach, Ontario Ministry of Natural Resources, Wheatley, Ontario.
- 5 August Systematics of North American Estuarine Bidens (Compositae). Marvin L. Roberts, Department of Biology, University of Alabama.
- 12 August Hypothermia and Cold-Water Drowning. Jeffrey M. Reutter, Associate Director, Ohio Sea Grant, The Ohio State University.
- 19 August Phytoplankton of the Great Lakes. David E. Rathke, Research Associate, Center for Lake Erie Area Research, The Ohio State University.

TABLE 4
 WORKSHOPS CONDUCTED AT F. T. STONE LABORATORY
 1981-1982

<u>DATE</u>	<u>GROUP</u>	<u>LEADER</u>	<u>PARTICIPANTS</u>	<u>DESCRIPTION</u>
Aug. 31 - Sept. 2, 1981	Ohio Agricultural Research & Development Center	Mr. Garth Cahoon	22	Grape Researchers Conference
Sept. 8-11, 1981	Center of Science and Industry	Mr. Bill Scmitt	12	Retreat
Sept. 9-11, 1981	Lucas County Board of Education	Ms. Judy DeShane	21	Aquatic Biology Workshop
Sept. 14-16, 1981	Center of Science and Industry	Mr. Bill Schmitt	8	Retreat
Sept. 21-23, 1981	Bexley City Schools	Ms. Marge Peterson	16	Aquatic Biology Workshop
Sept. 24-25, 1981	Mayfield Middle School	Mr. Dick Johnson	12	Aquatic Biology Workshop
Sept. 25-26, 1981	Ohio Charter Captains	Mr. Fred Snyder	70	Fisheries Workshop
Sept. 28-29, 1981	Cooperative Extension Service	Mr. Fred Snyder	17	Aquatic Biology Workshop
Sept. 30 - Oct. 1, 1981	Mayfield Middle School	Ms. Harriet Busch	14	Aquatic Biology Workshop
April 22-23, 1982	Hocking Technical College	Mr. Steve Yarsa	30	Aquatic Biology Workshop
April 29-30, 1982	University of Akron	Dr. John Olive	11	Limnology Workshop
April 30 - May 1, 1982	O.S.U. Limnology Class	Dr. David Culver	23	Limnology Workshop

TABLE 4 CONT.

<u>DATE</u>	<u>GROUP</u>	<u>LEADER</u>	<u>PARTICIPANTS</u>	<u>DESCRIPTION</u>
May 6-7, 1982	St. Mary's High School	Ms. Eloise Renwand	10	Aquatic Biology Workshop
May 7-9, 1982	Shaker Lakes Nature Center	Mr. Dan Best	9	Aquatic Biology Workshop
May 13, 1982	Padua High School	Mr. Gary Jennrich Mr. Dave Kelch	15	Aquatic Biology Workshop
May 14-15, 1982	O.S.U. Sierra Club	Ms. Carol Stamatakis	10	Retreat
May 15-16, 1982	Maumee Valley Girl Scout Council	Ms. Nancy Bucchop	30	Aquatic Biology Workshop
May 17-21, 1982	New Albany Middle School	Mr. Fred Donelson	83	Aquatic Biology Workshop
May 22-23, 1982	Dayton YMCA Trailmates	Mr. Jack Bish	27	Aquatic Biology Workshop
May 23-25, 1982	Northern Kentucky University	Dr. Thomas Rambo	12	Ornithology Workshop
May 24-26, 1982	Ohio Cooperative Fishery Unit	Dr. F. Joseph Margraf	4	Retreat
May 24-25, 1982	Margaretta Schools Bogart Elementary School	Mr. Carl Lehner Ms. Sandra Krieger	104	Aquatic Biology Workshop
May 28-31, 1982	O.S.U. Agricultural Economics	Mr. Fred Hitzhusen	12	Retreat
May 28-29, 1982	Start High School	Ms. Catherine Canelli	14	Aquatic Biology Workshop
June 5-6, 1982	League of Ohio Sportsmen	Mr. Brian Kirkpatrick	39	Meeting
June 6, 1982	Bowling Green State University	Dr. Jane Forsyth Dr. Ernest Hamilton	15	Geology/Botany Workshop

TABLE 4 CONT.

<u>DATE</u>	<u>GROUP</u>	<u>LEADER</u>	<u>PARTICIPANTS</u>	<u>DESCRIPTION</u>
June 7-8, 1982	Discovery School	Ms. June Taylor	34	Aquatic Biology Workshop
June 8-12, 1982	Ohio Division of Wildlife	Mr. Clayton Lakes	6	In-Service Education
June 11-14, 1982	Erie County Schools	Ms. Sandra Krieger	40	Aquatic Biology Workshop
June 12-13, 1982	Center of Science and Industry	Mr. Bill Schmitt	12	Retreat
June 18-19, 1982	Ohio Sea Grant Program	Mr. Fred Snyder		Congressional Day on Lake Erie
August 18, 1982	Frederick Insurance Agency, Inc.	Mr. Dave Frederick	23	Tour of Research Facilities, R/V Hydra
August 25, 1982	Sandusky Public Schools	Mr. Fred Snyder Mr. Pat Gallagher	24	School Administrators Workshop
September 4-6, 1982	O.S.U. Agricultural Economics	Mr. Fred Hitzhusen	12	Retreat
September 7-10, 1982	Center of Science and Industry	Mr. Bill Schmitt	10	Retreat
September 9-10, 1982	Mayfield City Schools	Mr. Dick Johnson	27	Aquatic Biology Workshop
September 10-12, 1982	Bexley City Schools	Ms. Marge Peterson	24	Aquatic Biology Workshop
September 17-18, 1982	Ohio Sea Grant Program	Dr. Rosanne Fortner	8	Sea Grant Conference
September 18-19, 1982	Kimpton Middle School	Mr. James Parker	30	Aquatic Biology Workshop
September 24-26 1982	University of Dayton	Dr. Albert J. Burky	14	Biology Workshop

TABLE 4 CONT.

<u>DATE</u>	<u>GROUP</u>	<u>LEADER</u>	<u>PARTICIPANTS</u>	<u>DESCRIPTION</u>
September 26-28, 1982	IUC Legislative Representatives	Mr. William Napier	12	Retreat
October 1-3, 1982	O.S.U. Limnology Class	Dr. David Culver	11	Limnology Workshop
October 8-9, 1982	Sandusky City Schools	Mr. Fred Snyder	14	Aquatic Biology Workshop
October 17-18, 1982	O.S.U. Botany Class	Dr. Ralph Boerner	13	
October 28-29, 1982	Great Lakes Marine Sanctuaries	Dr. Al Beeton	5	Selection Committee Meeting

TABLE 5

FACULTY AND STAFF OF FRANZ THEODORE STONE LABORATORY
SUMMER 1982

Administration

<u>Name</u>	<u>Title</u>
1. Herdendorf, Charles E.	Director
2. Stuckey, Ronald L.	Associate Director of Instruction
3. Monaco, Mark E.	Laboratory Manager
4. Franks, Jo Ann	Administrative Assistant
5. Wilson, Andrea M.	Secretary (Put-in-Bay)
6. Harper, Mary L.	Secretary (Columbus)
7. White, Kristina I.	Business Manager (Columbus)

Teaching Faculty

<u>Name</u>	<u>Title</u>	<u>Department and University</u>
1. Boerner, Ralph E. J.	Asst. Professor	Botany (OSU)
2. Britt, N. Wilson	Professor	Entomology (OSU)
3. Cavender, Ted M.	Assoc. Professor	Zoology (OSU)
4. Culver, David A.	Assoc. Professor	Zoology (OSU)
5. Herdendorf, Charles E.	Professor	Zoology (OSU)
6. Putnam, Loren S.	Professor	Zoology (OSU)
7. Randles, Chester I.	Professor	Microbiology (OSU)
8. Rathke, David E.	Research Assoc.	Center for Lake Erie Area Research (OSU)
9. Reutter, Jeffrey M.	Adj. Asst. Professor	Zoology and Natural Resources (OSU)
10. Stuckey, Ronald L.	Professor	Botany (OSU)
11. Valentine, Barry D.	Professor	Zoology (OSU)

Resident Faculty and Visiting Scientists

<u>Name</u>	<u>Title</u>	<u>Department and University</u>
1. Beatty, Joseph A.	Assoc. Professor	Biology (Southern Illinois)
2. Carey, Walter E.	Assoc. Professor	Mechanical Engineering and Zoology (OSU)
3. Crites, John	Chairperson	Zoology (OSU)
4. El-Shaarawi, Abdul	Research Scientist	Canada Centre for Inland Waters
5. Forsyth, Jane L.	Professor	Geology (BGSU)
6. Fortner, Rosanne	Professor	Environmental Education (OSU)
7. Fraser, Andy	Research Scientist	Canada Centre for Inland Waters
8. Hamblin, Paul	Research Scientist	Canada Centre for Inland Waters
9. Hamilton, Ernest	Professor	Botany (BGSU)
10. Hunker, Henry L.	Professor	Public Administration and Geography (OSU)
11. Lakes, Clayton	Supervisor	ODW, Fish Production
12. Leach, Joseph	Research Scientist	Ontario Ministry of Natural Resources
13. Lean, David	Research Scientist	Canada Centre for Inland Waters

TABLE 5 CONT.

<u>Name</u>	<u>Title</u>	<u>Department and University</u>
14. Margraf, F. Joseph	Asst. Professor	Zoology (OSU)
15. Miskimen, Mildred	Adj. Assoc. Professor (Ret.)	Zoology (OSU)
16. Munawar, Mohi	Research Scientist	Canada Centre for Inland Waters
17. Olive, John	Professor	Biology (Univ. of Akron)
18. Rambo, Thomas	Asst. Professor	Biology (N. Kentucky Univ.)
19. Reese, Karen	Editor/Biologist	Ohio Biological Survey
20. Reynolds, W. Anne	Provost	Ohio State University
21. Roberts, Marvin L.	Professor	Botany (Univ. of Alabama)
22. Schmitt, William	Education Coord.	COSI
23. Svanks, Karlis	Assoc. Prof. (Emer.)	Chemical Engineering (OSU)
24. Swain, Wayland	Research Scientist	USEPA, Large Lakes Research Station
25. Thomas, Richard	Research Scientist	Canada Centre for Inland Waters
26. Trautman, Milton B.	Professor (Emer.)	Zoology (OSU)

Graduate Associates

<u>Name</u>	<u>Responsibility</u>
1. Davis, Wayne	Supplies
2. Heffelfinger, Janet	Library Assistant
3. Kelly, Rosmarie	Equipment
4. Lathrop, Joyce	Entomology Courses
5. Monaco, Mark E.	Laboratory Manager
6. Obara, Elizabeth	Bookstore
7. Schutte, Theresa	Laboratory Office
8. Stiver, Barbara	Laboratory Office

Student Assistants

<u>Name</u>	<u>Responsibility</u>
1. Armbrust, Charles	Transportation/Housing
2. Dawicke, Barbara	Food Service
3. Kirkpatrick, Gary	Botany Courses
4. Navarro, John	Transportation/Housing
5. Schultz, Linda	Food Service

Laboratory Staff

<u>Name</u>	<u>Title</u>
1. Duff, Allen	Research Vessel Operator
2. Estice, Robert	Supervisor of Dining Hall
3. LaPlante, Thomas	Maintenance Assistant
4. Luecke, Timothy	Supervisor of Physical Facilities
5. Wilhelm, Mark	Maintenance Assistant
6. Williams, Chester	Cook

TABLE 5 CONT.

R/V Hydra Staff

<u>Name</u>	<u>Title</u>
1. Bartish, Timothy	Graduate Research Associate
2. Brohl, Helen	Research Assistant
3. Fay, Laura	Chief Scientist
4. Keeler, Gordon	Research Assistant
5. Ladd, Paul	Captain
6. Letterhos, Julie	Research Technician

TABLE 6

MILESTONES IN THE HISTORY OF THE
FRANZ THEODORE STONE LABORATORY
THE OHIO STATE UNIVERSITY

Date

- 1985 Professor David S. Kellicott, Chairman of the Department of Zoology and Entomology, presented a proposal to the University to establish a field station for the study of biology at Lake Erie. University approved the project and appropriated \$350 for the construction of a second floor on the State Fish Hatchery in Sandusky.
- 1896 Professor David S. Kellicott named the first director of the Lake Laboratory and operated the laboratory for special studies during the summer.
- 1899 Professor Herbert C. Osborn named the second director upon the death of Professor Kellicott.
- 1900 First courses offered at the Lake Laboratory.
- 1903 University obtained a 50-year lease for property on Sandusky Bay at Cedar Point, erected a frame building at a cost of \$3,387 and moved the Lake Laboratory to this new site.
- 1918 Lake Laboratory moved to upper story of State Fish Hatchery at Put-in-Bay on South Bass Island. A lot adjacent to the hatchery was purchased by the University.
- 1925 Mr. Julius F. Stone, Chairman of the Board of Trustees, acquired Gibraltar Island in Put-in-Bay harbor from the Jay Cooke family and presented it to the University. In accepting the gift, the name of the laboratory was changed to the Franz Theodore Stone Laboratory in honor of Mr. Stone's father.
- 1926 Laboratory moved to Gibraltar Island and utilized buildings then on the island, Cooke Castle (1865) and Barney Cottage (1907). Construction program, which included a new laboratory building, dining hall and two housing units, Stone Cottage and Gibraltar House, initiated in 1926 and completed in 1930.
- 1928 Contribution No. 1, "Periodic Oscillations in Lake Erie," by Dr. F. H. Kreckler, of a new series of papers published by Stone Laboratory. Contributions Nos. 2 through 13 published from 1929-1974.
- 1929 Formal dedication of the Franz Theodore Stone Laboratory.
- 1934 President George W. Rightmire appointed an Advisory Committee to study the laboratory and plan for future development. The committee recommended expansion of the laboratory's activities into multi-disciplinary studies, year-round operation and appointment of a full-time director.

TABLE 6 CONT.

<u>Date</u>	
1936	Professor Dwight M. DeLong named the fourth director, the first to be appointed as a full-time position. Professor Thomas H. Langlois served as assistant director from 1936 to 1938.
1938	Professor Thomas H. Langlois named the fifth director upon the resignation of Professor DeLong.
1938	Franz Theodore Stone Laboratory established as a regular department of the University, assigned to the President's Division. Full-time faculty positions for a fisheries biologist and a limnologist were approved; Drs. Charles F. Walker and David C. Chandler were appointed.
1938	Peach Point Cottage was purchased by Mr. Julius F. Stone and donated to the laboratory for use as faculty housing.
1939	Professor Milton B. Trautman joined the staff of the laboratory.
1940	Federal Fish Hatchery on Peach Point, South Bass Island, transferred to the University; facility included the main hatchery building (converted to principal research building of the laboratory), superintendent's residence (converted to laboratory office and library) and a shop building.
1940	Mr. Julius F. Stone donated a two-acre woodlot on Peach Point to the laboratory.
1947	Laboratory purchased 37-foot steel research boat, the <u>Bio-Lab</u> .
1951	Name changed to the Franz Theodore Stone Institute of Hydrobiology.
1953	Laboratory purchased 30-foot passenger boat, the <u>Gibraltar II</u> .
1955	Laboratory became a program of the Natural Resources Institute, College of Agriculture and Home Economics; renamed Franz Theodore Stone Laboratory. Year-round research program suspended.
1955	Professor Loren S. Putnam named the sixth director upon the resignation of Professor Langlois.
1964	Bequest of Professor Mary D. Rogick permitted the purchase of two faculty housing units, Sycamore Cottage and Rogick Cottage, on Peach Point.
1966	Administration of Stone Laboratory transferred to the new College of Biological Sciences.
1966	Jay Cooke Home (Cooke Castle) designated a Registered National Historic Landmark by U. S. Department of the Interior, National Park Service.
1967	Hydrospheric Sciences Committee recommended establishment of a research center at Lake Erie.

TABLE 6 CONT.

Date

- 1970 Coast Guard Lighthouse on the south point of South Bass Island transferred to University (converted to radiobiology laboratory and faculty housing unit).
- 1971 Center for Lake Erie Area Research established with facilities at Stone Laboratory.
- 1973 Summer instructional program suspended. President's Task Force on Stone Laboratory recommended continuation of research and instruction at the Lake Erie field station.
- 1973 Professor Charles E. Herdendorf named the seventh director upon the retirement of Professor Putnam.
- 1973 Lean agreement negotiated with the U. S. Environmental Protection Agency for the 63-foot research vessel Hydra to be docked at Stone Laboratory.
- 1974 Summer instructional program and year-round research staff reinstated at Stone Laboratory.
- 1977 Ohio Sea Grant Program established with projects at Stone Laboratory.
- 1980 Celebration of 50th Anniversary of Stone Laboratory on Gibraltar Island.
- 1981 First Meeting of the Friends of Stone Laboratory, a group of alumni and friends of the Laboratory concerned with contributing to and preserving its high academic quality.
- 1982 Second meeting of the Friends of Stone Laboratory; By-laws approved and first Board of Directors elected.
- 1982 Ohio State University Board of Trustees hold summer meeting at Stone Laboratory; Ohio General Assembly provides \$950,000 for capital improvements at Stone Laboratory.

TABLE 7
DEVELOPMENT OF THE OHIO SEA GRANT PROGRAM 1977-1982

YEAR PROGRAM COMPONENT	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983
PROGRAM MANAGEMENT AND DEVELOPMENT		Development of the Core Administration for the Ohio Sea Grant Program (\$0-\$36,837) Dr. Charles E. Herdendorf	Administration and Manage- ment of the Ohio Sea Grant Program (\$20,000-\$51,500) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter	Administration and Development of the Ohio Sea Grant Program (\$41,500-\$76,700) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter	Administration of the Ohio Sea Grant Program (\$32,100-\$60,800) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter	Administration of the Ohio Sea Grant Program (\$62,300-\$76,500) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter
					Development of the Ohio Sea Grant Program (\$20,800-0)	Development of the Ohio Sea Grant Program (\$20,600-0)
RESEARCH		Development of Markets and Methods of Market- ing Freshwater Drum and Other Underutilized Species (\$47,807-\$4,460) Dr. Jeffrey M. Reutter Russell L. Scholl	Market Development for Underutilized Lake Erie Fish Species including New Packaging Techniques (\$28,400-\$2,200) Dr. Jeffrey M. Reutter Michael T. Metcalf		Lake Erie Storm Surge Forecasting: Model Intercomparison of Western Basin Effects (\$26,000-\$13,800) Dr. Keith W. Bedford	
			Preliminary Development of an Operational Lake Erie Storm Surge Flood Forecasting Program (\$26,600-\$16,300) Dr. Keith W. Bedford			
			The Life Cycle, Trans- mission and Pathology of <u>Eustrongylides tubifex</u> , a common Nematode Para- site of Yellow Perch and Waterfowl in Lake Erie (\$8,600-\$4,100) Dr. John L. Crites			
				Economic Value of Ohio's Lake Erie Fisheries (\$27,000-\$9,500) Dr. Leroy J. Hushak Dr. Fred H. Hitzhusen	Economic Value of Ohio's Lake Erie Fisheries (\$25,000-\$12,900) Dr. Leroy J. Hushak Dr. Douglas D. Southgate	Economic Value of Ohio's Lake Erie Fisheries (\$26,000-\$13,150) Dr. Leroy J. Hushak Dr. Douglas D. Southgate
				Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$12,000-\$4,700) Dr. David A. Culver	Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$10,700-\$2,000) Dr. David A. Culver Dr. C. Susan Munch	Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$7,600-\$4,800) Dr. David A. Culver Dr. C. Susan Munch
				Lake Erie Public Information Through-Radio Broadcasting (\$11,500-\$7,800) Dr. Rosanne W. Furtner		
				Chemical Characterization of the Antitumor Factor in the Clam <u>Mercenaria m</u> (\$18,000-\$10,561) ^b Dr. Derek Horton		

TABLE 7 CONT.

PROGRAM COMPONENT	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983
PROGRAM MANAGEMENT AND DEVELOPMENT		Development of the Core Administration for the Ohio Sea Grant Program (\$0-\$36,837) Dr. Charles E. Herdendorf	Administration and Management of the Ohio Sea Grant Program (\$20,000-\$51,500) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter	Administration and Development of the Ohio Sea Grant Program (\$41,500-\$76,700) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter	Administration of the Ohio Sea Grant Program (\$32,100-\$60,800) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter Development of the Ohio Sea Grant Program (\$20,800-0)	Administration of the Ohio Sea Grant Program (\$62,300-\$76,500) Dr. Charles E. Herdendorf Dr. Jeffrey M. Reutter Development of the Ohio Sea Grant Program (\$20,600-0)
RESEARCH		Development of Markets and Methods of Marketing Freshwater Drum and Other Underutilized Species (\$47,807-\$4,460) Dr. Jeffrey M. Reutter Russell L. Scholl	Market Development for Underutilized Lake Erie Fish Species including New Packaging Techniques (\$28,400-\$2,200) Dr. Jeffrey M. Reutter Michael T. Metcalf Preliminary Development of an Operational Lake Erie Storm Surge Flood Forecasting Program (\$26,600-\$16,300) Dr. Keith W. Bedford The Life Cycle, Transmission and Pathology of <u>Eustrongylides tubifex</u> , a common Nematode Parasite of Yellow Perch and Waterfowl in Lake Erie (\$8,600-\$4,100) Dr. John L. Crites	Lake Erie Storm Surge Forecasting: Model Intercomparison of Western Basin Effects (\$26,000-\$13,800) Dr. Keith W. Bedford Economic Value of Ohio's Lake Erie Fisheries (\$27,000-\$9,500) Dr. Leroy J. Hushak Dr. Fred H. Hitzhusen Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$12,000-\$4,700) Dr. David A. Culver Lake Erie Public Information Through Radio Broadcasting (\$11,500-\$7,800) Dr. Rosanne W. Fortner Chemical Characterization of the Antitumor Factor in the Clam <u>Mercenaria m</u> (\$18,000-\$10,561) ^b Dr. Derek Horton	Economic Value of Ohio's Lake Erie Fisheries (\$25,000-\$12,900) Dr. Leroy J. Hushak Dr. Douglas D. Southgate Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$10,700-\$2,000) Dr. David A. Culver Dr. C. Susan Munch	Economic Value of Ohio's Lake Erie Fisheries (\$26,000-\$13,100) Dr. Leroy J. Hushak Dr. Douglas D. Southgate Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds (\$7,600-\$4,800) Dr. David A. Culver Dr. C. Susan Munch

TABLE 7 CONT.

YEAR PROGRAM COMPONENT	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983
RESEARCH					<p>Aquaculture in Ohio: Culturing Fathead Minnows for Bait (\$10,000-\$6,000) Dr. David L. Johnson Dr. Charles F. Cole Thomas P. Stockdale</p> <p>Evaluation of Sand Resources in Western Lake Erie (\$10,000-\$12,000) Dr. Lester J. Walters (BGSU)/Dr. Robert W. Anderhalt (BGSU)</p> <p>Description and Analytical Marketing Study of Ohio's Lake Erie Commercial Fishery (\$8,700-\$2,900) Dr. Cameron S. Thraen</p> <p>Portrait of the Bass Islands: A Handbook of Architecture and History (\$5,000-\$4,800)^C Theodore J. Ligibel (BGSU) Dr. Richard J. Wright (BGSU)</p> <p>Coherent Turbulent Structures in the Benthic Boundary Layer; Phase I: Development of an Ultra- sonic Transducer for Direct Profiling of Sediment Concentration and Grain Size Distribution (\$30,000-\$15,500) Dr. Keith W. Bedford</p> <p>Reliability of Foundations for Offshore Structures and its Relation to Decision Criteria (\$8,200-\$4,100)^C Dr. Tien H. Wu</p> <p>Fish Community Structure, Movements, and Reproduction in Controlled and Uncon- trolled Lake Erie Marshes (\$10,000-\$6,000) Dr. David L. Johnson Dr. Mark D. Barnes Dr. Charles F. Cole</p> <p>Summer Storm Studies Over Western Lake Erie and its Coastal Drainage Basin (\$8,708-\$3,100) Dr. Thomas A. Seliga</p>	<p>Aquaculture in Ohio: Culturing Fathead Minnows for Bait (\$12,800-\$8,800) Thomas P. Stockdale Dr. Charles F. Cole Dr. David L. Johnson</p> <p>The Analysis and Mitigation of Lake Erie Flooding Effects (\$30,000-\$16,900) Dr. Keith W. Bedford Dr. Robert S. Brodkey Dr. Ranbir S. Sandhu Dr. Vasundara V. Varadan Dr. Vijay K. Varadan</p> <p>Site Exploration for Foundations of Offshore Structures (\$7,000-\$3,500) Dr. Tien H. Wu</p> <p>Fish Community Structure, Movements, and Reproduction in Controlled and Uncon- trolled and Uncontrolled Lake Erie Marshes (\$20,000-\$3,300) Dr. Mark D. Barnes</p>

TABLE 7 CONT.

YEAR PROGRAM COMPONENT	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983
EDUCATION	Development of Supplemental Curriculum Materials Relating to Ocean Study (\$36,894-\$12,515) Dr. Victor J. Mayer	Oceanic Education Activities for Great Lakes Schools (\$33,708-\$16,949) Dr. Victor J. Meyer	Oceanic Education Activities for Great Lakes Schools (\$36,900-\$7,800) Dr. Victor J. Mayer	Marine and Great Lakes Education: An Infusion Program for Ohio Schools (\$37,000-\$28,000) Dr. Victor J. Mayer Dr. John H. Hug The Development and Implementation of a Curriculum for the Study of Marine Technology (\$15,000-\$28,500) William E. Brewer (BGSU) Coastal Engineering Curriculum Development (\$1,500-\$0) Dr. Keith W. Bedford	Marine and Great Lakes Education: An Infusion Program for Ohio Schools (\$39,000-\$32,400) Dr. Victor J. Mayer Dr. Rosanne W. Fortner Ohio Sea Grant Education Program (\$1,000-\$4,100) Dr. Victor J. Mayer Great Lakes Information Through Museum Programming (\$5,100-\$9,900) ^c Dr. Rosanne W. Fortner William C. Schmitt (COSI)	Marine and Great Lakes Education: An Infusion Program for Ohio Schools (\$32,600-\$39,000) Dr. Victor J. Meyer Dr. Rosanne W. Fortner Ohio Sea Grant Education Program (\$5,000-\$7,000) Dr. Victor J. Mayer

TABLE 7 CONT.

YEAR PROGRAM COMPONENT	1977-1978	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983
ADVISORY SERVICE		Development of the Ohio Sea Grant Extension Program (\$40,327-\$9,570) Dr. Jeffrey M. Reutter Russell L. Scholl (ODNR)	Development of the Ohio Sea Grant Extension Program (\$47,500-\$19,500) Dr. Jeffrey M. Reutter Dr. Paul R. Thomas Publication and Distribution of The Fishes of Ohio, 2nd edition by Milton B. Trautman (\$12,000-\$0) Dr. Charles E. Herdendorf Weldon A. Kefauver Great Lakes Network (\$6,000-\$3,100) Dr. Jeffrey M. Reutter Dr. Charles E. Herdendorf	Ohio Sea Grant Advisory Service (\$123,500-\$85,200) Dr. Jeffrey M. Reutter Dr. Paul R. Thomas	Ohio Sea Grant Advisory Service (\$130,000-\$74,600) Dr. Jeffrey M. Reutter Dr. Paul R. Thomas Development of Audio- Visual Presentations for the Ohio Sea Grant Advisory Services Program (\$3,000-\$1,500) ^C Dr. Henry L. Hunker	Ohio Sea Grant Advisory Service (\$148,900-\$72,800) Dr. Jeffrey M. Reutter Dr. Paul R. Thomas Ohio Sea Grant Internship (\$28,000-0) Dr. Jeffrey M. Reutter Dr. Charles E. Herdendorf
TOTAL FEDERAL DOLLARS	\$36,894	\$121,842	\$186,000	\$295,000	\$365,900	\$401,000
INDIRECT COSTS	\$12,320	\$ 29,935	\$ 40,904	\$ 75,358	\$ 86,009	\$93,578
NUMBER OF PROJECTS	1	4	8	10	18	12
NUMBER OF INVESTIGATORS ^d	1	5	10	14	30	22
NUMBER OF GRA's	2	3	6	11	11	9

^aProjects listed side by side are continuations of the same effort. Dollar values in parentheses are the federal grant total on the left followed by the non-federal match on the right.

^bThis project is not included in the total because it was added to the grant subsidy through the year.

^cThese projects are being funded out of the discretionary fund and are not included in the total.

^dDoes not include graduate and undergraduate students.

TABLE 8

SEA GRANT ADVISORY SERVICE FUNCTIONS 1981-1982

DATE	GROUP OR AUDIENCE	NUMBER OF ATTENDEES AND SPEAKERS	TOPIC
July 9, 1981	Lorain County Residents	123 Dave Kelch, Fred Snyder & Jeff Reutter	Walleye Fishing Clinic - Where, when, how to catch them; Fish Senses; Fish Preparation
July 10, 1981	General Public at Port Clinton Fish Co.'s Toledo Outlet	53 Dave Kelch	Freshwater Drum Recipes
July 11, 1981	Great Lakes Sport Fishing Council	22 Fred Snyder & Dave Kelch	Ohio Sea Grant
July 14, 1981	4-H Camp Conger	25 Fred Snyder	Aquatic Ecology Field Trip
July 14, 1981	Heidelberg YCC	40 Fred Snyder	Lake Erie Resources Problems
July 15, 1981	4-H Camp Conger	26 Fred Snyder	Aquatic Ecology Field Trip
July 15, 1981	TV 35 (Elyria)	? Dave Kelch	Fish Preparation
July 18, 1981	Old Woman Creek Wetlands Workshop	22 Fred Snyder	Fish Production in Lake Erie Estuaries
July 21, 1981	Six Radio Tapes "WFUN" in Ashtabula	? Frank Lichtkoppler	Lake Erie
July 22, 1981	Fairport Harbor Rod and Reel Club	10 Frank Lichtkoppler	Lake Erie and Sea Grant
July 30, 1981	Wellington, Ohio Kiwanis Club	24 Dave Kelch	Ohio Sea Grant and Lake Erie
August 4, 1981	4-H Camp at Kelley's Island	146 Fred Snyder	Aquatic Biology and Geological History Presentations
August 10, 1981	Youth Conservation Corps	51 Fred Snyder	Fishes of Old Woman Creek
August 15, 1981	Lindy-Lil' Joe Walleye Tournament	400 Fred Snyder, Dave Kelch & Frank Lichtkoppler	Judging
August 20, 1981	Fremont Ohio Kiwanis	36 Fred Snyder	The Ohio Sea Grant Program
September 10, 1981	Lake County residents	300 Fred Snyder, Dave Kelch & Frank Lichtkoppler	Trout and Salmon Seminar
Sept. 11-12, 1981	Lucas County Teachers	22 Fred Snyder	Teacher Development Seminar
September 18, 1981	Ottawa County 5th Grade Classes	535 Fred Snyder	Marsh Ecology
Sept. 25-26, 1981	Ohio Charter Captains	40 Fred Snyder, Jeff Reutter, Dave Kelch, Frank Lichtkoppler and Ed Herdendorf	Business Meeting Seminar
Sept. 28-29, 1981	Ohio Coop. Extension Service	18 Fred Snyder, Jeff Reutter & Ed Herdendorf	The Lake Erie Program
October 23, 1981	Baldwin Wallace College Students	13 Fred Snyder	Fishes of Old Woman Creek
October 25, 1981	Firelands Audubon Society	8 Fred Snyder	Field Studies at Sheldon Marsh
October 27, 1981	Firelands Audubon Society	37 Fred Snyder	Estuarine Fishes
November 3, 1981	Ohio Park and Recreation Association	35 Fred Snyder	The Ohio Sea Grant Program
November 4, 1981	Ohio Park and Recreation Association	28 Fred Snyder	Aquatic Ecology
November 5, 1981	St. Mary's High School (Sandusky)	25 Fred Snyder	Career Counseling
November 17, 1981	Wood County Science Students	210 Fred Snyder	Career Counseling
November 18, 1981	Ohio Fish Consumers Association	62 Fred Snyder & Dave Kelch	Organizational Advice
November 23, 1981	Berlin-Milan Middle School	48 Fred Snyder	Lake Erie Ecology
November 25, 1981	Port Clinton Kiwanis	33 Fred Snyder	The Ohio Sea Grant Program
December 1, 1981	General Public	102 Fred Snyder	Old Woman Creek Grounds-Breaking
December 2, 1981	PSA - WTOL-TV, Toledo	Thousands Fred Snyder	Ice Safety
December 2, 1981	PSA - WTOL-TV, Toledo	Thousands Fred Snyder	Sea Grant Newsletter
Dec. 3-4, 1981	Findlay Area Teachers	47 Fred Snyder	Lake Erie Resources
Dec. 5-7, 1981	Marine Management Conference	53 Fred Snyder & Ed Herdendorf	Marine Technology
December 8, 1981	Berlin-Milan Middle School	56 Fred Snyder	Lake Erie Ecology
December 8, 1981	Izaak Walton League	18 Fred Snyder	Ohio Sea Grant Program
December 10, 1981	Ohio Society of Professional Engineers	34 Fred Snyder	OSU Lake Erie Program
December 12, 1981	Lake Erie Charter Boat Association	150 Fred Snyder & Dave Kelch	Award Banquet
January 7, 1982	Berlin-Milan Middle School	52 Fred Snyder	Lake Erie Ecology
January 7, 1982	Lorain County Ice Fishermen	95 Dave Kelch	Ice Fishing Clinic
January 8, 1982	Horizon Garden Club	12 Dave Kelch	Estuaries
January 12, 1982	Cuyahoga County Ice Fishermen	125 Dave Kelch	Ice Fishing Clinic
Jan. 15-25, 1982	Cleveland Boat Show	Thousands Fred Snyder, Dave Kelch & Frank Lichtkoppler	Ohio Sea Grant Booth
January 20, 1982	Izaak Walton League	15 Fred Snyder	Tournament Planning
January 26, 1982	Toledo Sport Fishermen	80 Fred Snyder	Ice Fishing Clinic

TABLE 8 CONT.

DATE	GROUP OR AUDIENCE	NUMBER OF ATTENDEES AND SPEAKERS	TOPIC
February 6, 1982	League of Ohio Sportsmen	150 Jeff Reutter	Sensory Perception in Fish
February 8, 1982	Ohio Fish Producer's Association	45 Fred Snyder, Dave Kelch & Jeff Reutter	Update Sea Grant Activities
February 10, 1982	Fremont Area 4-H Agents	12 Fred Snyder	Propose New Projects
February 13, 1982	Sciota Bass Anglers	80 Jeff Reutter	Ohio State University Lake Erie Research
February 16, 1982	Ohio Commercial Fishermen	16 Fred Snyder & Dave Kelch	Discuss New Markets
February 17, 1982	PSA - WTOL-TV, Toledo	Thousands Fred Snyder	Sea Grant Education Assistance
February 17, 1982	PSA - WTOL-TV, Toledo	Thousands Fred Snyder	Sea Grant Research
February 18, 1982	Sandusky School Administration	17 Fred Snyder	Propose Education Programs
February 19, 1982	Ohio Fish & Wildlife Conference	75 Fred Snyder	Submit Resolutions
February 22-26, 1982	Louisiana Bait Dealers	20 Fred Snyder & Dave Kelch	Market Development
February 26-28, 1982	Fairport Sport Show	Hundreds Frank Lichtkoppler	Ohio Sea Grant Booth
March 2, 1982	Lorain County Fishermen	175 Dave Kelch	Steelhead Fishing Clinic
March 4, 1982	Columbus Power Squadron	75 Jeff Reutter	Lake Erie Fisheries
March 5, 1982	Ivy House Residents	25 Frank Lichtkoppler	Ohio Sea Grant/Lake Erie
March 9, 1982	Cuyahoga County Fishermen	225 Dave Kelch	Steelhead Fishing Clinic
March 9, 1982	Ashtabula Co. Soil and Water Conservation District	25 Frank Lichtkoppler	Ohio Sea Grant
March 9, 1982	Oakland Park Conservation Club	60 Jeff Reutter	Ohio State University Lake Erie Program
March 10, 1982	Eastlake City Council	6 Frank Lichtkoppler	Lake Erie Boat Ramp Design
March 10-14, 1982	North Olmstead Mall Outdoor Show	625 Dave Kelch	Booth and Fish Preparation Demonstrations
March 11, 1982	Westlake Sportsmen's Club	42 Dave Kelch	Ohio Sea Grant
March 12, 1982	Mansfield Teachers Workshop	49 Jeff Reutter	Lake Erie Water Quality
March 15-19, 1982	Great Lakes Mall Show	Hundreds Frank Lichtkoppler	Sea Grant Exhibit
March 16, 1982	Toledo Vocational Agriculture Students	44 Fred Snyder	Lake Erie Ecology
March 17, 1982	Dayton Area Home Economics Agents	35 Dave Kelch	Fish Preparation
March 17, 1982	Lake Erie Fishing Clinic-Dayton	450 Fred Snyder, Dave Kelch & Jeff Reutter	When, Where and How to Fish on Lake Erie
March 17, 1982	Radio Station WPVL, Ashtabula	Thousands Frank Lichtkoppler	Five 1-minute radio tapes on Lake Erie and Sea Grant
March 18, 1982	Conneaut Chamber of Commerce	56 Frank Lichtkoppler	Lake Erie/Ohio Sea Grant
March 19-20, 1982	Northeast Ohio Teachers Workshop	28 Frank Lichtkoppler	OEAGLS/Sea Grant
March 19-21, 1982	Ohio Outdoor Writers	46 Dave Kelch	
March 19, 1982	Cleveland Sport Show	Thousands Dave Kelch, Frank Lichtkoppler, Fred Snyder & Jeff Reutter	Sea Grant Exhibit
March 22, 1982	Elyria High School Biology Class	36 Dave Kelch	Lake Erie Ecology
March 22, 1982	Fremont Area Agriculture Agents	8 Fred Snyder	Sea Grant Program Update
March 24, 1982	Lucas County High School Students	84 Fred Snyder	Career Counseling
March 25, 1982	Delaware County Home Economists	175 Dave Kelch	Fish Preparation Demonstrations
March 25, 1982	Western Reserve Federation of Conservationists	20 Frank Lichtkoppler	Lake Erie Fisheries
March 27, 1982	Joint Meeting of Three Advisory Committees	28 Dave Kelch, Frank Lichtkoppler, Fred Snyder & Jeff Reutter	Ohio Sea Grant and Congressional Day
March 28, 1982	Chagrin River Salmon Association	35 Frank Lichtkoppler	Lake Erie Fisheries
March 31, 1982	Lake County Extension Advisory Committee	20 Frank Lichtkoppler	Sea Grant Update in Northeast Ohio
April 1, 1982	Lorain County Sportsfishermen	146 Dave Kelch	Smallmouth Bass Fishing Clinic
April 2, 1982	Padua Franciscan High School	20 Dave Kelch	Lake Erie Fisheries
April 3, 1982	Padua Franciscan High School	24 Dave Kelch	Limnology Field Trip
April 3, 1982	Henry County Sportsfishermen	98 Fred Snyder	Lake Erie Fishing Clinic
April 4, 1982	Rock Creek Conservation Club	31 Frank Lichtkoppler	Lake Erie and Sea Grant
April 5, 1982	Lakefront Real Estate Appraisers	70 C.E. Herdendorf, Frank Lichtkoppler, & Keith Bedford	Lake Erie Coastal Erosion
April 8, 1982	General Public Northeast Ohio	30,000 Frank Lichtkoppler	Five 1-minute programs on Radio WFUN
April 10, 1982	Ohio Sportsmen at Alladin Temple Shrine	300 Jeff Reutter and Bill Snyder	Sea Grant Exhibit
April 13, 1982	Fishing Tackle Representatives	8 Jeff Reutter	Fishery Promotion Program
April 14, 1982	Painesville High School Students	125 Frank Lichtkoppler	Marine Careers
April 20, 1982	Ohio Parks and Recreation Association	34 Fred Snyder	Aquatic Education Concepts

TABLE 8 CONT.

DATE	GROUP OR AUDIENCE	NUMBER OF ATTENDEES AND SPEAKERS	TOPIC
April 21, 1982	Lorain County Ducks Unlimited	21 Dave Kelch	Waterfowl Problems on Lake Erie
April 22, 1982	Huron High School Students	42 Fred Snyder	Lake Erie Management
April 22-23, 1982	Hocking Technical College	28 Fred Snyder	Commercial Fishing Workshop
April 25, 1982	Lucas County Fishermen	68 Fred Snyder	Walleye and White Bass Fishing Clinic
April 26, 1982	Lakeland Community College Students	35 Frank Lichtkoppler	Lake Erie Fisheries Economics
April 29, 1982	Padua High School	24 Dave Kelch	Old Woman Creek Field Trip
May 1, 1982	Ohio Audabon Council	94 Fred Snyder	Ecology of Lake Erie
May 2, 1982	Ohio Audabon Council	48 Fred Snyder	Natural History Tour of South Bass Island
May 3, 1982	General Public Northeast Ohio	30,000 Frank Lichtkoppler	Five 1-minute broadcasts on Radio WFUN
May 4, 1982	Margaretta School Administration	5 Fred Snyder	Program Planning
May 5, 1982	Red Bird Middle School	100 Frank Lichtkoppler	Marine Education
May 6, 1982	Lorain County Sportsfishermen	166 Dave Kelch	Walleye Fishing Clinic
May 6, 1982	Ohio State University Sierra Club	15 Jeff Reutter	Pollution and Lake Erie
May 7, 1982	Fremont Area EFNEP Aides	12 Fred Snyder	Fish Preparation
May 7, 1982	Red Bird Middle School	125 Frank Lichtkoppler	Marine Education
May 7, 1982	Polish Fishermen's Club	39 Dave Kelch	Sea Grant Research
May 8, 1982	Holden Arboretum	25 Frank Lichtkoppler	Marine Careers
May 11-13, 1982	Site Review Team	50 Entire Staff	Presentations on all projects
May 12, 1982	Central Ohio Fishermen	95 Dave Kelch, Frank Lichtkoppler, Fred Snyder & Jeff Reutter	Lake Erie Fishing Clinic
May 13, 1982	Padua High School	22 Dave Kelch	Stone Lab Field Trip
May 18, 1982	Lake County Soil and Water Conservation District	10 Frank Lichtkoppler	Ohio Sea Grant
May 20, 1982	Erie County Naturalists	27 Fred Snyder	Fishes of Old Woman Creek
May 20, 1982	Cuyahoga County Sportsfishermen	175 Dave Kelch	Walleye Fishing Clinic
May 20, 1982	Northeast Ohio General Public	25,000 Frank Lichtkoppler	Five 1-minute Radio broadcasts WPVL
May 20, 1982	Camp Issac Joques	225 Frank Lichtkoppler	Lake Erie
May 23, 1982	Mentor Marsh Board	12 Frank Lichtkoppler	Hidden Secrets of the Marsh
May 24, 1982	Lake County Extension Advisory Committee	12 Frank Lichtkoppler	Ohio Sea Grant
May 24, 1982	Sheffield Lake Lions Club	50 Dave Kelch	Ohio Sea Grant
May 24-28, 1982	Fishing Tackle Representatives	25 Dave Kelch & Fred Snyder	Fishery Promotion Activities
May 27, 1982	Lake County Rural Development Committee	10 Frank Lichtkoppler	Sea Grant Programming
May 27, 1982	Northern Ohio General Public	Thousands Dave Kelch	T.V. 5 Broadcast
May 27, 1982	Western Reserve Federation of Conservationists	10 Frank Lichtkoppler	Lake Erie
May 29-30, 1982	Lake Erie Charter Boat Association Tournament	Hundreds Dave Kelch, Frank Lichtkoppler & Fred Snyder	Walleye Biology and Judging
June 1, 1982	Gifted and Talented Students, McKinley School, Elyria	18 Dave Kelch	Lake Erie
June 2, 1982	Lake Erie County Senior Citizens	31 Fred Snyder	Natural History of Sandusky Bay
June 2, 1982	Gifted and Talented Students, Windsor School, Elyria	21 Dave Kelch	Lake Erie
June 3, 1982	Berea Home Economists	37 Dave Kelch	Fish Preparation
June 4, 1982	Madison Memorial Middle School	78 Frank Lichtkoppler	Lake Ecology
June 4, 1982	Gifted and Talented Students, Jefferson School, Elyria	25 Dave Kelch	Lake Erie
June 6, 1982	League of Ohio Sportsmen	39 Jeff Reutter & Charles Herdendorf	Lake Erie Fisheries and Phosphorus
June 7, 1982	Geneva Schools, 6th Grade	304 Frank Lichtkoppler	Lake Ecology
June 9, 1982	Ashtabula County Sportsfishermen	160 Frank Lichtkoppler & Dave Kelch	Walleye Workshop
June 9, 1982	Cincinnati Businessmen's Club-Fin and Feathers	19 Jeff Reutter	Lake Erie Fisheries
June 10, 1982	Cleveland General Public	Thousands Dave Kelch	TV 5 Cleveland-Lake Erie
June 11, 1982	Erie County Students	53 Fred Snyder	Lake Erie Ecology
June 11, 1982	Elyria General Public	Thousands Dave Kelch	TV 35 Elyria-Lake Erie
June 13, 1982	Northeast Ohio Coastal Residents	25 Frank Lichtkoppler	Beach Walk
June 14 and 16, 1982	Lorain County Youth	70 Dave Kelch	Fishing Clinic
June 16, 1982	Municipal Officials	36 Frank Lichtkoppler	Coastal Littering
June 17, 1982	Northwest Ohioans	Thousands Fred Snyder	Congressional Day Talks on Radio WLEC, WOSE, WSPD

TABLE 8 CONT.

DATE	GROUP OR AUDIENCE	NUMBER OF ATTENDEES AND SPEAKERS	TOPIC
June 17, 1982	Ashtabula County Sportsfishermen	33 Frank Lichtkoppler & Dave Kelch	Fish Preparation
June 18-19, 1982	Congressional Representatives and Aides	50 Staff	Values of Lake Erie
June 24, 1982	Fremont Area 4-H	82 Fred Snyder	Tackle Making
June 24, 1982	General Public Northeast Ohio	30,000 Frank Lichtkoppler	Five 1-minute Radio broadcasts WFUN
June 24, 1982	General Public Northeast Ohio	25,000 Frank Lichtkoppler	Five 1-minute Radio broadcasts WPVL
June 25-26, 1982	League of Ohio Sportsmen Walleye Tournament	1,000 Dave Kelch & Fred Snyder	Walleye Biology and Judging
June 28, 1982	Medicinal Chemistry Graduate Symposium	250 Dave Kelch & Frank Lichtkoppler	Walleye Fishing Clinic
June 30, 1982	Northwest Ohioans	Thousands Fred Snyder	Noon News, WTVG-TV, Toledo-Lake Erie Walleye Fishing
July 1, 1982	Mentor Marsh Students	12 Frank Lichtkoppler	Marsh Ecology
July 1-2, 1982	Kelley's Island 4-H Youth	80 Dave Kelch	Lake Erie Ecology
July 5, 1982	Anchors Away Marina	39 Dave Kelch	Fish Preparation
July 7, 1982	Clevelanders-WCLV Radio	Thousands Dave Kelch	Lake Erie Fisheries
July 9, 1982	Ohio State University Board of Trustees	40 Jeff Reutter & Charles	Ohio State University Research and Value of Lake Erie
July 9, 1982	Elyria - TV 35	Thousands Dave Kelch	Ohio Sea Grant
July 15, 1982	Fremont Area Extension Agents	12 Fred Snyder	Bait Market Development
July 16, 1982	Cuyahoga County Commissioners Day	150 Dave Kelch	Fish Preparation
July 16, 1982	Interview on Radio WFUN	10,000 Frank Lichtkoppler	Beach Ecology
July 17, 1982	Northeast Ohio Coastal Residents	25 Frank Lichtkoppler	Beach Walk
July 19-20, 1982	Kelley's Island 4-H	55 Dave Kelch	Aquatic Education Programs
July 22, 1982	WTOL-TV Toledo	Thousands Fred Snyder	Marine Construction Permits and Hypothermia
July 22, 1982	Elyria Kiwanis Club	55 Dave Kelch	Lake Erie
July 23, 1982	Ottawa County Fishermen	112 Fred Snyder	Lake Erie Walleye Clinic
July 26, 1982	Amherst Rotary Club	62 Dave Kelch	Lake Erie
July 29, 1982	Radio Station WPVL-5 tapes	25,000 Frank Lichtkoppler	Lake Erie
July 30, 1982	Fremont Exchange Club	33 Fred Snyder	Bait Market Development
August 2-8, 1982	Ashtabula County Fair	Hundreds Frank Lichtkoppler	Sea Grant Exhibit
August 4, 1982	Sandusky CAC Interns	8 Fred Snyder	Natural History of South Bass Island
August 4, 1982	Ducks Unlimited-Lorain County	20 Dave Kelch	Steel Shot
August 5, 1982	Old Woman Creek Staff	6 Fred Snyder	Field Collection Training
August 6, 1982	Stone Lab Fish Ecology Class	8 Fred Snyder & Jeff Reutter	Field Trip
August 12, 1982	Stone Lab Guest Lecture	40 Jeff Reutter	Homothermia and Cold Water Drowning
August 9-15, 1982	Cuyahoga County Fair	Thousands Dave Kelch	Sea Grant Display and Fish Preparation
August 12, 1982	WOBL Radio-Oberlin	Thousands Dave Kelch	Ohio Sea Grant
August 13, 1982	TV 35- Elyria	Thousands Dave Kelch	Sea Grant Fact Sheets
August 18, 1982	Stone Lab Fish Ecology Class	8 Fred Snyder & Jeff Reutter	Field Trip
August 19, 1982	OCES Administrators	12 Frank Lichtkoppler	Lake Erie Erosion
August 21-29, 1982	Lake County Fair	Hundreds Frank Lichtkoppler	Sea Grant Exhibit
August 23-29, 1982	Lorain County Fair	Hundreds Dave Kelch	Sea Grant Exhibit
August 24-25, 1982	Sandusky School Administrators	26 Fred Snyder	Aquatic Education Inservice
August 26, 1982	Radio Station WPVL-5 tapes	25,000 Frank Lichtkoppler	Lake Erie and Sea Grant
August 26, 1982	Radio Station WFUN-5 tapes	30,000 Frank Lichtkoppler	Lake Erie and Sea Grant
August 27, 1982	TV 35-Elyria	Thousands Dave Kelch	Sea Grant Fact Sheets
August 31, 1982	Ruggles Beach Association	20 Frank Lichtkoppler & Dave Kelch	Coastal Erosion
September 1, 1982	Radio Station WOBL-Oberlin	Thousands Dave Kelch	Salmon and Trout Clinic
September 2, 1982	ARES, Inc.	7 Fred Snyder & Jeff Reutter	Firing Range Usage
September 3, 1982	TV 35-Elyria	Thousands Dave Kelch	Sea Grant and Salmon Fishing
September 7, 1982	Cuyahoga County Sportsfishermen	192 Dave Kelch	Salmon and Trout Clinic
September 8, 1982	Lake County Sportsfishermen	225 Frank Lichtkoppler & Fred Snyder	Salmon and Trout Clinic
September 9, 1982	Fremont Area 4-H Agents	9 Fred Snyder	Proposed Aquaculture Project
September 10-12, 1982	Bexley Junior High School	32 Fred Snyder	Aquatic Biology Workshop
September 15, 1982	Ashtabula County Sportsfishermen	155 Frank Lichtkoppler & Fred Snyder	Salmon and Trout Clinic
September 17, 1982	Ottawa County 5th Grade	550 Fred Snyder	Marsh Conservation Tour
September 19, 1982	Northeast Ohio Coastal Residents	26 Frank Lichtkoppler	Waves and Beaches/Beach Walk
September 21, 1982	Port Clinton Rotary	36 Fred Snyder	Bait Market Development
September 21-23, 1982	Farm Science Review	300 Jeff Reutter	Seafood Utilization Tour

TABLE 8 CONT.

DATE	GROUP OR AUDIENCE	NUMBER OF ATTENDEES AND SPEAKERS	TOPIC
September 22, 1982	Talkback Radio Show-WFUN	10,000 Frank Lichtkoppler	Coastal Drive-it-Yourself
September 23, 1982	TV 35-Elyria	Thousands Dave Kelch	Sea Grant Information
September 23, 1982	Camp Perry Range Officials	5 Fred Snyder	Firing Range Useage
September 25, 1982	WJW Radio-Cleveland	Thousands Dave Kelch	Lake Erie Discussion with D'Arcy Egan
September 25, 1982	Isaac Walton League and General Public	85 Fred Snyder	Sea Grant Exhibit
September 29, 1982	Mayfield Junior High School	39 Dave Kelch & Fred Snyder	Aquatic Biology Workshop
October 1, 1982	Charter Fishermen	10 Fred Snyder	Improvement of Toussaint Harbor
October 3, 1982	Northeast Ohio Coastal Residents	150 Frank Lichtkoppler	Drive-it-Yourself Tour
October 5, 1982	WOBL Radio-Oberlin	Thousands Dave Kelch	Lake Erie
October 5, 1982	Vermilion Lion's Club	46 Dave Kelch	Sea Grant
October 5, 1982	Lorain County Waterfront Hunters Association	26 Dave Kelch	Safety and Steel Shot
October 5, 1982	Isaac Walton League	6 Fred Snyder	Tournament Planning
October 7, 1982	Westlake Sportsmen's Club	43 Dave Kelch	Lake Erie
October 7, 1982	WPVL Radio-5 tapes	25,000 Frank Lichtkoppler	Sea Grant Update
October 7, 1982	Ashtabula County Extension Advisory Committee	15 Frank Lichtkoppler	Sea Grant Update
October 8, 1982	Lorain County Teachers	300+ Dave Kelch	Marine Education
October 8-9, 1982	Sandusky Teachers	14 Fred Snyder	Aquatic Education Workshop
October 11, 1982	Camp Terry Officials	6 Fred Snyder	Firing Range Warning Tests
October 12, 1982	Sandusky County 5th Grade	375 Fred Snyder	County Conservation Tour
October 13, 1982	Orain County Hunters	56 Fred Snyder	Waterfowl Hunting and Safety
October 13, 1982	Marion Power Squadron	43 Fred Snyder	Bait Market Development
October 14, 1982	Northeast Ohio Coastal Property Owners	7 Frank Lichtkoppler	Coastal Erosion
October 14, 1982	New Sea Grant Advisory Program Committee	9 Jeff Reutter	Ways to Save Money on Research Projects
October 14-15, 1982	Municipal Officials	40 Frank Lichtkoppler & C.E. Herdenhof	Coastal Erosion
October 20, 1982	Ohio Cooperative Extension Agents	18 Dave Kelch, Frank Lichtkoppler, Fred Snyder & Jeff Reutter	Lake Erie Fish Utilization
October 22, 1982	General Public-Erie County	Hundreds Fred Snyder	Congressional Breakfast
October 27, 1982	Lorain and Cuyahoga County Hunters	135 Dave Kelch	3 Safety Clinics
October 28, 1982	Coastal Property Owners	7 Frank Lichtkoppler	Waves and Beaches
October 29, 1982	Northeast Ohio School Teachers	38 Frank Lichtkoppler	Lake Erie
October 20, 1982	Northeast Ohio School Teachers	38 Frank Lichtkoppler	Know Your Local Fish

TABLE 9
RESEARCH PROJECTS

This table lists research projects focusing on Lake Erie and other marine and aquatic topics coordinated by the Center for Lake Erie Area Research or the Ohio Sea Grant Program. The table also includes research projects dealing with Lake Erie that are being administered by other programs within the University (such projects list the name of the appropriate administrative unit).

INDEX

Project No.	Title	PI	Sponsor	Page
●711230/713933	Limnological Investigations of Lake Erie	C. Herdendorf	USEPA	34
●711846	Great Lake Seiche-Affected River Mouths	K. Bedford/ C. Herdendorf	OWRT	35
●712332-712338/ ●712473	Ohio Sea Grant Program 1978-1980	C. Herdendorf	NOAA	36
●712598/712599	Aquatic Ecology Monitoring Davis-Besse Nuclear P.S.	J. Reutter/ C. Herdendorf	TECO	37
●712765/713050/ ●714628	Technical Assessment Lake Erie Intensive Study	C. Herdendorf	USEPA	38
●711367/712138/ ●712898/712899	Yellow Perch Parasites	J. Crites	NMFS	39
●712962/714869/ ●714452	Lake Erie Sediment Resuspension and Transport	K. Bedford/ C. Moore	USEPA	40
●713076	Forage by Walleye and Yellow Perch in Lake Erie	T. Peterle/ R. Carline	USFWS	41
●713207-713216/ ●713222-713224 ●713512	Ohio Sea Grant Program 1980-1981	C. Herdendorf	NOAA	42
●713207	Ohio Sea Grant Admin. and Development	C. Herdendorf/ J. Reutter	NOAA	43
●713208	Lake Erie Storm Surge Forecasting	K. Bedford	NOAA	44
●713209	Economics of Lake Erie Fishery	L. Hushak	NOAA	45

Project No.	Title	PI	Sponsor	Page
●713210	Zooplankton Productivity in Fish Hatchery Ponds	D. Culver	NOAA	46
●713211	Lake Erie Information Radio Broadcasting	R. Fortner	NOAA	47
●713212	Marine and Great Lakes Education	V. Mayer/ J. Hug	NOAA	48
●713213	Marine Technology Curriculum	W. Brewer	NOAA	49
●713214	Coastal Engineering Curriculum	K. Bedford	NOAA	50
●713215/713216	Ohio Sea Grant Advisory Service	J. Reutter	NOAA	51
●713222	Ohio Sea Grant Agent - Fremont	J. Reutter/ F. Snyder	NOAA	52
●713223	Ohio Sea Grant Agent - Elyria	J. Reutter/ D. Kelch	NOAA	53
●713224	Ohio Sea Grant Agent - Painesville	J. Reutter/ F. Lichtkoppler	NOAA	54
●713512	Antitumor Factor in Clams	D. Horton	NOAA	55
●713694	White Perch in Lake Erie	T. Peterle/ J. Margraf	USFWS	56
●713078/713478	Lake Erie Water Quality and <u>Cladophora</u>	C. Herdendorf/ R. Stiefel	USEPA	57
●714066-714082/ ●714207/714224/ ●714350/714820	Ohio Sea Grant Program 1981-1982 and 1982-1983	C. Herdendorf	NOAA	58
●714066	Ohio Sea Grant Administration	C. Herdendorf	NOAA	59
●714067	Ohio Sea Grant Development	C. Herdendorf	NOAA	60
●714068	Zooplankton Productivity in Fish Hatchery Ponds	D. Culver	NOAA	61
●714069/714820	Culturing Fathead Minnows	T. Stockdale/ C. Cole	NOAA	62

Project No.	Title	PI	Sponsor	Page
●714070	Sand Resources in Lake Erie	R. Anderhalt	NOAA	63
●714071	Economics of Lake Erie Fishery	L. Hushak/ D. Southgate	NOAA	64
●714072	Marketing of Lake Erie Fish	C. Thraen	NOAA	65
●714073	Development of Ultrasonic Transducer	K. Bedford/ V. Varadan/ R. Brodkey	NOAA	66
●714074/714075	Fish Community in Lake Erie Marshes	D. Johnson/ M. Barnes	NOAA	67
●714076	Summer Storms over Western Lake Erie	T. Seliga	NOAA	68
●714077	Ohio Sea Grant Education Office	V. Mayer	NOAA	69
●714078	Marine and Great Lakes Education	V. Mayer/ R. Fortner	NOAA	70
●714079	Ohio Sea Grant Advisory Service	J. Reutter/ C. Herdendorf	NOAA	71
●714080	Ohio Sea Grant Agent - Fremont	J. Reutter/ F. Snyder	NOAA	72
●714081	Ohio Sea Grant Agent - Elyria	J. Reutter/ D. Kelch	NOAA	73
●714082	Ohio Sea Grant Agent - Painesville	J. Reutter/ F. Lichtkoppler	NOAA	74
●714207	Great Lakes Museum Programming	R. Fortner	NOAA	75
●714224	Foundations of Offshore Structures	T. Wu	NOAA	76
●714350	Ohio Sea Grant Internship	J. Reutter/ C. Herdendorf	NOAA	77
●714377/714387	Acid Deposition in Aquatic Systems	C. Herdendorf/ M. Barnes	DAQDA	78
●714535	Environmental Evaluation of Lake Erie Power Plants	J. Reutter	TECO	79

●Limnological Investigations of Water Quality and Fish Larvae in Lake Erie.

Principal Investigator: Charles E. Herdendorf, CLEAR

Sponsor: U. S. Environmental Protection Agency, Large Lakes Research Station, Grosse Ile, Michigan

Grant No.: R-804612-03-0

OSURF Nos.: 711230 and 713933

Project Period and Budget: June 15, 1978 and November 30, 1981
\$292,216 (sponsor)
\$ 19,730 (OSU cost-sharing)

Objective: The Ohio State University, Center for Lake Erie Area Research (CLEAR), plans to conduct studies of (1) water quality, particularly nutrients/oxygen relationships, in the western and central basins of Lake Erie and (2) fish larvae in the western basin and Sandusky Bay. A comprehensive study of the status of eutrophication in Lake Erie is now being completed by CLEAR in support of an assessment of the effectiveness of nutrient control programs (EPA Grant No. R-802543). A subproject of this grant deals with population estimates of fish larvae in western lake Erie. Data generated by these studies also forms the base of deterministic models now under development by EPA, Large Lakes Research Station, Grosse Ile, Michigan. This project also provides support for the publication of a special issue of the Journal of Great Lakes Research, titled "Ecology of Filamentous Algae," vol. 8, no. 2, 1982.

●Transport Properties of the Great Lakes Seiche-Affected River Mouths

Principal Investigators: Keith Bedford, Civil Engineering and
Charles E. Herdendorf, CLEAR

Sponsor: U. S. Department of Interior, Office of Water Research and
Technology

Grant No.: 14-34-0001-9128

OSURF No.: 711846

Project Period and Budget: March 1, 1979 to September 30, 1982
\$120,476 (sponsor)
\$110,385 (OSU cost-sharing)
\$ 32,600 (ODNR cost-sharing)

Objective: The research objective is to determine the detailed flow physics of the transport disruptions, and the best analytical methodology to measure and empirically quantify these episodes. This will be done by the following sequence of steps: 1) A suitable river mouth site with vigorous seiche activity will be chosen. 2) Wind, stage elevation, velocity temperature, conductivity, and bedform profiles will be continuously monitored, and the data spectrally analyzed to delineate relevant time and length scales. 3) Nondimensional analysis, spectral theory and filtration theory. 4) Verified model will be used to further identify processes, readjust the sampling regimen and generate transport patterns for a variety of loading conditions. 5) Model output will be used to synthesize an empirical representation of the seiche episode for use as input into water management models.

●Ohio Sea Grant Program 1979-1980

Principal Investigator: Charles E. Herdendorf, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA79AA-D-00120

OSURF Nos.: 712332-712338 and 712473

Project Period and Budget: September 1, 1979 to August 31, 1981
\$186,000 (sponsor)
\$105,000 (OSU cost-sharing)

Objective: The overall objective of the Ohio Sea Grant Program is to enhance development, and improve management of state and regional aquatic resources. The program seeks the wise utilization of marine and aquatic resources, particularly those resources associated with the Great Lakes, to enhance the quality of life in Ohio and our surrounding states. This mission is being implemented through comprehensive research, education and advisory service programs. To accomplish this, support and resources are being provided to the university community in order to: 1) research Great Lakes problems and to develop critically-needed information while maintaining the highest level of academic excellence; 2) establish a statewide Sea Grant advisory services network to transfer this and other information to government, industry and the general public; and 3) continue to build understanding and appreciation for marine and aquatic resource values and to provide career training for marine technologists among the people of Ohio through education programs.

Results obtained through ongoing research and development projects will be transmitted to industry, agencies and the general public through appropriate publications and other media in a timely fashion.

Special information, advisory and education programs will be conducted to move these findings rapidly to various users and to create awareness and involvement on the part of institutions and the general public in Great Lakes problems and opportunities.

The Ohio Sea Grant Program will continue the process of delineating needs and priorities for future research, education and advisory programs which will serve as the basis for development of future programs focused on the real needs and vital problems of the state and region.

The Ohio Sea Grant Program has been successful in addressing its stated objectives in research, education and advisory services within the university community and in the context of the State of Ohio and the Great Lakes Region.

●Operational Aquatic Ecology Monitoring Program for the Davis-Besse Nuclear Power Station

Principal Investigators: Jeffrey M. Reutter and
Charles E. Herdendorf, CLEAR

Sponsors: Toledo Edison Company and Cleveland Electric Illuminating Company

Contract No.: 46980

OSURF Nos.: 712598 (on-campus) and 712599 (off-campus)

Project Period and Budget: January 1, 1980 to June 30, 1982
\$284,633 (sponsor)

Objective: This project will conduct an operational aquatic ecology monitoring program for the Davis-Besse Nuclear Power Station, Unit No. 1. This program is designed to comply with the Environmental Technical Specifications for this facility.

●Technical Assessment of the Lake Erie Intensive Study

Principal Investigators: Charles E. Herdendorf, C. Lawrence Cooper,
Laura A. Fay and David E. Rathke, CLEAR

Sponsor: U. S. Environmental Protection Agency, Great Lakes National
Program Office, Region V, Chicago

Grant No.: R00551601

OSURF Nos.: 712765 (on-campus), 713050 (off-campus) and 714628

Project Period and Budget: March 1, 1980 to December 31, 1982
\$358,878 (sponsor)
\$27,245 (OSU cost-sharing)

Objective: The general objectives of the Lake Erie intensive study are to provide information for detailed assessments of tributary, nearshore and main lake water quality. The intensive study is designed to identify emerging problem areas, to detect changes in water quality on a broad geographic basis, and to provide information necessary for trend analyses. A technical assessment team will be established to coordinate the implementation of the Lake Erie Surveillance Plan and preparation of an assessment report to the International Joint Commission.

●Yellow Perch Parasite Research

Principal Investigators: John L. Crites, Zoology and
Jeffrey M. Reutter, CLEAR

Sponsor: U.S. Department of Commerce, National Marine Fisheries Service,
and Ohio Department of Natural Resources, Division of Wildlife

Grant No.: 3-398-R-1, 2, and 3

OSURF Nos.: 711367, 712138, 712898 (on-campus) and 712899 (off-campus)

Project Period and Budget: July 1, 1978 to June 30, 1982
\$73,866 (sponsor)
\$31,147 (OSU cost-sharing)

Objective: This study is designed to document the incidence of infection of yellow perch in the central and western basins of Lake Erie with the nematode parasite Eustrongylides tubifex. The impact of the parasite on these populations will be documented and management recommendations to minimize this impact will be investigated.

● Lake Erie Sediment Resuspension and Transport Mechanisms: Nearshore Vertical Profiles and Flux Rates

Principal Investigators: Keith W. Bedford and Charles A. Moore,
Civil Engineering

Sponsor: U. S. Environmental Protection Agency, Large Lakes Research Station, Grosse Ile, Michigan

Grant No.: CR 807623-01-0

OSURF Nos.: 712962, 714869 (on campus) and 714452 (off-campus)

Project Period and Budget: June 12, 1980 to March 31, 1983
\$69,880 (sponsor)
\$ 4,290 (OSU cost-sharing)

Objective: With the objective of identifying and rationalizing sediment resuspension processes in the Great Lakes, an ultrasonic sediment profilometer for measuring vertical concentration profiles of muds, silts and clays will be constructed and used to study the nearshore of the Central Basin of Lake Erie to develop a preliminary delineation of mechanisms, patterns and rates involved.

The ultrasonic sediment profilometer constructed during the first year of this project will be calibrated and used to collect a series of data from seiche and wind wave events. The data will be analyzed to develop a quantitative description of the resuspension process.

Administrative Unit: Civil Engineering

● Forage Utilization by Walleye and Yellow Perch in Western Lake Erie

Principal Investigators: Tony J. Peterle and Robert F. Carline,
Zoology

Sponsor: U. S. Department of the Interior, Fish and Wildlife Service

Grant No.: 14-16-0009-80-034

OSURF No.: 713076

Project Period and Budget: July 22, 1980 to July 31, 1982
\$16,830 (sponsor)
\$ 1,504 (OSU cost-sharing)

Objective: This study is designed to document utilization of forage species by walleye and yellow perch in western Lake Erie and to relate this utilization to relative abundance and sizes of available forage species.

Administrative Unit: Zoology

●Ohio Sea Grant Program 1980-1981

Principal Investigator: Charles E. Herdendorf, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF Nos.: 713207-713216, 713222-713224 and 713512

Project Period and Budget: September 1, 1980 to August 31, 1982
\$295,000 (sponsor)
\$254,200 (OSU cost-sharing)

Objective: The overall objective of the Ohio Sea Grant Program is to enhance development, and improve management of state and regional aquatic resources. The program seeks the wise utilization of marine and aquatic resources, particularly those resources associated with the Great Lakes, to enhance the quality of life in Ohio and our surrounding states. This mission is being implemented through comprehensive research, education and advisory service programs. To accomplish this, support and resources are being provided to the university community in order to: 1) research Great Lakes problems and to develop critically-needed information while maintaining the highest level of academic excellence; 2) establish a statewide Sea Grant advisory services network to transfer this and other information to government, industry and the general public; and 3) continue to build understanding and appreciation for marine and aquatic resource values and to provide career training for marine technologists among the people of Ohio through education programs.

Results obtained through ongoing research and development projects will be transmitted to industry, agencies and the general public through appropriate publications and other media in a timely fashion.

Special information, advisory and education programs will be conducted to move these findings rapidly to various users and to create awareness and involvement on the part of institutions and the general public in Great Lakes problems and opportunities.

The Ohio Sea Grant Program will continue the process of delineating needs and priorities for future research, education and advisory programs which will serve as the basis for development of future programs focused on the real needs and vital problems of the state and region.

The Ohio Sea Grant Program has been successful in addressing its stated objectives in research, education and advisory services within the university community and in the context of the State of Ohio and the Great Lakes Region.

● Administration and Development of the Ohio Sea Grant Program

Principal Investigators: Charles E. Herdendorf and
Jeffrey M. Reutter, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713207

Project Period and Budget: September 1, 1980 to August 31, 1982
\$39,467 (sponsor)
\$76,669 (OSU cost-sharing)

Objective: The continuing and proposed goals of the program administration office are: (1) to provide management of Ohio Sea Grant Program activities by exercising sound administrative and fiscal control; (2) to provide leadership in the development and coordination of program proposals; (3) to establish advisory councils to assist in problem identification, long-range planning, coordination, and scientific direction of the Program; (4) to provide program-wide communication, business and logistic services; (5) to serve as the contact point with the National Sea Grant Program, federal and state agencies, other state programs and other institutions of higher learning, and to act as a focal point for collaboration with other organizations; and (6) to explore new applications of research, education and advisory services within the Ohio Sea Grant mission.

●Lake Erie Storm Surge Forecasting: Model Intercomparison of Western Basin Effects

Principal Investigator: Keith W. Bedford, Civil Engineering

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713208

Project Period and Budget: September 1, 1980 to August 31, 1982
\$26,038 (sponsor)
\$13,774 (OSU cost-sharing)

Objective: As is well known, extremely damaging Lake Erie floods called storm surge occur during the passage of large storms over the lake. In order to help reduce potential damages, operational storm surge forecasting strategies are being developed. Since a variety of competing forecasting strategies exist a study is now underway to intercompare these models in order to select the optimal formulation. As a result of this study it is now known that storm winds from the northeast cause particularly serious western basin flooding and the models as currently structured are poor in predicting this event. The objective of this research is to continue and refine the intercomparison initiated in this year's study by concentrating on the ability of the models to predict the aggravated western basin response. Based upon this intercomparison the structural improvements required to improve the forecasts will be identified and implemented in the operational forecasting model.

●Economic Value of Ohio's Lake Erie Fisheries

Principal Investigators: Leroy J. Hushak and Frederick H. Hitzhusen,
Agricultural Economics

Sponsor: National Oceanic and Atmospheric Administration

Grant No.: NA80AA-D-00103

OSURF No.: 713209

Project Period and Budget: September 1, 1980 to August 31, 1982
\$27,021 (sponsor)
\$ 9,521 (OSU cost-sharing)

Objective: This project will (1) determine the annual economic value of Ohio's Lake Erie fishery resource generated by the major user groups: sport fishermen, commercial fishing industry, charter fishing industry, and bait dealers; (2) estimate the value of (demand for) sport fishing on Lake Erie, and the relationships between fishing days as the unit of measurement, the value per fishing day, and sport fishing catch per fishing day; and (3) examine the implications of alternative distributions of income and of ownership rights or entitlements for management of the Lake Erie resource.

●Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds

Principal Investigator: David A. Culver, Zoology

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713210

Project Period and Budget: September 1, 1980 to August 31, 1982
\$11,999 (sponsor)
\$ 4,673 (OSU cost-sharing)

Objective: This project will: (1) determine the seasonal variation in the rate of production of zooplankton in fish rearing ponds in response to changing the amounts and timing of additions of inorganic fertilizer, chopped hay, alfalfa meal, and brewer's yeast; (2) determine the effect of fish predation on the structure and dynamics of the zooplankton community under the modifications of the normal management procedure outlined above; (3) determine whether target species of zooplankton were indeed stimulated by the management modifications and whether the fish utilize these species as anticipated; (4) determine the degree to which the manipulations change the relative productivity of algae and how this affects zooplankton productivity; and (5) determine the relative importance of bacteria and yeast as compared to algae on the growth of zooplankton, particularly those species identified to be important food organisms for the larval fish being raised.

●Lake Erie Public Information Through Radio Broadcasting

Principal Investigator: Rosanne W. Fortner, Natural Resources

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713211

Project Period and Budget: September 1, 1980 to August 31, 1982
\$11,499 (sponsor)
\$ 7,834 (OSU cost-sharing)

Objective: This project should serve to increase public knowledge about Lake Erie by: (1) developing and broadcasting by radio a series of public service announcements about the lake; and (2) making available to listeners the printed and illustrated scripts as resource materials. The research portion of the study will: (1) indicate the feasibility of designing an ongoing informational radio series originating with Ohio Sea Grant; and (2) measure audience contact levels, interest, optimum broadcast time and message effect from this study for incorporation directly into program design.

●Marine and Great Lakes Education: An Infusion Program for Ohio Schools

Principal Investigators: Victor J. Mayer, Science-Math Education
and John Hug, Ohio Department of Education

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713212

Project Period and Budget: September 1, 1980 to August 31, 1982
\$38,972 (sponsor)
\$27,958 (OSU cost-sharing)

Objective: This project is comprised of two components: (A) Awareness components, which will (1) create an awareness of marine and aquatic education among Ohio school administrators, supervisors and teachers; (2) disseminate examples of curriculum materials available in marine and aquatic education; and (3) create awareness of marine and aquatic education among selected educators in Ohio colleges and universities. (B) Implementation components, which will (1) assist teachers to effectively use available curriculum materials and teaching methods; (2) help teachers acquire appropriate background information in marine and aquatic topics; (3) provide teachers with marine and aquatic experiences through field trips; and (4) assist administrators and teachers in redesigning curricula to infuse marine and aquatic education.

●The Development and Implementation of a Curriculum for the Study of Marine Technology

Principal Investigator: William E. Brewer, Construction Technology,
Bowling Green State University

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713213

Project Period and Budget: September 1, 1980 to August 31, 1982
\$15,000 (sponsor)
\$28,546 (OSU cost-sharing)

Objective: This project plans the development of an industry-related curriculum in Marine Technology. This would be a four-year degree program and would encompass all aspects of the marine field: environmental, transportation, recreation and construction.

●Coastal Engineering Curriculum Development

Principal Investigator: Keith W. Bedford, Civil Engineering

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713214

Project Period and Budget: September 1, 1980 to August 31, 1982
\$1,498 (sponsor)

Objective: Lake Erie's 400 miles of shoreline is crucial to the economic health of the State of Ohio and its citizens. The proper use of the shoreline often requires planning, design and construction which is done by professional engineers trained in the use of up-to-date problem-solving techniques. Because there is no accredited curriculum in Ohio or the lower Great Lakes that offers coastal engineering instruction, a graduate program is being implemented in such instruction. This project seeks to purchase and develop materials necessary to finish the basic implementation of the new graduate program. These items include completing the libraries' holdings of basic texts and conference proceedings, preliminary development of a Lake Erie-based engineering case study library, and the creation and distribution of information about the program.

●Ohio Sea Grant Advisory Service

Principal Investigators: Jeffrey M. Reutter and Charles E. Herdendorf,
CLEAR and Riley S. Dougan and Paul R. Thomas,
Ohio Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713215 and 713216

Project Period and Budget: September 1, 1980 to August 31, 1982
\$30,419 (sponsor)
\$60,538 (OSU cost-sharing)

Objective: The overall objective of Ohio Sea Grant Advisory Service is to act as the public interface for the program, disseminating research results and other critical information to user groups, and transmitting public sentiment, needs and concerns to program management for future program development. As part of this objective, this year's objectives are: (1) to develop educational and informative materials to meet the needs of user groups, disseminate research results, and increase utilization of valuable lake resources while eliminating and/or reducing environmental degradation; (2) to increase the capabilities of the program to interact effectively with well-established audiences and to meet the needs and further develop recently identified user groups; and (3) to implement a linkage with Ohio Cooperative Extension Service (OCES) and thereby provide a more equitable distribution of effort and services to all lake counties and user groups.

●Ohio Sea Grant Advisory Service - Fremont

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul R. Thomas, Ohio Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713222

Project Period and Budget: September 1, 1980 to August 31, 1982
\$33,609 (sponsor)
\$ 8,230 (OSU cost-sharing)

Objective: The overall objective of Ohio Sea Grant Advisory Service is to act as the public interface for the program, disseminating research results and other critical information to user groups, and transmitting public sentiment, needs and concerns to program management for future program development. As part of this objective, this year's objectives are: (1) to develop educational and informative materials to meet the needs of user groups, disseminate research results, and increase utilization of valuable lake resources while eliminating and/or reducing environmental degradation; (2) to increase the capabilities of the program to interact effectively with well-established audiences and to meet the needs and further develop recently identified user groups; and (3) to implement a linkage with Ohio Cooperative Extension Service (OCES) and thereby provide a more equitable distribution of effort and services to all lake counties and user groups.

●Ohio Sea Grant Advisory Service - Elyria

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul R. Thomas, Ohio Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713223

Project Period and Budget: September 1, 1980 to August 31, 1982
\$29,739 (sponsor)
\$ 8,230 (OSU cost-sharing)

Objective: The overall objective of Ohio Sea Grant Advisory Service is to act as the public interface for the program, disseminating research results and other critical information to user groups, and transmitting public sentiment, needs and concerns to program management for future program development. As part of this objective, this year's objectives are: (1) to develop educational and informative materials to meet the needs of user groups, disseminate research results, and increase utilization of valuable lake resources while eliminating and/or reducing environmental degradation; (2) to increase the capabilities of the program to interact effectively with well-established audiences and to meet the needs and further develop recently identified user groups; and (3) to implement a linkage with Ohio Cooperative Extension Service (OCES) and thereby provide a more equitable distribution of effort and services to all lake counties and user groups.

●Ohio Sea Grant Advisory Service - Painesville

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul R. Thomas, Ohio Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713224

Project Period and Budget: September 1, 1980 to August 31, 1982
\$29,739 (sponsor)
\$ 8,227 (OSU cost-sharing)

Objective: The overall objective of Ohio Sea Grant Advisory Service is to act as the public interface for the program, disseminating research results and other critical information to user groups, and transmitting public sentiment, needs and concerns to program management for future program development. As part of this objective, this year's objectives are: (1) to develop educational and informative materials to meet the needs of user groups, disseminate research results, and increase utilization of valuable lake resources while eliminating and/or reducing environmental degradation; (2) to increase the capabilities of the program to interact effectively with well-established audiences and to meet the needs and further develop recently identified user groups; and (3) to implement a linkage with Ohio Cooperative Extension Service (OCES) and thereby provide a more equitable distribution of effort and services to all lake counties and user groups.

●Chemical Characterization of the Antitumor Factor in the Clam Mercenaria m.

Principal Investigator: Derek Horton, Chemistry

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA80AA-D-00103

OSURF No.: 713512

Project Period and Budget: December 1, 1980 to August 31, 1982
\$18,000 (sponsor)
\$10,561 (OSU cost-sharing)

Objective: Aqueous extracts of the clam Mercenaria mercenaria and related molluscs, that display in vivo and in vitro antitumor activity, are to be fractionated to permit isolation in the pure state of the antitumor principle or principles.

● Status and Population Dynamics of White Perch (Morone Americana) in Lake Erie

Principal Investigators: Tony J. Peterle, J. Margraf and
Robert F. Carline, Zoology

Sponsor: U. S. Department of the Interior, Fish and Wildlife Service

Grant No.: 14-16-0009-81-030

OSURF Nos.: 713694 (on campus) and 713695 (off campus)

Project Period and Budget: April 1, 1981 to March 31, 1982
\$26,900 (sponsor)
\$ 749 (OSU cost-sharing)

Objective: The objectives of the study will be (1) to determine, via food habits analysis, the role of white perch in the Lake Erie fish community with major emphasis on assessing competitive and predatory interactions with walleye, yellow perch and white bass; and (2) to determine basic population dynamics parameters of this species (e.g., growth, mortality, age structure).

Administrative Unit: Zoology

● Lake Erie Monitoring Program: Main Lake Water Quality and Cladophora

Principal Investigators: Charles E. Herdendorf, CLEAR and
Robert C. Stiefel, Civil Engineering/
Water Resources Center

Sponsor: U. S. Environmental Protection Agency, Great Lakes National
Program Office, Region V, Chicago

Grant No.: R005555-01, 02, and 03

OSURF Nos.: 713078, 714064 (on-campus) and 713478, 714065 (off-campus)

Project Period and Budget: July 1, 1981 to June 30, 1983
\$379,541 (sponsor)
\$ 34,700 (OSU cost-sharing)

Objective: This project continues the water quality monitoring program for western and central Lake Erie established by the International Joint Commission under Canada/United States Great Lakes Water Quality Agreement. Monthly water quality cruises will be conducted to determine concentration and quantities of nutrients, including phosphorus, nitrogen and silica, at 50 stations. Concentrations and hypolimnetic depletion rates of oxygen will also be measured as well as numerous other limnological parameters. The objective of the Cladophora growth study is to determine the usefulness of this alga as an indicator of eutrophication by monitoring its nutrient uptake, growth rates, biomass, and distribution at representative sites in western Lake Erie. Also, as part of this project an acid deposition study will be conducted by monitoring wet and dry deposition at a station on South Bass Island throughout the study period.

●Ohio Sea Grant Program 1981-1982 and 1982-1983

Principal Investigator: Charles E. Herdendorf, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF Nos.: 714066-714082, 714207, 714224, 714350 and 714820

Project Period and Budget: September 1, 1981 to August 31, 1983
\$738,900 (sponsor)
\$369,450 (OSU cost-sharing)

Objective: The overall objective of the Ohio Sea Grant Program is to enhance development, and improve management of state and regional aquatic resources. The program seeks the wise utilization of marine and aquatic resources, particularly those resources associated with the Great Lakes, to enhance the quality of life in Ohio and our surrounding states. This mission is being implemented through comprehensive research, education and advisory service programs. To accomplish this, support and resources are being provided to the university community in order to: 1) research Great Lakes problems and to develop critically-needed information while maintaining the highest level of academic excellence; 2) establish a statewide Sea Grant advisory services network to transfer this and other information to government, industry and the general public; and 3) continue to build understanding and appreciation for marine and aquatic resource values and to provide career training for marine technologists among the people of Ohio through education programs.

Results obtained through ongoing research and development projects will be transmitted to industry, agencies and the general public through appropriate publications and other media in a timely fashion.

Special information, advisory and education programs will be conducted to move these findings rapidly to various users and to create awareness and involvement on the part of institutions and the general public in Great Lakes problems and opportunities.

The Ohio Sea Grant Program will continue the process of delineating needs and priorities for future research, education and advisory programs which will serve as the basis for development of future programs focused on the real needs and vital problems of the state and region.

The Ohio Sea Grant Program has been successful in addressing its stated objectives in research, education and advisory services within the university community and in the context of the State of Ohio and the Great Lakes Region.

●Administration of the Ohio Sea Grant Program

Principal Investigators: Charles E. Herdendorf and
Jeffrey M. Reutter, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714066

Project Period and Budget: September 1, 1981 to August 31, 1983
\$ 94,400 (sponsor)
\$137,264 (OSU cost-sharing)

Objective: The continuing and proposed management goals of the program administration office are: (1) to provide management of Ohio Sea Grant Program activities by exercising sound administrative and fiscal control; (2) to provide program-wide communication, business and logistic services; (3) to serve as the contact point with the National Sea Grant Program, federal and state agencies, other state programs and other institutions of higher learning; to act as a focal point for collaboration with other organizations; (4) to provide leadership in the development and coordination of program proposals; and (5) to establish advisory councils to assist in problem identification, long-range planning, coordination, and scientific direction of the Program.

●Development of the Ohio Sea Grant Program

Principal Investigators: Charles E. Herdendorf and
Jeffrey M. Reutter, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714067

Project Period and Budget: September 1, 1981 to August 31, 1983
\$28,100 (sponsor)
\$ 4,000 (Hiram College cost-sharing)

Objective: The continuing and proposed developmental goals of the program administration office are: (1) to provide management of Ohio Sea Grant Program activities by exercising sound administrative and fiscal control; (2) to provide leadership in the development and coordination of program proposals; (3) to establish advisory councils to assist in problem identification, long-range planning, coordination, and scientific direction of the Program; (4) to serve as the contact point with the National Sea Grant Program, federal and state agencies, other state programs and other institutions of higher learning; and (5) to explore new applications of research, education and advisory services within the Ohio Sea Grant mission.

●Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds

Principal Investigators: David Culver, Zoology

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714068

Project Period and Budget: September 1, 1981 to August 31, 1983
\$18,300 (sponsor)
\$ 6,795 (OSU cost-sharing)

Objective: This project will: (1) examine the seasonal variation in zooplankton productivity of the rearing ponds and assess the impact of zooplankton productivity on the yield of fish from the ponds; (2) examine the effect of fish predation on the structure and dynamics of the zooplankton community; (3) examine the selectivity of the fish fry, i.e. do fish feed selectively on zooplankton in terms of species and size, and does this change with the age and size of the fish?; (4) examine the effect of algal productivity on zooplankton productivity both in terms of total phytoplankton production as well as individual species production; (5) examine the effect of bacteria and yeast, as compared to algae, on the growth of zooplankton; (6) use the above information to model carbon flux through the pond ecosystem to determine the amounts of algal, bacterial, and zooplankton production required to support the fish; and (7) determine the optimal amounts and timing of hay, yeast, alfalfa meal, and inorganic nutrient additions to maximize zooplankton production, and test these optimal amounts and timings by altering the numbers of fish stocked at above and below supportable levels.

●Aquaculture in Ohio: Culturing Fathead Minnows for Bait in Ohio

Principal Investigators: Thomas Stockdale, Charles Cole, and
David Johnson, Natural Resources

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF Nos.: 714069 (on-campus) and 714820 (off-campus)

Project Period and Budget: September 1, 1981 to August 31, 1983
\$22,800 (sponsor)
\$14,771 (OSU cost-sharing)

Objective: This project will: (1) locate cooperators and identify characteristics of six ponds to be evaluated beginning May 1982; (2) determine rates of production for monocultures of fathead minnows in typical Ohio farm ponds; and (3) evaluate aeration and supplemental feeding as techniques for increasing production of fathead minnow monocultures in Ohio farm ponds.

●Evaluation of Sand Resources in Western Lake Erie

Principal Investigators: Robert Anderhalt, Geology,
Bowling Green State University and
Charles E. Herdendorf, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714070

Project Period and Budget: September 1, 1981 to August 31, 1983
\$10,000 (sponsor)
\$12,200 (OSU cost-sharing)

Objective: This project will: (1) determine the mineralogical, textural and chemical character of the sand deposits in western Lake Erie; (2) evaluate the suitability for using the sand for the glass industry; and (3) estimate the potential reserves in the sand body between Monroe, Michigan and West Sister Island, Ohio, in western Lake Erie.

● Economic Value of Ohio's Lake Erie Fisheries

Principal Investigators: Leroy Hushak and Douglas Southgate,
Agricultural Economics

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714071

Project Period and Budget: September 1, 1981 to August 31, 1983
\$51,100 (sponsor)
\$25,953 (OSU cost-sharing)

Objective: This project will: (1) determine the annual economic value of Ohio's Lake Erie sport and commercial fisheries; (2) estimate the value of (demand for) sport fishing on Lake Erie, based on the relationship between fishing days, the value per fishing day, and sport fishing catch rates; and (3) examine the implications of alternative distributions of income and of ownership rights or entitlements for management of the Lake Erie resource.

● A Description and Analytical Marketing Study of Ohio's Lake Erie Commercial Fishery

Principal Investigators: Cameron Thraen, Agricultural Economics

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714072

Project Period and Budget: September 1, 1981 to August 31, 1983
\$8,700 (sponsor)
\$2,900 (OSU cost-sharing)

Objective: This project will improve the ability of industry, professional organizations and those public agencies responsible for the management of the Ohio Lake Erie commercial fishery to understand the current structure and potential value of that fishery. The specific objective of this study is: To describe and characterize in an organized manner the economic market structure of the Ohio Lake Erie commercial fishery. The emphasis of the study will be directed toward a descriptive assessment of the Ohio Lake Erie fresh fish commercial market with special emphasis on the economic position of the Ohio commercial fishery relative to that of the Canadian commercial fishery established in Ontario, Canada.

●Coherent Turbulent Structures in the Benthic Boundary Layer; Phase 1:
Development of an Ultrasonic Transducer for Direct Profiling of Sediment
Concentration and Grain Size Distribution

Principal Investigators: Keith Bedford, Civil Engineering;
Vijay Varadan, Engineering Mechanics; and
Robert Brodkey, Chemical Engineering

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714073

Project Period and Budget: September 1, 1981 to August 31, 1983
\$60,000 (sponsor)
\$32,436 (OSU cost-sharing)

Objective: Managing the effects of resuspended sediment-associated toxic substances in the Great Lakes requires rational resuspension parameterizations. Descriptions do exist but are empirical, site-specific, and contain too much scatter because they are based upon the traditional steady boundary layer viewpoint. A decade's research in laboratory and industrial turbulence has demonstrated that boundary layers consist of coherent structures of bursts which are very short disruptive events with high shear separated by longer periods of calm. It is desirable to introduce this viewpoint to the collection and analysis of resuspension data, yet to do so requires vertical profiles of sediment concentration and grain size distribution. Ultrasonic transducers can be used for such measurements, but they require such excessive in situ calibration as to render them useless. The overall objective of this program is to introduce the coherent turbulent structures viewpoint to the parameterization of resuspension. The first year's objective is the development of a three-frequency ultrasonic transceiver to directly measure mass concentration and grain size distribution profiles.

● Fish Community Structure, Movements and Reproduction in Controlled and Uncontrolled Lake Erie Marshes

Principal Investigators: David Johnson, Natural Resources and
Mark Barnes, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF Nos.: 714074 (on-campus) and 714075 (off-campus)

Project Period and Budget: September 1, 1981 to August 31, 1983
\$30,000 (sponsor)
\$ 9,281 (OSU cost-sharing)

Objective: The long-term objectives of a research program addressing the information needs regarding associations of fishes and Lake Erie marshes are: (1) quantify fish community structure, movements, and reproduction in Lake Erie marshes and assess the importance of the marshes to Lake Erie's fish communities; (2) quantify and compare the physiochemical, vegetational, and structural characteristics of Lake Erie marshes and relate to their use by and importance to fish populations; and (3) develop frameworks for evaluation of Lake Erie marshes based on their importance to fish populations and develop management strategies to improve these marshes as habitats for fishes of commercial, recreational, and prey value. The objectives of the first year's research are: (1) quantify seasonal population structure, movements, and reproduction of brown bullhead, a commercial species, and white crappie, a recreational species, in a controlled marsh; (2) quantify major seasonal physiochemical variables in this marsh and attempt to relate to use of the marsh by these two species; and (3) review, analyze and compile a written summary of current Lake Erie marsh uses and management practices.

●Summer Storm Studies Over Western Lake Erie and Its Coastal Drainage Basin

Principal Investigators: Thomas Seliga, Electrical Engineering

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714076

Project Period and Budget: September 1, 1981 to August 31, 1983
\$8,700 (sponsor)
\$3,100 (OSU cost-sharing)

Objective: The main objective of this research program is to determine the feasibility of employing a combined Doppler and dual polarization meteorological radar(s) to investigate storms over western Lake Erie and its coastal region. It is anticipated that this objective will require a continuing long-term effort, culminating in a summer observational program designed to test concepts and goals developed during the first year's research effort.

● Ohio Sea Grant Education Office

Principal Investigators: Victor J. Mayer, Science-Math Education

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714077

Project Period and Budget: September 1, 1981 to August 31, 1983
\$ 6,100 (sponsor)
\$11,164 (OSU cost-sharing)

Objective: The Ohio Sea Grant Education Coordinator will: (1) serve on the executive committee of the Ohio Sea Grant Program; (2) coordinate education-related projects and activities within the Ohio Sea Grant Program; and (3) develop long-range Sea Grant education plans for Ohio.

● Marine and Great Lakes Education: An Infusion Program for Ohio Schools

Principal Investigators: Victor J. Mayer, Science-Math Education and
Rosanne Fortner, Natural Resources

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714078

Project Period and Budget: September 1, 1981 to August 31, 1983
\$71,600 (sponsor)
\$71,437 (OSU cost-sharing)

Objective: Awareness Components: (1) create an awareness of marine and aquatic education among Ohio school administrators, supervisors, and teachers; (2) disseminate examples of curriculum materials available in marine and aquatic education; and (3) create awareness of marine and aquatic education among selected educators in Ohio colleges and universities. Implementation Components: (1) assist teachers to effectively use available curriculum materials and teaching methods; (2) help teachers acquire appropriate background information in marine and aquatic topics; and (3) assist administrators and teachers in re-designing curricula to infuse marine and aquatic education.

● Ohio Sea Grant Advisory Service

Principal Investigators: Jeffrey M. Reutter, and
Charles E. Herdendorf, CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714079

Project Period and Budget: September 1, 1981 to August 31, 1983
\$52,856 (sponsor)
\$66,510 (OSU cost-sharing)

Objective: The goal of the Advisory Service is to maximize benefits from Lake Erie, the other Great Lakes and the oceans. Part of this goal is to increase utilization of the Lake Erie resources and reduce wastage, thereby creating new jobs and stimulating the economy of the area. To reach this goal, the objectives for the program are: (1) to increase public awareness of Ohio Sea Grant, i.e. what it is, what it does, how the public can interact with the program and what Sea Grant can do for them; (2) to increase public awareness of Lake Erie and our aquatic resources and their recreational, commercial and industrial values and uses; (3) to provide Lake Erie user groups with information capable of making their Lake Erie interactions more enjoyable or profitable (recreation or business); (4) through education and enhanced awareness, to increase utilization of those portions of the Lake Erie resources which are currently underutilized, thereby creating new industries, businesses and jobs, and stimulating the economy; and (5) to assist shore owners with erosion and flooding problems.

●Ohio Sea Grant Advisory Service (Extension Program-Fremont)

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul Thomas, Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NAB1AA-D-00095

OSURF No.: 714080

Project Period and Budget: September 1, 1981 to August 31, 1983
\$78,121 (sponsor)
\$20,958 (OSU cost-sharing)

Objective: The goal of the Advisory Service is to maximize benefits from Lake Erie, the other Great Lakes and the oceans. Part of this goal is to increase utilization of the Lake Erie resources and reduce wastage, thereby creating new jobs and stimulating the economy of the area. To reach this goal, the objectives for the program are: (1) to increase public awareness of Ohio Sea Grant, i.e. what it is, what it does, how the public can interact with the program and what Sea Grant can do for them; (2) to increase public awareness of Lake Erie and our aquatic resources and their recreational, commercial and industrial values and uses; (3) to provide Lake Erie user groups with information capable of making their Lake Erie interactions more enjoyable or profitable (recreation or business); (4) through education and enhanced awareness, to increase utilization of those portions of the Lake Erie resources which are currently underutilized, thereby creating new industries, businesses and jobs, and stimulating the economy; and (5) to assist shore owners with erosion and flooding problems.

●Ohio Sea Grant Program (Extension Program-Elyria)

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul Thomas, Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714081

Project Period and Budget: September 1, 1981 to August 31, 1983
\$72,355 (sponsor)
\$30,263 (OSU cost-sharing)

Objective: The goal of the Advisory Service is to maximize benefits from Lake Erie, the other Great Lakes and the oceans. Part of this goal is to increase utilization of the Lake Erie resources and reduce wastage, thereby creating new jobs and stimulating the economy of the area. To reach this goal, the objectives for the program are: (1) to increase public awareness of Ohio Sea Grant, i.e. what it is, what it does, how the public can interact with the program and what Sea Grant can do for them; (2) to increase public awareness of Lake Erie and our aquatic resources and their recreational, commercial and industrial values and uses; (3) to provide Lake Erie user groups with information capable of making their Lake Erie interactions more enjoyable or profitable (recreation or business); (4) through education and enhanced awareness, to increase utilization of those portions of the Lake Erie resources which are currently underutilized, thereby creating new industries, businesses and jobs, and stimulating the economy; and (5) to assist shore owners with erosion and flooding problems.

●Ohio Sea Grant Advisory Service (Extension Program-Painesville)

Principal Investigators: Jeffrey M. Reutter, CLEAR and
Paul Thomas, Coop. Extension Service

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714082

Project Period and Budget: September 1, 1981 to August 31, 1983
\$75,568 (sponsor)
\$29,720 (OSU cost-sharing)

Objective: The goal of the Advisory Service is to maximize benefits from Lake Erie, the other Great Lakes and the oceans. Part of this goal is to increase utilization of the Lake Erie resources and reduce wastage, thereby creating new jobs and stimulating the economy of the area. To reach this goal, the objectives for the program are: (1) to increase public awareness of Ohio Sea Grant, i.e. what it is, what it does, how the public can interact with the program and what Sea Grant can do for them; (2) to increase public awareness of Lake Erie and our aquatic resources and their recreational, commercial and industrial values and uses; (3) to provide Lake Erie user groups with information capable of making their Lake Erie interactions more enjoyable or profitable (recreation or business); (4) through education and enhanced awareness, to increase utilization of those portions of the Lake Erie resources which are currently underutilized, thereby creating new industries, businesses and jobs, and stimulating the economy; and (5) to assist shore owners with erosion and flooding problems.

● Great Lakes Information Through Museum Programming

Principal Investigators: Rosanne Fortner, Natural Resources and
William Schmitt, Center for Science and Industry

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714207

Project Period and Budget: September 1, 1981 to August 31, 1983
\$5,100 (sponsor)
\$9,900 (OSU cost-sharing)

Objective: This project should serve to increase public knowledge about the Great Lakes by: (1) providing content and materials for development of a museum program about the Great Lakes; and (2) establishing within the general public an awareness of the importance of the Great Lakes as a resource. The research portion of the study will (1) evaluate the effect of the program on museum visitors: percentage of visitors reached, amount of knowledge gained, and relationships of knowledge gain to visitor characteristics; and (2) indicate the feasibility of using museum resources to a greater extent for dissemination of information on Great Lakes issues.

●Site Exploration for Foundations of Offshore Structures

Principal Investigator: Tien H. Wu, Civil Engineering

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea Grant

Grant No. NA81AA-D-00095

OSURF No.: 714224

Project Period and Budget: November 1, 1981 to August 31, 1983
\$15,200 (sponsor)
\$ 7,807 (OSU cost-sharing)

Objective: This project will: (1) develop a stochastic model to represent the random stratification in sea floor sediments. The Poisson lines model will be tried first; (2) use the stratification model and Bayes' theorem to estimate uncertainty about material type, given the data or observations from a number of boreholes or soundings. This will lead to a probability contour map which describes the probability of encountering a given material at a particular location; and (3) use the probability contour map to estimate the uncertainty about the bearing capacity of an offshore structure, taking into account the uncertainty on strength for any given material type.

●Ohio Sea Grant Internship

Principal Investigators: Jeffrey M. Reutter and Charles E. Herdendorf,
CLEAR

Sponsor: National Oceanic and Atmospheric Administration, Office of Sea
Grant

Grant No.: NA81AA-D-00095

OSURF No.: 714350

Project Period and Budget: February 1, 1982 to August 31, 1983
\$29,900 (sponsor)

Objective: The Ohio Sea Grant Internship provides support to a graduate student on an internship in Washington, D.C. gaining valuable first-hand experience of our nation's government by working on the staff of a Congressional or Senate subcommittee or on the staff of a congressperson or senator dealing with marine affairs. The 1982 fellowship was awarded to Brian Burby, a doctoral student in the Environmental Biology Program.

●Review and Analysis of Past and Current Research Relating to the Effect of Acid Deposition on Aquatic Systems

Principal Investigators: Charles E. Herdendorf and Mark D. Barnes, CLEAR

Sponsor: Ohio Air Quality Development Authority

Grant No. GRT DTD 4-16-82

OSURF Nos.: 714377 and 714387

Project Period and Budget: March 1 to November 30, 1982
\$10,000 (sponsor)
\$2,247 (OSU cost-sharing)

Objective: The proposed research will conduct a critical review and analysis of past and current research relating to the effects of acid deposition on aquatic systems.

● Toledo Edison Environmental Report Preparation and Evaluation

Principal Investigator: Jeffrey M. Reutter, CLEAR

Sponsor: The Toledo Edison Company

Grant No.: LTR DTD 4-23-82

OSURF No.: 714535

Project Period and Budget: May 1, 1982 to August 31, 1982
\$4,455.55

Objective: Preparation of an environmental report which evaluates the impact of Toledo Edison Company power plants on the ecology of western Lake Erie.

TABLE 10

PARTICIPANTS IN LAKE ERIE/SEA GRANT PROJECTS

Program Administration and Coordination

<u>Name</u>	<u>Responsibility</u>
1. Charles Herdendorf	Director, CLEAR, Stone Laboratory, Sea Grant
2. Jeffrey Reutter	Associate Director, Sea Grant; Assistant Director, CLEAR
3. Jo Ann Damon	Office Manager, Lake Erie Program
4. Mark Barnes	Coordinator, Fisheries Laboratories
5. Keith Bedford	Coordinator, Sea Grant Coastal Engineering Component
6. C. Lawrence Cooper	Coordinator, Technical Assessment Team
7. Laura Fay	Chief Scientist, R/V <u>Hydra</u>
8. Margaret Holland	Communicator, Sea Grant
9. John Hug	Coordinator, Sea Grant/Ohio Department of Education
10. Paul Ladd	Coordinator, Research Vessels
11. Victor Mayer	Coordinator, Sea Grant Education Office
12. John Mizera	Coordinator, Computer Facilities
13. Mark Monaco	Manager, Stone Laboratory
14. David Rathke	Coordinator, Plankton/Water Quality Laboratory
15. Karen Reese	Editor, Ohio Biological Survey/Friends of Stone Lab
16. P.R. Thomas	Coordinator, Sea Grant/Ohio Cooperative Extension Service
17. Kristina White	Business Officer, Lake Erie Program

TABLE 10 CONT.

Faculty

	<u>Name</u>	<u>Department</u>	<u>Institution</u>	<u>Principal RF Project(s)</u>
1.	Robert Anderhalt	Geology	BGSU	714070
2.	Barry Apgear	Fish Management	ODNR	
3.	Mark Barnes	Zoology/Natural Resources/CLEAR	OSU	714076, 714074, 714377
4.	Robert Brodkey	Chemical Engineering	OSU	714073
5.	Keith Bedford	Civil Engineering	OSU	711846, 714073
6.	William Brewer	Construction Technology	BGSU	713213
7.	Walter Carey	Mechanical Engineering/ Zoology	OSU	713027
8.	John Crites	Zoology	OSU	712138, 712898
9.	Charles Cole	Natural Resources	OSU	714069
10.	David Culver	Zoology	OSU	714068
11.	Rosanne Fortner	Natural Resources	OSU	714078, 714207
12.	Sheldon I. Guttman	Zoology	Miami	714067
13.	Charles Herdendorf	Geology/Zoology/Natural Resources/CLEAR	OSU	712765, 713535, 714377, 713207, 714065, 714066, 714067
14.	Derek Horton	Chemistry	OSU	713512
15.	John Hug	Environmental Education	Ohio Dept. Educ.	713212, 714078
16.	Henry Hunker	Geography	OSU	714067
17.	Leroy Hushak	Agricultural Economics	OSU	714071
18.	David Johnson	Natural Resources	OSU	714074, 714069, 714075
19.	Weldon Kefauver	University Press	OSU	712338
20.	David Kelch	Ohio Coop. Ext. Svc./ Sea Grant	OSU	713223, 714081
21.	Joseph Koonce	Biology	Case Western Reserve	714067
22.	Frank Lichtkoppler	Ohio Coop. Ext. Svc./ Sea Grant	OSU	713224, 714082
23.	Timothy Lloyd	Research & Develop.	Ohio Arts Council	714067
24.	John Lyon	Civil Engineering	OSU	714073
25.	Victor Mayer	Science-Math Education	OSU	714078, 714077
26.	C.S. Munch	Biology	Hiram	714068
27.	Patrick Mullen	English	OSU	714067

TABLE 10 CONT.

Faculty

	<u>Name</u>	<u>Department</u>	<u>Institution</u>	<u>Principal RF Project(s)</u>
28.	David Rathke	Zoology/CLEAR	OSU	712765
29.	Jeffrey Reutter	Zoology/Natural Resources/CLEAR	OSU	714080, 714066, 714081, 714082, 714079
30.	Ranbir Sandhu	Civil Engineering	OSU	714073
31.	Thomas Seliga	Electrical Engineering	OSU	714076
32.	William Schmitt	Education	COSI	714067
33.	Russell Scholl	Division of Wildlife	ODNR	
34.	Frederic Snyder	Ohio Coop. Ext. Svc./SG	OSU	713222, 714080
35.	Douglas Southgate	Agricultural Economics	OSU	714071
36.	Thomas Stockdale	Natural Resources	OSU	714069
37.	Paul Thomas	Ohio Coop. Ext. Svc.	OSU	714080, 714081, 714082
38.	Cameron Thraen	Agricultural Economics	OSU	714072
39.	Milton Trautman	Zoology	OSU	712338
40.	Vasundara Varadan	Engineering Mechanics	OSU	714073
41.	Vijay Varadan	Engineering Mechanics	OSU	714073
42.	Lester Walters	Research and Develop.	ARCO Oil & Gas	714070
43.	Thomas Wissing	Zoology	Miami	714067
44.	Kenneth Wenner	Natural Resources	OSU	713027
45.	Richard Wright	History	BGSU	714067
46.	Tien H. Wu	Civil Engineering	OSU	713224

TABLE 10 CONT.

Technical Staff

	<u>Name</u>	<u>Title</u>	<u>Project</u>
1.	Gary Arico	Research Assistant	714065
2.	Helen Brohl	Research Assistant	714065
3.	Deborah Downey	Technical Typist	712765
4.	Daniel Fisher	Research Assistant	714065
5.	Agypong Gyekye	Research Associate	714071
6.	Gordon Keeler	Research Assistant	714065
7.	Barbara Kohl	Technical Typist	714065
8.	P.H.W.S. Kulatilake	Senior Research Assoc.	713224
9.	Julie Letterhos	Research Assistant	713050
10.	Karen Stiefel	Research Aide	713215
11.	Patricia Steane	Research Assistant	712765
12.	Ginger-lyn Summer	Technical Typist	713050

Graduate Students

	<u>Name</u>	<u>Status</u>	<u>Department</u>	<u>Institution</u>	<u>Project</u>
1.	Kofi Apraaka	Ph.D.	Agricultural Economics	OSU	713210
2.	Timothy Bartish	M.S.	Environmental Biology	OSU	714065
3.	Sirinimit Boonyuen	M.S.	Environmental Biology	OSU	714066
4.	Helen Brohl	M.S.	Environmental Biology	OSU	714065
5.	Brian Burby	M.S.	Environmental Biology	OSU	711230
6.	Neva Carlson	Ph.D.	Environmental Biology	OSU	712765
7.	Kuo-Pin Chen	Ph.D.	Civil Engineering	OSU	712765
8.	Wayne Davis	Ph.D.	Zoology	OSU	711230
9.	James Dingman	Ph.D.	Civil Engineering	OSU	713208
10.	Nilima Dutta	M.S.	Agricultural Economics	OSU	714071
11.	Carolyn Farnsworth	Ph.D.	Science/Math Education	OSU	713212

TABLE 10 CONT.

<u>Name</u>	<u>Status</u>	<u>Department</u>	<u>Institution</u>	<u>Project</u>
12. Theresa Gordon	M.S.	Zoology	OSU	GTA-Zoology
13. Robert Hubbell	M.S.	Zoology	OSU	712899
14. Judy Kaufield	M.S.	Environmental Communications	OSU	714207
15. Rosmarie Kelly	M.S.	Zoology	OSU	GTA-Zoology
16. In-mo Lee	M.S.	Civil Engineering	OSU	714224
17. Richard Lorenz	M.S.	Environmental Biology	OSU	713078
18. John Mergo	Ph.D.	Zoology	OSU	712899
19. Mark Monaco	M.S.	Environmental Biology	OSU	200302
20. John C. Potter	Ph.D.	Civil Engineering	OSU	714244
21. Padma Rao	Ph.D.	Agricultural Economics	OSU	714072
22. Norman Reichenbach	M.S.	Zoology	OSU	712334
23. Audrey Rush	M.S.	Zoology	OSU	714065
24. Nancy Sergi-Gott	M.S.	Natural Resources	OSU	Work Study
25. Stanley Stavinski	M.S.	Chemistry	OSU	713512
26. Barbara Stiver	M.S.	Environmental Biology	OSU	GTA-Botany
27. Ralph Vaga	M.S.	Zoology	OSU	714068
28. Robert Van Evera	M.S.	Civil Engineering	OSU	711846
29. Jane M. Winslow	M.S.	Agricultural Economics	OSU	713210
30. Yu-Chang Wu	M.S.	Computer Science	OSU	712765

Undergraduate Students

<u>Name</u>	<u>Department</u>	<u>Institution</u>	<u>Project</u>
1. Cindy Basic	Industrial Design	OSU	Work Study
2. Jay Garland	Zoology	OSU	Work Study
3. John Hageman	Natural Resources	OSU	714079
4. Suzanne Hessler	Statistics	OSU	713933
5. Pamela Joseph	Zoology	OSU	714065
6. Cheryl Kimerline	Natural Resources	OSU	714065
7. Lou Ann Mucciarone	Accounting	OSU	713933
8. William Snyder	Natural Resources	OSU	714065
9. Dale Soltis	Botany	OSU	713933
10. Nathan Torn	Industrial Design	OSU	Work Study

TABLE 11
GRADUATE DEGREES AWARDED
1981-1982

The Lake Erie Programs are non-degree-granting units of the University. The degrees listed below were awarded by academic departments to students who participated in Lake Erie/Sea Grant related research projects.

Master of Science

<u>Graduate</u>	<u>Department</u>	<u>Advisor(s)</u>	<u>Research Topic</u>
Rush, Audrey A.	Zoology	C.E. Herdendorf	Water Quality Trends at Two Nearshore Stations in Western Lake Erie
Gordon, Theresa C.	Zoology	C.E. Herdendorf	Instantaneous Growth Rates and Distribution of Larval Fish in the Vicinity of Locust Point, Western Lake Erie
Davis, Wayne	Environmental Biology	C.E. Herdendorf	Sediment Oxygen Demand in Western and Central Lake Erie
Buchanan, David	Geology and Mineralogy	C.E. Herdendorf G.D. McKenzie	Erosion, Transport and Deposition of Sediments in Old Woman Creek Estuary, Lake Erie, Ohio
Fritz, Kenneth R.	Natural Resources	D.L. Johnson	Survival of Fresh Water Drum Released from Lake Erie Commercial Shore Seines
Leckie, Fred D.	Natural Resources	D.L. Johnson	Seasonal Distribution and Diet Activity Patterns in a Borrow Pit Lake and Fish Exchanges Between this Lake and Sandusky Bay
Lorenz, Richard C.	Environmental Biology	C.E. Herdendorf	Growth Dynamics of <u>Cladophora</u> in Western Lake Erie
Winslow, Jane	Agricultural Economics	L.J. Hushak	Private-Boat Walleye Angling in the Ohio Waters of Lake Erie: An Economic Evaluation

TABLE 11 CONT.

Doctor of Philosophy

<u>Graduate</u>	<u>Department</u>	<u>Advisor(s)</u>	<u>Research Topic</u>
Tuggle, Benjamin N.	Zoology	J.L. Crites	A Study of Gizzard Nematodes and Renal Coccidiosis in Canada Geese (<u>Branta canadensis</u> interior) of the Mississippi Valley Population
Potter, John C.	Civil Engineering	T.H. Wu	Modeling and Updating Site Characterization for Risk Analysis of Offshore Structures
Farnsworth, Carolyn	Math-Science Education	V. Mayer	Earth Science Education for Secondary Schools

TABLE 12
PRESENTATIONS
1981-1982

- Anderhalt, R. "Mineralogy of Western Lake Erie Sand-Sized Sediments." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Arico, G.R., K. Svanks and D.E. Rathke. "Determining Available Particulate Phosphorus and Nonavailable Particulate Phosphorus Concentrations in Water from the Western and Central Basins of Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Arico, G.R. and K. Svanks. "Determining Available Particulate Phosphorus and Nonavailable Particulate Phosphorus Concentrations in Water from the Western and Central Basins of Lake Erie." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Barnes, M.D. and D.L. Johnson. "Fish community structure, movements and reproduction in controlled and uncontrolled Lake Erie Marshes." Coastal Resources Regional Workshop, Michigan Sea Grant Program, Michigan State University, East Lansing. November 12, 1981.
- Barnes, M.D. "Lake Erie Intensive Study: Fisheries Status and Response to Water Quality." Great Lakes Fishery Commission, Lake Erie Committee Annual Meeting, Columbus, Ohio. March 17, 1982.
- Bartish, T.M. and C.E. Herdendorf. "Thermal Gradient Development in the Western Basin of Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Bedford, K. "Spectro Characteristics of Lake Circulation and Transport Models." Conference on Refined Modeling of Flows, International Association of Hydraulic Researchers, Paris, France. September, 1982.
- Brodkey, R. "Coherent Structure Analyses by Image Processing." American Society of Mechanical Engineers, Annual Meeting, Phoenix. November 19, 1982.
- Buchanan, D.B. "Erosion and Sediment Transport in Old Woman Creek Estuary, Erie County, Ohio." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Cavender, Ted M. "Diversity and Relationships of Percoids from Lower Tertiary Sediments of North America." Annual Meeting of the American Society of Ichthyologists and Herpetologists, DeKalb, IL. June 1982.
- Crites, J. and J. Mergo. "The Clamp Wall Ultrastructure of Microcotyle spinicirrus (Monogenea) a Parasite of Freshwater-Drum (Aplodinotus grunniens)." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 5, 1982.

TABLE 12 CONT.

- Crites, J. "Diversity and Commonality." Presidential Address, Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 25, 1981.
- Crites, J. "Harmful Parasites in Lake Erie Fishes." Boat Captains Workshop, Ohio Sea Grant Program, Put-In-Bay, Ohio. September 25, 1981.
- Crites, J. "Modern Concepts in Parasitology." Pre-inaugural Address, President Paul Pearson, Miami University, Oxford, Ohio. October 15, 1981.
- Culver, D.A. "Planktivory and Larval Walleye, Sauger and Northern Pike." American Society of Limnology and Oceanography Annual Meeting, North Carolina State University, Raleigh. June 1982.
- Fay, L.A. "An Evaluation of Principal Ions in Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Fisher, D.Z. "Estimation of Nearshore Phytoplankton Biomass in the Western Basin of Lake Erie." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Fortner, R.W. "Effects of a Cousteau Television Special on Environmental Knowledge and Attitudes." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Gordon, T.C. and C.E. Herdendorf. "Ichthyoplankton Densities and Growth Rates around Locust Point, Ohio in the Western Basin of Lake Erie--1980." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Gordon, T.C. and C.E. Herdendorf. "Occurrence, Abundance and Growth Rates of Larval Clupeids, Freshwater Drum, and Yellow Perch around the Locust Point Area of Western Lake Erie--1980." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Grabe, M.B. and J.L. Forsyth. "Origin of the Oak Openings Sand." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Herdendorf, C.E. "Environmental Improvements in Lake Erie During the Past Decade." Oceans '82, Session 17, Great Lakes Pollution-Past, Present and Future, Conference of Marine Technology Society and IEEE Council on Ocean Engineering, Washington, D.C. September 22, 1982.
- Herdendorf, C.E. "Geology of Lake Erie." U.S. Army Corps of Engineers Workshop on Shore Erosion, Painesville, Ohio. October 13, 1982.

TABLE 12 CONT.

- Herdendorf, C.E. and Y. Hamdy. "Synoptic Mapping of Water Quality in Western Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Hushak, L., D. Southgate and J. Winslow. "Private Sport Fishing in the Western Basin of Lake Erie: Private Boat Fishing During 1981." 22nd Ohio Fish and Wildlife Conference, Columbus, Ohio. February 22, 1982.
- Hunker, L. "Ohio's Lake Erie Region: A Social and Economic Overview." Guest Lecture Series, Franz Theodore Stone Laboratory, Put-In-Bay, Ohio. June 8, 1982.
- Jezerinac, R.F. and R.F. Thoma. "An Illustrated Key to the Ohio Species of Cambarus and Fallicambarus (Decapoda: Cambaridae), with Notes on their Identification, Range, Habitats, and Crayfish Associates." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Johnson, D.L. "Commercial Culture of Bait Fishes in a Lake Erie Marsh." Coastal Resources Regional Workshop, East Lansing. November 13, 1982.
- Johnson, D.L. "Fisheries Management." Charter Captains Conference, Ohio Sea Grant Program, Gibraltar Island, Ohio. October 4, 1981.
- Knight, R.L., F.J. Margraf and R.F. Carline. "Predation by Walleye and Yellow Perch on Forage Fishes in Western Lake Erie." Ohio Fish and Wildlife Conference, Columbus, Ohio.
- Lyons, J. "Use of Sea Sat and Shuttle Radar Imagery for the Examination of Coastal and Offshore Features." American Society of Photogrammetry, Eastern Great Lakes Region Annual Meeting. November 5, 1982.
- Mergo, J. and J. Crites. "Surface Morphology of Microcotyle spinicirrus (Monogenea) SEM." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Monaco, M.E., R.C. Lorenz and C.E. Herdendorf. "The Distribution of Cladophora in Western Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Rathke, D.E., N. Burns and F. Rosa. "Phytoplankton Settling Velocities Measured in the Central and Eastern Basins of Lake Erie." International Association for Great Lakes Research, 25th Annual Conference, Sault Ste Marie, Ontario. May 6, 1982.
- Snyder, W.S. "Growth and Mortality of Larval Freshwater Drum (Aplodinotus grunniens) in the Maumee River Estuary." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.

TABLE 12 CONT.

- Stuckey, R.L. "Botanical Centers of Communication in the Ohio Valley during the Second Quarter of the Nineteenth Century." Invited lecture presented to the Historical Section of the Botanical Society of America, AIBS Meeting, Bloomington, Indiana. August 18, 1981.
- Stuckey, R.L. "Pioneer Botanists of the Ohio Valley, 1825-1850," Invited lecture presented to the Columbus Natural History Society, Columbus, Ohio. November 9, 1981.
- Thoma, R.F. "The Phylogeny of the Subgenus Cambarus and Cambarus bartonii bartonii Complex (Decapoda: Cambaridae)." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.
- Thomas, Paul R. "Relationships Between Sea Grant and Cooperative Extension Service--Past, Present and Future." National Sea Grant Review, Fawcett Center, Columbus, Ohio. May 11, 1982.
- Varga, R. "Relative Impact of Resource Limitation and Fish Predation on Cladoceran Zooplankton Populations: A Modeling Approach." American Society of Limnology and Oceanography Annual Meeting, North Carolina State University, Raleigh. June 1982.
- Younger, J.D. "Results of a Trophic Classification of Ohio Lakes." Ohio Academy of Science, 91st Annual Meeting, Columbus, Ohio. April 24, 1982.

TABLE 13
LIMNOLUNCH PRESENTATIONS
1981-1982

LIMNOLUNCH is an informal seminar series held every Wednesday noon in the Faculty Lounge of the Biological Sciences Building. Topics for discussion include limnology, fisheries science, oceanography, water resources engineering and other facets of marine and aquatic sciences. During 1981 and 1982 the presentations were arranged and coordinated by Laura A. Fay, Research Associate, Center for Lake Erie Area Research.

1981

- | | |
|-------------|--|
| October 7 | "Water Supply, Water Treatment and Water Quality in Columbus"--Dr. Ken Button, Water Research Laboratory, Columbus Division of Water |
| October 14 | "Ecology of the Green Algae, <u>Cladophora</u> , in the Great Lakes"--Richard C. Lorenz, Graduate Research Associate, Center for Lake Erie Research, OSU |
| October 21 | "Panel Discussion on Aquatic Research at The Ohio State University"--Representatives from Cooperative Fishery Research Unit, Department of Zoology, School of Natural Resources, Ohio Sea Grant, Center for Lake Erie Area Research, Department of Civil Engineering, and Water Resources Center |
| October 28 | "Detection of Pollution in the Cuyahoga River (Ohio) using Benthic Invertebrates"--Bruce Trauben, Graduate Teaching Associate, Environmental Biology Program, OSU |
| November 4 | "Acid Rain, Scare Story or Scientific Fact"--Joan Fish-Pongren, Columbus and Southern Ohio Electric Company |
| November 18 | "Laboratory Induced Bilateral Asymmetry in the Fathead Minnow"--Robert Heitzman, Graduate Research Associate, Environmental Biology Program, OSU |
| November 25 | "A Cautionary Note on Estimation and Interpretation of Proportional Stock Density (PSD)"--Dr. Robert Carline, Ohio Cooperative Fishery Research Unit, USFWS |
| December 2 | "Remote Sensing Inventory of Great Lakes Coastal Wetlands"--Dr. John G. Lyon, Assistant Professor, Department of Civil Engineering, OSU |

TABLE 13 CONT.

1982

- January 6 "Cancer in Fish"--Dr. Paul Bauman, Columbia National Fishery Research Laboratory, USFWS
- January 13 "Cold Water Drowning and Hypothermia"--Dr. Jeffrey M. Reutter, Associate Director, Ohio Sea Grant Program, OSU
- January 20 "Sediment Oxygen Demand in Lake Erie"--Wayne Davis, Graduate Research Associate, Center for Lake Erie Area Research, OSU
- January 27 "Sedimentation History of a Deep Arctic Lake"--Mary Bergstrom, Graduate Research Associate, Environmental Biology Program, OSU
- February 3 "Forage Utilization by Walleye and Yellow Perch in Lake Erie"--Roger Knight, Graduate Research Associate, Department of Zoology, OSU
- February 10 "The Utility of Bluegills as Forage for Tiger Muskellunge: An Experimental Evaluation"--Cindy Tomko, Graduate Research Associate, Department of Zoology, OSU
- February 17 "The Effects of No Till Agriculture on Phosphorous Loads to Lakes"--Dr. Terry Logan, Professor, Department of Agronomy, OSU
- February 24 "Tiger Muskie Studies in Acton and Stonelick Lakes"--Robert Haywood, Graduate Research Associate, Department of Zoology, OSU
- March 3 "Hazard Waste Site Remediation"--William Hannahs, Ohio Environmental Protection Agency
- March 10 "Lake Erie Wetland Management Strategy"--Dr. Mark Barnes, Research Associate, Center for Lake Erie Area Research
- March 31 "Collecting Freshwater Mussels (Naiades) on Ohio Waters"--William Kasson, Museum of Zoology, OSU
- April 14 "--Microhabitat Selection by Smallmouth Bass in the Flat River, Michigan"--Edward Rankin, Graduate Research Associate, Department of Zoology, OSU
- April 21 "Emergency Response Plans at Nuclear Power Plants"--Dr. Walter E. Carey, Associate Professor, Department of Mechanical Engineering, OSU
- May 5 "Growth and Mortality of Larval Freshwater Drum in the Maumee River Estuary"--William Snyder, Student Research Assistant, Center for Lake Erie Area Research, OSU

TABLE 13 CONT.

- May 12 "Coral Reefs or Algal Reefs?--Observations by Submersible"
--Dr. Llewellya Hillis-Colinvaux, Associate Professor,
Department of Zoology, OSU
- May 19 "Some of the Aspects of Drilling in Lake Erie"--Andy Skalkos,
Division of Gas and Oil, Ohio Department of Natural Resources
- May 26 "Thermal Stratification in the Western Basin, Lake Erie"--
Timothy Bartish, Graduate Research Associate, Center for
Lake Erie Area Research, OSU
- September 22 "Lake Erie Fisheries Management"--Carl Baker, Lake Erie
Fisheries Unit, Division of Wildlife, ODNR
- September 29 "Basics of Industrial Waste Water Treatment"--Dr. Robert
Stiefel, Director and Professor, Water Resources Center, OSU
- October 6 "The Economic Value of Private Boat Fishing on Lake Erie"--
Dr. Leroy Hushak, Professor, Department of Agricultural
Economics & Rural Sociology, OSU
- October 13 "Water Transshipment Out of the Great Lakes"--Dr. Earl
Murphy, Professor, College of Law
- October 20 "Research Program at the National Fishery Laboratory"--
Dr. Donald Hales, Assistant Director, LaCrosse NFRL, USFWS
- October 27 "Fish Selection of Artificial Structure Based on Inter-
stitial Size and Water Depth in an Ohio Reservoir"--Debbie
Ambrow, Graduate Research Associate, School of Natural
Resources, OSU
- November 3 "Habitat Preservation Role of Ecological Services, U.S. Fish
and Wildlife Service"--Lynwood McClean, Ohio Office, U.S.
Fish and Wildlife Service
- November 10 "The White Perch in Lake Erie: The Ecology of an Invading
Species"--Jeffrey Schaeffer, Graduate Research Associate,
Ohio Cooperative Fishery Research Unit, OSU
- November 17 "Lake Erie History and Ships"--James Barry, Director,
Ohioana Library
- November 24 "The Biology of Water Supply and Treatment"--Richard Lorenz,
Water Research Laboratory, Columbus Division of Water

TABLE 14
PUBLICATIONS

- Auer, M.T. 1982. Ecology of filamentous algae. Special issue, J. Great Lakes Res. 8(1):1-237.
- Barnes, M.D. and D.L. Rice. 1982. Eastern sand darter, Ammocrypta pellucida (Putnam), in Hocking River and Federal Creek, Athens County, Ohio. Ohio J. Sci. (in review).
- Barnes, M.D. 1982. Lake Erie intensive study: fisheries status and response to water quality. Great Lakes Fish Comm. Tech. Rept. (in review).
- Cooper, C.L., J.J. Mizera and C.E. Herdendorf. 1982. Distribution, abundance and entrainment of larval fishes in the western and central basins of Lake Erie. U.S. Environmental Protection Agency, Environmental Research Laboratory--Duluth, PS-804612. 149 p.
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TABLE 16

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Volume 2, Number 2 should have been Volume 2, Number 1

Spring/Summer 1980

Volume 2, Number 2 Fall/Winter 1980

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 Volume 1, Number 3 July 1979
 Volume 1, Number 4 September 1979
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 Volume 2, Number 2 April 1980
 Volume 2, Number 3 June 1980
 Volume 2, Number 4 October 1980
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 Volume 4, Number 2 April 1982
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TABLE 17

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TABLE 18

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