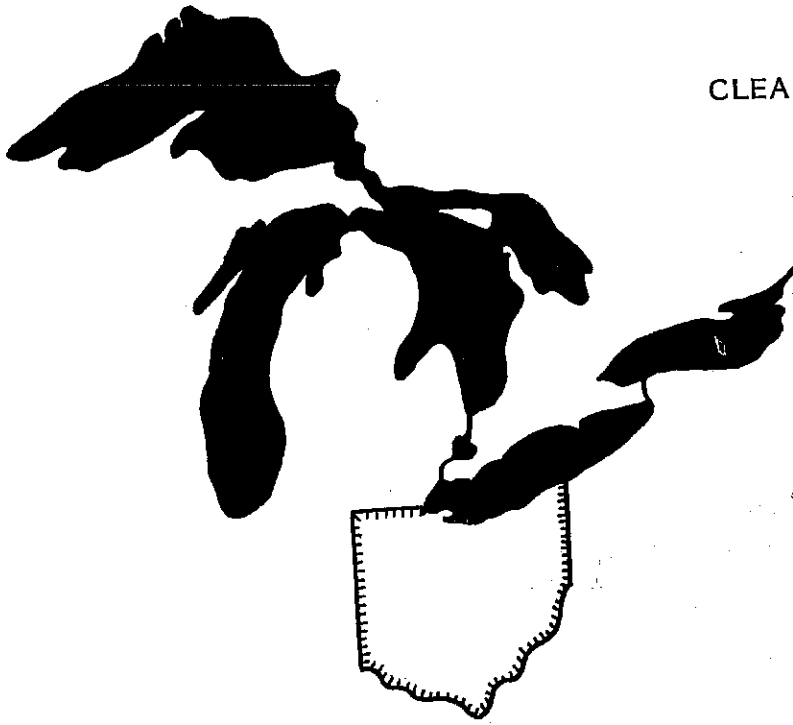


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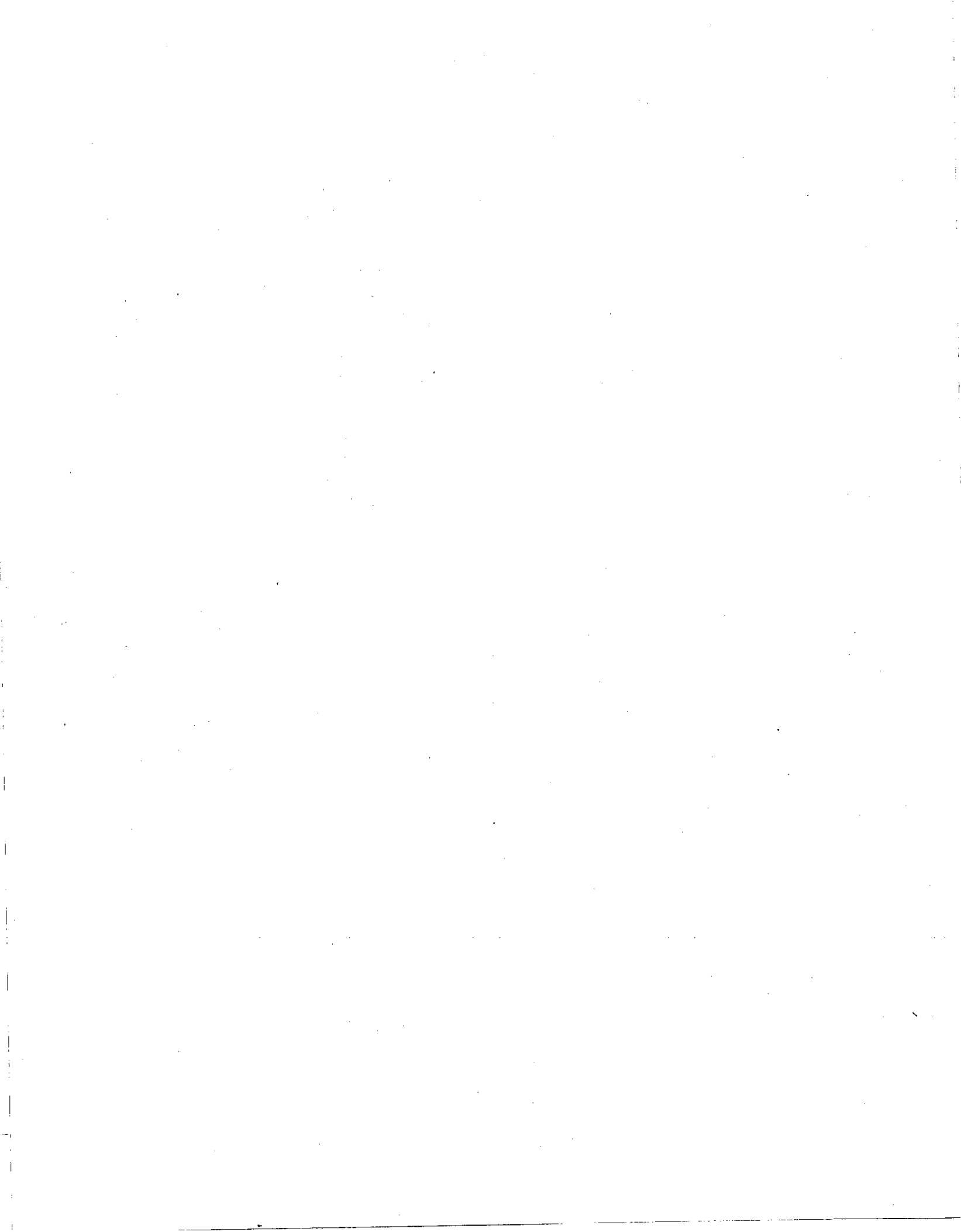


MARINE AND AQUATIC
SCIENCE RESEARCH
AT
THE OHIO STATE UNIVERSITY

Compiled by
Charles E. Herdendorf

THE OHIO STATE UNIVERSITY
CENTER FOR LAKE ERIE AREA RESEARCH
AND
OHIO SEA GRANT PROGRAM
COLUMBUS, OHIO

February 1983



INTRODUCTION

Marine and aquatic science research on The Ohio State University campus involves 70 faculty researchers working on 97 individual projects. The following report is a listing of all such projects administered through The Ohio State University Research Foundation which were active during the period 1980-1982. The listing contains the following information:

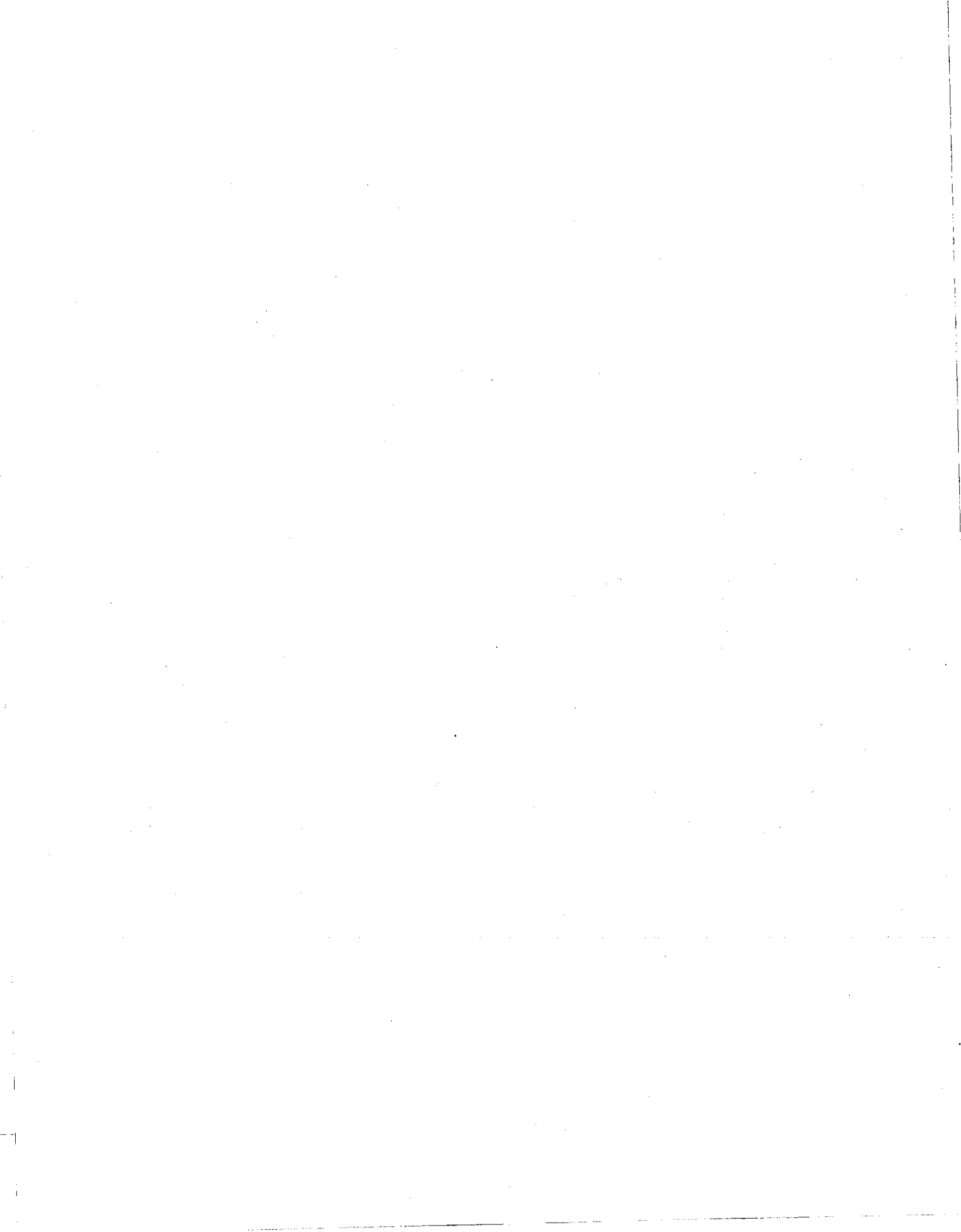
Project Title
Principal Investigator(s)
Sponsor
Grant/Contract No.
OSURF No.
Project Period and Budget
Research Objective

For the purpose of this report, marine and aquatic science has been interpreted broadly to include all studies of oceanic and freshwater systems (including their coastal zones); processes within the hydrosphere; and, water-related phenomena. Investigators from 25 departments, centers or programs have participated in these studies, including:

Agricultural Economics	Electrical Engineering	Ohio Cooperative
Agronomy	Engineering Mechanics	Extension Service
Center for Lake Erie	Geodetic Science	Physics
Area Research	Geology/Mineralogy	Preventive Medicine
Chemical Engineering	Institute for Polar	Science-Math Education
Chemistry	Studies	Surveying
Civil Engineering	Mechanical Engineering	Water Resources Center
Comprehensive Cancer	Microbiology	Zoology
Center	Natural Resources	
Cooperative Extension	Nuclear Engineering	
Field Operation	Ohio Biological Survey	

Sponsorship of these projects include 24 state, federal and private agencies and organizations. The total dollar value of the sponsored research amounts to \$7,517,000. In addition, The Ohio State University contributed \$2,247,000 yielding a total value of \$9,764,000 for marine and aquatic research. The following organizations sponsor such research on the OSU campus:

Army Corps of Engineers
Battelle Memorial Institute
Cleveland Electric Illuminating Co.
Defiance County Soil and Water Conservation District
Huntington District Corps of Engineers



National Institute of Environmental Health Science
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
National Science Foundation
Naval Research Laboratory
North Atlantic Treaty Organization
Office of Naval Research
Ohio Air Quality Development Authority
Ohio Department of Natural Resources
Ohio Inter-University Energy Research Council
U.S. Army Cold Regions Research and Engineering Laboratory
U.S. Army Research Office
U.S. Environmental Protection Agency
U.S. Department of Commerce
U.S. Department of Energy
U.S. Department of Interior
U.S. Geological Survey
University of California-Davis
Toledo Edison Co.



INDEX

Project No.	Title	PI	Page
•710729	An Experimental Analysis of a Predator-Prey System	R. Stein/S.Cook	1
•710793	Salt-Gradient Solar Pond Development	C. Nielsen	2
•711117	Environmental History of Toolik Lake and Toolik Drainage, A Component of Project ALPS (Arctic Lake Process Studies)	P. Colinvaux	3
•711230/713933	Limnological Investigations of Water Quality and Fish Larvae in Lake Erie	C. Herdendorf	4
•711367/712138/ •712898/712899	Yellow Perch Parasite Research	J. Crites/ J. Reutter	5
•711381	Bilateral Asymmetry in Freshwater Fishes as an Index of Environmental Contamination	T. Peterle/ R. Carline/ R. Tassava	6
•711581	Use of SEASAT Altimeter Data for the Improved Determination of the Geoid, Gravity Anomaly Field and Sea Surface Topography	R. Rapp	7
•711616	Removal of Heavy Metals from Reuse Waters with Synthetic Polymer Absorbents	A. Rubin/O. Sproul	8
•711846	Transport Properties of the Great Lakes Seiche-Affected River Mouths	K. Bedford/ C. Herdendorf	9
•711889	Physiology of Buoyancy Regulation	L. Greenwald	10
•712087	Risk Methodologies in Geotechnical Design of Offshore Structures	T. Wu	11

INDEX (continued)

Project No.	Title	PI	Page
•712112	Environment and Climate at the American Equator Since Last Glacial Maximum	P. Colinvaux	12
•712147	Experimental and Analytical Studies of the Thermal Aspects of Deep Geological Disposal of Commercial Nuclear Wastes	R. Christensen	13
•712243	The Taxonomic Evaluation of the Duck River <u>Pleurocera</u> Species	D. Stansbery/ C. Stein	14
•712332-712338/ •712473	Ohio Sea Grant Program 1979-1980	C. Herdendorf	15
•712429	Effects of Phosphate Fertilizer Applications and Chemistry-Mineralogy of the Iron Oxide System on Phosphate Adsorption-Desorption by Stream Sediments	T. Logan	17
•712438	Bacterial Methanogenesis and Denitrification in Cleveland Harbor and Lake Erie	J. Frea	18
•712512/712513	Management of Muskingum Mussel Populations Project Plan	C. King/ D. Stansbery	19
•712598/712599	Operational Aquatic Ecology Monitoring Program for the Davis-Besse Nuclear Power Station	J. Reutter/ C. Herdendorf	20
•712704	Analysis and Evaluation of Water Quality Data in the Ohio River Basin	E. Whitlatch/ R. Sykes/V. Ricca/ R. Stiefel	21
•712765/713050/ •714628	Technical Assessment of the Lake Erie Intensive Study	C. Herdendorf/ C. Cooper/L. Fay/ D. Rathke	22

INDEX (continued)

Project No.	Title	PI	Page
•712845	Scattering of Acoustic Waves by Finite Cylindrical Elastic Shells Immersed in Water	V. Varadan/ V. Varadan	23
•712846	Comparative Studies of Rain-drop Size Distributions Using Joss-Disdrometer and the Differential Reflectivity (Z_{DR}) Technique	T. Seliga	24
•712962/714869/ •714452	Lake Erie Sediment Resuspension and Transport Mechanisms: Nearshore Vertical Profiles and Flux Rates	K. Bedford/C. Moore	25
•713076	Forage Utilization by Walleye and Yellow Perch in Western Lake Erie	T. Peterle/ R. Carline	26
•713078/714064/ •713478/714065	Lake Erie Monitoring Program: Main Lake Water Quality and <u>Cladophora</u>	C. Herdendorf/ R. Stiefel	27
•713081	A Nuclear Radiation Protection Action/Decision Methodology for Public Officials	R. Christensen/ W. Carey	28
•713153	T-Matrix Formulation to Study the Frequency Dependent Properties of Absorbing Materials	V. Varadan/ V. Varadan	29
•713207-713216/ •713222-713224/ •713512	Ohio Sea Grant Program 1980-1981	C. Herdendorf	30
•713207	Administration and Development of the Ohio Sea Grant Program	C. Herdendorf/ J. Reutter	32
•713208	Lake Erie Storm Surge Forecasting: Model Intercomparison of Western Basin Effects	K. Bedford	33

INDEX (continued)

Project No.	Title	PI	Page
●713209	Economic Value of Ohio's Lake Erie Fisheries	L. Hushak/ F. Hitzhusen	34
●713210	Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds	D. Culver	35
●713211	Lake Erie Public Information Through Radio Broadcasting	R. Fortner	36
●713212	Marine and Great Lakes Education: An Infusion Program for Ohio Schools	V. Mayer/J. Hug	37
●713213	The Development and Implementation of a Curriculum for the Study of Marine Technology	W. Brewer	38
●713214	Coastal Engineering Curriculum Development	K. Bedford	39
●713215/713216	Ohio Sea Grant Advisory Service	J. Reutter/ C. Herdendorf/ R. Dougan/P. Thomas	40
●713222	Ohio Sea Grant Advisory Service - Fremont	J. Reutter/ P. Thomas	41
●713223	Ohio Sea Grant Advisory Service - Elyria	J. Reutter/ P. Thomas	42
●713224	Ohio Sea Grant Advisory Service - Painesville	J. Reutter/ P. Thomas	43
●713264/714433	Utilization of Shallow Water Fish Habitats in the Ohio River	T. Cavender	44
●713265/714434	Manipulation of Trophic Dynamics in Fish Hatchery Ponds	D. Culver	45

INDEX (continued)

Project No.	Title	PI	Page
●713266	Nitrate Contamination of Subsurface Waters in an Urbanizing Area	R. Stiefel	46
●713267/714436	The Components of Sediment Oxygen Demand in Lake Erie	R. Stiefel	47
●713269	Surface Water Contamination by Insecticides: Data from Analytic Insect Tests that Pertain to Water Quality Criteria	W. Collins	48
●713458/714752	Nutrient Losses from Lake Plain Soils with Conservation Tillage Management	T. Logan	49
●713512	Chemical Characterization of the Antitumor Factor in the Clam <u>Mercenaria m.</u>	D. Horton	50
●713604	Muskingum River Basin Survey	C. King/ D. Stansbery/ T. Cavender	51
●713650	Acoustic Wave Scattering by Finite Cylindrical Elastic Shells of Revolution Immersed in Water	V. Varadan/ V. Varadan	52
●713694/713695	Status and Population Dynamics of White Perch (<u>Morone Americana</u>)	T. Peterle/ F. Margraf/ R. Carline	53
●713694/713695	Status and Population Dynamics of White Perch (<u>Morone Americana</u>) in Lake Erie	T. Peterle/ F. Margraf/ R. Carline	54
●713709	American Lakes: Comparative and Paleolimnological Analyses to Test Hypotheses	P. Colinvaux	55

INDEX (continued)

Project No.	Title	PI	Page
●713779/713780	Predator-Mediated Competition	R. Stein/ G. Mittelbach	56
●713784	Rainfall Studies Using the Differential Reflectivity Radar Techniques	T. Seliga	57
●713799	Precipitation over the Coastal Area of East Antarctica	D. Elliot/ D. Bromwich	58
●713917/714216	Trihalomethanes in Water: An Epidemiologic Model	J. Wilkins/ M. Keller	59
●713991	Scale Shape as an Innate Tag for the Identification of Striped Bass Stock	T. Peterle/ R. Carline/ F. Margraf	60
●714009	Geologic and Paleontologic History of the James Ross Island Basin, Northern Antarctica Peninsula	D. Elliot/ W. Zinsmeister	61
●714021/712498	Thermoregulatory Significance of Pigment Intensity in Avian Adaptions	S. Lustick	62
●714066-714082/ ●714207/714224/ ●714350/714820	Ohio Sea Grant Program 1981- 1982 and 1982-1983	C. Herdendorf	63
●714066	Administration of the Ohio Sea Grant Program	C. Herdendorf/ J. Reutter	65
●714067	Development of the Ohio Sea Grant Program	C. Herdendorf/ J. Reutter	66
●714068	Aquaculture in Ohio: Zooplankton Productivity in Fish Hatchery Ponds	D. Culver	67

INDEX (continued)

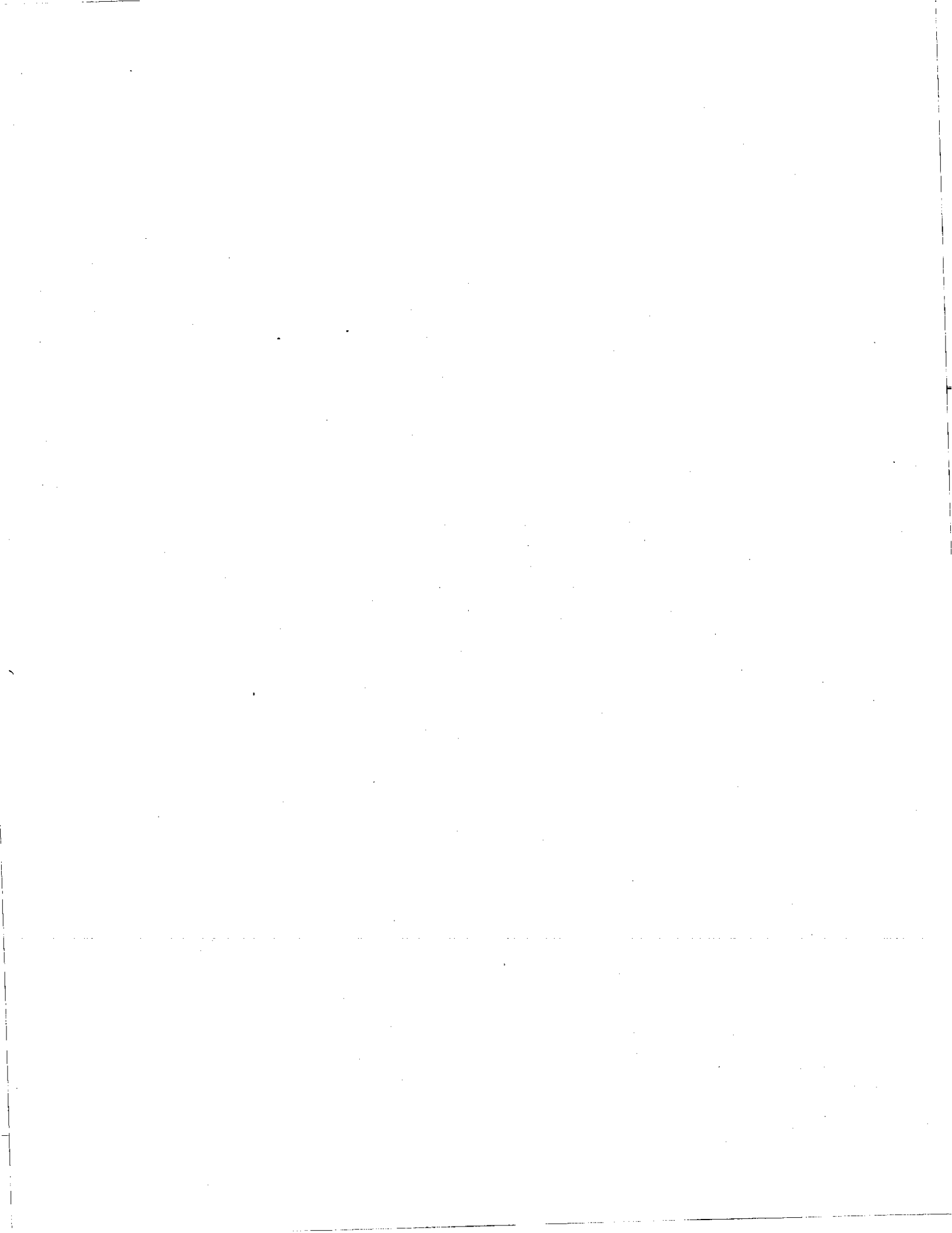
Project No.	Title	PI	Page
●714069/714820	Aquaculture in Ohio: Culturing Fathead Minnows for Bait in Ohio	T. Stockdale/ C. Cole/D. Johnson	68
●714070	Evaluation of Sand Resources in Western Lake Erie	R. Anderhalt/ C. Herdendorf	69
●714071	Economic Value of Ohio's Lake Erie Fisheries	L. Hushak/ D. Southgate	70
●714072	A Description and Analytical Marketing Study of Ohio's Lake Erie Commerical Fishery	C. Thraen	71
●714073	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	K. Bedford/ V. Varadan/ R. Brodkey	72
●714074/714075	Fish Community Structure, Movements and Reproduction in Controlled and Uncontrolled Lake Erie Marshes	D. Johnson/ M. Barnes	73
●714076	Summer Storm Studies Over Western Lake Erie and Its Coastal Drainage Basin	T. Seliga	74
●714077	Ohio Sea Grant Education Office	V. Mayer	75
●714078	Marine and Great Lakes Education: An Infusion Program for Ohio Schools	V. Mayer/R. Fortner	76
●714079	Ohio Sea Grant Advisory Service	J. Reutter/ C. Herdendorf	77
●714080	Ohio Sea Grant Advisory Service (Extension Program-Fremont)	J. Reutter/ P. Thomas	78
●714081	Ohio Sea Grant Advisory Service (Extension Program-Elyria)	J. Reutter/ P. Thomas	79

INDEX (continued)

Project No.	Title	PI	Page
●714082	Ohio Sea Grant Advisory Service (Extension Program-Painesville)	J. Reutter/ P. Thomas	80
●714096	T-Matrix Analysis of Acoustic Wave Scattering by Finite Cylindrical Elastic Shells Immersed in Water	V. Varadan/ V. Varadan	81
●714110	Gondwana Geology of the Falkland Islands	D. Elliot	82
●714120	Lake Erie Watershed Reduced Tillage Practices	B. Schmidt/ C. Cunningham	83
●714198	Soil Studies in the Coastal Plain of the Arctic National Wildlife Refuge in Alaska	K. Everett	84
●714207	Great Lakes Information Through Museum Programming	R. Fortner/ W. Schmitt	85
●714222	Wave Propagation and Transport in Heterogeneous Media	D. Stroud/ B. Patton	86
●714224	Site Exploration for Founda- tions of Offshore Structures	T. Wu	87
●714241	Lake Erie Basin-Accelerated Conservation Tillage Project	T. Jones	88
●714350	Ohio Sea Grant Internship	J. Reutter/ C. Herdendorf	89
●714358	Effect of Vegetation Roots on Slope Stability	T. Wu	90
●714377/714387	Review and Analysis of Past and Current Research Relating to the Effect of Acid Deposition on Aquatic Systems	C. Herdendorf/ M. Barnes	91
●714435	Nitrate Contamination of Sub- surface Waters in an Urbanizing Area	R. Steifel	92

INDEX (continued)

Project No.	Title	PI	Page
●714437	Iron Speciation in Acid Mine Effluents: Chemical and Microbial Controls	J. Bigham	93
●714476	Phosphorus Fertility Management Demonstration Project for Defiance Area Soils High in Available Phosphate	T. Jones	94
●714530/714635	Conference on Wave Propagation and Scattering	V. Varadan/ V. Varadan	95
●714535	Toledo Edison Environmental Report Preparation and Evaluation	J. Reutter	96
●714609	Physiology of Buoyancy Regulation	L. Greenwald	97
●714636	Environment and Climate of the American Equator Since 18K	P. Colinvaux	98
●714673	Trihalomethanes in Water: An Epidemiologic Model	J. Wilkins/ N. Reiches	99
●714848	The Vertical and Temporal Structure of Particle Distributions	K. Bedford/ V. Varadan/ V. Varadan	100



PROJECT LISTING



● An Experimental Analysis of a Predator-Prey System

Principal Investigators: Roy A. Stein and Susan B. Cook, Zoology

Sponsor: National Science Foundation

Grant No.: DEB77-16167 A01

OSURF No.: 710729

Project Period and Budget: October 1, 1977 to September 30, 1981
\$106,747 (sponsor)
\$ 10,154 (OSU cost-sharing)

Objective: An experimental approach that will provide proximate and ultimate explanations for selective predation and resource depression within the interaction between predatory fish (redeer sunfish) and benthic molluscs (Physa, Helisoma, and Oxytrema).

Administrative Unit: Zoology

●Salt-Gradient Solar Pond Development

Principal Investigator: Carl E. Nielsen, Physics

Sponsor: U.S. Department of Energy

Grant No.: DE-FG04-77CS34155

OSURF No.: 710793

Project Period and Budget: September 30, 1977 to August 31, 1981
\$300,928 (sponsor)

Objective: This is for solar pond development designed to solve the remaining problems in solar pond operation for space heating and to demonstrate whether the solar pond can actually provide the heat for winter use that is calculated to be possible. Three aspects require further study: (a) the control of biological growth and maintenance of water transparency, (b) the behavior of boundaries between the mixing zones and the salt-gradient zone, and (c) the magnitude of perimeter heat losses and their dependence upon pond size and configuration.

Administrative Unit: Physics

• Environmental History of Toolik Lake and Toolik Drainage, A Component of Project ALPS (Arctic Lake Process Studies)

Principal Investigator: Paul A. Colinvaux, Institute of Polar Studies and Zoology

Sponsor: National Science Foundation

Grant No.: DPP-7723881

OSURF No.: 711117

Project Period and Budget: May 1, 1978 to October 31, 1981
\$61,693 (sponsor)
\$10,114 (OSU cost-sharing)

Objective: The history of the Toolik Lake ecosystem will be investigated by the methods of core drilling and paleolimnology. The main basins of the lake will be cored to the underlying strata with a Livingstone sampler from a raft of rubber boats. Radiocarbon and paleomagnetic assay will provide a time-stratigraphy for the sediments and will contribute to a history of geomagnetism in the Arctic.

Administrative Unit: Institute of Polar Studies

•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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

•Bilateral Asymmetry in Freshwater Fishes as an Index of Environmental Contamination

Principal Investigators: Tony J. Peterle, Robert Carline and Roy A. Tassava, Zoology

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

Grant No.: 14-16-0009-78-952

OSURF No.: 711381

Project Period and Budget: July 1, 1978 to December 31, 1981
\$92,860 (sponsor)
\$27,956 (OSU cost-sharing)

Objective: The project is to 1) Determine if asymmetry exists in yellow perch (Perca flavescens) populations taken from habitats with divergent levels of contamination. 2) Measure residues of contaminants in the tissue of the perch populations sampled and correlated residues with asymmetry. 3) Describe embryological and developmental evidence for any asymmetry-contaminant correlations found utilizing natural and laboratory exposed populations of bluntnose minnow (Pimephales notatus).

Administrative Unit: Zoology

● Use of SEASAT Altimeter Data for the Improved Determination of the Geoid,
Gravity Anomaly Field and Sea Surface Topography

Principal Investigator: Richard H. Rapp, Geodetic Science and Surveying

Sponsor: National Oceanic and Atmospheric Administration

Grant No.: NA-78-SAC-04326

OSURF No.: 711581

Project Period and Budget: September 29, 1978 to September 30, 1982
\$102,827 (sponsor)

Objective: The specific objectives to be met in this investigation are the following: (a) detailed geoid modeling in selected geographical areas; (b) mean and point gravity anomaly recovery in selected geographical areas; and (c) analysis and implementation between the geoid and the instantaneous sea level.

Administrative Unit: Geodetic Science and Surveying

●Removal of Heavy Metals from Reuse Waters with Synthetic Polymer Adsorbents

Principal Investigators: A.J. Rubin and O.J. Sproul, Civil Engineering

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

Grant No.: 14-34-0001-9090

OSURF No.: 711616

Project Period and Budget: October 1, 1978 to September 30, 1981
\$65,000 (sponsor)
\$67,612 (OSU cost-sharing)

Objective: The renovation of reuse waters requires that trace levels of heavy metals be removed efficiently and economically. An approach of considerable promise is adsorption on porous solids. Synthetic polymer adsorbents of several types will be evaluated using cadmium (II), zinc (II) and similar metal salts. Laboratory studies will be conducted to investigate the solution and operating parameters controlling adsorption and regeneration. It is expected that a predictive model for the process will also be developed.

Administrative Unit: Civil Engineering

●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.

Administrative Unit: Center for Lake Erie Area Research

●Physiology of Buoyancy Regulation

Principal Investigator: Lewis I. Greenwald, Zoology

Sponsor: National Science Foundation

Grant No.: PCM-7823624

OSURF Nos.: 711889

Project Period and Budget: March 1, 1979 to August 31, 1981
\$56,827 (sponsor)
\$ 7,090 (OSU cost-sharing)

Objective: The chambered nautilus weighs about 1 gm. in seawater despite its protective shell that weighs over 100 gm. in seawater. This discrepancy is of course explained by the presence of gas-filled chambers within the shell that buoy it up in water. This research will determine the mechanism by which the animal removes liquid from the chamber and replaces the liquid with gas.

Administrative Unit: Zoology

•Risk Methodologies in Geotechnical Design of Offshore Structures

Principal Investigator: Tien H. Wu, Civil Engineering:

Sponsor: National Science Foundation

Grant No.: PFR-7819222

OSURF No.: 712087

Project Period and Budget: June 1, 1979 to August 31, 1983
\$94,996 (sponsor)
\$ 3,494 (OSU cost-sharing)

Objective: The overall objective of the joint venture with Wilson Tang at the University of Illinois is to formulate methodologies for risk assessment and decision making in geotechnical planning and design of offshore gravity structures.

The objective at Ohio State University is the development of decision model for the geotechnical planning, design and construction of offshore structures, and the transfer of experiences to future designs.

Administrative Unit: Civil Engineering

● Environment and Climate at the American Equator Since Last Glacial Maximum

Principal Investigator: Paul A. Colinvaux, Institute of Polar Studies and Zoology

Sponsor: National Science Foundation

Grant No.: DEB-7905840

OSURF No.: 712112

Project Period and Budget: July 1, 1979 to December 31, 1982
\$92,700 (sponsor)
\$ 5,455 (OSU cost-sharing)

Objective: The objective of this project is to reconstruct the climate and other environmental parameters of the American Equator from the time of the last glacial maximum to the present. We shall proceed by stratigraphy and pollen analysis of the sediments.

Administrative Unit: Institute of Polar Studies

● Experimental and Analytical Studies of the Thermal Aspects of Deep Geological Disposal of Commercial Nuclear Wastes

Principal Investigator: R.N. Christensen, Mechanical Engineering

Sponsor: U.S. Department of Energy, Office of Nuclear Waste and Battelle Memorial Institute

Grant No.: E512-03900

OSURF No.: 712147

Project Period and Budget: July 1, 1979 to September 30, 1983
\$636,054 (sponsor)

Objective: Research is being conducted on several problems in the areas of heat and mass transfer related to the storage and deep geologic disposal of commercial nuclear wastes. These problems are general in the sense that they are relevant to a number of waste types and to more than one repository medium. In any case, the goal of the research is the development of basic data, correlations, and information that can be applied in engineering design and analysis of nuclear waste storage and/or disposal systems.

Administrative Unit: Mechanical Engineering

●The Taxonomic Evaluation of the Duck River Pleurocera Species

Principal Investigators: David H. Stansbery and Carol Stein, Zoology

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

Grant No.: 14-16-0004-79-092

OSURF No.: 712243

Project Period and Budget: August 1, 1979 to July 31, 1981
\$ 9,998 (sponsor)
\$11,678 (OSU cost-sharing)

Objective: River snails of the family Pleuroceridae are abundant members of the benthic communities of most swift-flowing rivers and streams in North America. Living in more-or-less isolated populations in nearly every river system these snails have evolved a great variety of shell shapes. Virtually all of the species have been described solely on the basis of shell shape. Very little is known about the comparative biology of the various taxa. Six Duck River taxa have been officially proposed as Endangered or Threatened species. We propose to apply electrophoretic analysis to selected samples of these taxa, comparing morphological and zoogeographical data to clarify the status and relationships of these taxa.

Administrative Unit: Zoology

●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.

Administrative Unit: Center for Lake Erie Area Research

●Effects of Phosphate Fertilizer Applications and Chemistry-Mineralogy of the Iron Oxide System on Phosphate Adsorption-Desorption by Stream Sediments

Principal Investigator: Terry J. Logan, Agronomy

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

Grant No.: 14-34-0001-0242

OSURF No.: 712429

Project Period and Budget: October 1, 1979 to September 30, 1982
\$36,544 (sponsor)
\$36,544 (OSU cost-sharing)

Objective: The objectives of this study are (1) to determine chemical and mineralogical characteristics of the iron oxide system in stream-suspended sediments and their soil precursors; (2) to categorize phosphate release from the sediments; (3) to determine relationships between plant available phosphate and phosphate desorption; and (4) to develop a system for measuring instantaneous phosphorus desorption kinetics with the sediments.

Administrative Unit: Water Resources Center

●Bacterial Methanogenesis and Denitrification in Cleveland Harbor and Lake Erie

Principal Investigator: James I. Frea, Microbiology

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

Grant No.: 14-34-0001-0243

OSURF No.: 712438

Project Period and Budget: October 1, 1979 to March 31, 1983
\$66,800 (sponsor)
\$67,315 (OSU cost-sharing)

Objective: The problem to be studied is the increase in organic carbon in Cleveland Harbor and Lake Erie, particularly as it relates to inputs from major river tributaries and to inputs from algae productivity. The approach will be through the analysis of the impact of heterotrophic bacterial decomposition of the organic carbon through in situ methane production by a bacterial methanogenesis and through bacterial decomposition.

Administrative Unit: Water Resources Center

● Management of Muskingum Mussel Populations Project Plan

Principal Investigators: Charles C. King, Ohio Biological Survey and
David H. Stansbery, Zoology

Sponsor: Ohio Department of Natural Resources, Division of Wildlife

Grant No.: AGM DTD 11-5-79 & 3-6-81

OSURF Nos.: 712512 (on campus)
712513 (off campus)

Project Period and Budget: January 1, 1980 to April 30, 1982
\$62,919 (sponsor)
\$24,934 (OSU cost-sharing)

Objective: The goals of this project are: To develop harvest management recommendations based upon a knowledge of the status and rate of recruitment of mussel populations in the Muskingum River. Determination will be made of the current location and size of mussel beds, species composition and density, rate of recruitment, and size composition of populations throughout the entire stretch of the Muskingum River from Coshocton to Marietta.

Administrative Unit: Ohio Biological Survey

●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.

Administrative Unit: Center for Lake Erie Area Research

●Analysis and Evaluation of Water Quality Data in the Ohio River Basin

Principal Investigators: E.E. Whitlatch Jr., R.M. Sykes, V.T. Ricca,
and R.C. Stiefel, Civil Engineering

Sponsor: U.S. Geological Survey

Grant No.: 14-08-0001-G-682

OSURF No.: 712704

Project Period and Budget: March 1, 1980 to September 30, 1982
\$206,182 (sponsor)

Objective: This award provides additional funds to complete the examination of Ohio River Basin water quality data for the period 1973-1977 to identify characteristic water quality variables.

Administrative Unit: Civil Engineering

•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.

Administrative Unit: Center for Lake Erie Area Research

●Scattering of Acoustic Waves by Finite Cylindrical Elastic Shells Immersed in Water

Principal Investigators: V.K. Varadan and V.V. Varadan, Engineering Mechanics

Sponsor: Office of Naval Research

Grant No.: N00014-80-C-0573

OSURF No.: 712845 (on campus)

Project Period and Budget: May 1, 1980 to November 16, 1981
\$14,280.74 (sponsor)

Objective: The scattering of acoustic waves by an elastic shell in water will be analyzed using the T-matrix method and shell theory. The shell is considered to be one of revolution but otherwise of general shape. Numerical results will be obtained for the finite cylindrical shell. A collaborative effort with the Physical Acoustics Group at NRL to compare theoretical and experimental results is also proposed.

Administrative Unit: Engineering Mechanics

•Comparative Studies of Raindrop Size Distributions Using Joss-Disdrometer and the Differential Reflectivity (Z_{DR}) Technique

Principal Investigator: Thomas A. Seliga, Electrical Engineering

Sponsor: North Atlantic Treaty Organization

Grant No.: RG 054.80

OSURF No.: 712846

Project Period and Budget: April 1, 1980 to June 30, 1982
\$3,111.65 (sponsor)
\$ 716.00 (OSU cost-sharing)

Objective: The purpose of the project is to allow further collaboration between investigators at Ohio State and at the Appleton Laboratory, United Kingdom. Research focuses on radar estimation of raindrop size parameters.

Administrative Unit: Electrical Engineering

●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

●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.

Administrative Unit: Center for Lake Erie Area Research

•A Nuclear Radiation Protection Action/Decision Methodology for Public Officials

Principal Investigators: R.N. Christensen and W.E. Carey, Nuclear Engineering

Sponsor: Ohio Inter-University Energy Research Council

Grant No.: OBR-ER-17

OSURF No.: 713081

Project Period and Budget: July 1, 1980 to September 30, 1981
\$25,739 (sponsor)
\$20,073 (OSU cost-sharing)

Objective: A Nuclear Radiation Protective Action/Decision Methodology will be developed for use by Public Officials in the State of Ohio during emergency drills and in case of an actual emergency at Ohio's three nuclear power sites. This methodology can be used in making prompt decisions about evacuations or other protective measures.

Administrative Unit: Nuclear Engineering

●Ohio Sea Grant Program 1980-1981

Principal Investigator: Charles E. Herdendorf, CLEAR

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

Grant No.: NABOAA-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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.: ~~NABOAA-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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

•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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●Utilization of Shallow Water Fish Habitats in the Ohio River

Principal Investigator: Ted M. Cavender, Zoology

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

Grant No.: 14-34-0001-1137

OSURF Nos.: 713264 and 714433

Project Period and Budget: October 1, 1980 to March 31, 1983
\$6,920 (sponsor)
\$2,424 (OSU cost-sharing)

Objective: This research is designed to yield information on the distribution, diversity, and relative abundance of young-of-the-year fishes occupying twelve shallow water and wetland habitats found in and along the Ohio River mainstem. The work will help to establish the importance of these habitats to the survival of a major element of the Ohio River fish fauna.

Administrative Unit: Water Resources Center

●Manipulation of Trophic Dynamics in Fish Hatchery Ponds

Principal Investigator: David A. Culver, Zoology

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

Grant No.: 14-34-0001-1137

OSURF Nos.: 713265 and 714434

Project Period and Budget: October 1, 1980 to March 31, 1982
\$19,045 (sponsor)
\$ 7,420 (OSU cost-sharing)

Objective: This study will examine the effectiveness of manipulating the input of inorganic nutrients and organic food to fish hatchery ponds to direct the available energy through zooplankton to larval fish in pond. Primary productivity, zooplankton productivity and fish productivity will be measured.

Administrative Unit: Water Resources Center

•Nitrate Contamination of Subsurface Waters in an Urbanizing Area

Principal Investigator: Robert C. Stiefel, Water Resources Center

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

Grant No.: 14-34-0001-1137

OSURF No.: 713266

Project Period and Budget: October 1, 1980 to March 31, 1982
\$15,000 (sponsor)
\$ 8,400 (OSU cost-sharing)

Objective: This project, to be done under the direction of Drs. Gerald Matisoff and John Hall of the Case Western Reserve University, will investigate the sources, transformations and movements of nitrogen from human activities to the groundwater in an urbanizing area in northeastern Ohio.

Administrative Unit: Water Resources Center

•The Components of Sediment Oxygen Demand in Lake Erie

Principal Investigator: Robert C. Stiefel, Water Resources Center

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

Grant No.: 14-34-0001-1137

OSURF Nos.: 713267 and 714436

Project Period and Budget: October 1, 1980 to March 31, 1982
\$3,890 (sponsor)
\$1,900 (OSU cost-sharing)

Objective: Six laboratory experiments are planned to determine the oxygen consumption in Lake Erie sediments. This consumption is due to microbial respiration, macrobial respiration and ammonia reduction, diffusion of reduced chemical compounds and the flux of other compounds to the interface by deposit feeding worms. The result of this work, which will be performed at the Case Western Reserve University, will account for spatial and temporal variations of sediment oxygen demand in lakes.

Administrative Unit: Water Resources Center

●Surface Water Contamination by Insecticides: Data from Analytic Insect Tests that Pertain to Water Quality Criteria

Principal Investigator: William J. Collins, Entomology

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

Grant No.: 14-34-0001-1137

OSURF No.: 713269

Project Period and Budget: October 1, 1980 to March 31, 1982
\$9,470 (sponsor)
\$3,977 (OSU cost-sharing)

Objective: This project (a continuation of RF 712436) will provide data on the toxicity, uptake, depuration and bioconcentration of pesticides in eight species of aquatic insects collected at high and low temperatures. The chemicals studied are converted to more toxic metabolites by mixed function oxidases. The rates of adsorption, accumulation, depuration and bioconcentration of aldrin and parathion will be measured in each species.

Administrative Unit: Water Resources Center

●Nutrient Losses from Lake Plain Soils with Conservation Tillage Management

Principal Investigator: Terry J. Logan, Agronomy

Sponsor: Defiance County Soil and Water Conservation District

Grant No.: AGM. DTD. 10-1-80

OSURF Nos.: 713458 and 714752

Project Period and Budget: October 1, 1980 to July 31, 1984

\$81,773 (sponsor)

\$30,980 (OSU cost-sharing)

Objective: Various tillage-crop management combinations will be tested on the Paulding-Roselms soils at several locations in Mud Creek. The objective of the project is to demonstrate these new and innovative practices to area farmers, to evaluate and improve the various combinations and to monitor relative soil, nutrient (nitrogen and phosphorus) and pesticide losses from these sites.

Administrative Unit: Agronomy

•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.

Administrative Unit: Center for Lake Erie Area Research

•Muskingum River Basin Survey

Principal Investigators: Charles C. King, Ohio Biological Survey;
David Stansbery and Ted Cavender, Zoology

Sponsor: Huntington District, Corps of Engineers

Grant No.: DACW69-81-C-0026

OSURF No.: 713604

Project Period and Budget: February 12, 1981 to December 31, 1981
\$33,677 (sponsor)

Objective: The work to be accomplished shall consist of a literature search and ecological analysis of (1) ichthyological taxon of the appropriate counties within the Muskingum River Basin; (2) freshwater mollusca taxon; and (3) aquatic invertebrate taxon.

Administrative Unit: Ohio Biological Survey

●Acoustic Wave Scattering by Finite Cylindrical Elastic Shells of Revolution Immersed in Water

Principal Investigators: V.K. Varadan and V.V. Varadan, Engineering Mechanics

Sponsor: Naval Research Laboratory

Grant No.: N00014-81-C-2195

OSURF No.: 713650

Project Period and Budget: February 2, 1981 to January 31, 1982
\$35,378 (sponsor)

Objective: The numerical results obtained using the T-matrix method for acoustic wave scattering by finite cylindrical shells will be compared with experimental results obtained by the sponsor with the objective of expanding the present capability to higher values of $Kl/2$.

Administrative Unit: Engineering Mechanics

●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

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

Principal Investigators: Tony J. Peterle, F.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 and April 1, 1983
\$49,900 (sponsor)
\$ 1,584 (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

•American Lakes: Comparative and Paleolimnological Analyses to Test Hypotheses

Principal Investigator: Paul A. Colinvaux, Zoology

Sponsor: National Science Foundation

Grant No.: DEB-8021539

OSURF No.: 713709

Project Period and Budget: June 1, 1981 to May 31, 1983
\$155,000 (sponsor)
\$ 14,059 (OSU cost-sharing)

Objective: This study will investigate the factors controlling species number in planktonic communities of small equatorial lakes. This will let us test a number of hypotheses about community processes in lakes developed by limnologists working in temperate regions.

Administrative Unit: Zoology

•Predator-Mediated Competition

Principal Investigators: Roy A. Stein and Gary G. Mittelbach,
Zoology

Sponsor: National Science Foundation

Grant No.: DEB-8104697

OSURF Nos.: 713779 (on campus) and 713780 (off campus)

Project Period and Budget: June 15, 1981 to June 30, 1983
\$45,178 (sponosor)
\$ 377 (OSU cost-sharing)

Objective: This project involves a series of field and laboratory studies with three co-occurring sunfish of the genus *Lepomis* designed to measure the impact of competition among juvenile fishes. Results of these studies will allow us to assess the importance of predator-restricted habitat on species recruitment and relative abundance in a natural system.

Administrative Unit: Zoology

● Rainfall Studies Using the Differential Reflectivity Radar Techniques

Principal Investigator: Thomas A. Seliga, Electrical Engineering

Sponsor: National Science Foundation

Grant No.: ATM-8003376

OSURF No.: 713784

Project Period and Budget: June 1, 1981 to December 31, 1982
\$274,900 (sponsor)

Objective: This project is a continuation of research into use of the differential reflectivity radar technique for rainfall measurements. Evaluation of the technique is being carried out in cooperation with the radar facility of the Illinois State Water Survey.

Administrative Unit: Electrical Engineering

● Precipitation over the Coastal Areas of East Antarctica

Principal Investigators: David H. Elliot and David H. Bromwich,
Institute for Polar Studies

Sponsor: National Science Foundation

Grant No.: DPP-8100142

OSURF No.: 713799

Project Period and Budget: May 1, 1981 to April 30, 1983
\$83,425 (sponsor)
\$ 1,207 (OSU cost-sharing)

Objective: A two-part program is proposed: (1) Using available data to describe the characteristics of water vapor transfer near the coast of East Antarctica, and (2) to theoretically examine major coastal precipitation mechanisms and to derive the elevation profile of precipitation. The results of the qualitative and theoretical investigations will be compared and tested against accumulation data from the Antarctic continent.

Administrative Unit: Institute for Polar Studies

•Trihalomethanes in Water: An Epidemiologic Model

Principal Investigators: John R. Wilkins III and Martin D.
Keller, Preventive Medicine

Sponsors: DHHS, PHS, NIH, National Institute of Environmental Health
Sciences

Grant No.: 1 R01 ES02655-01

OSURF Nos.: 713917 and 714216

Project Period and Budget: July 1, 1981 to June 30, 1982
\$100,745 (sponsor)
\$ 26,356 (OSU cost-sharing)

Objective: The purpose of this research is to develop, for use in epidemiologic studies, a method for estimating the degree of human exposure to organic chemical contaminants in drinking water. The study will, in its first phase, use routinely collected water treatment plant data to construct a predictive mathematical-statistical model of trihalomethane (THM) formation. The model will be developed to permit the estimation of THM levels in past time periods when the only available information is the routine water plant data.

Administrative Unit: Preventive Medicine

•Scale Shape as an Innate Tag for the Identification of Striped Bass Stock

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

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

Grant No.: 14-16-0009-81-036

OSURF No.: 713991

Project Period and Budget: July 31, 1981 to December 31, 1982
\$34,000 (sponsor)
\$ 830 (OSU cost-sharing)

Objective: The purpose of this study is to provide information on the contribution of various spawning stocks of striped bass to the coastal migratory population. This contribution can be determined by identification of unique innate characteristics of monitoring studies of striped bass and in contributing to studies that relate to the perceived decline in striped bass stocks. The specific objective is to determine the applicability of scale shape analysis for the identification of striped bass spawning stocks.

Administrative Unit: Zoology

●Geologic and Paleontologic History of the James Ross Island Basin, Northern Antarctica Peninsula

Principal Investigators: David H. Elliot and William J. Zinsmeister,
Institute for Polar Studies and
Geology/Mineralogy

Sponsor: National Science Foundation

Grant No.: DPP-8020096

OSURF No.: 714009

Project Period and Budget: August 1, 1981 to July 31, 1983
\$90,000 (sponsor)
\$ 3,947 (OSU cost-sharing)

Objective: It is proposed to undertake a detailed study of the stratigraphy sedimentology, sedimentary petrology and paleontology of the sedimentary rocks of the James Ross Island Basin. The objectives of the program are to establish the stratigraphic succession, the environments of deposition, the petrofacies of the clastic sediments, and the composition and distribution of the faunas.

Administrative Unit: Institute for Polar Studies

●Thermoregulatory Significance of Pigment Intensity in Avian Adaptions

Principal Investigator: Sheldon I. Lustick, Zoology

Sponsor: National Science Foundation

Grant No.: DEB-7911759

OSURF Nos.: 714021 and 712498

Project Period and Budget: November 1, 1979 to April 30, 1983
\$68,339 (sponsor)
\$24,845 (OSU cost-sharing)

Objective: An investigation of the thermal regulatory significance of avian plumage coloration. The study has embodied laboratory and field investigations to correlate the adaptiveness of coloration and environment to thermoregulation, in particular and to relate microhabitat selection to maximized energetic efficiency, in general.

Administrative Unit: Zoology

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

•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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

● 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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

●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.: NA81AA-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.

Administrative Unit: Center for Lake Erie Area Research

●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.

Administrative Unit: Center for Lake Erie Area Research

•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.

Administrative Unit: Center for Lake Erie Area Research

●T-Matrix Analysis of Acoustic Wave Scattering by Finite Cylindrical Elastic Shells Immersed in Water

Principal Investigators: Vijay K. Varadan and Vasundara V. Varadan,
Engineering Mechanics

Sponsor: Naval Research Laboratory

Grant No.: N00014-81-C-2516

OSURF No.: 714096

Project Period and Budget: September 1, 1981 to September 30, 1982
\$25,265 (sponsor)

Objective: This project is of the classified type solely because of the access requirements which permit access when needed to classified material in pursuit of the unclassified research.

Administrative Unit: Engineering Mechanics

●Gondwana Geology of the Falkland Islands

Principal Investigators: David H. Elliot, Institute for Polar Studies
and Geology/Mineralogy

Sponsor: National Science Foundation

Grant No.: DPP-8025210

OSURF No.: 714110

Project Period and Budget: September 1, 1981 to August 31, 1983
\$18,000 (sponsor)
\$11,898 (OSU cost-sharing)

Objective: The geology of the Falkland Islands includes a rather poorly known Gondwana sequence that over much of the southern half of East Falkland is largely undeformed. In Gondwanaland reconstructions the Falkland Islands lie in an anomalous position in that they lie within what is normally regarded as part of the active "Pacific" plate margin. The objective of the proposed study is acquisition of detailed information on the stratigraphic succession, the depositional environments, the sandstone petrofacies, and the provenance of the rocks.

Administrative Unit: Institute for Polar Studies

●Lake Erie Watershed Reduced Tillage Practices

Principal Investigators: Berlie L. Schmidt, Agronomy and Clarence J. Cunningham, Cooperative Extension Service

Sponsor: Army Corps of Engineers

Grant No.: DACW49-81-C-0067

OSURF No.: 714120

Project Period and Budget: July 1, 1981 to March 31, 1982
\$38,490 (sponsor)

Objective: This contract will provide research services and technical assistance to the Lake Erie Wastewater Management Study in the form of an extension agronomist. The technical assistance will include development of extension education materials and programs for non-point source pollution abatement programs for county and area extension personnel.

Administrative Unit: Agronomy

●Soil Studies in the Coastal Plain of the Arctic National Wildlife Refuge in Alaska

Principal Investigator: Kaye R. Everett, Institute for Polar Studies and Agronomy

Sponsor: U.S. Army Cold Regions Research and Engineering Laboratory

Grant No.: DACA89-82-M-0057

OSURF No.: 714198

Project Period and Budget: October 9, 1981 to September 1, 1982
\$10,000 (sponsor)

Objective: The purpose of this project will be to prepare soils description and analysis for incorporation in the environmental impact statement (EIS) for the proposed seismic exploratory activities and regulations governing these activities in the coastal plain of the Arctic National Wildlife Refuge in Alaska.

Administrative Unit: Institute for Polar Studies

•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.

Administrative Unit: Center for Lake Erie Area Research

●Wave Propagation and Transport in Heterogeneous Media

Principal Investigators: David O. Stroud and Bruce R. Patton, Physics

Sponsor: National Science Foundation

Grant No.: DMR-8114842

OSURF No.: 714222

Project Period and Budget: October 15, 1981 to December 31, 1982
\$67,000 (sponsor)
\$ 2,177 (OSU cost-sharing)

Objective: A three-year program of research into wave properties and transport in heterogeneous materials.

Administrative Unit: Physics

●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.

Administrative Unit: Center for Lake Erie Area Research

●Lake Erie Basin-Accelerated Conservation Tillage Project

Principal Investigator: Ted L. Jones, Cooperative Extension Field Operations

Sponsor: Ohio Division of Natural Resources, Division of Soil and Water Districts

Grant No.: Subsidy Agreement 10-22-81

OSURF No.: 714241

Project Period and Budget: October 1, 1981 to November 30, 1982
\$8,000 (sponsor)
\$2,960 (OSU cost-sharing)

Objective: The project objective is to accelerate conservation tillage in nine counties in North Central Ohio. County Agents, Agriculture, will cooperate with the Division of Soil and Water Conservation District, and Ohio Department of Natural Resources personnel. County Agents, Agriculture, will conduct educational meetings for participating farmers, and Soil and Water Conservation Districts and Soil Conservation Service personnel, and provide extension publications and recommendations related to conservation tillage and no-till systems. The \$24,000 will be used to help pay travel expenses of the nine county Agents, Agriculture, and to provide extension publications.

Administrative Unit: Cooperative Extension Field Operations

●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.

Administrative Unit: Center for Lake Erie Area Research

●Effect of Vegetation Roots on Slope Stability

Principal Investigator: Tien H. Wu, Civil Engineering

Sponsor: National Science Foundation

Grant No.: CEE-8113253

OSURF No.: 714358

Project Period and Budget: January 15, 1982 to January 14, 1983
\$65,282 (sponsor)
\$ 1,497 (OSU cost-sharing)

Objective: The overall objective will be to evaluate the effect of vegetation roots on slope stability. The specific objectives will be (a) development of a root characteristics model; (b) analysis of root-soil interaction in stability problems; and (c) formulation of risk assessment for slope failure.

Administrative Unit: Civil Engineering

●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.

Administrative Unit: Center for Lake Erie Area Research

●Nitrate Contamination of Subsurface Waters in an Urbanizing Area

Principal Investigator: Robert C. Steifel, Water Resources Center

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

Grant No.: 14-34-0001-2137

OSURF No.: 714435

Project Period and Budget: October 1, 1981 to March 31, 1983
\$15,000 (sponsor)
\$ 8,400 (OSU cost-sharing)

Objective: This project, to be done under the direction of Drs. Gerald Matisoff and John Hall of the Case Western Reserve University, will investigate the sources, transformations and movements of nitrogen from human activities to the groundwater in an urbanizing area in northeaster Ohio.

Administrative Unit: Water Resources Center

●Iron Speciation in Acid Mine Effluents: Chemical and Microbial Controls

Principal Investigator: Jerry M. Bigham, Agronomy

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

Grant No.: 14-34-0001-2137

OSURF No.: 714437

Project Period and Budget: October 1, 1981 to March 31, 1983
\$15,000 (sponsor)
\$15,107 (OSU cost-sharing)

Objective: The distribution and stability of iron species occurring in acid mine effluents will be determined using colorimetric and instrumental techniques. Bacterial populations will be enriched and subsequently introduced to artificial systems in order to test their influence on iron speciation. Similar studies will be conducted to determine the effects of various organic and inorganic compounds on iron speciation and precipitation.

Administrative Unit: Water Resources Center

●Phosphorus Fertility Management Demonstration Project for Defiance Area
Soils High in Available Phosphate

Principal Investigator: Ted L. Jones, Cooperative Extension Service

Sponsor: Ohio Environmental Protection Agency

Grant No.: AGM DTD 1-21-82

OSURF No.: 714476

Project Period and Budget: January 1, 1982 to December 31, 1982
\$3,850 (sponsor)

Objective: This project will seek to demonstrate that optimum crop yields can be obtained without phosphate fertilization on soils with high levels of available phosphate. This will reduce phosphorus loads to sensitive lakes such as Lake Erie where they contribute to the eutrophication problem.

Administrative Unit: Cooperative Extension Service

●Conference on Wave Propagation and Scattering

Principal Investigators: V.V Varadan and V.K. Varadan, Engineering
Mechanics

Sponsor: U.S. Army Research Office

Grant No.: DAAG-29-82-M-0174

OSURF Nos.: 714530 and 714635

Project Period and Budget: April 22, 1982 to April 21, 1983
\$10,000 (sponsor)
\$ 2,694 (OSU cost-sharing)

Objective: Distinguished scientists who have pioneered the development of new analytical/numerical techniques will be brought together with those more concerned with application of these methods to encourage a critical exchange of ideas.

Administrative Unit: Engineering Mechanics

● 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.

Administrative Unit: Center for Lake Erie Area Research

●Physiology of Buoyancy Regulation

Principal Investigator: Lewis I. Greenwald, Zoology

Sponsor: University of California-Davis

Grant No.: PCM 8202891 NSF

OSURF No.: 714609

Project Period and Budget: June 15, 1982 to November 30, 1984
\$35,340 (sponsor)
\$50,728 (OSU cost-sharing)

Objective: The research will continue and extend earlier investigations into the buoyancy regulation of chambered nautilus by examining and testing hypotheses on the cellular mechanism of chamber liquid transport by the siphuncle, the mechanism of gas evolution, the control of chamber formation and its relationship to apertural shell growth, the compensatory control of buoyancy by the nautilus, and the possibility of vertical migration.

Administrative Unit: Zoology

●Environment and Climate of the American Equator Since 18K

Principal Investigator: Paul A. Colinvaux, Zoology

Sponsor: National Science Foundation

Grant No.: DEB-8202658

OSURF No.: 714636

Project Period and Budget: July 1, 1982 to June 30, 1983
\$66,871 (sponsor)
\$ 9,934 (OSU cost-sharing)

Objective: This research will reconstruct the climate, vegetation, and environment of equatorial America since the time of the last glacial maximum from evidence in the sediments of Ecuadorian lakes.

Administrative Unit: Zoology

●Trihalomethanes in Water: An Epidemiologic Model

Principal Investigators: John R. Wilkins III, Preventive Medicine
and Nancy A. Reiches, Cancer Center

Sponsor: DHHS, PHS, NIH, National Institute of Environmental Health
Science

Grant No.: 5 R01-ES02655-02

OSURF No.: 714673

Project Period and Budget: July 1, 1982 to June 30, 1983

Objective: The purpose of this research is to develop, for use in epidemiologic studies, a method for estimating the degree of human exposure to organic chemical contaminants in drinking water. The study will, in its first phase, use routinely collected water treatment plant data to construct a predictive mathematical-statistical model of trihalomethane (THM) formation. The model will be developed to permit the estimation of THM levels in past time periods when the only available information is the routine water plant data.

Administrative Unit: Preventive Medicine

●The Vertical and Temporal Structure of Suspended Particle Distributions

Principal Investigators: K.W. Bedford, Civil Engineering; V.K. Varadan
and V.V. Varadan, Engineering Mechanics

Sponsor: Office of Naval Research

Grant No.: N00014-83-K-0003

OSURF No.: 714848

Project Period and Budget: October 1, 1982 to September 30, 1983
\$66,497 (sponsor)
\$ 1,870 (OSU cost-sharing)

Objective: Using data collected by the Woods Hole Oceanographic Institute Acoustic Backscattering System (ABSS) deployed at the HEBBLE site the objective of this research project is to delineate and parameterize the vertical structure of near-bottom suspended particles.

Administrative Unit: Civil Engineering