

CLEAR TECHNICAL REPORT NO. 267



Task Force Report on
Franz Theodore Stone Laboratory

REPORT OF THE COORDINATING COMMITTEE
CENTER FOR LAKE ERIE AREA RESEARCH
THE OHIO STATE UNIVERSITY

August 1973

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LAKE ERIE PROGRAM

PROGRAM OBJECTIVES

Lake Erie and its coastal zone constitute one of Ohio's most valuable natural resources. The Ohio State University's Lake Erie Program is devoted to the preservation, enhancement, and wise use of the lake area and its resources through innovative instruction, research, and public service. A program responsive to the ever-changing needs of our society must incorporate these three activities.

The instructional unit of the Program is the Franz Theodore Stone Laboratory located on Gibraltar Island. Courses are designed to provide students with a blend of classroom, laboratory, and field experience unavailable at an inland campus. Subject matter includes a comprehensive review of the body of knowledge pertaining to freshwater systems and specific information on the unique environmental problems of Lake Erie. Techniques employed in the study of large lakes as well as other aquatic realms are stressed.

The research unit of the Program is the Center for Lake Erie Area Research (CLEAR) which maintains laboratories in Columbus, Sandusky and Put-in-Bay. CLEAR serves the University as a focal point for action directed toward solutions of scientific and engineering problems of the lake as well as societal and economic conditions of the adjacent coastal zone. CLEAR's objective is to encourage and promote individual and multidisciplinary research on all aspects of Lake Erie and environs. The Center coordinates sponsored research in several major areas of man's concern, contemporary examples of which are: (1) food resources from the lake, (2) impact of the energy crisis, (3) coastal zone management and erosion control, and (4) pollution and eutrophication. The research phase of the Lake Erie Program is closely linked to instruction by providing students with financial support and stimulating topics for thesis, dissertation, and other individual study efforts. CLEAR also serves as an inter-university coordination center for faculty and students from other area institutions with common interests in Lake Erie studies.

Public service efforts are jointly sponsored by the instructional and research units. These services include special interest courses, conferences, seminars, workshops, publications, and advisory assistance to groups and individuals on a wide range of subjects related to Lake Erie.

ORGANIZATIONAL RECOMMENDATIONS

The teaching and research entities described above are now in existence but they are only informally linked together. The Task Force Committee recommends that the link be strengthened and that the resulting program receive official recognition. Specific recommendations on the organization of a program follow:

A. Organizational Structure

- 1) The ~~Franz~~ Theodore Stone Laboratory and the Center for Lake Erie Area Research should be administered jointly as parts of a comprehensive Lake Erie Program designed to advance the combined goals of these units.
- 2) A full-time Director should be appointed to administer both segments of the program with the assistance of an Associate Director for Instruction and an Associate Director for Research. The Associate Directors should have faculty status and receive at least a one quarter-time appointment to these positions. In addition, a full-time administrative associate should be hired to coordinate the day-to-day operations of the Program and to assist the Directors with routine administrative matters. A proposed organizational structure is presented in Figure 1.
- 3) The Lake Erie Program should continue to be administered by the College of Biological Science as a University-wide program that serves several other colleges. Because of the multi-disciplinary nature of the Program a sustaining budget should be provided through the Office of Academic Affairs and the Graduate School.
- 4) A Program Advisory Panel should be appointed to assist the Director in formulating program policy. Membership on the board should be limited to seven members including the Director and open to representatives from The Ohio State University, other Ohio universities, government agencies, and private scientific institutions. Members will serve at the pleasure of the Provost and Vice President for Academic Affairs. Because of the University-wide activities of the Program, the CLEAR Administrative and Coordinating Committees should be retained. The task force subcommittees should also be retained as standing subcommittees for continued planning of future programs.

LAKE ERIE PROGRAM

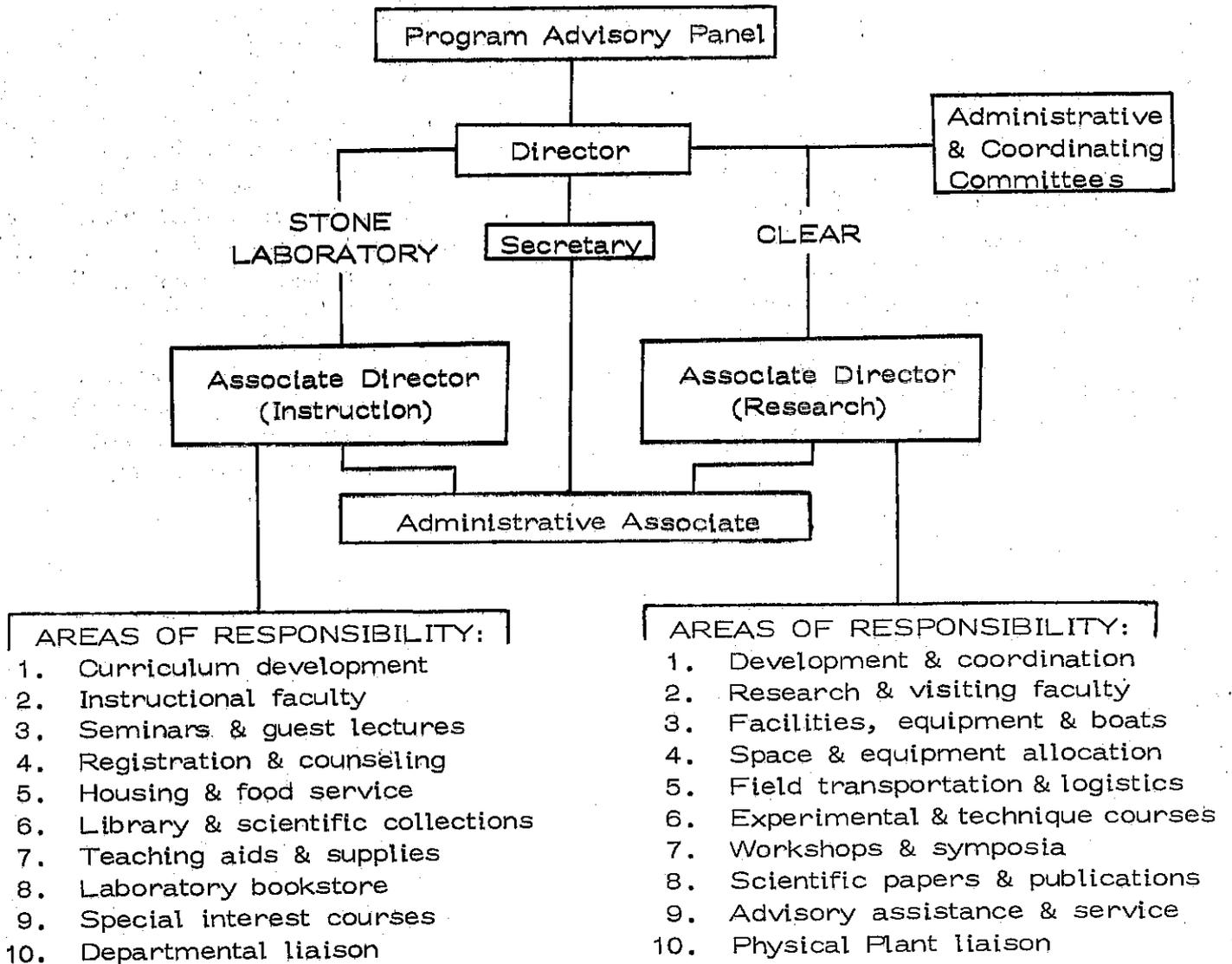


Figure 1. Organizational Structure for a Lake Erie Program

B. Relationship to other University Organizations

- 1) The Director should work closely with the Department of Physical Plant, Division of Property Management, Division of Transportation, and the Office of Residences and Dining Halls to develop enduring arrangements to provide University services for the field station consistent with those services provided on the Columbus campus.
- 2) The Director should endeavor to formulate teaching and research programs with other University organizations in areas of mutual concern. Although academic departments will supply major inputs, cooperative arrangements should be pursued with, but not limited to, Ohio Biological Survey, Water Resources Center, Atmospheric Sciences Program, Research Foundation, Engineering Experiment Station, School of Natural Resources, Cooperative Fisheries Unit, Institute of Polar Studies, Nuclear Reactor Laboratory and the Division of Continuing Education.

CURRICULUM RECOMMENDATIONS

The Curriculum Subcommittee considered the merits of a teaching program at Stone Laboratory and the types of courses which most effectively could be offered at this facility. The Subcommittee has also formulated alternative plans for a 1974 summer curriculum as well as a set of criteria for future course planning. Specific recommendations follow:

A. Curriculum Development for Stone Laboratory

- 1) Courses offered at Stone Laboratory should be the ones that can be best taught at an aquatic field station, rather than some other locale.
- 2) Courses offered at Stone Laboratory should have a direct relationship to aquatic systems, as exemplified by Lake Erie and its environs.
- 3) The total academic program at Stone Laboratory should be interdisciplinary, or at least multi-disciplinary.
- 4) There is a distinct need for "principles" courses that serve students from academic disciplines other than those of the academic unit offering the course. However, all students should be able to both communicate their knowledge about specific organisms encountered in a particular ecosystem, and handle quantitative problems. As an example, engineering students interested in environmental impact of industrial operations should be able to learn about communities of organisms. Conversely, biology students should be able to learn about heat generation, loss, and transfer within a system.
- 5) Where appropriate, an interdisciplinary or multi-disciplinary "team" approach should be developed in instructional activities.
- 6) There should also be a strong blend of research activities and formalized instruction at the Laboratory.
- 7) The academic term at the Laboratory should be extended so that existing facilities may be utilized a

greater number of days per year. For example, two-week mini-courses could be developed. Or three terms, instead of two, might be organized.

B. Stone Laboratory Facilities

- 1) The consensus of Task Group members with instructional experience at Stone Laboratory is that the teaching facilities are competitive with other "leadership" inland field stations. Over the years, the facilities have been improved through property acquisition and renovation. However, further facility improvement activities would be welcome whenever available.
- 2) The boats available for instructional activities are adequate, but not for advanced research.
- 3) The equipment inventory should be augmented.
- 4) The facilities capacity should not be increased beyond about 100 persons. This limitation is typical for semi-isolated field stations and is dictated to some extent by a consideration of group dynamics.
- 5) No operational changes should take place at Stone Laboratory until a decision has been reached regarding the long-term instructional program.

C. Inter-Institutional Scholastic Credit

- 1) Students have, for some time, taken courses at Stone Laboratory and, through transfer of credits, fulfilled the curricular requirements of their home institutions. For the immediate future, this practice should be continued.
- 2) For the long-term situation, consideration should be given to a system such as that now existing between Ashland College and The Ohio State University, or the one between Kent State University and The Ohio State University. This long-term suggestion is in agreement with a similar idea presented at the October 7-8, 1971, Conference sponsored by the Regents Inter-University Committee on Environmental Quality.

- 3) If a true consortium of institutions is ever developed, a single curriculum for all students from member institutions should be developed as recommended by the Inter-University Participation Task Group.

D. Summer Curriculum - 1974

- 1) If there is to be a continuing instructional program at Stone Laboratory, it is imperative that formal courses be presented as an interim curriculum, during Summer, 1974.
- 2) Because of administrative delays associated with initiating new courses, or modifying existing courses (including changing course numbers, titles, or Bulletin descriptions), an interim curriculum must be formulated primarily from existing courses.
- 3) Because of uncertainties regarding logistic support and faculty availability during Summer, 1974, two alternative, interim curricula are recommended (Figure 2). The final decision on which of the two should be implemented must be an administrative decision. It is understood that modifications to either one may be necessary.

Curriculum "A" was formulated with the assumption that approximately 45 students would be enrolled in formal courses. Curriculum "B" was formulated with the assumption that only 30 students would be enrolled in formal courses. For both curricula, the further assumption was made that approximately 15 additional students would be enrolled in either Individual Studies or Thesis Research.

E. Experimental Instructional Efforts

- 1) There is a need for additional course listings from departments other than Botany and Zoology.
- 2) There is a need for multidisciplinary courses, perhaps involving a team-teaching effort. One mechanism would be the presentation of mini-courses before or after the summer academic program.
- 3) The Stone Laboratory should be utilized before or

CURRICULUM "A"

M, W, F

Tu, Th, S

First Term

Zoology 612 - Invertebrate Zoology
(Freshwater)
Zoology 621 - Ichthyology
Zoology 855 - Environmental Radiation
(in Aquatic Systems)

Botany 611 - High Aquatic Plants
Zoology 652 - Limnology (Biological)
Zoology 653 - Fish Ecology
Biochemistry 694 - Chemical Limnology

Second Term

Botany 632 - Physiology of Aquatic Plants
Entomology 612 - Aquatic Entomology
Microbiology 639 - Aquatic Microbiology

Botany 644 - Algae
Zoology 611 - Animal Parasitology
(Freshwater)
Zoology 654 - Ecological Physiology
of Aquatic Animals
Biophysics 694 - Physical Limnology

CURRICULUM "B"

M, W, F

Tu, Th, S

First Term

Botany 611 - Higher Aquatic Plants
Zoology 612 - Invertebrate Zoology
(Freshwater)

Zoology 652 - Limnology (Biological)
Zoology 653 - Fish Ecology

Second Term

Entomology 612 - Aquatic Entomology
Microbiology 639 - Aquatic Microbiology

Botany 644 - Algae
Zoology 654 - Ecological Physiology
of Aquatic Animals

Figure 2. Proposed Summer Curriculum for 1974

after the summer academic program for conferences or short courses related to aquatic systems.

- 4) Consideration should be given to utilization of the facilities at times other than the summer academic program, as an outdoor school by secondary school science classes.

F. Future Activities

- 1) If the instructional program at Stone Laboratory is to be continued, a standing curriculum committee will be necessary.
- 2) A general statement of purpose must be formulated as a standard with which proposed curricular activities can be compared.
- 3) Specific responsibilities and authorities of a standing curriculum committee must be delineated.
- 4) A specific set of courses must be developed in accordance with the criteria set forth in Section A of these recommendations.
- 5) A program of resident experts in a broad spectrum of scientific disciplines should be established. Although these resident scientists would not have primary instructional responsibilities, and might be in residence at the Laboratory for only a limited period of time, they would be available to all instructors and students as a resource person for any of the courses of instruction.

RESEARCH RECOMMENDATIONS

The Research Subcommittee reviewed the advisability of maintaining a field station on a large freshwater lake for the conduct of scientific investigation. The Subcommittee also examined the future expansion of research efforts on South Bass Island and the necessity of a mainland facility for advanced projects. Specific recommendations follow:

A. Recommendations for a Lake Erie Research Program

- 1) Stone Laboratory should be maintained as a research and teaching field station.
- 2) The laboratory complex should be expanded to include facilities on the mainland, as well as on other islands.
- 3) Island facilities should be modernized as a multi-disciplinary field station while mainland facilities should be made available for more convenient year-round access.
- 4) In addition to field biology support laboratory facilities, improved facilities, particularly on the mainland should be amenable to modern instrumentation in all scientific disciplines directly related to lake research. Computer access is necessary.
- 5) The available complement of research and teaching watercraft should be maintained and expanded, with at least one research boat with full navigational equipment capable of housing modern instrumentation.
- 6) The research facilities should remain an integral part of teaching programs, available to both formal lecture-laboratory courses, and to individual graduate student research.
- 7) In-service training of biologists and engineers should be made an integral part of the research/teaching program.
- 8) Research programs of both a basic and applied nature should be encouraged, and programs responsive to State needs should be encouraged.

- 9) Resident scientist facilities should be maintained and improved.
- 10) All facilities should be modified and expanded to form a basis for biological, chemical, physical, and social science participation. The full range of appropriate disciplines within Ohio universities should be encouraged to participate.
- 11) All programs should fall under a central management structure to insure compatibility of the research efforts with training programs. Publication of Stone Laboratory research results should be encouraged and both public and private user agencies in Ohio should be kept current on Laboratory activities.

B. Justification for an Island Facility

- 1) The lake is a major state resource, and much lake oriented research/training can be done only on-site (this applies to the mainland as well).
- 2) The relative seclusion of the current laboratory is a positive asset for both research and training.
- 3) The location of the islands is advantageous to open water sampling in both the central and western basins, and is in the main current flow between the two basins.
- 4) The islands are advantageously located for centralized telemetry.
- 5) The islands are more representative of lake weather conditions than are mainland locations.

C. Justification for Expansion to a Mainland Facility

- 1) Year-round logistic support and easy access.
- 2) Preferred location for research equipment of a sensitive or complex nature.

FACILITIES RECOMMENDATIONS

The Facilities Subcommittee reviewed the existing facilities at Stone Laboratory and considered how they might best be utilized. The Subcommittee also analyzed the need for additional laboratories in the Lake Erie area and programs that could best be developed at each facility (Figure 3). Specific recommendations follow:

A. Facilities Maintenance and Development

- 1) Stone Laboratory facilities are most important, particularly for teaching purposes. Classroom and housing facilities should be significantly improved. Laboratory facilities should also be improved and made adequate for teaching purposes and limited research - i.e. research that is best undertaken on the Islands. Ohio State University should continue to maintain the facilities during the coming year. No major renovation of the facilities is proposed for the coming year, but the buildings should receive roof repair and at least a new coat of paint, particularly the exteriors.
- 2) A mainland-based research facility is strongly recommended. Such a facility should be located near a deep-water harbor along the lake at, for example, Sandusky. This research facility should be of sufficient size and sophistication to permit research in a variety of disciplines on a year-round basis. This facility should be designed and constructed specifically for planned Lake Erie research needs. Instruction in marine aspects of engineering and physical sciences should be considered at this facility.
- 3) Kelleys Island facilities should be considered for possible integration into research and particularly teaching functions. Expansion of a lake-oriented curriculum in the earth and social sciences should be considered for a facility on Kelleys Island.

B. Future Planning

- 1) The Facilities Subcommittee should continue its work in the areas of defining both priorities and the mission of the field station. More realistic and detailed planning could then be accomplished.

- 2) The Subcommittee should endeavor to integrate the nature of long-term financing and administrative control into the plan for future expansion and development of facilities.

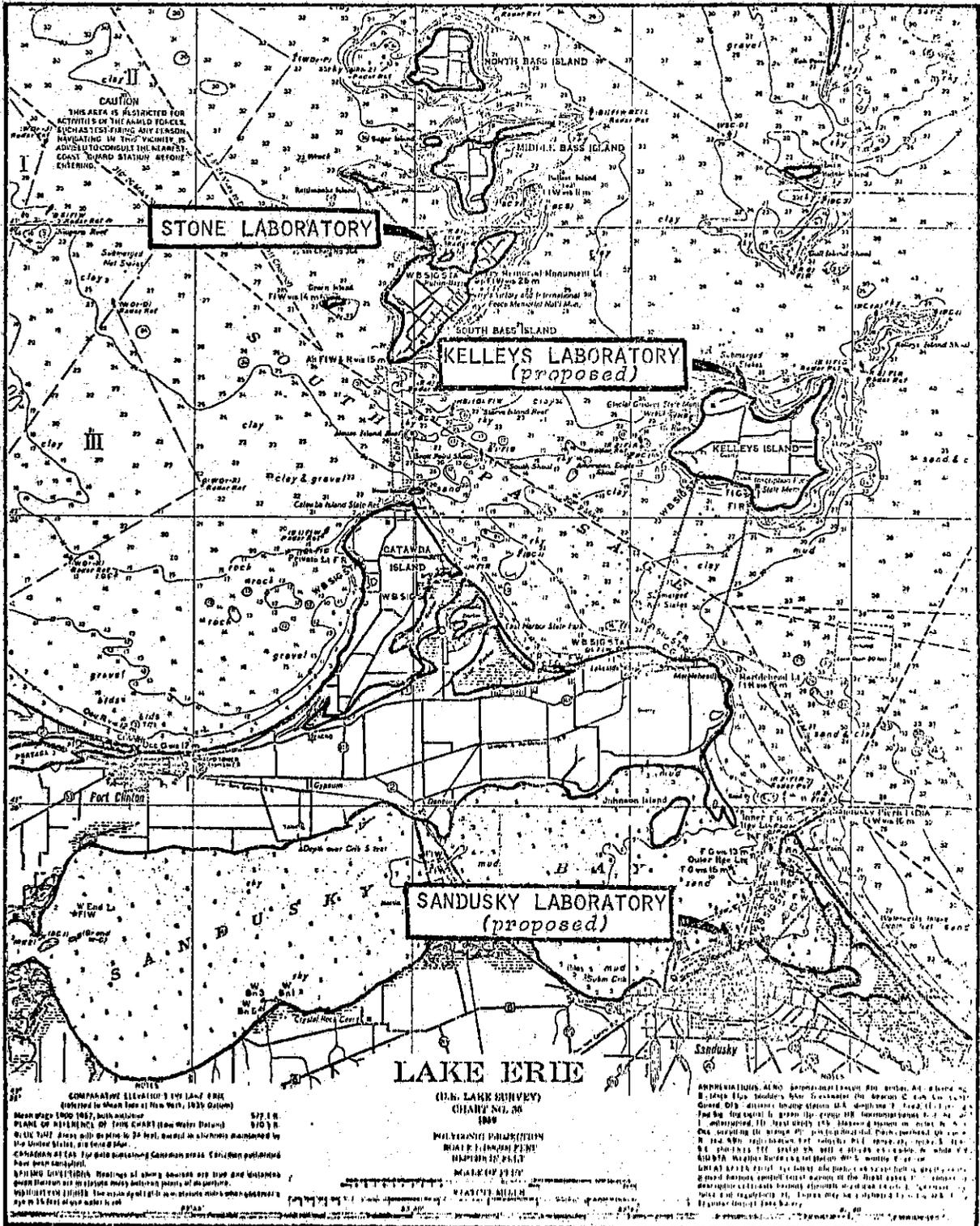


Figure 3. Proposed Lake Erie Laboratory System

FINANCE RECOMMENDATIONS

The Finance Subcommittee explored the probabilities of obtaining financing for the Franz Theodore Stone Laboratory on a short term and long term basis. The findings and recommendations follow:

A. Consortium of Colleges and Universities to Support Stone Laboratory

- 1) The short term prospects of operating a consortium with members contributing teaching talent or direct payments are not attractive to potential members of a consortium. With one exception (Bowling Green State University) most members representing other universities did not feel that the short term benefits of operating Stone Laboratory on a summer basis or an extended session justified participation by their institutions. Most members felt that the Ohio Board of Regents should issue a statement encouraging a consortium arrangement for the operation of Stone Laboratory before even approaching their administrators with a proposal. Funding from private foundations is unlikely in the near future.
- 2) The long term advantages of a consortium operating CLEAR and Stone Laboratory were apparent to the Subcommittee. A generalized model (Figure 4) shows some of the benefits that might be incorporated into a consortium. Field stations of members might be included in this arrangement. Obviously, a great deal of time and effort among university administrators and concerned faculty members will be necessary to create a consortium funded by the Ohio Board of Regents and the Ohio Legislature.

B. Financial Considerations for a Consortium

- 1) Each university must decide what experiences best prepare students to meet the challenges of modern biology. Since biology encompasses such a vast field many small universities and some large university have found it necessary to cover only a portion of the field of biology in detail. Laboratories offering field courses are expensive, administratively cumbersome and often unused much of the year. For these reasons and a variety of others many field biology

laboratories are coming under increased financial pressures. These pressures will increase with the result that only a few stations with a long waiting list of well-qualified students will be operating in the near future. For the near future the Stone Laboratory must be operated by The Ohio State University. Costs may need to be reduced but in reality The Ohio State University will have to develop a program dealing with a variety of courses in the aquatic sciences that is compatible to other university programs in the state. Costs may be reduced by (1) increasing short courses for professional scientists for university credit in the spring and fall, (2) curriculum revision, (3) development of Interdisciplinarian research efforts occupying rented space throughout the year, (4) increased use of (teaching) faculty members on 12-month appointments.

- 2) Ultimately, a consortium operating CLEAR and Stone Laboratory will be a necessity. It was such a necessity that started the consortium which became the present day Stone Laboratory. The ability of The Ohio State University to continue the financial burden until a consortium can be formed must be decided by the administration of The Ohio State University.

C. Proposed Financial Support for a Field Studies Complex

- 1) The immediate funding for any program of teaching at the Franz Theodore Stone Laboratory or other facilities to supplement this effort apparently must come from a group of colleges and universities interested in giving scientists an opportunity to study aquatic problems at their source. A commitment in the form of a distinguished teacher instructing for a summer or a financial commitment equal to the salary of such a teacher appears the best way to develop an interest group without the risk of overcommitting small colleges or universities (Figure 4). There would probably have to be an incubation period to allow this type of assemblage to work out personnel arrangements, identify problem areas and integrate the advantages of such a facility into a members teaching program.
- 2) If the combined efforts of the consortium are advantageous to member organizations after two years, the consortium

should ask the Board of Regents and Ohio Legislature for funding for remodeling, repairs, maintenance and upkeep of the natural areas and field study sites of the all member schools. This would mean that field facilities would be shared. Students at any member institution could carry out research or take field courses at any member organization and that the entire field study-research program would be integrated under CLEAR. Admittedly, this is a somewhat larger effort than is needed for Lake Erie, but it places the vitally needed research areas necessary for comparative ecological studies into a unified effort. Teaching programs, research programs and interdisciplinary studies must be worked out but the long-term advantages for funding from all sources appear probable under this plan. Educational fellowships (at least ten) should be available for students needing specialized courses of study (Figure 4).

- 3) The funding for research is likely to be diverse but a constant input of state money is necessary to maintain the quality of the program and provide a base of support. A few fellowships should be available to senior investigators from member institutions working on problems related to Lake Erie. The investigator may teach during the summer and perform research throughout the year at the same salary level he receives for his duties at the place of employment. Awards should be for no more than one year. After the year of study his research should be presented at seminars at each member institution. Publications resulting from any research of a biological nature funded by CLEAR should be submitted to the Ohio Biological Survey (Figure 4). The Survey should be allowed first publication rights and publication should be paid for from the consortiums appropriated budget. Investigators could publish in other journals with approval from the Biological Survey.

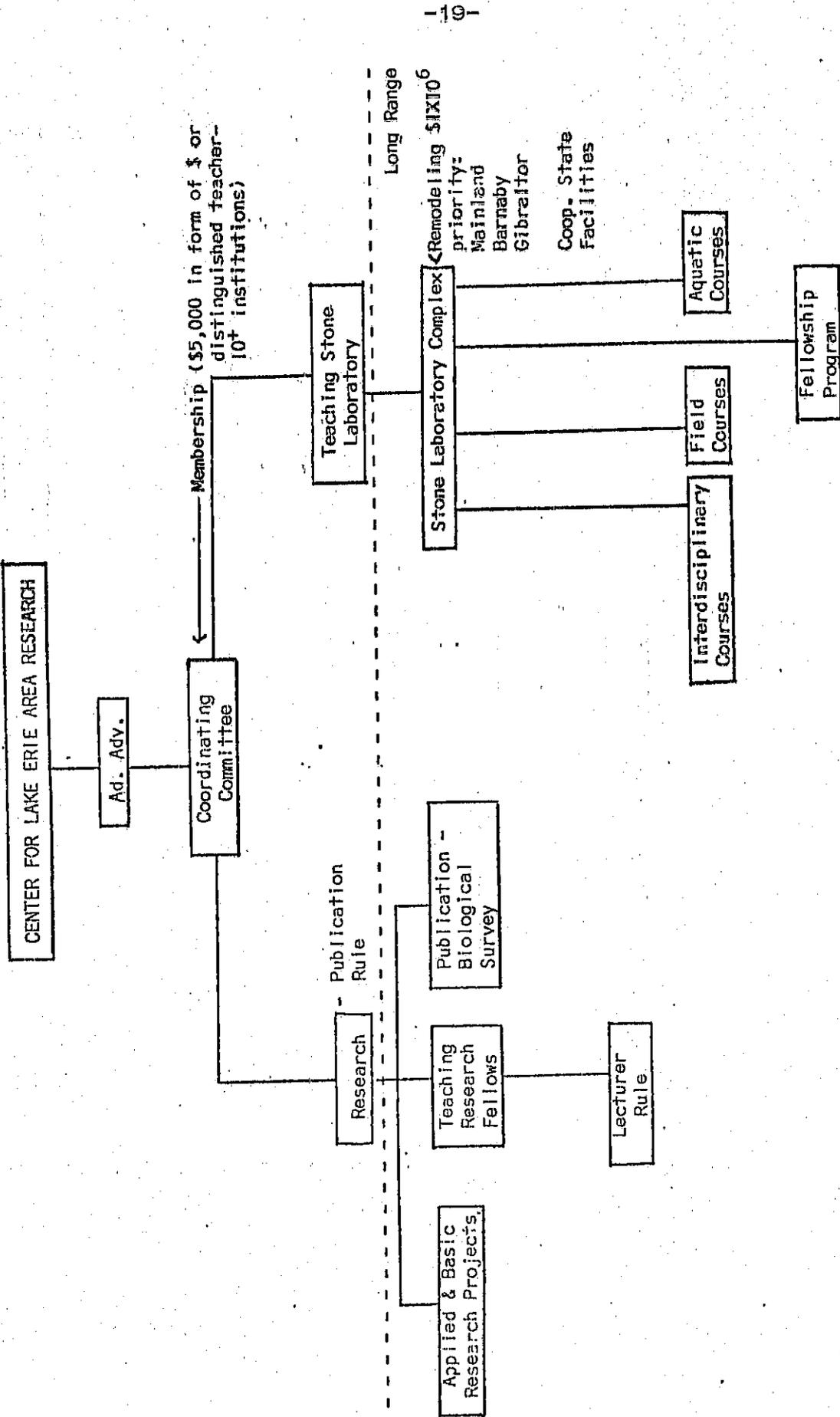


Figure 4. Generalized Model for a Field Station Consortium

INTER-UNIVERSITY RECOMMENDATIONS

The Inter-University Participation Subcommittee considered the establishment of an inter-university consortium and both the academic and research aspect of a Lake Erie Program. Particular attention was given to potential support from the Ohio Board of Regents, Ohio Legislature, and government agencies. Specific recommendations follow:

A. Inter-University Consortium

- 1) One representative from each member institution should have a seat on the governing board.
- 2) Separate directors should be appointed for the research and academic programs.
- 3) The Consortium should be responsible to the Ohio Board of Regents with funding coming directly from that body in addition to the basic FTE standards.
- 4) A contract should be given to one of the member institutions, for example The Ohio State University, for management and maintenance of the facilities.

B. Academic and Research Programs

- 1) The present number of students should be maintained at the Stone Laboratory. The time period should extend into the spring and fall. Facilities and equipment should be upgraded to meet on-campus standards.
- 2) Courses should be cross-listed by all member institutions of the Consortium. Uniform student fees should be charged by all member institutions. Faculty salaries should be paid by the Consortium. Individual, and not necessarily uniform, agreement with each institution or partial rebate of fees to universities providing instructors are alternative, but not as satisfactory as the above recommendations.
- 3) Research programs should have a direct relationship to the teaching program. Research should be continued on South Bass Island which can best be conducted at such a locale and which results in student involvement.

- 4) Sophisticated research programs should be headquartered at a mainland facility on Lake Erie. New major expansion should be focused at such a facility.

C. Opportunities for Support

- 1) The consortium concept should be developed as soon as possible and with the involvement of all interested institutions in order to demonstrate to the Board of Regents and the Legislature a real concern on the part of the academic community to keep the Stone Laboratory operating as a viable program.
- 2) Consideration should be given to the academic offerings relative to the market (i.e., programs responsive to the needs of state agencies). Contacts should be made with these agencies to determine the level of concern, interest and support.
- 3) Consideration should be given to federal funding possibilities, especially for research facilities.

APPENDIX

CENTER FOR LAKE ERIE AREA RESEARCH

COORDINATING AND ADMINISTRATIVE COMMITTEES

COORDINATING COMMITTEE:

Charles E. Herdendorf, Chm. - CLEAR, Zoology - Ohio State University

CURRICULUM SUBCOMMITTEE:

Walter E. Carey, Chm. - Nuclear Reactor Lab, Zoology - OSU

N. Wilson Britt - Entomology - Ohio State University

John L. Crites - Zoology - Ohio State University

Jane L. Forsyth - Geology - Bowling Green State University

Paul Olynyk - Chemistry - Cleveland State University

William D. Ploughe - Physics - Ohio State University

Chester I. Randles - Microbiology - Ohio State University

Glenn O. Schwab - Ag. Eng. - Ohio State University

Mike Sears - Student, Natural Resources - Ohio State University

Edwin E. Smith - Chemical Eng. - Ohio State University

Clarence E. Taft - Botany - Ohio State University

RESEARCH SUBCOMMITTEE:

Ken S. Shumate, Chm. - Water Resources Ctr., Chem. Eng. - OSU

Barry Apgear - Wildlife Division - Ohio Dept. Natural Resources

Dennis Case - Research Division - Ohio Dept. Natural Resources

Gordon Clark - Ind. & Systems Eng. - Ohio State University

Thomas J. Curtin - Research Foundation - Ohio State University

Edward K. Damon - Elect. Eng. - Ohio State University

Wilbur L. Hartman - Bur. Sport Fish & Wildlife - U.S. Dept. Interior

Henry L. Hunker - Geography - Ohio State University

Melodee Kornacker - Research Section - Ohio EPA

Wayne A. Pettyjohn - Geology - Ohio State University

Robert M. Pfister - Microbiology - Ohio State University

D. Jean Sprinkle - Graduate Student, Zoology - Ohio State University

Lester J. Walters - Geology - Bowling Green State University

FACILITIES SUBCOMMITTEE:

L. James Charlesworth, Co-chm. - Geology - University of Toledo

James I. Frea, Co-chm. - Microbiology - Ohio State University

G. Dennis Cook - Limnology Lab, Biology - Kent State University

Donald Gartman - Research Division - Ohio Dept. Natural Resources

Kenneth R. Hille - Biology - Bowling Green State University

Jerry H. Hubschman - Biology - Wright State University

Mike Ross - Graduate Student, Zoology - Ohio State University

FACILITIES SUBCOMMITTEE (cont'd)

Thomas A. Seliga - Atmospheric Sciences, Elect. Eng. - OSU
David H. Stansbery - Zoology - Ohio State University
Robert C. Stiefel - Water Res. Ctr., Civil Eng. - OSU
Ronald L. Stuckey - Botany - Ohio State University
Acie C. Waldron - Entomology - Ohio State University
T. Craig Weidensaul - Plant Path, OARDC - Ohio State University
Andrew White - Biology - John Carroll University

FINANCE SUBCOMMITTEE:

Richard A. Tubb, Chm. - Fisheries Unit, Zoology - OSU
Richard J. Anderson - Ocean Systems - Battelle Memorial Institute
Jeffrey C. Burnham - Microbiology - Medical College of Ohio
Patrick R. Dugan - Microbiology - Ohio State University
Howard P. Fink - Law - Ohio State University
Richard Fisher - Biology - Bowling Green State University
Laurence C. Gerckens - Architecture - Ohio State University
Jules B. LaPidus - Graduate School, Pharm. - Ohio State University
Curt A. Levis - Elect. Eng. - Ohio State University
Loren S. Putnam - Stone Lab, Zoology - Ohio State University
Robert G. Rolan - Envir. Sciences - Cleveland State University
Robert W. Teater - Natural Resources - Ohio State University
Richard A. Tybout - Economics - Ohio State University
Warren Wistendahl - Botany - Ohio University

INTER-UNIVERSITY SUBCOMMITTEE:

William B. Jackson, Chm. - Envir. Studies Ctr. - BGSU
Norman A. Aldridge - Biology - Case Western Reserve University
Ray S. Baby - Anthropology - Ohio Historical Society
Charles C. King - Ohio Biological Survey
Donald W. Lewis - Geography - University of Toledo
Gary D. McKenzie - Geology - Ohio State University
John H. Olive - Biology - University of Akron
Tony J. Peterle - Zoology - Ohio State University
Emanuel D. Rudolph - Botany, Polar Inst., Envir. Biol. - OSU
Berlie L. Schmidt - Agronomy - Ohio State University
Edwin J. Skoch - Biology - John Carroll University
Garvin L. Von Eschen - Aero & Astro Eng. - Ohio State University

ADMINISTRATIVE COMMITTEE:

Richard H. Bohning, Chm. - Dean, Biological Sciences - OSU
Harold A. Bolz - Dean, Engineering - Ohio State University
Colin B. Bull - Dean, Mathematics and Physical Sciences - OSU
Franklin P. Kilpatrick - Dean, Social and Behavioral Sciences - OSU
James C. Kirby - Dean, Law - Ohio State University
Roy M. Kottman - Dean, Agriculture and Home Economics - OSU
Arliss L. Roaden - Dean, Graduate School - OSU