CLEAR TECHNICAL REPORT NO. 251

FRANZ THEODORE STONE LABORATORY

Ohio State University's Biological Field Station on Lake Erie

Prepared by

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COLUMBUS, OHIO

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-Ohio State University's Biological Field Station on Lake Erie

Scientists and outdoorsmen alike have long recognized the importance of the world's tenth largest freshwater lake which forms Ohio's northern border. Lake Erie is perhaps Ohio's most valuable water resource. The abundance of natural resources and scenic vistas along its shores have attracted many people in search of recreational and livelihood pursuits. The lake, its bays and estuaries are the source of a wide variety of fish for both commercial and sport fishing. Environmental deterioration of the lake ecosystem and misunderstanding of fishery management practices have placed severe stresses on many of the lake's biological resources. Over 85 years ago scientists from The Ohio State University began to see the first signs of dramatic environmental changes in Lake Erie. A few became determined to establish a laboratory on the shore of the lake where the physical and biotic characteristics of Lake Erie could be studied and experiments could be conducted in close proximity to natural habitats. It was their intent to create an institution where diverse bits of scientific knowledge could be amassed over many decades which would eventually enhance the resources of Lake Erie. Their mission was to unravel the ecological mysteries of the lake and train young scientists to carry on this challenge. They were successful!

History of the Laboratory

The biological field station of The Ohio State University has a record of continuous operation since its opening in 1895, a span which is believed to be longer than any other freshwater station in the United States. It was named the Lake Laboratory until 1929. Since that time it has been called the Franz Theodore Stone Laboratory.

The Lake Laboratory was first housed in the State Fish Hatchery at Sandusky. In 1903 it moved to a new laboratory building on Cedar Point. Fifteen years later in 1918, it moved to the State Fish Hatchery at Put-in-Bay. And in 1925 it made its final move to Gibraltar Island. During the first years on Gibraltar Laboratory needs were met by the original buildings on the island. In 1926 a building program was initiated which included the main laboratory facility, a dining hall, and two housing units - Stone Cottage and Gibraltar House. The building program was completed in 1930, fifty years ago.

Through the generosity of Julius F. Stone, Chairman of the Board of Trustees of The Ohio State University, Gibraltar Island became part of the University in 1925. In accepting the gift, the Board of Trustees changed the name of the Laboratory to the Franz Theodore Stone Laboratory in honor of his father.

Franz Theodore Stone was born in Angerburg, Prussia, January 4, 1813, and died May 22, 1862, near Devils Lake, Michigan. According to family tradition, he studied at the University of Koenigsburg in Prussia and assisted in the

researches of the University's renowned astronomer and mathematician Friedrich Wilhelm Bessel. It was probably through this association that he acquired that extensive knowledge and interest in the natural sciences which he later encouraged in his youngest son, Julius, donor of the Laboratory.

Throughout the years, the station has been a focal point for the training of hundreds of undergraduates and graduate students in aquatic biology and related sciences. Research at the Laboratory has contributed to the granting of more than 200 graduate degrees. The station has provided facilities for visiting professional biologists and other investigators whose research was best conducted in the environs of the islands of western Lake Erie. This research has been reported in more than 600 papers published in at least 75 domestic and foreign journals.

Some of the more important milestones in the history of the Laboratory are presented below:

MILESTONES IN THE HISTORY OF THE FRANZ THEODORE STONE LABORATORY

Date

1895 Professor David S. Kellicott, Chairman of the Department of Zoology and Entomology, presented a proposal to the University to establish a

field station for the study of biology at Lake Erie. University approved the project and appropriated $350 for the construction of a second floor on the State Fish Hatchery in Sandusky.

1896 Professor David S. Kellicott named the first director of the Lake Laboratory and operated the Laboratory for special studies during the summer.

1899 Professor Herbert C. Osborn named the second director upon the death of Professor Kellicott.

1900 First courses offered at the Lake Laboratory.

1903 University obtained a 50-year lease for property on Sandusky Bay at Cedar Point, erected a frame building at a cost of $3,387 and moved the Lake Laboratory to this new site.

1918 Lake Laboratory moved to upper story of State Fish Hatchery at Put-in-Bay on South Bass Island. A lot adjacent to the hatchery was purchased by the University.

1918 Professor Raymond C. Osburn named third director of the Lake Laboratory upon the retirement of Professor Osborn. Professor Frederick H. Krecker served as acting director from 1918 to 1925 and as assistant director from 1926 to 1936.

1925 Mr. Julius F. Stone, Chairman of the Board of Trustees, acquired Gibraltar Island in Put-in-Bay harbor from the Jay Cooke family and presented it to the University. In accepting the gift, the name of the laboratory was changed to the Franz Theodore Stone Laboratory in honor of Mr. Stone's father.

1926 Laboratory moved to Gibraltar Island and utilized buildings then on the island, Cooke Castle (1865) and Barney Cottage (1907). Construction program, which included a new laboratory building, dining hall and two housing units, Stone Cottage and Gibraltar House, was initiated in 1926 and completed in 1930.

1928 Contribution No. 1, "Periodic Oscillations in Lake Erie," by Dr. F. H. Krecker, of a new series of papers published by Stone Laboratory. Contributions Nos. 2 through 13 published from 1929 to 1974.

1929 Formal dedication of the Franz Theodore Stone Laboratory.

1934 President George W. Rightmire appointed an Advisory Committee to study the Laboratory and plan for future development. The committee recommended expansion of the Laboratory's activities into multi-disciplinary studies, year-round operation and appointment of a full-time director.

1936 Professor Dwight M. DeLong was named the fourth director, the first to be appointed as a full-time position. Professor Thomas H. Langlois served as assistant director from 1936 to 1938.

1938 Professor Thomas H. Langlois named the fifth director upon the resignation of Professor DeLong.

1938 Franz Theodore Stone Laboratory was established as a regular department of the University, assigned to the President's Division. Full-time faculty positions for a fisheries biologist and a limnologist were approved: Drs. Charles F. Walker and David C. Chandler were appointed.

1938 Peach Point Cottage was purchased by Mr. Julius F. Stone and donated to the Laboratory for use as faculty housing.

1939 Professor Milton B. Trautman joined the staff of the Laboratory.

1940 Federal Fish Hatchery on Peach Point, South Bass Island, was transferred to the University; facility included the main hatchery building (converted to principal research building of the Laboratory), superintendent's residence (converted to Laboratory office and library) and a shop building.

1940 Mr. Julius F. Stone donated a two-acre woodlot on Peach Point to the Laboratory.

1947 Laboratory purchased 37-foot steel research boat, the Bio-Lab.

1951 Name changed to the Franz Theodore Stone Institute of Hydrobiology.

1953 Laboratory purchased 31-foot passenger boat, the Gibraltar II.

1955 Laboratory became a program of the Natural Resources Institute, College of Agriculture and Home Economics and was renamed Franz Theodore Stone Laboratory. Year-round research programs were suspended.

1955 Professor Loren S. Putnam named the sixth director upon the resignation of Professor Langlois.

1964 Bequest of Professor Mary D. Rogick permitted the purchase of two faculty housing units, Sycamore Cottage and Rogick Cottage, on Peach Point.

1966 Administration of Stone Laboratory transferred to the new College of Biological Sciences.

1966 Jay Cooke Home (Cooke Castle) designated a Registered National Historic Landmark by U.S. Department of the Interior, National Park Service.

1967 Hydrospheric Sciences Committee recommended establishment of a research center at Lake Erie.

1970 Professor Ronald L. Stuckey served as acting director during the illness of Professor Putnam.

1970 Coast Guard Lighthouse on the south point of South Bass Island transferred to University (converted to radiobiology laboratory and faculty housing unit).

1971 Center for Lake Erie Area Research was established with facilities at Stone Laboratory.

1973 Summer instructional program suspended. President's Task Force on Stone Laboratory recommended continuation of research and instruction at the Lake Erie field station.

1973 Professor Charles E. Herdendorf named the seventh director upon the retirement of Professor Putnam.

1973 Lease agreement negotiated with the U.S. Environmental Protection Agency for the 65-foot research vessel Hydra to be docked at Stone Laboratory.

1974 Summer instructional program and year-round research staff reinstated at Stone Laboratory.

1977 Ohio Sea Grant Program established with projects at Stone Laboratory.

1980 Celebration of 50th Anniversary of Stone Laboratory on Gibraltar Island.

1981 First Meeting of the Friends of Stone Laboratory, a group of alumni and friends of the Laboratory concerned with contributing to and preserving its high academic quality.

1981 Stone Laboratory designated as a National Experimental Ecological Reserve by the Institute of Ecology, in cooperation with the National Science Foundation.

1981 Ohio General Assembly passed a capital improvements bill which provided $950,000 to upgrade research and instructional facilities at Stone Laboratory.

1982 Ohio State University Development Fund Steering Committee formally approved the formation of the "Friends of Franz Theodore Stone Laboratory."

Present Facilities and Programs at the Laboratory

Today the Laboratory complex includes 13 major buildings, six on Gibraltar Island, five on Peach Point of South Bass Island, the old lighthouse on South Point of South Bass Island and a leased laboratory building on the mainland at Port Clinton. Instructional programs are conducted primarily on Gibraltar Island (Figures 1-4). This 6-acre island, which lies in Put-in-Bay harbor, is entirely owned by the University (Figure 5). The principal structure on Gibraltar is the Franz Theodore Stone Laboratory building, a three-story structure housing eight classroom/laboratories, a 100-person capacity seminar room, offices and a bookstore. The island also includes housing and food service facilities. Up to 45 male students can be housed in "Cooke Castle," the former summer home of Jay Cooke, a Civil War financier. Barney Cottage is used as a women's dorm and can accommodate 20 students. Gibraltar House provides housing for as many as four married couples and Stone Cottage is used to house instructors, visiting scientists and laboratory guests. All meals are provided, cafeteria style, in a dining hall that can serve approximately 100 persons.

The Laboratory also has extensive facilities on South Bass Island. The primary building is the Peach Point Research Laboratory located across Fishery Bay from Gibraltar Island (Figure 6). This building was originally constructed as a federal fish hatchery, but it has been extensively modified since its acquisition by the University. It features office space, an analytical chemistry laboratory, a dark room, a thermal gradient unit for studying thermal effects on fish, holding tanks for collected aquatic

organisms, and general field research support space flexible enough to be used by a variety of projects.

Adjacent to the research laboratory is Bayview, the administration/library building for the Laboratory. Also located on South Bass Island is the year-round residence of the Laboratory Director which was formerly a Coast Guard Lighthouse station. Presently this structure also houses radiobiology and water quality laboratories. Various meteorological sensors and monitoring equipment, including those capable of detecting environmental radiation and acid rain are operated at the lighthouse. Three additional family housing units are clustered around the Peach Point Research Laboratory - Peach Point, Mary Rogick and Sycamore cottages.

Stone Laboratory operates 26 watercraft and one aircraft in support of its research and teaching programs. The largest research vessel operated by the University is the 68-foot R/V Hydra. Currently leased from U.S. Environmental Protection Agency, this vessel contains an analytical chemistry laboratory and accommodations for a crew of eight. Ship-board analytical equipment includes an auto-analyzer, a gas chromatograph, a spectrophotometer, a submersible pump, vacuum filtration units, and probe sensors for direct measurement of several physical/chemical parameters of water quality (Figure 7).

A second research vessel is the Bio-Lab, a 37-foot, diesel-powered work boat used for trawling, coring, dredging and other limnological studies. The

31-foot, diesel-powered Gibraltar II is used primarily for transporting groups of up to 20 persons. It can also be used for light field research.

A 24-foot Sisu powered by a 240-hp inboard engine, a 22-foot Boston Whaler with a 120-hp outboard engine, and a 21-foot Mako driven by twin 70-hp outboard engines are used for survey cruises requiring extensive running between sampling stations. The Sisu has sleeping accomodations for a crew of four during overnight cruises. Twenty small boats ranging from 12 to 18 feet in length, some powered by outboard motors, are also available to support the instructional and research programs.

A single engine airplane, Cherokee 140, is also stationed at the Laboratory. Extensive use is made of this aircraft for research purposes. Approximately 200 hours of flight time were recently logged by researchers making aerial reconnaissance surveys of Great Lakes coastal wetlands from Montreal, Quebec, to Duluth, Minnesota.

Since the origin of Franz Theodore Stone Laboratory in 1895, significant research has been conducted by both student and professional biologists dealing with the aquatic ecology of Lake Erie. The instructional program has been designed by the College of Biological Sciences to meet the needs of graduate and advanced undergraduate biological science majors and science teachers. A student may, by an appropriate selection of courses and preparation of a satisfactory thesis, satisfy the requirements for the M.S. degree in botany or zoology at the Laboratory. Courses of instruction are

offered here which are designed to provide students with a blend of classroom, laboratory, and field experience unavailable at an inland campus. Subject matter includes a comprehensive review of the body of knowledge pertaining to freshwater systems, particularly large lakes. To accomplish the mission of the Laboratory, the following goals have been established:

1. To provide the facilities and logistical support necessary for the effective presentation of courses designed to offer a blend of classroom, laboratory, and field experience unavailable at an inland campus.

2. To provide the facilities and logistical support required for research projects on Lake Erie and its coastal zone.

3. To promote a balanced curriculum in the aquatic and environmental sciences which utilizes the unique setting of the Laboratory.

4. To promote individual and multidisciplinary research projects which utilize the facilities and setting of the Laboratory.

5. To foster close relationships between the instructional and research programs to the mutual benefit of each activity.

6. To maintain a current library on subjects related to instructional and research topics at the Laboratory.

7. To collect environmental data in the vicinity of the Laboratory and maintain records of these observations.

8. To provide facilities for workshops, seminars, and other group meetings and field trips.

9. To serve as a public information center for information relating to Lake Erie.

10. To preserve segments of the Lake Erie shoreline in a natural state for educational and research purposes.

Summer programs at Stone Laboratory stress applied field studies in aquatic ecology and environmental biology. The curriculum features courses designed to provide upper level undergraduate and graduate students with practical field experience. Classes take advantage of the unique location of this field station on Gibraltar Island in western Lake Erie. A wide variety of natural and man-induced habitats are available for investigation in the western Lake Erie area and are easily accessible for the Laboratory. Students have the opportunity to conduct individual and group research projects at the rocky shores of the Lake Erie Islands, on the extensive spawning reefs and shoals in western Lake Erie, in the deep water environments of central Lake Erie, at the sand spits, barrier beaches and marshes along the mainland shorelines, and in diversified tributaries and freshwater estuaries of the lake.

Instruction focuses on environmental problems of the Lake Erie area. Several nuclear power plants are located within 25 miles of the Laboratory which facilitates studies on the effects of thermal and chemical plumes and radiation on aquatic ecosystems. Major spawning grounds, commercial fishing fleets, and the Ohio Division of Wildlife Fish Hatchery at Put-in-Bay afford opportunities to study fishery problems in the Lake Erie area. The shoreline of Lake Erie and its aquatic communities are being dramatically altered by the erosive effects of record-high water levels. Man's attempts to control this phenomenon are prevalent and available for examination throughout the area. Lake Erie is well-known for its pollution problems and rapid rate of eutrophication. The Laboratory is ideally situated to provide training in the investigation of these topics.

Summer studies also emphasize the importance of interfacing biological sciences with the physical, social, and engineering sciences bearing on aquatic ecosystems. To accomplish this, a Lecture Series and a Visiting Scientist Program feature specialists in allied fields such as geology, sedimentology, atmospheric sciences, water chemistry, nuclear engineering, historical ecology, and coastal zone planning and management. The visiting scientists are available for student contact at the Laboratory and through optional field trips. The objective of this activity is to promote a better understanding of the need for interdisciplinary approaches to environmental problems.

The 1982 summer program will include 14 courses offered by the departments of Botany, Entomology, Microbiology, and Zoology. Course titles will include: Community Ecology and Ecosystems, Field Entomology, Limnology, Field Botany, Ichthyology, Advanced Ornithology, Plankton, Aquatic Entomology, Fish Ecology, Aquatic Plants, Physiology and Ecology of Aquatic Microorganisms, Field Zoology, and Great Lakes Limnology.

In addition to the regular instructional program offered each summer, many workshops and group field studies are conducted at the Laboratory in the spring and fall. This year 30 such events were scheduled at Stone Laboratory and included over 500 participants. One of the most extensive projects was a "Workshop in Aquatic Biology" sponsored by the Ohio Education Association which was attended by 108 high school science teachers. High school and college science teachers are encouraged to bring groups of students to Stone Laboratory for one day or longer workshops or field studies in aquatic ecology or other subjects. Stone Lab can provide laboratories, research boats, field equipment and experienced field ecologists for such groups. For more details on the workshops, summer programs, price lists and available dates, please contact:

Office of the Director
Franz Theodore Stone Laboratory
The Ohio State University
Room 112, Biological Sciences Bldg.
Columbus, Ohio 43210

(614) 422-8949

Research Activities at the Laboratory

In 1971, a major step was taken to upgrade the University's research capabilities by establishing a new research center for lake studies. The Center for Lake Erie Area Research (CLEAR) was assigned the responsibility of coordinating interdisciplinary research and technical services on scientific, technologic, and socioeconomic problems associated with Lake Erie and its coastal zone. The Center, with facilities at Stone Laboratory and the Columbus campus, provides a single focal point within the University for unified planning, development and logistic support for Lake Erie research. CLEAR's objective is to encourage and promote individual and multidisciplinary research on all aspects of Lake Erie. The center coordinates sponsored research in several major areas of man's concern; contemporary examples follow: 1) food resources from the lake, 2) energy generation facilities and energy conservation, 3) mineral resources from the lake basin, 4) water quality, 5) coastal zone management, 6) shore erosion control, and 7) lake-related recreation. The research phase of the Lake Erie Program is closely linked to instruction by providing students with financial support and stimulating topics for thesis, dissertation, and other individual study efforts.

In the eleven-year history of CLEAR, approximately $7 million of sponsored research has been conducted by the Center. Major federal agencies which have supported Lake Erie research include: 1) U.S. Environmental Protection Agency, 2) U.S. Department of Interior-Fish and Wildlife Service, and Office of Water Resources and Technology, 3) U.S. Department of Commerce, NOAA-Office of Sea Grant, Office of Coastal Zone Management, and National

Marine Fisheries Service, 4) U.S. Army Corps of Engineers, and 5) National Aeronautical and Space Administration.

In 1977, the Center for Lake Erie Area Research received an award from the National Sea Grant Office to form a Sea Grant program in Ohio. 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. All workshops held at Stone Laboratory are coordinated by the Ohio Sea Grant Advisory Service.

Fisheries and water quality investigations have dominated the research activities at the Laboratory. The preparation of a remarkable book on Ohio fish and the long-term assessment of the chemical contamination of Lake Erie

are two examples of the research accomplishments of the Laboratory which are highlighted below.

The long-awaited second edition of Dr. Milton Trautman's Fishes of Ohio is now available from The Ohio State University Press. The new edition is over 100 pages longer than his 1957 masterpiece and contains descriptions of 166 species (six new records for the state). Dr. Trautman plans to visit Stone Laboratory again this summer to give a guest lecture on 200 years of ecological change in Lake Erie based on information presented in his book. Dr. Trautman has now embarked on an ambitious new project - The Birds of Western Lake Erie. This book is expected to be completed in two years and, like Fishes of Ohio, it will be published in cooperation with the Ohio Sea Grant Program of the Center for Lake Erie Area Research.

A 10-year assessment of nutrient (phosphorus and nitrogen) control efforts in Lake Erie has recently been completed by Laboratory researchers under USEPA sponsorship. The objective of the study was to determine recent trends in lake eutrophication and water quality which may be related to recent attempts to control nutrient loadings to these basins. Over 25 water quality, meteorological and biological parameters were determined shipboard at monthly intervals. Measurements were taken at 50 stations and at several depths in order to characterize the various strata of water in the lake and to permit volume-weighted calculation of nutrient concentrations and quantities. Data from previous limnological surveys as far back as 1928 were compared with the results of the present study to establish long-term trends, as well as recent trends since the first comprehensive survey in 1970.

The fundamental conclusion of this assessment is that during the first half of the last decade no significant decrease in the loading of nutrients to Lake Erie took place. Therefore, during this period the concentrations and quantities of nutrients within the waters of the lake have remained relatively stable. This was an encouraging sign even though no decreases were observed. The constant increases which have taken place in preceding decades have been stopped. However, an analysis of Lake Erie water quality data for the last half of the past decade indicates a general improvement in lake quality.

Concentrations of total phosphorus in the western and central basins were relatively constant during the period 1970 to 1977. In the past four years (1978-1981) significant declines in the concentrations and quantities in these basins have been observed. This improvement coincides with the approximate 800 metric-ton-per-year reduction in total phosphorus loaded by tributaries to the lake during the period 1976-1981. Transparency shows no discernable trends, but in 1980 the central basin had the highest average summer transparency during the period of record, 1973-1980. Chlorophyll a concentrations in 1980 were also the lowest average annual values on record (1970-1980) for the western and central basins. Dissolved substances, as measured by conductivity and chloride, also show a significant decline in the past 15 years.

Many of these trends are preliminary interpretations and must stand the test of further scientific scrutiny. However, the evidence is continuing to mount that Lake Erie is no longer degrading and that future improvements are eminent.

Plans for the Laboratory's Future

Late this fall, the 113th Ohio General Assembly passed the capital improvements bill (Am. Sub. H.B. 552) and Governor Rhodes signed the bill into law on December 2, 1981. The bill contains over ninety million dollars for planning, construction and renovation of buildings at OSU. Of this total, $950,000 has been allocated to upgrade the research and instructional facilities at Stone Laboratory on Gibraltar and South Bass Islands. Plans are now being prepared to undertake the following projects:

1. Renovate Stone Laboratory and the Peach Point Research Laboratory for research and teaching.
2. Remodel Cooke Castle into a conference center and office building.
3. Remodel the present Dining Hall into a library and service center.
4. Construct a new overnight lodging/dining complex with 80-person capacity on Peach Point.
5. Improve Bayview as the administrative center for the program.
6. Provide a pedestrian causeway and new power service conduit between Gibraltar Island and Peach Point along the centerline of Alligator Bar.
7. Install a new sewage treatment facility on Peach Point to service new lodging/dining building and upgrade treatment facility on Gibraltar Island.
8. Make minor improvements, primarily for safety and convenience to the existing housing units on Gibraltar and South Bass Islands.

Approximately nine months will be required for design and approval of these improvements. If everything goes well, we can expect construction to begin this fall and completion of all the projects by late 1983. The Laboratory is especially grateful for the support of Representative Fred Deering of Sandusky and Senator Paul Gillmor of Port Clinton for their support of the Lake Erie program in the General Assembly.

Franz Theodore Stone Laboratory has been selected as a member of the Experimental Ecological Reserves National Network. This Network includes 96 sites that are reserved for the research of natural areas which are distributed among the coastal, freshwater and terrestrial ecosystems of the United States. The Institute of Ecology, an organization of professional ecologists, was asked by the National Science Foundation (NSF) to identify, evaluate and designate field sites for the National Network. Selection of Stone Laboratory as a member is a recognition of the Laboratory as an outstanding representative of the Great Lakes ecosystem and as a gateway to the natural area of Lake Erie. Stone Lab's membership will give the Laboratory visibility as a research site and will make it competitive for NSF funds allocated for the study of natural areas. The Lake Erie Program is applying for NSF funds to dovetail with the money provided by the state of Ohio in its capital improvements bill. The NSF funds will be used for new equipment in the main research building at Stone Lab. The Laboratory is looking forward to 100 years of significant scientific accomplishments. The future looks bright!

Those of us who have been students at Stone Laboratory vividly remember our summer on the lake with fondness and nostalgia. Until last summer, there had not been an attempt by the Laboratory to contact former students, faculty or staff members, visiting scientists, or other friends of Stone Laboratory. The first Homecoming event was held on 1 August 1981 and all the friends with whom contact was achieved were invited. After a picnic lunch, interested persons attended a Formulation Meeting where it was decided that a formal organization was needed and some attendees volunteered to serve on the Formulation Committee. This committee has proposed a set of bylaws, recommended that the name of this organization be the "Friends of Franz Theodore Stone Laboratory of The Ohio State University," and has set forth the following purposes of the organization:

1. To promote wider understanding and use of the academic resources, research achievements, and public services of Stone Laboratory.
2. To encourage endowments and bequests, as well as gifts of money and gifts-in-kind, such as, collections, books, furniture, and other teaching materials and research equipment, and special services beyond the resources of Stone Laboratory's budget.
3. To promote closer fellowship among alumni (former students of Stone Laboratory), faculty, visiting scvientists, and other friends and to provide for closer alumni relations by keeping up-to-date records of the students of all the year classes, providing feedback for program evaluation, and highlighting the achievements of former students, faculty, researchers, and friends.

4. To aid in improving the quality of the current physical facilities and to provide Stone Laboratory with modern instructional and research equipment.
5. To give direction to future, long-range planning and to function in an advisory capacity.
6. To support the objectives of Stone Laboratory.

The "Friends" will meet again at a Second Annual Stone Laboratory Homecoming on August 7, 1982. At this time the recommendation of the Formulation Committee will be considered and vote will be taken on the formal creation of the "Friends of Stone Laboratory."

Charles E. Herdendorf, Director
Franz Theodore Stone Laboratory

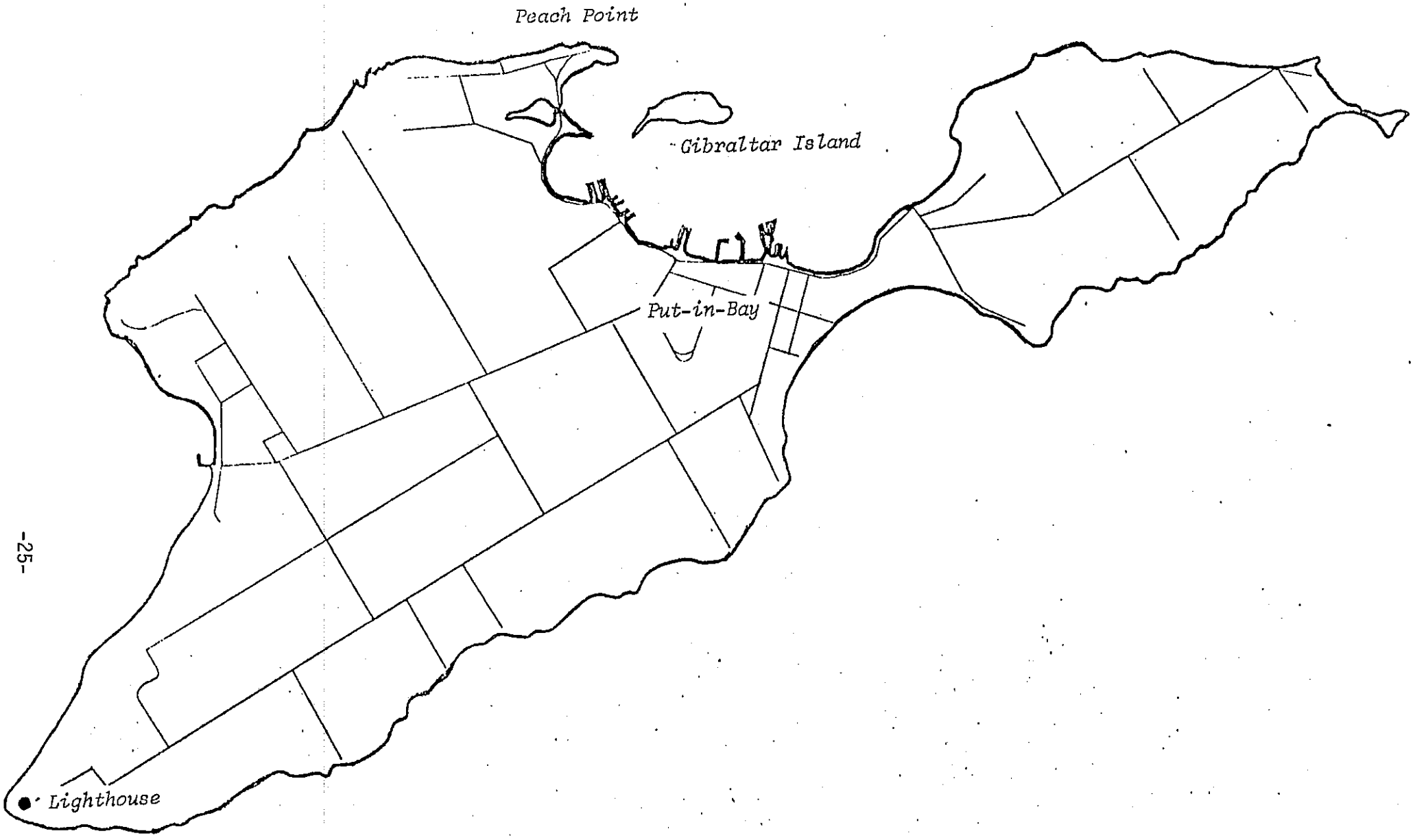


FIGURE 1

SOUTH BASS ISLAND

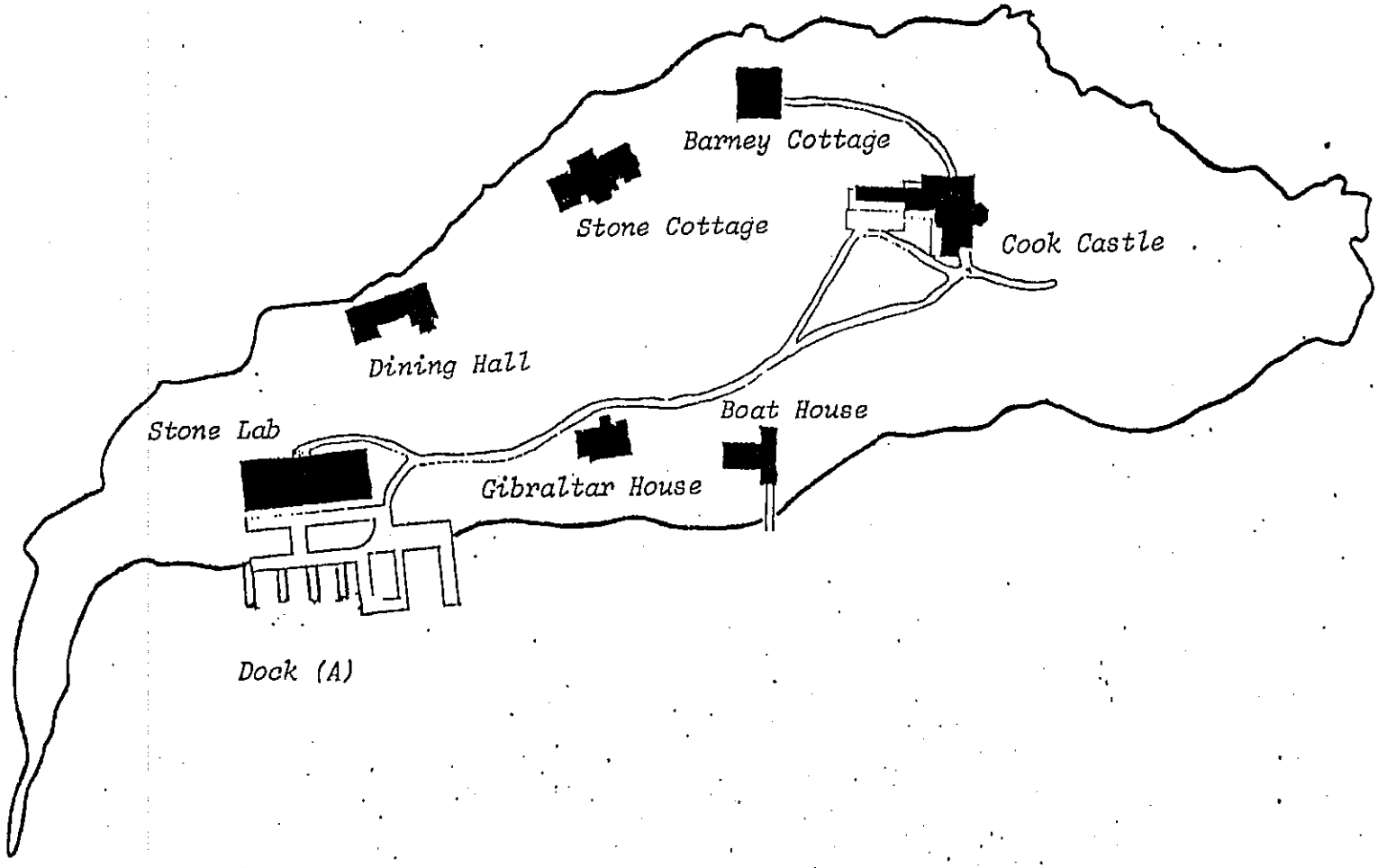


FIGURE 2

GIBRALTAR ISLAND

SCALE 1" = 150'

NORTH

0 50 100 150 300

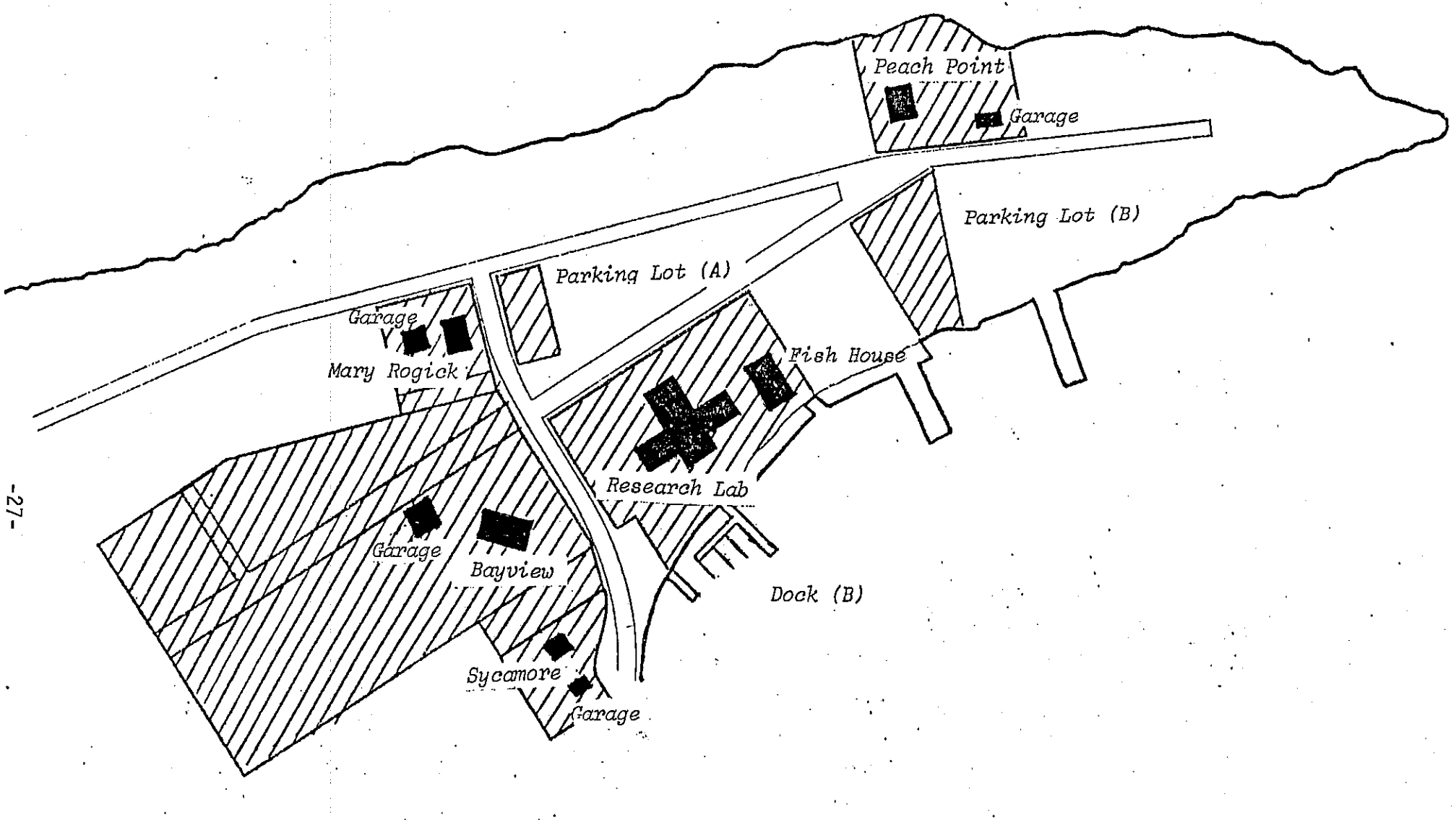


FIGURE 3

PEACH POINT, SOUTH BASS ISLAND

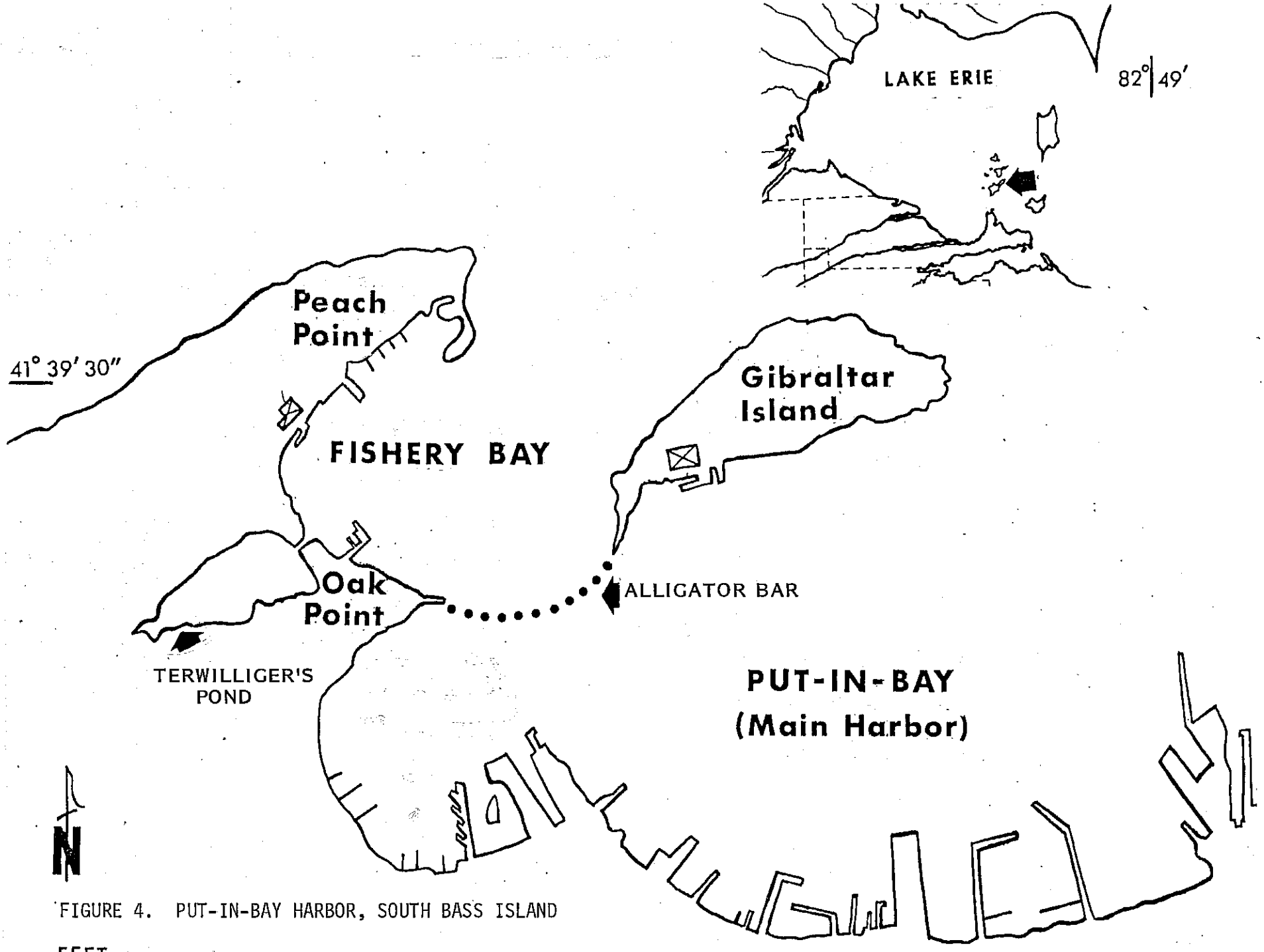


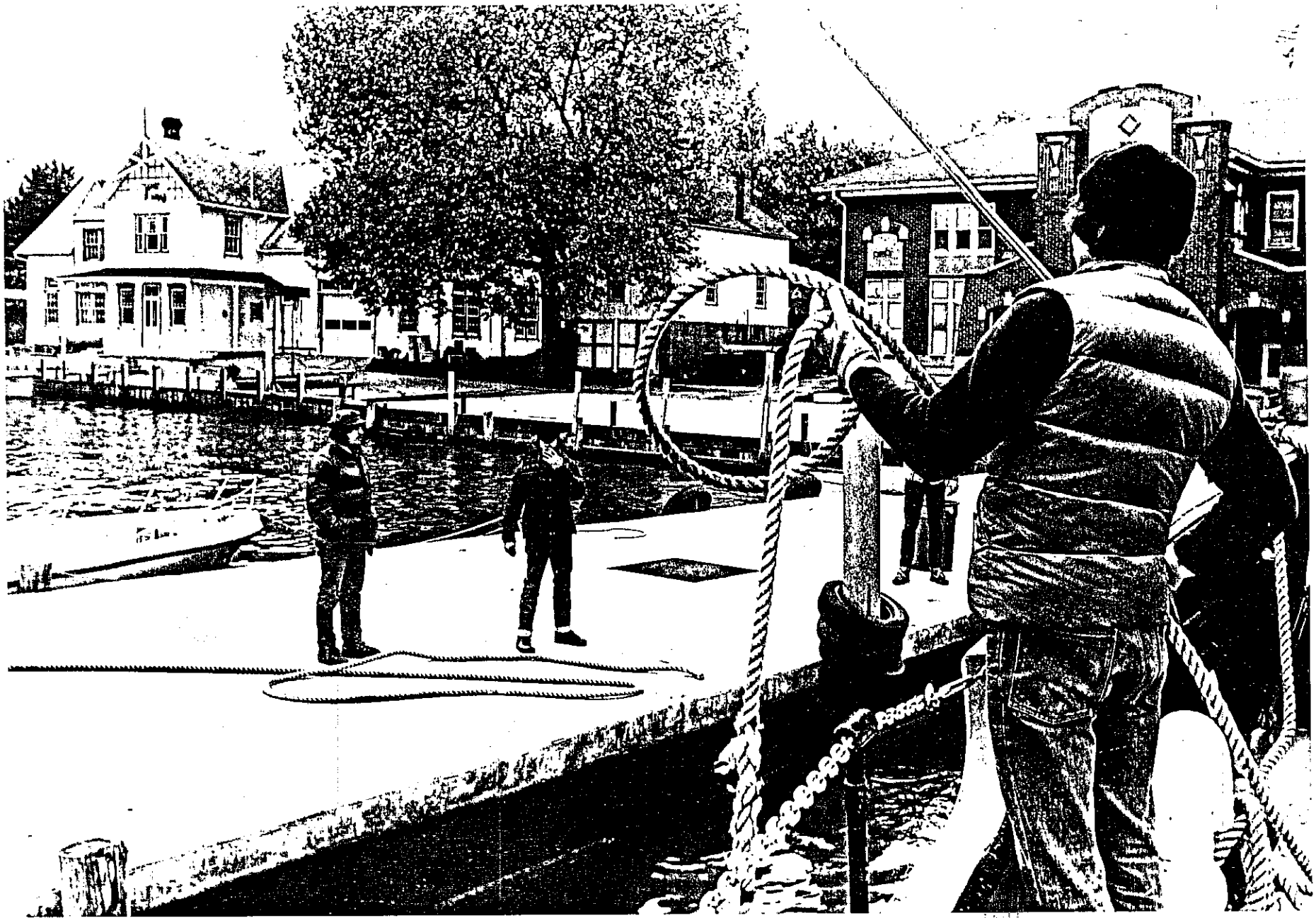
FIGURE 4. PUT-IN-BAY HARBOR, SOUTH BASS ISLAND

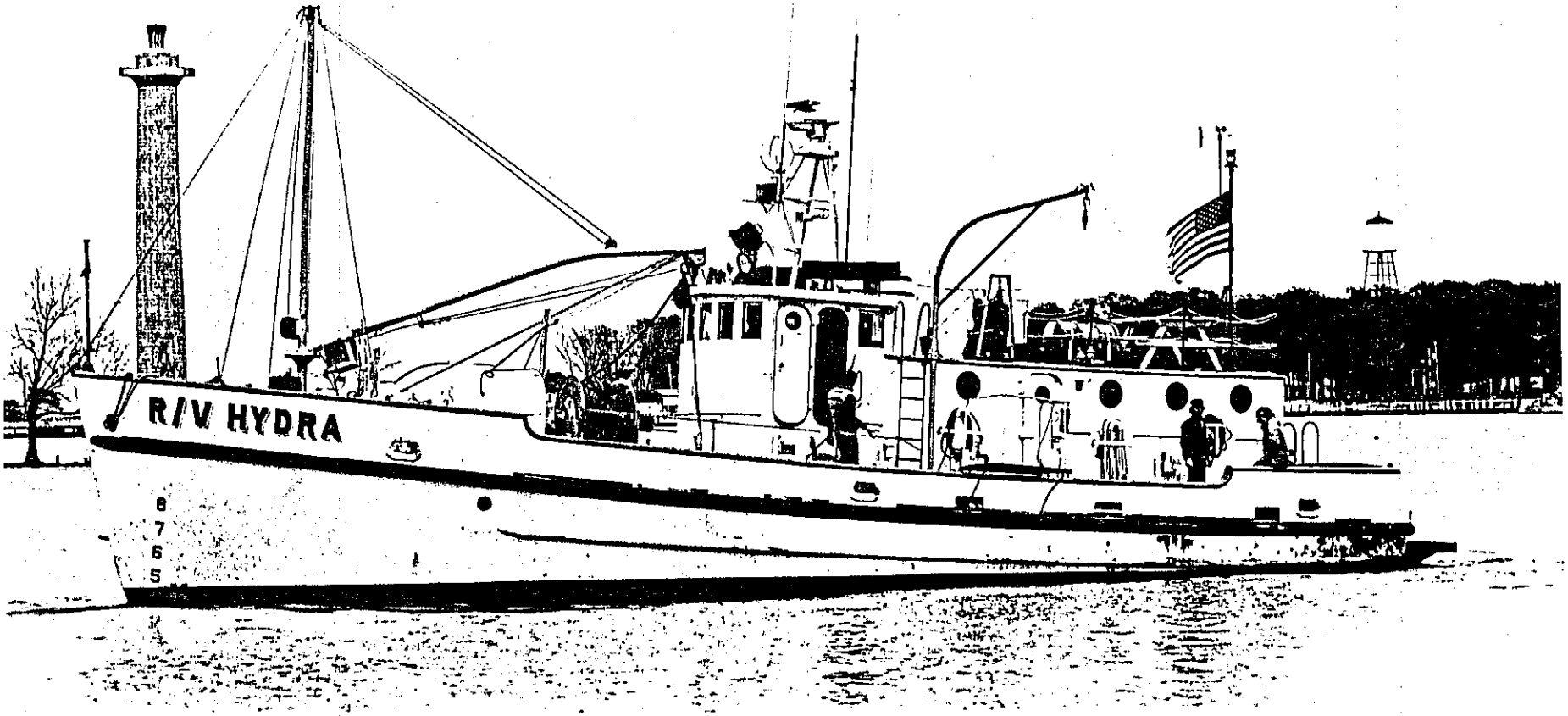
CAPTION FOR FIGURES 5, 6 AND 7

5. Aerial view of Gibraltar Island, Put-in-Bay. (Photograph taken by Scott Gilmore.)

6. Peach Point Research Laboratory (left) and State Fish Hatchery at Put-in-Bay. (Photograph provided by OSU Quest.)

7. The R/V Hydra returning from a research trip in Ohio's western Lake Erie. (Photograph provided by OSU Quest.)




R/V HYDRA