

**Organization of  
Biological Field Stations**

**Newsletter  
No. 26  
November 1978**

# OBFS NEWSLETTER

March, 1978

Number 26

## OBFS 1978 COURSE ANNOUNCEMENT

Over two thousand announcements of courses offered by twenty-five member institutions were mailed on February 2nd in the following numbers to each state: Puerto Rico (3); Massachusetts (54); Rhode Island (13); New Hampshire (14); Maine (16); Vermont (19); Connecticut (25); New Jersey (37); New York (136); Pennsylvania (125); Delaware (4); DC/Maryland (47); Maryland (54); Virginia/West Virginia (20); North Carolina (62); South Carolina (30); Georgia (52); Florida (35); Alabama (35); Tennessee (61); Mississippi (24); Kentucky (44); Ohio (82); Indiana (47); Michigan (70); Iowa (51); Wisconsin (54); Minnesota (40); South Dakota (22); North Dakota (13); Montana (17); Illinois (77); Missouri (43); Kansas (34); Nebraska (21); Louisiana (25); Arkansas (15); Oklahoma (33); Texas (72); Colorado (27); Wyoming (14); Idaho (7); Utah (26); Arizona (16); New Mexico (14); Nevada (8); California (119); Hawaii (6); Guam (1); Oregon (32); Washington (36); Alaska (7). An additional 72 were mailed to Canadian institutions. Address labels from a list of Chairmen of Biological Departments at U. S. and Canadian colleges and universities were purchased at cost from the American Institute of Biological Sciences.

There have been a number of requests from other sources for copies of the announcement. It is anticipated that the cost of the announcement, and its distribution, will be covered entirely by the subscribing members.

## OFFICERS FOR 1978

President - Dr. Edmund H. Smith, Pacific Marine Station, Dillon Beach, California

Vice President - Dr. Jennifer M. Shay, University Field Station, Winnipeg, Manitoba

Secretary-Treasurer - Dr. Richard W. Coles, Tyson Research Center, Eureka, Missouri

## DIRECTORY OF MEMBERS

The Secretary-Treasurer has compiled and published an annotated Directory to member institutions responding to his questionnaire. It is hoped that this Directory will grow, as will our membership, and serve as a useful inventory of existing facilities. Additional copies may be available from the Secretary-Treasurer.

THE WASHINGTON SCENE

It is my intention, commencing with this Newsletter, to bring to your attention and describe various federal agencies and programs whose mission may influence Biological Stations. Some of these agencies may be well known to you and I will welcome any additional information you wish to share. I will make every effort to cover parallel agencies in Canada.

NEWS RELEASE: Department of the Interior, Office of the Secretary

CITIZENS, STATES, INVITED TO SHARE IN SELECTING  
HISTORIC AND NATURAL SITES FOR PRESERVATION

The American people, through their State governments, are invited to participate in a new National Heritage Program to identify and protect historic and natural sites nationwide, Secretary of the Interior Cecil D. Andrus announced today.

As directed by President Carter in his 1977 Environmental Message, Andrus said, the new program emphasizes the individual's role in identifying heritage resources important to our development as a nation.

Andrus said the program will provide a mechanism to pull together existing Federal efforts to preserve historic and natural places, make financial and technical assistance available to the States, and to their local communities and interested groups.

"The Federal member of this partnership will be a new agency called the Heritage Conservation and Recreation Service," Andrus said. "This agency will incorporate natural and historic preservation activities now handled by the Natural Landmarks program and the Office of Archeology and Historic Preservation of the National Park Service, with the recreation responsibilities of the Bureau of Outdoor Recreation. Additionally a new emphasis will be placed on the cooperative protection of natural resources.

"I am asking the Governors of all the States to join us by participating in Heritage Programs at the State level, with heavy emphasis on voluntary public participation through conservation groups, historical societies, community and cultural organizations and local governments. Thousands of such organizations are already in existence, most of them pursuing their own objectives on a local scale," Andrus said.

Chris T. Delaporte, present director of the Bureau of Outdoor Recreation, will head the new Heritage Conservation and Recreation Service and administer the National Heritage Program as well as the recreation programs. Andrus said that there will be no lessening of recreation functions in the new agency.

The Secretary indicated that he would recommend legislation to expand the duties of the existing Advisory Council on Historic Preservation to include Federal activities affecting natural resources. This body would be renamed the Council on Heritage Conservation and would advise the President and Congress on Federal policies affecting historic and natural resources in the United States.

Andrus said that he would also recommend to the Congress the creation of a National Register of Natural Areas, similar to the existing National Register of Historic Places. The intent, Andrus said, is to provide protection for natural areas parallel to that enjoyed by properties on the Historic Register.

The emphasis of the program will be on the protection of sites and other resources important to America's heritage by means other than public acquisition.

"Through this new program," Andrus said, "we hope to identify and initiate protection for the majority of the nation's heritage resources within five years."

THE NATIONAL SCIENCE FOUNDATION has been reorganized. Basic Biological Research is within the Division of Integrated Basic Research which is within the Directorate for Applied Science and Research Applications. See attached memorandum for further details. Program managers as follows:

Deputy Division Director:	John L. Brooks	202/632-7318
Systematic Biology Program		
Director:	Jason A. Lillegraven	202/632-5846
Associate Director:	Tod F. Stuessy	202/632/5846
Population Biology Program		
Associate Director:	Donald W. Kaufman	202/632-7317
Ecology Program Director:	Robert P. McIntosh	202/632-7324
Ecosystem Studies Program		
Director:	Wayne T. Swank	202/632-5854
Associate Director:	James T. Callahan	202/632-5854
Biological Research Resources		
Program Director:	William E. Sievers	202/634/4135

#### FEDERAL COMMITTEE ON ECOLOGICAL RESERVES

This committee meets at the National Science Foundation offices, normally once a month. I have attended two meetings of this committee, and receive minutes of meetings. Dr. Paul Risser, a member of OBFS, participated in this committee up until last year, when he was on the staff of the National Science Foundation.

The following description of FCER and Research Natural Areas is taken from A Directory of Research Natural Areas on Federal Lands of the U. S. A., prepared by the Federal Committee on Ecological Reserves, published by the Forest Service, United States Department of Agriculture, in 1977. It is based upon data compiled and computerized by The Nature Conservancy, under contract with the National Science Foundation.

## PREFACE

The current status of the Research Natural Area (RNA) system, sponsored and promoted by the Federal Committee on Ecological Reserves (FCER), is presented in this Directory. This Directory expands and updates the 1968 publication "A Directory of Research Natural Areas on Federal Lands of the United States of America" and the 1972 Addendum. Given the increased attention that scientists and other interested citizens are directing toward natural areas, the information in this publication should be a valuable tool for potential research on the nation's Federal lands. Research Natural Areas represent important resources for investigations requiring natural areas unaltered by human intervention. In addition, they represent vital repositories of genetic information and invaluable components of our national natural heritage.

Since the first RNA directory was published, the Federal land-managing agencies have reevaluated their land designation programs. In some cases, they have deleted from the RNA system those areas which lacked sufficient documentation to justify establishment. In other cases, new agency perspectives have led to the establishment of new areas. The balance of these two processes has led to an increase in the number of established RNA's from the 1968 total of 336 to the present 389, and to an increase from the original total acreage of 1 million acres to approximately 4.4 million acres in 46 states and one territory. Thus, the RNA system has achieved more comprehensive coverage of the nation's natural land and water diversity.

This Directory describes Research Natural Areas on Federal lands, but a truly national system of Research Natural Areas must also involve the many public and private organizations which have set aside priceless examples of the American landscape. Many of these organizations administer natural land programs, representing testimony for the nation's desire to retain segments of its natural heritage. Communication and cooperation between these sectors and government agencies is essential for meeting the challenge to develop a strong cohesive program for preserving the nation's natural land. This interaction is also necessary to reduce the duplication of time, effort, and resource investments that can occur if communication does not take place.

The FCER welcomes suggestions to improve the directory and the system of Research Natural Areas. Communication with those organizations which administer natural areas and who wish to share information about their programs is also invited. Please address correspondence to:

Federal Committee on Ecological Reserves  
National Science Foundation  
1800 G Street, NW  
Washington, DC 20550

# SECTION I. THE FEDERAL COMMITTEE ON ECOLOGICAL RESERVES

## History and Membership

The Committee had its origins in President Johnson's "Special Message to the Congress on Conservation and Restoration of Natural Beauty" presented in the early months of 1966 (Johnson, 1965). This message contained a directive to advance "our scientific understanding of natural plant and animal communities." This stimulated the formation of a review committee within the Departments of the Interior and Agriculture to evaluate the status of natural land and water resources within the respective agency programs. Further impetus came from the imminent participation of the United States in the International Biological Program (IBP) which emphasized the analysis and conservation of ecosystems (Darnell, 1976). As a result of these events, the Federal Committee on Research Natural Areas was informally established in 1966.

The initial group of founding agencies was joined by other land administering agencies, namely, the Department of Defense, Atomic Energy Commission and the Tennessee Valley Authority. This group, with assistance from the IBP Committee on Conservation of Ecosystems, conducted a land review and transmitted the findings to the President in a report entitled Advancing Scientific Understanding of Natural Communities (Office of Science and Technology 1968). This report outlined the need for a system of reserves representing the nation's natural land and water ecosystems. It also described the need for an interagency committee to coordinate natural area programs, and reported that 336 Research Natural Areas were available for observational studies.

In 1968, the Committee published A Directory of Research Natural Areas on Federal Lands of the United States of America which summarized the characteristics of 336 Research Natural Areas within the interagency system and provided guidelines for use of the areas. From 1969 until 1974 several unsuccessful attempts were made to formally house the Committee and its endeavors. Nevertheless, during this period the Committee accomplished several important tasks: the completion of a draft for uniform Standards and Policy Guidelines for Research Natural Areas, the assistance of documentation of IBP/CE data on natural areas, and stimulation of increased activity by land administering agencies in establishing RNA's.

New interest was generated in 1974 with assistance and leadership from the National Science Foundation and the Council on Environmental Quality. In November, these two agencies fostered the charter of the Federal Committee on Ecological Reserves with the following charter members:

- Agricultural Research Service, USDA
- Bureau of Land Management, USDI
- Bureau of Outdoor Recreation, USDI
- Cooperative State Research Service, USDA
- Council on Environmental Quality

Department of Defense  
Department of Transportation  
Energy Research and Development Administration  
Environmental Protection Agency  
Fish and Wildlife Service, USDI  
Forest Service, USDA  
General Services Administration  
Geological Survey, USDI  
National Oceanic and Atmospheric Administration, USDC  
National Park Service, USDI  
National Science Foundation  
Office of Land Use and Water Planning, USDI  
Smithsonian Institution  
Soil Conservation Service, USDA

The original charter document is reprinted in Section VII of this Directory.

Since that time the Committee has continued to gain support from the Federal agencies. Except for the Office of Land Use and Water Planning which was dismantled, all of the original 19 members still participate in the Committee; the Bureau of Indian Affairs and the Tennessee Valley Authority have recently assumed membership as well.

In addition to the member agencies a number of national professional organizations have provided significant support to the Committee since its inception. Those organizations which have played prominent roles are:

American Institute of Biological Sciences  
Conservation Foundation, Inc.  
Ecological Society of America  
National Parks and Conservation Association  
Society of American Foresters  
Society of Range Management  
The Institute of Ecology  
The Nature Conservancy  
The Wilderness Society  
The Wildlife Society

State institutions, agencies, organizations and others have begun to request assistance and information from the FCER. To handle this increased activity and flow of information, the National Science Foundation has provided a temporary Executive Secretary for the Committee.

#### Purpose and Objectives

The present charge to the Committee is to exercise leadership in the development of a coherent national resource plan of natural land reserves in order to insure progress of the ecological and environmental sciences of the United States. Critical to the health of these sciences are establishment and maintenance of a network of protected field sites that represents a fully array of the nation's terrestrial, freshwater and marine ecosystems. To assure that the network is

adequate in size and quality, the FCER is taking a leadership role in developing a mechanism to coordinate Federal, state, and private preservation and research activities. Since each agency's responsibility to the natural area program under its jurisdiction remains unchanged, land management and program execution is still its domain. The Committee's purpose in this regard is to assist the agencies in fulfilling their missions.

A related purpose of the Committee is to provide an overall national focus. Not only is this focus to provide areas for research, but also to contribute to national environmental goals as stated in NEPA--namely, better land planning and improved resource management.

To carry out its charge, the Committee has focused its activities on the following objectives:

1. To insure creation and maintenance of an adequate national system of natural and experimental areas for environmental and ecological research including identification, designation, and protection of the essential areas. Included here are major responsibility for working with Federal and agencies on those system components which are Federal lands and for leadership and encouragement with regard to components in state, local and private lands.
2. To insure development of permanent data retrieval systems on the location of the areas and the ecological and environmental data available for each to service: a) the research and development community who need such areas; b) the land planning agencies at Federal, state and local levels; and c) decision makers and agencies in the environmental area.
3. To encourage development of research programs, particularly collection of baseline ecological and environmental data on these key national research sites and their use for long-term monitoring.
4. To encourage a broad array of education uses of ecological reserves, insofar as compatible with their specific objectives and functions.
5. To lead in developing the structures for coordinating Federal activities with those of State and local governments, academic groups and private organizations concerned with scientific reserves and experimental areas (Federal Register 1975).

In practice, the Committee has a special concern for Ecological Reserves which are those areas dedicated primarily or exclusively to scientific research and education on ecological and environmental problems. These reserves include Research Natural Areas, where natural processes are allowed to dominate and where management is designed to preserve a given ecosystem or feature; and Experimental Ecological Areas, where various kinds of experiments or management practices can be conducted to provide new knowledge or serve as demonstrations.



## Future Role

Although the FCER has a relatively short history in terms of its actions and influence, it has many years of preservation and management expertise upon which to draw. With the growing need for a strong national land resource plan, and with the emergence of several governmental and private efforts to create natural and experimental area systems, it has become imperative to establish an information center to interrelate these activities.

The Committee, with its broad representation and liaison opportunity, envisions a leadership role in these efforts. Without such a focused effort, considerable expenditures of time and resources may contribute to unnecessary duplication or oversight of significant programs or properties that might otherwise be avoided.

To further this ideal the Committee will continue to enhance the Research Natural Areas system in both content and knowledge of the constituent areas. Likewise, the Committee will encourage the designation of new experimental areas, emphasizing the role of such areas in evaluating the effects of management and action programs. At the same time, the Committee will proceed toward the fulfillment of other objectives listed earlier.

## SECTION II. RESEARCH NATURAL AREAS

### Purposes of the System

The Federal land management agencies have been actively developing a national system of Research Natural Areas (RNA's) since 1927. This system has grown to the current 389 areas covering 4.4 million acres in 46 states and one territory. Each area is administered by one of eight cooperating agencies: Forest Service in the Department of Agriculture; Bureau of Indian Affairs, Bureau of Land Management, Fish and Wildlife Service and National Park Service in the Department of the Interior; Air Force in the Department of Defense; Energy Research and Development Administration; and the Tennessee Valley Authority.

From the inception of the program there have been two primary purposes for developing a comprehensive and representative system of Research Natural Areas:

1. To preserve a representative array of all significant natural ecosystems and their inherent processes as baseline areas. This action provides a potential range of diversity, including common, rare, and endangered species or disjunct populations.
2. To obtain through scientific education and research, information about natural system components, inherent processes, and comparisons with representative manipulated systems.

The system provides several specific advantages to the nation's scientific community which have not usually been available, namely:

1. The potential use of an area that has had minimal human interference and has a reasonable assurance of long-term existence.
2. The potential availability of diverse or multiple data sets for analysis of factor interrelationships or temporal sequences.
3. The potential association with scientists of different disciplines leading toward scientific discoveries unlikely to occur without such association.

These values not only assist the investigator and science, but also provide the administering agencies with an information base with which to optimize their resource management decisions.

Interrelated with system preservation and the intrinsic scientific information are the numerous future options the system provides to society, especially with respect to genetic and land resource potential.

An activity such as logging, grazing, burning or restocking is prohibited unless it replaces natural processes and thus contributes to the protection and preservation of the designated feature. Such a practice is invoked only after thorough research and testing indicate that it adequately or favorably benefits the feature. In such an instance, a portion of the tract is left untreated as a control to justify the practice.

Picnicking, camping, swimming, hiking, and gathering of rocks, plants, nuts, or berries are generally discouraged, and in some cases are prohibited if serious impairment is anticipated. Hunting, fishing, and trapping of fur-bearing animals are also not encouraged, but are permitted subject to State regulation except on restricted lands such as those within National Parks.

No agency has purposely encouraged public use of RNA's through publicity or recreational development. However, some peripheral nature trails and interpretive signs have been established and more can be anticipated as these undisturbed sites become subject to increased public attention.

### Scientific Use

Scientific use of RNA's by responsible scientists and educators is encouraged, providing their activities will not impair or threaten the features of the area. The limitations on use vary with the particular tract, its features, and the managing agency's regulations. An agency may place increased restrictions on some areas or portions of areas that it deems fragile or hazardous.

Research activities must be essentially non-destructive in character. Felling of trees and tree ring analyses, manipulative studies requiring extensive community floor modification, and extensive soil excavation are generally not allowed. Collection of plant and animal specimens should be restricted to the minimum necessary for providing vouchers and other research needs. In no case should specimens be collected to a degree that significantly reduces species population levels. The collection should be carried out in accordance with applicable Federal and State agency regulations and the specimens should be deposited in some public holding institution.

Within these guidelines, the appropriate uses of RNA's are determined on a case-by-case basis by the administering agency. After choosing a particular RNA to study, the scientific user should contact the area manager listed in the specific RNA Abstract of this Directory for more specific use information.

Scientists wishing to use an RNA must assume the following general obligations. These may vary, however, depending upon the administering agency.

1. Obtain permission from the appropriate administering agency before using the area;

## Recommendation, Selection, and Establishment

The Research Natural Area designation is used by the Federal land administering agencies to establish areas on which natural features and processes are preserved with minimal human intervention for research and educational purposes. This designation differs from other classifications such as wilderness sanctuary, refuge, or preserve, in that the latter designations often have broader use-management objectives than the preservation/scientific applications of the RNA system.

As initially conceived by the system founders, an RNA should contain an exemplary tract of vegetation along with its major supporting factors. In recent years, however, the range of features designated has expanded to include: typical or unusual floristic and/or faunistic assemblages, characteristic or unusual geologic, pedologic, or aquatic features; or characteristic or unusual processes. At the time of designation, significant effort is expended to assure that adequate conditions are provided to insure longevity of the feature. Presently, a designated area may range in size from a few to several thousand acres and may possess one or more features of interest.

A point which should be documented is that the Research Natural Area system receives no special legislative protection. The additional protection afforded the areas is derived only from the individual agencies which designate them.

Each participating agency has a different procedure leading to the designation of an RNA. In general, the on-site staff inventories the land resources to identify potential sites. Each area recommended by the inventory is documented by an agency-provided establishment report which details the features and proposed management plan. Upon administrative approval, the site becomes an agency-recognized RNA. In some agencies, the establishment process includes a detailed withdrawal procedure; this administrative recognition is the strongest action available to insure the protection and management of the RNA.

Should a particular feature be identified that has not received designation, documentation supporting the feature may be submitted to the area manager as a recommendation for review and consideration. Proposing new sites for designation can encourage growth of the national system and also precipitate review of the existing RNA's.

## Management and General Use

All agencies employ a similar set of regulations to insure the protection of the educational and scientific values in their management and use. The Committee has developed a set of standard and policy guidelines (see Section VII) to provide greater uniformity in system definitions, objectives, classification, selection, use, management and administrative policies. The underlying emphasis in RNA management is on preserving and protecting the features of each area by controlling any disruptive use, encroachment, and development.

FEDERAL COMMITTEE ON ECOLOGICAL RESERVES

MINUTES

The FCER with an attendance of 9, met on January 25, 1978 at 1:30 p.m. in Room 338, National Science Foundation, 1800 G Street, N.W., Washington, D.C. The agenda included a variety of topics and extensive discussion that are summarized as follows:

AGENDA ITEMS:

1. Status of the National Heritage Program was reviewed. Keith Shone, BOR (now Heritage Conservation and Recreation Service), and Del Price, BLM, provided updated information on the Program. A news release (see attachment) by Secretary of the Interior Cecil Andrus that outlines action to be taken on the Heritage Program was discussed.
2. The second conference on Long-Term Ecological Measurements to be held February 6 - 10 at Woods Hole, Massachusetts was announced by Wayne Swank. The report of the first conference held in 1977 is available from William Sievers, Biological Research Resources Program, NSF. The objectives of this second conference include the following details:
  - a. Selection of sites
  - b. Storage and retrieval of the data
  - c. Integration of activities among pilot sites
  - d. Standardization and calibration of measurements
  - e. Manpower requirements and availability
  - f. Coordination with Federal agencies involved in data acquisition

Proceedings and recommendations will be discussed at FCER when this second report becomes available.

3. Dr. Swank highlighted the final report submitted by the Nature Conservancy to NSF on the project "Creation of a data bank on established scientific ecological reserves." Copies will be distributed to the membership and recommendations contained in the report will be discussed at the next FCER meeting.
4. Paige Grant, MAB Directorate, provided an overview of progress on Project 8, "Conservation of Natural Areas and of the Genetic Material They Contain" which includes the establishment of biosphere reserves. The next Regional Workshop will be held for 3 days during the week of March 27 in southern California. The purpose of the workshop will be to establish needs and begin development of a plan for biosphere reserves in the California region.
5. A recently published book, Preserving Our National Heritage, Volume 1, Federal Activities, was reviewed by Craig Shafer, National Park Service. This volume is an excellent working document and represents the most current overview of Federal natural area activities. The report was prepared for the National Park Service by The Nature Conservancy and was published in cooperation with the U.S. Man and

Biosphere Program. Individuals wishing to obtain copies should contact Craig Shafer, Division of Research and Scientific Services, National Park Service, Washington, D.C.; or The Nature Conservancy.

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NOTICE: The next FCER meeting will be at 1:30 p.m., Thursday, March 30, 1978, Room 338, NSF, 1800 G Street, N.W.

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ATTENDANCE, January 25, 1978

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Affiliation	Name
Agricultural Research Service	Absent
Bureau of Indian Affairs	Absent
Bureau of Land Management	Delmar Price
Bureau of Outdoor Recreation (Heritage Conservation & Recreation Service)	Keith A. Shone
Cooperative State Research Service	Absent
Council on Environmental Quality	Ariel Lugo
Department of Defense	Absent
Department of Transportation	Absent
Department of Energy	William Osburn
Environmental Protection Agency	Absent
Fish & Wildlife Service	Absent
Forest Service	Absent
General Services Administration	Absent
Geological Survey	Absent
National Oceanic & Atmospheric Administration	Absent
National Park Service	Paige Grant, Craig Shafer
National Science Foundation	Wayne Swank
Smithsonian Institution	Robert DeFilipps
Soil Conservation Service	Absent
Tennessee Valley Authority	Absent

OBSERVERS:

Environmental Consultant Paul Lemon

NATIONAL SCIENCE FOUNDATION  
OFFICE OF THE DIRECTOR  
Washington, D.C. 20550

January 4, 1978

O/D 7B-2

STAFF MEMORANDUM  
(with revisions)

ORGANIZATION

SUBJECT: Establishment of the Directorate for Applied Science  
and Research Applications

The purpose of this memorandum is to announce the establishment of the Directorate for Applied Science and Research Applications (ASRA), effective February 6, 1978. On this same date, the Directorate for Research Applications will be disestablished.

Dr. Jack T. Sanderson, currently Assistant Director for Research Applications, will continue as Assistant Director for Applied Science and Research Applications.

The Directorate for Research Applications and the RANN program were established in March 1971. In the summer of 1976, a review of the role of applied research in the Foundation, and of the five years of operating experience of RANN, was initiated to consider possible changes of emphasis and alternative organizational mechanisms to carry out such research. After discussions with the National Science Board, a Science Applications Task Force was established in December of 1976 to assist in this review. The reorganization which is described below was arrived at after careful consideration of the recommendations of this Task Force.

The primary objectives in establishing the new Directorate are:

- . To strengthen the links between applied research/problem-oriented research and the basic research activities of the Foundation;
- . To improve the ties between research applications activities and user communities in State and local government, private industry and other Federal mission agencies;
- . To focus problem-oriented research applications on a more limited set of national issues in order to increase the impact of the Foundation's programs;

To provide a funding source for high quality applied research proposals consistent with the 1968 Amendments to the NSF Act of 1950.

The organization of the Directorate for Applied Science and Research Applications is shown on the attached organization chart, and the functions of its major organizational elements are described in more detail below.

#### Office of Problem Analysis

The Office of Problem Analysis (OPA) is a staff office to the Assistant Director and the Head of this Office reports directly to him. This Office is responsible for preparing timely, concise problem assessments for strategic and programmatic planning by the Assistant Director. In fulfilling its mission, the Office will work with (i) other units within ASRA and the Foundation; (ii) other Federal agencies; (iii) external scientific, educational, technical and professional groups; and (iv) representatives of non-scientific groups or institutions. It has a research budget to support its activities in fulfilling these responsibilities.

#### Division of Integrated Basic Research

The Division of Integrated Basic Research (IBR) is organized into six broad scientific and engineering areas corresponding to the scientific and engineering disciplines in the research directorates of the Foundation: Biological Sciences; Physical and Mathematical Sciences; Engineering and Materials Sciences; Chemistry; Geophysical/Geochemical Sciences and Social and Behavioral Sciences.

This Division is responsible for (i) working with the basic research units throughout the Foundation to identify areas of basic research which are or might be focused in broad problem areas; and (ii) stimulating and coordinating research support in its focused areas of basic research. Its primary purpose is to provide a direct link between ASRA and the basic research directorates in insuring that basic research related to significant national problems is identified and carried out.

#### Division of Applied Research

The Division of Applied Research (AR) is organized into two sections: (i) Applied Social and Behavioral Sciences; and (ii) Applied Physical, Mathematical and Biological Sciences.

The objectives of this Division are to support applied research which will (i) provide an improved scientific understanding of a range of significant technical, social, economic, and policy problems; and



(ii) increase the rate of technological innovation growing out of significant discussion in various fields of science and engineering. The Division is responsible for working closely with the established research programs throughout the Foundation and for supporting proposals for applied research from the broad scientific and engineering communities to which the Foundation relates. The Division will also work closely with the potential users of applied research in state and local government, other mission agencies, and private industry in order to insure that their views and priorities are included along with those of the scientific community in its planning and review activities.

#### Division of Problem-Focused Research Applications

The Division of Problem-Focused Research Applications (PFRA) is organized into four focused research programs: Earthquake Hazard Mitigation, Chemical Threats to Man and Environment, Alternative Biological Sources of Materials, and Community Water Management.

The goal of this Division is to support the application of scientific and technological capabilities to selected societal problems of critical national importance where NSF can make a unique contribution to the science and technology base needed for their solution. In carrying out its responsibilities, the Division will work closely with other research units within the Foundation, mission agencies, scientific, technical, and professional groups and societies, and representatives of the potential user community to insure that its activities and priorities are closely related to and coordinated with the activities, needs and views of these other groups.

From time to time, the problem areas which are the focus of this Division's activities will be reviewed for possible phasing out or transfer to other agencies. It is also anticipated that new areas for focused research will be introduced periodically into the activities of this Division.

#### Division of Intergovernmental Science and Public Technology

At this same time, there is to be no reorganization of the Intergovernmental Science and Public Technology Division (ISPT). Its functions, responsibilities, and organizational structure under the Directorate for Research Applications will remain unchanged and be transferred directly to ASRA. The Division is responsible for the support of research on the needs of State and local governments in policy, resources, and program management and the stimulation of industrial R&D in the national interest. The objective of the Intergovernmental Program is to facilitate the integration of Science and Technology into the policy and program planning, and program execution activities in State and local governments. The objective of the Industrial Program is to

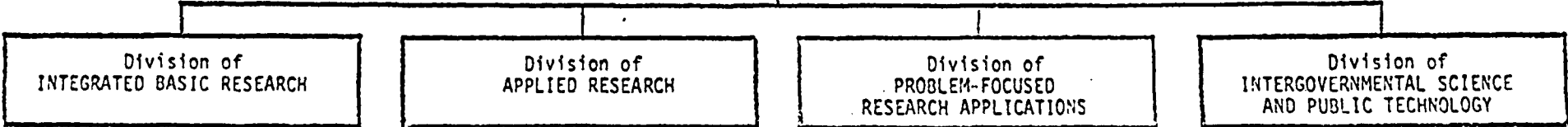
DIRECTORATE FOR APPLIED SCIENCE AND RESEARCH APPLICATIONS

Assistant Director  
Deputy Assistant Director

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Director of Operations  
Special Assistant for  
Oversight and Evaluation  
Programs and Resources  
Officer

Office of  
PROBLEM ANALYSIS



Division of  
INTEGRATED BASIC RESEARCH

- Physical, Mathematical, and Engineering/Materials Sciences
- Biological, Geophysical/Geochemical and Social and Behavioral Sciences

Division of  
APPLIED RESEARCH

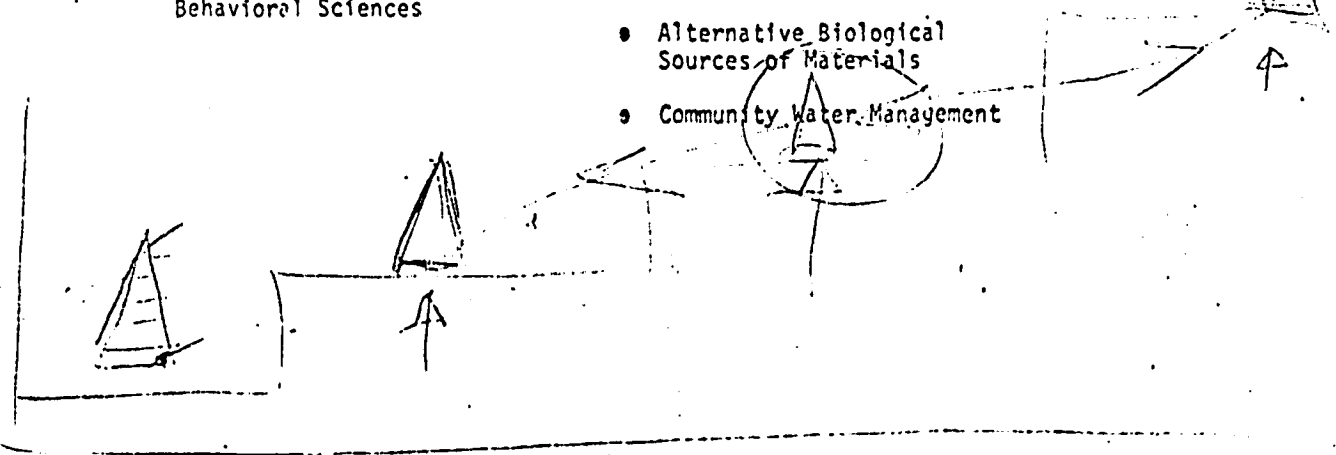
- Applied Physical, Mathematical, and Biological Sciences
- Applied Social and Behavioral Sciences

Division of  
PROBLEM-FOCUSED  
RESEARCH APPLICATIONS

- Earthquake Hazards Mitigation
- Chemical Threats to Man and the Environment
- Alternative Biological Sources of Materials
- Community Water Management

Division of  
INTERGOVERNMENTAL SCIENCE  
AND PUBLIC TECHNOLOGY

- Intergovernmental Program
- Industrial Program
- Communications Program



test and evaluate incentives which the Federal Government may properly and effectively use to increase R&D investment in the private sector where new technology is needed in the national interest.

In conjunction with the establishment of ASRA, the following two functions formerly performed in the Research Applications Directorate will be transferred to other directorates:

Weather Modification. The Weather Modification Program and the personnel primarily associated with that activity will be transferred to the Directorate for Astronomical, Atmospheric, Earth and Ocean Sciences.

Technology Assessment. The Technology Assessment Program and the personnel primarily associated with that program will be transferred to the Directorate for Scientific, Technological and International Affairs.



Richard C. Atkinson  
Director

Distribution E

# Inland Biological Field Stations Of the United States

**M. DALE ARVEY AND WILLIAM J. RIEMER**

**NATIONAL SCIENCE FOUNDATION**

# Inland Biological Field Stations Of the United States

**M. DALE ARVEY AND WILLIAM J. RIEMER**

**NATIONAL SCIENCE FOUNDATION**

"Study nature, not books," Louis Agassiz exhorted his students. This terse statement by an early and great American naturalist is usually cited out of context, and the bristling reaction of many scholars to what seems a very narrow view is probably quite unjustified. Nonetheless it can be said with assurance, following Agassiz's advice, that studying biological objects and phenomena out-of-doors and firsthand does provide a kind of understanding — an insight, a comprehension, an appreciation — that is not gotten from reading the selected facts and interpretations of others who may or may not have known Nature.

Modern adherents of the philosophy that to be a really well-rounded biologist one must study nature too, not books alone, include the persons usually responsible for establishing and maintaining the biological field stations that are scattered over this land. These shoe-string operations — only a few can claim to be more than that — play a varied, usually small, but perhaps highly important role in the field of biological education.

The National Science Foundation in seeking to learn more about these field stations and their significance to biological science and education found only frustration. Little information about them is published. Therefore it resolved to go directly to the best possible source, the stations themselves. The Biological and Medical Sciences Division has now

assessed the state of affairs in three groups of field stations. A study of marine stations in the United States was completed in 1962, and during the same year another study on biological research centers in tropical America was finished. The latter survey included, among other things, field stations of all types. Besides providing better understanding of the scope and problems of these groups of organizations, and therefore a basis for development of Federal support practices, the studies have served to bring together in varying ways and to varying degrees the persons responsible for operating these facilities. In the third and most recent study, this is what we learned.

Biological field stations in the United States are easily divisible into two groups: those that are mainly concerned with oceanography and marine biology, and those that are not. Our discussion is concerned primarily with those of the nonmarine sort; for the lack of a better term, we shall call them inland field stations.

But when we try to delimit what we mean when we speak of an inland biological field station, real difficulties arise. Such stations are varied indeed. They defy simple description. From what one might picture as a typical station, they rapidly grade off in all directions into a diverse lot of miscellaneous facilities that have little in common and no pertinence to our discussion. The "typical" field station we have in mind

is administratively tied to a university or college, it has facilities for field research and offers instruction in field biology, and it consists of a few rustic buildings tucked away among the trees of a distant wood. It is foolish, of course, to think that many are like that. A rather good idea of the varied size, location, and setting of a number of stations can be gotten by quickly scanning the list at the end of this article. We specifically exclude from our discussion of field stations installations such as arboreta, agricultural stations, research farms, and other off-campus laboratories devoted to applied research or separated from the main campus largely for reasons of space needs.

Biological stations were first established to exploit the out-of-doors as a teaching aid. Emphasis was on nature study. Only gradually was research added to the program.

By 1945, there were 53 such stations operating in this country. Of these, only 20 survive today — most in a much altered condition. Partly offsetting this attrition are 15 stations established since 1945, plus 6 more in various stages of development. This net loss of 12 stations in the last 20 years is much greater proportionately than that suffered by biological marine stations.

## Functions

A primary function of the biological station always has been one of providing field instruction to students. An asso-

ciated activity that offered public education through displays or museum-type exhibits has largely disappeared in recent decades. Another basic function is that of offering suitable facilities and resources for ecological, systematic, physiological, and behavioral research. This opportunity, depending on the station, may be available only to professional scientists or to students or to both. Of the 42 stations that are most active today and are considered here in some detail, half have some formal course work in their program; the other half are devoted exclusively to research. The stations that have survived over the years generally are those with a multi-purpose program. It seems that a dual role promises more for the future than one of specialized research or the teaching of classes alone. Those stations that are currently in the planning stage appear to be designed wisely as centers for both teaching and research.

Many of the values derived from work at a field station are intangible ones. It is surprising how many prominent biologists of today had experience at a station sometime during their formative years. Even more revealing is the fact that many think the station experience contributed importantly to their decision to adopt biology as a career.

#### Location

The uniqueness and strength of the biological field station lies in its physical setting and in the opportunity it provides for study of organisms in their natural environments. Site selection must be made with adequate thought given to the primary goal of the station. Ecological diversity is advantageous if instruction is the basic concern. Conversely, location deep within a single ecosystem might provide best for intensive long-range studies of specific environmental situations. Accessibility to workers also must be considered. Ideally, stations should be present in all types of habitats and so situated geographically that the student in any part of the country can find the environment or type of ecosystem he needs with minimum difficulty.

With more geometry than realism evident, the suggestion has even been made that a chain of stations be established longitudinally across the country and another from the Arctic to the Tropics so that in sum they would encompass a spectrum of all altitudes, latitudes, and longitudes together with

their full array of natural attributes. This arrangement may never be realized. The fact is that the altitudinal variation and associated biotic diversity found in the western mountains seem far more favorable to the development of field stations than the low relief and less striking diversity of other areas. While an extensive sample of differing habitats may be useful in teaching and a stimulant for research projects, student instruction in the principles of field biology, natural history, behavior, etc., may be accomplished almost anywhere. Though there has been no over-all planning or coordination involved, it must be recognized that the stations now extant are located rather favorably on a geographic basis (see map), and in total they sample a wide range of environmental types.

A majority of inland stations are located on lakes or sizable streams and emphasize limnology in their research or teaching programs. Among these are eight stations whose programs extend well beyond aquatic studies however, for their favorable location provides considerable diversity in terrestrial habitats as well. It is worth noting that the aquatic-terrestrial stations are augmented in number by a small group of marine stations that include within their activities a terrestrial biology program.

Next most abundant are mountain stations; most of these are located in the West. Terrestrial stations other than those classified as mountain stations or those associated with aquatic areas are generally established with a particular research theme in mind. Thus, one station is primarily concerned with forest ecology and the effects of fires, two others conduct long-range ecological studies, and a fourth concentrates on studies of the original prairie conditions of the Great Plains. Only one station has as its major purpose a long-range study of desert conditions, although a second one is being planned in Arizona. Existence of several special stations should be noted. Two are for research in animal behavior, and at least one other is being established for research on ecosystems under controlled conditions. Not included in this study because of its special nature, but nevertheless of considerable importance, is the Arctic Research Laboratory of Point Barrow, Alaska.

It is possible that some of the National Parks could serve as the base for a biological center of research with-

out detracting from the park's basic functions. At present the only one so situated is the Jackson Hole Biological Station, located within Grand Teton National Park on a long-term lease. While the Park Service itself is coming to recognize that absolute protection of the biota at times may be undesirable, the mere presence of the park serves to maintain a more stable habitat than is generally possible in most natural or unprotected areas. Research investigators and their studies also might provide a foundation on which park personnel could build an outstanding interpretive program as an adjunct to their own.

#### Problems faced

*Physical Facilities.* Historically the field station grew out of the local field trip and later the permanent camping site. In the early days of field station development, primitive facilities were adequate, especially so because the site often was used only briefly during the summer months. Personnel housing began with tents or crude cabins. Some installations remain essentially unmodified to this day. The idea gradually grew that a station could serve as a base for research studies; later the idea for year-round use developed. It was soon realized that much physiological work could be conducted in the field. Station laboratories were then constructed so that delicate equipment could be utilized effectively and also kept safely stored when not in use.

Exploitation for a summer respite from formal academic courses still insures that only token utilization during winter months is the rule at most inland field stations, but indications are that even a small amount of winterizing of laboratories and housing would allow, and might encourage, occupancy on a year-round basis at many stations. Greater use of existing facilities should be encouraged.

It is rare today to see a successful station that does not have good laboratory space for investigators and students and adequate, though perhaps somewhat "woody," housing and dining facilities for the personnel. Some station directors adhere to the principle of austerity in all physical facilities while still realizing that field work is physically demanding and best results require comfortable quarters, good food, and some degree of recreation. Some directors feel that they must maintain good library facili-

ties for both teaching and research functions; others feel that needed materials should be brought in individually and seasonally. Greater year-round utilization of a station will generally mean that far more and far better reference material will be needed at the station than is usually found there today.

**Station Personnel.** Generally a single individual serves the function of administrator. He often is the person responsible for the development of the station, and he frequently is called upon to make decisions of profound variety, ranging from those requiring a high degree of scientific and educational sophistication to those concerned with road maintenance and keeping faculty children entertained but out of reach of the experimental aquaria. His most serious problems generally concern the type and number of persons that can or should be housed, how to meet financial needs, and how to enable at least a caretaker crew to remain in residence throughout the year.

It seems mandatory that a station that extends its activities to the entire calendar year have a resident director who is also a professional biologist. This is so because a man at the caretaker-maintenance level who has adequate professional biological experience would be a rare find indeed. Few stations have been in a position to afford the luxury of a trained resident director however, because most are university affiliated and an academic staff member is not ordinarily released for such off-campus, academic-year residence. Full-time administrative personnel are not easily found moreover, for there is usually a lack of adequate and properly winterized housing. Good schools for the staff's children are not ordinarily available in areas near field stations. And there is little intellectual stimulation from colleagues, seminars, etc., compared to that which a university campus normally offers.

A station director is usually recommended or appointed to his position by an executive committee composed of representatives from several departments. Often an assistant is named to take part of the administrative load from the director, for this work load may be heavy during the season of full operation. Presence of an assistant also insures continuity upon the retirement or transfer of the director. Some stations without such administrative pro-

vision have been unable to survive release of the key person, an event that often reveals personal rivalries, insufficient interest on the part of other university staff, or simply lack of adequate experience needed for successful operation.

In some instances the station with its director is an effectively autonomous institution with departmental status and a great degree of latitude in such administrative matters as hiring of staff, salaries, acceptance of students, and program direction. In other instances, the director is told whom he may hire, what types of programs are to be given, etc. In most stations the administration lies between these extremes.

**Habitat Conservation.** All biological stations, but inland ones in particular, must exercise caution to insure that the biotic changes that are inevitable in an area utilized by man do not become excessive lest the very reason for a station's existence be removed. This can be appreciated most readily in certain parts of the arid West, where the biota is exceptionally fragile and any disturbance can cause serious and long-lasting degradation within the plant communities and therefore to the animals dependent on them.

Similarly, certain lakes tend to become heavily utilized for recreational purposes with a consequent threat to the natural biota. There are numerous water skiers on inland waters. The effect of such human intrusion on aquatic life may be great, and it would be of interest to have a limnological comparison made between an undisturbed lake and one of comparable nature that is much used by power boats.

It is important in future planning that stations attempt to obtain sufficient surrounding land to insure that an adequate outdoor biological laboratory will remain intact. It seems appropriate to suggest that serious consideration be given to the allocation of funds for purchasing prime habitats around field stations as such land becomes available. Such property, not necessarily contiguous to the station itself, may be purchased at times for relatively little money and might be a sound investment for the future when higher prices are likely to prevail. The intent should be not merely to preserve lands but to insure that research areas remain available.

**Status of Field Stations** It must be

emphasized that the present-day biological field station is in competition with all other types of biological activities. It cannot be assumed that stations automatically will survive at most universities; their status is not high, and stations are often dismissed as mere nature study camps. Though there is real value even if limited to this function, it must be realized fully that modern field biology with its sophisticated approach to ecology bears little relationship to the flora-and-fauna courses of a few years back! It must be remembered also that the biologist of today is often a chemist or physicist too, who will in time realize that field work has its value and will then appreciate again the worth of persons trained to recognize taxonomic and ecological differences. The field station will continue to be of tremendous value in training students in the areas of ecology and systematics in a manner that usually cannot be approached on a university campus.

#### Descriptive Data

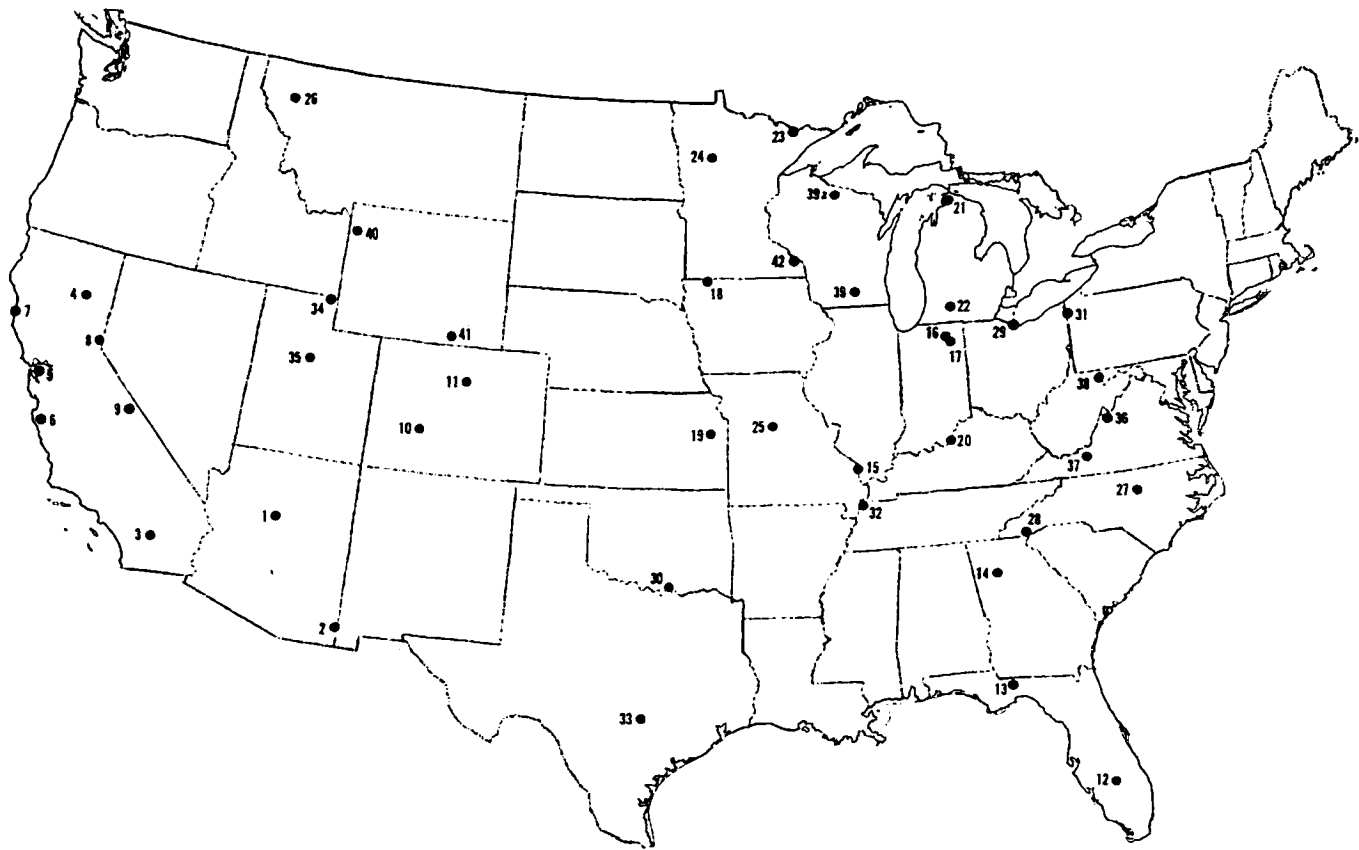
The number associated with each station identifies its location on the accompanying map. For each installation information is provided on its location (and postal address if different), administering officer, physical habitat, research program, instructional program, and dates of operation.

1. **Museum of Northern Arizona**, P.O. Box 402, Flagstaff, Arizona. Edward B. Danson. Eighty acres of forest and grassland; Lower Sonoran to Arctic-alpine areas nearby. Research in anthropology and biology. No instruction. All year.

2. **Southwestern Research Station** (American Museum of Natural History), Portal, Arizona. Vincent D. Roth. Sonoran to Hudsonian zones; 9800-foot Chiricahua Mountains nearby. Research in biology, geology, meteorology, and astronomy. No instruction. All year.

3. **Deep Canyon Desert Research Station**, Deep Canyon, near Palm Springs, California. Address: Division of Life Sciences, University of California, Riverside. Rodolfo Ruibal. Edge of the Colorado Desert. Biological and non-biological research. No instruction. No charges. All year.

4. **Eagle Lake Biological Station**, Eagle Lake, Lassen Co., California. Address: Chico State College, Chico, California. Thomas L. Rodgers. Twenty-five acres



Numbers show the locations of field stations and correspond with the descriptive paragraphs.

of forest on lake shore. Aquatic and terrestrial ecology. No facilities for visitors. Graduate and undergraduate summer biology courses. Dates of operation not determined.

**5. Field Station for Animal Behavior,** Berkeley, California. Address: Department of Psychology, University of California, Berkeley, California 94720. Frank A. Beach. Controlled research on behavior of vertebrates. Fenced area adjacent to campus, enclosures, cages, pits. No instruction. No charges. All year.

**6. Hastings Natural History Reservation** (University of California, Berkeley), Jamesburg Route, Carmel Valley, California. John Davis. Oak woodland, grassland, chaparral. Ecology of biota. No instruction. No charges. All year.

**7. Mendocino Biological Field Station,** Albion, California. Address: Pacific Union College, Angwin, California. Donald V. Hemphill. Rocky shore, estuary, stream, redwood forest. Marine and coastal biota. Graduate and undergraduate courses in nature education, field biology, and carpentry. No fees for research. June through August.

**8. Sagehen Creek Biological Station** (University of California, Berkeley). Box 447. Truckee, California. Director not known. High mountain streams, forest, lakes. Environmental research. Special building for observing under-stream conditions. Field zoology and plant taxonomy taught each summer. Fees for classes. Research all year.

**9. White Mountain Research station,** (University of California, Berkeley), in White Mountains, near Bishop, California. Address: P.O. Box 31, Big Pine, California 93513; or 2517 Life Sciences Building, University of California, Berkeley, California 94720. Nello Pace. Southern Sierra Nevada and isolated desert ranges. Physiological responses to high altitudes, high mountain ecology. Four laboratories at different elevations up to 14,250 feet, major facility at Barcroft (12,500 feet). Special research equipment including helicopter. Housing for investigators only. No instruction. All year.

**10. Rocky Mountain Biological Laboratory,** Crested Butte, Colorado; or address Biology Department, Swarthmore College, Swarthmore, Pennsylvania.

Robert K. Enders. Forested area, 9500 feet. Biological research. Six-week summer courses on demand. Research all year.

**11. Science Lodge Mountain Research Station** (Institute of Arctic and Alpine Research, University of Colorado), Nederland, Colorado; or address 102 Hale Science Building, University of Colorado, Boulder. John W. Marr. Two-hundred acres surrounded by National Forest. Mountain ecosystems; emphasis on montane forest, alpine tundra, and ecotones. Special equipment includes snow vehicles. No instruction. All year.

**12. Archbold Biological Station** (American Museum of Natural History), Lake Placid, Florida. Richard Archbold. There are 1060 acres of oak-hickory, pine, and palmetto; lakes nearby. Biological research. No instruction. All year.

**13. Tall Timbers Research Station,** Route 1, Box 110, Tallahassee, Florida. Edward V. Komarek. Pine forest, lakes. Forest biota and ecology; fire effects. No housing. No instruction. No charges. All year.



14. **Lullwater Field Laboratory** (Emory University), Atlanta, Georgia. W. D. Burbanck. Twenty acres of forest adjacent to main campus. Aquatic biology; radiation effects. No facilities for visitors. Instructional program on main campus. No charges. All year.
15. **Pine Hills Field Station**, near Wolf Lake, Illinois. Address: Southern Illinois University, Carbondale, Illinois. John Parsons. Mississippi River, marshes, and oxbow lakes; broad-leaf and coniferous forests. Biological research. No instruction. All year.
16. **David Worth Dennis Biological Station** (Earlham College), near North Webster, Kosciusko Co., Indiana. Address: Rural Route 3, Syracuse, Indiana; or Department of Biology, Earlham College, Richmond, Indiana. Cameron E. Gifford. There are 550 acres on Dewart Lake. Ecology and limnology. Undergraduate summer courses in limnology. Early June to early August.
17. **Indiana University Biological Station**, Crooked Lake, 7 miles north of Columbia City, Indiana. Address: Department of Zoology, Indiana University, Bloomington. Shelby D. Gerking. Twenty-seven acres of wooded shoreline. Limnology and fish ecology. No instruction at present, but courses planned. No charges at present. June through August.
18. **Iowa Lakeside Laboratory** (University of Iowa), West Okoboji Lake, Dickinson Co., Iowa. Address in summer: Milford, Iowa; in winter: University of Iowa, Iowa City. Richard V. Bovbjerg. One-hundred acres of lake shore and forest. Aquatic and terrestrial ecology; 26-foot launch. Many graduate and undergraduate summer courses in biology; 2 terms of 4 weeks. Mid-June through mid-August.
19. **Robinson Farm**, near Lawrence, Kansas. Address: Department of Zoology, University of Kansas, Lawrence. Henry Fitch. Rolling hills, forests, and ponds. Ecology of terrestrial communities. No instruction. No charges. All year.
20. **Potamological Institute**, University of Louisville, Louisville, Kentucky. William M. Clay. Ohio River and environs. Ecology of flowing streams. Power boats. Instruction on campus. No charges. All year.
21. **University of Michigan Biological Station**, Pellston, Emmet Co., Michigan. Address in summer: Pellston, Michigan; during academic year: Ann Arbor, Michigan. A. H. Stockard. Almost unlimited wild and forested land; large lakes, streams, marshes, bogs, and upland areas. Environmental biology: atmospheric, terrestrial, and aquatic. Graduate and undergraduate summer instruction; many courses in biology. Instruction, late June to mid-August; research, all year.
22. **W. K. Kellogg Biological Station** (Michigan State University), Gull Lake, near Battle Creek, Michigan. Address: Hickory Corners, Michigan. George H. Lauff. Lakes, streams, bogs, and swamps. Terrestrial and aquatic biology. Adjoining Kellogg Bird Sanctuary, Farm, and Feed Research Project are part of the Biological Station complex; Kellogg Forest is nearby. All available for research. Variety of graduate and undergraduate summer courses in biology and geography. Instruction, June through August; research, all year.
23. **Associated Midwest Colleges Field Station**, Basswood Lake, Lake Co., Minnesota. Address: c/o Wilderness Outfitters, Ely, Minnesota. Robert V. Drexler. Forests, rivers, lakes. Primitive area with only canoe transportation. No facilities for visitors. Undergraduate summer courses in biology and geology; postsession student research. June-August (2 sessions).
24. **Lake Itasca Forestry and Biological Station** (University of Minnesota), Lake Itasca, Clearwater Co., Minnesota. Address: Lake Itasca P.O., Minnesota; or 300 Coffey Hall, University of Minnesota, St. Paul. William H. Marshall. Within Itasca State Park; 50 square miles of forest, lakes, bogs; portions of original prairie nearby. Aquatic and terrestrial ecology. Graduate and undergraduate biology and forestry courses; emphasis on research-study combination. Mid-June to early August.
25. **Prairie Research Station**, near Columbia, Missouri. Address: Department of Botany, University of Missouri, Columbia. Clair Kucera. Section of original prairie. Controlled research on flora and controlled burns. No facilities for visitors. No instruction. No fees. All year.
26. **Flathead Lake Biological Station** (Montana State University), Flathead Lake, Yellow Bay, northwestern Montana. Address: Bigfork, Montana; or Montana State University, Missoula. Richard A. Solberg. Lakes, bogs, streams, and rivers; sagebrush to forest to tundra. Aquatic and terrestrial biology; 25-foot vessel available. Graduate and undergraduate summer courses in biology. Summer Institutes for high school teachers. Late summer session in conservation education; 5- and 8-week summer sessions. Research at other times by arrangement.
27. **Field Station for Animal Behavior**, Duke University, Durham, North Carolina. Edward C. Horn. Forty acres of woodland. Duke Forest is available nearby. Controlled research on vertebrate behavior. Pens, cages, fenced plots. No facilities for visitors. No instruction. No fees. All year.
28. **Highlands Biological Station, Inc.**, Highlands, North Carolina, 28741. Thelma Howell. Research emphasis on ecology and biota of the Appalachian and Blue Ridge Mountains. No instruction. All year.
29. **Franz Theodore Stone Laboratory** (Ohio State University), Gibraltar Island, Put-in-Bay, Lake Erie, near Sandusky, Ohio. Address: Put-in-Bay, Ohio; or Department of Zoology and Entomology, Ohio State University, Columbus. Loren S. Putnam. Shoreline, islands, marshes. Productivity of lakes, marshland ecology, terrestrial communities. Three vessels (25-42 feet). Graduate and undergraduate summer courses in biology; emphasis on aquatic habitats. Research, all year; classes, June through September.
30. **University of Oklahoma Biological Station**, Lake Texoma, near Madill, Oklahoma. Address: Willis, Oklahoma 73462. Carl D. Riggs. There is a 95,000-acre impounded lake, rivers, streams, ponds, prairies, oak forests. Biology of aquatic and terrestrial communities. Large inboard power boat. Many summer courses in biology. Classes, June and July (approximately 8 weeks); research, all year.
31. **Pymatuning Laboratory of Field Biology**, Linesville, Pennsylvania; or address: University of Pittsburgh, Pittsburgh. Clarence A. Tryon, Jr. Pymatuning Lake, Ohio River, ponds, marshes, bogs, forests. Environmental biology. Graduate summer courses in ecology and limnology; research all year.
32. **Reelfoot Lake Biological Station** (Tennessee Academy of Sciences), Walnut Log, near Union City, Tennessee. Address: R.F.D., Hickman, Kentucky; or Southwestern College, Memphis, Tennessee. C. L. Baker. Naturally impounded stream bed, swamp, and bog.

Aquatic and terrestrial ecology. No instruction. No fees. All year.

33. **Brackenridge Field Laboratory**, Austin, Texas. Address: Department of Zoology, University of Texas, Austin. Frank Blair. Off-campus; river flood plain. Controlled research on ecology and experimental systematics. Enclosures, ponds, aviaries. No housing facilities. No instruction. No fees. All year.

34. **Bear Lake Biological Station**, Bear Lake, Rich Co., Utah. Address: Utah State University, Logan. William T. Helm. Limnology, aquatic ecology. No housing. No instruction. All year, but principal activity in warm season.

35. **Lakeside Laboratory**, Brigham Young University, Provo, Utah. Wilmer W. Tanner. Lakeshore and streams. Limnology. No research facilities at present. No instruction. March to December, but can be available throughout year.

36. **Columbia Union Biological Station**, Head Waters, Highland Co., Virginia; or address: Biology Department, Columbia Union College, Takoma Park, Maryland. Lester E. Harris, Jr. Meadows and forest in Shenandoah Mountains. No facilities for visitors. Two

summer terms, June through August; all year for research.

37. **Mountain Lake Biological Station**, near Blacksburg, Montgomery Co., Virginia. Address: Route 1, Pembroke, Virginia; or University of Virginia, Charlottesville. James L. Riopel and J. J. Murray, Jr. Lake nearby; 1200 acres of forest; mountain biota. Graduate and undergraduate summer courses in biology. June through August, about 10 weeks.

38. **Terra Alta Biological Station**, Terra Alta, West Virginia. Winter address: Department of Biology, West Virginia University, Morgantown. Earl L. Core. Forested Appalachian Mountains; lakes and rivers nearby. Lake and terrestrial ecology. Graduate and undergraduate summer courses in biology. Late July through August.

39. **Laboratory of Limnology and Associated Field Units** (University of Wisconsin), Lake Mendota, Madison, Wisconsin 53706. Arthur D. Hasler. Lakes, ponds, streams, terrestrial habitats. Biological research. Hydrobiological laboratory on campus at Madison. Small laboratory at Trout Lake in northern Wisconsin (39a on map). University

Arboretum and all departments with water interests cooperate. Formal instruction on Madison campus. All year.

40. **Jackson Hole Biological Research Station** (University of Wyoming), Moran (in Grand Teton National Park), Wyoming; or address: University of Wyoming, Laramie. L. Floyd Clarke. Lakes, streams, forest, alpine meadows. Aquatic and terrestrial biota. No instruction. June to early September; but available at other times by arrangement.

41. **Summer Science Camp**, Medicine Bow Mountains, near Centennial, Wyoming. Address: Centennial, Wyoming; or University of Wyoming, Laramie. S. H. Knight. Rocky Mountain habitats from sagebrush to 12,000 feet; streams, lakes, forests. No accommodations for families. Graduate and undergraduate summer courses in botany, zoology, and geology. June through August.

42. **Hydrobiology Station**, Horner, Minnesota. Address: Saint Mary's College, Winona, Minnesota 55987. Brother L. George. Mississippi River shores and sloughs. Aquatic biology. No instruction. All year.

# OBFS NEWSLETTER

November, 1978

Number 26

Minutes: 1978 Annual Meeting - Eagle Lake Field Station - Sept. 29-Oct. 1, 1978

1. In Attendance: Raymond Barnett, Robert Ediger and Roger Lederer, hosts, Eagle Lake Field Station (ELFS). Burr J. Betts, Lilly White Field Station; Richard Bovbjerg, Iowa Lakeside Laboratory; Paul M. Bultsma, S. H. Ordway Memorial Prairie Biological Station; Jesse F. Clovis, Terra Alta Biological Station; Richard W. Coles, Tyson Research Center; Robert C. Dalglish, E. N. Huyck Preserve; B. Jeanie Davis, Sierra Nevada Field Campus; Denzel Ferguson, Malheur Environmental Field Station; Robert L. Fisher, Raystown Field Station; Dan Hannan, Aquatic Station, Southwest Texas State University; Peter P. Harper, Station de Biologie, Universit e de Montreal; Richard T. Hartman, Pymatuning Laboratory of Ecology; Gordon W. Hodgson, Kananaskis Center Campus; Steve H. Jenkins, Whittell Forest and Wildlife Area; George Lauff, W. K. Kellogg Biological Station; Peter N. Marchand, Babcock Nature Preserve; Brent B. Nickol, Cedar Point Biological Station; David F. Parmelee, University of Minnesota Forestry and Biological Station, at Lake Itasca, and at Cedar Creek Natural History Area; Jennifer M. Shay, University Field Station (Delta Marsh); William F. Sievers, National Science Foundation; Edmund Smith, Pacific Marine Station; John Tibbs, University of Montana Biological Station.
2. Saturday Morning - 9/30/78:  
Panels and discussion on: 1. The role of OBFS beyond the annual meeting; E. Smith, G. Lauff, R. Hartman. 2. Present and future enrollment trends: how they affect field stations; J. Tibbs. 3. Teaching and research at ELFS; by staff and students of the host station.

No attempt will be made here to summarize the full discussion which occurred during the morning session; however several points arose which affected later events. These will be mentioned. It was observed that one benefit of the annual meeting is that it acquaints the attenders with habitats and ecosystems in the neighborhood of the host station. Distribution of descriptions of the environment(s) nearby, perhaps with reprints or a citation list of relevant publications describing the area would help the visitors. Many stations have such materials on hand already. Dr. Lauff summarized the present activities and possible future activities of OBFS as follows: compilation of a directory of biological field stations; announcement of summer course offerings at the various member stations; holding of an annual meeting including a review of ecosystems and habitats near the host station; development of a rationale for OBFS, its purposes and objectives; drafting of operating guidelines and procedures for users in effect at the member stations; establishment of biological data bases at each station including physical and biological monitoring; the storage of information in an appropriate data bank; and sharing of information about equipment at various member stations.

During discussion of these activities, it was observed that their might be an expansion of inter-station cooperation. It was suggested that later, in the business meeting, a steering committee be established, and charged with the responsibility of exploring this possibility. ¶ In discussing field station enrollments, John Tibbs reported on some data gathered by David Gates showing a decline in enrollment at his facility and others over the last several years. There is a well known national trend towards fewer students in the college age bracket. Discussion proceeded on methods of improving the situation by advertising, by description of courses offered and other mechanisms to aid the directors in dealing with this problem should it arise at their stations.

The meeting continued with discussion of research and teaching projects under active pursuit by the staff and students at Eagle Lake Biological Station.

3. September 30, 1978 p.m. Annual meeting for business.

- A. The president solicited information from those present regarding their departure plans and then turned to William Sievers for a few comments on the role of NSF and its relation to biological field stations. Dr. Sievers indicated that there may on occasion have been misunderstandings between OBFS membership and NSF. He indicated that his branch of NSF, Biological Research Resources, can support only research and not training. He recognized that our outlook does not separate the two processes and appreciates our point of view but nevertheless, indicated that Biological Research Resources conducted its program under established policies. He said his office would entertain a proposal from OBFS for a study of the needs for funding program support, research, training, baseline data collection, environmental monitoring and so on, as they might be performed at biological field stations. He mentioned that it would be best if proposed activities were dovetailed with existing programs relating to data gathering and other aspects of field biology. He observed that in order to generate funding for biological stations, the scientific community itself, must provide evidence, and even some pressure, to NSF that more support is needed. He cited examples in other areas of activity such as systematic biology and the American Onthologist Union where such pressures did generate funds to support facilities and research.
- B. The minutes were adopted in the form they had been presented and circulated in Newsletter #25 (November, 1977)
- C. Old business. None was offered.
- D. New business:
  - 1.) President's Report - President Smith indicated that he had contacted a number of West Coast Marine Biological Stations and that three of those had indicated that they would join our organization. With regards to some others he encountered a problem which was - it was difficult for him to describe to them what they would receive from membership in OBFS and what the organization does. He indicated that if we could come up with a concrete statement of our activities, objectives and goals, that perhaps additional numbers of marine or other stations would be interested in joining the organization. It was observed that this was one of the

possible projects to be undertaken by the steering committee which had been suggested earlier in the day.

2.) Secretary/Treasurer's Report - Dick Coles indicated that there was no complete membership list available at the meeting for distribution to those in attendance. Instead he promised to compile a revised membership list to appear in a forth-coming Newsletter. This was partly because the mere distribution of a membership list at the annual meeting seemed inadequate as a mechanism for informing the membership of its composition. The secretary did circulate an old membership list which had been revised on the 20th of September, and solicited from those in attendance, their phone numbers and various other bits of information concerning their vital statistics. It was suggested that the secretary prepare a list of phone numbers of the various members and the directors of the various member stations for distribution to the membership so that communication among us might be improved.

Directories had been compiled from members responding to questionnaires distributed some time ago. The distribution of these occurred in early March, a few copies remain in the secretaries office and are available to members or others who place an inquiry. The secretary also mentioned that it had cost roughly \$50.00 to prepare and distribute peel-off mailing labels of all member stations to the various directors. It was recommended this year that rather than repeat this gesture directly, that the membership list to appear in the forthcoming Newsletter be arranged so that those who have in their home facilities the capacity to prepare Xerox labels might be able to do so from the Newsletter directly. Other members who needed peel-off address labels of the membership would be welcome to contact the secretary directly and he would provide mailing labels to them. This suggestion will be followed. The secretary mentioned eight new members since the last meeting. While some ambiguity remains in a couple of instances, it appears that this brings our membership to roughly 65. Some of the confusion results from the passing of responsibility for a particular station from one person to another without any clear indication to OBFS as to whether the original is still involved or should no longer be regarded as holding the membership.

It was reported that the balance in the treasury as of 9/28/78 was \$430.19 Receipts of note to date had included: interest of Certificate of Deposit (\$1000. nominal value), \$60.00; Dues from membership, \$541.00; Income from those listed in the course announcement, \$650.00; Total receipts to date: \$1251.00. It was observed that dues are still owed by a substantial number of members and there are some outstanding obligations with regard to the course announcement as well, and the treasurer indicated that he would rebill these individual stations in the near future.

Disbursements included: AIBS membership, \$100.00 (including the donation that was arranged for in the previous meeting); Reimbursement to Bob Dalglish for travel to AIBS meetings in 1977 and in 1978, \$150.96; Newsletter expenses, \$50.40; Annual meeting mailing, \$62.40; postage, duplication costs in the office of the secretary/treasurer, \$148.22

Course Announcement expenses, \$723.96; and expenditures on the directory, \$253.39. Total disbursements for the period under review \$1489.44. With the collection of outstanding dues, we will be at about the same point where we were last year. The Course Announcement will then have generated income nearly identical to its costs.

3.) Location of Next Meeting - The president entertained suggestions from the membership as to places where our presence has been invited or might be tolerated for the fall '79 meeting. Several possibilities were discussed; but it was decided that since everyone intended to establish the steering committee, that this chore be delegated to that group.

4.) Report of the Representative to AIBS - Bob Dalgleish pointed out that the former executive director of AIBS, Richard Trumble, had resigned and that Don Beem was acting as executive director while a search was in process. It is also under consideration of the governing board that the category of affiliate membership be dropped. Bob Dalgleish recommended that his vote be to drop this membership category which allows an organization to pay dues but not to vote. He also reported that a few adherent societies appear to be dropping out, owing to some uncertainties over the role of AIBS. Consideration is being given to raising the dues of member organization to \$600/ per organization, but the qualification was that no more than \$1.00 per professional member of a member organization be charged. Dalgleish recommended that we may include amateur members in our group and that it would appear difficult for the AIBS or for anyone else to distinguish between amateur and professional members and therefore recommended that his vote be cast against this particular change. Society dues make up only 4½% of the AIBS income. (OBFS dues to AIBS are charged at a rate of \$1.00 per member, since we fall in the size category where that rate applies. When a revised dues charges were enacted several years ago, we voted to donate additional monies sufficient to maintain our contribution at \$100 per year.)

5.) Editor's Report - Bob Dalgleish pointed out that the effort devoted to compiling and distributing the Newsletter frequently elicited no feedback, positive or negative, on the content of this organ. He reported a hesitation to advance his own point of view in the Newsletter and pointed out that in a recent spring Newsletter he merely duplicated and distributed some copies of material from federal offices which appeared to be of interest. For the upcoming annual Course Announcement Bob needs information concerning the courses to be offered next summer by Dec. 1, 1978. It was moved, seconded and passed that the cost per station for this listing be raised to \$30.00.

6.) Additional New Business - It was moved, seconded and passed that the president appoint a five-member ad-hoc steering committee. Nominating and program committees to be chosen from among its membership, by the executive committee. The president requested that volunteers identify themselves if seriously interested in serving on this committee. During the discussion the following activities would be charged to the steering committee: 1.) Find site for next years meeting. 2.) Develop a document describing the role of OBFS - its rationale and purposes,

and explore sources of support for performance of this role. 3.) Develop a revision of the constitution and bylaws which would accommodate several new activities and extend the term of the president and vice-president to 2 years. 4.) Explore the notion of inter-station cooperation in course offerings. 5.) Consider revision of the membership structure so as to establish two categories of membership, one for individuals and one for member stations, to consider raising the dues to generate greater income to facilitate meeting between annual meetings by the steering committee and to explore as well the possible use of the \$1000. certificate of deposit, again to facilitate additional meetings by the steering committee.

7.) It was moved, seconded and passed that, if the above membership categories are established, the individual dues be kept at \$10.00, the member station dues be raised to \$50.00.

8.) It was moved, seconded and passed to authorize the treasurer to remove the \$1000. CD from the Ohio State Bank and place it at the disposal of the steering committee.

9.) Bob Fisher raised the question of the scheduling of our annual meeting and whether there might not be a more suitable time with fewer conflicts for members. After some discussion, it was decided that probably the present timing is as convenient for as large a number as could be devised. For the present the constitution mechanism of timing for the next annual meeting was followed - to wit, the membership voted to establish the time for the next annual meeting as the last weekend of September, 1979 - that is 9/28-9/30.

10.) The president thanked the hosts for the excellent overview of the ecosystems seen by the touring directors on Friday, the 29th and for its generous provision of libations, food and hospitalities for the balance of our gathering.

11.) After some discussion a recess was held during which time two committees were formed and functioned.

12.) The recess ended and the board of directors returned to report that it had appointed a nominating committee composed of Parmelee, Barnett, and Marchand, and that it had appointed a steering committee made up of Lauff, Dalgleish, Hartmann, Coles and Bultsma.

13.) The nominating committee reports nominees as follows: for President, Bob Dalgleish - for Vice-president, Dick Hartmann, for editor, Jeannie Davis.

14.) The steering committee announced that it had chosen co-chairman of Dalgleish and Hartmann.

15.) It was also observed that content of the Newsletter might be improved with input from member stations describing their current situation, purposes and problems. Five stations agreed to submit descriptive material for future Newsletters to the editor. Presumably this process will continue indefinitely and over a few years, each station will be described for the membership.

16.) Business meeting was adjourned.

4. Program - Saturday afternoon 9/30/78:

The discussion panel session initiated Saturday morning was resumed after the business meeting. Discussions included coverage of the following topics:

A. The rising costs/budget cuts problem facing field stations: Bob Dalgleish, David Parmelee. David Parmelee reported that at his station rising costs were a continuing problem as they probably were at all of our facilities. He reported that the physical plant at his facility had originated in 1909 and had survived with no regularized maintenance budgets. The presence of a new administrator in the University of Minnesota system led to the transfer of maintenance responsibilities from the station itself to the maintenance department of the main campus. This relieved the stations budget of a substantial cost, placed the stations employees under new supervision, enabled the director to forget worries about utility bills, and will enable the director to hire additional staff, should he choose to do so with monies that formerly had been devoted to maintenance. David reported great satisfaction with the new arrangements and that when he made a serious request for some work which clearly needed to be done, it was in fact performed by the maintenance department from the main campus itself or through it making arrangements with a contractor that the job be performed. With regard to the teaching program at his station, David pointed out that the legislature in Minnesota tends to relate the budget for education directly to enrollment. When the latter declines, so does the former. The summer session in which his station participates controls the budget for instruction at the station and with decreasing enrollment he found that his staff was cut by one instructor.

The University of Minnesota has suggested to David that he find a mechanism for special funding for summer faculty at the field station from the state legislature directly. This may prove successful. The department giving courses at the station may be asked to provide instruction, which they do not do now. With regard to research, David reported that at his facility the legislature does not fund research; it expects the faculty to get grants to do this.

David mentioned that his station has been contacted by several persons looking for post-doctoral positions where they themselves might apply to a granting agency and if allowed to indicate an affiliation with the field station would get their own grant and be self-supporting. Overhead income acquired under this fashion would accrue to the university itself. While some historical experiences at the university mitigated against this, David hoped to overcome this resistance where he thought this mechanism might help encourage research programs at his facility.

Bob Dalgleish mentioned to the members present that there are a number of costs to field station operation which sometimes do not meet the eye of the director. These costs have been highlighted in Bob's experience since his station is run as a non-profit private corporation independent from a college or university. This means that for its own survival his station must raise money from its own investments and from contributions. It also sees some costs which may be inconspicuous elsewhere.



Bob reported that there are many new government imposed regulations and chores which are costly. He emphasized that merely the cost of getting one's own books audited and establishing accounting procedures were frequently much higher than perhaps the academic affiliated director would realize, and in some cases more risky. For example, he said that the accountants have worked it out so that the person (i. e. the director) who provides them with the figures from which they do their analysis is not only responsible for the figures but also for the accounting procedures involved in the annual report. He finds the Occupational and Safety and Health Act is very burdensome. In coming into compliance, a station could spend considerable quantities of money. The matter of insurance was another cost which he highlighted and he found that in the last two years insurance costs for his facility had gone up 30%, even though no claims had been submitted. Another director noted that the rates charged for the station were much higher than those charged to the main campuse, perhaps because of the assumption that field station operations are much more risky.

Finally, it was observed by Ed Smith, in the course of discussion, that there are hidden costs which can be dragged out by the university administrator who wants to build up a case for disposing of the station. In his particular experience where the Pacific Marine Station has been given the ultimatum of closure by the home institution, Ed says as he went through meeting after meeting with administrators, and tried to answer the complaints about costs. In each case, he would go to the meeting with explanation and justification for the items that had been challenged in the previous meeting only to learn that the administrators had dug up another cost which they felt still invalidated the case for saving the station. In his particular situation, there were peculiarities of the marine station, such as, insurance for laborers on docks, insurance for longshoreman, and insurance under something called the Jones law, which applies to the vessels and the use of vessels for diving. The peculiarities of the marine station notwithstanding, it would appear that any station director would benefit from a clear understanding of what hidden burdens the station places on the sponsoring institution.

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YE OLDE OFFICIAL OBFS BALLOT

<u>OFFICE</u>	<u>NOMINEE</u>	<u>WRITE-IN</u>
President	___ Robert Dalglish	_____
Vice-President	___ Richard Hartman	_____
Editor	___ B. Jeanie Davis	_____

Return to Dr. R. W. Coles (by December 30, 1978)  
Tyson Research Center  
P. O. Box 258  
Eureka, MO 63025

B. Bob Dalglish reported in his role as our man in Washington, that the Congress had established a "congressional clearing house on the future" which had solicited input from the academic and scientific community. The input is to be compiled into "foresight packages." There has been a request for input specifically on a package being built dealing with environmental education and research. The clearing house requested a response from our organization or from us as individuals by the 6th of October. Dalglish got suggestions from the membership and will put together a brief statement of our view on environmental issues related to education and research for submission to the committee.

C. Jennifer Shay presented the results of a survey of biological field station data acquisition systems in use at 46 stations which responded to a questionnaire. The results were of great interest to the membership and it was planned that either a summary will appear in the Newsletter at a later time, or possibly that the Delta Marsh Field Station will compile a publication on this matter and will then distribute reprints to the members of OBFS.

1979 Annual Meeting of the Organization of Biological Field Stations,  
Archbold Biological Station, Lake Placid, Florida, September 27-29, 1979;  
Dr. James Layne, Host Director.