

**Organization of Inland
Biological Field Stations**

**Newsletter
No. 18
January 1974**

ORGANIZATION OF INLAND BIOLOGICAL FIELD STATIONS

NEWSLETTER NO. 18, JANUARY, 1974

THE ANNUAL MEETING

The Seventh Annual Meeting of the Organization of Inland Biological Field Stations, as announced May 1, 1973, was convened at 9:00 a.m., at the Guggenheim Pavillion of The Institute on Man and Science, Rensselaerville, New York.

Attendance:

Members:

- James R. Barnes, Utah Lake Research Station, Brigham Young University, Provo, Utah.
Richard W. Coles, Tyson Research Center, Washington University, St. Louis, Missouri.
Robert C. Dalgleish, The Edmund Niles Huyck Preserve, Inc., Rensselaerville, New York.
Robert L. Fisher, Biological Station, Juniata College, Huntingdon, Pa.
Benjamin F. Graham, Conard Environmental Research Area, Grinnell College, Grinnell, Iowa
Willard N. Harman, Biological Station, State University of New York, Oneonta, New York
Richard T. Hartman, Pymatuning Laboratory of Ecology, University of Pittsburgh, Pittsburgh, Pa.
Loren G. Hill, Biological Station, University of Oklahoma, Norman, Oklahoma
Loren S. Putnam (& wife), Stone Laboratory, Ohio State University, Columbus, Ohio.
John F. Tibbs, Flathead Lake Biological Station, University of Montana, Missoula, Montana

Guests:

- Laurance E. Bayless, Department of Biology, Concord College, Athens, West Virginia (Investigator at Huyck Preserve)
W. Brian Bedford (& wife), The Nature Conservancy, Arlington, Virginia
Babette B. Coleman, Rochester, New York. (Chairman, Scientific Advisory Committee, The Huyck Preserve)
Konrad J. Gajewski, Administrative Assistant, The Huyck Preserve.
Hugo A. Jamback, Director, Science Service, New York State Dept. Education, Albany, N.Y. (Member Scientific Advisory Committee)
Karen Johnson, Curator, Dept. Botany, Manitoba Museum, Winnipeg, Manitoba, Canada
Paul C. Lemon, Conservation of Ecosystems, I.B.P., AIBS, Washington, D.C.
Eugene P. Odum (& wife), Director, Institute of Ecology, University of Georgia, Athens, Georgia.
Peter L. Tobiessen, Department of Biology, Union College, Schenectady, N.Y. (investigator at Huyck Preserve)

Agenda:

Saturday, June 16:- Symposium - (9:00 a.m. - 3:00 p.m.)

THE ROLE OF NATURAL AREAS IN RESEARCH AND EDUCATION

Loren S. Putnum, President; O.I.B.F.S.

Welcome

Robert C. Dagleish, Program Chairman

Introductions

Paul C. Lemon, Project Leader, Conservation of Ecosystems, I.B.P.-AIBS

THE NEED FOR A NATIONAL NETWORK OF NATURAL AREAS

Brian Bedford, Ecologist, The Nature Conservancy, Arlington, Va.

CRITERIA FOR SELECTION AND EVALUATION OF NATURAL AREAS

Eugene P. Odum, Director, Institute of Ecology, University of Georgia

ECOLOGY AND THE NATIONAL ENVIRONMENTAL RESEARCH PARK

Richard W. Coles, Director, Tyson Research Center, Washington University.

RESEARCH AND MANAGEMENT OF THE TYSON RESEARCH CENTER

Willard N. Harman, Director, Biological Station, S.U.N.Y.; Oneonta, N.Y.

RESEARCH & MANAGEMENT OF THE BIOLOGICAL STATION, S.U.N.Y. ONEONTA

Robert C. Dagleish, Director, The Huyck Preserve & Biological Station

THE E. N. HUYCK PRESERVE, ITS ORIGIN AND OBJECTIVES

3:00 p.m. Field Trip - Bear Swamp - property of The Nature Conservancy

8:00 p.m. Business Meeting OIBFS

9:00 p.m. Research Reports - Bayless and Tobiessen

Sunday, June 17

9:00 Field Trip - The Huyck Preserve - Odum

Minutes of the 1973 Annual Meeting

Meeting Site: Institute of Man and Science, Rensselaerville, New York

President Loren Putnam called the meeting to order at 8:15 p.m. in the conference room of the Guggenheim Pavillion.

Minutes of the 1972 meeting were approved as presented in the OIBFS newsletter #16. Puttie opened the discussion of membership requirements of OIBFS. It was pointed out that perhaps amendments are needed, in reference to active membership, to create founded interests in the objectives and functions of biological field stations. Bob Dagleish responded by stating that modifications of policy are probably needed because of the present exemptions of past directors of field stations to membership in OIBFS. He also expressed the belief that if the membership were open, that enrollment and participation of members may not increase appreciably, since only approximately one-third of the present membership attend the annual meeting.

Subsequently, Dagleish moved the adoption of an amendment which would broaden the criteria for membership to include all individuals subscribing to the purposes of the organization, i.e., promote cooperation, well-being and objectives of inland biological stations. The motion was seconded by Will Harman. John Tibbs amended the original amendment by substituting the wording "field studies" for "inland biological station"; the motion was seconded by Fisher.

Following discussion, the substitute amendment to the original amendment passed; then the original amendment passed unanimously.

President Putnam informed the group present that the 1974 AAAS meetings will be held in San Francisco February 25 - March 2nd. He also pointed out that OIBFS has in the past attempted to meet at a field station, near the annual meeting site of AIBS or AAAS. In the ensuing discussion, it was noted that several field stations exist within relatively short distance from San Francisco, which would undoubtedly provide a focal point of interest to many members of OIBFS.

Bob Dalgleish expressed the opinion that since the 1974 AIBS Meeting is June 16-21, (a bad time for station directors) OIBFS should hold their 1974 annual meeting in conjunction with AAAS, and correspondingly moved that OIBFS consciously seek to reserve a station for the annual meeting of OIBFS in February of 1974. John Tibbs seconded the motion, which passed unanimously.

Puttie requested Loren Hill to contact various field stations within the area, e.g., Dillion Beach, to confirm a meeting site for 1974 annual meeting of OIBFS.

Dalgleish suggested that joint membership between OIBFS and AIBS be explored. AIBS has elected to pursue the possibility of having a better representation of biologists in legislative voice, thus AIBS wishes to increase their membership. It was generally agreed upon that joint membership may likely increase the effectiveness and improve the relationship of OIBFS with the biological community. Dalgleish moved that OIBFS explore the possibility of dual membership with AIBS. The motion was seconded by Tibbs, which passed unanimously.

President Putnam pointed out that the directory of inland biological field stations was in need of revision and that OIBFS should consider means of updating the publication. A possible suggestion might be the inclusion of field stations into the AIBS directory of organizational affiliations. Bob Dalgleish was asked to pursue this possible alternative.

The nominating committee composed of Puttie, Jim Barnes and Dick Hartman presented the individuals suggested for president elect and editor: Bob Ediger and John Tibbs, respectively. Additional nominations from the membership of OIBFS were to be solicited at a later date.

The meeting was adjourned at 9:45 p.m.

TREASURER'S REPORT 1973

Bank: The Ohio State Bank, Worthington, Ohio

Balance in account: August 28, 1972

Receipts - Regular (August 29, 1972 - August 28, 1973) 1,051.24

Dues:	2 for 1972	20.00	
	40 for 1973	400.80	
			420.80

Disbursements - Regular

1973 AIBS Membership Dues	100.00	
Office Supplies - stamps	13.00	
- invoice	11.00	
Tryon Memorial Fund	50.00	
Travel for 1973 meeting		
Eugene P. Odum	175.80	
		349.80
		71.00
		1,122.24

DIRECTORY OF INLAND BIOLOGICAL FIELD STATIONS

Receipts

Sales 15 @ 2.85	42.75	
postage	4.35	
	<hr/>	47.10

Disbursements
none

0.00	<hr/>	47.10
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BALANCE IN ACCOUNT as of August 28, 1973 1,169.34

Respectfully submitted

Robert C. Dalgleish,
Secretary-Treasurer

October 1, 1973

A.I.B.S. - I.B.P. NATURAL AREAS INVENTORY *

Paul C. Lemon
Project Leader
Conservation of Terrestrial Ecosystems

The time is ripe, perhaps over-ripe for us to make an accounting of our ecological and other field research areas. What lands and waters will we need as basic working materials for environmental research? Myriads of questions are being raised by land owners, land managers, politicians, and citizens. The ecologist's answers will be as useful as his research permits. It is now important that we examine our research machinery and materials. The public will clamor for the facts and guidance needed for policy formulation in environmental problems. In fact, there is a possible rapid expansion in public and private funding for environmental and natural resource research. Hence, the need to organize a descriptive catalog or inventory of suitable research natural areas becomes urgent business. The excellence of our product (ecological resource management) will be largely determined by a program of active research field stations and other natural areas. True, the skill of trained ecologists is a

* First funded by the National Science Foundation in 1970, this project has offices with its sponsor, American Institute of Biological Sciences and is the Conservation of Ecosystems Program of the International Biological Programme.

factor but they can be limited by not having suitable preserves or scientific areas.

The A.I.B.S. Conservation of Ecosystems project is presently composed of three task forces for the main types of research natural areas:

- (1) Terrestrial Ecosystems
- (2) Freshwater Ecosystems
- (3) Estuarine and Marine Ecosystems

We are assembling notes, data, maps, and other descriptive material in order to create an inventory of research natural areas best represented in our Selgem Retrieval System:

<u>STATE</u>	<u>RNA'S IN SELGEM RETRIEVAL SYSTEM</u>
CONNECTICUT	228
TEXAS	160
OHIO	112
RHODE ISLAND	100
MARYLAND	86
ILLINOIS	69
INDIANA	68
WISCONSIN	59
NEW YORK	55
MICHIGAN	<u>44</u>
TOTAL	981

We must hasten to say that this implies that the included areas are those which exhibit the expected processes and phenomena of biotic community life. Many other areas, admittedly, are of great significance scientifically, albeit sometimes for a rather narrow or special purpose.

The policies and practices followed in various states, and the personnel working on natural areas embrace a wide variety of language and ideas. Though many of us use the same words and have similar motivations, we agree less than one might first suppose. It might accelerate progress if some strong agency could try to establish a set of concrete definitions, at least separating research areas from recreational, scenic, and similar public lands. Some books employ terms like "scientific" (Wisconsin), "ecological" (New Hampshire), or "nature preserves" (Ohio). In the A.I.B.S. project I have suggested a minimum of fifty acres, which has been helpful in trimming off such items as historic points. Some care has been required, however, in treating narrow strips such as trails, rights-of-ways, reserved stream banks, and similar designated areas which could have large total area but are usually unsuited to ecological research. Thus, we ought to push ahead with as high a set of standards as is consistent with solid forward progress. The descriptive inventory should not include areas clearly unsuitable for ecological or other serious field research.

CRITERIA FOR SELECTION AND QUANTITATIVE EVALUATION
OF NATURAL AREAS

Dale Jenkins

	Value	
	<u>Exc. or High</u>	<u>Fair</u>
A. Ecological type of community not represented in the National Natural Area System.	6	3
1. High natural quality and lack of past or present disturbance.	x6	x3
2. Protectable viable ecosystem.	x4	x2
3. Diversity of species and/or communities.	x2	x1
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C. Relic species, restricted, species at edge of range, or unusual to region.	6	3
1. Degree of rarity, e.g., only example in region.	x2	x1
2. High number of species.	x2	x1
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D. Nesting, breeding, overwintering, or concentrated migrating populations of animals.	4	2
1. High number of species.	x2	x1
2. High number of individuals.	x2	x1
3. Rare species.	x2	x1
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E. Sites with deposits of peat, lignite, sediments, fossils, bones and artifacts, for study of past vegetational, climatic, archaeological and paleontological history. (10-1)	10	5
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F. Site with high exploration potential for factors in E.	10	5
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G. Sites of well-documented scientific research or discovery and type localities, or records over period of years. (10-1)	10	5
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H. Oldest, largest or exceptional representatives and exceptional associations. (6-1)	6	1
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I. Area where successional trends can be studied, e.g., sand dunes, fire burns, wind damage. (6-1)	6	1

Note: This system is at present undergoing revision and will be published soon.

A REGIONAL EVALUATION SYSTEM "CHESAPEAKE BAY"

Dick Wagner

	<u>Highest Value</u>
1. Ecosystem: pond, 1; marsh, 1; swamp forest, 1; upland forest, 1; others, 1	5
2. Size: under 99a., 1; 100-199 a., 2; 1000-4999 a., 3; over 4999 a., 4	4
3. Uncommon Animal Species: birds, 1; mammals, 1; reptiles, 1; others, 1	4
4. Uncommon Plant Species: cryptogams, 1; herbs, 1; shrubs, 1; trees, 1	4
5. Seasonal Concentration of Animals: spawning, 1; overwintering, 1; summer nesting, 1; migratory stopovers, 1	4
6. Marine Invertebrates: clam, 1; oyster, 1; crab, 1	3
7. Range Phenomena: northern limit, outlier, 1; southern limit, outlier, 1; eastern limit, outlier, 1; coastal plain outlier, 1	4
8. Geological Features: geomorphological, 1; structural, 1; paleontological, 1	3
9. Archaeological Features: prehistoric, 1; historic, 1	2
10. Isolation-Impaction: isolation, 2; impaction, 2	<u>4</u>
	highest total... 37

The higher the final total for each area the greater the variety of natural features and the more desirable the area. This system of course puts a premium on diversity. To be sure that areas of low diversity but of critical importance--a bog for example--were included in the final recommendations, the entire list was reviewed after weight analysis and some areas were added to the list on the basis of my judgement as a professional ecologist.

ECOLOGICAL EVALUATION OF NATURAL AREAS

W. Brian Bedford

Instructions: Rate each of the categories below as follows:

- 2 = excellent
- 1 = good
- 0 = poor

The sum of the five categories will be the area's ecological evaluation.

VIABILITY. Rating of the area's ability to perpetuate a natural system. Includes consideration of size, completeness of watershed, and bufferage.

DIVERSITY. Rating of factors such as: number of habitats represented, relative species diversity (determined by comparison with different representatives of the same ecosystem type), and the absolute diversity index.

UNIQUENESS OR RARITY. Uniqueness or rarity of ecosystem type in the United States at the present time. Habitats for rare or endangered species are to be weighed heavily.

FREEDOM FROM HUMAN IMPACT. A rating of excellent (2) indicates no appreciable influence by man. Good (1) indicates that appreciable influence by man has occurred but not enough to change the natural community man's entity. A rating of poor (0) indicates that the area is dominated.

DEFENSIBILITY. Rating of the ability to protect a natural system from future destruction or alternation by man.

ECOLOGICAL EVALUATION.

"VIEWPOINT"

Eugene P. Odum

(abstracted from Research Reporter, University of Georgia,
Vol. 7, No. 1, Fall 1972)

We are pleased with the part that we have played in the establishment of the nation's first National Environmental Research Park (NERP) on the site of the AEC Savannah River Plant in South Carolina just across the river from Augusta. The 200,000 acres, which surrounds facilities at the AEC's Savannah River Plant near Aiken, borders the Savannah River for 22 miles and includes swampland, pine forests, an old town site, a large man-made lake, fields, streams and watersheds. In June 1972, the Atomic Energy Commission designated the site an Environmental Research Park in order to provide scientists from other government agencies, universities and private foundation a protected outdoor laboratory where long-term projects can be set up to answer questions about man's impact on the natural environment.

During the 22 years of University of Georgia contract studies, more than 300 papers have been published in recognized scientific journals, of which about 20 per cent represent MS and PhD theses. SREL researchers have not only contributed to an extensive biological inventory of the 200,000 acre natural laboratory, but have pioneered in developing important basic ecological concepts, especially in the areas of ecological energetics, ecosystem development, population biology and radioecology. In recent years, staff and students have given more and more attention to applying these basic concepts to urgent national needs relating to pollution and resource management, and to the kind of modeling required to deal with these problems. SREL contract work has also had an important national impact in the training of ecologists, as evidenced by the large number of former graduate students, post-doctoral fellows and staff members who are now staffed in universities, governmental laboratories and industries.

Now that the national mission for the Savannah River site has been expanded, there are a number of new and exciting objectives and research goals for the "outdoor laboratories" in the Environmental Research Park. Among them: developing ways to measure effects and responses at the ecosystem level in terms of structure, cycling and energy balances of the whole environmental system; training environmental researchers, especially in dealing with systems technology involving data storage and retrieval, prediction and modelling; developing an environmental crisis response unit to respond to pollution accidents and unexpected environmental problems; creating a national experiment station for waste management research; compiling a regional environmental encyclopaedia and species data bank; serving as a gene reservoir for organisms common to the region; and developing mathematical models simulating ecosystems that would help organize knowledge of the system, select research priorities and predict organism response to environmental stimuli.

NEWS FROM THE STATIONS

W.K. Kellogg Biological Station. Michigan State University. George Lauff.

Summer Session: Student enrollment is slow in contrast to recent years. However, we expect 85 to 90 students. There is a shift toward undergraduate students, in contrast to dominance by graduate students in the past. Further, the number of commuters has increased significantly and will approximate one-third of the student body. This causes concern regarding housing and dormitory service operations. Class enrollments have been specified by the Office of the Provost, but it appears that all classes will meet the required minimum number--this is five for graduate-level courses, and ten for undergraduate-level courses.

Faculty: Effective September 1, two new faculty members will join the resident staff. Drs. Earl and Patricia Werner are initiating field work this summer, and will continue here. Earl Werner is pursuing work on fish-zooplankton interactions and focusing his work on the recently completed experimental ponds. Patricia Werner is studying old-field plant community succession dynamics and competition. The resident faculty now numbers seven, and three post-docs are also in residence. Currently, fourteen graduate students are in residence pursuing dissertation research on a year-around basis.

Facilities: A \$200,000 grant from the National Science Foundation has permitted the construction of a set of experimental ponds -- eighteen in number. These ponds are approximately 100 feet in diameter, eight feet deep, and have controllable water supply and drainage. They are evolving as a regional research resource with interests from faculty at New Hampshire, Notre Dame and the MSU campus. Work on the ponds was completed in early '72, and support for research activities were awarded in the fall of '72.

There have been major renovations in our "Greenhouse" where two large artificial stream channels have been constructed. Further, a large portion of the structure has been assigned as an aquarium room with provision of lake water. One portion will remain as a greenhouse for some experimental work on terrestrial and aquatic plants.

Computer Facilities: We have for some time had a data line to MSU and the University of Michigan computer centers. More recently, we have added a Hewlett-Packard mini-computer and have upgraded it with various software components. It is now a focal point for much of our computational work, and is also used in the training of graduate students.

University Support: Like all stations, we have a considerable degree of financial constraint. There has been little increase in State monies, except in the categories of labor and salaries. Operational support has been severely eroded in recent years. I foresee little change, with the possible exception of special appropriations for major projects such as upgrading electrical systems, road work, or maintenance on physical plants. We have been extremely fortunate in federal support of research activities, and this funding base has not suffered significantly, although a major training grant will not be renewed this fall. All resident faculty have ongoing research grants from the Atomic Energy Commission, the National Science Foundation, or the Office of Water Resources Research. The federal grant support presents approximately one-third of our total operational budget which now exceeds a million dollars per year.

Visitors: Our year-around activities and location make it relatively easy for visitors to come by for a day or so, and there is an increasing procession.

We were particularly pleased to have Dr. Johannes Ringelberg from the University of Amsterdam spend a two-week period discussing his interests in zooplankton with our faculty and students.

Future: Western Michigan University is desirous of having access to field teaching and research facilities on a year-around basis and we are seeking a cooperative arrangement with them. Further, we are attempting to evolve a long-term plan that will more effectively integrate the terrestrial, agricultural and aquatic resources at our disposal. The general concept of this long-term plan has been presented to the Central Administration and has received acceptance. The real problem that confronts us is its direct implementation, though there are encouraging developments in this area.

Highlands Biological Station. Richard C. Bruce.

We will have about 15 researchers in residence in summer of 1973. Funding looks good, because of \$20,000 increase in our grant-in-aid from the State of North Carolina. NSF has never informed us of the disposition of our proposal for operational support, which was submitted over a year ago. We had an outstanding "Conference on the Biology of Plethodontid Salamanders". Attendance was about 50. Steve Tilley (Smith College) was Chairman. Abstracts were published in HISS News-Journal. Bryology Conference will be held in summer of 1974. Lewis Anderson is organizer, A.J. Sharp will serve as chairman. We will begin a new program this summer on an inventory of natural areas in Southwestern North Carolina, in cooperation with the North Carolina program for establishment of a State-wide system of natural areas.

The following is a condensed version of some of the comments received by Arthur Hasler on the Research Site System Study (RSSS):

Loren Hill, President-elect, Organization of Inland Biological Field Stations.

Feels that OIBFS would like to cooperate in such an effort, which he - Hill - feels is most timely. Suggests that the February meeting of the group (Pacific Marine Station) would be a good time to talk it over. In the meantime, because of his own interest, he will sketch out some approaches to the study, including the matter of criteria.

Potential Systematists of help to us:

Donald W. Tinkle, Museum of Zoology, U. Mich.
Peter Raven, Missouri Botanical Garden, St. Louis

George Lauff, Kellogg Biological Station, MSU

Suggests following persons who could be helpful:

Boyd Strain, Duke University (on sabbatical in 1975)
David Reichle, ORNL
George Sprugel, Illinois Natural History Survey
Alton Lindsey, Indiana
Dick Marsoff, Kansas State
Kenneth Norris, Univ. of California, Santa Cruz

Harve J. Carlson (Prepared Paper, 1971)

Suggests eight criteria that could be used in establishing a national network:

- location to serve scientists, within major biotal assemblages;
- adequate size of facility/area;
- minimize duplication of efforts;
- research program should be important;
- open to all researchers;
- demonstrated long-term commitment to field research;
- prioritization scheme;
- protected sites/areas.

C. Arch Tryon (deceased)

George Lauff brought forward a paper titled Ecosystem Experiment Stations - A Program for the Organization of Inland Biological Field Stations, which sets forth an eight-part development program to include:

- 1) guidelines for development of stations;
- 2) preparation of a land acquisition plan, nationally integrated;
- 3) standardization of data collection, storage and retrieval;
- 4) promotion of cooperative programs between sites/stations;
- 5) encouraging stations to become a focal point or home base for diverse ecological scientists;
- 6) guidelines for academic courses built around field stations;
- 7) development of a support program;
- 8) support of communications meetings to be held at stations.

Robert C. Dalgleish, Organization of Inland Biological Field Stations, (OIBFS)

"As administrators of Field Stations, the members of OIBFS can be of considerable value in formulating guidelines for the selection, utilization and administration of a System of Natural Research Sites. We would appreciate the opportunity to assist the Institute of Ecology in developing this proposal and we are available to contribute whatever talent and information may be found within our organization."