Organization of Biological Field Stations

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Newsletter

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NEWSLETTER EDITOR

JOSEPH F. MERRITT
POWDERMILL NATURE RESERVE
CARNEGIE MUSEUM
STAR ROUTE SOUTH, RECTOR, PA 15677

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HAPPY HOLIDAYS!

II. MINUTES - 1985 ANNUAL MEETING FOR OBFS BUSINESS

THE EVENING OF SATURDAY, SEPTEMBER 28, 1985

HANCOCK BIOLOGICAL STATION, KENLAKE STATE PARK, KENTUCKY

1. In Attendance: From the host station - Joe King; Kenneth Armitage, (Ecology Program, Univ. of Kansas, KS); Michael Bowers, (Blandy Experimental Farm, VA); Peter Connors, (Bodega Marine Lab and Res, CA); Richard Coles, (Tyson Research Center, Washington Univ., MO); Robert Dalgleish (W.V. School of Osteopathic Med. WV); Boyce Drummond, (Pike's Peak Res. Station, CO); Robert Fisher, (Raystown Field Sta.,PA); Jeffrey Froke, (National Audubon Society, CA); David Gates,(Univ. Michigan Biol Sta., MI); Richard Hartman, (Pymatuning Lab of Ecology, PA); Robert Hastings, (Turtle Cove Biol. Res. Sta., LA); Stephen Havera, (Ill. Natural History Survey, IL); John Janovy, (Cedar Point Bio. Sta. NE); Dennis Johns, (Rocky Mountain Biol. Lab, CO); Jeffery Kennedy, (Natural Reserve System, CA); Harold Klieforth, (Desert Research Inst. NV); Charles Kupchella, (Ogden Coll. of Science Tech & Health, KY); George Lauff, (W.K. Kellogg Biological Sta. MI); James Layne, (Archbold Bio. Sta,FL); Mark Noble, (Mountain Res. Sta, CO); David Parmelee, (Itasca Biology Prog., MN); Donald Prusso, (Whittell Forest & Wildlife Area, NV); Jennifer Shay, (Delta Marsh, Winnipeg, Manitoba); Wade Sherbrooke, (Southwestern Research Station, AZ); John Tester, (Cedar Creek Nat. History Area, MN); James Wolfe, (Archbold Biol. Sta, FL).

2. President Parmelee called the meeting to order at 18:16. The gracious hospitality of Hancock Biological Station as represented by Joe King and Chuck Kupchella was much appreciated by all in attendance. Parmelee also thanked George Lauff and the officers of OBFS for their assistance and cooperation during his tenure as our leader.

3. The minutes of the 1984 business meeting, as circulated in a previous Newsletter, were approved.

4. The secretary/treasurer (R. Coles) reported that membership has grown to a total of 107 members - 64 station members plus 43 in the individual member category. Since the 1984 annual meeting there have been 11 new members, 3 resignations, 6 changes in directorship and 1 reinstatement of an errant member.

   The treasurer's report was presented as of Sept. 20, 1985. Since the last report, when the balance was $6,549.91, our balance has risen to $9,104.47. Income (totaling $4,064.39) during the year has been: from dues $3,270; interest on the NOW account, $573.85; interest on the certificate of deposit, $180.; and miscellaneous, $40. Expenses (totaling $1,509.83) have been: for the office - secretarial (65 hrs. @ $7.00/hr) $455.; postage, $220.10; telephone (toll), $51.52; check returned, $10.; - a total of

$736.62; for travel - $354.65; AIBS dues - $100.; Newsletter - $288.56; - refund on dues overpayment, $30.

The above figures include the interest on a Certificate of Deposit in the amount of $2000. Since the renewal date of the CD is nearby and since the treasury contains a balance of $9,104.47, the treasurer was authorized to acquire a new CD in the amount of $5000, (and since has done so).

It was decided to continue to reimburse the Washington University Tyson Research Center for secretarial/clerical assistance in an amount not to exceed $500. A log is kept of the time used and reimbursement is for wages plus social security on an hourly basis.

5. In the unavoidable absence of the Editor, this report was waived.

6. The AIBS representative, Jerome Rosen, presented this report, a copy of which appears elsewhere in the Newsletter. It was decided that OBFS will continue its affiliation with AIBS, recognizing that since our membership has passed 100, there will be a significant increase in dues.

7. The summer course announcement poster report was presented by Mark Noble of the Mountain Research Station. The 1985 edition was edited by Jim Halfpenny who has subsequently stepped out of his assignment as director of that facility. Mark Noble agreed to assume the duties of the poster editor. In order to continue operating the poster as a near-breakeven basis, it was decided to continue the charge for listing at $60. The 1985 version operated at near the breakeven level; the funds being curated in an account curated by the Mountain Research Station. Mark will devise a code of some sort so that listed station can identify those applicants whose interest in their offerings were stimulated via the poster. In addition, there will be a means whereby research under direction as is offered at some stations can be included among the categories of offerings at listed stations.

8. New Business:

a. Discussion arose again concerning the assembly of an OBFS slide show. John Janovy offered to compile a slide show and compose a narrative on opportunities at field stations. John request that OBFS members send him just a few (about 5) of their best slides by January 1. He is looking for human interest involving a search, somebody looking for something, several people interacting about a biological subject - illustrations which have an allegorical component. He asks that two of the submitted slides to "of the most stunning allegorical scenery we have", two to "document the search, conveying that something exciting and intellectual is going on", and one or two simple composition slides with a single major visual line through the field of view.

b. Nominations: President Parmelee had appointed an ad hoc committee on nominations which selected Ken Armitage as the nominee for vice-president the only position coming open in 1986. The current vice-president, Jim Layne, will succeed President Parmelee in the beginning of 1986. A ballot will be circulated as part of the fall Newsletter.

9. Future meetings.

a. The 1986 annual meeting will be Sept. 25-28 at the University of Nebraska's Cedar Point Biological Station, located near Ogallala. President Parmelee recruited Mark Paddock and Jeff Kennedy to serve as the program committee for this meeting.

b. Subsequent meetings held each year in late September will be:
1987 Bodega Marine Laboratory
Bodega Bay California
1988 The Audubon Sanctuary in Maine
(a 2-hour drive north from Portland)
1989 The Rocky Mountain Biological Laboratory and
the Pike's Peak Research Station in Colorado

10. Those present thanked Dave Parmelee for his effective service to OBFS as our president over the last two years.

11. President Parmelee declared the meeting to be adjourned at 21:31.

NOTE: During the annual meeting, there were several gatherings of those in attendance to hear from spokesmen and to hold lengthy, in-depth discussions. The secretary did not take minutes on those occasions. However to inform members not in attendance about the topics discussed, we present the following list of items which received attention.
Topics Discussed Included:

1. Report on the NSF-sponsored workshop on the research needs of biological field stations. (R.W. Coles)

2. Report on the biological research resources program at NSF, and other programs of relevance to field stations. Distribution of a new program announcement: "Equipment and Facilities for Research at Terrestrial and Freshwater Biological Field Stations." (Jim Edwards) (A copy of the program announcement appears elsewhere in this Newsletter).

3. Planning and station master plans (Jeff Kennedy)

4. The Directory of Field Stations - a status report (George Lauff)

5. Data-management at field stations (Jeff Kennedy)

6. In-house graduate student fellowship and stipend systems.

7. National Biological Survey (Jim Edwards)

8. Scientific collecting permits, animal rights activism and the probable extension of the regulatory climate to field stations and to those who work with "wild" species in captivity.

9. Management-directed research at field facilities (species-inventories, studies of demographics and population dynamics in species pertinent to the site, monitoring of rare species, of interesting species and of human impacts thereupon, etc.)

10. The field science project: an activity in science education at Tyson Research Center. (R.W. Coles and P. Hawker, the text of this presentation appears elsewhere in this Newsletter.)

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Keyword Codes
P.T.: 18
K.W.: 1002000
1008000
1008005

III. A-- **National Science Foundation**

Equipment and Facilities for Research at Terrestrial and Freshwater Biological Field Stations

SUMMARY. A special competition for the improvement of research facilities and equipment at U.S. terrestrial and freshwater biological field stations is to be held in 1986, with a deadline for submission of proposals of January 2 and announcement of the awards totaling about $800,000 in June 1986. It is expected that the maximum award amount will be $100,000 per institution.

DESCRIPTION. In recognition of the importance of biological stations in preserving, providing access to, and fostering research on natural terrestrial and freshwater environments, and in response to the continuing need of these stations for modern instrumentation and facilities, the Foundation announces a special competition for increased support of terrestrial and freshwater biological field stations to be held in 1986. For purposes of the competition, "biological field stations" are defined as those facilities which (1) preserve a natural terrestrial or freshwater habitat, (2) facilitate research on the organismal or ecological relationships of the plants, animals and/or microorganisms occurring therein, and (3) qualify at least as a Phase II site as defined in the publication "Experimental Ecological Reserves: A Proposed National Network" (published by the National Science Foundation in 1977). Phase II sites must be able to accommodate a group of research personnel on a seasonal basis and have some provision for year-round use. Utilities, shop and storage facilities, housing and food must all be available on-site. A resident caretaker or maintenance person must be provided year-round, as well as on-site technical staff seasonally. A full-time director and a site advisory committee must be in place, and a plan for year-round monitoring and data base development be already implemented.

Proposals for this special competition will not be accepted from agricultural research stations or from marine biological laboratories, including those on the Great Lakes. However, those stations that can document a combination of both marine and terrestrial/freshwater research emphases will be allowed to submit proposals for items specifically devoted to the terrestrial and freshwater components of their programs.

Proposals will be accepted from U.S. colleges, universities and other institutions with formally constituted biological research programs at terrestrial and freshwater field stations located within the territorial limits of the U.S. and its possessions. While many such laboratories combine both research and education, funding in this special competition is limited to support of research functions. Only a single proposal may be submitted per field station. The Foundation welcomes proposals on behalf of all qualified applicants, and strongly encourages women, minorities, and the handicapped to participate fully in this competition.

Proposals should be focused on specific projects of facility refurbishment or rehabilitation, including new multi-user instrumentation, research laboratory renovation, and improvements to facilitate handicapped scientists. Requests for special-purpose, off-road vehicles, including boats, are allowed but must be especially well justified. Explicit plans for the care and maintenance of all requested items must be presented, including consideration of long-term maintenance or service contracts. Requested support should be of limited duration (up to 2 years). No support will be allowed for routine operations, indirect costs (overhead) or the salary of the Principal Investigator(s) or other senior personnel. The costs of maintenance, technical personnel, and operation of commercial instruments will also not be provided. Assumption of these types of costs by the submitting institution is strongly encouraged as an indication of its commitment to the proposed project. Expressions of institutional commitment to the facility and the proposed project in the form of matching funds or cost contributions, although not mandatory, will greatly strengthen a proposal. All requests must be directly related to research needs rather than to training activities.

In 1986, approximately $800,000 will be available. As a result, only a few awards can be made, at a maximum of about $100,000 per institution. Major criteria to be used in evaluating proposals are: (1) Scientific merit of the research that would be permitted or enhanced by access to the equipment or renovated facility; (2) Evidence of research use and demand for the facility, including both broad use within the institution, and regional and/or national utilization of the facility; (3) Demonstrated need for the items requested, including multi-investigator and/or multi-departmental usage; and (4) Plans for effective management of the facility for efficient use by both resident staff and visiting investigators.

Review will be conducted with advice from an external advisory committee and experts from the research community. The deadline for submission of proposals to be funded in 1986 is January 2, 1986, with awards to be announced June 1986.

General information on the preparation of proposals and the review process, including standard forms to be used (Appendices II-VI), can be found in *Grants for Scientific and Engineering Research*, NSF 83-57. The program described in this publication is in Category 47.051 in the Catalogue of Federal Domestic Assistance.

Please submit 20 copies of the proposal to the Foundation's Data Support Services, Room 220, National Science Foundation, 1800 G St., N.W., Washington, D.C. 20550. The proposal should contain the following information, in the order indicated:

A. Cover page, signed by the P.I.(s) and an authorized institutional representative (Appendix II).

B. Project summary (no more than a 20-line synopsis of the importance of the station and of the proposed project) (Appendix IV).

C. Narrative (limit to 15 single-spaced pages, exclusive of illustrative and tabular material), to include: (1) Introduction, historical perspectives and uniqueness of the site; (2) Items being requested, with full justification for each; (3) Plans for care and maintenance of all requested items; (4) Descrip-

tion of the present physical facilities and administration of the station; (5) Utilization of the station for research, including use by investigators from outside the institution and use on a year-round basis; (6) Future research plans and potential for the station and how these plans would be enhanced by the requested equipment or facility improvements; and (7) Mechanism for advising the national biological research community of the increased availability and enhancement of the facility and associated resources, if appropriate.

D. Bibliography of pertinent literature.

E. Curriculum Vitae and Current and Pending Support Statement (Appendix VI) for the P. I.(s) and, if appropriate, brief biographical sketches of selected other senior staff and summaries of staff research.

F. Budget (Summary Proposal Budget, NSF Form 1030) (Appendix V).

G. Any needed technical appendices (for example, technical plans for refurbishment requests, specifications of requested equipment items, etc.).

H. Proof of compliance with the Flood Disaster Protection Act of 1973 (NSF Grants Policy Manual, Section 797).

Inquiries should be addressed to:

Dr. James L. Edwards, Program Director
Biological Research Resources Program
Division of Biotic Systems and Resources
National Science Foundation
Washington, D.C. 20550
Phone (202) 357-7475

NOTE

The Foundation provides awards for research in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for such findings or their interpretation.

The Foundation welcomes proposals on behalf of all qualified scientists and engineers, and strongly encourages women and minorities to compete fully in any of the research and research-related Programs described in this document.

In accordance with Federal statutes and regulations and NSF policies, no person on grounds of race, color, age, sex, national origin, or physical handicap shall be excluded from participation in, denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

NSF has TDD (Telephonic Device for the Deaf) capability which enables individuals with hearing impairment to communicate with the Division of Personnel and Management for information relating to NSF programs, employment, or general information. This number is (202) 357-7492.

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

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III. B.-- Report of the Representative of the OBFS
To the American Institute of Biological Sciences, 1984-85

Jerome G. Rozen, Jr. attended the Council Meeting of AIBS in November 1984 at the Sheraton Crystal City Hotel near Washington National Airport in late November 1984. The meeting was highlighted by a visit of the Council to the Congressional offices in Washington D.C. Council members heard staff members of the Committee on Science & Technology discuss major biological issues about which Congress is concerned, both in short and long range governmental planning. Thus many members of the Council developed a new insight into the functioning of the legislature. This meeting highlighted one of the major responsibilities of AIBS, namely, serving as an interface between the biological community and the country's legislature. Today more than ever before, there is a need for our legislators to have a clear understanding of the complex and technical biological issues facing American society so that the issues can be dealt with effectively. Dr. Rozen urges OBFS to continue its support of AIBS because the Society is the major link between the community of biologists and the government.

III. C.-- THE FIELD SCIENCE PROJECT

AN ACTIVITY IN SCIENCE EDUCATION AT TYSON RESEARCH CENTER.

Part A. Development of the Concept (R.W. Coles)

We at Tyson have begun development of a program of possible interest at other field stations. While transfer of program content to habitats different from our oak-hickory forest may not be appropriate in all instances, we suggest that other facilities might find our experience to be of relevance should they wish to expand their activities during the academic year and/or to reach out to serve nearby communities and gain the support of the neighborhood in a new way.

With retrospection, I'll describe a selected series of unplanned events which relate to the development of our project. First, we came to a recognition that we had programs ongoing at Tyson which would be of interest to those in secondary education, including students, teachers and administrators. In addition, an outreach effort would benefit our parent institution, Washington University in St. Louis, as we would be making a contribution to our community upon which we depend for support in many ways. In addition, some of the students to be served in our program represent potential applicants to our institution during a time of declining numbers of college-age students in the U.S. population. In particular, we felt a program at Tyson would help build interest in our biology department's offerings in Ecology and other holistic areas within the biological sciences. It is from these areas that we hope to draw our most significant users for research and in education.

In addition, we felt that it would help Tyson, if we were able to alter an institutional and community impression that Washington University has little biology to offer other than that which is preoccupied with phenomena at the molecular and cellular level.

As a beginning of such service activities we established the Wildlife Workshop about seven years ago. The workshop is attended by superior high school students interested in conservation, ecology and related areas and nominated by their high school science faculty or guidance counselor. The participants attend four Saturday morning sessions at Tyson which are devoted to the ecology of oak-hickory forest, our Wild Canid Survival and Research Center, our Raptor Rehabilitation and Propagation Project and our bird banding program. The $15 paid by each participant is used for career information, various leaflets and flyers, refreshments and other minor program costs. As well as benefiting the students, this program has assisted our parent institution by generating applicants who are now showing up in ecology and other biology courses and has brought us to the attention of high school science students, faculty, and administrators.

As another part of our community outreach efforts, I present talks, upon invitation, to local civic and community groups and host tours of our facilities. Among these have been visits by Biology Area Teachers

of St. Louis (BATS!) and teachers with their classes on field trips. Again these efforts built an awareness of our existence, programs and purposes.

As these activities grew, we were gratified by favorable community responses and have subsequently established the "Friends of Tyson" which among various supportive activities, provides hosts for expanded numbers of visiting groups. Still we had no money for a paid staff person to handle educational field trips. In discussions with an accountant of the St. Louis (city) schools who happens to be a fellow birdwatcher, I learned of the existence of the Partnership Program of the St. Louis Schools. This enterprise seeks to recruit community contributions, usually in kind and at no cost to the schools, in the form of field trips, as well as visits to the schools by interesting persons, performers, etc. We held discussions with the director of the Partnership Program, knowing that the program had a small budget for contracted services. We were well received, had a sympathetic hearing and were site-visited by a small group of teachers and administrators on a Saturday morning. These persons were able to endorse our proposal, which was eventually reduced to a few pages of narrative accompanied by a proposed budget. The latter conformed to suggestions we had received during prior communications.

The result has been a series of seven, semester-long contracts starting at around $5000 and now up to about $7000 which pay for PART of the costs of the program. The partnership office suggested that the staff requirements `could be met by a housewife whose kids were in school, who had training in science and had time available.' We were able to set our sights on a different sort of person, for, as it turned out, much of what needs to be done require arrival at Tyson before the school day starts and requires evening time devoted to preparation of curricular materials and telephone contacts with the teachers involved at their homes in the evenings. The person we hired had seven years' experience as a biology teacher in a private school and had handled the administration of the science department.

Appropriate salary for such a person and other costs for the program go well beyond the level of support available from the city schools. The gap has been filled in several ways: 1) The instructor contributed much time beyond that for which she was being paid. 2) Tyson and Washington University (which waived overhead charges on this project) lent much assistance. 3) An individual who supported Tyson and approved of our Field Science Program gave cocktail parties to which she invited friends who were told about our project and the need and who made donations to support us (there is widespread recognition that the city schools need assistance as well). 4) We contacted the Friends of Tyson, local Audubon and nature study societies as well as the "Old Newsboys" and received support at the level of $500 -$1500. 5) And finally, we were given clearance by our parent institution to approach a foundation for a large (for us) grant and were grateful to receive an award of $30,000 for expansion of and improvements in the project and for increasing the involvement by volunteers from the nature study community.

The search for support will be a continuing part of the project which is based entirely on "soft" money. We are currently negotiating with the community in and around Belleville, Illinois in hopes of selling our service to several schools there who, along with impetus provided by the local newspaper publisher (also a bird-watcher....) plan to arrange for funding from about two dozen local businesses. We, of course, would be heavily involved in describing our program to these potential supporters. They in turn would be welcomed as co-hosts of field trips done at Tyson by classes drawn from schools in Belleville. Thus there would be the involvement of contributors on a personal level.

At the outset, we did not contemplate this scale of activity nor plan for it. There are not only the financial uncertainties, but also pressures on the available classroom and rest facilities. However we have succeeded in catching the attention of high ranking administrators within Washington University and are hopeful that they will help us locate funds for renovation of an existing building to serve as an educational facility suitable for support of field studies.

Rather than the culmination a premeditated course of action, the field science project represents an outgrowth of good intentions in the areas of outreach to the surrounding community and service to the parent institution and the application of these over many years. While all the details of what we have chosen to do may not transfer to other facilities readily, we think that the basic concepts may be of interest to other field stations. Especially those which desire to build utilization of the physical facilities during the school year, to diversify activities in these times of declining numbers of college students committed to field studies, or to increase the appreciation of the field station by the surrounding community and the parent institution.

* *

Part B. Application of the Concept (P. Hawker)

Tyson Research Center is a 2000 acre tract of oak-hickory forest located 19 miles southwest of St. Louis. Surrounded by county and state parks, it is dedicated to conservation of the landscape and, through research and education, to an improved public understanding of,and appreciation for, wise husbandry of our natural resources. In addition to welcoming a number of educational and research projects from our parent institution and from other universities around St. Louis, it has provided space for a wolf sanctuary operated by the Wild Canid Survival and Research Center and for a Raptor Rehabilitation and Propagation Project. Located on an interstate highway, the research center represents a resource easily accessible to schools of the region for activities which capitalize on these projects and this management philosophy.

Tyson Research Center conducts a field science program which provides an outdoor learning laboratory for elementary and high school students and their teachers. Many of our participants are from urban areas and have little or no previous exposure to natural processes and phenomena. At Tyson many see their first live frog, overcome fears of snakes and spiders by handling them, or successfully identify a bird for the first time while they band it. They discover a new world of plants and animals, and leave with a new appreciation for the responsible stewardship of our natural resources.

The Field Science program is based on exciting, "hands-on" science activities which serve to reinforce classroom curricula, and to stimulate student interest and curiosity about our natural environment, in both the physical and biologic dimensions. In addition, these field activities stress teamwork, honesty, reliability, self-discipline, and learning how to learn. The project helps to round the education students are receiving and is often cited by students as a great incentive for coming to school!

The format, which we have developed and are using thus far, begins with preparation of participants through an orientation for participating teachers followed by individual classroom pre-trip visits by Tyson staff. During the pre-trip classroom visit we provide students with an introduction to the topics they will explore in the field, as well as general information about the flora and fauna at Tyson, some anticipation of how the animals generally respond to the arrival of visitors, suggestions for what students should wear and bring on the field trips, and background information about the research center. We also provide teachers with materials for pre- and post-trip classroom activities. This initial orientation is followed by one or a series of full-day trips to Tyson. The trips are followed up with questions relating to the topics discussed and written program evaluations from students and teachers.

Topics explored on these trips include: bird banding, endangered species (wolves and raptors), bats, geology, weather, pond study, non-flowering plants, spring wildflowers, insects, forest ecology, and map reading/orienteering.

The hands-on outdoor educational program Tyson Research Center provides represents a unique opportunity for planned, supervised field science trips for both students and their teachers. Many teachers participate in the program for several semesters with different groups of students. As their confidence and experience grow, many begin to develop and implement "hands-on" field-based science activities for their students on their own. The program has already met with overwhelmingly enthusiastic response from students, teachers, and school officials in the St. Louis area schools.

The Tyson Field Science Program is geared for one class per trip (typical class size = 20-25 students) from grades 4-12. The length of the field trip day at Tyson is usually determined by individual teachers/schools - most classes bring bag lunches and spend the whole school day, from 4-6 hours. Travel time from most St. Louis area

schools to Tyson is about 45 minutes. The activities at Tyson are conducted by a field science instructor, aided, whenever possible by trained volunteers to increase the instructor/student ratio for more effective, experiential learning in the field.

The majority of programs we provide at this time are for St. Louis city schools. Funding for these programs is provided by the city schools, in the form of grants, and by private sources identified and approached for funding by Tyson staff. The city schools provide for slightly less than half the cost to Tyson for their programs. In addition, the city schools provide buses to transport their students to and from Tyson. We have also begun negotiating with the Belleville (Illinois) area schools to provide field trips for all of their 8th graders (approx. travel time to Tyson, 75 min). Funding for Tyson's costs will be provided by numerous Belleville area businesses, each business contributing approximately $1000/year on an ongoing basis. Buses will provided by the schools. An area newspaper is providing incentive for businesses to participate in the form of a start-up grant which will contribute half of the contribution needed from each business for the first year. Thereafter, each business will be asked to contribute the entire $1000 each year. We invite and encourage participation of the sponsoring business people. Business representatives will be provided with pre-trip preparatory materials and will be encouraged to attend pre-trip classroom visits with participating students and teachers. On the field trip(s), they will assist Tyson field instructors in conducting student science activities. Participating sponsors have the opportunity to be involved in the development of the future work force of their community.

Logistics have been tackled as they have come up. The University negotiated an agreement with the city schools regarding liability, eliminating our need to get signed releases from each student's parents. The city schools do require parent permission/informed consent forms on their end, and we are careful that all participants are informed about the nature of the activities they will be involved in and the associated risks involved. In addition, staff are trained in basic first aid and emergency procedures. The nearest ambulance crew periodically visits Tyson to familiarize themselves with access, etc. Tyson has not yet had to face a space crunch, so the field science project does not infringe on researchers' sites. We are mindful of the tremendous environmental impact of our approximately 1500 student visits to Tyson/semester, and therefore avoid particularly sensitive areas and limit activities to easily accessible, less pristine sites (mostly near main roads and buildings). We have been fortunate so far to have the enthusiastic support of many researchers working at Tyson.

* *

PIKES PEAK RESEARCH STATION

Colorado Outdoor Education Center
Florissant, Colorado 80816

Telephone: 303/689-2025 (PPRS)
303/748-3341 (COEC)

PURPOSE

The primary purpose of Pikes Peak Research Station is to foster original research in the natural and social sciences (anthropology, archeology, astronomy, biology, geology, physical and historical geography) by encouraging holistic, interdisciplinary approaches to scientific investigations; and by providing modern laboratory facilities; comfortable, year-round living quarters; and (eventually) extensive baseline information (on the geological, biological, and cultural histories of the area) against which to interpret current research. PPRS is also a learning center for post-public school students (college undergraduate and graduate students as well as adults).

The information generated by research conducted and courses taught at PPRS will be used to advance other educational activities of the Colorado Outdoor Education Center: the Outdoor Leadership Program; the Public School Residence Program; outdoor programs for adults at The Nature Place; development of educational materials for Search Publications; displays at the Interbarn Learning Center; and the annual educational workshop "Stalking Education in the Wild." In 1986 the station will begin publishing a new serial entitled Bulletin of Pikes Peak Research Station, which will contain scientific papers in five concurrent series: Paleontology, Geology, Zoology, Botany, and Geography.

PHILOSOPHY

The guiding philosophy at PPRS is based on the following related principles:

1. Life on earth is a dynamic system, closely interlocked with the nonliving systems of rocks, water, and atmosphere.

2. Humans are a part of nature and our continued success as a species (cultural advancement and standard of living) depends on our understanding of and respect for the complexity and dynamic nature of the world's ecosystems.

3. Successful stewardship of the earth's resources and responsible decisions about human activities on earth require reliable information about the nature of the world's ecosystems and full appreciation of the processes that govern ecosystem dynamics.

4. All scientific investigations conducted at PPRS should contribute to a holistic understanding of the workings of natural systems, with an eye to increasing our ability to make responsible decisions as members of a diverse global community of life on earth.

Promoting understanding of nature through research and education

HISTORY

Pikes Peak Research Station was established in 1982 on the site of the Drais Homestead on the southern end of the Sanborn Ranch, a 6000-acre tract administered for educational purposes by the Colorado Outdoor Education Center. This area has been designated a National Environmental Study area by the National Park Service. The station has a cooperative agreement with the University of Florida to provide facilities and support for field courses in anthropology, astronomy, botany, geology, and zoology. The University of Florida Geology Field Camp has been taught at PPRS for the past four years.

PPRS has developed an interdisciplinary course in ecology and geology that was first taught in 1984 to students from Illinois State University and since has been offered to public school science teachers. Under development for 1986 is an international educational research program, Pikes Peak Perspectives, in which interested adults from around the world will come to Colorado to participate in long-term ecological research projects designed to characterize and monitor natural ecosystems in the Pikes Peak region (rather like Earthwatch in reverse).

FACILITIES

In addition to the 6000-acre Sanborn Ranch (elevation 8500 feet, Montane Life Zone), Pikes Peak Research Station has access to an additional 2000 acres owned by Colorado Outdoor Education Center in central Colorado (in parcels of various sizes located in life zones stretching from upper Sonoran to Arctic Alpine), and to the lands of the adjacent Florissant Fossil Beds National Monument, the Mueller Ranch State Wildlife Preserve, and Pike National Forest. As of 1985, the physical facilities at PPRS consisted of:

(1) a kitchen/dining hall building with an attached classroom,
(2) seven large tents on permanent frames, each accomodating 4 students,
(3) a bathhouse with separate facilities for men and women,
(4) a two-story house for the station director and his family, in which is housed the station office,
(5) two winterized dormitory-residences for year-round use, each with 5 bedrooms, 2 1/2 baths, kitchen, and living room with fireplace.
(6) an IBM PC XT computer for data analysis and record-keeping
(7) approximately $30,000 worth of scientific equipment, including petrographic and stereomicroscopes, collecting equipment, and storage cabinets for botanical, entomological, and geological specimens.
(8) a rapidly growing research library of over 500 volumes and about 20 scientific journals

Future plans call for the construction of a large, modern laboratory building, which will contain 4 fully-equipped laboratories (botany, zoology, geology, anthropology/archeology), an instrumentation lab (scanning electron microscope, gas chromatograph, mass spectrophotometer, electrophoresis equipment), an exhibition room and reception area, specimen preparation room, specimen storage area (herbarium; insect, skin, skeleton, rock, and artifact collections), library, reading room, conference room, darkroom, computer room, and offices. Additional buildings still in the planning stage include a larger kitchen and dining hall (capable of seating 100 people), an expanded classroom building, and two more winterized dormitory-residences for a total year-round capacity of 40 to 50 researchers, technicians, and students.

V. NEW MEMBERS-- WELCOME TO OBFS!!

A. Dr. Michael A. Bowers
Blandy Experimental Farm
University of Virginia
P.O. Box 175, Boyce, VA 22620

B. Dr. Robert Singer
School for Field Studies, Inc.
Cambridge, Mass 02139

C. Dr. Linda E. Leddy, Director
Manomet Bird Observatory
Manomet, Mass. 02345

D. Dr. Elizabeth P. Mallory
Director, Field Biology Training Program
Manomet Bird Observatory
Manomet, Mass. 02345

E. Dr. Robert W. Hastings
Director
Turtlecove Biological Research Station
Southeastern Louisiana University
Hammond, Louisiana 70402

F. Dr. W. James Judge
Fort Burgwin Research Center
Southern Methodist University
Dallas, Texas 75275

G. Dr. Ross F. Shaw, Director
Blakely Island Campus
Seattle Pacific University
Seattle, Washington 98119

H. Dr. William E. Keller
Box 187
Rensselaerville, New York 12147

I. Lynn Amos
Fiscal Office
University of Texas Marine Science Institute
P.O. Box 1267
Port Aransas, Texas 78373

Don C. Aabel
Pigeon Lake Field Sta
204 North Hall
U.W. River Falls
River Falls, WI 54022

Richard D. Alexander
Edwin C. George Res
Univ of Michigan
Museum of Zoology
Ann Arbor, MI 48109

David C. Allison
Dept of Biology
Monmouth College
Monmouth, IL 61462

Dr. Robert W. Angell
Dept. Biol Sciences
High Alt. Laboratories
University of Denver
Denver, CO 80210

Dr. Kenneth B. Armitage
Ex. & Applied Ecology
Div. Biol Sciences
University of Kansas
Lawrence, KS 66045

Dr. Nevin Aspinwall
St. Louis U. Biology
Reis Biological Station
3507 Laclede Avenue
St. Louis, MO 63103

Paul C. Baumann
Zoology Museum
Ohio State University
1813 N. High Street
Columbus, OH 43210

Dr. George T. Baxter
Knight Science Camp
Dept. Zoology & Physiol
University of Wyoming
Laramie, WY 82071

Dr. Walter B. Bohl
Int. Field Studies
Forfar Field Station
2199 E. Main Street
Columbus, OH 43209

Dr. Richard V. Bovbjerg
Iowa Lakeside Laborator
Department of Biology
University of Iowa
Iowa City, IA 52240

Dr. Michael A. Bowers
Blandy Experiment Farm
Univ of Virginia
P.O. Box 175
Boyce, VA 22620

Dr. Charles Boylen
Rensselaer Fresh Water
Institute MRC 201
Rensselaer Polytechnic
Troy, NY 12181

Dr. Ranier H. Brock
Cranberry Lake Bio Sta
249 Illick Hall
State Univ of New York
Syracuse, NY 13210

Dr. D. J. Brown
Bishop's University
Lennoxville, Quebec
J1M 1Z7

Dr. Richard C. Bruce
The Highlands Biol Sta
P.O. Drawer 580
Highlands, NC 28741

Dr. Diane M. Calabrese
F.J. Reineman Wildlife
Dickinson College
Dept. Biology
Carlisle, PA 17013

Laura S. Carter
81 Oakview Terrace
Short Hills, NJ 07078

Dr. Mike Christensen
Phillips Univ. Colorado
Dept. Biology
Enid, OK 73702

Dr. Richard W. Coles
Washington University
Tyson Research Center
P.O. Box 258
Eureka, MO 63025

Dr. Peter Connors
Bodega Marine Lab
and Reserve
Univ of California
Bodega Bay, CA 94923

Donald D. Cox
Rice Creek Biol. Sta
State University Coll
Oswego, NY 13126

Dr. Robert C. Dalgleish
Dean, Admin, Research,
W.V. Sch of Osteopathy
400 N. Lee Street
Lewisburg, WV 24901

Steve Davenport
Ano Nuevo Island Reser
Univ.of CA Santo Cruz
Santo Cruz, CA 95064

Daniel R. Dawson
Valentine Eastern
Sierra Research
P.O. Box 273
Mammoth Lakes, CA 93546

Dr. Kenneth L. Diem
Univ. Wyo Nat Park Serv
Dept. Zoology & Physiol
P.O. Box 3166, Univ Sta
Laramie, WY 82071

Dr. Ronald Dimock, Jr.
C.M. Allen Biol Station
Dept. of Biology
Wake Forest University
Winston-Sale, NC 27109

Dr. Boyce A. Drummond
Pike's Peak Res Sta.
Colorado Outdoor
Education Center
Florissant, CO 80816

Dr. Don C. Erman
Sagehen Creek Field Sta
Dept. of Forestry & Res
University of Calif
Berkeley, CA 94720

Dr. John W. Ferner
Aquatic Biol Field Sta
Thomas More College
Crestview Hills,
KY 41017

Dr. Millicent Ficken
Univ. Wisconsin Field
Station
3095 Blue Goose Road
Saukville, WI 53080

Revised December, 1985

Dr. Robert L. Fisher
Rayston Field Station
Dept. of Biology
Juniata College
Huntingdon, PA 16652

Dr. Charles J. Flora
Sundquist Marine Lab
Aquatic Studies
W. Washington Univ
Bellingham, WA 98225

Dr. Ronald E. Foreman
Bamfield Marine Sta
P.O. Box 99
Bamfield, B.C. VOR 1BO

Jeffrey B. Froke
National Audubon Soc
P.O. Box 224-COTO
Trabuco Canyon, CA
92678

Thomas A. Frost
Trout Lake Biol Sta
Rt. 1, Box 76
Boulder Junction WI
54512

Dr. David M. Gates
U. Mich Biol Station
Rm 2043 - Nat. Science
Ann Arbor, MIO 48109

Dr. Ralph E. Good
Div Pinelands Research
Rutgers Pineland Field
Station, Dept. Biology
Camden, NJ 08102

Deborah M. Gordon
E.N. Huyck Preserve
P.O. Box 188
Rensselaerville, NY
12147

Dr. Robert E. Gordon
Office of Advanced Stu
Univ. of Notre Dame
Notre Dame, IN 46556

Dr. Benjamin F. Graham
Conard Environmental
Research Area
Grinnel Coll-Dept Biol
Grinnell, IA 50112

Dr. James Griffin
Hastings Nat History
Reservation
Star Route, Box 80
Carmel Valley CA 93924

Dr. Alan Grundman
Jasper Ridge
Biological Preserve
Stanford University
Stanford, CA 94305

Dr. James Halfpenny
Inst Arctic & Alpine
Research-U of Colorado
Box 450
Boulder, CO 80309

Dr. Clarence Hall, Jr
White Mountain Res. St
3805 Geology Building
University of Calif
Los Angeles, CA 90024

Dr. Willard N. Harman
Biology Department
State Univ College
Oneonta, NY 13820

P.P. Harper
Station de Biologie
C.P. 6128, Succ "A"
Montreal, Que Canada
H3C 3J7

Dr. Richard T. Hartman
Pymatuning Lab Ecology
University Pittsburgh
Rt. 1, Box 7
Linesville, PA 16424

Dr. Robert Hastings
Turtle Cove Bio Res
P.O. Box 814
S.E. Louisiana Univ
Hammond, LA 70402

Dr. Stephen P. Havera
Illinois Natural
History Survey
Box 599
Havana, IL 62644

Dr. John B. Heiser
Shoals Marine Lab
G-14 Stimson Hall
Cornell Univ
Ithaca, NY 14853

Dr. Loren G. Hill
Univ Oklahoma
Biological Station
730 Van Vleet Oval
Norman, OK 73019

Dr. Louis F. Hilleary
Gold Creek Ecological
Los Angeles Valley Col
5800 Fulton Avenue
Van Nuys, CA 91401

Edward G. Horn
Environmental Prot
N.Y. Dept. Env Cons
50 Wolf Road - Rm 530
Albany, NY 12233-0001

Dr. Lloyd Hulbert
Div Biol Sciences
Kansas State Univ
Manhattan, KS 66506

Dr. John Janovy
Cedar Point Biol Sta
School Life Science
Univ of Nebraska
Lincoln, NE 68588

Dennis Johns
Rocky Mountain Bio Lab
P.O. Box 519
Crested Butte, CO
81224

Dr. Robert S. Jones
University Texas
Marine Science Inst
P.O. Box 1267
Port Aransas, TX 78373

Dr. W. James Judge
Fort Burgwin Res Cen
Southern Methodist
University
Dallas, TX 75275

Dr. Eugene Kaplan
Hostra University
Marine Laboratory
Dept Biology
Hempstead, NY 11550

Dr. William E. Keller
Box 187
Rensselaerville, NY
12147

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Mr. Jeffery Kennedy
Natural Reserve System
Univ California
2120 Univ Ave-4th fl
Berkeley, CA 94720

Dr. Michael Kennedy
E.J. Meeman Bio Field
Life Science Bldg 321
Memphis St. Univ
Memphis, TN 38152

Dr. Charles C. King
980 Biol Science Bldg
Ohio St University
484 West 12th Ave
Columbus, OH 43210

Dr. Joseph King
Hancock Biol Sta
Murray St. University
Murray, KY 42071

Dr. Harold Klieforth
Desert Research Inst
P.O. Box 60220
Reno, NV 89506

Lois Kruschwitz
Alpine Learning Center
2190 Bluebell
Boulder, CO 80302

Charles E. Kupchella
Ogden Col of Sci Tech
and Health
Western Kentucky Univ
Bowling Green,KY 42101

Dr. George Lauff
W.K. Kellogg Bio Sta
Michigan St. Univ
3700 East Gull Lake Dr
Hickory Corn MI 49060

Dr. James N. Layne
P.O. Box 2057
Archbold Biol Sta
Lake Placid, FL
33852

Linda E. Leddy
Manomet Bird
Observatory
P.O. Box 936
Manomet, MS 02345

Dr. Michael C. Mackey
McIntyre Medical Sci
3655 Drummond
Montreal, P.Q.
H3G 1Y6

Elizabeth P. Mallory
Field Bio Training Pro
Manomet Bird Observato
P.O. Box 936
Manomet, MS 02345

Dr. Peter Marchand
Babcock Nature Pres
Johnson St. College
Johnson, VT 05656

Dr. James E. Martin
Black Hills Natural Sci
South Dakota Sch Mines
& Technology
Rapid City, SD 57701

Dr. John Martin
Moss Landing
Marine Station
Moss Landing, CA 95039

Dr. Robert E. Martin
Tech Aqu Biol Sta
Box 5041
Tennessee Tech Univ
Cookeville, TN 38501

Dr. William H. Martin
Div Natural Areas
Eastern Kentucky Univ
Richmond, KY 40475

Dr. Donald McCrimmon
Point Reyes Bird Obser
4900 Shoreline Highway
Stinson Beach, CA 94970

Carl Merrill
R. Friedman Cobscook Bay
Biology Department
Suffolk Univ Beacon Hill
Boston, MA 02114

Dr. Joe Merritt
Powdermill Nature Res
Star Route South
Rector, PA 15677

Dr. Thomas W. Moon
Huntsman Marine Lab
Brandy Cove Road
St. Andrews
New Brunswick EOG 2XO

J. J. Murray, Jr.
Mountain Lake Bio Sta
University Virginia
Gilmer Hall Rm B-64
Charlottesvil VA 22903

Dr. Robert J. Naiman
Matamek Research Sta
Woods Hole Oceanograph
Woods Hole, MA 02543

Dr. Mark Noble
University of Colorado
Mountain Research Sta
INSTAAR
Nederland, CO 80466

V. T. Parker
Sierra Nevada Field Ca
Dept. Biol Sciences
1600 Holloway Ave
San Francisco CA 94132

Dr. Dennis Parkinson
Kananaskis Centre
Univ of Calgary
2500 Univ Drive N.W.
Calgary Alberta T2N 1N4

Dr. David F. Parmelee
Itasca Biology Pro
10 Church St. SE
Univ Minnesota
Minneapolis, MN 55455

Dr. Frank Pennington
Eagle Lake Field Sta
Dept. Biol Sciences
California St. Univ
Chico, CA 95929

Dr. Ethen Perkins
Malheur Field Sta
P.O. Box 260-E
Princeton, OR 97721

Dr. Donald Prusso
Whittel Forest & Wild-
life Area Dept Biol
Univ of Nevada
Reno, NV 89557

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Karen Jennings Reese
Ohio State Univ
Coll Biol Sciences
484 W 12th Avenue
Columbus OH 43210

J. M. Reutter
F.T. Stone Lab
Ohio State Biol Sci
484 W. 12th Ave
Columbus, OH 43210

Dr. Steven C. Roschke
Aquatic Biol Field Sta
Thomas More College
Crestview Hills KY
41017

Dr. Jerome Rozen, Jr.
Am Museum Natural Hist
Central Park West at
79th Street
New York NY 10024

Dr. Richard Rust
Whittel Forest &
Wildlife Area
University Nevada
Reno, NV 89557

Dr. Ross F. Shaw
T. B. Crowley Lab
Seattle Pacific Univ
Seattle, WA 98119

Dr. Jennifer M. Shay
Delta Marsh
Univ of Manitoba
Winnipeg, Manitoba
Canada R3T 2N2

Wade C. Sherbrooke
Southwestern Res Sta
P.O. Box G
Portal, AZ 85632

Dr. Robert Singer
School-Field Studies
196 Broadway
Cambridge, MA 02139

Paul Siri
Bodega Marine Lab
Univ California
P.O. Box 247
Bodega Bay, CA 94923

Dr. Raymond Soltero
Turnbull Lab for
Ecological Studies
East Washington Univ
Cheney, WA 99004

Dr. Richard Speairs,Jr
Ouachita Biol Sta
Louisiana St Univ
Shreveport, LA 71115

Dr. Jack Stanford
Univ Montana Biol Sta
East Shore
Bigfork, MT 59911

Dr. Wolfgang Sterrer
Bermuda Biol Station
for Research, Inc
Ferry Reach 1-15
Bermuda

Dr. John R. Tester
Cedar Creek Nat Hist
Univ Minnesota
2660 Fawn Lake Dr NE
Bethel, MN 55005

Don J. Usner
Landels-Hill Big Creek
231 Clark Kerr Hall
Univ. California
Santa Cruz, CA 95064

Dr. John Vernberg
Belle W. Baruch Inst
Marine Biol & Coastal
Univ S. Carolina
Columbia, SC 29208

Dr. John Warnock
Kibbe Life Science St
Dept Biology
Western Illinois Univ
Macomb, IL 61455

Dr. Douglas Wartzok
Dept. Biol Sciences
Indiana U-Purdue U
2101 Coliseum Bv. East
Fort Wayne, IN 46805

Lavern J. Weber
Oregon St Univ
Marine Science Center
2030 S. Marine Sci Dr
Newport, OR 97365

Dr. Philip White
Queens College Center
Caumsett State Park
Huntington, NY 11743

Dr. B. G. Whiteside
Director Aquatic Sta
Southwest Texas Univ
San Marcos, TX 78666

James L. Wolfe
Archbold Bio Station
P.O. Box 2057
Lake Placid, FL 33852

Michael Yoder-Williams
Sagehen Creek Field St
P.O. Box 939
Truckee, CA 95734

Dr. William D. Youngs
New York St. College
Agriculture & Life Sc
Arnot Forest
Ithaca, NY 14853

Lynn Amos, Fiscal Office
Univ. Texas Marine Sci.Inst
P.O. Box 1267
Port Aransas, TX 78373

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