



## NEWSLETTER

### GREETINGS AND APOLOGIES

This is our second attempt at a newsletter to the alums of the Biology Department of the University of New Mexico. We meant to have this off to you a bit sooner, but it seems we do better with grant proposal deadlines than with other communications. Nevertheless, here we are again, hoping to inform you mainly of things that happened to us between June 1984 and June 1985. Admittedly, that's not quite current, but since the single best summary of recent significant developments is the Departmental Annual Report covering that span of time, we must make do with what we have. So please read on.

### PHYSICAL FACILITIES

Research labs in our old wing were renovated for our programs in microbial physiology, molecular genetics, Neurospora studies, and pollen analysis. We also improved our computer facilities by squeezing funds out of bond monies, grant overhead, teaching funds, and faculty research contracts -- but for a university the size of UNM our computer holdings are still inadequate. One bright point: we were recently rewarded by a grant from NIH-MBRS for a new transmission electron microscope. The instrument is now in operation in a very attractive and functional Electron Microscopy Facility that occupies completely renovated rooms in the old wing basement. Come by and take a look!

### UNDERGRADUATE CURRICULUM

We recognize the need to delineate areas of study as clearly as possible for our undergraduates. With this in mind we've revised the undergraduate curriculum so that students can now graduate with an emphasis in one of the following areas: botany, evolution/ecology, microbiology, molecular-cellular biology, physiology, and zoology. We think we offer a rigorous, high quality undergraduate program in biology that trains pre-professionals effectively and that also satisfies students who simply want to graduate with a thorough grounding in the study of life. Last year 70 students graduated with the BS in Biology.

### GRADUATE REVIEW

Last spring, at our request, the graduate program in biology was reviewed by a panel of nationally recognized scientists. Their task was simplified by a comprehensive set of data provided by a hardworking Graduate Self-Study Committee. You'll be interested in comments, given in the Appendix, that were excerpted from the review group's final report. If you read it you'll note that while we have much to be proud of, to reach our full potential we need more adequate resources and more faculty members.

### DEPARTMENT OF BIOLOGY

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#### GRADUATE PROGRAM

Thanks in large part to you alums and other donors, The Biological Society invited and successfully recruited two out of three outstanding graduate students acvutely sought after by other universities. Similar funds in 1984-1985 made possible \$100 Graduate Student Teaching Awards to Jim Bednarz and Steve Zack (now on post-doctoral fellowships in Venezuela and New Mexico, respectively), to Ann O'Rourke who is still with us, and to Gary Dodson who is all set to do post-doctoral study in Australia.

Our graduate students are an integral part of our total effort. They work with us on important departmental committees (7 committees last year), and contribute either with faculty or independently to journals and at meetings. This independence last year resulted in 32 papers presented at regional, national, or international meetings, 4 publications in refereed journals, 4 awards from professional societies for outstanding presentations, 10 grants for research support, one UNM Presidential Fellowship, one Fulbright Scholarship to France, and one NSF doctoral dissertation grant. We're pleased to have such a vigorous, dedicated group of young scientists in our midst.

#### ENDOWED CHAIR

The department's first Endowed Chair, the Loren D. Potter Chair in Plant Ecology was established to honor Loren's contributions to the department and his research efforts in field plant ecology. Ecological studies pertaining to natural resources started in this department with the course "Plant Ecology/Field Botany" in 1908-09 -- before a regular textbook in ecology was available. A substantial base for the endowment was obtained from the appraisal price of two parcels of land donated to the Biology Department in 1972 by Harry Ross and Arthur Brown. The amount of \$63,215 has been placed in a Trust Fund called the Ross-Brown Endowment within the UNM Endowment fund. Additional funds for the Potter Chair were solicited by the Biological Society through a general mailing to 1,416 Biology alumni and friends. As of June 30, 1985 an additional \$7,000 was generated by contributions. The total endowment will accumulate interest until 1991, at which time only the annual interest income is to be used to support the research and related scholarly activities of the holder of the Potter Chair, who will be a tenured UNM plant ecologist with national recognition for work emphasizing field studies. Further additions to the fund, tax-exempt, can be made by check payable to the "UNM Foundation L.D. Potter Endowment Fund" and sent to the Biology Department.

#### FACULTY

Here now is a look at our full-time faculty and some of their recent activities. We go through the list in alphabetical order.

ALTENBACH, SCOTT, Associate Professor, Vertebrate Anatomy and Morphology. Scott was acclaimed Outstanding Undergraduate Teacher of the Year at UNM last year. His tremendous teaching talent, particularly at the beginning biology level, is widely known in the state and region. Last year Scott also presented a major invited paper at an international conference on bat research.

BACA, OSWALD, Associate Professor, Microbiology. Last year Oz gave invited papers in London and Czechoslovakia (the latter at an international symposium on Rickettsiae and rickettsial diseases), and had several research papers published. Now in his final year of a large NSF grant, he was recently awarded another grant by PHS-NIH-MBRS for nearly \$60,000.

BARTON, LARRY, Associate Professor, Microbial Physiology. Larry received an \$80,000 NIH-MBRS grant for his research on transport systems in bacteria. He also published a research paper.

BOURNE, EARL, Associate Professor, Human Anatomy and Physiology. Earl continues to be responsible for teaching rigorous courses to many students in UNM's paramedical program.

CATES, REX, Associate Professor, Plant-Herbivore Ecology. Rex is an example of what's happening to UNM because of poor support by the state. He had over \$200,000 in NSF and Forest Service grants, had actually brought in over 2 million dollars worth of outside support since 1975, and last year was a Texas A&M Distinguished Lecturer. Nevertheless, BYU made him an offer that UNM couldn't match. Fortunately for us, Rex will continue to do jointly supported research with UNM biologists.

CHIOVETTI, ROBERT, Assistant Professor, Electron Microscopy. Bob's recent efforts resulted in the EM Facility discussed on page 1. Last year he also published several papers and gave a number of invited seminars; his community service has been extensive.

CRAWFORD, CLIFFORD, Professor, Terrestrial Invertebrate Ecology. Last spring, Cliff went to the University of Kuwait, where, as a visiting professor, he gave seminars, lectured, and reviewed the Zoology Department. A member of two editorial boards of journals dealing with desert research, Cliff also wrote a review and research paper on the role of arthropod gut flora in desert ecosystems.

DAHM, CLIFFORD, Assistant Professor, Aquatic Ecology. This new Cliff joined us in 1984 and has already been funded by NSF, Sandia National Labs, and the Forest Service for a total exceeding \$350,000, some of it shared. His diverse research includes nitrogen cycle interactions on Mt. St. Helens, microbial studies in geothermal fluids, and the effects of catastrophic disturbances on stream ecosystems. Cliff wrote a book chapter on the last of these subjects, and presented several regular papers at meetings, in addition to giving invited papers at international meetings in Israel and Japan.

DEGENHARDT, WILLIAM, Professor, Herpetology. In addition to his teaching and curatorial duties, Bill continues to study the biology of reptiles. Results of some of his work were recently published.

DUSZYNSKI, DONALD, Professor and Chairman, Parasitology. Don somehow manages to continue work (the chair) with pleasure (teaching and research). Holder of grants from NIH and the NM Department of Game and Fish, he's an editorial board member of a major journal, and a member of the Executive Council of the American Society of Parasitologists. Last year he also published two papers and presented eight at national meetings.

FINDLEY, JAMES, Professor, Mammalogy and Evolutionary Biology. Together with Terry Yates, Jim received \$93,000 from NSF to reorganize and update the Museum of Southwestern Biology's outstanding mammal collection. In recent years Jim has found that tropical reef fish communities offer intellectual challenge and aesthetic allure. Meanwhile, he also serves on the Board of Directors of the American Society of Mammalogists.

GOSZ, JAMES, Professor, Ecosystem Ecology. Jim is on leave during 1984-86 as NSF Director of Ecosystem Studies. Being in Washington, however, hasn't totally removed him from scholarly effort. Back at the shop his more than \$600,000 (some shared) in grants keeps an active program going on forest nutrients. While all this was going on, Jim wrote four book chapters.

GROVER, HERBERT, Visiting Associate Professor, Ecosystem Ecology. As a temporary replacement for Jim Gosz, Herb has also become well known for his articles and other contributions to the theme of "nuclear winter," which may well be the major environmental consequence of nuclear war.

JOHNSON, GORDON, Associate Professor, Plant Physiology. New Mexico Water Resources supported Gordon's recent studies of nitrogen fixation by a salt-tolerant plant in hydroponic culture. Gordon also published a paper and gave several presentations at regional meetings.

JOHNSON, WILLIAM, Associate Professor, Genetics. Bill kept busy this last year with his duties as Assistant Chairman, and also as a very active member of a variety of departmental and university committees.

KERKOF, PAUL, Associate Professor, Cell Physiology. Paul continues to rank as one of UNM's outstanding teachers. His research on thyroid stimulating hormone action on cultured thyroid cells is supported by a grant from NIH-MBRS.

KOGOMA, TOKIO, Associate Professor, Molecular Genetics. Tok, who is one of the eminent scientists in the field of DNA replication, had over \$150,000 in grants from three agencies last year. He also served on an NIH Review Panel, published five papers, and gave several national meeting papers and invited seminars.

LIGON, DAVID, Professor, Ornithology and Animal Behavior. NSF and the National Geographic Society supported Dave's studies on population structure and communality in the Green Woodhoopoe's he's studied over the years in Kenya. Besides his teaching and research, Dave serves on several national society committees and contributed a book chapter last year.

MARTIN, WILLIAM, Professor, Plant Systematics. As usual, Bill's public service as Herbarium Curator is but one feature of his busy professional life. Floristics studies and Herbarium and Ethnobotany lab improvement needs resulted in funding by the Forest Service and the UNM Foundation. Bill, who is also a Research Associate of the Los Angeles Natural History Museum, gave two invited seminars and co-authored two books on the flora of New Mexico last year.

MOLLES, MANUEL, Associate Professor, Aquatic Invertebrate Ecology. Manuel, who is now in Portugal as a Fulbright Scholar, studies the structure of stream insect communities. Last year this work produced a journal article, four papers at meetings, an invited seminar, and support by New Mexico Game and Fish for his continuing research on the endangered Socorro isopod.

NATVIG, DONALD, Assistant Professor, Molecular Evolutionary Biology. NSF gave Don \$120,000 last year for a phylogenetic study of Neurospora. Don teaches in the introductory biology program as well as in his own area, but found time to give five papers at regional and national meetings.

POTTER, LOREN, Professor, Plant Ecology. Never one to slow down, Loren's final year of his distinguished career at UNM saw him co-author two books, one on New Mexico grasses, the other on regional water resources. He also wrote two papers and gave several others at meetings. The National Park Service supported two of his vegetation studies. Now, as professor emeritus, Loren seems to be just as active in scientific and departmental affairs as he's ever been.

RICE, WILLIAM, Assistant Professor, Population Genetics. Shortly after joining us in 1984, Bill landed a large NSF grant to study the evolution of habitat selection and reproductive isolation, using Drosophila. Bill adds teaching strength to our genetics program as well. He just had several articles published and gave two invited seminars in the SUNY system, New York.

RIEDELSEL, MARVIN, Professor, Environmental Vertebrate Physiology. With the help of grants from the Air Force and UNM, Bud and his students continue to study how vertebrates, including humans, respond to various physiological stresses.

TAYLOR, FRITZ, Associate Professor, Population Biology. Two NSF grants, totalling nearly \$200,000, went towards Fritz's work with diapause induction in pest insects. Fritz also wrote two papers, and was both an invited speaker at and the editor for a symposium in Germany on insect life-cycle strategies.

THORNHILL, RANDY, Associate Professor, Behavioral Ecology and Evolution. Randy is another colleague with two NSF grants. Social behavior and sexual selection are his areas of study. A very busy biologist, Randy last year wrote three papers and three book chapters, gave five papers at meetings and six seminars at U.S. and English universities, was one of four invited eminent biologists to participate in a Canadian forum on the evolution of behavior, and was recently asked to be one of three speakers at the initiation of a field station at Uppsala University, Sweden.

TOOLSON, ERIC, Associate Professor, Physiological Ecology. Another of our premier introductory biology teachers, Eric is also supported by NSF for his studies on the physical and biochemical nature of insect cuticle in relation to water loss. Eric wrote a paper on this subject, and presented two others at national meetings.

TRUJILLO, JOHN, Associate Professor, Developmental Biology. Besides teaching courses in his field, John is also an associate editor of a professional journal. Last year he gave two invited seminars at other universities.

VOGEL, KATHRYN, Associate Professor, Cell Physiology. Two NIH grants for her studies of cell surface properties are only part of what Kate keeps up with these days. She's also co-editor of a professional journal and an NIH Study Section member, and has written two journal articles and a book chapter, in addition to giving three national meeting papers and five invited seminars. One of our two UNM Presidential Junior Professors, Kate spent a semester doing research at NIH, Bethesda.

WIENS, JOHN, Professor, Avian and Community Ecology. This past year John was a Fulbright Scholar in Australia, where his research was also supported by grants from NSF and the National Geographic Society. Meanwhile, NSF also funded his ongoing work in North American shrubsteppe ecosystems. Finishing his last year as editor of the Auk but continuing on the editorial boards of Biological Abstracts and the Ecological Society of America, John also managed to write five papers and five book chapters, and gave four invited international lectures.

YATES, TERRY, Associate Professor, Mammalian Systematics. Besides sharing a large NSF grant with Jim Findley for updating and reorganizing the Mammal Museum, Terry has two other NSF grants: one for a genetic survey of Bolivian mammals and another to study the genetics of mammalian hosts with respect to coccidian parasites. Terry is our other UNM Junior Presidential Professor; last year he wrote two papers and one book chapter, gave four papers at national meetings, presented an invited seminar, and was a board member of a national society.

#### ADDITIONAL APPOINTMENTS

A cluster of active scientists interacts with the Biology Department in a variety of ways. We list these people here to give you a broader view of our scholarly effort.

Adjunct Professors: Roger Conant (retired former Curator, Philadelphia Zoo), Tom Fritts (Fish and Wildlife Service), Kathryn Ono (Fish and Wildlife Service), Eugene Rypka (Lovelace Foundation), Norman Scott (Fish and Wildlife Service).

Adjunct Research Professors: Jack Cully (UNM/Southwest Ecological Consulting Associates), David Hafner (NM Natural History Museum), Kathryn Ono (Fish and Wildlife Service), Richard Smartt (NM Natural History Museum), Bruce Woodward (UNM).

Joint Appointments: Troy Best (UNM General College), Robert Kelley (UNM School of Medicine), Robert Waterman (UNM School of Medicine). Note that the following regular faculty members are joint appointees in other UNM departments: Oswald Baca (Microbiology), Tokio Kogoma (Cell Biology), William Martin (Anthropology), Kathryn Vogel (Anatomy).

Visiting Research Professors (Post-doctoral Appointees): Steve Austad (with Randy Thornhill), Tom Koob (with Kathryn Vogel), Deborah Malka (with Tok Kogoma), Beatrice Van Horne (with John Wiens).

New Assistant Professor: Dianne Marshall, who specializes in plant reproductive strategies, was recently appointed to fill the vacancy left by Loren Potter's retirement. Eric (Sam) Loker, a parasitologist with a background in schistosomiasis and the helminth-related diseases, joined our faculty at the same time.

#### OTHER PERSONNEL

About 20 full- or part-time support staff, headed by Administrative Assistant Mary Alice Root, are an indispensable component of the department's teaching and research effort. These vital people include office specialists, lab and animal technicians, and individuals responsible for the storeroom and greenhouse. In addition to the above, a variable number of technicians are employed on grant funds and are essential for our heavily funded research activities.

#### MUSEUM OF SOUTHWESTERN BIOLOGY

Consisting of six divisions, the Museum is a focal point for research and teaching. It also serves the city, state, and region on a nearly daily basis throughout the year by identifying organisms and making available specimens for study groups. Jim Findley is the Museum's director. The curators are Bill Martin (Herbarium), Terry Yates (Mammals), Bill Degenhardt (Reptiles and Amphibians), Dave Ligon (Birds), Manual Molles (Fish), and Cliff Crawford (Insects). So far some 20 grants, totalling over \$280,000, have been awarded to the Museum.

#### CASTETTER LAB FOR ETHNOBOTANICAL STUDIES

The Castetter Lab serves contracted archaeological research by specializing in vegetation surveys and analyses of pollen, macrobotanical remains, coprolites, and flotation residues. Its personnel, who are all trained in field archaeology and botany, include Beth Crowder, Karen Clary, Ann Cully, and Mollie Toll.

#### THE BIOLOGICAL SOCIETY OF NEW MEXICO

Because of decreased revenues in the state, appropriations to the University have not kept pace with the increasing needs and costs of operation. Increases in salaries and operational budgets have been nil for several years. Although the Biology Department's research activity has continued to expand and its scientific productivity is truly outstanding, many areas of teaching and research lack fiscal resources, which are needed to attain the type of excellence for which we are striving. For example, unless research funds are available, university support for one meeting per year is 60% of air fare and no per diem. Some alumni have asked how they may support the increased excellence in biological education and research. To make this possible, the Biological Society of New Mexico was formed.

A. Organization:

The Biological Society of New Mexico is a tax-exempt organization under the New Mexico Nonprofit Corporation Act and the United States Internal Revenue Code. The object of the Society is to establish and maintain endowments, trusts, and foundations and to administer grants and other funds, all for the purposes of encouraging, fostering, and pursuing excellence in education in the Department of Biology at The University of New Mexico. Such purposes shall be pursued directly through sponsorship of educational programs, support of education-related research, and any other activities, academic processes, or programs that benefit our primary goal of excellence.

The Society is authorized to receive, disburse, and administer funds, grants, stipends, honoraria, property, or any other interests for educational purposes. Tax-exempt gifts may be given with designation to be used for specific purposes, e.g., student fellowships, research support, or whatever, as long as the purpose fits the objectives of pursuing excellence in biological education and research at UNM. The funds will be administered by the Board of Directors under the laws of New Mexico governing non-profit corporations and the federal laws governing tax-exempt educational organizations approved by the U.S. Internal Revenue Service.

B. Activities:

1. Graduate Student Recruitment: The Society arranges for and contributes to visitation costs to the department of high caliber applicants.

2. Graduate Student Support: The Society makes awards, as funds become available, to students showing excellence in teaching.

3. Continuing Education and Professional Stature: The Society assists graduate students and faculty to attend and give papers at professional meetings.

4. Local Seminars and Symposia: The Society hopes to allocate funds to sponsor seminars and symposia in Albuquerque, thus attracting national attention to UNM and the Biology Department.

5. Newsletter: The Society publishes this newsletter, which is made available to all past and present graduates in Biology, and to members of the public who may wish to join the Society and thereby lend their strength and support.

C. Designated Use of Funds:

If contributions are earmarked for designated purposes such as teaching areas, research projects, equipment, or awards, the Society will carry out the wishes of the donors involved. Otherwise, donations will be used according to our discretion to fill our most immediate needs.

D. Membership in the Biological Society of New Mexico:

1. Any person contributing an annual fee, on a calendar year basis, of \$15 or more is appointed a member of the Society and will receive the Newsletter. As with membership in all professional societies this is a tax deduction.

2. Any person contributing \$25 will be appointed a member and on request will receive a T-shirt or tank top of excellent quality with the logo and name of the Society.

3. Any person or organization contributing a lump sum of one thousand dollars or more is appointed a patron of the Society. Patrons are entitled to membership benefits for life and will receive a Certificate of Patronage. Anyone contributing \$10,000 or more will be considered a "patron Saint" of the Society.

4. All memberships and contributions are tax exempt.

5. Please mail memberships and contributions by check payable to "The Biological Society of New Mexico" to:

Secretary-Treasurer, Biological Society of New Mexico  
Biology Department  
The University of New Mexico  
Albuquerque, New Mexico 87131

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D E T A C H A N D M A I L  
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Name \_\_\_\_\_ UNM Degree \_\_\_\_\_ Year \_\_\_\_\_ Other Degrees \_\_\_\_\_

Current Mailing Address \_\_\_\_\_

Current Occupation \_\_\_\_\_

Other Activities \_\_\_\_\_

Enclosed check \$ \_\_\_\_\_

If \$25 or more and you desire a shirt, check appropriate boxes:

T-shirt                       Blue                       Small

Tank top                       Cream                       Medium

Large

APPENDIX

Research: "Graduate education and research are strong by both national and international standards. The major focus of strength is in ecology and evolution." "A secondary focus of strength in biology is in molecular and cell biology, an area where a subset of mainly younger faculty have developed solid reputations and strong research programs within the last decade. Research excellence in this area enhances the intellectual climate of the department and presents opportunities for department-wide cooperation in new hybrid disciplines such as molecular evolution, metabolism of ecologically significant biomolecules, and microbial ecology." (A considerable part of the report deals with suggestions and recommendations of how to assist in bringing about this cooperation). "A high proportion of faculty and graduate students is as productive in research, in obtaining extramural funding for research programs, and in graduate teaching as faculty at any institution." "It is noteworthy that more than one faculty member in the department maintains several simultaneous research grants." "The quality and number of scientists visiting the Biology Department to deliver talks and to confer with faculty and students are outstanding."

Attitudes: "An impressive atmosphere of shared ideas, critical appraisal, and collaboration has developed among students and faculty in ecology and evolution. With few exceptions, the graduate students feel they are favorably served by the attitudes of faculty toward them." "The seminar program is an important indication of excellence in the department. The department has dedicated a significant fraction of its resources to this function." "The graduate program is strong by any measure." "We found the graduate students committed to their teaching duties. Students perceive that they are getting quality educations that will afford them good job opportunities after graduate school. They are excited and knowledgeable about ideas and progress in their respective disciplines and are pleased about having made the decision to study at the University of New Mexico."

Resources: "The wisdom of the long-standing policy at UNM to emphasize ecology and evolution in research and graduate education takes advantage of a special resource that has cost nothing but continues to pay handsome rewards. The geography and environs provide a very special context to researchers in environmental and organismal biology. This resource base is not available to many longer-established departments of biology on the east and west coasts. Of great value to all sectors of the department is the fine building housing the Biology Department."

Administration: "The department's present strength owes much to a succession of intensely dedicated chairmen, who have given much from their individual careers to the betterment of biology at UNM. The current chairman is highly dedicated to the growth of excellence in research, teaching, and service."

Needed Improvements: "The curriculum does not pay sufficient attention to modern molecular approaches to biology. The molecular and cellular biology component is conversely lacking in awareness that organisms have in fact evolved from earlier ones, and that they all function in complex ecosystems, and students in this area do not take advantage of the strengths in ecology and evolution." "The department lacks a coherent, well-designed graduate curriculum in molecular and cellular biology." "Coordination with the Medical School in the area of graduate courses and curriculum is inadequate or nonexistent." "Resources for use of quantitative methods in biostatistics, data collection, and analysis are inadequate."

Graduate Needs: "Support from the university for graduate research funds and travel to meetings, particularly given the productivity of the students, is inadequate and underutilizes this talented and energetic group." (This is an area where contributed money made to the Biological Society of New Mexico could be advantageously used.) "Teaching loads of graduate students are too high in comparison with comparable institutions. Access to journals and books is inadequate for a modern research department." (Perhaps this will be partially remedied by the current construction of an Engineering and Science Library just west across the street from the Biology Annex - the old Pharmacy building.)

Faculty Needs: "The ratio of total biology faculty to biology majors is too small. Plant science, biometrics, and molecular evolution are examples of areas which deserve strengthening."