

The College of Arts and Sciences

A Centennial History: 1889-1990

History of the Biology Department

Donald W. Duszynski

The 1892 University of New Mexico catalog offered three types of baccalaureate degrees, two of which required knowledge of biology: a PhB and a BS degree. For these degrees, "each candidate is expected to read intelligently all the books prescribed . . . and to write a short composition on one of several subjects announced at the time of the examination. . . . Good courses will be given in Physiology, Chemistry, Physics, Geology, Zoology, and Botany. In these subjects much of the work will be done in the laboratories." Such was the beginning of biology at UNM.

1894-1920: New Buildings, Courses, Curricula, and Faculty

In 1894 a very limited university faculty included Dr. William A. Zimmer who taught Chemistry, Physics, Botany, and Geology; Dr. Marshal Gaines who taught Zoology, Astronomy, and Physical Geography; and Dr. J.P. Kaster who taught Physiology.

By 1895 both Botany and Zoology were listed as courses of study. At this time all of the administration and teaching was conducted in the Main Building where there was a biological laboratory with dissecting equipment and a compound microscope. By 1896, "the nucleus of a working museum of geology and biology has been secured and will be rapidly increased. The students and all friends of the University are requested to assist in procuring materials, illustrating the material and economic resources of the Territory."

In the 1896-97 catalog a "Prospectus of Academic Departments" listed Biology directed by Dr. Randolph W. Tinsley. The junior year included Zoology taught the first semester, with lectures given and "students required to take notes" and three hours of laboratory per week. Botany was taught the second semester. "Intermediate" included the systematic study of Comparative Anatomy and Physiology of Vertebrates plus some Histology, and this alternated with Microscopic Botany. The senior year included a detailed study of some order of animals and of plants plus work on microscopic plants.

By 1899-1900 Biology courses were taught by Dr. Clarence L. Herrick, President and Professor of Psychology, Philosophy, and Biology; Dr. John Weinzirl, Professor of Bacteriology and Chemistry; and Mr. George E. Coghill who finished his M.S. in 1899 at the University of New Mexico. By this time Hadley Laboratory had been built east of the Main Building to serve as a lab for climatological studies and to house several laboratory sciences. The first floor was used for laboratories in Histology, Zoology, Botany, and Geology. The second floor was used for Physics, Chemistry, Bacteriology, and a stock room. Bacteriological research on air flora showed that the number of organisms found was relatively small. . . "a sanitary effect of the winds in sweeping the towns and thickly populated communities is a very interesting problem now under investigation. The bactericidal effect of intense sunlight is very great. . . The desiccating effect of the dry atmosphere on germ life is most pronounced. These factors furnish a material basis for the remarkable freedom from disease, and the general healthfulness of the climate." Hadley also housed the Natural History and Archeological Museum, working collections for Geology, Paleontology, Botany, Zoology, Archaeology, and Ethnology.

In 1899-1900 a College of Literature and Arts was active with curricula in classical or scientific studies. The 1900 Biology course offerings taught by the three professors named above included: Physiology and Hygiene, Elementary Botany, Elementary Zoology, General Biology, Physiology,

Comparative Anatomy, Histology, Embryology, Neurology, Bacteriology, and research work in Biology or in Bacteriology.

By 1903-04 Biology was taught within the College of Letters and Science and new courses had been added in Advanced Physiology, Advanced Zoology, Cryptogamic Botany, and Haematology.

By 1908-09 the course offerings had burgeoned with additions including Invertebrate Zoology, Vertebrate Zoology, Field Zoology, Cytology, Human Physiology, Organic Evolution, Cryptogamic Botany, Phanerogamic Botany, Elementary Forestry, and Ecology or Field Botany. The last course offering was contemporaneous with the early development of American plant ecology in the first decade of the twentieth century and prior to the publication of the first American ecology textbook, *A Textbook of Botany, Volume 3, Ecology* by Coulter, Barnes, and Cowles in 1910.

In May 1910 Hadley Hall (1894-1910), the second oldest building on campus, was completely destroyed by fire, and included the loss of the herbarium and museum collections. During the year when a new Engineering Building was being constructed, temporary quarters were provided for science courses in the Administration Building and the Gymnasium.

By 1914-15 Biology was housed in the Chemistry Building or Science Hall with new laboratory equipment and micro-photography apparatus shared with Geology. In 1913-14, the Biology Department consisted of two faculty members with Dr. A.O. Weess listed as Chairman. From 1910-1915 many new course titles appeared, e.g., Ecology and Geographic Biology, Plant Identification, Entomology, Natural History and Evolution of Mammals, Anatomy of Mammals, Eugenics, Histological Techniques, Vertebrate Embryology, and Animal Behavior.

In 1915-16 the catalog announced a master's degree graduate program in Arts and in Science. For several years, 1915-1918, Biology courses were listed as Animal Biology and Plant Biology, although taught by the same two faculty members.

In 1919 a third faculty member was added, and Biology was listed as one department with new offerings in Experimental Ecology and Geography, Experimental Zoology, Heredity and Evolution, and Medical Entomology.

The 20s: First Graduate Degrees are Granted

In 1922-23 the Biology Department showed early recognition of sexual equality by having an all-female faculty of Drs. Edna Mosher, Chairman, and Elsie Foster. The next year Dr. Helen Murphy, Assistant Professor, became Chairman, a position she held from 1923 to 1928. From 1922 to 1927 the number of courses was reduced to 9 or 10.

In 1927-28 some unusually specific courses were added, e.g., Insect Morphology, Lab Methods in Heredity, New Mexico Crustacea, Iron-fixing Bacteria of New Mexico Waters, and New Mexico Algae. It is difficult to determine if courses were changed due to societal needs, public pressure, student demand, or professorial preferences.

The year of 1928-29 saw several changes in the Biology Department. There was a move into a Biology Building which had a large freshman laboratory for 72 students, a lab for advanced classes, a research lab, lecture rooms, and a germinating room. Dr. Edward Castetter came to UNM as Chairman and Associate Professor of Biology and served with one other faculty member and two Graduate Assistants as the faculty. This was the first year that graduate degrees (MS) were given. A Field School in Biology was conducted in August for Plant and Animal Ecology and Systematics.

The 30s, 40s, and 50s: New Courses and New Programs

In the early 1930s new courses were added in Genetics, Evolution, Fundamental Concepts of Biology, Human Anatomy, Sanitary Bacteriology, Flora of New Mexico, Plant Anatomy, Physiographic Plant Ecology, Ethnobiology, and research courses in Zoology, Bacteriology, Botany, and Plant Ecology. These expanded course offerings were handled in 1934 by Professors Castetter, Allen, and Bell.

There was a strong emphasis in the late 1930s on Ethnobiology studies under Drs. Castetter and Bell. Dr. Castetter was to serve as departmental Chairman for a period of 29 years, perhaps a record.

Dr. William Koster joined the faculty in 1939 and probably at some time taught all of the zoological type courses offered in those years. His tenure as a faculty member extended for a record time of 36 years. For five years (1943-48) the ecological emphasis of Biology's program was covered by Dr. Alton Lindsey, later to become editor of *Ecology*. During this time there was an increase in service courses for programs in Nursing, Physical Education, and the newly established School of Pharmacy. Drs. Howard Dittmer and Martin Fleck joined the faculty and were to serve for 31 and 26 years, respectively. To increase the offerings in Physiology, Zoology, and Bacteriology, Drs. Douglas Humm, Clayton Hoff, and D. Johnson were added to the faculty.

Arrangements were made during the 1947-49 biennium whereby doctoral students could be employed at Los Alamos Scientific Laboratory (LASL) to assist in research programs, portions of which could be used for their dissertation. The Department started accepting PhD candidates in the fall of 1949 and the first PhD was awarded to Richard W. Widner in 1952. Because of the post-World War II surge of graduate students, emphasis was given to establish cooperative research programs with a variety of non-university foundations (e.g., Lovelace Foundation). This was essential because of the lack and inadequacy of the Biology Department's research laboratories. The Department at this time was scattered in four buildings, two of which were of temporary construction. To remedy the inadequacy, plans were made for a Biology Building, which was occupied in 1951-52, contemporary with Geology and Chemistry. Because of the lack of funds to satisfy all needs it was agreed to get the maximum amount of space in the new building and to furnish and equip the rooms as required by increases in enrollment and research. The replacement of Dr. Humm by Dr. Tim Eversole led to several years of active research in Vertebrate Physiology, Radiation Biology, and cooperation with LASL. Teaching and research of Invertebrate Zoology under Dr. Hoff soon received a national reputation. The year of 1955-56 saw a big boost in research and publications in Vertebrate Zoology (Mammalogy) by the addition of Dr. James Findley, who appreciated the uniqueness of New Mexico as a meeting place of a variety of biomes.

In 1956-57 Dr. Castetter was appointed to the Vice Presidency of UNM and Drs. Koster and Dittmer served as Acting Chairmen in two consecutive years. In 1956-57, under the direction of Dr. Martin Fleck, one of the first programs of its kind, the Radiation Biology Institute, was awarded to UNM by the National Science Foundation and Atomic Energy Commission. This program involved high school teachers, later college professors, and finally researchers. It continued for 15 years and trained over 300 participants in the physical and biological effects of radiation. The program was successively under the directorship of Drs. Fleck, Potter, Riedesel, and G. Johnson. In addition, several NSF Academic Year Institutes for high school teachers of science were conducted by the Department as well as a Summer Institute in Ecology and Field Botany.

An appointment to the Chairmanship was made in 1958 to Dr. Loren Potter, who served for 14 years, during which time the faculty increased from 9 to 24. The late 1950s however, were times of great increases in enrollment in Biology, e.g., in the successive years 23%, 17%, 27%, 11%, and 10%. Increases in faculty and operational money lagged far behind, a serious problem where laboratory

courses require supplies in direct relation to student enrollment. Although consideration was given to charging laboratory fees, this was not done so as not to penalize students because of specific course interest. During this time, there was a maximum effort to obtain outside funding to update equipment of laboratories, e.g., NSF Undergraduate Equipment Grants for Animal and Plant Physiology and Ecology, Radiation Biology Teaching and Research Equipment, and for a Physical Improvement Grant for Bacteriology.

By 1958, all laboratory space in the building had reached a saturation point. Soon, all available laboratories for General Biology were used continuously from 8:30 a.m. to 9:30 p.m. except Friday night. Courses by TV were initiated in 1959 as a trial to help alleviate the crowded lecture hall schedule.

The 60s: Continued Growth

In 1960, plans were made for the role of the Department relative to the Basic Science program of the newly-formed Medical School. To meet the high student enrollment, an increasing number of laboratory courses, even at the upper division level, were turned over to the Graduate Teaching Assistants because of the lack of faculty to teach these labs. By 1964, students were turned away from enrollment in beginning courses because of lack of laboratory space. The great need for Graduate Teaching Assistants increased the graduate student enrollment in Biology, which resulted in further increasing the teaching and advisement pressure on the limited faculty. The great increase in MS and PhD degrees during the 1960s reached an all-time high of more than 30 degrees granted in 1969. This came at a time when faculty numbers had only recently reached 18. That year, there were 350 undergraduate majors and 85 graduate students in the Department. Some faculty had 10-12 graduate advisees, plus full teaching loads and research programs. The increased graduate program was coincident with faculty efforts to establish cooperative research programs with agencies such as the New Mexico Game and Fish Department, Los Alamos National Laboratory (LANL), Sandia Corporation, Lovelace Clinic, and the Radiation Inhalation Laboratory, the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station, the National Park Service, and the Museum of New Mexico in Santa Fe.

During the 1960s the Department gained in recognition and prestige by hosting several national meetings, e.g., American Society of Mammalogists, Southwest Division of AAAS, Directors of Radiation Biology and Nuclear Technical Institutes, and Symposium on Physiological Systems in Semi-arid Environments.

Starting in 1962-63, the Department did a self-analysis of departmental goals and needs of faculty additions, space requirements, and curriculum goals. This was in preparation for obtaining a new building addition, about which contacts were made with NSF and NIH for funding. The next year, a request was made to NSF for \$761,000 of an estimated cost of \$2 million. It included a departmentally-designed building including room-by-room details of arrangements for offices, teaching labs, research labs, furnishings, utilities, special physical requirements, room use, and occupancy. Although not approved the first year, the proposal was the basis for later approval of HEW Title I funds for \$789,000 and several NSF grants for Undergraduate Education Facilities and for Graduate Facilities. The balance of funding to complete the new wing was raised from land sales and bonds. Working drawings were available in May 1966, and construction was started by July so that the 69,000 square feet addition and the 42,000 square feet renovated original building were ready for occupancy in August 1967. The new building set a new standard in quality, lighting, and an excellent compromise of effectiveness, flexibility, and aesthetics, built around an attractive atrium which provided a living core to the building. The dedication was coincident with the gathering of famous physiologists for the Symposium on Physiological Systems and the presence of a Danforth Foundation Graduate Review Team of Drs. Galston, Prosser, and Stephens. The Graduate Review Team confirmed a prior decision of the university administration that because of limited funding, the Biology Department

could not expect to excel in all areas of biological research and could not expect to be competitive in some highly specialized areas which could be done better elsewhere. Although the education program should be modern and as thorough as possible, the principal expertise at the graduate level should maximize the use of the peculiar environmental advantages unique to New Mexico's natural resources.

The 70s: New Facilities, Faculty, and Programs

Because of the complexity of the departmental physical plant and its rapidly growing research program with increased equipment and personnel, the Department was given permission to employ the first Administrative Assistant among Arts and Sciences departments. Although the new wing and old building were to provide facilities for 24 faculty members to be attained by 1977, this number was reached in 1972. With the new facility, graduate students had research laboratories and museum and herbarium workspace. By 1970, there were 37 Graduate Teaching Assistants, 3 NSF Trainees, 2 NDEA Trainees, 1 NASA Fellow and 1 Danforth Fellow, plus 3 Curatorial Assistants. There was an increase in research proposals submitted and awarded at a time when funding was slackening. New cooperative research efforts included the desert biome studies of the International Biological Program, Association of Western Universities, NPS Chaco Canyon Research Center, Water Resources Institute, the Research Corporation and NASA. The Department was active in the forming of a Consortium of 9 western universities and the U.S. Forest Service Research Station in Fort Collins, Colorado, which for 10 years actively conducted research relating to the interactions of population growth and recreation with western wildlands.

Under the Chairmanship of Dr. Paul Silverman in 1972-73, there were active studies of evaluation of space and facilities utilization, faculty performance, and of both undergraduate and graduate curricula. Progress was made for increased cooperation in graduate education with the Medical School, LANL, Sandia, and Lovelace Foundation with adjunct faculty appointments. To provide for greater efficiency of space, audio-visual tutorial laboratories were installed for basic courses.

From 1973 to 1978, Dr. Clifford Crawford served as Chairman. Because of increased stringency of USDA certification standards for animal rooms, these were renovated. To strengthen the teaching and research programs in Cellular and Molecular Biology, a Developmental Biologist (Dr. Maria Rosales-Ronquillo) and a Molecular Geneticist (Dr. Tokio Kogoma) were hired. Following the Danforth Committee report and the Dean's sanction, 1975 was a major year of reorganization with many replacements: Dr. Manuel Molles (Invertebrate and Vertebrate Aquatic Ecologist) replaced Dr. William Koster, Dr. Rex Cates (Evolutionary and Plant-Herbivore Ecologist) replaced Dr. Howard Dittmer, Dr. Frederick Taylor (Theoretical Ecologist) replaced Dr. Michael Rosenzweig, Dr. Randy Thornhill (Behavioral Ecologist) replaced Dr. Paul Silverman. Dr. Oswald Baca (Bacterial Immunologist) replaced Dr. James Booth, Dr. John Trujillo (Developmental Biologist) replaced Dr. Maria Rosales-Ronquillo. One new addition was made by Dr. Douglas Caldwell (Microbial Ecologist).

The lack of research space and the vacating of the Pharmacy Building resulted in transfer of the large, well-funded research programs of Drs. Gosz and Cates in ecosystem nutrient cycling and chemical herbivory as well as office and laboratory space for Dr. Molles in aquatic ecology. The building became known as the Biology Annex. This momentarily relieved the pressure for research space and allowed transfer of the fish collection to make more room for microbiology.

The area of zoological physiology was strengthened by the appointment of Drs. Kathryn Vogel and Eric Toolson; genetics was also strengthened by the addition of a second geneticist, Dr. Evelyn Ewing.

In 1978, the Dean approved funding for a position of an eminent senior-level appointment in Environmental Biology, which was filled by Dr. John Wiens, who, at the time, was also editor of the journal *Auk*. Dr. James Findley became Chairman and Dr. Terry Yates was appointed as a Zoological Systematicist and Curator of Mammals.

The 1978-79 Dean's Report acknowledged that Biology maintained the distinction of a high percentage of faculty engaged in the presentation of papers at scientific meetings for five successive years, while maintaining a student/faculty ratio higher than similar departments in six neighboring universities. In that year, 23 of 29 faculty members had grants from the year totaling \$1.5 million, had 38 papers published, and 70 papers presented. By 1982, there were 48 current research contracts at a value of \$2 million, a research money amount second only to the physics department.

The 80s: Consolidation and Conclusion

In 1982, Dr. Donald Duszynski was appointed as Chairman. In 1984 the Biological Society of New Mexico was established as a tax-exempt organization to establish and maintain endowments, trusts, and foundations and to administer grants and other funds, all for the purposes of encouraging, fostering, and pursuing the greatest degree of excellence in education in the Department of Biology at The University of New Mexico. 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.

Recent faculty appointments have been replacements without a change in total numbers: Dr. Robert Chiovetti in Electron Microscopy as Assistant Professor for a previous technician position; Dr. Donald Natvig, fungal specialist and plant molecular microbiologist, for Dr. Caldwell; Dr. Clifford Dahm, aquatic ecologist, for Dr. Kidd; and Dr. William Rice, population geneticist, for Dr. Ewing. In 1985, Dr. Eric Loker was appointed as parasitologist, and with the retirement of Dr. Potter, Dr. Dianne Marshall was appointed as his replacement in plant ecology. The 1967 wing of the Biology Building was dedicated as the Loren D. Potter Wing and a Dr. Loren D. Potter Chair in plant ecology was established as the first Chair in the Department.

The national reputation of the Department as a teaching and research organization has reached an all-time high as indicated by the supported research programs, the caliber and volume of publications, the number of invitations to speak at national and international symposia, and the increased caliber of the graduate students attracted to the Department. The latter is a reflection of the caliber of the faculty and the improved graduate student selection process. Thus, the Biology Department is becoming recognized both within and outside as one of the really strong science departments at UNM.