Creation of the Future 3
Academic Plan for the Department of Zoology & Physiology
for the period Sept 2009 to August 2014

Mission and Aspirations

The mission of the Department of Zoology and Physiology is to provide a broadly integrative education for undergraduate students, provide state-of-the art training for graduate students, conduct cutting-edge research in a variety of disciplines, and provide outreach and service to the state and nation. These four missions are synergistic: research supports outreach and undergraduate education, and undergraduate and graduate education support our research and outreach. The diversity of disciplinary interests in our department is a source of strength in addressing research problems and in providing a broad education for our students.

Our goal is to maintain excellence in all four missions. We strive to train highly qualified undergraduate students who will be able to acquire the best professional employment or join the best graduate programs in the nation. We aim to impart the highest quality graduate education such that our graduates can pursue academic and professional paths. We strive for excellence and international recognition in our research. We strive to work with a variety of management agencies and interest groups to provide a knowledge base that will inform decisions that affect the well-being of both wildlife and human populations in the region and beyond.

Previous planning accomplishments since Academic Plan 2 (2004-2008)

1. We played a major role in establishing the Life Science Program which provides foundation courses in biology for a variety of majors in the College of Arts and Sciences, the College of Agriculture and the College of Health Sciences. We also contribute more than any other department to teaching Life Science courses.

2. We played a key role in establishing, and continue to contribute strongly to the Program in Ecology, a cross-college doctoral program that brings together faculty with interests in ecology from across the campus.

3. We contributed to strengthening the Neuroscience Program by hiring three faculty members with research specializations in this area.

4. The Berry Chair in Ecology was established and filled by a distinguished avian ecologist, Dr. Craig Benkman. The Berrys provided a second gift of $675,000 to establish an endowment for writing a "Birds of Wyoming" and for graduate fellowships, and a third gift of $10 million to establish the Berry Center for Natural History and Conservation and planning for this building is nearing completion.

5. As part of the assessment of our curriculum, the B.S. degree in Zoology and Physiology was split into separate degrees in Zoology and in Physiology. The purpose was to

provide a more focused education for students interested in careers in animal physiology, veterinary science, or health care fields. As part of this focus, we developed courses in human systems physiology and integrative physiology that serve 300-400 students from the College of Health Sciences as well as from our department. We developed a new course, Z00 4100, Writing in Zoology, that meets the University Studies WC requirement and helps students develop skills in synthesizing the biological knowledge they have attained during their degree studies.

Relevant Institutional Issues

Our goals for 2009-2014 involve most of the planning motifs identified in UP 3. These include building depth in existing areas within our department (Motif 1); helping to reinforce and build excellence in areas of distinction involving the life sciences, environment and natural resources, and water resources (Motifs 2 and 4); and cultivating leadership by training the next generation of life scientists, natural resource managers, and health care professionals (Motif 5).

Action Items

ZOO 1 (Motifs 1,2,4,5). Refine and enhance our undergraduate degree programs.

We will strive to update and improve the curricula in our four degree programs. In part this will be done by revising the course offerings for the degrees in Biology, Zoology, Physiology, and Wildlife and Fisheries Biology and Management. In part this will be done by targeting faculty hires in areas where recent retirements have created gaps in our staffing such as fish biology and developmental biology. We also will pursue improved laboratory classrooms by helping to plan for a new Science Teaching Laboratory Facility. We will strive to provide a laboratory manager to provide for better maintenance of the laboratory equipment and supplies that support the 11 lab-based upper division courses we offer.

ZOO 2 (Motifs 1,2,4). Maintain our contribution to the LIFE Program.

The teaching of our upper division courses depends on the proper preparation of students in lower division classes, most of which are in the LIFE Program. To fulfill our obligations to the LIFE program, we will

a) Provide faculty to teach in the lower division courses (LIFE 1001, 1010, 2022) and in appropriate upper division courses (LIFE 3400, 3600, 4400).
b) Support the appointment of a mathematical biologist and work with the incumbent to create appropriate Math classes for biology students. Biology is increasingly quantitative and focused Math classes will establish appropriate quantitative skills early.

ZOO 3 (Motifs 1,2,4,5). Promote outreach and interdisciplinary research and graduate education through the Program in Ecology, the Berry Center for Natural History and Conservation, and the Neuroscience Graduate Program.

We will encourage participation by our faculty and graduate students in the Program in Ecology. We will continue to be involved in planning for the Berry Center for Natural History and expect to have some of our faculty involved in the operation of the Center once it is completed. Our faculty members are major contributors to the Neuroscience Graduate Program and we intend to strengthen these ties with another faculty hire through an on-going search.

ZOO 4 (Motifs 1,2,4). Develop assessment protocols for our undergraduate and graduate learning outcomes.

Refinement of our teaching is tied to the assessment of learning outcomes and therefore it is important to develop assessment guidelines. We have established an oversight committee and identified learning outcomes for our undergraduate and graduate degrees. We will develop assessment guidelines based on the following:

1. Listing of learning outcomes for undergraduate and graduate students.
2. Reporting grade distributions in key and capstone courses that underpin our learning outcomes.
3. Routine assessment of one of our learning outcomes each year in the key ZOO prefix courses
4. Identification of defects in our courses or in prerequisite courses that contribute to the lack of achievement of the specific learning outcomes
5. Implementation of corrective actions to improve students' achievement of learning outcomes, wherever possible.

ZOO 5 (Motifs 1,2,4,5). Build depth and promote excellence in environmental and natural resources and water resources.

Our department enjoys national prominence in the fields of wildlife, fisheries and conservation biology. These fields are central to two areas of distinction identified in UP 3: environmental and natural resources, and water resources. Furthermore, we have trained the majority of fisheries and wildlife professionals working in Wyoming. We will continue to promote excellence in wildlife, fisheries, and conservation biology through targeted hires, research collaborations with resource management agencies, and contributions to the School of Environment and Natural Resources. We will seek to regain full staffing for the Wyoming Cooperative Fish and Wildlife Research Unit. We will seek participation in new interdisciplinary graduate and professional programs in water resources that may be developed.

ZOO 6 (Motifs 1,2,4,5). Build depth and promote excellence in physiology.

Our department recently established a new undergraduate major in Physiology. This major will increase our visibility in training students interested in careers in animal biology, including health sciences. To strengthen the physiology program and to foster interactions

with the College of Health Sciences, we will seek to fill the Gardner Chair in Physiology that was recently endowed by Drs. Hank Gardner and Marilyn Fiske.

Implementation

ZOO 1 (Motifs 1,2,4,5). Refine and enhance our undergraduate degree programs.

This will be an ongoing process throughout the 5-year plan.

ZOO 2 (Motifs 1,2,4). Maintain our contribution to the LIFE Program.

Hiring of a mathematical biologist will occur early, whereas our contributions to teaching in the LIFE Program will be ongoing throughout the 5-year plan.

ZOO 3 (Motifs 1,2,4,5). Promote outreach and interdisciplinary research and graduate education through the Program in Ecology, the Berry Center for Natural History and Conservation, and the Neuroscience Graduate Program.

These will be ongoing processes throughout the 5-year plan.

ZOO 4 (Motifs 1,2,4). Develop assessment protocols for our undergraduate and graduate learning outcomes.

This will occur early in the 5-year plan.

ZOO 5 (Motifs 1,2,4,5). Build depth and promote excellence in environmental and natural resources and water resources.

This will be an ongoing process throughout the 5-year plan.

ZOO 6 (Motifs 1,2,4,5). Build depth and promote excellence in physiology.

Filling the Gardner chair will occur early in the 5-year plan but promoting excellence in physiology will be a continuing process.