

FLORIDA BOARD OF GOVERNORS

January 22, 2004

SUBJECT: Implementation Authorization for a Ph.D. in Conservation Biology at the University of Central Florida

PROPOSED BOARD ACTION

Consider implementation authorization for a Ph.D. in Conservation Biology (CIP 26.1307) at the University of Central Florida.

AUTHORITY FOR BOARD OF GOVERNORS ACTION

Article IX, Section 7 (d), Constitution of the State of Florida

BACKGROUND INFORMATION

The University of Central Florida is requesting to implement a Ph.D. in Conservation Biology, which focuses on understanding and minimizing human impacts on biodiversity in order to prevent species extinctions and ameliorate or repair damage to ecosystems. The program will produce scientists who are not only capable of doing independent research in the realm of Conservation Biology but who can work within the broader arena of environmental politics, law, and economics. The proposed program will not directly duplicate the offerings of other state universities or independent universities.

The proposal provides a convincing argument that there is a need for more scientists trained in Conservation Biology. Strong support for this program has been expressed by Walt Disney World Company and Hubbs-Sea World Research Institute, both of which plan to engage in collaborative research and instructional activities with UCF. The Brevard Zoo and a number of other regional conservation-oriented entities have also expressed support. Estimated first year and fifth year costs per FTE for this program compare favorably with the average cost per FTE across the system for the Life Sciences. By the fifth year, 53 percent of the funding for the program is expected to be from contract and grants. Dr. Ronald Carroll, of the University of Georgia, was retained as a consultant to review the proposal and strongly endorses its approval.

The UCF Board of Trustees approved the proposal for the Ph.D. in Conservation Biology at its September 25, 2003, meeting. If the Board of Governors approves the proposal, the University plans to implement the program at the earliest possible date.

Supporting Documentation Included:

Staff Analysis

Facilitators / Presenters:

Chancellor Austin / R. E. LeMon
UCF Representatives

**New Ph.D. Proposal Staff Analysis
Conservation Biology at the University of Central Florida**

Estimated Costs:

	Total	% & \$ Current	% & \$ New	% & \$ C&G	Cost per FTE
Year 1	\$353,509	41% \$145,642	43% \$150,868	16% \$57,000	\$31,611
Year 5	\$824,762	30% \$248,823	17% \$142,592	53% \$433,347	\$18,071

Projected FTE and headcount are:

	Projected Headcount	Student FTE
First Year	14	9.38
Second Year	24	13.13
Third Year	35	15.47
Fourth Year	43	16.97
Fifth Year	50	21.66

Abstract

The proposed program relates to the University's mission and will not directly duplicate the offerings of other state universities. There are no Conservation Biology programs at any of the independent universities. Planning for the Ph.D. in Conservation Biology has been ongoing since 1998, through an advisory committee consisting of faculty from other universities throughout the U.S. with similar programs and a number of scientists with Disney's Animal Kingdom.

The proposal provides a convincing argument that there is a need for more scientists trained in Conservation Biology, especially in the rapidly developing Central Florida region. There is also a strong argument provided for the preparation of new faculty in this field of biology on a national level. The proposal also addresses the future of conservation employment, outlining a number of emerging challenges which will drive the need for professionals with advanced education in the field. The proposal states that "In 1970 fewer than 230,000 people were employed in environmental/conservation work with annual expenditures of around \$32 billion. By 1998, \$200 billion was being spent...supporting nearly 2.5 million jobs." U.S. Bureau of Labor Statistics data also indicate significant growth in jobs related to conservation biology between the years 2000 and 2010. This includes a projected increase of 15,000 Ph.D. level biological scientists over this period of time.

The proposal outlines a curriculum that requires 72 credit hours of study beyond the

bachelor's degree with two major tracks. The Ecology and Organismal Biology track is designed for those individuals interested in academic careers, while the Applied Conservation Biology track is designed primarily for those individuals who are already, or plan to be employed in industry or government. The curriculum includes 12 credit hours of core of courses, and requires that students develop a program of study with their faculty advisor by the end of their second semester. There will be 15 faculty participating in the program in year one, which breaks down to almost a one-to-one ratio between students and faculty. New faculty hires are planned for 2005, 2006 and 2007. Individuals with expertise in Urban Ecology, Entomology, and Plant Ecophysiology will be recruited. Adequate library resources, teaching facilities and equipment are in place to implement the program.

Estimated first year and fifth year costs per FTE for this program are \$31,611 and \$18,071 respectively. This compares favorably with the average cost per Grad II FTE across the system for the Life Sciences, which is \$22,520, as calculated from the 2001-2002 Expenditure Analysis. By the fifth year, 53 percent of the funding for the program is expected to be from contract and grants.

Dr. Ronald Carroll, with the Institute of Ecology at the University of Georgia, was retained as a consultant to review the proposal. In his report Dr. Carroll writes "I strongly endorse this request to establish a doctoral program in conservation biology. UCF can boast of excellent faculty, local wetland and marine resources, urban-wildland interface problems for investigation, and innovative partnerships. The UCF conservation biology doctoral program will fill a unique and significant academic niche." Dr. Carroll also makes three recommendations for further strengthening the program which include building an endowment to support research and attract top students, improvement of computer facilities, and strengthened collaboration with the social sciences.

If approved, the University expects to implement the program in Spring 2004, or at the earliest date possible.

Is the proposed program listed in the current State University System Master Plan, and do the goals of the proposed program relate to the institutional mission statement as contained in the Master Plan?

The program was added to the 1998-2003 State University System Strategic Plan during the mid-course correction in May of 2000. The proposed program relates to the University's mission as described in the Strategic Plan, and also the mission that has been adopted by the University subsequent to the changes in university system governance.

Does the proposed program duplicate other SUS offerings, and, if so, provide an adequate rationale for doing so?

The proposed program will not directly duplicate the offerings of other state universities, although related studies exist in other biological and environmental programs at the University of Florida. There are no Conservation Biology programs at any of the independent universities. However, doctoral programs in biology-related programs do exist at Barry University, Florida Institute of Technology, Nova Southeastern University, and the University of Miami.

Is there evidence that planning for the proposed program has been a collaborative process involving academic units and offices of planning and budgeting at the institutional level, as well as external consultants, representatives of the community, etc.?

Planning for the Ph.D. in Conservation Biology has been ongoing since 1998. An advisory committee was formed consisting of faculty from other universities throughout the U.S. with similar programs. In addition, a number of scientists with Disney's Animal Kingdom collaborated in the planning of the program. The proposal provides evidence that the planning process involved the appropriate academic and administrative offices of the University.

Does the proposal provide a reasonable timetable of events leading to the implementation of the proposed program?

The proposal outlines a tight timetable for implementation that included seeking Board of Governor's approval in December 2004. The proposal was not received in time to conduct a complete review before the December meeting, so it will be need to be considered at the January meeting instead. This extends the timeline for implementation by one semester.

Does the proposal provide evidence that there is a need for more people to be educated in this program at this level?

The proposal provides a convincing argument that there is a need for more scientists trained in Conservation Biology, especially in the rapidly developing Central Florida region. There is also a strong argument provided for the preparation of new faculty in this field of biology on a national level, and a number of letters of support for the program were included in the proposal package. The proposal also addresses the future of conservation employment, outlining a number of emerging challenges which will drive the need for professionals with advanced education in the field. The proposal

states that “In 1970 fewer than 230,000 people were employed in environmental/conservation work with annual expenditures of around \$32 billion. By 1998, \$200 billion was being spent...supporting nearly 2.5 million jobs.”

The proposal also cites U.S. Bureau of Labor Statistics data that indicate significant growth in jobs related to conservation biology between the years 2000 and 2010. This includes a projected increase of 15,000 Ph.D. level biological scientists over this period of time. The proposal also evaluated the projected local labor market for the program’s graduates using data provided by the Florida Agency for Workforce Innovation. Potential student and employer interest surveys were conducted. Of the potential student responses received, 86 % indicated an interest in the proposed program, and 23 % indicated that they were ready to begin their study immediately. The potential employer survey responses indicated that 44 % already employed persons with doctoral degrees who were specializing in conservation biology, while 77 % foresaw hiring such individuals in the future.

Does the proposal contain reasonable estimates of headcount and FTE students who will major in the proposed program? Does the proposal also provide a signed EEO statement that indicates steps to be taken to achieve a diverse student body?

The proposal provides a reasonable estimate of headcount based upon enrollments in similar programs elsewhere and the level of interest indicated in the potential student survey. The proposal also includes a plan to ensure diversity in the student body, and this page is signed by the Equal Opportunity officer of the University.

Does the proposal provide an appropriate, sequenced, and described course of study?

The proposal outlines a curriculum that requires 72 credit hours of study beyond the bachelor’s degree with two major tracks. The Ecology and Organismal Biology track is designed for those individuals interested in academic careers, while the Applied Conservation Biology track is designed primarily for those individuals who are already, or plan to be employed in industry or government. The curriculum includes 12 credit hours of core courses, and requires that students develop a program of study with their faculty advisor by the end of their second semester. The course requirements are somewhat more structured for the Applied Conservation Track.

Dr. Ronald Carroll, with the Institute of Ecology, University of Georgia, was retained to review the proposal. Although strongly in favor of implementation, he did have some suggestions for strengthening the proposed program. Specific to the curriculum he suggested, “The department should continue to broaden and strengthen collaboration with the social sciences, especially economics and anthropology. This is important because conservation biology graduates will need to understand the social context of their work.”

Does the proposed program relate to specific institutional strengths such as programs of emphasis, other academic programs and/or institutes and centers?

The proposed program is expected to enhance the existing bachelor's and master's programs in biology by interaction with faculty and doctoral students, and providing new opportunities for research. The interdisciplinary nature of the program is expected to attract students from outside the Department of Biology. It will also create linkages with other departments at UCF because the faculty from those departments will be participating in the program.

If there have been program reviews or accreditation activities in the discipline pertinent to the proposed program, or in related disciplines, does the proposal provide evidence that progress has been made in implementing the recommendations from those reviews?

The proposal outlines recommendations from the 2001 Biology program review and provides evidence that progress has been made in implementing those recommendations. One of these recommendations was for the University to consider implementing a Ph.D. in Conservation Biology.

Does the proposal provide evidence that the institution has analyzed the feasibility of providing all or a portion of the proposed program through distance learning technologies via its own technological capabilities as well as through collaboration with other universities?

The primary mode of instruction will be classroom lecture and lab. However, some courses will be offered through non-traditional scheduling to accommodate the expected high enrollment of working professionals. Mixed modality courses, using a combination of lecture and instructional technology, will also be used.

Does the proposal provide evidence that there is a critical mass of faculty available to initiate the program based on estimated enrollments?

There will be 15 faculty participating in the program in year one, which breaks down to almost a one-to-one ratio between students and faculty. Eighteen faculty members are planned by year five, and faculty from other departments at the university are also expected to provide some courses for the program and serve on dissertation committees.

Does the proposal provide evidence that the faculty in aggregate have the necessary experience and research activity to sustain the program?

Evidence was provided that the existing faculty members have been active in research and publication. Only four have any experience supervising dissertations or post-doctoral students, but all have experience on thesis committees. The University should consider experience with dissertation committees when hiring new faculty.

Peer comparison data is provided with the proposal. The University selected Arizona State University, Old Dominion University, and the University of Missouri-St. Louis as its peer institutions because each is a public-supported metropolitan university without a medical school. Using 1993 National Research Council Data and National Science

Foundation data for the past three years, the proposed program compares favorably with regard to number of faculty, the percent supported by grant money, the number of publications, and R&D Expenditures.

Does the proposal provide evidence that, if appropriate, there is a commitment to hire additional faculty in later years, based on estimated enrollments?

New faculty hires are planned for 2005, 2006 and 2007. Individuals with expertise in urban ecology, entomology, and plant ecophysiology will be recruited.

Does the proposal provide evidence that library volumes and serials are sufficient to initiate the program?

The proposal states that there are 4,221 monographs and 57 periodicals related to the field of Conservation Biology in the current library holdings. The University has identified a number of new holdings that are needed, and has budgeted \$58.5 thousand to acquire them.

Does the proposal provide evidence that classroom, teaching laboratory, research laboratory, office, and any other type of space that is necessary for the proposed program are sufficient to initiate the program?

The UCF Department of Biology has 9,700 sq. ft. of research laboratory, 15,800 sq. ft. of teaching classrooms, and 3,000 sq. ft. of office space for faculty and graduate students. There is also an 8,000 sq. ft. Biology Field Facility which is used primarily for storage, but also has additional space for laboratories and classrooms. Affiliated with the Department of Biology is the UCF Arboretum, which consists of almost 80 acres adjacent to campus with over 600 species of plants. The Department also runs the Feller's House Field Station, a 1,500 research facility located alongside the Mosquito Lagoon in the northern Cape Canaveral National Seashore.

The Department of Biology also maintains the Geospatial Analysis and Modeling of Ecological Systems (GAMES) Laboratory, the Bug Closet with over 81,000 specimens, and an Ornithology Collection. The UCF campus also has four experimental fish ponds which are used for semi-controlled experiments.

Does the proposal provide evidence that necessary and sufficient equipment to initiate the program is available?

See response above. Although the equipment and facilities are considered adequate to implement the program, the consultant recommends "that a networked computer laboratory with one station and printer for every three graduate students should be a target goal. Each station should support SAS Statistical Analysis System and other commonly used applications and the computer laboratory should have a dedicated manager."

Does the proposal provide evidence that, if appropriate, fellowships, scholarships, and graduate assistantships are sufficient to initiate the program?

Incoming students will receive \$19,000 a year as graduate teaching assistants or faculty research assistants. The consultant considers this amount to be a generous stipend, if it is offered in conjunction with tuition waivers. If not, then he feels that the amount will

not prove competitive in attracting top graduate students. The consultant also suggested that “UCF should begin building an endowment for discretionary funds to help support graduate research and perhaps as supplement to attract the very best graduate applicants.”

Does the proposal provide evidence that, if appropriate, clinical and internship sites have been arranged?

No formal internship is required for the proposed program. Opportunities exist to work on collaborative projects with governmental and non-governmental organizations throughout the Central Florida area.

Does the proposal provide evidence that, in the event that resources within the institution are redirected to support the new program, such a redirection will not have a negative impact on undergraduate education?

No negative impacts are anticipated as a result of implementing the proposed program. The University is committed to hiring additional faculty to teach both undergraduate and graduate courses. The University is already spending \$700,000 to provide research opportunities to undergraduate students.

Does the proposal provide a complete and reasonable budget for the program that reflects the text of the proposal? Do costs for the program reflect costs associated with similar programs at other SUS institutions?

The proposal provides a complete and reasonable budget for the program that identifies the major costs. The Budget Table includes the relevant issues described in the text of the proposal. There are no other Conservation Biology programs in the State University system; however the average cost per Grad II FTE across the System is \$22,520, as calculated from the 2001-2002 Expenditure Analysis. Estimated first year and fifth year costs for this program are \$31,611 and \$18,071 respectively. By the fifth year, 53 percent of the funding for the program is expected to be from contract and grants.

Does the proposal contain evidence that, if appropriate, the institution anticipates seeking accreditation for the proposed program?

There is no specialized accreditation available for this program.

Does the proposal provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service?

The proposal includes a chart that illustrates an increase in productivity on the part of the Department of Biology in teaching, research and service over the past five years. There has been a twelve fold increase in grant dollars over the same period.