Justification for Course in Wildlife Ecology and Management

Originally the field of wildlife ecology and management pertained primarily towards understanding and managing game species (i.e., species that are hunted). Today, however, wildlife ecology encompasses the entire field of applied terrestrial vertebrate ecology, conservation, and management. As a result, the field encompasses such disparate aspects as hunting, human dimensions, population dynamics, non-game species, and ecosystem management to name a few. Across most Land Grant institutions that have natural resources programs, one predominant focus is on wildlife species, given the applied nature of the field. Because the University of Hawai‘i at Mānoa (UHM) currently has no other courses devoted strictly to wildlife ecology and management, such a course is critically needed. Furthermore, the proposed course fills a core area in the study of natural resources, which is the purview of the Department of Natural Resources and Environmental Management (NREM). Based upon this core need I am proposing a new course be added the curriculum that will meet biannually during Spring semesters. The justification for this new course is described below in relation to the twelve guidelines for new courses as outlined by the College of Tropical Agriculture and Human Resources.

1. **What is the course modification?**
   The proposed course will be new to the University of Hawai‘i at Mānoa.

2. **Why is this course being requested or modified?**
   The field of wildlife ecology and management encompasses the entire field of applied terrestrial vertebrate ecology, conservation, and management. Across most Land Grant institutions that have natural resources programs, one predominant focus is on wildlife species, given the applied nature of the field (see example list of schools and the similar class to the one proposed herein following this paragraph). Because UHM currently has no other courses devoted strictly to wildlife ecology and management, such a course is critically needed.

   Considering the number of undergraduate and graduate students that are being trained in NREM it is critical that they have a well rounded background in the natural resources, including wildlife, when they graduate. Because wildlife related issues are of key concern both within Hawai‘i as well as the mainland, the knowledge gained by the students will be relevant to any location that they would move onto in the future. Furthermore, considering that wildlife ecology faces burgeoning problems here in Hawai‘i (e.g., feral pigs, goats, endangered forest bird species, potential of wildlife diseases), coupled with its foundational relevance to natural resources, the proposed course is both timely and necessary. Undergraduate students will greatly benefit by having the opportunity to take this course as well as graduate students across the university who have a wildlife component to their research.

   The course is being requested at this point in time for five main reasons. First, the university does not have a course strictly focused on wildlife. Second, wildlife ecology and management is a core class in nearly all natural resource programs across the Land Grant institutions of the U.S. Third, my professional training is in large part devoted to wildlife related issues, and hence both my graduate students and my research focus on wildlife questions. Fourth, students attending a natural resource program need to be well rounded, and thus it is critical that they are exposed to wildlife as one of the core areas. Fifth, wildlife scientists in Hawai‘i have not been trained here at UHM, because there has not been a focus on wildlife ecology in the past. Hence, there is great interest among agency personnel to have a formal course in wildlife ecology for training students here in Hawai‘i. This interest has been communicated to me by Vanessa Pepi (M.S. UHM, Wildlife Biologist for Navy Facilities of the Pacific), Edwin Johnson (Hunter Education Coordinator and Wildlife Biologist, Hawai‘i Department of Land and Natural Resources, Division of Forests and Wildlife), and Steve Hess...
If this course is approved it would greatly benefit both undergraduate and graduate students in a number of departments at UHM, including Animal Science, Biology, Botany, Geography, Natural Resources and Environmental Management, Zoology as well as programs such as Ecology, Evolution, and Conservation Biology, and Environmental Science. On the other hand, if a course in wildlife ecology and management were not approved, there would be no classes that deal with wildlife specifically and there would be no opportunities to learn about and be exposed to a core area of natural resources.

Sampling of Introductory Wildlife Ecology and Management Courses at Land Grant Institutions

a) University of Arizona, School of Natural Resources. WFSC 444 -- Wildlife Management (4 units). Description: Management of wildlife as a resource; characteristics of wildlife species; principles of population dynamics in wildlife populations; techniques used in studying wildlife.


d) University of Vermont, The Rubenstein School of Environment and Natural Resources Wildlife & Fisheries Biology. 174 Principals of Wildlife Management. Application of ecology and sociology to the management of wildlife populations and habitat; integration of wildlife management with demands for other resources; consideration of game species, endangered species, and biological diversity. Prerequisites: Natural Resources 103 or Biology 102 or Botany 160.

e) University of Wyoming, Department of Zoology and Physiology. ZOO 4300. Principles of Wildlife Ecology and Management. 5 credits. Integrates concepts of vertebrate ecology with the art of wildlife management, stressing approaches to deal with the inherent uncertainty of managing populations. Strategies to increase or decrease populations of target species, tools used to determine population status (e.g., viability analysis, monitoring, habitat assessment), and ecosystem management approaches. Laboratory included. Dual listed with ZOO 5300.

f) Washington State University, Department of Natural Resources Sciences. NATRS 435 Wildlife Ecology 4 Credits and NATRS 436 Advanced Wildlife Management 4 Credits.

3. How will the content be organized?
Please find attached a syllabus for the course as it was offered in Spring 2008 as NREM 491-003 Wildlife Ecology and Management.

4. What other courses at UHM closely parallel the proposed course and in what way will the latter make a distinct contribution?
   The only current course which could be confused with Wildlife Ecology and Management is Biology 425: Wildlife and Plant Conservation. While BIOL 425 has two to three lectures discussing the history of wildlife law and metapopulations, there is less than 10% overlap between the courses. Specifically, BIOL 425 is primarily focused on species conservation and is more akin to a conservation biology class as it covers such diverse topics as marine systems, plants, ex situ conservation strategies, endangered species, genetics, and alien species. In addition, with the potential addition of Wildlife Ecology and Management, Dr. Shelia Conant is planning on altering the BIOL 425 course to have a greater marine component within it (which lies outside of any wildlife ecology class as wildlife is exclusively focused on terrestrial vertebrates) and potentially changing the course title to “Fundamentals of Conservation Biology.”

5. Where or how does the proposed course fit into the current and future curriculum?
   The proposed course fits into the current NREM curricula as an elective course for NREM majors, either undergraduate or graduate students. It may also be considered an elective course in Biology, Botany, and Zoology, depending upon approval of the respective departments.
   With regards to the course, students will receive content that dovetails the other natural resource classes being offered in NREM (e.g., forestry, watersheds, GIS, etc.). Students learn foundational concepts and theories about the ecology of terrestrial vertebrates, from individuals to communities, and then how best to manage them. The material covered provides both historical context to the development of the field as well as examples from around the world, including Hawai‘i.

6. Why is the number of credits and level justified? Explain the prerequisites and the absence thereof.
   The class is listed as three credits because it is a standard lecture based course and is the minimum number of credits needed to cover the material in a sufficient manner. Typically classes in Wildlife Ecology and Management are three credits if they do not contain a laboratory, which this course does not contain. The reason for making the course a 400 level is threefold. First, the course is an elective aimed at both undergraduate and graduate students. By placing the course at the 400 level it allows for both groups of students to receive credit. Second, the course level corresponds to the previously mentioned BIOL 425 course, which in terms of difficulty and requirements is similar. Third, Wildlife Ecology and Management courses at other institutions is often considered a 400 level course (four of the six examples above are at 400 level).
   The only prerequisite for the course is BIOL 172. Although other courses could be added to limit enrollment, the topic is of broad interest here at UHM and the amount of prior knowledge that a student needs is primarily encapsulated in BIOL 172. Furthermore, this course is one that appeals to students from many departments as well as outside the university and making it less restrictive is important. A case in point was interest from students in Communications and employees at the Waikiki Aquarium.

7. How will the course assist students to achieve the critical skills and competencies expected of CTAHR graduates?
For each critical skill, either state that your course proposal (or modification) will not address that skill, or describe briefly (in a sentence or two) how the students will be assisted in gaining mastery of that critical skill.

Students enrolled in Wildlife Ecology and Management are expected to use and/or develop a number of critical skills expected of CTAHR graduates. The following critical skills are utilized in the course:

1. Written Communications—for exams, problem sets, and the term paper, students are expected to write in a grammatically correct manner that assumes a logical flow. Furthermore, students are expected to write in an unbiased scientific manner for all assignments, unless otherwise indicated.

2. Oral Communications—the only aspect of oral communication required is that students listen effectively.

3. Analytical Problem Solving Skills—Students are required to evaluate and solve a number of mathematical expressions (e.g., animal population growth models), effectively read and interpret data and results from figures and tables, and evaluate causes and effects of different ecological relationships and management treatments.

4. Personal Characteristics—The class is structured such that students should be inherently curious, which I regularly foster. Furthermore, students need to effectively manage their time to accomplish problem sets, the assigned readings and studying for exams. I expect that for every contact hour a student has that he or she spend two to three hours of time outside of the classroom studying. I also expect students to be punctual, responsible, and self-directed. Finally, I work with students in all of my courses on accepting constructive criticism in order to improve their skills and persevere.

5. Human Relations Skills—In any class I teach I expect students to conduct themselves in a professional manner that is sensitive to other students and other viewpoints.

6. Business Management Skills—There is no aspect of the course related to this skill set.

7. “Read World Experience”—A regular part of this particular course is discussing the expectations and requirements of wildlife biologist and working in the natural resource profession.

8. Leadership Skills—There is no aspect of the course related to this skill set.

9. Computer Skills—Students are expected to type all problem sets and the term paper in a word processor. In addition, problem sets require that students use spreadsheets for analysis and produce graphical output.

10. Global Perspective—The class is taught to convey aspects of natural resource management from around the world and what makes management decisions similar and different. For instance, wildlife ecology and management is discussed in the context of North America, Europe, Australia, and Asia.

8. How will students be evaluated?

Students will be evaluated through a combination of examinations, problem sets, participation, and a final project. Please see the attached syllabus for further details.

9. What are the minimum qualifications for teaching this course? Is a qualified instructor now available?

Currently there is an instructor available for the course. If a new instructor were needed, he or she should have a graduate degree or training in wildlife ecology, animal ecology, and/or natural resources. Furthermore the individual would need to have an intimate knowledge of terrestrial animals (e.g., mammals, birds, reptiles, and amphibians) and their ecology.

10. How will the course be financed, assuming no further cutbacks?
Currently there are no additional costs aside from the basics of providing lectures.

11. **Has the course been offered before? Is there a demand for it?**

   Yes, the course is currently being offered this semester (Spring 2008) as NREM 491-003 Wildlife Ecology and Management. Currently there are eight students enrolled in the course. Numerous students aside from those registered were interested in the class, but were unsure if it would count towards their degrees or were simply unaware of the course initially as it was listed as a special topics class. There has been an acknowledged demand for the course among students in such departments as Biology, Botany, Natural Resources and Environmental Management, and Zoology. In addition, a number of faculty members from across the campus have indicated a need for this course.

12. **Is the course cross-listed with another department?**

   The course is not being cross-listed with any other department.