Proposal for the Initiation of a New Instructional Program Leading to A Graduate Certificate in Wildlife Management

April 2013
Oregon State University
College of Agricultural Sciences
Department of Fisheries and Wildlife
Contents
Executive Summary ........................................................................................................................................5

1. Program Description ................................................................................................................................7
   a. Proposed Classification of Instructional Programs (CIP) number: 030601 ........................................7
   b. Overview ........................................................................................................................................7
   c. Course of Study .............................................................................................................................7

Curriculum ..................................................................................................................................................8

d. Program Delivery ..................................................................................................................................10

e. Ways in which the program will seek to assure quality, access, and diversity ............................10

f. Anticipated enrollment (first five years) .........................................................................................12

g. Expected certificates awarded (next five years) ...........................................................................12

h. Characteristics of students to be served .......................................................................................12

Faculty and Staff ....................................................................................................................................13

j. Faculty resources ................................................................................................................................14

k. Other staff ..........................................................................................................................................19

l. Facilities, library, and other resources ............................................................................................20

m. Anticipated start date .......................................................................................................................20

2. Relationship to Mission and Goals ....................................................................................................20

   a. Manner in which the proposed program supports the institution’s mission and goals for access,
      student learning, research and/or scholarly work, and service ....................................................20

   b. Connection of the proposed program to the institution’s strategic priorities and signature areas
      of focus ...........................................................................................................................................21

   c. Manner in which the proposed program contributes to Oregon University System goals for
      access; quality learning; knowledge creation and innovation; and economic and cultural support
      of Oregon and its communities...........................................................................................................21

   d. Manner in which the program meets broad statewide needs and enhances the state’s capacity to
      respond effectively to social, economic, and environmental challenges and opportunities ..........22

3. Accreditation ........................................................................................................................................22

   a. Accrediting body or professional society that has established standards in the area in which the
      program lies, if applicable ...............................................................................................................22
b. Ability of the program to meet professional accreditation standards ........................................... 22

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation................................................................. 243

d. If accreditation is a goal, the proposal should identify the steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not.................................................................................................................................................... 23

4. Need.................................................................................................................................................... 23

a. Evidence of market demand ............................................................................................................... 23

b. If the program’s location is shared with another or similar OUS program, proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts). ................................................................. 23

c. Manner in which the program would serve the need for improved educational attainment in the region and state........................................................................................................................................ 23

d. Manner in which the program would address the civic and cultural demands of citizenship........ 24

5. Outcomes and Quality Assessment.................................................................................................. 24

a. Learner Outcomes ............................................................................................................................. 24

b. Assessment of Learner Outcomes ..................................................................................................... 25

c. Program performance indicators ..................................................................................................... 25

d. Nature and level of research and/or scholarly work expected of program faculty......................... 25

6. Program Integration and Collaboration............................................................................................. 25

a. Closely related programs in other OUS universities and Oregon private institutions .................. 25

b. Ways in which the program complements other similar programs in other Oregon institutions. 26

c. If applicable, proposal should state why this program may not be collaborating with existing similar programs. ................................................................................................................................. 26

d. Potential impacts on other programs............................................................................................... 27

7. Financial Sustainability ....................................................................................................................... 27

a. Business Plan..................................................................................................................................... 27

b. Plans for development and maintenance of unique resources ......................................................... 28

c. Targeted student/faculty ratio............................................................................................................. 28
d. Resources to be devoted to student recruitment ................................................................. 28
Appendix A. Enrollment and completion statistics for the Graduate Certificate in Fisheries Management Program .................................................................................................................................................. 29
Appendix A1. List of past mentors for Capstone Projects completed for the Graduate Certificate in Fisheries Management Program .................................................................................................................................................. 29
Appendix B. Email correspondence on draft proposal ................................................................. 32
Appendix C. Letters of Support from University of Oregon and Portland State University ....... 33
Appendix D. Syllabus for FW 506 Projects ............................................................................... 33
Appendix E. Assessment tools for the Graduate Certificate in Wildlife Management........... 38
  Exit Survey .................................................................................................................................. 38
  Mentor Review Form .................................................................................................................. 42
Appendix F. Library Assessment for Wildlife Management Certificate (March 2013) .......... 44
Appendix G. Budget Outline ....................................................................................................... 48
  Budget Narrative ....................................................................................................................... 48
  Draft Budget Worksheet ........................................................................................................... 49
**Executive Summary**

The Department of Fisheries and Wildlife proposes a Graduate Certificate in Wildlife Management (GCWM) to complement its successful Graduate Certificate in Fisheries Management. This 18 credit hour, online Certificate requires courses in biological science and human dimensions, plus a 3 credit hour project, which will provide qualified applicants with training in wildlife sciences at the graduate level. Like our Fisheries Management Certificate, GCWM is expected to serve students who are:

a) interested in a graduate degree but are not yet competitive enough, due to a lack-luster GPA or lack of experience in the field of wildlife science;

b) interested in online education options but want to “test the waters” before committing to a full degree program;

c) seeking advancement in their current job through graduate-level coursework and completion of a relevant capstone project (3 credit hour research paper or outreach product mentored by a local agency scientist);

d) entering the Master of Natural Resources degree program or other graduate degree program at OSU that allows application of Graduate Certificate credits; or

e) in need of particular coursework to contribute to professional certification, such as Wildlife Scientist.

There is a demonstrated demand for this proposed Graduate Certificate in the number of inquiries we receive from applicants to the Fisheries Management Certificate, Professional Science Master’s in Fisheries and Wildlife Management (PSM-FWA), and the Master of Natural Resources. Many of these applicants desire coursework and training related to wildlife conservation, as opposed to fisheries or forest ecology (Sustainable Natural Resources Graduate Certificate). Students are likely to be in three primary groups: recent graduates seeking to improve their credentials for graduate school, students in existing OSU graduate degree programs, and natural resource professionals. Target enrollment is 40 students per year. Importantly, this Graduate Certificate will increase enrollment in existing graduate courses that have been developed for the PSM-FWA program, which is intentionally limited to a select number of professional-level students.

Because this proposed Graduate Certificate relies entirely upon existing courses, administration, and infrastructure, it requires few additional resources. Applications and academic advising will be handled by our Graduate Program Advisor, and the program oversight and review will be included in the duties of the current Program Director for the Fisheries Certificate and PSM-FWA. Capstone projects will be reviewed by a local mentor and a faculty member assigned to the course, FW 506 Projects.
The Graduate Certificate in Wildlife Management is a logical and needed extension of our department’s successful efforts to expand training opportunities to future managers of wildlife nationwide. It will enhance OSU’s presence in the growing field of online graduate education in the biological and resource sciences, promote sustainability in existing online programs, and contribute to our commitment to excellence and opportunity in conservation education.

Category I Proposal
Proposal for a New Academic Program

Graduate Certificate in Wildlife Management

Oregon State University
College of Agricultural Sciences
Department of Fisheries and Wildlife

April 2013
Proposed Effective Term: Fall Term 2013 (201401)

CPS Tracking # 86051
1. Program Description

a. Proposed Classification of Instructional Programs (CIP) number: 030601

Title: Wildlife, Fish and Wildlands Science and Management.

Definition: A program that prepares individuals to conserve and manage wilderness areas and the flora, marine and aquatic life therein, and manage wildlife reservations and zoological/aquarium facilities for recreational, commercial, and ecological purposes. Includes instruction in wildlife biology, marine/aquatic biology, environmental science, freshwater and saltwater ecosystems, natural resources management and policy, outdoor recreation and parks management, the design and operation of natural and artificial wildlife habitats, applicable law and regulations, and related administrative and communications skills.


b. Overview

The Department of Fisheries and Wildlife proposes a Graduate Certificate in Wildlife Management to complement its successful Graduate Certificate in Fisheries Management. This 18 credit hour Certificate will require courses in biological science and human dimensions, plus a 3 credit project, which will provide qualified applicants with training in wildlife sciences at the graduate level. This Graduate Certificate, like our Fisheries Management Graduate Certificate, is expected to function in three primary ways: to prepare students who plan to apply to graduate school in a similar discipline, as advancement for students in their current positions as wildlife professionals, and to provide technical training or specific coursework that can contribute to professional certification by The Wildlife Society.

The Graduate Certificate in Wildlife Management will be offered entirely online through Ecampus, but will also be available to Corvallis on-campus students in Fisheries and Wildlife, Natural Resources, Environmental Science, and other departments. The curriculum provides the flexibility that online students need, but with learner outcomes that are commensurate with the requirements of our discipline and the preparation required for further study. Many of the courses have on-campus sections, and on-campus students can choose on-campus offerings or take the on-line courses with the appropriate tuition and fees.
c. Course of Study
The Graduate Certificate in Wildlife Management will require a minimum of 18 credits, including a 3-credit capstone project. Two courses must be from the Wildlife Sciences group, and 2 courses must be from the Human Dimensions group. A fifth course can be chosen from either group or from a list of Skills courses. Students may petition to apply a course not listed to the Certificate, including up to 6 graduate-level credits from another institution. Requests will be reviewed by the Certificate Program Director. We will request submission of a Program of Study for review by the Department’s Graduate Advisor, although this document is not currently required by the Graduate School for Certificate students.

A capstone project (3 credits, 60-80 hours of effort expected) is required for the proposed Graduate Certificate. Capstone projects may be one of two options: a paper based on original research or a literature review, or an outreach product that benefits an agency or the student’s local community. Projects are supervised by a local mentor (identified by the student, with assistance from our staff as needed) and the faculty member in charge of the capstone course, FW 506 Projects (described below). Mentors must submit a project evaluation form once the final draft of the project is submitted. The final capstone product is not equivalent to a thesis and does not get reviewed through a formal defense process, but is expected to demonstrate the concepts and integration of social and biological science that defines the field of Wildlife Management.

Curriculum

Capstone Project
FW 506 Projects (3) – see Appendix D for course syllabus

Wildlife Sciences Core (2 courses minimum)
FW 519 The Natural History of Whales and Whaling (3)
FW 521 Aquatic Biological Invasions (4)
FW 527 Principles of Wildlife Diseases (4)
FW 535 Wildlife in Agricultural Ecosystems (3)
FW 540 Vertebrate Population Dynamics (4) (Ecampus Only)
FW 545 Ecological Restoration (4)
FW 551 Avian Conservation and Management (3)
FW 553 Forest Wildlife Habitat Management (4)
FW 558 Mammal Conservation and Management (4)
FW 562 Ecosystem Services (3) counts as FW core OR Human Dimensions
FW 563 Conservation Biology of Wildlife (3)
FW 575 Wildlife Behavior (4)
FW 579 Wetlands and Riparian Ecology (3)
FW 581 Wildlife Ecology (4)
FS 545 Advanced Forest Community Ecology (4)
FS 548 Biology of Invasive Plants (3)
SNR 530 Ecological Principles of Sustainable Natural Resources (3) (Ecampus Only)
SNR 540 Global Environmental Change (3) (Ecampus Only)

**Human Dimensions Core** (2 courses minimum)

FW 515 Fisheries and Wildlife Law and Policy (3)
FW 562 Ecosystem Services (3) *counts as FW core OR Human Dimensions*
FW 585 Consensus and Natural Resources (3)
FW 620 Ecological Policy (3)
ANTH 581 Natural Resources and Community Values (4)
AREC 532 Environmental Law (4)
AREC 534 Environmental and Resource Economics (3)
AREC 553 Public Land and Resource Law (4)
FS 592 Ecosystem Services Ecology, Sociology, Policy (3)
PHL 540 Environmental Ethics (3)
PHL 543 World Views and Environmental Values (3)
PS 575 Environmental Politics and Policy (4)
PS 577 International Environmental Politics and Policy (4)
SNR 520 Social Aspects of Sustainable Natural Resources (3) (Ecampus Only)
SNR 521 Economics of Sustainable Natural Resources Management (3) (Ecampus Only)
SNR 522 Basic Beliefs and Ethics in Natural Resources (3) (Ecampus Only)
SOC 580 Environmental Sociology (4)
SOC 581 Society and Natural Resources (4)
WRP 599 Special Topics (3)

**Skills Courses** (1 course recommended)

FW 514 Professional Development: Meeting Communications (1)
BOT 540 Field Methods in Vegetation Science (4)
FS 523 Natural Resource Data Analysis (4)
GEO 544 Remote Sensing (4)
GEO 565 Geographic Information Systems and Science (4)
ST 511 Methods of Data Analysis (4) (continues as ST 512, 513)
Proposal: **Graduate Certificate in Wildlife Management**

- **Credential Type:** Graduate Certificate
- **Program Type:** Graduate
- **Academic Home:** Department of Fisheries and Wildlife, College of Agricultural Sciences
- **Contact:**
  - W. Daniel Edge, Head, Department of Fisheries and Wildlife
    Daniel.Edge@oregonstate.edu
    541-737-2910
  - Selina Heppell, Certificate Program Director, Department of Fisheries and Wildlife
    Selina.Heppell@oregonstate.edu
    541-737-9039
- **CPS #:** 86051
  [https://secure.oregonstate.edu/ap/cps/proposals/view/86051](https://secure.oregonstate.edu/ap/cps/proposals/view/86051)
- **CIP #:** 030601
- **SIS #:** XXXX - To Be Assigned by the Registrar's Office
- **College Code:** 01
- **Course Designator:** FW (existing)
- **Delivery Mode and Location:** Online (through ECampus) and Face-to-Face (Main Campus)
- **Enrollment Limitations:** None
- **Accreditation:** None
- **Program Unique Within the Oregon University System:** Yes
- **Proposed Effective Term:** Fall Term 2013 (Banner: 201401)

**d. Program Delivery**

All courses listed are offered online through Ecampus, and this Graduate Certificate is designed primarily for online students. Fisheries and Wildlife courses are scheduled to ensure that a variety of topics are covered each term. A complete schedule of courses (including those offered in other departments) will be made available for Graduate Certificate students each fall term, and distributed through our quarterly newsletter. Our experience with the Graduate Certificate in Fisheries Management has been that most students are taking courses while committed to a full or part-time
job, which limits them to 1-2 courses per term. Thus, it will typically take a student 1-1.5 years to complete the Certificate.

Networking is a critical aspect of graduate education, particularly for programs that are designed for professional training in applied disciplines. Through our newsletters, Blackboard Organization page, Facebook page, and course Discussion Boards, we will encourage Graduate Certificate students to communicate and assist one another by sharing project ideas, opportunities for future jobs or internships, and connections with state and federal natural resource agencies. We also maintain a list of local mentors that have assisted our Graduate Certificate students with their capstone projects.

Advising begins with the application process, where our Graduate Advisor and Program Director help prospective students choose among the variety of certificate and degree programs in natural resources at OSU. Our Graduate Advisor monitors student progress and enrollment to assure that students meet the requirements of the Continuous Enrollment Policy and other Graduate School regulations. We also assist with capstone project development and identification of mentors. If a local mentor cannot be identified, we will match the student with a courtesy or regular faculty member in the Department.

e. Ways in which the program will seek to assure quality, access, and diversity

Application Review Process. All applications will be reviewed by the Program Director. Applicants must have a bachelor’s degree and a GPA of at least 3.0 for the last 90 credit hours, plus a demonstrated interest in the Graduate Certificate for career or academic advancement (as shown in the cover letter). Students with a bachelor’s degree that is not in a biological field will be told to take preparatory courses such as BI 370 Ecology, FW 320 Introductory Population Dynamics, and/or FW 321 Applied Community and Ecosystem Ecology. Students who do not meet the 3.0 GPA requirement may petition for conditional admission (required to maintain a B or better in all coursework) at the discretion of the Program Director, pending review by the Graduate Council. Students who do not meet admission requirements will be advised to take 1-2 graduate-level courses as a non-degree seeking student, or apply to an appropriate post-baccalaureate program if they meet that program’s requirements.

Retention and Evaluation. The Fisheries and Wildlife Graduate Advisor will check the status of currently enrolled Graduate Certificate students at the end of each academic term to assure that they are making progress and are meeting Continuous Enrollment requirements. Students who need to file Leave of Absence forms will be contacted by email, and those who are struggling will be referred to the Program Director and the Academic Success Center. Final grades, capstone products, and mentor evaluation of the capstone project of each student will be reviewed by the Program Director prior to awarding the Graduate Certificate in Wildlife Management.
Diversity is a major issue within the Department of Fisheries and Wildlife because the Fisheries, Wildlife and Conservation Biology professions have historically been staffed predominately by white males. We have been actively engaged in enhancing diversity for many years through faculty hires with nine of our last 15 faculty hires having been women and/or minorities. One of our most recent hires under the Tenured Faculty Diversity Initiative is specifically working on diversity recruitment and retention as part of her position. We have actively promoted our graduate programs at the SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) annual meeting.

f. Anticipated enrollment (first five years)
Applications for the Graduate Certificate in Wildlife Management will be accepted year-round. Based on current enrollment in our Graduate Certificate in Fisheries Management and the volume of inquiries about a Graduate Wildlife Certificate that we have received over the past 2 years, we anticipate 5-10 applications per term and predict the following enrollment:

Fall Term 2013: 10 students (includes a few current Fisheries Management Certificate students who will make a change of program request)

Winter and Spring Terms 2014: 10 additional students

Subsequent Fall Terms: 5-10 new students

Other terms, incl. Summer: 2-4 new students

Program enrollment goal by year 5: 40 students in the program annually

g. Expected certificates awarded (next five years)
Certificates awarded in first 5 years, assuming an average of 5 terms per student, including Summer: 50-60

Statistics from our Graduate Certificate in Fisheries Management (established in Fall 2008) are shown in Appendix A. We have awarded 33 Graduate Certificates in the first 4 years of that Program, and currently have 36 students enrolled in the program. We anticipate that the Wildlife Certificate will be more popular, based on the relative proportion of wildlife vs. fisheries undergraduates in our program.

h. Characteristics of students to be served
The majority of our Graduate Certificate in Fisheries Management students are 3-5 years out from their bachelor’s degree. We anticipate that the Graduate Certificate in Wildlife Management will attract older-than-average, working professionals who are seeking additional training to advance in their current agency or move to a new position. We will also attract recent bachelor degree recipients who desire additional training but lack either a GPA sufficient for admission to a graduate degree program, or a degree in a relevant field. For students in the latter category, we will suggest 2-3 undergraduate preparatory courses before enrolling in the graduate certificate courses: BI 370 Ecology, FW 320 Introductory Population Dynamics, and/or FW 321 Applied Community and Ecosystem Ecology.

Corvallis campus and Ecampus online graduate students in degree-based programs at OSU who wish to add the Wildlife Management Graduate Certificate to their Program of Study may do so in accordance with the guidelines established for their degree. Courses can “double count” toward the student’s degree and the Graduate Certificate if they are accepted by both programs, but to complete the Graduate Certificate in Wildlife Management the student must enroll in FW 506 Projects and submit a capstone project that is independent of his or her thesis work. This Certificate will be included in the list of options for students in the Master of Natural Resources program. Marketing research by Ecampus has found that Certificates are in demand as “add-ons” for degree-seeking students, because they provide evidence of breadth and dedication to education in a specific field that is greater than an academic minor.

We anticipate that the geographic distribution of Wildlife Management Graduate Certificate students will mimic that of our Fisheries Management Graduate Certificate: with approximately 30% coming from Oregon, 15% from Washington and California, 10% from Alaska, 35% from other US states, and 10% international.

**Faculty and Staff**

**i. Adequacy and quality of faculty delivering the program**

The Department of Fisheries and Wildlife is unique among OSU programs in our coordination and oversight of online courses. All courses are supervised by a faculty member who developed or modified the course content, and all graduate-level courses are taught by instructors or faculty with a graduate degree. Because the Graduate Certificate in Wildlife Management is not a graduate degree, most faculty involvement will be through Ecampus online courses, although capstone projects will occasionally be mentored by a faculty or courtesy faculty member of the Department.
The Certificate Programs in the Department of Fisheries and Wildlife are directed by Dr. Selina Heppell, an Associate Professor with a 0.25 FTE appointment to administer online programs in the Department. Dr. Heppell reviews all applications and Programs of Study, is a resource for students with questions about their program or career paths, and reviews coursework and final projects for Certificate completion.

j. Faculty resources
Table 1 lists the graduate faculty who will supervise and/or teach the graduate courses in this proposed Graduate Certificate program. Abbreviated CVs are available upon request.

Table 2 lists external faculty who supervise and/or teach graduate courses in this Certificate. Abbreviated CVs are available upon request.

**Table 1. Department of Fisheries and Wildlife faculty that teach or supervise graduate classes and advise graduate students* in the area of Wildlife Science. Faculty CV's are available upon request.**

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Area of Expertise</th>
<th>Course(s) Taught in GCWM Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Scott Baker, PhD</td>
<td>Molecular ecology of marine mammals, historical demography and population dynamics of whales, molecular taxonomy, conservation genetics. *Graduate Faculty Member</td>
<td></td>
</tr>
<tr>
<td>Professor of Wildlife</td>
<td></td>
<td>-FW 519 The Natural History of Whales and Whaling</td>
</tr>
<tr>
<td>Associate Director of The Marine Mammal Institute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matthew Betts, PhD</td>
<td>Forest wildlife, landscape ecology. *Graduate Faculty Member</td>
<td>-FW 553 Forest Wildlife Habitat Management</td>
</tr>
<tr>
<td>Adjunct Associate Professor of Forestry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest Ecosystems and Society</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Chapman, PhD</td>
<td>Aquatic biological invasions, invertebrate zoology and peracaridan crustacean taxonomy. *Graduate Faculty Member</td>
<td>-FW 521 Aquatic Biological Invasions</td>
</tr>
<tr>
<td>Courtesy Assistant Professor of Fisheries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert Davison, PhD</td>
<td>Fisheries and wildlife.</td>
<td>-FW 515 Fisheries and Wildlife Law and Policy</td>
</tr>
<tr>
<td>Instructor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sandra DeBano, PhD</td>
<td>Riparian ecology and entomology, aquatic-terrestrial and riparian-upland linkages, trophic interactions. *Graduate Faculty Member</td>
<td>-FW 562 Ecosystem Services</td>
</tr>
<tr>
<td>Associate Professor of Wildlife</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bruce Dugger, PhD</td>
<td>Ecology, conservation and management of waterbirds and their wetland habitat. *Graduate Faculty Member</td>
<td>-FW 579 Wetlands and Riparian Ecology</td>
</tr>
<tr>
<td>Associate Professor of Wildlife</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Title, Institution</td>
<td>Research Interests</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Katie Dugger, PhD</td>
<td>Courtesy, Associate Professor of Wildlife, Asst. Unit Leader, USGS Cooperative Wildlife Research Unit</td>
<td>Avian population modeling, forest bird survival rates in relation to environmental variables. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Collin Eagles-Smith, PhD</td>
<td>Courtesy, Assistant Professor of Wildlife, USGS Forest and Range Ecosystem Science Center</td>
<td>Ecotoxicology, food web ecology, contaminant bioaccumulation, wetland ecology, limnology, mercury toxicity. *Graduate Faculty Member</td>
</tr>
<tr>
<td>W. Daniel Edge, PhD</td>
<td>Department Head and Professor of Wildlife Ecology</td>
<td>Nongame wildlife, habitat management, wildlife relationships in forest and agricultural ecosystems. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Clinton Epps, PhD</td>
<td>Assistant Professor of Wildlife</td>
<td>Ecology, conservation, and management of mammals; effects of climate and climate change on distribution and demography. *Graduate Faculty Member</td>
</tr>
<tr>
<td>M. Jesse Ford, PhD</td>
<td>Associate Professor of Fisheries</td>
<td>Paleoecology, limnology. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Eric Forsman, PhD</td>
<td>Courtesy Assistant Professor of Wildlife U.S. Forest Service</td>
<td>Spotted owls, other forest wildlife. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Tiffany Garcia, PhD</td>
<td>Assistant Professor of Wildlife</td>
<td>Amphibian population decline, animal behavior freshwater community ecology. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Jen Gervais, PhD</td>
<td>Instructor</td>
<td>Interactions of contaminants with natural stressors and their effects on population dynamics. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Christian Hagen, PhD</td>
<td>Assistant Professor of Wildlife, Senior Research</td>
<td>Avian ecology and management; conservation planning. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Susan Haig, PhD</td>
<td>Courtesy, Professor of Wildlife, USGS Forest and Range Ecosystem Science Center</td>
<td>Conservation genetics, avian behavioral ecology. *Graduate Faculty Member</td>
</tr>
<tr>
<td>Selina Heppell, PhD</td>
<td></td>
<td>Marine fishes population ecology, life history *FW 506 Projects</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Research Focus</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Associate Professor of Fisheries</strong></td>
<td></td>
<td>and population dynamics of marine vertebrates, impacts of invasive species. *Graduate Faculty Member</td>
</tr>
</tbody>
</table>
| **Markus Horning, PhD**  
Associate Professor of Wildlife | | Pinniped ecology, behavioral physiology and ecology of diving animals, population dynamics and life histories of marine mammals.  
*Graduate Faculty Member | |
| **Michelle Kappes, PhD**  
Instructor, Assistant Professor of Wildlife | | Spatial ecology, tracking animal movements; behavior, habitat use, and energetics of marine birds. | |
| **Boone Kauffman, PhD**  
Professor of Wildlife, Senior Research | | Interactions of ecosystems, land use, and climate change in wetlands and tropical forests (current emphasis is on mangroves and other coastal ecosystems, tropical swamp forests, and riparian zones).  
*Graduate Faculty Member | -FW 545 Ecological Restoration |
| **Patricia Kennedy, PhD**  
Professor of Wildlife | | Wildlife ecology and management, conflicts associated with the private and public land management and the ecological impact of agricultural practices on the environment.  
*Graduate Faculty Member | |
| **Holger Klinck, PhD**  
Assistant Professor of Wildlife, Senior Research | | Bioacoustics.  
*Graduate Faculty Member | |
| **Robert Lackey, PhD**  
Courtesy Professor of Fisheries  
U.S. EPA, retired | | Ecosystem management, ecological risk assessment, ecological policy.  
*Graduate Faculty Member | -FW 620 Ecological Policy |
| **Bruce Mate, PhD**  
Professor of Wildlife  
Director of Marine Mammal Institute | | Marine Mammals, migration of whales.  
*Graduate Faculty Member | |
| **Anita Morzillo, PhD**  
Assistant Professor, Senior Research | | Forest ecosystems and society | -FW 585 Consensus on Natural Resources |
<p>| <strong>Dave Paoletti, MS</strong> | | Behavioral ecology, herpetology, introduced species. | -FW 575 Wildlife Behavior |</p>
<table>
<thead>
<tr>
<th>Instructor</th>
<th>Area of Expertise</th>
<th>Course(s) Taught in GCWM Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>W. Douglas Robinson, PhD</strong>&lt;br&gt;Professor of Wildlife&lt;br&gt;Mace Professor of Watchable Wildlife</td>
<td>Arid land ecology, community ecology, temperate and tropical forest birds community dynamics in fragmented landscapes.&lt;br&gt;*Graduate Faculty Member</td>
<td>-FW 551 Avian Conservation and Management&lt;br&gt;-FW 581 Wildlife Ecology</td>
</tr>
<tr>
<td><strong>Daniel Roby, PhD</strong>&lt;br&gt;Courtesy Professor of Wildlife; Unit Leader, USGS Cooperative Wildlife Research Unit</td>
<td>Physiological ecology, energetics of birds and mammals, seabird ecology.&lt;br&gt;*Graduate Faculty Member</td>
<td>-FW 563 Conservation Biology of Wildlife</td>
</tr>
<tr>
<td><strong>Dan Rosenberg, PhD</strong>&lt;br&gt;Courtesy, Associate Professor of Wildlife</td>
<td>Applied population and landscape ecology.&lt;br&gt;*Graduate Faculty Member</td>
<td></td>
</tr>
<tr>
<td><strong>TBA</strong>&lt;br&gt;Dana Sanchez, PhD&lt;br&gt;Assistant Professor and Extension Wildlife Specialist</td>
<td>TBA&lt;br&gt;Mammalian space use and habitat selection. human-wildlife issues.&lt;br&gt;*Graduate Faculty Member</td>
<td>-FW 527 Principles of Wildlife Diseases</td>
</tr>
<tr>
<td><strong>Robert Suryan, PhD</strong>&lt;br&gt;Associate Professor of Wildlife</td>
<td>Ecology and population dynamics of marine birds, marine ecosystem processes affecting food web dynamics and life history strategies&lt;br&gt;*Graduate Faculty Member</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. External faculty that teach or supervise graduate classes. Faculty CV’s are available upon request.

<table>
<thead>
<tr>
<th>Faculty Member</th>
<th>Area of Expertise</th>
<th>Course(s) Taught in GCWM Curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>John Bliss, PhD</strong>&lt;br&gt;Associate Dean - Graduate and International Programs</td>
<td>Applied Economics</td>
<td>-FS 592 Ecosystem Services Ecology, Sociology, Policy&lt;br&gt;-SNR 520 Social Aspects of Sustainable Natural Resources</td>
</tr>
<tr>
<td><strong>Christine Brekken, Instructor</strong></td>
<td>Applied Economics</td>
<td>-AREC 532 Environmental Law</td>
</tr>
<tr>
<td><strong>Lori Cramer, PhD</strong>&lt;br&gt;Associate Professor of Sociology</td>
<td></td>
<td>-SOC 580 Environmental Sociology&lt;br&gt;-SOC 581 Society and Natural Resources</td>
</tr>
</tbody>
</table>
| **Lisa Ganio, PhD**  
| Associate Professor of Forest Ecosystems & Society  
| -FS 523 Natural Resource Data Analysis  |
| **David E. Hibbs, PhD**  
| Professor of Forest Ecosystems and Society  
| Community Ecology, Silviculture  
| -FS 545 Advanced Forest Community Ecology  |
| **William Jaeger, PhD**  
| Extension Agricultural and Resource Policy Specialist  
| Environmental & Molecular Toxicology  
| -AREC 534 Environmental and Resource Economics  |
| **Nancy Kerkvliet, PhD**  
| Professor of EMT  
| -SNR 521 Economics of Sustainable Natural Resources Management  |
| **A Jon Kimerling, PhD**  
| Emeritus Appointment  
| -GEO 544 Remote Sensing  |
| **Seema Mangla, PhD**  
| Instructor of Forest Ecosystems & Society  
| -FS 548 Biology of Invasive Plants  |
| **David Perry, PhD**  
| Instructor  
| -SNR 530 Ecological Principles of Sustainable Natural Resources  |
| **Brent Steel, PhD**  
| Professor of Political Science  
| -PS 575 Environmental Politics and Policy  
| -PS 577 International Environmental Politics and Policy  |
| **Loretta Thielman, PhD**  
| Instructor  
| -ST 511 Methods of Data Analysis (continues as ST 512, 513)  |
| **Duncan Thomas, PhD**  
| Instructor  
| -BOT 540 Field Methods in Vegetation Science  |
| **Allen Thompson, PhD**  
| Assistant Professor of Philosophy  
| -PHL 540 Environmental Ethics  |
| **Bryan Tilt, PhD**  
| Associate Professor of Anthropology  
| -ANTH 581 Natural Resources and Community Values  |
k. Other staff

Capstone Project mentors will be from federal and state natural resource agencies in each student’s local area, or an OSU Faculty or Courtesy Faculty member if a local mentor cannot be found. The Certificate Program Director or the professor responsible for FW 506 Projects may also serve as a project mentor; this has occurred twice for the Fisheries Management Certificate when students were on active military duty. A list of mentors from Fisheries Management Capstone projects is provided in Appendix A1.

The Department of Fisheries and Wildlife has a Graduate Advisor, Ms. Lisa Pierson, who works with applicants and graduate students in our certificate and degree programs. The Graduate Advisor monitors student status and notifies the Program Director if a student is doing poorly or failing to submit Leave of Absence forms or other paperwork required by the Graduate School. The Advisor

---

**Table**

<table>
<thead>
<tr>
<th>Name</th>
<th>Department/Position</th>
<th>Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jenna Tilt, PhD</td>
<td>Research Associate of Earth, Ocean and Atmospheric Sciences</td>
<td>-ANTH 581 Natural Resources and Community Values</td>
</tr>
<tr>
<td>David Turner, PhD</td>
<td></td>
<td>-SNR 540 Global Environmental Change</td>
</tr>
<tr>
<td>Blaine Vogt, PhD</td>
<td></td>
<td>-PHL 540 Environmental Ethics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-PHL 543 World Views and Environmental Values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-PHL 547 Research Ethics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-SNR 522 Basic Beliefs and Ethics in Natural Resources</td>
</tr>
<tr>
<td>Kuuipo Walsh, MS</td>
<td>Earth, Ocean &amp; Atmospheric Science</td>
<td>-GEO 565 Geographic Information Systems and Science</td>
</tr>
<tr>
<td>Edward Weber, PhD</td>
<td></td>
<td>-PS 575 Environmental Politics and Policy</td>
</tr>
<tr>
<td>Charlotte Wickham, PhD</td>
<td></td>
<td>-ST 511 Methods of Data Analysis (continues as ST 512, 513)</td>
</tr>
<tr>
<td>TBA</td>
<td></td>
<td>-WRP 599 Special Topics</td>
</tr>
</tbody>
</table>
serves as a liaison to the Graduate School, Financial Aid and Scholarship Office, and Registrar’s Office for all certificate students.

The Graduate Certificate Program Director (currently Dr. Selina Heppell) will review all applications, be the signatory on Leave of Absence forms and other official documents, and provide general oversight for the program. Dr. Heppell will direct both the Fisheries Management Graduate Certificate and the Wildlife Management Graduate Certificate.

Adding 40 graduate students to the Department will increase the workload of the Graduate Advisor and Certificate Program Director. Up to 25% of one classified office staff FTE will be devoted to graduate program admissions, record-keeping, and student communications.

1. Facilities, library, and other resources

The Department of Fisheries and Wildlife is housed in two buildings on the Corvallis main campus and at several locations around the state. In addition, research is conducted at several off-campus facilities. Because most students admitted to the Graduate Certificate in Wildlife Management will be Ecampus online learners, the current facilities are sufficient for meeting the needs of these students.

**Hatfield Marine Science Center (HMSC)**—The HMSC (http://hmsc.oregonstate.edu/index.html) is located in Newport, Oregon, approximately 53 miles west of Corvallis. Several tenure-track faculty members, research faculty, instructors and courtesy faculty members are housed at HMSC. The HMSC brings OSU’s diverse marine science programs together for effective collaboration and higher national and international visibility. The Center plays an integral role in marine and estuarine research and instruction, as a unique laboratory facility serving resident scientists and graduate students, and as a base for oceanographic research. The Department of Fisheries and Wildlife offers 16-24 credits of courses at HMSC during the fall term, some of which are applicable to the Graduate Certificate in Wildlife Management. There are also course offerings in the summer, although currently those are restricted at the undergraduate course level. Future course offerings are in the planning stages with Itchung Cheung, Director of Academic Programs at HMSC. We will encourage Certificate students to consider a term at HMSC for experiential learning and networking with the agency staff that are housed there.

m. Anticipated start date

Fall Term 2013, pending review.
2. Relationship to Mission and Goals

a. Manner in which the proposed program supports the institution’s mission and goals for access, student learning, research and/or scholarly work, and service.

Our current graduate program is among the largest at OSU and thus supports OSU’s goals for access and student learning. Graduate Certificates in Fisheries Management and Wildlife Management provide a non-degree option for prospective students that can enhance their employment options and broaden their training in ecology and management of wildlife resources. Many of our faculty serve on state or federal panels, task forces, endangered species recovery teams, as editors of scientific journals, etc., as well as the normal complement of college and university committees. Our courtesy faculty, which are primarily from state and federal agencies, are an excellent resource for students and will contribute to networking opportunities through course instruction. This Graduate Certificate program will strengthen ties between regular and courtesy faculty in our Department.

b. Connection of the proposed program to the institution’s strategic priorities and signature areas of focus.

OSU’s Strategic Plan, Phase II identified science of sustainable Earth ecosystems as a signature area of distinction. Conservation and management of vertebrate organisms is central in this signature area. Vertebrate organisms have captured the imagination of the American public and conserving these organisms is a high priority based on national and state policies and funding levels. The Graduate Certificate in Wildlife Management will support teaching and outreach related to sustainability, ecosystem services, ecology and management of vertebrate species, communities and their habitats and ecosystems.

c. Manner in which the proposed program contributes to Oregon University System goals for access; quality learning; knowledge creation and innovation; and economic and cultural support of Oregon and its communities.

Online degrees and certificates are a high priority for Oregon University System. OSU trains many of the fisheries and wildlife professionals in the state and region and have good to excellent employment success (Edge 2009). Furthermore, the fish and wildlife resources of the state, which our graduates manage, have substantial economic impact in Oregon. Based on a 2009 economic survey [http://www.dfw.state.or.us/agency/docs/Report_5_6_09--Final%20(2).pdf](http://www.dfw.state.or.us/agency/docs/Report_5_6_09--Final%20(2).pdf), Oregonians and visitors spent $2.5 billion dollars per year on fishing, hunting, shell fishing and wildlife viewing activities and equipment. Other states around the country report similar statistics. The long-term sustainability of this economic engine is dependent on effective management of these resources.
Graduates of our Graduate Certificate programs will advance in the employment structure of the agencies they currently work for, or be able to move into advanced degree programs.

d. Manner in which the program meets broad statewide needs and enhances the state’s capacity to respond effectively to social, economic, and environmental challenges and opportunities.

The teaching, research and outreach of the Department of Fisheries and Wildlife are central to meeting the nation’s environmental challenges and opportunities. Fisheries and Wildlife Sciences are central to the concepts of sustainability, ecosystem services, and natural resources management. It is estimated that there are approximately 3,500 fish and wildlife professionals in the state of Oregon employed by state and federal agencies or non-government organizations, and over 50,000 nationwide. The Department anticipates that successful students will benefit from the Certificate through enhanced employment opportunities, improved qualifications for graduate degree programs, and a broader understanding of the human dimensions component of wildlife conservation and resource management that is at the core of many of our FW courses and is a required component of the Graduate Certificate program.

3. Accreditation

a. Accrediting body or professional society that has established standards in the area in which the program lies, if applicable.

There is no organization that accredits Graduate Certificates in fisheries or wildlife. However, the three primary professional societies (American Fisheries Society, Society for Conservation Biology, and The Wildlife Society) all have specific missions and codes of ethics, and provide links to courses and degree programs that meet those standards.

b. Ability of the program to meet professional accreditation standards.

The Wildlife Society (TWS)\(^1\) has a program designed to certify professionals at two levels (Associate and Full Certification). However, certification is not a requirement for employment in most state or federal agencies. Undergraduates of our programs generally qualify for certification depending on electives they choose in their programs. The proposed program of study for the Graduate Certificate will not provide all of the coursework required for certification (over 100 credit hours total), but can

contribute to a student’s efforts to attain certification as a Certified Wildlife Biologist (TWS) by allowing students to select coursework that fulfills required courses missing from their undergraduate degrees. We will continue to work with the Education Committees of the Wildlife Society and other professional societies to have the Certificate and its courses recognized for excellence in training future wildlife managers.

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, proposal should identify whether or not the undergraduate program is accredited and, if not, what would be required to qualify it for accreditation.
Not Applicable—see 3a and 3b above.

d. If accreditation is a goal, the proposal should identify the steps being taken to achieve accreditation. If the program is not seeking accreditation, the proposal should indicate why it is not. Not Applicable.

4. Need

a. Evidence of market demand. The existing Fisheries Management Graduate Certificate has been quite successful (Appendix A). Several inquiries per quarter are received from applicants who are also interested in a Graduate Certificate in Wildlife Management. According to a marketing study for the Fisheries Management Graduate Certificate, the Department and Ecampus receive about 25 inquiries per month for that program. Likewise, many applicants to the Master of Natural Resources program at OSU are interested in a Wildlife Management specialization (see email from MNR Director Badege Bishaw, Appendix B). Dr. Heppell met with Alfonso Bradoch of Ecampus prior to submission of this proposal, and received supportive feedback. In particular, there is market demand for Certificates as “add-on” options for degree-seeking students.

b. If the program’s location is shared with another or similar OUS program, proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts). After review of Environmental Science and Natural Resource Science Programs at OUS institutions, it was determined that this program does not overlap with any other OUS
program, particularly due to its on-line delivery. Letters of support are provided by University of Oregon and Portland State University (Appendix C).

c. Manner in which the program would serve the need for improved educational attainment in the region and state. Many natural resource agencies desire additional experience or training at the graduate level for positions in biological monitoring, assessment, and management. While the Graduate Certificate is not a degree, it is a good option for students who are

1. interested in a graduate degree but are not yet competitive enough, due to a lack-luster GPA or lack of experience in the field of wildlife science;
2. interested in online education options but want to “test the waters” before committing to a full degree program;
3. seeking advancement in their current job through graduate-level coursework and completion of a relevant capstone project;
4. entering the Master of Natural Resources degree program or other graduate degree program at OSU that allows application of Graduate Certificate credits; or
5. in need of particular coursework to contribute to professional certification, such as Wildlife Scientist (administered by the Wildlife Society).

d. Manner in which the program would address the civic and cultural demands of citizenship.
The Graduate Certificate in Wildlife Management emphasizes the integration of biological and social sciences for sound conservation and resource management. The Department’s online courses encourage synthesis and thoughtful debate through Discussion Boards and individual and group projects. Students are encouraged to think critically about public perception and societal goals in addition to the biological needs of wildlife. These are essential skills for natural resource agency employees and any citizen who values wildlife and their habitats.

5. Outcomes and Quality Assessment

a. Learner Outcomes
The curriculum requirements for the Graduate Certificate in Wildlife Management are intentionally broad, to provide students with flexibility in scheduling and tailoring their Program of Study to meet their individual needs. A working professional in a resource agency may have very different needs or interests than a new graduate who is seeking experience to get into a
graduate degree program. All students will be expected to meet the following Learner Outcomes of the proposed program:

_Demonstrate_ proficiency (overall GPA of 3.0 or greater) in graduate-level coursework in wildlife ecology and human dimensions of fisheries management.

_Integrate_ biological and social science in a capstone research paper or outreach product designed for a specific audience: science, management agency, or general public.

_Synthesize_ scientific information from a variety of sources and demonstrate research skills through a project proposal, outline, and revision process, as well as correct citation and documentation of sources in the capstone project.

_Improve_ knowledge and understanding of critical wildlife management issues to prepare for advancement in the field.

b. **Assessment of Learner Outcomes**
Individual courses will be reviewed annually through the Electronic Student Evaluation of Teaching scores. All students will receive an exit questionnaire that includes an opportunity to evaluate their courses and experience in the Program (Appendix E). The questionnaires and mentor review forms will be reviewed by the Program Director and the Fisheries and Wildlife Curriculum Committee annually to identify program needs and potential improvements.

c. **Program performance indicators**
The Department of Fisheries and Wildlife conducts a statistical survey of all graduates every three years (Edge 2009). Graduate Certificate students will be included in this survey. Because the professional benefits of Certificates have not yet been fully evaluated, an active database of contact information for our Graduate Certificate students, and periodically request updates on employment status, will be maintained. Finally, it is anticipated that the networking aspect of our Graduate Certificate programs will help students maintain long-term ties to each other and resource agencies. This will be enhanced by our Facebook page and postings on our departmental web pages.

d. **Nature and level of research and/or scholarly work expected of program faculty.** The Program Director will review exit surveys, course evaluations, and employment histories of Certificate students in this program as well as the Graduate Certificate in Fisheries Management, potentially synthesizing the information for publication in an education journal or commentary in an online forum, as well as presentations at regional and national meetings.
6. **Program Integration and Collaboration**

a. **Closely related programs in other OUS universities and Oregon private institutions.** There are no Graduate Certificate programs that are entirely online that emphasize Wildlife Science and Management. An online review of existing programs in Oregon and universities affiliated with the Natural Resources Distance Learning Consortium revealed the following certificates in Natural Resources that share some characteristics with our proposed program:

Graduate Certificate in Sustainable Natural Resources (OSU): this 18 credit certificate most strongly overlaps with our proposed program in that it also requires ecology and human dimensions courses, plus an integrative project. However, the courses for this Graduate Certificate are entirely housed in the SNR program, with a strong emphasis on forest ecology and management. We feel that the SNR program and the proposed Wildlife Management Graduate Certificate program will complement each other and provide a needed additional program option for students who plan to enter the Master of Natural Resources degree. (See email response to our initial proposal draft from The SNR Director, Badege Bishaw (Appendix B)).

Graduate Certificate in Wilderness Management (U. Montana): 14-credit program of 4 management-based courses. There is a little overlap with this proposal.

Certificate of Graduate Study in Natural Resources (Virginia Polytechnic): 12-credit program, which requires a course in Conservation Ecology plus 3 additional courses in ecology, management, or policy. No capstone project is required.

Graduate Certificate in Restoration Ecology (U. Idaho): 14 credit program with, 4 courses in ecology and human dimensions of habitat restoration. This is a very specific program. There is not much overlap with this proposal.

b. **Ways in which the program complements other similar programs in other Oregon institutions.** This Graduate Certificate will complement the suite of graduate level opportunities in natural resource management at OSU, providing prospective students with a stepping stone to a graduate degree program such as Master of Natural Resources, Professional Science Masters degrees, and master’s or PhD programs in Environmental Science, Fisheries or Wildlife Science, Marine Resource Management, or the biological sciences. With a growing number of students seeking post-baccalaureate education, and a growing number of agencies requiring graduate-level training, there is a growing niche for Graduate Certificates.
While there are no similar programs at other Oregon institutions, our Certificate may be of value to students in Environmental Science programs. We would like to develop a tuition agreement for students at other OUS schools, but this will require negotiations with Ecampus.

c. If applicable, proposal should state why this program may not be collaborating with existing similar programs.
Not applicable.

d. Potential impacts on other programs. Several of the courses listed in this Graduate Certificate curriculum are in other units, particularly courses in the Human Dimensions group. As with the Department’s other degree and certificate programs, we seek collaboration across campus and hope that our courses and majors enhance the diversity and quality of all natural resource-based programs.

7. Financial Sustainability (see Appendix G Budget Outline)

a. Business Plan

The Graduate Certificate in Wildlife Management depends entirely upon existing courses and infrastructure, so there is little additional overhead. No new courses are anticipated for this program; all courses are complete or under development through our existing MOU with Ecampus for the Professional Science Master’s in Fisheries and Wildlife Administration.

On the proposed Budget Worksheet, a small increase in FTE for the Program Director, Graduate Advisor, and instructor FTE to handle the increased student load, with the latter primarily devoted to supervision of capstone courses (FW 506), has been included. Ecampus does not provide funding for advising and administrative support for graduate-level programs at this time. We have also included an increase in the electronic library resources required for the program (Appendix G). While we do not anticipate a dramatic need for new resources, the increase in graduate enrollment will put some burden on the library system. Following consultation with Janet Webster, we have included the same library resource budget that was proposed for the PSM in Fisheries and Wildlife Administration degree: $2,500/year plus $175 per student per year (Appendix G).

Expected revenues are based on a conservative estimate of 15-20 students per year multiplied by 9 credit hours of FW coursework, followed by a gradual increase in enrollment to the target of 40
students per year. Revenues are calculated using the current College of Agricultural Sciences and Ecampus funding model of $336 per credit hour returned to the academic unit.

<table>
<thead>
<tr>
<th>Anticipated Ecampus Tuition Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
</tr>
<tr>
<td>$45,000</td>
</tr>
</tbody>
</table>

As an added benefit to our graduate programs, the proposed Graduate Certificate is expected to increase student credit hours in online graduate level courses that are part of our PSM degree, making those courses more solvent financially and providing a critical mass of students for online discussion and group project work. The addition of this Certificate will create a larger online graduate student body that will add to the credit hours in our wildlife courses as well as those of other departments represented in our proposed curriculum.

b. Plans for development and maintenance of unique resources
This Graduate Certificate will join our other online graduate programs in a partnership with Ecampus. We are dedicated to providing the best available online education, utilizing cutting-edge technologies and continually updating course materials and delivery. We have invested in a variety of equipment to enhance online instruction, including hardware to produce instructional videos, interactive software, and communication tools. We will continue to work with Ecampus on technological advances, updating older online courses first and improving our efforts to connect with distance education students. Our proposal to Ecampus for support of the Wildlife Management Graduate Certificate curriculum will include requests for updates of older courses, with an emphasis on the graduate-level component of “slash” courses. In some cases, we are separating the 400- and 500-level sections of online courses to facilitate instructor assignments and improve the content and learner outcomes of the graduate sections.

b. Targeted student/faculty ratio (student FTE divided by faculty FTE). Our online graduate courses have enrollment caps of 15 students to ensure a high faculty:student ratio and good opportunity for individual feedback and group discussions. With a target enrollment of 40 students per year and 30 online graduate courses in wildlife sciences, this proposed program should maintain a faculty:student ratio of approximately 1:1.33 for instruction. Dividing by the number of FW faculty listed above, the ratio is 1:1.5.

d. Resources to be devoted to student recruitment. Most of the recruitment for this program will be combined with advertising for our Professional Science Master’s degree, with some additional emphasis on marketing opportunities with The Wildlife Society annual meetings. We will work on a marketing plan with Ecampus and develop a webinar for prospective students, similar to
the one for our Graduate Certificate in Fisheries Management (http://www.youtube.com/watch?v=iS4T8lfELic).

Appendix A. Enrollment and completion statistics for the Graduate Certificate in Fisheries Management Program.

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Applicants</th>
<th>Admissions</th>
<th>Certificates awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-2008</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2008-2009</td>
<td>18</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2009-2010</td>
<td>22</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2010-2011</td>
<td>31</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>2011-2012</td>
<td>35</td>
<td>22</td>
<td>24</td>
</tr>
<tr>
<td>2012-2013 (to date)</td>
<td>18</td>
<td>7</td>
<td>---</td>
</tr>
</tbody>
</table>

Appendix A1. List of past mentors for Capstone Projects completed for the Graduate Certificate in Fisheries Management Program.

<table>
<thead>
<tr>
<th>Mentor</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shelly Miller</td>
<td>Oregon Department of Fisheries and Wildlife</td>
</tr>
<tr>
<td>Michael Harte</td>
<td>College of Earth, Oceanic and Atmospheric Sciences, OSU</td>
</tr>
<tr>
<td>Selina Heppell</td>
<td>Fisheries and Wildlife, OSU</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hannah Gosnell</td>
<td>College of Earth, Oceanic and Atmospheric Sciences, OSU</td>
</tr>
<tr>
<td>Ramana Rallapudi</td>
<td>New Zealand Ministry for Fisheries Management</td>
</tr>
<tr>
<td>Will Young</td>
<td>U.S. Forest Service</td>
</tr>
<tr>
<td>John Chapman</td>
<td>Hatfield Marine Science Center</td>
</tr>
<tr>
<td>Alyson Mack</td>
<td>U.S. Fish &amp; Wildlife Service</td>
</tr>
<tr>
<td>Joe Ebersole</td>
<td>Environmental Protection Agency, Corvallis</td>
</tr>
<tr>
<td>William Poytress</td>
<td>U.S. Fish &amp; Wildlife Service</td>
</tr>
<tr>
<td>Rick Nemeth</td>
<td>University of the Virgin Islands</td>
</tr>
<tr>
<td>Katie Hildenbrand</td>
<td>Oregon Sea Grant</td>
</tr>
<tr>
<td>Heidi Taylor</td>
<td>National Oceanic and Atmospheric Administration/NMFS, SW Region</td>
</tr>
<tr>
<td>Gene Galinat</td>
<td>South Dakota Game Fish &amp; Parks</td>
</tr>
<tr>
<td>Scott Heppell</td>
<td>Fisheries and Wildlife, OSU</td>
</tr>
<tr>
<td>Colliin Eagles-Smith</td>
<td>Fisheries and Wildlife, OSU</td>
</tr>
<tr>
<td>Pete Bloom</td>
<td>Bloom Biological Consulting</td>
</tr>
<tr>
<td>Vaclav Biza</td>
<td>Pyxis Laboratories</td>
</tr>
<tr>
<td>Russell Bassett</td>
<td>Association of Northwest Steelheaders</td>
</tr>
<tr>
<td>Peter Lawson</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>Holly Campbell</td>
<td>OSU Marine Resource Management</td>
</tr>
<tr>
<td>Gil Sylvia</td>
<td>Hatfield Marine Science Center</td>
</tr>
<tr>
<td>Melinda Molnar</td>
<td>California Dept. of Transportation, Division of Environmental Analysis</td>
</tr>
<tr>
<td>John Drotts</td>
<td>Stillaguamish Tribe</td>
</tr>
<tr>
<td>Aaron Podey</td>
<td>Florida Fish and Wildlife Conservation Commission</td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Scott Highleyman</td>
<td>Pew Charitable Trust, International Arctic Program</td>
</tr>
<tr>
<td>Domingo Ochavillo</td>
<td>American Samoa Department of Marine and Wildlife Resources</td>
</tr>
<tr>
<td>John Odenkirk</td>
<td>Virginia Dept. of Game and Inland Fisheries</td>
</tr>
<tr>
<td>Barbara Samora</td>
<td>Mt. Ranier National Park</td>
</tr>
</tbody>
</table>
Appendix B. Email correspondence on draft proposal

From: Badege, Badege  
Sent: Monday, January 14, 2013 4:46 PM  
To: Heppell, Selina  
Cc: Edge, W.  
Subject: RE: Cat I proposal for Wildlife Certificate

Hi Selina,

Thanks for your e-mail and sharing with me the I proposal for a Graduate Certificate in Wildlife Management. This Certificate will satisfy the request from prospective MNR applicants who want to specialize in Wildlife Management. It also complements other Certificate programs at OSU. I think, it will be a great addition to the online education at OSU.

Cheers,
Badege

Badege Bishow, Ph.D., Program Director,  
Master of Natural Resources, and  
Sustainable Natural Resources Graduate Program  
Department of Forest Ecosystems and Society  
Oregon State University  
Corvallis, OR 97331  

Phone: 541-737-9485  
Fax: 541-737-1393

From: Heppell, Selina  
Sent: Wednesday, January 02, 2013 11:23 AM  
To: Bishow, Badege  
Cc: Edge, W.  
Subject: Cat I proposal for Wildlife Certificate

Dear Badege,

I hope you had a fun and relaxing holiday.  
I am hoping you have time to review the attached Cat I proposal for a new online Certificate in Wildlife Management. We have discussed this before, and I think there will be a strong demand for this Certificate. It should enhance both of our programs, as there are a number of applicants to MNR that have asked about a Certificate like this one that is more wildlife conservation focused than SNR or Fisheries. However, I do want your feedback before submitting this proposal because there is some overlap with the SNR Certificate.

Thanks for your time –
Selina

~*~*~*~*~*~*~*~*~*~*~*~*~*~*~*~*~*~
Dr. Selina S. Heppell, Associate Professor  
Director of On-Line Graduate Programs  
Department of Fisheries and Wildlife  
Oregon State University  
104 Nash Hall, Corvallis, OR 97331  
Office phone: 541-737-9039  
http://oregonstate.edu/heppell

B.S. in Fisheries and Wildlife Science  
Grad Certificate in Fisheries Management  
Professional Science Master's In  
Fisheries and Wildlife Administration (PSMWA)  
Coming soon: Grad Certificate in Wildlife Management
Appendix C. Letters of Support from University of Oregon and Portland State University

Appendix D. Syllabus for FW 506 Projects

**FW 506 Projects**

**Capstone Project Guidelines**

Students enrolled in FW 506 are required to complete a capstone project. The capstone project is essentially an extended term paper that can be based on a literature review and/or new research data.

Each capstone project will be designed by the student and his or her mentor; as such, we expect there to be considerable variety in the types of projects and subjects covered. All students should meet the following learner outcomes:

- **Identify** a fisheries resource, ecology, or conservation issue that requires sound science to provide advice to management.
- **Outline** the principle components of their project, including problem identification, background information, management issues, potential solutions, and recommendations for dissemination of information and management alternatives.
- **Synthesize** available data and **apply** information to development of management alternatives.
- **Demonstrate** proficiency in literature review and evaluation of primary research, through development of a complete bibliography.
- **Interpret** his or her mentor's advice and comments to improve the final product for submission.
| **Purpose** | To contribute to the field of wildlife management with a product that reflects the principles and applications you have learned in your classes. |
| **Format** | Format is choice of student and Project Mentor. Final projects can be in any communication format – a written report or “white paper”, a documentary, or even a podcast. Podcasts or video productions require a written script. |
| **Data Collection and Analysis** | Use methodology appropriate to the practice of wildlife management. This can include scientific research methods, application of analytical tools such as GIS or remotes sensing, literature review and/or the collection of material for extension and outreach materials. All materials used or referenced should be properly cited. |
| **Standard expected** | The project report must effectively communicate findings, results and/or outreach materials to an audience of wildlife management practitioners and, in some cases, the general public. You can work on a project of relevance to your employer, but work submitted for the course should be new material completed during the certificate course of study. The project content must be well researched, relevant to its target audience, reliable and academically defensible. |
| **Length and Time Commitment** | The length of the research project is not an indication of quality. Actual length will depend on the topic, methods and final product as agreed with the student’s Project Mentor, with feedback from the FW 506 Instructor. A project must be succinct as possible and effectively communicated to its target audience. Most written projects range from 5,000 to 10,000 words excluding references and appendices. As a 3-credit course, the expectation for your time commitment is a total of 60-90 hours of work on research, analysis, writing, editing and final product production. |
| **Supervision** | Although Certificate Capstone Projects are not defended like a thesis or degree-level project, we do want to provide you with feedback and help you produce an excellent product that is valuable to the scientific community, a natural resource agency, and/or the general public. There are 3 people to assist you: your Project Mentor, the Instructor of FW 506, and the Certificate Program Director. Your primary mentor for the project should be a scientist in your local area who works in the field of Wildlife Management. This “Project Mentor” can be an agency, academic, or NGO scientist. The Certificate Program Director (Dr. Heppell) and the faculty instructor of FW 506 can help you identify a potential Project Mentor, or connect you with a departmental faculty member if there is not a suitable mentor in your area. Your employer or supervisor can serve as your Mentor. The Instructor of FW 506 will monitor your progress and provide feedback on your proposed project plan, final product, and drafts as necessary. The Certificate Program Director will review your final product and can also give you ideas |
about project topics and identifying a Project Mentor.

| Credits | You must obtain a written evaluation of your final product from your Project Mentor to receive pass/fail credit for FW 506 (3 credits). Your project will also be evaluated by the course instructor, who will provide feedback on its overall quality and merit, and the Certificate Program Director. In rare cases, a particularly detailed capstone project may be eligible for 4 credits instead of 3. You must submit a request to the FW 506 Instructor for approval before registration.

If your project cannot be completed during a single term, you can choose to take a grade of Incomplete. Incomplete courses must be completed within one year to receive credit. You will be asked to sign a contract that specifies a timeline for project completion, and submit the contract to the Certificate Program Director. If you take FW 506 in your final term and receive an Incomplete, you will also need to register for at least 3 credits each subsequent term (or apply for a Leave of Absence) to satisfy OSU’s Continuous Enrollment Policy.

Writing your Project

Final projects can be in any communication format – a written report or “white paper”, a documentary, or even podcast. Videos and podcasts do require a written script. Regardless of format, though, the project needs to meet high academic standards. The following are basic guidelines for mentors and students.

1. Establish a topic and clearly address it from the beginning of the work and stay focused. Prepare a two to three page project proposal that outlines your project and share this proposal with your Project Mentor and the FW 506 Instructor. Get feedback on the scope of your project – is it too broad, too narrow, or appropriate for the amount of work expected? What problem are you planning to address?

2. Establish good communication with your Project Mentor early in the process. It is up to you and your mentor to establish a reasonable timeline and set of deliverables for feedback. If you change aspects of your project let your mentor know and discuss the change before making it.
3. The Oregon State University Libraries provide access, delivery and reference services that support the research of needs of students taking courses through Ecampus. The Ecampus library services page has the most complete information.

4. Structure your project carefully. You need a clear introduction, a well-structured body of the essay and a high-impact conclusion. Most written projects follow some variation of the following:

- Abstract/Executive Summary. A short summary of what you did, why you did it, what you found and why this matters.
- Introduction & research question(s). This explains what your research is about, why it is important and lists the research questions you are trying to answer.
- Background and method. This section or sections provides the foundation for your research. What does the peer reviewed literature say about the topic, what information is there in other reports and papers? How are you going about conducting your research explained in enough detail so someone else could repeat it. You should also describe similar studies and what they found.
- Results or case study. Use diagrams and tables to summarize what you found and highlight the most significant aspects of your findings.
- Discussion and conclusion. Here is where you describe the importance of your findings, the strengths and weaknesses of your study, areas for further investigation by someone else or you in the future, etc. Your concluding pages should highlight the main implications of what you found for fisheries management.
- References (see below).
- Appendices. Here is where you put additional information, details and results that are too long to include in the main text or are of less relevance to your key findings.

5. Writing style is important – this should be a professional document. Refer to writing guides such as Strunk and White’s Elements of Style. Proofread for spelling and grammar – again and again and again. If you are a poor writer, you should have your draft paper edited by someone before sending it to your mentor to review, and you may need to have the final draft professionally edited. You will likely need to do at least 2 drafts before finalizing your product; make sure you plan for the time needed to review and revise.

Reference your work appropriately, throughout the document and in your bibliography. A bibliography is required even if your final product is outreach material for the public. Referencing correctly is important for two reasons: (1) to give your own arguments greater weight by supporting them with references from peer reviewed journals and other sources; and (2) to acknowledge the
source of a fact and/or other writers' thinking and the influence they have had on you.

The OSU Library has resources for how to cite appropriately. Do not use web sites as primary sources of information unless you can find no other source. It’s OK to use a footnote or endnote style of reference. You must include a citation in every sentence that includes information sourced from an article or other reference. You can’t just put a citation at the end of a paragraph. For example:

Multi-criteria methods are not based on monetary valuations like cost-benefit analysis, but on a more general weighting system (Kiker et al. 2005). The weighting system reflects preferences about the importance of differing outcomes such as environmental protection, economic efficiency or social well-being (Harte and Lonergan 1995; Leung 2006).

You are encouraged to go to this Rutgers webpage to learn more about proper citations: http://sociology.camden.rutgers.edu/curriculum/citation.htm, which includes a citation generator called Citation Machine. http://citationmachine.net/. You are strongly urged to use it if you are unsure how to cite your references. Unless otherwise instructed by your mentor you can use any of the different "styles" listed although you are urged you to use APA or Chicago. These are the two most common styles. It is never OK to “cut-and-paste” material written by someone else into your document without quotations, and you should use quotes sparingly. We expect the writing and synthesis to be your own!

All podcast and videos or other outreach products must have a script that is referenced appropriately and in the recorded version appropriately acknowledges the contribution of others.

Timeline

Start thinking about project ideas early in your Program. You may want to run your ideas for a project past the Program Director (Dr. Heppell), who can also give you ideas for appropriate people to approach about serving as your Project Mentor.

Although the course (FW 506) is only for one term, it is sometimes difficult to complete a project from start to finish in three months, particularly if you have a job, other classes, or family obligations. You can take an Incomplete for the course (with your Project Mentor’s agreement), but a better plan is to get started on the basic information gathering and structure of your project before you actually register for FW 506. Incomplete courses must be completed within one year to receive credit. If you take FW 506 in your final term and receive an Incomplete, you will also need to register for at least 3 credits each subsequent term (or apply for a Leave of Absence) to comply with OSU’s Continuous Enrollment policy.

An outline of your project should be submitted for evaluation by no later than the middle of your term of enrollment in FW 506 (approximately week 5). By the end of the term, you must submit either your final capstone project or a progress report and timeline for completing the project. Final capstone project reports should be submitted at least one week prior to the end of the term to allow adequate time for review and comments.
Work with your Project Mentor on a plan of work and detailed timeline with specific milestones and check-in dates. That way, you’ll know if you are falling behind schedule and need to re-evaluate the project plan. Be sure to plan for adequate review and revision time; your complete draft should be completed in week 8 of the term, to allow at least a week for review and a final week for revision and product submission to the FW 506 Instructor.

Appendix E. Assessment tools for the Graduate Certificate in Wildlife Management

Exit Survey

Graduate Certificate Student Exit Questionnaire

Wildlife Management
Oregon State University

Please complete the following survey. We will send your signed Certificate by mail after we receive your survey.

StudentName: ________________________________
(Please Print or Type) (Last) (First) (Middle)

OSU ID number ____________________________

Was your Wildlife Management Certificate completed through Ecampus? □ Yes □ No □ Partially (i.e. Some courses)
Did you apply for ☐ and/or receive ☐ financial aid for this program? Did you take out a student loan?  ☐ Yes  ☐ No

Were you also pursuing an advanced degree while enrolled in the Certificate Program?  ☐ Yes  ☐ No

If yes, was it a... ☐ M.S.  ☐ M.A.  ☐ PhD  ☐ Thesis  ☐ Non-Thesis  ☐ Other

If other, name degree and university___________________________________________________________

What was your motivation for joining this Certificate Program (choose all that apply):

☐ Job or career advancement

☐ General interest in topic

☐ “Stepping stone” to advanced degree in a related field

☐ Need for more breadth in my natural resource management field

☐ To try out online graduate courses and programs

☐ Other___________________________________________________________

Using the following scale, please indicate the extent to which you agree with each of the following statements about the program of study you completed. Please note that N/A means no opinion or not applicable.

<table>
<thead>
<tr>
<th></th>
<th>Disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-enrollment information provided on the website and through the program advisor and/or director was helpful and matched my expectation and experience.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>2</td>
<td>I felt I was prepared for the coursework that I chose for my certificate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
</tbody>
</table>
3. I received adequate guidance and advice on my Plan of Study and procedures for completion of the Certificate.  

4. I gained an appreciation for both ecological science and human dimensions components of fisheries management through this program.  

5. I gained useful skills and/or knowledge through my capstone project.  

6. I received appropriate and useful feedback on my capstone project from my mentor.  

7. I learned about real world issues I expect to encounter in my work through my courses and/or capstone project.  

8. The Certificate helped prepare me for the next step in my career.  

<table>
<thead>
<tr>
<th>No.</th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>I received adequate guidance and advice on my Plan of Study and procedures for completion of the Certificate.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>4</td>
<td>I gained an appreciation for both ecological science and human dimensions components of fisheries management through this program.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>I gained useful skills and/or knowledge through my capstone project.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>6</td>
<td>I received appropriate and useful feedback on my capstone project from my mentor.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>7</td>
<td>I learned about real world issues I expect to encounter in my work through my courses and/or capstone project.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>8</td>
<td>The Certificate helped prepare me for the next step in my career.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>NA</td>
</tr>
</tbody>
</table>

What would you tell a student asking for advice about this program?

After reflecting on the program, please specify the course that was the best experience for you, and comment on the reasons why.

Course Number or Name:  
____________________________________________________________________________  
Instructor:  
____________________________________________________________________________  
Comments:
In contrast, please specify the course that was the biggest disappointment for you, and comment on the reasons for your disappointment.

Course Number or Name:

____________________________________________________________________________

Instructor:

____________________________________________________________________________

Comments:

________________________________________

After completing the certificate, I plan to:

☐ Continue my graduate education  ☐ Look for work  ☐ Travel  ☐ Continue at my current job.

Briefly describe the job or position you are looking for or have obtained:

____________________________________________________________________________

Please complete/comment in the following statements: “If I were the Director of the Graduate Certificate in Wildlife Management, the first thing I would do to improve the program would be to ...”

Do you have any other comments/advice regarding the Graduate Certificate Program in Wildlife Management?
As a follow-up, we hope to track how graduates are doing in terms of employment and satisfaction with the education they received from the program. If you are willing to participate in this, please provide your e-mail and mailing address below:

**Mentor Review Form**

**Graduate Certificate in Wildlife Management Capstone Project Review Form for Mentors**

All students taking the Graduate Certificate in Wildlife Management are required to complete a capstone project (FW 506). Thank you for agreeing to serve as a mentor for one of our students. This Project Evaluation Form is designed to help you review the student’s progress and final product, which will also be evaluated by the Instructor of the course and the Certificate Program Director.

Please answer the following questions about each component of the project, along with any detailed comments that you wish to add. We are interested in hearing about your interactions with the student and your experience. This form and your comments will be reviewed by the Program Director and retained in the student’s file.
Please rate the following from Poor to Exceptional by placing an “x” in the appropriate box:

<table>
<thead>
<tr>
<th>Project Component or quality</th>
<th>Poor 1</th>
<th>2</th>
<th>Good 3</th>
<th>4</th>
<th>Exceptional 5</th>
<th>Did not review or unable to rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial conceptualization of the product or topic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project plan and outline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product revisions (did the paper or outreach product improve according to your expectations/advice?)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use and proper documentation of scientific information (biological or social sciences)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration of fisheries-related ecology and human dimensions of natural resource management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Product</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of product to its intended audience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments may be added here or included in a separate letter. Thanks for your feedback!
Appendix F. Library Assessment for Wildlife Management Certificate

OSU Libraries
Collection Development

Library Evaluation for Category I Proposal

_ Proposal for the Initiation of New Instructional Program Leading to a Graduate Certificate in Wildlife Management

Title of Proposal

_Fisheries and Wildlife_
Department

_College of Agricultural Sciences_
College

The subject librarian responsible for collection development in the pertinent curricular area has assessed whether the existing library collections and services can support the proposal. Based on this review, the subject librarian concludes that present collections and services are:

[ X ] adequate to support the proposal

Estimated funding needed to upgrade collections or services to support the proposal (details are attached)

Year 1: $1000 Ongoing: continuation of current e-campus support model

Comments and Recommendations:

Date Received: March 18, 2013
Date Completed: March 29, 2013

_Laurel Krietek_ Subject Librarian
_Signature_

_Steven L. Sowell_ Head of Collection Development
_Signature_ 4/2/13
_Date_

_Yahe Chadwell_ University Librarian
_Signature_ 4/2/13
_Date_

03/29/2013
Oregon State University Libraries Evaluation of the Collection supporting:
A Certificate in Wildlife Management

Overview:
The OSU Libraries maintain a strong wildlife management collection. However, wildlife management information entails more than biology, expanding into human dimensions, including anthropology and environmental policy and economics. The Libraries collect in all these disciplines at varying levels. Fortunately, the resources to support a wildlife management certificate are, for the most part, available in the OSU Libraries’ collections. The OSU Libraries also provides a digital repository that may be a means to archive and deliver the program’s anticipated collection of capstone projects. This would enhance our collections as well as support the certificate program.

Collections:
The current relevant collections are housed at the Valley Library. In the 2003 Collection Assessment that examined the monograph and periodical resources, wildlife components of the OSU Libraries’ collections was deemed adequate to support PhD level research. These levels are more than adequate for the science components of the certificate program. The other subject areas that cover this field are also adequate to support the program.

Journals
OSU Libraries has online access to over 600 journals in the disciplines of zoology, ecology and environmental sciences. This includes almost all of the highest impact journals in the related disciplines, as determined by the Journal Citation Report (JCR). See Table 1 for details. The vast majority of these titles are available electronically, so all students will be able to access them. For titles not available online, OSU Libraries provides the Scan and Deliver service, which e-mails PDF scans of the print articles to the student.

| Table 1. JCR Categories: Biological Conservation, Ecology, & Environmental Sciences |
|-----------------------------------------------|---------------|----------------|----------------|
| Journal Title                               | ISSN          | Impact Factor  | OSU Subscription |
| Ecology letters                             | 1461-023X     | 17.557         | 1998-present (online) |
| Trends in ecology & evolution               | 0169-5347     | 15.748         | 1995-present (online); 1989-2005 (print) |
| Annual review of ecology, evolution, & systematics | 1543-592X   | 14.373         | 2003-present (online) |
| Energy & environmental science              | 1754-5692     | 9.61           | 2008-present (online) |
| Frontiers in ecology & the environment      | 1540-9295     | 9.113          | 2003-present (online) |
| Ecological monographs                       | 0012-9615     | 7.433          | 1931-present (online) |
| ISME Journal                                | 1751-7362     | 7.375          | 2007-present (online) |
| Environmental health perspectives            | 0091-6765     | 7.036          | 1972-present (online) |
| Global environmental change                 | 0959-3780     | 6.868          | 1995-present (online) |
| Global change biology                       | 1354-1013     | 6.862          | 1995-present (online) |

03/29/2013
<table>
<thead>
<tr>
<th>Annual review of environment &amp; resources</th>
<th>1543-5938</th>
<th>6.419</th>
<th>2003-present (online)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular ecology</td>
<td>0962-1083</td>
<td>5.522</td>
<td>1992-present (online)</td>
</tr>
<tr>
<td>Proceedings of the Royal Society. B, Biological sciences</td>
<td>0962-8452</td>
<td>5.415</td>
<td>1800-present (online)</td>
</tr>
<tr>
<td>Advances in ecological research</td>
<td>0065-2504</td>
<td>5.333</td>
<td>1962-present (print only)</td>
</tr>
<tr>
<td>Wildlife monographs</td>
<td>0084-0173</td>
<td>5.333</td>
<td>1958-present (online)</td>
</tr>
<tr>
<td>Environment international</td>
<td>0160-4120</td>
<td>5.297</td>
<td>1995-present (online); 1979-1996 (print)</td>
</tr>
<tr>
<td>Environmental science &amp; technology</td>
<td>0013-936X</td>
<td>5.228</td>
<td>1967-present (online)</td>
</tr>
<tr>
<td>Journal of environmental science &amp; health Part C</td>
<td>1059-0501</td>
<td>5.16</td>
<td>N/A</td>
</tr>
<tr>
<td>Evolution</td>
<td>0014-3820</td>
<td>5.146</td>
<td>1947-present (online)</td>
</tr>
<tr>
<td>Global ecology &amp; biogeography</td>
<td>1466-822X</td>
<td>5.145</td>
<td>1999-present (online)</td>
</tr>
<tr>
<td>Ecological applications</td>
<td>1051-0761</td>
<td>5.102</td>
<td>1991-present (online)</td>
</tr>
<tr>
<td>Methods in ecology &amp; evolution</td>
<td>2041-210X</td>
<td>5.093</td>
<td>N/A</td>
</tr>
<tr>
<td>Journal of applied ecology</td>
<td>0021-8901</td>
<td>5.045</td>
<td>1964-present (online)</td>
</tr>
<tr>
<td>Journal of ecology</td>
<td>0022-0477</td>
<td>5.044</td>
<td>1913-present (online)</td>
</tr>
<tr>
<td>Journal of animal ecology</td>
<td>0021-8790</td>
<td>4.937</td>
<td>1932-present (online)</td>
</tr>
<tr>
<td>Water research</td>
<td>0043-1354</td>
<td>4.865</td>
<td>1955-present (online); 1967-2005 (print)</td>
</tr>
<tr>
<td>Ecology</td>
<td>0012-9658</td>
<td>4.849</td>
<td>1920-present (online)</td>
</tr>
<tr>
<td>Critical reviews in environmental science &amp; technology</td>
<td>1064-3389</td>
<td>4.841</td>
<td>1993-2006 (print); 2005-2009 (online)</td>
</tr>
<tr>
<td>Diversity &amp; distributions</td>
<td>1366-9516</td>
<td>4.83</td>
<td>1998-present (online)</td>
</tr>
<tr>
<td>Global biogeochemical cycles</td>
<td>0886-6236</td>
<td>4.785</td>
<td>1987-present (online)</td>
</tr>
<tr>
<td>American naturalist</td>
<td>0003-0147</td>
<td>4.725</td>
<td>1867-present (online)</td>
</tr>
<tr>
<td>Conservation biology</td>
<td>0888-8892</td>
<td>4.692</td>
<td>1987-present (online)</td>
</tr>
<tr>
<td>Heredity</td>
<td>0018-067X</td>
<td>4.597</td>
<td>1947-present (online)</td>
</tr>
<tr>
<td>Remote sensing of environment</td>
<td>0034-4257</td>
<td>4.574</td>
<td>1955-present (online); 1969-2005 (print)</td>
</tr>
<tr>
<td>Functional ecology</td>
<td>0269-8463</td>
<td>4.567</td>
<td>1987-present (online)</td>
</tr>
<tr>
<td>Journal of biogeography</td>
<td>0305-0270</td>
<td>4.544</td>
<td>1974-present (online)</td>
</tr>
<tr>
<td>Frontiers in zoology</td>
<td>1742-9994</td>
<td>4.46</td>
<td>2004-present (online)</td>
</tr>
<tr>
<td>Ecography</td>
<td>0906-7590</td>
<td>4.188</td>
<td>1992-present (online)</td>
</tr>
<tr>
<td>Journal of hazardous materials</td>
<td>0304-3894</td>
<td>4.173</td>
<td>1995-present (online)</td>
</tr>
<tr>
<td>Biological conservation</td>
<td>0006-3207</td>
<td>4.115</td>
<td>1995-present (online); 1968-2005 (print)</td>
</tr>
</tbody>
</table>

*Subject-Specific Indexes and Abstracts:*
The library subscribes to a number of databases that provide access to the literature in this field. These include the following:

03/29/2013
• Wildlife and Ecology Studies Worldwide, 1935-present
• Environmental Sciences and Pollution Management (ESPM), 1967-present
• GreenFILE – 1960s-present
• Birds of North America - 2002
• Zoological Record, 1993-present
• Web of Science (Science Citation Index), 1965-present

These databases are accessible to all OSU students regardless of location. Combined with GoogleScholar, identifying relevant information should not be problematic.

Monographs

The monographs collection in wildlife management and the related disciplines is adequate to support graduate degree programs. Since the proposed certificate is online-based, the Libraries growing collection of electronic books (e-books) will be valuable for the program. The library owns over 100 e-books specifically on wildlife management. In addition, the e-book collection includes the Springer Environmental Sciences collection of over 1,500 books, plus individual e-book titles on relevant topics.

Access costs:

A significant part of this certificate program relies on distance delivery of the course and the materials needed by students not located on an OSU campus. The certificate program proponents intend to deliver much of the program via Blackboard. Consequently, it is imperative that ready access to available library resources be integrated into those online courses. The Libraries should be involved in the identification and incorporation of information resources into Blackboard as there are persistent quality and copyright issues.

For material not available electronically or physically at the OSU Libraries, students will need to borrow from other institutions. The cost for borrowing materials has decreased as the OSU Libraries develop more efficient systems and more extensive relationships. The average cost to borrow an item is around $6.75; if we must purchase it, the cost averages around $35. It is hard to estimate how much graduate students will need materials from beyond OSU; however, in the past, a typical graduate student in the College of Agricultural Science borrowed five items per year from outside the OSU libraries. Given current data, that number is probably still applicable. If a student spends a total of four quarters completing the certificate program, the cost per student for access to materials not readily available is ranges from $30 to $175. For a cohort of 20 students, this amounts to $600 to $3500. This cost should be covered by the Ecampus fee and the subsequent transfer of some Ecampus funds to the OSU Libraries.

Library staff and expertise:

Janet Webster is the subject librarian for wildlife management. In that capacity, she manages the collection, provides instruction as requested, responds to reference inquiries, and develops materials to assist faculty members and students in their research. As a professor, she also holds an adjunct status in the Fisheries and Wildlife Department and CEOAS as part of the Marine Resource Management faculty. Additional services include the physical attributes of the libraries including excellent computer facilities, study areas for individual and group work, and practice rooms for students.

03/29/2013
Additional expertise is available through electronic reference and mediation for accessing materials not readily available.

Summary:
Given the anticipated enrollment for the Graduate Certificate in the Management of Wildlife, the OSU Libraries resources are adequate and would be excellent with the addition of international policy and management material. Delivery systems are in place to address the needs of distance students; however, ongoing access costs should be recognized and negotiated.

Recommendations:
Access costs:
* Integration of library resources into Blackboard
  * One time cost: $1,000 (librarian time)

03/29/2013
Appendix G. Budget Outline

Budget Narrative
Because the Graduate Certificate in Wildlife Management depends on existing courses and administrative infrastructure, expected costs are limited to accommodation of additional students.

Administration: Dr. Selina Heppell, Program Director for the Graduate Certificate in Fisheries Management and the Professional Science Masters in Fisheries and Wildlife Administration, will be Director of this proposed Graduate Certificate Program. Duties include program oversight, scheduling classes, reviewing applicant files, arbitration of student-instructor conflicts, eSET and exit survey review, general student advising. Budget: 0.1 FTE + OPE

Administrative Support: Lisa Pierson, Graduate Advisor, is currently providing support to the Department’s graduate programs. She will provide information to prospective students, compile application materials, monitor student progress, and serve as the liaison to the Graduate School and Ecampus. Budget: 0.2 FTE + OPE

Faculty: To cover additional sections of graduate-level online courses, as well as supervision of FW 506 Projects, we request 0.4 FTE + OPE of recurring funds for Instructors.

We are not planning to provide scholarships for Graduate Certificate students, as the program is only 18 credits and most students are part-time only. It is possible that GTA positions to cover online undergraduate courses will be available to highly qualified Certificate students (i.e, those with substantial expertise in the course subject matter and some level of teaching experience).

Library Budget: These line items are from the official Library Review (Appendix E.).

Revenue: Anticipated revenue is conservatively calculated for 9 online graduate credits per year at the current rates provided by Ecampus and the College of Agricultural Sciences ($336/SCH). With the addition of faculty and support staff FTE, the Program is expected to require support for the first 2 years (about $21,000 in Year 1 and $9,000 in Year 2), but should be self-sustaining thereafter, with Ecampus tuition resources at $19,000 in Year 3 and $48,000 in Year 4.
## Draft Budget Worksheet

### OSU Internal Budget Outline Form

**Estimated Costs and Sources of Funds for Proposed Program**

Total new resources allocated to the Proposed Program, if any. If no change in resources is required, the budgetary impact should be reported as zero.

**PROGRAM TITLE:** Graduate Certificate in Wildlife Management  
**BUDGET PERIOD:** From FY 2013-2014 to FY 2017-2018

<table>
<thead>
<tr>
<th>RECURRING</th>
<th>Fiscal Year 1</th>
<th>Fiscal Year 2</th>
<th>Fiscal Year 3</th>
<th>Fiscal Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty, Tenured/Tenure-track</td>
<td>9,500</td>
<td>9,690</td>
<td>9,884</td>
<td>10,082</td>
</tr>
<tr>
<td>Faculty, fixed-term</td>
<td>24,000</td>
<td>24,480</td>
<td>24,970</td>
<td>25,469</td>
</tr>
<tr>
<td>Sub-total, Faculty</td>
<td>33,500</td>
<td>34,170</td>
<td>34,854</td>
<td>35,551</td>
</tr>
<tr>
<td>Graduate Assistants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support Staff</td>
<td>8,000</td>
<td>8,160</td>
<td>8,323</td>
<td>8,489</td>
</tr>
<tr>
<td>Fellowship/Scholarship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPE</td>
<td>18,675.00</td>
<td>19,048.50</td>
<td>19,429.65</td>
<td>19,818.00</td>
</tr>
<tr>
<td><strong>Personnel Subtotal</strong></td>
<td>60,175</td>
<td>61,379</td>
<td>62,607</td>
<td>63,858</td>
</tr>
<tr>
<td><strong>Other Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library, Printed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library, Electronic</td>
<td>6,000</td>
<td>7,750</td>
<td>9,500</td>
<td>9,500</td>
</tr>
<tr>
<td>Services &amp; Supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other Expenses Subtotal</strong></td>
<td>6,000</td>
<td>7,750</td>
<td>9,500</td>
<td>9,500</td>
</tr>
<tr>
<td><strong>Total Cost of Program</strong></td>
<td>66,175</td>
<td>69,129</td>
<td>72,107</td>
<td>73,358</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Budget, unit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition</td>
<td>45,360</td>
<td>60,480</td>
<td>90,720</td>
<td>120,960</td>
</tr>
<tr>
<td>Fees/Sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, describe:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation Endowment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provost, tenure-track 2 hires</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Resources</strong></td>
<td>45,360</td>
<td>60,480</td>
<td>90,720</td>
<td>120,960</td>
</tr>
</tbody>
</table>