

Conservation Biology

BI 429 (CRN: 40421) & BI 529 (CRN: 40442)
Tuesdays and Thursdays, 1600–1750h, online only
Zoom link: <https://pdx.zoom.us/j/85261849226>

Instructors:

PSU Biology: Dr. L. A. Ruedas

Text:

Groom, M. J., Meffe, G. K., and C. R. Carroll. 2006. Principles of Conservation Biology, Third Edition. Sinauer Associates, Sunderland, Massachusetts, 673 pp. ISBN: 0-87893-518-5.

⇒ ⇒ **Note that this schedule is always subject to change** ⇐ ⇐

Lect.	Date	Topic (last 10 minutes is discussion)	Speaker	Reading
1	5 Jan	Background/Intro; Species Concepts	Luis Ruedas	Ch. 1, 2
2	7 Jan	Columbia River restoration	Stuart Ellis	Ch. 8, 12
3	12 Jan	Invertebrate conservation	Scott Hoffman Black	Ch. 3
4	14 Jan	Biodiversity	Luis Ruedas	Ch. 4
5	19 Jan	Environmental ethics	Luis Ruedas	Ch. 2
6	21 Jan	Mini symposium: Biodiversity		Ch. 6, 7
7	26 Jan	Invasive species / group activity [mgmt]	Luis Ruedas	Ch. 9
8	28 Jan	Population Dynamics & Metapopulations	Sarah Eppley	Ch. 7, 11
9	2 Feb	Mini symposium: Invasive species		Ch. 9
10	4 Feb	MIDTERM EXAM		
11	9 Feb	Global warming	Luis Ruedas	Ch. 10
12	11 Feb	Economics and the environment	Sahan Dissanayake	Ch. 5, 16
13	16 Feb	Contaminants and Wildlife	Jeremy Buck, Leland Brown	Ch. 6
14	18 Feb	<i>In situ</i> and <i>ex situ</i> conservation; Recovery of sea otter in Oregon	David Shepherdson; Robert Bailey	Ch. 12
15	23 Feb	Federal listing and recovery	Kristi Young (USF&WS)	Ch. 17
16	25 Feb	Ecology and politics	Charlotte Regula Whitefield (OR Governor's Office)	Ch. 17
17	2 Mar	Zoos and conservation	Don Moore (OR Zoo)	Ch. 14
18	4 Mar	Mini symposium: Global warming		Ch. 10
19	9 Mar	Connectivity and conservation	Lori Hennings	Ch. 15, 17
20	11 Mar	Conservation in the Anthropocene	Tierra Curry	Ch. 17, 18
21	16 Mar	(Tuesday) Final Exam	1530h–1720h	

Speaker Affiliations:

Robert (Bob) Bailey — Manager (retired), State of Oregon Coastal Management Program. Chair
Elakha Board of Directors
Leland Brown — Outreach & Education, Oregon Zoo
Jeremy Buck — Toxicologist, US Fish & Wildlife Service
Tierra Curry — Senior Scientist, Center for Biological Diversity
Sahan Dissanayake — Institute for Economics and the Environment, PSU
Stuart Ellis — Harvest Management Biologist, Columbia River Inter-tribal Fish Commission
Sarah Eppley — Professor, Department of Biology, PSU
Lori Hennings — Senior Natural Resource Scientist, Metro Parks and Nature Department
Paul Henson — State Supervisor Oregon Fish and Wildlife Office; U.S. Fish and Wildlife Service
Scott Hoffman Black — Executive Director, The Xerces Society for Invertebrate Conservation
Don Moore — Director, Oregon Zoo
Dan Serres — Conservation Director, Columbia Riverkeeper
Kristi Young — Wildlife Biologist, US Fish & Wildlife Service

Expectations:

1. Students must take the midterm and final exams as shown on the schedule. There will be absolutely no make ups. This is a class *and* department policy.
2. The syllabus is only a guide. Situations arise that call for changes in the syllabus. Some speakers may not be able to attend, for example, due to illness, weather emergencies, Federal shutdowns, etc. Or, we may arbitrarily decide to change a topic at the last minute because something topical arises. The point is, it is your responsibility to be aware of these changes to the syllabus. The question “What is going to be on the exam?” only tells the instructor that the student has not been paying attention to what material is being covered in class. See also “Major themes” below.
3. There are three mini-symposia spread more or less evenly throughout the class. *You have **potential** topics listed in the syllabus!* Please read up on the matter to be discussed well in advance of the date listed for the mini-symposium. The format is that there are topics assigned on the first day of class; these topics are your assignment for an in class oral presentation accompanied by a Powerpoint or similar aid (we prefer ppt). Regardless of your personal stance on a particular issue, you will be expected to perform well in support of and against the position on said issue that you have chosen. In other words: **take an unbiased stand!!!** There are approximately 60 students in the class, and only 30 topics from which to pick, so some of you may have to come up with your own topics. The flip side of that equation is that each person will get less than 4:45 minutes per presentation. You can give your presentation from your computer (it will be enabled to do so in Zoom), but you **must** submit your presentation to the instructor prior to class, and you absolutely have to keep your presentation to no more than about 4 minutes in order to account for changing over between students. Take more than that, and points will start plummeting... In addition, a maximum two page paper is due **electronically** at the time of your presentation. Obviously, you are not going to undertake scientific research for this presentation, but I expect a solid, well researched, well cited, non-plagiarized item covering the major points of the topic of your choice, with extensive citations from the primary literature.

4. The instructors will not prepare any outlines or study guides for the mid-term or final. **YOU**, the student, are responsible for that. This is an upper level class. As such, the instructors are guides to help you (in the singular and the collective) focus your considerable talents and energies on worthwhile endeavors in Conservation; to guide you into promoting independent thinking and analysis of the issues. The instructors are not here to take you by the hand or spoon feed you. Independent thought and initiative are characters required of success once you graduate and leave the university. This class is merely a stepping stone in the direction of intellectual independence.

Final grades will be based the following scale:

≥ 95	A
$\geq 90 < 95$	A-
$\geq 86.6 < 90$	B+
$\geq 83.3 < 86.6$	B
$\geq 80 < 83.3$	B-
$\geq 76.6 < 80$	C+
$\geq 73.3 < 76.6$	C
$\geq 70 < 73.3$	C-
$\geq 66.6 < 70$	D+
$\geq 63.3 < 66.6$	D
$\geq 60 < 63.3$	D-
< 60	F

There are some items of to keep in mind with respect to grading. This is a fairly easy class (have you noticed how, as you progress toward graduation, classes seem to get easier?). Accordingly, there will be no curve applied. Curving is not necessary at this point, because grade distributions have historically fallen out fairly evenly. Actually—to be honest—skewed toward the higher end of the scale. Thus, A's will be in the 90 point range, B's in the 80's. etc. One obvious, but often overlooked consequence of the foregoing is that because of this, a numerical score in the "A" category will not automatically result in an A: point totals of 90–95 obtain in an A– instead.

MAJOR THEMES IN CONSERVATION BIOLOGY

Conservation Biology is first and foremost a multidisciplinary subject requiring an integrative approach to problem solving. This class is therefore designed to bring into the classroom a broad variety of speakers from diverse disciplines, including US Fish and Wildlife Service, Oregon state government, Oregon Zoo, Berry Botanic Gardens, Portland State University Economics Department, and others on an opportunistic basis. The purpose of bringing in these apparently disparate guest lecturers is to provide students with a broader perspective of the discipline of conservation biology, and the realization that a narrow approach to conservation quandaries (i.e., only based on biology), likely will not be successful at solving problems. Below is an apperçu of what we see as being the major themes operative in conservation biology, and where they fit in relative to the topics in the syllabus.

1. Conservation Biology as an Emerging Science [Lecture 1]

- Multi-Disciplinary nature
- U.S. Conservation Movement
- Conservation Issues Abroad
- Society for Conservation Biology
- Training of Conservation Biologists

2. Human Population Growth [Lectures 1, 6, 12, 20]

- Per Capita Resource Consumption
- Rising Economic Expectations in
Developing Nations
- Pleistocene Extinctions
 - North America
 - Australia
 - Madagascar
 - New Zealand
 - Easter Island

3. Biodiversity [Lectures 1, 4, 6 (mini symposium)]

- Definition
- Classification
 - Genes
 - Species
 - Communities & Ecosystems
 - Landscapes
 - Biomes
- Distribution
 - Global Hot Spots
- Ecosystem Function
 - Community Interactions
 - Sea Otters
 - PNW Forests
 - Moral
 - Aesthetic
 - Economic/Medical
 - Drugs
 - Heritage Breeds & Crops
 - Ecosystem Services
 - NY Water Supply
 - Insectivory

4. Habitat Loss and Fragmentation [Lect. 3, 4, 8]

- Global Review
- Island Biogeography
- Tropical Forests
 - Africa
 - South America
 - Southeast Asia
- Temperate Systems
 - Europe
 - United States
 - Australia
- Nature Reserves
 - Size
 - Limitations

5. Alien Species [Lecture 7, 9 (mini symposium)]

- Vertebrates
 - Brown Tree Snake
 - Feral Pig
- Invertebrates
 - Zebra Mussel
- Emerging Diseases
 - West Nile
 - HIV, SIV
 - Ebola, Marburg
- Plants
- Prevention and Control

6. Global Climate Change [Lecture 11, 18 (mini symposium)]

- Desertification
- Melting Ice, Rising Waters
- Diseases and Vectors
- Agricultural and Economic Impacts

7. Economics and Conservation [Lect. 12]

- Tragedy of the Commons
- Direct and Indirect Costs
 - Oil-Based Economy
 - Synthetic Chemicals
 - Bioengineering
- Globalization

Conservation vs. Development	
Sustainable Growth/Development	
Short vs. Long Term Return	
Use of Capital	
8. Endangered Species [Lecture 15]	Recovery Strategies
Extinctions	Species Specific
Passenger Pigeon	Successes?
Carolina Parakeet	Bald Eagle
Tasmanian Wolf	Black-footed Ferret
Tasmanian Aborigines	California Condor
Threats	Ecosystems
Channel Islands Fox	Northern Spotted Owl
	Population Viability Analysis

Biodiversity: 21 January—potential topics may include (choosing your own is preferable!)...

1	Climate and Biodiversity	
2	Effects of Invasive species	
3	Coral reefs	
4	Tropical Forests	
5	Diseases and Biodiversity	
6	Food webs	
7	Productivity	
8	Ecological stability & ecosystem health	
9	Habitat fragmentation	
10	Soil loss	
11	Human population growth	
12	Pets	
13	Endangered species recovery	

Invasive Species: 2 Feb— potential topics may include (choosing your own is preferable!)...

1	English Ivy	
2	Brown Tree Snake (<i>Boiga irregularis</i>)	
3	Zebra Mussel (<i>Dreissena polymorpha</i>)	
4	Starling (<i>Sturnus vulgaris</i>)	
5	Scotch Broom (<i>Cytisus scoparius</i>)	
6	Feral hogs (AKA Wild Boar; <i>Sus scrofa</i>)	
7	Indian mongoose (<i>Herpestes javanicus</i>)	
8	<i>Boa constrictor</i> in the Everglades	
9	The vine that ate the South (Kudzu)	
10	Air-breathing flying Caribbean Piranhas	
11	Chinese mitten crab (<i>Eriocheir sinensis</i>)	
12	Argentine ant (<i>Linepithema humile</i>)	
13	Fire ant (<i>Solenopsis invicta</i>)	
14	Mountain pine beetle (<i>Dendroctonus ponderosae</i>)	

Global warming: 4 March—potential topics may include (choosing your own is preferable!)...

1	Phenology of plants	
2	Glaciers	
3	Water cycle and circulation	
4	Altitudinal effects (e.g., pika)	
5	Distributions of species	
6	Community composition	
7	Ecosystem dynamics	
8	Physico-chemical changes, effects	
9	Behavioral changes	
10	Disease and warming	
11	Whales & Humans (boat strikes)	
12		
13		
14		