Instructors:

Dr. Anna Himler
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Dr. Robert Laport
Boone 221A, x5292
rlaport@collegeofidaho.edu

LectureMeetings:
MWF: 10:00-10:50am Boone 106
LAPORT lecture section

MWF: 11:00-11:50AM Boone 116
HIMLER Lecture section

LaboratoryMeetings: Boone 216/214
M: 1-4:50pm Himler
T: 12:20-4:20pm Himler & Laport
TH: 12:20-4:20pm Laport

BIOLOGY 203

Ecology, Evolution and Diversity: Fall 2023

Snake River sockeye salmon: The most endangered of the Pacific salmon. Less than 100 individuals are expected to make it back to the Stanley Basin in 2022.

Course Description:

Ecology, Evolution, and Diversity (BIO 203) is the third lower division core course in the Biology 201 and Biology 202 sequence. The class focuses on biological principles at the species, population, and community level of organization, with evolution and ecology as organizing themes.

Evolution is a population's genetic response to ecological conditions and is responsible for shaping the diversity of life on Earth. Thus, ecology, evolution and diversity are linked. The study of ecology, evolution, and diversity is important to many aspects of biology—including human disease, species conservation, animal behavior, and organismal physiology.

OFFICE HOURS

Dr. Himler:
W 12-2:30 pm
T: 10:30am-12pm
or by appointment

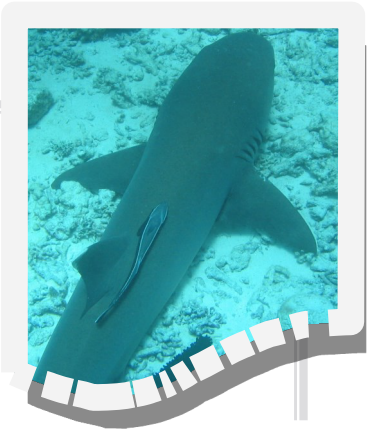
Dr. Laport:
T/TH: 10am-12pm
or by appointment

Student Learning Outcomes:

1. Students will know the key principles of ecology and evolution, explain these principles using terminology inherent to the discipline, and apply these principles to evaluate potential solutions to biodiversity loss.
2. Students will know the major innovations in vertebrate evolution.
3. Students will know the basis of animal classification, and be able to place vertebrate animals in their respective taxonomic group.
4. Students will improve their ability to decipher the primary scientific literature.
5. Students will apply scientific reasoning to develop and test an ecological question.
6. Students will present research results in written and oral form—following standard scientific writing and oral presentation guidelines.

You can access course assignments, readings, announcements, grades, etc. via the course page on Canvas (look under the MODULES tab)

Course policies:



Attendance for lecture and laboratory is essential for learning and is expected of every student. If you anticipate missing a class or laboratory for a legitimate reason (medical, school-sponsored activity, etc.), you must provide at least 24 hr. advanced notice of your absence. In the event of an absence, in-class handouts and slides will be provided. Notes must be obtained from a classmate.

Cell phones & other electronics: **silenced and put away**.

I expect that credit will be given to others for ideas, data, etc. that are not your own. All forms of cheating, plagiarism and other dishonesty will be treated seriously with penalties ranging from failure on an assignment (first violation) to failure in the course (second violation). Your signature (name) on all course work is required and indicates that the work was completed with academic integrity according to the College of Idaho Academic Honor Code. You will be asked to sign a statement of academic integrity prior to taking every exam.

Accessibility Resources and Services:
The College of Idaho seeks to provide an educational environment that is accessible to the needs of students with disabilities. The College provides reasonable services to enrolled students who have a documented permanent or temporary physical, psychological, learning, intellectual, or sensory disability that qualifies the student for accommodations under the Americans with Disabilities Act or section 504 of the Rehabilitation Act of 1973. Students that have, or think they may have, a disability that will impact their performance as a student in this class are encouraged to arrange support services and/or accommodations through the Department of Accessibility and Learning Excellence (DALE) located in Hendren Hall. Reasonable academic accommodations may be provided to students who submit appropriate and current documentation of their disability. Accommodation can be arranged only through this process and are not retroactively applied. More information can be found at the Accessibility and Learning Excellence office located in Hendren Hall (208-459-5275). Accessibility-related adjustments to course expectations can be arranged only through this process and accommodations are not retroactively applied

Jaguar prints, Belize

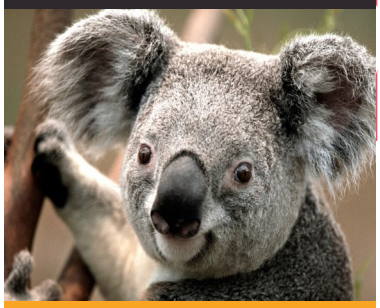
The many different kinds of activities in this course are designed to promote active learning. These activities include reading reflections, laboratory exercises, online simulations, self and peer evaluations, exams, oral presentation, problem sets, writing assignments, field journaling, group discussions, and an ecology-based research project.

Summative (graded) assessment: There will be three lecture exams (40%), comprehensive final examination (20%), assignments (on-line simulations, etc.) (5%); course involvement (15%), ecolog-based research project and oral research presentation (20%).

Formative assessment (not graded but completion counts towards course involvement): class problem sets, reading reflections, field journal, self and peer evaluations.
*The lab and lecture are integrated and you will receive a single combined grade at the end of the semester. Late assignments will NOT BE ACCEPTED (unless due to illness-must provide a note from an official health care provider).

Course materials

Koala, Queensland, Australia



Moalem, S. 2007. Survival of the Sickest: a medical maverick discovers why we need disease. Morrow Publishers.

Weiner, J. 1994. The Beak of the Finch. Vintage Publishers

Notebook for Field Journal $6.00 BIO 220

Raven et al. 2020. Biology 12^{h} Edition. McGraw Hill. Same book as used in BIO 201 and BIO 202 (optional)

Access to SimBio Virtual Labs

Daily course readings to be posted on Canvas

Assessment:

Aletsch glacier, Switzerland

Exams: Three IN CLASS lecture exams will be given during the semester. Exams will consist of multiple choice, T/F, and short answer questions. See syllabus for dates. The final examination is comprehensive and will consist of 3-5 essay questions which each require you to integrate key course concepts.

Course Involvement: Your engagement in classroom discussions (willingness to ask and answer questions, overall attentiveness), on-time of completion of reading reflections (see below), completion of field journal (see below), completion of problems sets, contribution to laboratory activities, and thoughtful completion of other formative assessments (see below). Regular attendance is integral to success in this course and is expected of every student.

Field-Based Research Project: Project data will be collected during the first half of fall term. You will then work individually (or with a partner) to ask a research question (based upon the project data), develop a proposal, analyze data, and com- plete a scientific research report (IMRaD format). See grading rubric. Much of the data analysis and writing will be completed outside of class time.

Oral Presentation of Field-Based Research Project: An 8-10 minute PPT presentation on your research project. Allow 8 minutes for your presentation and 2 minutes for questions. Style follows that for formal scientific presentations. See grading rubric.

Assignments: Includes a variety of written work (SimBIO Online simulations; Beak of the Finch questions, statistical analysis of datasets, etc.). See Canvas for assignment details, due dates, etc.

Formative assessments (NON-GRADED): Class Problem Sets: Three sets of practice problems (population growth, life tables, population genetics) will be assigned during the term. Reading Reflections: Reading reflections consist of a se- ries of questions that cover the assigned reading(s) for that day. Questions will be posted on Canvas and you will submit your answers using Canvas BEFORE CLASS (BY 10 AM). Late submissions will receive no credit.
Field Journal: As part of the laboratory, you will complete a detailed account of your field activities. More information will be provided in laboratory.
Peer and self evaluations: To be completed at the midterm and end of the course and will give each student an opportunity to reflect upon self and peer performance.

Commitment to Diversity: The College of Idaho and The Biology Department are committed to creating an academic climate that is safe and respectful of all students, staff, and faculty regardless of race, ethnicity, sexual orientation, gender identity, age, size, socioeconomic background, religion, spirituality, physical ability, mental ability, or any other aspect of one's identity. A climate of mutual respect allows us to ask difficult questions and to participate in honest discussions, even in the context of strong disagreement. Creating this kind of open, honest, and respectful climate is our mutual responsibility. The Biology Department is continually seeking to understand how students and faculty—particularly those from historically excluded groups experience our classrooms, and to provide actionable resources to support teaching approaches that promote equity and foster a sense of belonging. I encourage you to reach out to me or other Faculty in the Biology Department with any concerns or ideas you may have.

Letter Grades– A brief guide

Florida panther, Big Cypress Preserve, Florida

A= mastery of course material
B= noteworthy achievement (above expectations across all areas of assess- ment)

C= every course requirement was met

D= some course requirements were not met but still wor- thy of course credit.

F= a significant number of course re- quirements were not met. No credit earned.

A (93-100%)
A- (90-92%)
B+ (87-89%)
B (83-86%)
B- (80-82%)
C+ (77-79%)
C (73-76%)
C- (70-72%)
D+ (67-69%)
D (63-66%)
D- (60-62%)
F (<60%)

THERE MAY BE OPPOR- TUNITIES TO EARN EXTRA CREDIT

FINAL EXAM :

DECEMBER 13 8:30-11 AM (LAPORT)

DECEMBER 12 8:30-11 AM (HIMLER)

RESEARCH REPORT DUE:

DECEMBER 15 @ 5PM uploaded in Canvas

FIELD WORK

Students recording data on Dry Creek

We will take several field trips during the laboratory portion of this course. Venues include the Boise River (aquatic insects); Bogus Basin Mtns (Conifers); local Foothills (vegetation), local park/campus, etc. On field days, come prepared for working outdoors. Bring your field journal and a waterproof pen or mechanical pencil. Wear appropriate clothing (e.g., hat, coat, long pants when going to brushy areas/poison ivy/snakes and no open toed shoes). Carry sunscreen, water and a snack. Field trips will occur rain or shine—so please bring what you need to be comfortable.
Field trips are fun, but also a time for serious work. Students must sign a field lab liability waiver prior to attending these trips.

Field Biology Winter 2019, Belize

On field days, please assemble in the Boone parking lot (west side of Boone Hall) approximately 10-min prior to start of lab. Use "van time" to get to know your neighbor and/or prepare your field journal. You can bring your cell phone ---but please use it only for taking photos or recording data in the field. Most importantly -- have fun, engage in the activity, make observations and ask questions! Oh --and don't forget to write in your field journal before, during and immediately after the experience.

Field journals, like the one pictured here, can be purchased from Emily Tormey (Administrative Assistant to the Biology Department in Boone 220) for **$6.00**. Please pay in **cash** and secure your journal prior to the first week of lab (week of August 28).

Use a mechanical or regular pencil to record field notes in your journal. And remember to write legibly.

Course schedule: Check Canvas daily for updates!

Date	Topic	Assignment(s)
	NO LABS SCHEDULED THIS WEEK SEE LAB CANVAS PAGE FOR DETAILED INFORMATION ABOUT THE LAB (schedule, rubrics, readings, etc.)	
W-8/23	Introduction to the course and each other Ecology, evolution, and diversity	Read syllabus Upstanding Apes (PDF)
F– 8/25	Population density and distribution Case study: Tree islands of the Everglades	Stiling Ch. 8 (PDF) Sections 8.1 and 8.2 only Tree islands (PDF) DUE: Reading Reflection 1.1 Tree Islands
	LAB: PREVIEW OF THE SEMESTER AND HOW TO DO ECOLOGY: Prepare for Field Lab #1	
M-8/28	Population dispersion	Stiling Ch. 8 (PDF) Read Section 8.3 only Whale sharks (PDF) DUE Reading Reflection 1.2 DUE: COURSE CONTRACT
W-8/30	Population fragmentation Case study: Dry Creek redband trout	Ecol. Considerations (PDF) DUE Reading Reflection 1.3 Border Wall Readings –no reading reflections required
F-9/1	Meta-populations Case study: The Florida Panther	Florida panther (PDF) DUE Reading Reflection 1.4 Stiling Ch. 8 (PDF) Read sections 8.4 and 8.5 only
	NO LABS SCHEDULED THIS WEEK	
M-9/4	LABOR DAY: NO CLASSES	.
W-9/6	Meta-populations (continued)	SimBio: Patchy Prairies
F-9/8	Population growth	Exponential growth (PDF) DUE Reading Reflection 1.5 Problem Set #1 available

Course schedule: Check Canvas daily for updates!

LAB: AQUATIC INSECTS ALONG AN URBAN GRADIENT (FIELD)

M-9/11	Population growth (continued)	Wolf population dynamics (PDF) DUE Reading Reflection 1.6 Problem Set #2 available
W-9/13	Life Tables and Fecundity schedules Group work (Problem Set #2)	Problem Set # 1 DUE SimBio: Isle Royale Stiling Ch. 9 (PDF)
F-9/15	Population regulation	Population Regulation (PDF) The Everglades (PDF) DUE Reading Reflections 1.7 and 1.8. Problem Set #2 DUE

LAB: DENDROCHRONOLOGY (FIELD)

M-9/18	Mutualisms	Cleaning symbioses (PDF) DUE Reading Reflection 1.9
W-9/20	Competition	Competition Lynx (PDF) DUE Reading Reflection 1.10
F-9/22	Predation	Fire ants and turtles (PDF) Jaguar-prey relations (PDF) DUE Reading Reflections 1.11 and 1.12

LAB: LAND-USE HISTORY and PLANT SPECIES RICHNESS (FIELD)

M-9/25	Predation (continued) Introduction to Community Ecology Species Richness	SimBio: Keystone Predator
W-9/27	Theory of Island Biogeography	E.O. Wilson (PDF) Raven Ch. 57 (suggested) DUE Reading Reflection 1.13
F-9/29	EXAM 1	

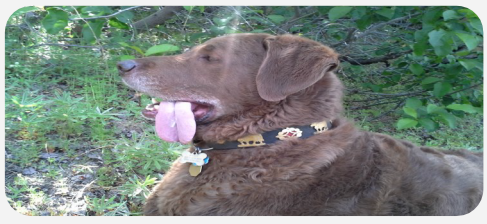
Course schedule: Check Canvas daily for updates!

Date	Topic	Assignment(s)
	LAB: ANIMAL BEHAVIOR (FIELD)	
M-10/2	Charles Darwin	C. Darwin and medicine (PDF) DUE Reading Reflection 1.14
W-10/4	Charles Darwin (continued) Evidence for evolution	Evolution: Fact and Theory (PDF) DUE Reading Reflection 1.15
F-10/6	Population variation Population genetics	Raven Ch. 20 (suggested)
	LAB: Data Analysis Part I; Preparing a Research Proposal	
M-10/9	Hardy-Weinberg Equilibrium	Raven Ch. 20 (suggested) Survival of the Sickest (Intro-Ch.2) DUE Reading Reflection 1.16 Problem Set #3 available on Canvas
W-10/11	Hardy-Weinberg Equilibrium Group Work: Problem Set #3	No reading
F-10/13	NO CLASS	
	10/16-10/20 FALL BREAK (Begin reading ***Beak of the Finch***)	
	LAB: Data Analysis Part II; Research Proposals; Galapagos Film with Q/A WE WILL DISCUSS PART I OF BEAK OF THE FINCH IN LAB THIS WEEK RESEARCH PROPOSALS DUE IN LAB	
M-10/23	Natural selection	Survival of the Sickest (Ch. 3-4) DUE Reading Reflection 1.17 Problem Set #3 DUE
W-10/25	Adaptation	Survival of the Sickest (Ch. 5) Spandrels (PDF) DUE Reading Reflections 1.18 and 1.19
F-10/27	Sexual selection	Raven Ch. 54 (suggested) Sexual selection iguana (PDF) DUE Reading Reflection 1.20 SimBio: How the Guppy Got its Spots

Course schedule: Check Canvas daily for updates!

Date	Topic	Assignment(s)=
	LAB: Data Analysis Part III, Scientific Writing Part I WE WILL DISCUSS PART II OF BEAK OF THE FINCH	
M-10/30	Speciation	Raven Ch. 22 (suggested) Dog evolution (PDF) DUE Reading Reflection 1.21
W-11/1	Speciation (continued)	No readings
F-11/3	Extinction	Overkill and Megafauna (PDF) DUE Reading Reflection 1.22
	LAB: Data Analysis Part IV; Creating Tables and Figures; Scientific Writing Part II; Work on Research Projects WE WILL DISCUSS PART III OF BEAK OF THE FINCH	
M-11/6	EXAM 2	
W-11/8	Species classification and systematics	Raven Ch. 23 (suggested)
F-11/10	Trends in early animal evolution	No readings
	LAB: ANIMAL ZOOGEOGRAPHY (FIELD TRIP)	
M-11/13	The chordates and the first fishes	Fish origins (PDF) DUE Reading Reflection 1.23 Raven Ch. 35 (suggested)
W-11/15	Modern day jawless fishes and sharks	Shark senses (PDF) DUE Reading Reflection 1.24
F-11/17	Jawed fishes	Raven Ch. 35 (suggested)

Tiktaalik—the missing link



A wolf in dog's clothing?

Course schedule: Check Canvas daily for updates!

Date	Topic	Assignment(s)
	LAB: OPEN LAB-WORK ON RESEARCH PROJECTS	
M-11/20	The transition to land-Amphibians	Raven Ch. 35 (suggested) Transition to land (PDF) DUE Reading Reflection 1.25
W-11/22	Reptiles	Pit Viper Intertidal (PDF) DUE Reading Reflection 1.26
F-11/24	NO CLASS (Thanksgiving Holiday)	
	LAB: HOW TO GIVE A SCIENTIFIC RESEARCH PRESENTATION—WORK ON YOUR RESEAR CH PRESENTATION ANALYSIS OF DATA DUE IN LAB THIS WEEK	
M –11/27	Avian Dinosaurs	Feathers (Part II) (PDF) DUE Reading Reflection 1.27
W-11/29	Early Mammals	Nocturnal Bottleneck (PDF) DUE Reading Reflection 1.28
F-12/1	The Origins of Us	Human Origins (PDF) DUE Reading Reflection 1.29
	LAB: RESEARCH PRESENTATIONS YOU WILL GIVE A 10 MINUTE PPT PRESENTATION ON YOUR RESEARCH THIS WEEK TURN IN YOUR FIELD JOURNAL	
M –12/4	The Origins of Us (continued) Life in the Anthropocene	Living in the Anthropocene (PDF) DUE Reading Reflection 1.30
W-12/6	Life in the Anthropocene (cont.)	The Darkening Sea (PDF) Solutions (PDF) No reading reflections
F-12/8	EXAM 3	

FINAL EXAM :

Wednesday December 13 (Laport), 8:30am-11:30am
Comprehensive Lecture Exam (Essay format) -In class

Tuesday December 12 (Himler), 8:30am-11:30am
Comprehensive Lecture Exam (Essay format) -In class

RESEARCH REPORT DUE:

FRIDAY, December 15 @ 5PM VIA CANVAS (submit as PDF). PLEASE ASK ONE OF YOUR PEERS TO REVIEW YOUR REPORT BEFORE FINAL SUBMISSION.
IF WORKING WITH A PARTNER SUBMIT JUST ONE REPORT FOR YOUR GROUP.

PEER AND SELF-EVALS

TO BE COMPLETED DURING FINAL EXAM PERIOD