Instructor: Professor Ashley Larsen (Larsen@bren.ucsb.edu)  
Prof. Larsen’s Office hours: Monday 2:15-3:15

Teaching Assistant: Nakoa Farrant (farrant@bren.ucsb.edu)  
Office hours: TBD based on survey of student availability

Class: Mondays 3:30-4:45pm (1414); Wednesdays 3:30-5:30pm (3035)

The objectives of this course are for you to:

1. Understand the principles and concepts underlying conservation planning
2. Understand how these principles are applied in real world settings
3. Gain exposure to and experience with a range of conservation planning tools

Course Structure: For most weeks, there will be one lecture on a key topic in conservation planning and one computer lab exercise using a planning tool that reflects concepts from lecture. We are going to “flip” the classroom, watching lectures in advance and discussing material during in-person meetings. Most Mondays will be discussions of lecture, most Wednesdays will be computer labs.

Lectures: Lectures will explore different topics in conservation planning. Lectures will be pre-recorded and a link to the week’s lecture will be posted on Gauchospace by Thursday the week before. There will be a series of questions embedded and/or accompanying the lecture. Please view lecture in advance and bring questions from lecture to discussions on Mondays.

Discussions: Discussions will begin with a short student presentation of the readings and a class activity (see details below). Students will then divide into discussion groups to go over the structured lecture questions and any other questions about lecture. We will come back together periodically to discuss.

Readings: Required readings accompany each lecture to provide context. All readings will be available on Gauchospace. There will be weekly reading quizzes (True/False). These quizzes will be very short and cover the main points of the readings. Quizzes will be 5 minutes in duration and available on Gauchospace from Wednesday the week before until the start of class Monday (Monday at 3:30pm). Please complete the readings before watching lecture. Additional, optional readings will be posted on gauchospace each week.

Lab and Lab Assignments: Lab sections are designed to explore commonly used tools in conservation planning. We will start with an introduction to the tool. Students will then use real data to address a short conservation problem. Lab time is extended to provide additional time to ask questions of the instructors. However, successfully completing the labs will likely require substantial troubleshooting and googling of issues on your own both within and outside of class time. All analyses should be completed individually, though peer-to-peer discussion is encouraged. Written assignments #2-7 will be completed in pairs, with the first author responsible for the rough and final drafts, and the second author responsible for detailed peer-review comments. Pairs will work together for two consecutive assignments such that each individual is a first and second author on one. Please see the template and rubric for the written
assignment on Gauchospace (or at the links). Please coordinate partners amongst yourselves and rotate partners after 2 labs. You are responsible for coordinating with your partner to complete the write-up.

**Project Proposal:** The project proposal is included to encourage deeper exploration of practical conservation planning challenges. A proposal includes scoping of a problem, objectives, proposed data and proposed (and often preliminary) analyses. Proposals can be related to Group Projects or another topic that aligns with the concepts and tools presented in class. We encourage students to explore topics early in the quarter and discuss with the TA or professor. Two “working labs” will be devoted to project proposals. Additional time outside of class time will be necessary to complete a thorough proposal. Proposal presentations and write-ups will be due week 10. See proposal template and presentation rubric on Gauchospace for more details.

**Attendance & Participation:** We cover a substantial amount of material in 270 at a rapid pace. Engagement with the material is critical to building conceptual and practical knowledge. Arriving on time and staying the entire period is necessary, but not sufficient for participation credit; engaging with the discussion questions and contributing to the discussion are also required, as is effort troubleshooting labs and helping classmates when asked. Participation will be used to adjust final grades up or down. Do not underestimate the importance of consistent, meaningful participation to your learning (or grade) outcomes. Please email the instructor asap (Larsen@bren.ucsb.edu) if you become ill or for other unexpected conflicts. Make-up work is available to recover participation points (2pts/class) for excused absences, when the instructor is notified before class.

**Student-led Discussion:** Most weeks (2-8) will include a student-led discussion of the readings. Sign up for a date on Gauchospace. Students leading the discussion should be the experts on the papers assigned. This means you should dig into the concepts and terms and be able explain them to your classmates. You are welcome to contact the TA or professor (at least 24h in advance) with specific questions. Student-led discussions include 3 components. 1) Students should prepare a short presentation that clarifies any confusing terms or important concepts, and puts the paper(s) in context of the broader literature or conservation issue. These should not be summaries of each paper, but rather a synthesis of the topic that adds value to the readings your classmates have already completed. The presentation will occur at the start of the Monday class. 2) Students should also prepare a short exercise to engage the class in the material during the Monday meeting. 3) Students should upload a ~ 1 page summary of the reading to Gauchospace. A grading rubric and more details are posted on Gauchospace.

**Office Hours:** We will hold multiple weekly office hours and are available by email. Regardless of how you reach us, please be sure to google the problem/concept and try to troubleshoot in advance.

**Grading:** Grading is based primarily on lab and project assignments and participation.

- Weekly Lab Assignments: 12 points each (1 opinion piece + 6 labs, 84 points total)
- Student-led paper discussions: 20 points
- Reading Quizzes: 2 points each (14 points total)
- Project presentation: 12 points
- Project proposal: 12 points
- Participation: 38 points
*See Gauchospace for templates and grading rubrics.
*Assignments are due at 10:00pm on the day listed.
*Late assignments will lose 1 point if late, and 1 point each additional day it is late.

**Acknowledgements:** ESM 270 was developed by Profs. Frank Davis & Ben Halpern. Former TA, Owen Liu, designed the R lab, which parallels the ArcGIS hotspots lab. The material has also benefited from engaged students in prior classes. In particular, Roshni Katrak-Adefowora, Taylor Lockmann, and Grace Kumaishi (all ‘22) and Cameryn Brock (‘21) contributed data and insight for the MaxEnt lab, Cameryn Brock and Bret Folger (‘21) contributed data and insight for the circuitscape lab. Bri Baker (‘22) and Nick McManus (‘23) identified valuable changes to assignments and papers that advance EJ content within CP. Past renditions also benefit from Karly Miller, Becky Twohey, and Thomas Butera. Thank you all in advance for answering surveys and helping us continue to improve 270 for current and future students.

**Consider the syllabus a living document. Lecture topics & schedule are subject to change**

**Week 1**
Monday, March 28 (lecture 1, in class)
Introduction to Conservation Planning

Lecture 2 & readings (posted, watch before Wednesday)
Conservation elements and setting conservation objectives
Readings: Kareiva & Marvier 2012, Soule 2013, Evans 2021

Wednesday, March 30 (Discussion of lecture 2, 3035)
Assignment 1 due: What should conservation objectives be? This assignment should be completed solo.

Lecture 3 & readings
Species-level conservation targets (viable populations)
Readings (+ quiz): Beissinger and Westphal 1998, Doak et al. 2015

**Week 2**
Monday, April 4 (Discussion of lecture 3)

Wednesday, April 6
Lab 1: Species range mapping with Maxent lab

Lecture 4 & readings
Multi-species priorities and multi-criteria planning

**Week 3**
Monday, April 11 (Discussion of lecture 4)
Wednesday, April 13
Lab 2: Mapping hotspots with ArcGIS (or R or QGIS or…?)
**Assignment 2 due:** Using Maxent to map species ranges

**Lecture 5 & readings**
Scaling up (conservation networks and portfolios)

**Week 4**
Monday, April 18 (Discussion of lecture 5)

Wednesday, April 20
Lab 3: Marxan as a planning tool for reserve design lab
**Assignment 3 due:** Using ArcGIS to map hotspots in the California Current

**Lecture 6 & readings**
Conservation in a dynamic world

**Week 5**
Monday, April 25 (Discussion of lecture 6)

Wednesday, April 27
Lab 4: Modeling connectivity with Circuitscape lab
**Assignment 4 due:** Reserve network design with Marxan

**Lecture 7 & readings**
Restoration, reintroductions and rewilding
**Readings** (+ quiz): Rohr et al. 2019, Rayne et al. 2020

**Week 6**
Monday, May 2 (Discussion of lecture 7)

Wednesday, May 4
Lab 5: hijacking tools for restoration planning lab
**Assignment 5 due:** Exploring connectivity between patches

*Readings (see wk 7)*
Social science in conservation planning
**Readings** (+ quiz): Leslie et al. 2015, Sarkar & Montoya 2011

**Week 7**
Monday, May 9
In-person guest lecture, N. Farrant.

Wednesday, May 11
Lab 6: AHP elicitation lab
Assignment 6 due: Exploring how to make restoration more strategic

Lecture 9 & readings
Ecosystem services

Lecture 10 & readings
EBM/Comprehensive Planning
Readings: Halpern & Agardy 2013, Tallis et al. 2010
*Quiz on combined readings

Week 8: *Monday’s discussion covers lectures 9 & 10
Monday, May 16 (Discussion lectures 9 & 10)

Wednesday, May 18
Lab 7: Modeling ecosystem services with InVEST (no writeup, turn in figures after class)
Assignment 7 due: Eliciting and mapping preferences for conservation priorities

Week 9
Monday May 23 (meet in 3035)
Project, working lab

Wednesday, May 25
Project, working lab
Assignment due: None

Week 10
Monday, May 30: Memorial Day; no class

Wednesday, June 1
Presentations: project proposal & proposed data/analyses

Friday June 3
Assignment 8 due: Conservation Planning Project Proposal