

## ESM 270: Conservation Planning and Priority Setting Course Syllabus, Fall 2023

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Class Dates: **9/20/2023-9/27/2023**

Class times: **9am-5pm in Bren 3035**, unless otherwise noted.

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: This is a short course intensive.** We will cover a lot of ground each day. It is recommended that you review the readings, labs, and recorded material prior to class. For most class days, there will be three formal class sessions, composed of a combination of ~1h15m lectures on key topics in conservation planning and computer lab exercises using a planning tool that reflect concepts from lecture. There will also be dedicated time to read, review and discuss papers.

**Lectures:** Lectures will explore different topics in conservation planning. Pre-recorded lectures will be available on gauchocast over the summer as a resource. It remains required that you attend in person lectures.

**Readings:** Required readings accompany each lecture to provide context. All readings will be available on Canvas. Dedicated reading time will be built into each day. However, absorbing the readings fully may take time outside of class. Additional, optional readings will be posted on canvas. See the [Readings and Discussion guidelines](#) for tips on efficiently reading papers.

**Student-led Reading Discussions:** Lunch will consist of chatting about readings, hopefully enjoying the sunshine in the great outdoors. Everyone is expected to participate. Each day, two teams will lead reading discussions, each lasting about 20m. Sign up for a [topic](#) on Canvas. Every student is expected to lead one discussion, highlighting the importance of the topic, relevance to lecture and other material, and addressing any confusion from the class.

**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. You are expected to try troubleshooting and googling issues on your own, but instructors are there for help navigating hurdles that google didn't solve. All analyses should be completed individually, though peer-to-peer discussion is encouraged. Lab assignments will be completed in pairs. Please see the [template and rubric](#) for the written assignment on Canvas. Please coordinate partners amongst yourselves and rotate partners each lab. 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 analyses. Proposals can be related to Group Projects or another topic that aligns with the concepts and tools presented in class. There will be dedicated time to work on proposals during class, but thinking through the project early will make for a better proposal. See [proposal template](#) on Canvas 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 day is necessary, but not sufficient for participation credit; engaging in lecture and contributing to the paper discussions 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](mailto:Larsen@bren.ucsb.edu)) if you become ill or for other unexpected conflicts. Historically, the average for participation has been ~90%.

**Grading:** Grading is based primarily on lab, proposals and participation. We want you to focus on learning, not points. Labs and proposals will be graded on a check, check plus, check minus, no credit basis. Check plus exceeds expectations in all regards (~top 10-20% of class). Check implies all expectations are met and there are no major flaws. Check minus implies major flaws. No credit will be given for subpar work that displays little effort or understanding.

*Lab Assignments:* 5 assignments (50% of grade)

*Student-led paper discussion:* 1 assignment (10% of grade)

*Project proposal:* 1 assignment (10% of grade)

*Participation:* 30% of grade

\*See Canvas for templates and grading rubrics.

**\*Assignments are due at 10pm day of the lab. However, we strongly encourage you to submit them by 5pm so you can clear your desk for the next busy day.** We will, however, accept labs 1-4 until Sunday 9/24 at 10pm without penalty. Delays past then will result in lost credit.

**Acknowledgements:** ESM 270 was developed by Profs. Frank Davis & Ben Halpern. The material has 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. Hanna Weyland, Kirsten Hogdson, and Teague Tran (all '22) provided data and a draft lab document for the optional InVEST lab. Bri Baker ('22) and Nick McManus ('23) identified valuable changes to assignments and papers that advance EJ content within CP. Former TA, Owen Liu, designed the optional R hotspot lab. 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 \*\***

### **Day 1 Wednesday, September 20**

12:15-2:30 GIS refresher (optional)

2:45-4:15 Lecture 1: Introduction to Conservation Planning, Introduction to Proposal Assignment

4:15-5:00 Class Social

Assignments due: None

### **Day 2 Thursday, September 21**

9:00-10:15 Lecture 2: Conservation Objectives

10:30-12:00 Readings

Evans 2021 (Lect 2, Cons Obj)

Beissinger & Westphal (1998), Doak et al. (2015) (Lect 3, Single Sp).

12:15-1:00 Brown bag paper discussion

1:15-2:30 Lecture 3: Single Species Conservation

2:45-4:15 Lab 1: Species Distribution Modeling

4:15-5:00 Proposal working time & general catch up

Assignments "due": Lab 1 SDM write up

### **Day 3 Friday, September 22**

9:00-10:15 Lecture 4: Multi-species conservation

10:30-12:00 Readings

Kareiva & Marvier 2007, Myers et al. 2000 (Lect 4, Multi-species)

Meyfroid et al. 2022 (Lect 5 Networks)

12:15-1:00 Brown bag paper discussion

1:15-2:50 Lab 2: Hotspots

3:05-4:00 Lect 5: Networks

4:15-5:00 Proposal working time & general catch up

Assignments "due": Lab 2 Hotspots write up

### **Day 4 Saturday, September 23**

9:00-10:15 Lab 3: Conservation Networks in Marxan

10:30-12:00 Readings

Reside et al. 2018 (Lect 6, Dynamics)

Bennett et al. 2017, Sarkar & Montoya 2011 (Lect 7, Social)

12:15-1:00 Brown bag paper discussion

1:15-2:30 Lect 6: Dynamics

2:45-4:15 [Lect 7: Social Dimensions](#)

4:15-5:00 Proposal working time & general catch up

Assignments "due": Lab 3 Marxan write up

### **Day 5 Sunday, September 24**

Day off. Computer lab will be [open on request](#).

Assignments not "due" until Sunday October 1.

**Day 6 Monday, September 25**

9:00-11:00 Lab 4: Connectivity modeling with Circuitscape

11:10-11:55 Readings

Rohr et al. 2019 (Optional, but a great paper! )

[Documentary on Santa Cruz Island restoration](#) (pw:snh2023; we will watch together in class)

12:00-1:00 Brown bag paper discussion: Q&A with Lotus about SCI restoration

1:15-2:30 Lect 8: Restoration

2:45-4:15 Proposal working time

4:15-5:00 Proposal working time & general catch up

Assignments "due": [Lab 4: Connectivity](#)

**Day 7 Tuesday, September 26**

9:00-10:15 Lab 5: Restoration\*

10:15-1:00: Lab revisit time–restoration and others

1:00-5:00 Field trip to COPR (optional)\*\*.

Assignments "due": Restoration

\*\*PLEASE sign the waiver on CANVAS via docusign to participate ([Instructions](#)). Please save it with your first and last name added to the file name.

\*Note this day overlaps the mandatory TA orientation for new TAs, which is 10am-12pm on 9/26. Those in the TA training will need to complete the lab on their own.

**Day 8 Wednesday, September 27**

9:00-10:15 Lect 9: Ecosystem Services

10:30-12:00 Reading + discussion\*:

Costanza et al. 2017, Diaz et al, (Lect 9, Ecosystem Services)

12:15-1:00 Brown bag discussion

1:15-1:30 Short overview of 270p

1:30-2:30 Proposal working time

2:45-4:15 Proposal working time

4:15-5:00 Proposal working time & general catch up

Assignments "due": Proposal

The above translates to the below schedule. Please let me know if they don't align!

Day	9-10:15	10:30-12:00	12:15-1	1:15-2:30	2:45-4:15	4:15-5
1 (w)			(Optional) GIS refresher lecture	(Optional) GIS lab activity	Lect1: Intro Lecture, Intro to proposal	Class social
2 (R)	Lect2: Conservation objectives	Reading (t1: Conserv. objectives, t2: Single Species)	brown bag lunch discussion: (20m Cons	Lect3: Single Species	Lab1: SDMs	Proposal Working time (sketch objectives, sleuth data) & General

			Obj, 20m SS)			catchup
3 (F)	Lect4: Multi-species	Reading (t1: Multi-sp, t2: Networks)	brown bag lunch discussion: readings	Lab2: Hotspots	Lect5: Networks	Proposal Working time
4 (S)	Lab 3: Marxan	Reading (t1: Dynamics, t2: Social)	brown bag lunch discussion: readings	Lect6: Dynamics	Lab4: Circuitscap e	Proposal Working time & General catchup
5 (Su)	Day off					
6 (M)	Lect 7: Restoration	Reading (t1: Restoration, Channel islands documentary) (10:30-11:45)	brown bag lunch discussion: Q& A with Lotus (12-1)	Lect8: Social	Proposal Working time & General catchup	Working time
7 (T)*	Lab5: Restoration	Reading + discussion (t1: ES )	Field trip COPR (optional, depart ~1pm)			
8 (W)	Lect9: Ecosystem Services	Working time	brown bag lunch	Working time	Working time	Class wrap up (plan to be here until 5)