

## Catalina Semester, BISC 369L – Island Ecology & Natural History

<b>Hours:</b>	<b>M</b>	<b>11:00AM to 5:00PM</b>
	<b>T</b>	<b>8:30AM to 5:00PM</b>
	<b>W</b>	<b>8:30AM to 5:00PM</b>
	<b>Th</b>	<b>8:30AM to 5:00PM</b>
	<b>F</b>	<b>8:30AM to 11:00AM</b>

### Required Text:

Schoenherr, Feldmeth, & Emerson: Natural History of the Islands of California

### Class Reader

### Recommended Text:

Ambrose & Ambrose: Handbook of Biological Investigation

Brower, Zar, & von Ende: Field and Laboratory Methods for General Ecology

Important web site: [www.catalinaconservancy.org](http://www.catalinaconservancy.org)

### Instructor

Dr. Jonna Engel

Wrigley Institute for Environmental Studies

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### Teaching Assistant

Isabel Romero

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### Grading

5%: Pattern write-ups (2 pattern assignments – 10% of total grade)

5%: Quizzes (2 quizzes - 10% of total grade)

5%: Field project write-ups (4 field project write-ups - 20% of total grade)

1. Plant community monitoring
2. Plant/insect community associations
3. Rocky intertidal sampling
4. Sandy beach sampling

10%: Midterm

20%: Final

5%: Project Proposal Oral Presentation

10%: Project Proposal Write-up

10%: Class Participation and Attitude (lectures, discussions, paper presentations, field, lab)

### Course Goals

- Become familiar with the terrestrial and marine flora and fauna of Catalina Island
- Learn about the field of island biogeography

- Appreciate the geology, geography, climatology, and history that relates to the distribution and abundance of island organisms
- Examine the effects of human activities on the wildlife of Catalina Island
- Understand the structure and art of biological field research
- Practice skills in experimental design
- Obtain experience in making measurements related to population ecology and community ecology
- Practice skills in data analysis
- Practice skills in oral presentation
- Appreciate the importance of functioning as a team while conducting biological field work
- Conduct several field research projects from start to written report
- Write a field research proposal detailing a project of particular interest to you on Catalina Island
- Have fun in the field in amazing places!

### **Course Information**

This class will take place on Santa Catalina Island where our home base will be the USC Wrigley Institute for Environmental Studies. Each day we will meet at 8:30AM and end at approximately 5:00PM (Mondays and Fridays are abbreviated because of the boat schedule – see above). Most days will be broken in two with lecture and discussions during half of the day and field and/or lab activities during the other half of the day. Depending on the day (flexibility is essential) we will either start with a lecture and discussion or with field/lab projects. Some days will be spent entirely in the field. We will end each day with a quick review of that day and an overview of the next day.

### **Class Rules**

To be announced

### **Tips for the Field**

A key to being able to assimilate information outdoors is comfort. If you're cold, wet, hungry, or otherwise uncomfortable, it's difficult to concentrate on the subject at hand, whether plant or animal.

First, good nutrition is important (I know I sound like your mother): to begin the day, try to have some bulk and liquids for breakfast. Orange juice and dry cereal or granola with milk or yogurt is easy to prepare and provides a base of calories essential to maintaining body temperature in cold weather. Don't hesitate to carry snacks with you. A quart-sized container of water is essential.

Second, you should dress in layers, so garments can be added or subtracted as necessary to maintain body temperature in cold weather. For the upper torso, a turtleneck sweater, shirt, and outer sweater (preferably polypro – cotton usually doesn't work well), along with a vest and/or windbreaker, make a good combination. You don't have to wear them all at once! Extra coverings can be carried in a daypack or knapsack, along with field guides and notebooks. IT WILL PROBABLY RAIN SOME TIME WE ARE IN THE FIELD – a decent rain jacket is essential. In general, shorts are a poor choice for serious or prolonged fieldwork. Shorts offer little protection from poisonous plants. A woolen stocking cap is a good, collapsible, packable, all-around choice for covering the head. Your feet deserve special attention. Wear decent shoes

and socks that will keep your feet warm. Sandals are a poor choice, even in summer, because they do not provide either good foot support or protection from injury or from plants. Consider lip protection and sunscreen. Sunglasses also add to comfort on bright, sunny days. Avoid the fashionable pink, orange, or blue tinted lenses, and choose sunglasses with lenses tinted in such a way that you have adequate protection from ultraviolet radiation and true colors are not distorted when viewed through the glasses in the field.

**POISON OAK:** You can do a few things to minimize this problem. First, be able to identify it in all of its forms. Second, wear long pants and a long sleeve shirt if you are sensitive. If you accidentally brush up against the plant, your first line of defense is to rinse off with COLD water as soon as possible. This may mean washing the affected area off in a creek or the ocean. Third, when you get back to Wrigley shower immediately (best to soap up and rinse with cold water). After our hikes and terrestrial field projects it is a good idea to wash your field clothes – separately if you can – to get the oil out of your clothing

### **Things to bring with you into the field**

- Watch: weatherproof and digital with military time. Stopwatch function is also useful.
- Binoculars: If you own binoculars please bring them.
- Field Notebook with pens and pencils
- Field project sampling gear – we will discuss the necessary gear for each project and you (students) will be responsible for gathering gear together and bringing it
- Backpack
- Rain gear if weather looks inclement
- Food and drink
- Field guides – birds, plants are especially useful

### **Research Equipment**

We will be using a wide range of research equipment – from transect tapes to binoculars to dissecting scopes to computers. This only works if we all take responsibility for caring for it, and making sure it gets put back so that others can use it. Be conscientious. Also, it is common that equipment breaks or needs maintenance. Don't put away a damaged or non-functional piece of equipment. Give it to myself or Isabel so that we can fix it or replace it.

**Catalina Semester, Biology 369L: Island Ecology & Natural History  
Spring 2005 – Tentative Schedule – Subject to change!**

DATE	LECTURE	FIELD/LAB	READING	ASSIGNMENT	WHAT'S DUE?
<b>WEEK 1 – Intro to Catalina, Island Biogeography, &amp; Geology</b>					
12 Jan Wed	11:30AM Arrive Catalina – room assignments 12:00 Lunch 1:00PM Housing orientation 1:45PM Lab tour 3:00PM -Intro to class -Intro to myself 5:00PM Welcoming Party	None	Class Reader (see readings for week)  <u>Lecture:</u> Schoenherr et al. (class text) Chap 5, 147-154 and Chap 1		
13 Jan Thurs	8:30AM - Intro to Catalina Island & Island Biogeography  @11:00AM Guest Lecturer - Dr. John Avise, "Good & bad times for Evolutionary Biology"  @1:00-3:00PM - Introduction to library resources: USC Librarians, Jean & Sara, Science & Engineering Interdisciplinary Team	Hike - Plant identification around WIES and make observations for Pattern #1  <b>Optional evening activity:</b> <b>Videos:</b> <b>Catalina Island: The land &amp; sea &amp; Hollywood's Magic Island</b>	<u>Lecture:</u> Schoenherr et al. Chap 2	<b>Pattern #1</b>	
14 Jan Fri	9:00AM Guest Lecturer- Ellen Kelley, Geology of Catalina Island  11:30AM Guest Lecturer - Dr. Mark Readdie, PISCO subtidal marine research	None			<b>Pattern #1</b>
<b>WEEK 2 – Island Biogeography, Island Flora and Fauna (Botany and Zoology)</b>					
17 Jan	<b>HOLIDAY – Martin Luther Kings Birthday</b>				

18 Jan Tue	None	All day car tour of Catalina -weather permitting (day to observe 2 <sup>nd</sup> pattern) Little Harbor, Ridge road, airport in the sky (visit Nature Center) 1:00PM - Middle Canyon Native Plant Nursery tour with Mike Herrera (510-2904) - Seed germination experiment 3:30 Avalon -visit Botanic Garden - Tour with Mark Hoefs (510-2288)	Class Reader (see readings for week)  <u>Field/lab:</u> Ambrose: 1-29 Brower 1-12, 22-25, 87-89	<b>Pattern #2</b>	
19 Jan Wed	8:30AM - Island Biogeography Theory  Video: Island of the pygmy mammoth  <b>Paper discussion (Minnich) – led by Jonna</b>  <b>Weather permitting: Catalina Conservancy evening lecture in Avalon at the Metropole Hotel 7PM Dr. Lisa Stratton, “Island Oak research”</b>	Field Project #1 - Plant community monitoring	<u>Lecture:</u> Schoenherr et al. (class text) Chap 5, 147-177  <u>Field/lab:</u> Brower 97-102, 177-192	<b>Start Field Project #1 write-up</b>	<b>Pattern #1</b>
20 Jan Thurs	Botany – Focus on Catalina Flora  <b>Paper discussion (Power) – led by 2 students</b>  <b>QUIZ</b>	1:00PM Guest Lecturer, Dr. Peter Sharpe (510-2728), Bald Eagle reintroduction and island fox status  Field Project #2 - Plant/Insect community associations  <b>Evening activity: black light insect sampling</b>	Lecture: Schoenherr et al. (class text) Chap 5, 177-195  Field/lab: Brower 110-113	<b>Start Field Project #2 write-up</b>	
21 Jan Fri	<b>None</b>	Complete Field Project #2- Plant/Insect community associations			<b>Pattern #2</b>
<b>WEEK 3 – Marine Biology (algae, invertebrates, fishes, mammals, birds)</b>					
24 Jan	Guest lecturer, Dr. Kevin Lafferty,	Intro to Field Project #3 - Rocky intertidal sampling	Class Reader (see readings for week)	<b>Start Field Project #3 write-up</b>	<b>Field Project #1 write-up</b>

	Ecology of parasites Guest lecturer, Dr. Christina Sandoval, Terrestrial Reserves  Zoology – Focus on Catalina Fauna	Low tide: -0.72', 3:36PM	<u>Lecture:</u> Schoenherr et al. (class text) Chap 4, 70-121		
25 Jan	Marine Botany  <b>Paper discussion (2 papers: Laughrin, Conover) – led by 2 students</b>	Field Project # 3 – Rocky intertidal sampling at Little Harbor  Low tide: -0.67', 4:02PM  <b>FULL MOON</b>			
26 Jan	Marine Invertebrates I  <b>MIDTERM</b>	Intro to Field Project # 4 – Sandy Beach Sampling  Low tide: -0.54', 4:28PM  <b>Potential evening activity: Grunion run at Two Harbors beach</b>		<b>Start Field Project #4 write-up</b>	
27 Jan	Marine Invertebrates II  <b>Paper discussion (Seapy) – led by 2 students</b>	Field Project # 4 – Sandy Beach Sampling  <b>Potential evening activity: Grunion run at Two Harbors beach</b>	<u>Lecture:</u> Schoenherr et al. (class text) Chap 4, 121-146		
28 Jan	Marine Vertebrates: Fish, Mammals, Birds	None  Low tide: -0.32', 4:54PM		<b>Start project proposals</b>	<b>Field Project #2 write-up</b>
<b>WEEK 4 – Human Influence and Conservation Biology</b>					
31 Jan	Subtidal Ecology/Kelp Forest Ecology	Field trip to archeology site/or kayaking (weather will determine)	Class Reader (see readings for week)		
1 Feb	Catalina Island – Human History and Influence  <b>Paper discussion (Dugan) – led by 2 students</b>	Work on project proposals  <b>Evening activity: Plankton sampling – bioluminescence</b>			
2 Feb	Marine Conservation Biology – Catalina Island	Survey WIES landing cove for introduced algal species, Undaria, via snorkeling			<b>Field Project #3 write-up</b>
3 Feb	Terrestrial Conservation	Middle Ranch Field Trip/Avalon trip?			

	Biology – Catalina Island  <b>Paper discussion (Laughrin et al.) – led by 2 students</b>				
4 Feb	Ecological Genetics  <b>QUIZ</b>	None			
<b>WEEK 5 – New Research Approaches/Class Wrap-Up</b>					
7 Feb	Guest lecturers: Dr. Diana Steller, Algae that rock & roll: rhodolith ecology Dr. Don Croll, Marine Conservation Biology	Work on project proposals OR Rocky intertidal field trip  Low tide: -1.75', 2:51PM	Class reader (see readings for week)		<b>Field Project #4 write-up</b>
8 Feb	GIS/GPS as a Research Tool  <b>Paper discussion (Roemer et al.) – led by 2 students</b>	Geocaching activity  Low tide: -1.73', 3:30PM			
9 Feb	Review of class material	Project proposal oral presentations  Low tide: -1.46', PM		<b>Proposal Oral Presentations</b>	<b>Project Proposals</b>
10 Feb	<b>FINAL</b>	Clean-up classroom, labs, equipment and personal space			
11 Feb	End of class celebration	Return to Long Beach/San Pedro			