

**Instructor:** Eric Larsen, UC

Email: [eclarsen@uchicago.edu](mailto:eclarsen@uchicago.edu)

**Co-Instructor:** David Remsen, MBL

Email: [dremsen@mbi.edu](mailto:dremsen@mbi.edu)

TA: Mariah Scott, another grad student, TBD

### **Course Organization—Lecture, Lab and Field work throughout the 3 wks**

#### **Week 1: Aug 29-Sept 3 -- MBL**

Monday Intro to course, staff, habitats, projects.  
 Tuesday Pamela Polloni, WHOI, herbarium, native plants of New England  
 Wednesday Dave Remsen -- Marine influences  
 Thursday Dave Remsen – rocky intertidal field trip  
 Friday Dave Remsen – rocky intertidal field trip  
 Saturday Travel day to Penikese Island

#### **Week 2: Sept 4-10 -- Penikese Island**

Sunday Tour island, set rodent live-traps (evening)  
 Monday Run rodent traps (first thing in morning); Lecture: species-area curves, Plant sampling—quadrats vs. line transects; begin plant sampling, reset rodent traps  
 Tuesday Run rodent traps first thing in morning; continue plant sampling; set rodent live-traps (evening)  
 Wednesday Run rodent traps (first thing in morning); Survey of aquatic insects of fresh water habitats of the island  
 Thursday continue aquatic insect survey of remaining ponds; collect insects associated with island vegetation;  
 Friday Continue survey of insects on plants of the island  
 Saturday travel day  
 Field work – rodent, terrestrial/aquatic insect, plant projects, data collection to answer specific question posed in first week (e.g., island/mainland comparison of species diversity, genetic diversity of island vs mainland populations), rocky intertidal survey (comparison w/ observations from wk 1)

#### **Week 3: Sept 11-16 -- MBL**

DNA extraction, PCR to determine species identities of rodents collected prior to the beginning of the course and collections during the course on Penikese Island, Cape Cod and general vicinity; prep of Penikese Island plant samples for deposit at WHOI herbarium; identification of aquatic insects from Penikese Island, comparison w/ aquatic insects collected on mainland

Sunday Assemble collections in lab; analysis of data collected in Week 2; set rodent traps

Monday Run rodent traps first thing in morning; LAB: DNA extraction, multiplex PCR for *Pmaniculatus* vs. *Pleucopus* identification; samples from surveys prior to course

	for comparison of mainland/island rodent taxa, plus Penikese Island, set rodent traps.
Tuesday	Run rodent traps first thing in morning; LAB: Run gels of PCR from Monday-- DNA comparison of local (Cape Cod/Penikese Island); set rodent traps
Wednesday	Run rodent traps first thing in morning; LAB: analyze data from individual projects, prepare for presentations
Thursday	Data analysis, preparation for presentations; Complete identification of specimens and preparation for deposit in local collections. Preparation of written report, presentation of findings to class
Friday	Public presentations

**Grade Assessment:**

<b>50 pts</b>	<b>Contribution to Class Discussion</b>
<b>100 pts</b>	<b>Lab exercise, data collection – Field Exercises (plant, aquatic insect, rodent collection)</b>
<b>150 pts</b>	<b>Field Exercise Report – students select a project to collaborative effort (rodent, aquatic insects, botanical survey of Penikese Island in comparison with previous surveys, rocky intertidal community surveys)</b>
<b>100 pts</b>	<b>Oral Presentation of Field Exercise</b>
<b>400 pts</b>	<b>total</b>

**Grading Scale for Student Evaluation:** Grading scale: A, 90 $\geq$ ; B, 80 $\geq$ ; C, 70 $\geq$ ; D, 60 $\geq$ , etc. Bottom 2% receive a minus letter grade; top 2% receive a plus letter grade (e.g., 89%, B+, 81,5% B-). P/F Policy: request for P/F for the course must be made prior to taking the final exam. A grade of P will be granted for work at or above C-.

**Course Description:**

Students will explore various aspects of the biota of the region surrounding the Marine Biology Laboratory, Woods Hole, MA. The focus of the course will be to examine various patterns in the distribution and abundance of the flora/fauna in the islands and associated mainland habitats over the course of 3 weeks through a combination of in class lectures and laboratory sessions, combined with field studies. Penikese Island will receive special focus for extensive inventory of the biota, to update previous contributions to the flora of the island and begin an inventory of mammals, birds, and invertebrates. Similar surveys will be made of nearby mainland habitats for biogeographic comparisons between island and mainland patterns of abundance.

**Objectives**

Learn fundamental ecological concepts and principles related to community ecology and species diversity.

Relate those ecological principles to the local biota in an environment impacted by human landscapes.

Recognize the impact of physical environment on ecological interactions (e.t., global patterns of climate, geology, human alterations of the landscape)

Identify communities/species in the Northeast (vicinity of Woods Hole) and potential interactions among members of those ecological communities (e.g., plant-pollinator interactions, predator-prey &/or plant-herbivore interactions)

Learn limitations of various sampling techniques used to identify species abundance or estimate population size dependent on the focal species.

Design and conduct scientific investigation to address questions pertaining to biological communities (plant/animal) in the vicinity of Woods Hole/Penikese Island.

Understand the historical context of their project as it relates to work that has been conducted in the region.