

11:216:274 *Field Techniques in Ecology and Natural Resources*

Fridays – 8:45-9:45 AM
Field Course - May 19-30, 2025

Course Objectives:

Students are immersed in two different ecosystems – the Kittatinny Ridge and Valley and the NJ Pinelands/Coast – to learn fundamental aspects of field ecology, forestry, wildlife biology, field data collection/analysis, and natural resource management.

Instructor:

Prof. Rick Lathrop lathrop@crssa.rutgers.edu 908 229 1779 Rm 162 ENRS

Prof. Henry John-Alder henry.john-alder@rutgers.edu 609 213 5033 156ENRS

Week 1: School of Conservation, Stokes State Forest.

Week 2: RU Marine Field Station, 132 Great Bay Blvd, Tuckerton.

During the Spring semester, classes will revolve around the basics of data collection and analysis. The first half of classes will focus on tree and vegetation sampling techniques and faunal survey techniques. The second half of classes will focus on the founding of the New Jersey Pinelands National Reserve, the collection and analysis of environmental thermal data, and applications of allometric analyses in animal ecology. During the field trips, activities will revolve around field exercises/projects and field trips/hikes. The projects will entail the students investigating an ecological question that is backed up by independent field observation or measurement, a short report write-up and presentation. The report write-up should include the sampling protocol, a record of the data collected, a discussion with tables/graphics summarizing the results and a written synthesis of the findings.

Grading for Dr. Lathrop's half will be based:

- 25 pts Assignments 1-5 (5 pts each)
- 30 pts Variable plot-radius Stand Inventory
- 25 pts Landscape Gradient Sampling Problem write-up
- 20 pts Forest Health Assessment

Grading for Dr. John-Alder's half:

- 100 pts Pinelands

200 pts Total

Food: Each student will be volunteered/assigned to a cooking group. Each Cooking group will shop for & prepare one evening meal for the entire group. We will shop for food on the 2 Monday mornings prior to that week's field trip. The instructor will collect \$75 in cash (\$150 total) from each student (at the beginning of each week) to pay for that week's food (\$ not used to buy food will be returned). A range of dietary preferences will be accommodated.

Schedule of Spring Semester Classes

Jan 24 **Introduction to Course**

Jan 31 **RGL 1: Intro to Google Earth for Landscape Mapping**

- Feb 7 RGL 2: **Using the Web Soil Survey for Terrain/Soils Mapping**
Assignment 1 Due
- Feb 14 RGL 3: **Web Mapping tools for Conservation Planning**
- **Lecture Recorded. In class lab.**
Assignment 2 Due
- Feb 21 RGL 4: **Intro to Vegetation Inventory-Estimating carbon**
Assignment 3 Due

Resources: <https://www.nrs.fs.fed.us/carbon/tools/>

https://www.nrs.fs.fed.us/carbon/local-resources/downloads/Field_manual_1pager.pdf

- Feb 28 RGL 5: **Vegetation Inventory Reprise – Estimating C.I.s**
- March 7 RGL 6: Vegetation Inventory Field Exercise
Meet at EcoPreserve: Parking Lot 101 8:30am
Assignment 4 Due
- March 14 RGL 7: **Analyze Veg inventory data**
- March 21 Spring Break

The following class schedule and assignments are subject to change.

- March 28 HJ-A 1: **The pine barrens (NJ Pinelands National Reserve);**
select topics for presentations; Assignment 5 Due
- April 4 HJ-A 2: **Student 10-min powerpoint presentations on pinelands**
field trip sites 5 pts
- April 11 HJ-A 3: **Allometry; Good & Good assignment due 10 pts;**
approval of allometry data
- April 18 HJ-A 4: **Deployment and analysis of HOBO data; allometry**
assignment due 10 pts
- April 25 HJA 5: **Thermal ecology; Graphing microclimates due 10 pts**
- May 2 HJA 6: **Analysis of HOBO data; HOBO assignment due 15 pts**

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Ridge and Valley Forested Upland Schedule:

Monday May 19

Meet at Shoprite parking lot in Newton Route 206 North at 8:30 am.

Arrive and get settled at School of Conservation, Stokes State Forest

AM Map & Compass Lecture & Demo

PM Field navigation & mapping
Measuring Tree Height

Evening Forest Inventory: Fixed Plot Techniques & Analysis Redux
Night hike around Lake Shawanni

Tuesday May 20

7 AM Breeding Bird Survey – Group 1

8 AM Breakfast

9AM Variable Plot Radius Sampling Lecture/Demo
Forest Inventory Data Collection

-- Fixed Plot: Natural Forest Stand

--Variable Plot: Red Pine Plantation

PM/Evening Work up the Data

- Generate species/size distribution, height, canopy cover;
estimate basal area, biomass and carbon stock

Evening Vernal Pool Amphibian Survey

Wednesday May 21

7 AM Breeding Bird Survey – Group 2

8 AM Breakfast

9AM Forest Landscape/Vegetation Gradient Sampling Problem
- Transect sampling to examine tree species changes
across a landscape gradient

PM Work up the Data

Evening Present Results – Forest Stand Inventory Techniques

Thursday May 22

8 AM Breakfast

9 AM Forest Health Assessment
- Assess prevalence of beech leaf disease and
hemlock wool adelgid impacts

PM Work up the Data – Present Results

Evening Barbeque and Campfire

Friday May 23

8 AM Breakfast

AM Hike: Tilman's Ravine

PM Head for Home for weekend

Pinelands Field Course Schedule:

Approximate Schedule for the week of May 26 – May 30 (details are subject to change):

We will spend Monday through Thursday nights in the dormitory at Rutgers Marine Field Station in Tuckerton, NJ. (<https://rumfs.marine.rutgers.edu/about-us/rumfs-facilities/dormitory/>). Accommodations are dormitory-style in shared rooms. Students must supply their own bedding, towels, washcloths, etc. Laundry is available at the dormitory.

Meals will be group meals much as during the first week of field camp. The dorm is equipped with a full kitchen with ample refrigeration. We will buy food for the week at a local grocery store upon arrival in Tuckerton. Responsibilities for preparing dinners will be shared as in the previous week at Stokes. We will have a pizza dinner at RUMFS on one of the days.

Transportation: A 12-seat van will depart 14 College Farm Road at 8AM on Monday, May 26 to transport students first to Colliers Mills WMA and then to the dormitory in Tuckerton. Students may also drive themselves to Colliers Mills and then on to Tuckerton in their own cars. During the week, all students will be transported either in the van or as passengers in Dr. John-Alder's car. Students will not be permitted to drive their own cars to destinations throughout the week, except on Friday. On Friday, we will drive from Tuckerton to the Franklin Parker Preserve, then to the Marucci Center, and finally back to New Brunswick. Obviously, students with their own cars will use them on Friday.

The schedule below is subject to change, but it includes our major stops.

Monday, May 26: land management; lizard ecology; thermal ecology

9:00AM – meet at the entrance to Colliers Mills WMA intersection of Hawkin and Success Roads; set Google Maps to NJ Fish and Game Training Center, Jackson Township 08527

Pete Winkler, Regional Superintendent NJ-DEP Fish & Wildlife: Land and wildlife management objectives and methods

Henry John-Alder: Introduction to methods for field studies of lizards: allometry, population ecology, and thermal ecology

2:00PM – drive to RUMFS dorm in Tuckerton; buy groceries, get set up for the week

Tuesday, May 27: Ichthyoplankton netting; surf seining; pine-snake tracking

10:00 AM – Pine snake radio-tracking with Chris Jeitner, Pinelands Commission; drive to tracking site in Bass river State forest

2:00 PM – Surf seining at RUMFS; Roland Hagan

6:00 PM – Pizza dinner at RUMFS

9:00 PM – Ichthyoplankton netting, RUMFS.
(https://link.springer.com/referenceworkentry/10.1007/978-94-017-8801-4_289)

Wednesday, May 28: Colliers Mills: lizard ecology, thermal ecology, plant ID

9:00 AM – drive to Colliers Mills

1:30 PM – lunch at Lucille's

Thursday, May 29: Red knot banding at Reeds Beach

Early departure from RUMFS dormitory

Return via Stone Harbor point; birding at Edwin B. Forsythe NWR

(<https://www.fws.gov/refuge/edwin-b-forsythe>)

Friday, May 30: restoration ecology; agroecology

8:00AM – clean-up and pack-up for final departure from dorm

9:00AM – Franklin Parker Preserve, Chatsworth, NJ

(<https://www.njconservation.org/preserve/franklin-parker-preserve/>)

Dr. Emile DeVito, Manager of Science and Stewardship, New Jersey

Conservation Foundation (<https://www.njconservation.org/staff/>)

12:30PM – brown-bag lunch at Marucci Center

(<https://pemaruccicenter.rutgers.edu/>)

1:30PM – entomological ecology of blueberry and cranberry agriculture in New Jersey pinelands, Dr. Cesar Rodriguez-Saona

(<https://pemaruccicenter.rutgers.edu/programs/entomology/>)

3:00PM – return to Rutgers Cook Campus

Ecology Field Techniques Equipment List

Clothing

- ☐ Hiking boots – well broken-in
- ☐ Knee-length Rubber field boots
- ☐ Sneakers or sandals for in camp
- ☐ Rain gear - top and bottom – or poncho
- ☐ Lighter weight jacket – it can get cold in Stokes in May
- ☐ Extra top layers - wool/fleece sweater, turtleneck
- ☐ Short sleeve shirts
- ☐ Light weight long sleeve shirt – for sun and bug protection
- ☐ Heavyweight field pants (1 pr)
- ☐ Lighter weight (zip-off) pants (1 pr)
- ☐ Shorts
- ☐ Underwear - your choice
- ☐ Cap or brimmed hat – for sun protection
- ☐ Sunglasses
- ☐ Thick outer socks - several pairs (1 for each day)
- ☐ Thinner inner socks - several pairs
- ☐ Various and sundry toiletries: sunscreen, bug repellant
- ☐ Towel

Gear

- ☐ Duffel bag to carry all this gear in
- ☐ Large daypack for daytrips
- ☐ 3 season sleeping bag (bedding not provided) - it can get cold in Stokes
- ☐ Short pad for sitting/lounging
- ☐ Flashlight or headlamp
- ☐ Survival/First Aid Kit: matches/pen knife/whistle
- ☐ 2 refillable water bottles
- ☐ Calculator
- ☐ Clipboard
- ☐ Field Journal with pens, pencils, tape
- ☐ Laptop
- ☐ Binoculars (optional)
- ☐ Camera (optional)
- ☐ Entertainment: Games, musical instrument
- ☐ Duct tape & insect repellant for tick prevention
- ☐ Sunscreen