



California Naturalist Sierra Nevada Immersion Course Sunday October 1 to Saturday October 7, 2017

Hosted by the UC Merced Yosemite Field Station (YFS) in Wawona, and the Sierra Nevada Aquatic Research Laboratory (SNARL) in Mammoth Lakes

Coordinating Instructors:



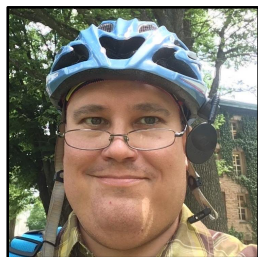
Dr. Carol Blanchette
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Carol is a community ecologist and Research Biologist at the Marine Science Institute, UCSB. Her work focuses on population dynamics, biomechanics and ecological networks. She is the Director of the UCSB Valentine Eastern Sierra Reserves (SNARL and Valentine Camp).



Dr. Anne Kelly
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Anne is the Director of the Yosemite and Sequoia Field Stations for UC Merced. Her research has focused on the effects of climate change and drought on the ecosystems of the the Sierra Nevada, Mojave Desert, Colorado Plateau, and Arctic tundra.



Dr. Tom Hothem
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Tom Hothem is Associate Director of UC Merced's Merritt Writing Program, in which he teaches writing for natural sciences and engineering. His research explores intersections between environmental science and literature in natural history and urban planning.

Guest Instructors

Annie Barrett; Outreach Coordinator, SNARL
Pete Devine; Resident Naturalist, Yosemite Conservancy
Dr. Dave Herbst; Research Scientist, SNARL
Dr. Marc Meyer; Ecologist, US Forest Service
Bartshe Miller; Mono Lake Committee
Ann Howald, MA; Professional Botanist (Ret.), SNARL
Dr. Jay Sexton; Professor of Ecology, UC Merced
Dr. Greg Stock; Geologist, Yosemite National Park
Andie Thrams; Professional Illustrator

About the California Naturalist Program

The California Naturalist program has been developed by the University of California Cooperative Extension to foster eco-literacy and to train volunteer naturalists and citizen scientists trained for active roles in natural resource conservation, education, and restoration. Its goals are:

- To promote environmental literacy and stewardship of California's natural resources
- To increase participation in resource conservation and citizen science projects throughout the state
- To develop a core constituency of committed and educated citizens motivated and trained to participate in resource conservation, preservation, and restoration efforts
- To provide participants with the knowledge, skills and confidence they need to educate others and participate in many aspects of resource management, such as public education, resource planning and public decision-making
- To provide the communication experience and critical thinking skills necessary to grow a citizen base that supports environmental protection and sustainable growth in California
- To support partner organizations and collaborators as they implement the program

About the Sierra Nevada Immersion Course

This weeklong immersion course focuses on the ecosystem linkages of the Sierra Nevada around Yosemite National Park. It consists of presentations, field trips, and lively collaborative discussions about individual components of the ecosystem, including influences on and interconnections with the whole system. Led by scholars and professionals in their fields, these sessions introduce and expand on the importance of each entity, using examples from Sierra communities and relating them to California's unique ecology and natural history. Time in the field with researchers and professionals gives participants first-hand experiences in seeing nature from a scientist's perspective. The course offers participants opportunity to interpret what they see, to make meaning for themselves and others.

The first half of the course will take place in a residential setting on the west slope of the Sierra at the Yosemite Field Station (YFS) in Wawona, and the second half will occur on the east slope of the Sierra at the Valentine Eastern Sierra Reserve and Sierra Nevada Aquatic Research Laboratory (SNARL) in Mammoth. On-site lodging is included in the course fee and is important for all participants (because activities begin early each morning and continue through the evening). Participants will stay in semi-rustic cabins in Wawona and dormitory-style housing at SNARL. The course fee also includes all meals, with catered dinners and one night dining out.

Sierra Nevada Immersion Course Student Learning Outcomes

Upon completion of this course, participants will be able to:

1. Describe scientific methods of understanding natural history.

2. Relate knowledge of natural history to becoming a naturalist and an environmental steward.
3. Integrate knowledge about the interconnectedness of abiotic and biotic factors (including human) and their influence on the natural history of the Sierra Nevada Ecosystems.
4. Demonstrate skills in making and recording natural history observations in a field notebook.
5. Apply knowledge of the Sierra Nevada ecosystem to local and global environmental issues.
6. Understand and communicate the role of citizen science in informing the natural resources management decision making processes.

Participation

Participants must attend class meetings and field trips during this one-week immersion course, and must complete an eight-hour Capstone Project and presentation, in order to obtain the California Naturalist certificate. The course consists of required pre-course reading and full participation throughout the week. While each day is filled with new content and activities, presentations, field sessions, and hands-on activities will occur at a comfortable pace with time for reflection and personal needs. The residential format allows participants to develop deeper connections with the area and fosters a sense of camaraderie with fellow participants.

Naturalist Field Notebook

Naturalists document field observations with notes and sketches in detailed Field Notebooks. It is a course requirement that each participant keep a Field Notebook during the course and hopefully beyond it. Keeping a detailed field journal is one of the best ways of recording observations for future reflection and for fostering continued learning and development as an experienced naturalist. Course participants also record observations in an online field data collection and social networking tool called iNaturalist (<https://www.inaturalist.org/>). To observe your own personal approach to taking notes in the field, we encourage you to bring your own notebook. We will also have notebooks available for those who would like them.

Required Texts (Please read them beforehand and bring them with you to the course!)

- de Nevers, Edelman, & Merenlender, *The California Naturalist Handbook*, UC Press, 2013. Link to amazon product site: <http://a.co/aMijyWJ>. Also available [via the UC Press with a 30% CalNat discount](#).
- Ingram & Kocher, "Natural History of the Sierra Nevada" available online only: <http://anrcatalog.ucanr.edu/pdf/8535.pdf>

Capstone Project

California Naturalist certification requires each participant to complete a Capstone Project, which applies his/her naturalist skills and environmental interests to a task that benefits a natural history organization (an established restoration effort, conservation program, research project, nature center, park system, scientific publication, etc.). The Capstone Project must focus on stewardship, education/interpretation, citizen science, and/or program support and should be completed in a relatively short time period (eight hours). Participants may work individually or in teams to design and implement their Capstone Projects. Since time is limited during the week of our immersion course, participants will design Capstone Projects to implement after the course. At the end of the immersion course, each participant will give a five-minute oral presentation describing a plan for designing and completing his/her Capstone Project. There will be time throughout the week for brainstorming and focusing your project. See [Capstone document](#) for ideas and suggestions about possible Capstone Projects.

Volunteer Service:

After completing the California Naturalist Yosemite training program, participants are encouraged to complete 40 hours of volunteer service relating to California's natural or environmental cultural history (stewardship, education/interpretation, citizen science, or program support). Hours spent planning, developing, and completing the Capstone Project count toward your 40 hours of service. Your instructors will provide information on local opportunities, and students are encouraged to participate in and conduct activities with organizations, field stations, parks or agencies within their own communities. Volunteers who log 40 hours of service annually receive a service recognition pin, which commemorates a different California native species each year.

Registration and Fees

The course registration fee is \$900. Class size is limited to 25 participants. Fees include lodging, meals, course instruction and field sessions, graduation certificate, California Naturalist registration, website support, and lapel pin. Participants will need to purchase and read the required text, *The California Naturalist Handbook*, prior to the start of the course.

For an additional fee, General Education Academic or Continuing Education Credits (CEUs) are available through UC Davis Extension to teachers and undergraduate students who successfully complete the course. If you are interested in CEUs, please speak to a course coordinator.

Registration and Fees Cover ...

- Cabin accommodations at both reserves
- John Muir Laws' "Laws Guide to the Sierra Nevada" and a journaling book
- Food for the week
- Classroom instruction
- Field trips

- Graduation certificate and lapel pin upon successful completion
- Registration with California Naturalist and web support

TO DO LIST (BEFORE THE COURSE)

- **Buy and read the textbook beforehand** (there won't be much time to read during the week). Read the CalNat Sierra Nevada Supplement available on the CalNat website.
- **Sign up for a free iNaturalist account** at <https://www.inaturalist.org/>. Download the app to a smartphone, and practice taking a picture and uploading your observation on iNaturalist.
- **Think about a potential capstone project** and email your idea to the coordinating instructors (Anne, Carol, and Tom, whose contact information is at the top of the syllabus). See the [Capstone Project document](#) in this folder for more information and examples.

WHAT TO BRING

- Clothes appropriate for variable autumn conditions in the Sierra: warm layers, rain layers, sturdy hiking shoes, hats, sunglasses
 - Sleeping bag or sheets/blankets, pillow
 - Towel and toiletries
 - A journal: an empty notebook, with or without lines or grids, in which to record your nature observations. We will have some available if you do not have your own.
 - Colored pencils and/or pens to write and sketch in your nature journal
 - Your smart phone, iPad, or laptop for iNaturalist observations (optional)
 - A laptop for supplemental research during the course (optional)
 - Things you like to bring on the trail and while traveling: daypack, water bottle, headlamp or flashlight, binoculars, magnifying glass, snacks, pocket knife, travel mug, etc.
 - Any alcohol, or special foods and snacks for yourself
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COURSE SCHEDULE

Note: This schedule may be revised due to weather or fire conditions or other surprises. If fire prevents the opening of the Yosemite Field Station, we will carry on as planned, but our starting location on Sunday will be SNARL in Mammoth Lakes. The course coordinators will keep everyone apprised of any changes in schedule.

Meeting Times and Locations:

Participants will convene at the Sierra Nevada Research Station in Wawona (just inside the south entrance to Yosemite National Park) midday on Sunday, 1 October. We will depart for Mammoth on Wednesday, 4 October, and adjourn after lunch on Saturday, 7 October.

Day 1: Sunday, October 1st

8:30: Eastsiders may meet at SNARL for carpooling to Wawona.

11:30 – 1:00: Cabin assignments, unpack, settle in

Location: Sierra Nevada Research Stations, Yosemite Field Station
7799 Chilnualna Falls Road, Wawona, 95389

Note: Lunch is not provided on Sunday, 10/1. Please bring a lunch, or consider purchasing a to-go sandwich and snacks from the Big Trees Store in Wawona.

1:00 – 3:00: Welcome, Introduction to the California Naturalist Program, Volunteer Management System, and iNaturalist

Location: Field Station classroom

Staff: Pete Devine, Tom Hothem, Anne Kelly

Reading: *CalNat Handbook* Chapter 1, “California Natural History and the Role of Naturalists”

CalNat Handbook Chapter 1 Outcomes: “California Natural History and the Role of Naturalists”

- Describe California’s biodiversity, noting its importance and potential crises.
- Identify and characterize California bioregions.
- Distinguish the significance of being a naturalist.
- Maintain a field notebook utilizing some form of the Grinnell Method.
- Summarize (1) features of Linnaean taxonomy for plants and animals, and (2) features of geographic range in which California plants and animals live

3:00 – 5:30: Guided Journaling Activity and Introduction to iNaturalist, walking tour of meadow area

Location: Field Station classroom, Wawona meadow

Instructor: Andie Thrans

Reading: *CalNat Handbook* Chapter 1, “California Natural History and the Role of Naturalists”

5:30: Dinner

7:00 – 8:00: Interpretation, Collaboration, and Citizen Science

Location: Field Station classroom

Instructor: Tom Hothem

Reading: *CalNat Handbook* Chapter 8, “Interpretation, Collaboration, and Citizen Science”

CalNat Handbook Chapter 8 Outcomes: “Interpretation, Collaboration, and Citizen Science”

- Identify principles of nature interpretation with respect to its the practice and promotion.
- Enumerate ways in which experts and novices collaborate to produce knowledge about the natural world.
- Define Citizen Science, and explain its importance.

Day 2: Monday, October 2nd

7:30: Breakfast, assemble food for lunch

8:30 – 12:00: Geology - Glacier Point

Instructor: Greg Stock, Yosemite National Park geologist

Reading: *CalNat Handbook* Chapter 2, “Geology, Climate, and Soils”

CalNat Handbook Chapter 2 Outcomes: “Geology, Climate, and Soils”

- Describe tectonic, glacial, and erosive phenomena that gave rise to California’s various mountain ranges and valley systems.
- Identify some of California’s common rocks and soils, and locate them geographically
- Explain key aspects of California’s climate and ways in which it manifests in specific bioregions.
- Illustrate aspects of nutrient cycling and its role in the environment.

12:00-1:00pm: Lunch

Location: Wawona, YFS Office

1:00 – 3:00pm: Plants

Location: Wawona Meadow

Staff: Dr. Jay Sexton

Reading: *CalNat Handbook* Chapter 4, “Plants”

CalNat Handbook Chapter 4 Outcomes: “Plants”

- Enumerate common California plants (trees, shrubs, grasses, wildflowers, etc.) with respect to communities and bioregions in which they occur.
- Illustrate the different parts of a plant, and describe plants’ means of reproduction.

-- Assess natural and cultural significances of relationships between plants and people.

3:00 – 5:00 Wawona Hike, Journaling, and iNaturalist [Wawona Meadow Loop]

5:30: Dinner

Location: Landsnaes

7:00 – 8:00 Daily Reflection and Capstone Preparation

Location: Landsnaes

Staff: Pete Devine, Tom Hothem

Reading: Review Chapters 1, 2, 4, & 8

Day 3: Tuesday, October 3rd

7:30: Breakfast, assemble food for lunch

8:30 – 12:00: Wildlife

Location: Field Station classroom and Wawona Meadow Loop

Instructor: Dr. Marc Meyer

Reading: *CalNat Handbook* Chapter 6, “Animals”

CalNat Handbook Chapter 6 Outcomes: “Animals”

- Describe the lifestyles, behaviors, ecological functions, reproductive strategies, and adaptations of common California animals, locating them in specific food cycles and bioregions.
- Enumerate some of California’s signature insects, fish, amphibians, birds, reptiles and mammals, noting environmental facilitators and stressors that affect them.
- Assess natural and cultural significances of relationships between animals and people.
- Define the term “invasive species,” and illustrate dynamics of invasion with reference to specific animals as well as plants.

12:00 – 1:00: Lunch

1:00 – 4:00: Forest, Woodland, and Range Resources and Management, iNaturalist and journaling

Location: Foresta - North Rim Trail or TBD

Instructors: Anne Kelly and Marc Meyer

Reading: *CalNat Handbook* Chapter 5, “Forest, Woodland, and Range Resources and Management”

CalNat Handbook Chapter 5 Outcomes: “Forest, Woodland, and Range Resources and Management”

- Categorize types of woodland and locate them in California bioregions.
- Analyze the history and management of California forests.
- Identify common forest dynamics with respect to such phenomena as growth, disease, drought, wildfire, fragmentation, and carbon sequestration.

5:30: Dinner

7:00 – 8:00 Daily Reflection and Capstone Preparation

Location: Landsnaes
 Staff: Pete Devine, Tom Hothem
 Reading: Review Chapters 5 & 6

Day 4: Wednesday, October 4th

7:30 - 8:30: Breakfast

8:30-9:30: Pack, clean facilities, and depart

Across the Divide: From Wawona to Mammoth (Geology, Plants, Wildlife, and Landscape Ecology)

Instructors: Greg Stock, Annie Barrett, Pete Devine, Carol Blanchette, Anne Kelly, Tom Hothem

Location: Multiple stops along Highway 120 from Wawona to Lee Vining to examine and compare/contrast the natural history as we cross through climate gradients and across geologic features

5:30: Dinner

7:00 – 8:00: Daily Reflection, Welcome to VESR, etc.

Location: Page Center @ SNARL
 Staff: Carol Blanchette, Annie Barrett, Participants

Day 5: Thursday, October 5th

7:30: Breakfast

8:30 – 12:00: Water, Stream and Lake Ecology, SNARL streams field trip

Location: Page Center @SNARL

Staff: Dr. Dave Herbst, UCSB Research Scientist

Reading: *CalNat Handbook* Chapter 3, “Water”*CalNat Handbook* Chapter 3 Outcomes: “Water”

- Illustrate aspects of the water cycle in California’s geography and climate.
- Describe stream processes with respect to biological, chemical, and physical inputs.
- Locate some of California’s estuaries, intertidal zones, wetlands, and lakes, noting their roles in supporting biodiversity.
- Characterize the current state of California rivers in terms of water management and sustainability.

12:00: Lunch**1:00 – 4:00: Field Trip to Mono Lake, Lake Ecology and Birds**

Location: Mono Lake

Instructors: Bartshe Miller (Mono Lake Committee), Pete Devine

4:00: Free time, work on capstone**5:30: Dinner****7:00 – 8:00: Movie and Discussion - Water in the West (optional)**

Location: Page Center @SNARL

Host: Carol Blanchette

Day 6: Friday, October 6th**7:30: Breakfast, assemble lunch****8:30 – 10:00: Energy and Global Environmental Issues**

Location: Page Center @SNARL

Instructors: Carol Blanchette, Annie Barrett, Tom Hothem, Anne Kelly

Reading: *CalNat Handbook* Chapter 7, “Energy and Global Environmental Issues”*CalNat Handbook* Chapter 7 Outcomes: “Energy and Global Environmental Issues”

- Compare and contrast forms and sources of energy used by plants, animals, and people.
- Explain the role of energy fluxes and imbalances in the processes and effects of climate change.

- Categorize common forms and sources of pollution in California.
- Predict some outcomes of climate change and human influence in California, with respect to such challenges as resource management, public health, habitat modification/destruction, water shortage, air quality, waste management, and (over)population.
- Define sustainability, and list some means by which the practice thereof might mitigate environmental pressures.

10:30: Guided Hike around Valentine Reserve, iNaturalist, journaling

Location: Valentine Camp

Instructors: Anne Howald

Reading: Review *CalNat Handbook* Chapter 4, “Plants”

12:00: Brown Bag Lunch @ Valentine

1:30 – 3:00 Science Communication

Location: Page Center @ SNARL

Instructors: Carol Blanchette, Annie Barrett, Tom Hothem

Reading: Review Chapter 8, *Interpretation, Collaboration, and Citizen Science*

3:00 – 5:30: Prepare for Capstone Project Presentations

5:30: Dinner

7:00 – 9:00: Capstone Presentations, Part I

Location: Page Center@SNARL

Staff: Participants

Day 7: Saturday, October 7th

7:30: Breakfast

8:30 – 11:30: Capstone Presentations, Part II

Location: Page Center@SNARL

Staff: Participants

11:30 – 12:00: Course wrap-up, evaluations

12:00–1:00: Closing lunch

1:00-2:00: Clean-up, pack, and departures
