PRESERVING CALIFORNIA ENVIRONMENTS:
THE BIG SUR WILDLANDS PROJECT

July 27 – August 11, 2017

Meeting Place: **Santa Cruz, CA**
5 quarter credits/3.35 semester credits

FULL PROJECT DESCRIPTION

Thank you for your interest in the Big Sur Wildlands Program. The class is an academically rigorous (and fun!) field class designed to give team members practical experience with the process of conducting field work, including designing a hypothesis-based ecological investigation, data collection, data analysis and report preparation. Students will complete all of their investigations while staying on the University of California's Big Creek Reserve. As a part of the class, each year students engage in two long-term investigations which contribute to a dataset for the Reserve: 1) Southern sea otter populations (*Enhydra lutris nereis*) and raft locations between Big Creek and Esalen Institute; and 2) a stream survey of Lower Big Creek, Middle Big Creek and Devils Creek which involves stream mapping, pool substrate analysis and steelhead (*Oncorhynchus mykiss*) counts in four size classes. We now have 18 years of data from that effort. In addition, students may carry out data collection and analysis on a variety of subjects, including plant communities and intertidal communities, as well as an independent project.

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I. Background Information

Team members will take part in on-site ecological investigations of the redwood forested canyons and rugged coastal environments that form California's famed Big Sur Wildlands. The Big Sur Coast is one of the most spectacular and dynamic stretches of coastline along the west coast of North America with elevation gains of over 5,000 feet, pristine streams with sensational waterfalls and a rich shoreline, home to thousands of marine mammals and some of the richest marine life along the central California coast. Our program will take place at the Landels-Hill Big Creek Reserve, part of the University of California Reserve System. This Reserve sets aside ecological sites for research and education. The Big Creek Reserve, connecting to the greater Ventana Wilderness, consists of over 4,000 acres of terrestrial wilderness comprised of dozens of different plant communities. The Big Creek marine reserve just offshore creates a continuum of protected habitats along the Big Creek watershed from the Santa Lucia mountain range into the Pacific Ocean. The Reserve is home to several rare and endangered species including mountain predators, sea otters, and many birds of prey, such as the California Condor.

The geology of the region is just as breathtaking as the wildlife with hot springs, gem quality jade that can be beachcombed, and a tectonically dynamic history of oceanic subduction, uplift, and erosion creating one of the most spectacular landscapes in the world. The area is also culturally unique with a rich history of homesteaders and Native Americans making the Reserve their home. On-site Middens have been studied showing thousands of years of occupation by such tribes as the Essalen and Salinan Indians. Our team will use Redwood Camp as a home base, conducting day trips for our investigations. There will be a two-day overnight field study towards the end of the program.

II. Project Goals and Activities

Team members will participate in several field studies as part of Wildlands Studies' on-going investigations in the Reserve, where we have been collecting data for over 18 years. Participants will learn valuable field research techniques including stream/fish monitoring, marine mammal behavior/population census techniques, and habitat mapping. Data will add to a long-term database aimed at helping to manage Big Sur's wildlands. Participants will also have an opportunity to take part in independent studies focused on enhancing their interest and knowledge of ecological systems. Together we will search for answers to important ecological questions as we assess how habitats - and the wildlife populations they support - develop and evolve over time with changing climatic conditions and large-scale events such as fire, flood and drought.

The tapestry of environments found in our Big Creek Reserve study area include famed marine mammal habitats; a complex intertidal zone bridging marine/terrestrial ecosystems; and clear streams flowing from spectacular coastal mountains. Together we will: 1) conduct fishery/stream habitat investigations; 2) assess the abundance and behavior of marine mammal populations including sea otters and seals; 3) survey/map plant and animal communities found in both the rich intertidal zone and on land; and 4) learn to take detailed field notes, make maps and keep field notebooks. Additional field explorations will be scheduled as well.

We will begin our project with a 'big picture' overview of the Landels-Hill Big Creek Reserve, becoming familiar with the complex geography, geology and abundant habitat types that form our study area. Here, too, we will learn about the principle ecosystems of Big Sur, and pressing conservation issues facing the region today. We will survey and map three reaches of the Big Creek stream system, conducting a visual census of steelhead and habitat assessments. Our marine mammal investigations will take us down the coast, along Highway One, adjacent to rugged Big Sur cliffs. Using the cliffs as a vantage point, team members will scan the near shore environment to locate, identify and census sea otters, seals and sea lions in their kelp forest habitats. Our primary focus will be on the endangered Southern Sea Otter. Our plant community surveys will look at diversity and dominance within and between plant communities in riparian corridors, oak woodlands, and redwood forests.

A major component of our investigations and field studies will be hands-on surveys of the pristine Big Creek stream system that is at the heart of the region's terrestrial environment. Once abundant in California streams, sensitive fish species including steelhead and salmon are declining in the wake of a rapidly developing coastline. Today, steelhead are largely restricted to remaining pristine waterways such as those found in the Big Creek Reserve, and key questions remain: How do fish populations in pristine streams such as Big Creek compare with those in other, less protected streams? What are the natural fluctuations in population density over time? How are steelhead populations affected by natural cycles in the ecosystem such as flood, fire, and drought? Few regions provide an environment to address these questions where natural cycles can be examined free of anthropogenic activities–and the Big Creek Reserve is one of them.

To answer these and other questions, team members will use a face mask, snorkel and wetsuit to conduct visual surveys in Big Creek to estimate steelhead density, size composition and bottom substrate. We will also document stream hydrology (flow rates, temperature, stream discharge, oxygen levels), and measure the physical dimensions of the stream (width, length, depth of riffles, runs, falls, and pools). During the intertidal and/or plant community component of the project, team members will conduct surveys and establish key transects for site characterization and analysis. In our hands-on investigations we will learn transect-quadrant field study methods and characterize unique communities. While our itinerary will depend in part on ocean and weather conditions, by the end of the program each of us will gain a heightened awareness of Big Sur's fascinating ecology, and firsthand knowledge of key wildland habitats. **Please note that previous field experience is not required.** All necessary skills to conduct our marine mammal, intertidal, stream and terrestrial ecological studies will be taught on-site during the program.

III. Academic Credit

Students will receive 5 quarter credits/3.35 semester credits from Western Washington University. Our staff will be happy to explain the program in further detail to the applicant's advisor, if necessary. This field studies program gives credit in one course: ESCI 497T, Environmental Wildlands Studies: 5 quarter credits/3.35 semester credits.

Team members will be evaluated on the quality of fieldwork; discussion participation; a written analysis of field work; an oral presentation; and field notebooks.

Team members are expected to conduct themselves in a mature and responsible manner. Wildlands Studies reserves the right to require any student to withdraw from the program if their conduct is detrimental to or incompatible with the interests, safety, or welfare of any course participants. We ask all students to read the Student Program Manual before joining the project on-site.

IV. Team Logistics

Santa Cruz, in California's Monterey Bay Area, will be the meeting place. Located approximately 100 miles south of San Francisco, Santa Cruz is accessible by air (Monterey, San Jose, San Francisco, Oakland Airports).

Hiking at Big Creek can be strenuous. Moderate hiking will be required to get to our campsites, and to access the Big Creek Reserve. Slightly more strenuous hiking will be required to access the upper reaches of Big Creek. Hiking will also be used to gain an overview of the Reserve, and to look at the effects of fire on stream and marine systems. We will be camping the entire time in campsites (primarily Redwood Camp) within Big Creek. These sites are only available to researchers/students such as ourselves. In the remote Reserve, there are no laundry facilities, so participants are encouraged to plan accordingly with regard to clothes. We *may* have a chance to do a small laundry halfway through the project. Like most of Coastal California, the Reserve has a Mediterranean climate of cool wet winters and cool, often foggy, summers with warm dry conditions, located a short distance inland from the coast. Summer fog keeps the immediate coastal area moist and cool year-round. Team members should be prepared for hot dry weather as well as cool moist conditions as we will be participating in activities on the coast and inland. Temperatures in the summer can range from 65-70^{o} F near the coast to 80's inland.

V. Accommodations

Primarily camping, one short overnight backpack.

VI. Official Documents/Visa

If you are a non-U.S. citizen, you will need a current passport that does not expire until after the end of the program. Please contact your country's Consulate Office to determine if you need a TOURIST visa to enter the U.S.

VII. Language

This program is taught in English.

VIII. Pre-Program Mailings

Detailed information regarding travel/flight information, equipment/gear requirements, food costs, meeting plans, group expenses payment, medical recommendations, and academic preparations will be sent to all team members in a logistics letter emailed about 8-10 weeks before the project initiates. Between now and summer, stay in good shape and prepare for a wildlands adventure second to none!

IX. Project Leader

NICOLE L. CRANE: M.S. in Marine Science, SF State University – Moss Landing, 1991; M.A. in Science Education, UC Santa Cruz, 2003. Nicole is a senior conservation scientist with the Oceanic Society and a faculty member in the Biology Department at Cabrillo College. Her research interests lie in coral reef ecology, marine conservation and science education. Nicole also works with local communities in the Pacific and Caribbean to develop collaborative reef management plans, including marine protected areas. She teaches university courses in plant biology, marine biology, ecology, and environmental science. She has taught our Big Sur Project since 1997.

X. Project Costs

Program Fee:	$1900 plus $150 Application Fee. Program fee due May 15, 2017. Enrollment on a space-available basis after the fee due date until the program is full.
Estimated On-site expenses:	$750 per person This includes transportation and fuel, camping, field activities/permits, most food.
Money for wetsuit (if needed):	Approximately $45
Personal Spending Money:	$150 (this varies according to taste - but don't be caught short)
Estimated Airfare:	$400

Students should inquire at the financial aid office of their home campus regarding the use of their loans or grants for this course. Wildlands Studies is not responsible for non-refundable airline or other tickets or payments or any similar penalties that may be incurred as a result of any course cancellation or changes.

XI. Contact Information

Email: wildlands@wildlandsstudies.com
Phone: 831-684-9999
Fax: 831-684-9998