



# **UC Santa Cruz Fort Ord Natural Reserve 2017-2018 Annual Report**

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**Field Manager**



**UC SANTA CRUZ**



**Natural Reserve System**  
UNIVERSITY OF CALIFORNIA

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## Executive Summary

This report provides an overview of activity at UC Santa Cruz Fort Ord Natural Reserve (FONR), in Marina, California for the fiscal year 2017-2018. FONR is a 600 acre reserve that protects maritime chaparral, grassland, and oak woodland on part of the former Fort Ord army base. Reserve staff and interns monitor and maintain habitat for multiple protected species throughout the reserve. As part of the University of California Natural Reserve System, FONR provides a living laboratory and outdoor classroom for researchers, K-12 students, university students and faculty, and the greater Monterey Bay community. Research, teaching, and public service goals continued to increase this past year and FONR had the busiest year on the books thus far. FY2017-2018 saw the first complete year of the new Field Manager position, as well as the addition of a part time Steward. Over the last year, users increased by 50 percent and user days by 75 percent. The model of teaching interns who then become part-time seasonal staff, has greatly increased the ability to expand and better support research and stewardship as well as assist with classes and community groups.

The Fort Ord Natural Reserve consists primarily of maritime chaparral habitat that is home to many rare and endemic species. For most of the 20th century the land was occupied by the Fort Ord US Army Base. The 600-acre reserve now serves the community by helping to achieve regional conservation and education goals by supporting research, education, and outreach. The site was chosen as a UC Reserve due to the unique vegetation communities and the numerous sensitive and listed plant and animal species that occur throughout the reserve (including the federally endangered, state- threatened sand gilia, state-endangered seaside bird's beak, and the federally threatened Monterey spineflower).

This past year we increased internship opportunities, animal monitoring (including a new bird banding program), and long-term vegetation monitoring plots while continuing to monitor flora and fauna with faculty and undergraduate intern assistance. UC Santa Cruz undergraduate researchers initiated a long-term population study of Coast Horned Lizard, *Phrynosoma blainvillii*, a species of special concern. The reserve field manager helped organize and manage volunteer field crews to assist UCLA graduate researchers in a large-scale artificial vernal pool installation on the Bureau of Land Management Fort Ord National Monument to study the endangered California Tiger Salamander. This collaborative effort served as an example of how FONR can be used to facilitate research on adjacent protected lands. Staff assisted in conservation efforts of rare orchids on former Fort Ord lands in surrounding cities. Staff also continued to assist Army contractors with continued environmental cleanup onsite. New partnerships were formed with local non-profit organizations, university internship agencies, and educational institutions.

## Education

Instructional use at FONR is at its highest level, supporting classes that span multiple disciplines. 2017-2018 was the first year with a full time field manager and a part time steward. Reserve staff met regularly with classes to help support and develop teaching activities, interpret and identify flora and fauna, and help with student research projects. FONR is roughly one hour from the UCSC campus, minutes away from CSU Monterey Bay, and within an hour of several other higher education institutions in the greater Bay Area. Classes included a wide variety of disciplines including biology, ecology, environmental studies, earth sciences, and art from multiple institutions (Table 1).

### *Capstone Projects*

We supported multiple capstone projects from the CSUMB Environmental Studies Program. Three students used our emerging scientific bird-banding program to create an ornithology education project that brought K-12 students to the reserve and showed them the process of data collection through bird banding. Spearheaded by Rachel Perpignani, a senior at CSUMB, this program included multiple field trip opportunities for local k-12 schools. Upon graduation, Rachel was hired as a part time employee by the reserve so that she could continue the bird monitoring and outreach work.

### *Undergraduate Interns and Volunteers*

We supervised a total of 52 interns (volunteer and for course credit). Interns were involved in a wide variety of stewardship, ecology, public service, research installations, and course facilitation internships. Agencies that provided class credit for these internships include the UC Santa Cruz Environmental Studies Internship Program, CSUMB Science Internship Program, and the CSUMB Service Learning Institute. FONR interns gain valuable experience while they assist staff in facilitating research, education, and public outreach. Interns are involved in a wide variety of activities including field data collection, repair and maintenance of reserve facilities, land stewardship, rare plant surveys, invasive species control, assisting with classes, vertebrate monitoring, small mammal trapping, working with k-12 and public outreach efforts, and faculty research projects.

Interns were also able to make connections and learn from the larger conservation community through a variety of community projects. Reserve staff and 24 volunteers facilitated with the installation of a large-scale research project on Bureau of Land Management Fort Ord National Monument, where 18 artificial vernal pools were built as part of a research project studying the endangered California Tiger Salamander. This project was conducted by Brad Shaffer's lab (UCLA). Interns also worked with the Fort Ord Reuse Authority to assist with research and protections of the endangered Yadon's piperia (*Piperia yadonii*) on the former Fort Ord Base now owned by the cities of Marina, Seaside, and Monterey.

All of the undergraduates who participate in internships at FONR gain research and practical skills, connect with faculty and other students, and get real world experience that cannot be acquired in a traditional classroom.



Left, interns meet researchers and professionals at BLM Fort Ord National Monument. Right, caging endangered *Piperia yadonii*.

**Table 1. Fort Ord Natural Reserve Class Use - Fiscal Year 2017/2018**

University of California, Santa Cruz		
BIOE 117: Systematic Botany	University of California, Santa Cruz	Kathleen M Kay
BIOE 135: Plant physiology	University of California, Santa Cruz	Kate Cary
BIOE 82: Introduction to Field Research and Conservation	University of California, Santa Cruz	Sean Reilly, Kristen Heady, and Gage Dayton
BIOE 114: Herpetology	University of California, Santa Cruz	Barry Sinervo



California Ecology & Conservation (CEC)	University of California, Santa Cruz	Krikor Andonian
EART 109: Elements of Field Mapping	University of California, Santa Cruz	Neil Foley
ENVS 104: Introduction to Environmental Field Methods	University of California, Santa Cruz	Sara Baguskas
ENVS 182: Environmental Studies Internships	University of California, Santa Cruz	Joe Miller - Agency Advisor
BIOE 124: Mammalogy	University of California, Santa Cruz	Alan Shabel
BIOE 137: Molecular Ecology	University of California, Santa Cruz	Beth Shapiro
Other University of California		
Integrative Biology 157LF: Ecosystems of California	University of California, Berkeley	Paul Fine
California State University		
BIO 195: Special Topics in Wildlife Research	California State University, Monterey Bay	Jennifer Duggan and Gerick Bergsma
BIO 340: Ecology	California State University, Monterey Bay	Gerick Bergsma
BIO 360 Natural History of CA Wildlife	California State University, Monterey Bay	Jennifer Duggan
BIO 364: Mammalogy	California State University, Monterey Bay	Jennifer Duggan

CSUMB Scientific Illustration	California State University, Monterey Bay	Jennifer Keller
ENV 350: Quantitative Field Methods	California State University, Monterey Bay	Robert Burton
Scientific Illustration: Field Sketching	California State University, Monterey Bay	Andrea Dingeldein
SCIP 513: Scientific Illustration Program	California State University, Monterey Bay	Jennifer Keller
SL 95-500: Service Learning (lower and upper division)	California State University, Monterey Bay	Joe Miller - Agency Mentor
ENVS 189: Coastal Field Studies	San Jose State University	Rachel Lazzeri-Aerts
Community College		
Bio 3: General Botany	Hartnell College	Jeffery Hughey
BIO 11C: Ecology	Cabrillo Community College	Allison Gong

### Research and Monitoring

FONR was established because of the unique and rare flora and fauna that occur throughout the 600 acres. Faculty and graduate students from multiple institutions use the reserve for research. Below we provide a short overview of some of the ongoing research projects on the reserve during the past year.

#### ***Current Research - FY2017-2018***

##### Long-term research examining the ecology of flora and fauna in maritime chaparral

UC Santa Cruz faculty member Dr. Laurel Fox has been working on the ecology and conservation of maritime chaparral for nearly three decades. Her work has resulted in a variety of important publications that are providing insight into life history of rare species and factors that influence the abundance and distribution of species throughout the region. This past year she supported several undergraduate researchers who are assisting with a variety of projects examining plant demographics and the impact herbivores have on structuring communities.



**UCSC FONR interns assist Dr. Laurel Fox in field data collection.**

### [Seeing the big picture: The influence of agricultural intensification on a network of ecological networks](#)

Beth Morrison, a graduate student at Stanford University and UCSC alumna, is working at FONR. Her work focuses on the conversion of natural habitat into land for agricultural production and the role habitat conversion plays in extinction. Her project is measuring the effects of agricultural intensification on multiple species interactions by constructing plant-pollinator, plant-herbivore, plant-seed disperser, and bird- insect interaction networks along a gradient of agricultural intensification. She is comparing biodiversity, network structure, and the resistance of networks to change in the face of habitat perturbations at 12 sites along California's central coast that range from natural habitat, to structurally diverse organic polycultures, to industrial organic monocultures. Her work will help design effective agricultural management strategies for biodiversity conservation and community stability, as well as provide a comprehensive dataset of multiple interaction networks, a scarce but vital resource for understanding ecological community dynamics.

### [Spider population surveys among the habitats at UCSC Fort Ord Natural Reserve](#)

Andrew Caudillo, an undergraduate student at CSUMB, is conducting a spider survey across the reserve. He is currently analyzing habitat associations and creating a trifold pamphlet with the 10-15 most common spiders on FONR. His research is the first study to document spiders on the reserve.



### Epiphytic lichens and bird communities in oak woodlands

Dr. Gerick Bergsma (CSUMB) is studying how oaks function as an foundation species for woodland ecosystems throughout Central California. The epiphytic lichen, *Ramalina menziesii*, commonly grows on oaks, and can form dense filamentous masses that hang up to 2m from the tree branches. Because of their size and morphology, the lichens create considerable physical structure, which may create foraging and habitat structure for insectivorous birds. Furthermore, they are known to capture moisture and dust-borne nutrients from the air, thereby enriching soil moisture and nutrient levels underneath the tree. This may also affect the understory habitat and foraging opportunities for ground feeding birds. Dr. Bergsma's study is examining the relationship between lichen cover and avian abundance, biodiversity, and foraging behavior. His results will help our understanding of how epiphytic lichens affect arthropod and bird communities.



Students studying epiphytes on the reserve.

### Oak Woodland Ecological Community Analysis

Rosalinda Vizina (CSUMB) is an undergraduate working with Dr. Bergsma. Her project is focuses on how arthropod communities in Coast Live Oak trees differ with varying amounts of epiphyte cover. Trees were chosen based on the amount of lichen present; eight of the oak trees had a significant amount of lichen present, while the other eight did not. Arthropods were sampled using the beat method, sweep nets, pitfall traps, brushings, and lichen clippings. Arthropod samples were then analyzed in the lab to identify organisms to family. When comparing results from different areas on and around a tree (e.g. the brush within the drip line of the trees, the lichen, and the tree itself) they found few differences between arthropod communities with high and low lichen cover. Although these results indicate lichens do not appear to have an impact on arthropod abundance, future sampling across seasons and over a greater spatial scale are needed.

### Personality affects of foraging small rodents

Rebecca Roberts (CSUMB) is studying how personalities impact foraging patterns and risk assessment. Within natural community settings, small animals are faced with foraging decisions that influence survival. Rebecca is studying small rodents (*Peromyscus maniculatus*, *Peromyscus boylii*, *Peromyscus truei*, *Chaetodipus californicus*, and *Dipodomys heermanni*) to determine how personality influences decision-making across a gradient of predator risk. One of the decisions that these animals face is where they choose to forage and whether or not it is beneficial to perceive the risk of predation by foraging in an open area. Recent studies suggest that populations and species often exhibit behavioral syndromes, which are suites of correlated behaviors across situations. A population or species can demonstrate a behavioral syndrome with each individual showing a behavioral type (e.g. more bold or more shy). We know that vegetation offers herbivores protection from predators, but do the personalities of these small rodents have an impact on where they choose to forage? Rebecca is using a manipulative Giving-Up-Density (GUD) experiment, combined with video behavioral analysis, to measure how costs of predation alter behavior. Her hypothesis is that animals characterized as bold will forage in open areas, where there is more risk of predation.

### Investigating adaptive coloration of Monterey *Ensatina*

Dr. Sean Reilly (UCSC) is supervising undergraduates from his BIO 82 course who are conducting a study that is investigating the possibility that lighter color in some local *Ensatina escholtzii escholtzii* is the result of selection over time to match the light colored dune sand. Caitlyn Rich, Jennifer Adams, and Maya Talpai-Vasintashas are UCSC undergraduate students conducting the research under the supervision of Sean Reilly and Barry Sinervo.

### Population surveys of Coast Horned Lizard, *Phrynosoma blainvillii*

Brandon Cluff, another BIO 82 student, is working on a project that is establishing a long-term mark-recapture survey to monitor *Phrynosoma blainvillii*. He is collecting life history and habitat use information on this rare species as well as establishing a long-term monitoring program for the reserve.

### Long Term Bat Monitoring

Bethany Schulze is a CSUMB graduate student working on bats along the central coast. At Fort Ord, she is conducting year round monitoring efforts using bat acoustic data loggers. This information provides data on bat use throughout the year and is providing insight into the temporal shift in bat activity and species composition at the reserve.

### Flora and Fauna Monitoring

Joe Miller (Reserve Field Manager), staff, and undergraduate interns from both UC Santa Cruz and CSU Monterey Bay monitor 600 acre UCSC Fort Ord Natural Reserve land. These efforts accomplish critical baseline monitoring of the reserve and, importantly, engage students in a wide range of research and stewardship techniques that teach them important skillsets. Activities include photo point surveys, herpetology cover board surveys, wildlife camera surveys, pitfall trap surveys, weekly bird banding, endangered plant monitoring, and the establishment of long-term chaparral vegetation monitoring plots.

### Coastal Fog Monitoring

Dr. Daniel Fernandez (CSUMB) continues to conduct his long-term monitoring of coastal fog at two stations on the reserve. Fog is a significant source of summer water for many of the plants that occur along the central coast. His work is providing important information on how fog patterns are changing from year to year.

### *Arctostaphylos* Seed Banks and Animal Foraging

Dr. Tom Parker (SFSU) is studying a variety of abiotic and biotic factors that influence the distribution of Manzanita throughout the state. His work at Fort Ord is focused on quantifying seed banks of *Arctostaphylos pumila* and *A. tomentosa* and how density of seeds in the soil influence foraging effort of small mammals.

## Public Service

FONR had dramatic increase in public service and community outreach at FONR over the past year. Not only were overall numbers up, but we also increased the number of groups using the reserves. Groups included public schools, universities, NGOs, conservation entities, and a variety of community organizations.



Nature Detectives crew

### ***Public Service Highlights***

In addition to class visits and internships, reserve staff are dedicated to quality experiential learning opportunities for K-12 students and the Monterey Bay community in general. FY2017-2018 saw multiple opportunities for FONR to represent our university and the greater natural reserve system. Below are a few highlights:

#### **Nature Detectives Program - Marina City Schools Kindergarten and First Grade Classes**

In collaboration with CSUMB Return of the Natives (RON) program, we hosted kindergarten and first grade classes from Marina elementary schools. Staff and interns visited each classroom prior to field trips in order to meet students and provide an overview of what they might expect to see at the reserve. In-class activities included an art project that helps university staff measure nature and science knowledge before and after the trip. Classes were then brought to the reserve by bus, which is just a few minutes drive from their schools. Parents of the students are also encouraged to attend. Once at the reserve, students are led on a short hike to visit stations where undergraduates teach them about a variety of Natural History topics. Funding for busses is provided by the UCSC Reserves as public schools are not always able to pay for transportation. Kids learn about insects, mammals, reptiles, and birds from university students and reserve staff. For some of these students, this is their first exposure to a hands-on learning activity focused on science in the outdoors - their enthusiasm is infectious. Nature Detectives served approximately 500 elementary students and community members this year. This program was started in 2013 and we plan to continue the program next year. In addition to helping the public school students, this event is a great way for university students to gain valuable teaching experience.



**UCSC FONR Field Manager Joe Miller speaks to K-1st grade students from the Nature Detectives field trip.**





*Student volunteers teach the Nature Detectives about herpetology.*

### UCSC Fort Ord Natural Reserve Spring Bioblitz and eDNA Survey

On Saturday May 12, 2018, UCSC Fort Ord Natural Reserve staff hosted a Bioblitz, an event where community members are invited to the reserve in an open house setting and are guided by staff and students to observe and catalog living things using the iNaturalist smartphone application. In addition to guided hikes, UC Genomics Consortium representative hosted an eDNA survey, where citizen scientists helped collect environmental DNA soil samples while they learned from students about this emerging science. Approximately 70 community members attended. This is a way to highlight the value of the Reserve to the surrounding community, facilitate networking among students, local teachers, and the general public. The Open House program will be an annual event at the reserve.



**Left, UCSC Arboretum staff and UCANR California Naturalist program students examine coast wallflower specimens. Right, CSUMB and Cabrillo College students, identify a reptile.**



### El Sausal Middle School - Ventana Alliance Club Visit

On Friday April 13, 2018, members of the Ventana Alliance Club visited FONR for a field trip where they learned about bird banding. The club is comprised of students from El Sausal Middle School in Salinas, CA. Transportation was paid for by funds donated to UCSC Natural Reserves.

The Ventana alliance students arrived at the reserve and were greeted by field manager Joe Miller and two CSUMB Environmental Studies undergraduate capstone students, Jennifer Nguyen and Dulce Estevez. These capstone students had spent the previous semester developing an interpretive program that introduced the visitors to the reserve, bird banding in general, and basic ornithology identification techniques. On the hike to the banding station, students learned about the reserve, history of the area, and ways they can get involved in natural sciences as they enter college.

Once the students arrived at the station, UC Santa Cruz bird banding interns taught them about the process of bird data collection, bird safety, and what it is like to be an intern at the reserve. Reserve Steward Rachel Perpignani talked about her life and educational experience that led to professional career in ornithology. The visit finished with a hike into the reserve interior to learn about rare maritime chaparral habitat. The El Sausal Middle School visit to FONR exemplifies our efforts to have students learning from other students in the field, collaborations among multiple institutions, and an excellent networking space for young scientists in the Monterey Bay area.



**Left, El Sausal Middle School students learn about bird banding from Reserve Steward Rachel Perpignani. Right, CSUMB Capstone student Jennifer Nguyen works with El Sausal visitors.**

## Reserve Use

This past year represented a record use level for the reserve - supporting more individuals and groups than ever before (Appendix 1). The largest user group was undergraduate students who used the reserve for coursework and independent research. K-12 students were the next largest group. The increase in K-12 was a direct result of our targeted outreach to local schools and non-profits. Approximately 20 different NGO, community, K-12, affiliated, and governmental entities used the reserve throughout the year (Table 2).

**Table 2. NGO, governmental, k-12, and affiliated user groups.**

Ventana Wildlife Society	California Native Plant Society	Bureau of Land Management
Fort Ord Reuse Authority	California Department of Fish and Wildlife	Ventana Wilderness Alliance
UC Santa Cruz Arboretum	California Academy of Sciences	The Bird School Project
Monterey Bay Tracking Club	UC Genomics Consortium	Ecological Society of America - CSUMB SEEDS club
UCSC Office of Physical Education, Recreation, and Sports	CSUMB Return of the Natives	Alisal High School
Girl Scouts of California's Central Coast	El Sausal Middle School Ventana Alliance Club	University of California Agriculture and Natural Resources
S.A.F.E. Program (Salinas Alternative Education)	Rancho Cielo (Salinas Alternative Education)	Olson Elementary School
Warner Davis School (Salinas Alternative Education)	Los Arboles Middle School	Marina Vista Elementary School
Crumpton Elementary School	UCSC Kenneth Norris Center for Natural History	CSUMB Sciences Internship Program
CSUMB Service Learning Institute	UCSC Environmental Studies Internship Office	UC Monterey Bay Education, Science and Technology Center (MBEST)

## Appendix 1. Use data for FY17-18

**RESERVE USE DATA**  
Period from July 1, 2017 to June 30, 2018

University of California, Santa Cruz  
Fort Ord Natural Reserve

	UC Home		UC Away		CSU System		CA Com'ty. Colleges		Other CA Colleges		U.S. Colleges		Int'l Colleges		Gov't		NGOs		For-Profit Business		K-12 Schools		Others		TOTALS	
	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days	Users	Days
UNIVERSITY-LEVEL RESEARCH																										
No selection	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	3	
Faculty	0	0	1	11	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	14	
Research Assistant	3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	25	
Graduate Student	1	9	2	54	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	4	69	
Undergraduate Student	15	151	18	18	97	370	0	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	133	544	
Professional	1	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13	
Other	1	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	36	
Volunteer	0	0	3	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	39	
SUB-TOTALS	22	236	24	122	99	373	0	0	4	11	0	0	0	0	0	0	0	0	0	0	0	1	1	150	743	
UNIVERSITY-LEVEL CLASSES																										
Faculty	6	19	2	4	12	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	51	
Research Assistant	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	15	
Graduate Student	8	19	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	21	
Undergraduate Student	204	431	47	169	411	523	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	663	1131	
Other	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
SUB-TOTALS	222	485	50	175	423	551	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	696	1219	
PUBLIC SERVICE																										
Research Scientist	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
Research Assistant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	0	0	0	1	8	
Graduate Student	2	4	0	0	1	3	0	0	0	0	1	8	0	0	0	0	0	0	0	0	0	0	0	4	15	
Undergraduate Student	34	116	4	80	42	109	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	315	
K-12 Instructor	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	18	0	0	0	0	0	2	7	11	25	
K-12 Student	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	177	0	0	446	456	0	531	633	
Professional	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	12	2	8	0	0	0	0	62	62	67	83
Other	2	5	1	2	0	0	0	0	0	0	0	0	0	0	2	4	10	10	0	0	0	0	115	115	130	136
Docent	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	1	2	
Volunteer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6	6	6	
SUB-TOTALS	39	126	6	83	43	112	10	10	0	0	1	8	0	0	13	34	99	205	0	0	446	456	185	190	842	1224
TOTALS:	283	847	80	380	565	1036	10	10	4	11	1	8	0	0	13	34	99	205	0	0	446	456	187	199	1688	3186

## Appendix 2. UC Santa Cruz Advisory Committee



**UNIVERSITY OF CALIFORNIA, SANTA CRUZ**  
**2017-2018 NATURAL RESERVES ADVISORY COMMITTEE**

**CHARGE**

The committee provides oversight of on- and off-campus natural reserves of instructional and research interest. It is responsible for developing program vision and policy for the management and use of the UCSC Campus Reserve and of the four UC Natural Reserves System holdings: Año Nuevo Island Reserve, Landels-Hill Big Creek Reserve, Younger Lagoon Reserve and Fort Ord Reserve. The committee coordinates with the system-wide NRS Advisory Committee that advises on policy for all NRS reserves.

In addition to the chair (Faculty Director), membership of the committee is comprised of faculty advisors to each reserve, one faculty representative at large, one non-senate academic appointment, one staff representative, one graduate student, two undergraduate students, and ad hoc faculty members as needs arise. The Faculty Director, in consultation with the Dean and the Administrative Director of the UCSC Natural Reserves, appoints the committee. Membership terms begin September 1 unless otherwise specified.

**DURATION OF APPOINTMENTS**

Faculty Director: 5 years

Faculty Advisors: 3 years

Non-Senate Academic, Staff, and Students: 1 year

Members may be reappointed at the discretion of the Faculty Director in consultation with the Administrative Director.

Hours/Quarter: Chair/NRS Representative-20, Members-10

Reports to: Division of Physical & Biological Sciences Dean

**MEMBERSHIPS**

Faculty Director of the  
Natural Reserve System

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Younger Lagoon Reserve  
Faculty Advisor

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Año Nuevo Reserve  
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Fort Ord Reserve  
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Landels-Hill Big Creek Reserve  
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Faculty Advisor at Large

Erika Zavaleta  
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