2017–2018
ANNUAL REPORT
The CSU, Chico Research Foundation
Ecological Reserves
BCCER & BCEP
“… BCCER has been an invaluable asset in my education. I have conducted several studies at the reserves, and the reserves have served as an educational tool for myself and other students interested in the natural sciences to further foster our learning…. From the riparian habitat along the creek to the chaparral and mixed pine forest habitat within Big Chico Creek Canyon there exists a plethora of uniquely pristine ecosystems and organisms that are uniquely situated next to CSU, Chico campus”

— He-Lo Ramirez, Biology Major
Where Education Meets the Land

The Big Chico Creek Ecological Reserve and the Butte Creek Ecological Preserve are under the direction of the CSU, Chico Research Foundation. Our mission is to work to preserve critical habitat and to provide a natural area for environmental research and education.
Reflection and Opportunity

As I reflect on this past year, I am overwhelmed by the energy and engagement surrounding our ecological reserves. I intentionally spent my first year as reserves manager listening to the community to better understand our strengths, challenges, and opportunities. I have been inspired by the hundreds of people who participated in our community meetings, events, citizen science activities, and our open house this past spring. The enthusiasm for our mission to preserve critical habitats and to provide a natural area for environmental research and education is remarkable.

In this day and age, one cannot think of preserving critical habitat without considering fire. As I write this, over 1.4 million acres of land has burned in California this year. With wildfire “season” continuing to grow longer and more intense, it is imperative to innovate solutions to protect our environment and our communities.

We recently received over $350,000 in grants to support fire mitigation and habitat enhancement projects on the Big Chico Creek Ecological Reserve. These projects will help us protect the community by completing fire fuel reduction through various techniques, while providing technical training and experiences to CSU, Chico students. Our students will become land managers, agency administrators, policy makers, and environmental advocates. The experiences they receive here will impact future land management decisions within California, our country, and the world.

While we hosted over 2,100 visits by CSU, Chico students this past year, we also had over 6,500 community members attend our events and workshops, or just come out to access our beautiful lands. Over this next year, we will also be hosting community workshops on topics ranging from managing starthistle to helping private land owners access public funds.

I would like to give a special thanks to Wes Dempsey and all of you who supported the match campaign this year. The campaign was a huge success, raising over $100,000! This outpouring of support is both humbling and inspiring.

CSU, Chico provides significant resources for baseline operations, but your contributions are what allow us to continue to evolve as an environmental and educational leader, while remaining an asset to the community.

Please take time to read through this report and celebrate our many accomplishments. We could not do it without you.

See you at the Reserves,

Eli Goodsell
Ecological Reserves Manager

“Experiences on the CSU, Chico reserves have been life-changing—life-saving, actually. I definitely deal with depression, and I think that working [only] in an office, with everything I went through, I wouldn’t have survived that. Being out in nature . . . just really helped me get through:”

—Tom Mello (Physical Geography, ’18)
The Ecological Reserves are owned and operated by The CSU, Chico Research Foundation (RF). The RF is a public nonprofit corporation that is dedicated to the development and execution of activities that supplement the educational mission of CSU, Chico. The reserves have adopted an adaptive management approach to facilitate programs such as research, conservation, community outreach, education, and habitat management.

**BUTTE CREEK ECOLOGICAL PRESERVE**

The Butte Creek Ecological Preserve (BCEP) is a 93-acre site along the middle section of Butte Creek. The site was formerly used for gold, sand, and gravel mining, and is recovering from those activities. The property contains more than a mile of creek frontage, which is critical habitat and spawning grounds for the largest population of the threatened Central Valley spring-run Chinook salmon. In December 1998, the RF purchased this site with grants from the US Fish and Wildlife Service, National Fish and Wildlife Federation, CALFED, and the Wildlife Conservation Board. The goal of the Preserve is to work in conjunction with other programs toward achieving a reasonable balance among the diverse demands on the resource base of the Butte Creek watershed.

**RESERVES BACKGROUND**

The Ecological Reserves are some of the most valuable resources we have here at Chico State! We use the reserves as “home base” for my field ecology course, and bringing my students there over the course of the semester has helped them build a sense of stewardship and connection with the land that is impossible to cultivate in the classroom.”

— Professor. Mandy Banet, Biology

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**BIG CHICO CREEK ECOLOGICAL RESERVE**

The Big Chico Creek Ecological Reserve (BCCER) contains 3,950 acres of diverse canyon and ridge habitats, including 4.5 miles of Big Chico Creek. The BCCER was created with the purchase of the Simmons Ranch in 1999 and the Henning Ranch in 2001.

The BCCER ranges in elevation from 700 feet to 2,044 feet and contains a wide variety of habitats, including creek riffles and pools, riparian areas, oak woodlands, chaparral, pine forest, rock cliffs, and springs. These diverse habitats support hundreds of wildlife species, including a number of listed species and species requiring large tracts of undisturbed habitat.

**Coral-bellied Ring-necked Snake**

This secretive snake is generally 11-16 inches long and found under rocks and logs. It has a mild venom administered through rear fangs to subdue prey like worms, insects, small frogs, and lizards. The back is a gray color that blends in well with its surroundings, while it exposes its red belly to startle predators.
OUTDOOR EDUCATION

Since its inception, the ecological reserves’ education and outreach programs have offered visitors and K–12 students hands-on experiences with nature while providing real-life training experiences for Chico State students majoring in recreation, science education, biology, geography, and more.

“Being an outdoor educator for the ecological reserve taught me some of the most valuable lessons I have learned in my life. I learned patience, creativity and adaptability and these characteristics have aided me in my success. The Ecological Reserves K–12 program allows children to learn in a unique and engaging way, all while promoting safe practices in our natural world. When I look back on my time in Chico, I am most proud of the work I did for the Ecological Reserve K–12 program.”

—Paige Martin, Recreation Coordinator for the City of Lincoln

2017–2018 Outdoor Education Classroom:

• 1,416 K–12 students
• 10 Chico State students interning as teachers led modules
• 37 K–12 field trips for classes from Chico, Paradise, Oroville, charter, and home schools
• 54 in-class presentations
• 376 volunteer days
• 10 transportation scholarships (493 students) were provided to Title 1 economically disadvantaged schools
• Short film created by communications student intern Ashlyn Duran

“The Reserve has a unique way of drawing you in from the blissful melody provided by birds early in the morning to the random, one of kind encounters with its deer and bears... Doing research and working with staff at BCCER has been a refreshing experience that has not only helped me develop necessary skills for research, but also build leadership skills — both of which I can take with me anywhere I go.”

—Italia Cardenas, Geography
Sierra Newt

Most of the newts in the BCCER and surrounding area are Sierra Newts, a species that was formerly included in the California Newt species. They spend most of the year in moist areas in the forest, migrating in masses to the creek in the rainy season. The skin of a single newt contains enough neurotoxin to kill 2,500 mice.

An increase in programming and better tracking of public users has resulted in 2017-18 being our most successful year yet.
Teacher Testimonials

“All of the activities were excellent and age appropriate. The students loved looking in the water for creatures and were also very engaged in the ‘salmon migration madness game’ where there were fewer and fewer survivors.”

“The activities were all a perfect length of time, with great leaders who worked well with the students and kept them engaged. Students still talk about the things they learned and did on the trip.”

“The structure of the activity where the students become the expert on the plant and teach the next groups was awesome to watch each individual student step into the role of being a leader.”

Northern Saw-whet Owl

The BCCER is one of only two active banding stations in California for this tiny 7-inch, 4-ounce owl. Little is known about the lives of these owls, including their migration patterns. We have captured owls banded from as far away as Iowa and Montana, and one of our owls was recently recaptured in British Columbia.

Other highlights:

• “History Hike” with Dave Nopel and Marti Leicester, authors of The Humboldt Wagon Road
• “Watershed Ed-Venture” in cooperation with the Butte Environmental Council (BEC)
• “Up the Creek” Birding Tour as part of the Snow Goose Festival
• “Birds and Trees of the BCEP” hikes
• Northern Saw-whet Owl banding programs at both BCCER and BCEP
• Field trips for the California Naturalist program
• Hikes in partnership with Adventure Outings on edible plants and geology
• Information tables at Environmental Coalition Gathering, Sense of Place event for the First-Year Experience Program, March for Science, Osher Lifelong Learning Institute (OLLI) program preview
• Guided hike for the Youth Conservation Corps
• An OLLI citizen science series, in which we did an introductory hike, bird survey, butterfly survey, and tree carbon sequestration measuring
• Moth Night moth light trapping and identification with entomologist Don Miller
• Mushroom Survey
• New maps for both Reserves
• An interpretive brochure on the archaeology of the BCCER
• Revamped website for the BCCER that is more mobile device friendly
• Reached 1,000 likes on Big Chico Creek Ecological Reserves Facebook page
• Started an Instagram account at csuc_reserves
• Site visit with members of the Mechoopda Tribal Council

SPECIAL EVENTS

Our programs are run by experienced and knowledgeable staff and specialists in various fields, such as researchers, authors, historians, and community members. We received some great media attention for our programs this year.

Our open house was a success, with over 240 people coming to learn more about the research and programs that happen on the Reserves, and participate in hikes and demonstrations.
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“The faculty (and students) involved were very informative and it was great having so many disciplines represented. BCCER’s setting was a great location for becoming orientated with the rugged terrain, diversity, and processes tied to the Big Chico Creek Watershed. Catching the Saw-whet Owls was unexpected and a great nightcap for the first day.”

—Watershed class participant

RESEARCH

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The Reserves continue to be a rich environment for student, faculty, and outside research. Our 2017–18 projects included:

- Clara Buchholtz completed her thesis on gall-inducing Tamalia aphids on manzanitas.
- Installation of monitors of bat activity in our bat condo that will determine preferred conditions and detect species through recording of vocalizations, by Shahroukh Mistry, Trevor Moore, and others.
- Ongoing meadow restoration research by Professor Don Hankins, geology.
- Ongoing research by Professor Don Miller, biology, with graduate student thesis work by Badri Ghimire and Stephanie Parker on gall-inducing Tamalia aphids on mazanita species.
- Yearly butterfly counts led by Professor Don Miller, biology.
- Research for thesis by graduate student Hannah Weinberger on post-fire regeneration of our Tuscan Loop area that was burned in September 2017.
- Citizen science experiences through collecting data on oaks, butterflies, moths, owls, and birds.
- Re-established water quality monitoring on Big Chico Creek with the Stream Team.
- Undergraduate student research on oak leaf diversity, water quality of springs, mountain lion urine as an attractant/deterrent to wildlife, riverine assessment, distribution of native and non-native turtles, and more...
MANAGEMENT ACTIVITIES

VOLUNTEERS
The Ecological Reserves could not fulfill their mission without the hard work of our dedicated volunteers. Volunteers help us in all aspects of operations, from field work and to assisting with the K–12 programs to leading public hikes. The majority of volunteer hours are spent laboring in the field improving wildlife habitat, removing invasive species, reducing fuel loads, and general maintenance of these pristine pieces of land. Over 4,000 volunteer hours were logged this past year at the BCCER and BCEP. Outstanding contributors included: Paul Maslin, (over 2,200 hours), Bruce Gallaway, (over 400 hours), and Colin Stokes (over 400 hours). Estimated value of volunteer hours is over $90,000.

Bidwell Presbyterian Church rallied a group of volunteers and materials for a BCEP makeover on its “Choose Chico” day. Work included graveling our parking lot, a donation of decomposed granite and work on our native plant garden, and sanding and staining our new benches made from large oaks that had fallen in last winter’s storms. The BCEP parking lot received a further upgrade with a new fence by Liam Murphy for his Eagle Scout badge.

PRESCRIBED FIRE
Fire is a powerful force that has been present on the California landscape for thousands of years and is an essential element in the healthy functioning of the Reserves’ ecosystems. Decades of fire suppression have altered natural fire regimes and have led to unnaturally high fuel accumulations. The reintroduction of prescribed fire to the landscape is one of the most important restoration strategies employed on the Reserves. We were able to accomplish numerous pile burns to reduce fuel loads in strategic locations to reduce hazard fuels such as yellow starthistle, and to improve deer browse. In partnership with Cal Fire, the ecological reserves staff completed environmental review on 6 units comprising 450 acres of potential hazardous fuels reduction and habitat improvements.

In spring 2018, we hosted a Prescribed Fire Training Exchange (TREX), a cooperative effort with numerous partners, including the Fire Learning Network, Terra Fuego, and the US Forest Service. Reserves staff trained along with others on this intensive week of trainings and participated on prescribed burns. This training will allow us to be more independent and flexible in the timing and extent of our prescribed burns. A small 40-acre wildfire that occurred in September 2017 is being studied for further and more localized knowledge of the land’s response to fire.

HUNT PROGRAM
The BCCER offers unique hunting opportunities for fall deer and spring turkey. The 2017–2018 hunting seasons brought 28 hunters for turkey and 54 deer hunters to the BCCER over 37 hunt days. In partnership with the California Deer Association (CDA) and the Rocky Mountain Elk Foundation (RMEF), BCCER staff continued to improve habitat for all wildlife including deer and turkey. Both the CDA and RMEF provided grants for conservation efforts on the BCCER.

“My experience at BCCER was one I won’t forget. There I studied many topics but ecology spoke to me personally. I studied and researched the impacts of fire on native and invasive species on the reserve and grew to understand the significance of biodiversity in an ecosystem.”

— Carlee Agar
Columbian Black-tailed Deer

The BCCER is winter range for the East Tehama herd, the largest migratory deer herd in California. During the early 1960s, the deer herd population was more than 100,000 deer. As of 2001, the herd was reduced to 22,100 deer. Overgrowth of shrubs due to fire suppression impedes travel and reduces forage. Prescribed burns and fuels reduction on the BCCER meet our dual objectives of fire prevention and habitat improvement.

FIELD OPERATIONS

The Ecological Reserves were established with the purpose of conserving habitat. Consistent, recurring, and ecologically responsible property management is fundamental to habitat conservation. The Ecological Reserves staff work diligently to foster conditions that sustain and preserve native plant and animal communities and maintain biodiversity in two of Butte County’s most critical watersheds.

- In partnership with Cal Fire, the Ecological Reserve Staff completed environmental review on 6 units comprising 450 acres of potential hazardous fuels reduction and habitat improvements.
- Staff hosted and participated in CALTREX a prescribed fire training and certification program.
- Completed an extensive shaded fuel break from Highway 32 and 14 Mile House Road to the Old Chico Canyon Road along the creek.
- Thinned 430 acres of brush to encourage wildlife forage and reduce fuel.
- Treated 105 acres with pile burns, where soil was enhanced and carbon was sequestered through the creation of charcoal.
- Improved and maintained over 30 miles of trails and 10 miles of road, thus improving access for restoration, education, research, and public access.
- Maintained over 4 miles of trails for K-12 and CSU, Chico outdoor classes and public use at BCEP.
- Continued removal of noxious invasive species including: yellow starthistle, klamath weed, milk thistle, and scotch broom.
- Seeded over 100 pile-burned plots with mixtures of on-site collected native grass and forb seeds.
- Planted native Purple Needlegrass plugs over 100 acres.
- Maintained 550 gallons of rainwater storage capacity in remote barrels for prescribed burns.
- Maintained infrastructure, vehicles, and equipment in support of operations.
This past year, we were able to raise over $100,000 through a match campaign based on a generous donation from Professor Emeritus, Wes Dempsey. All 8,000+ visitors and 100,000+ animals who passed through the CSU, Chico Ecological Reserves this past year are grateful for your support. Community giving allows us to develop innovative programming around outdoor education, habitat restoration, and research. Please contact us today to find out how you can support the important work we do at the Reserves.

$0 - $99
Joan Palmer
Sean Murphy
Kathryn Fritz
Chad Alderson
Wendy Pine
Drs. Bill and Marilyn Niepoth
Signe Miller
Mr. and Mrs. Tom J. Reilly
Mr. and Mrs. David Coffee
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Joan Walters
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Sandrine Matiasek
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Carol Stanley-Hall
David Lerch
Gladys McIntosh
Thomas Lambert

$40,000+
Shamus Terry
Colin Stokes*
Dr. Bruce Gallaway*
Dr. and Mrs. Wesley H. Dempsey
Anonymous Donor
Dr. Paul Maslin*
*In-kind

“I care deeply about the vision for perpetuating this remarkable wilderness next to the city. It’s important to educate young people to carry on the work of our conservation heroes.”
—Wes Dempsey, Emeritus Professor of Biology

Photo by Jennifer Jewell
The Reserves continue to be a rich environment for student, faculty, and outside research. Our 2017–18 projects included:

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Black Bear
As omnivores, black bears will eat whatever seems edible. Their diet is 95% plants, changing with the season. Some of their favorites on the Reserves are manzanita and toyon berries, acorns, and the historic olives and figs around the headquarters.
STAY TUNED FOR EXCITING ANNOUNCEMENTS IN 2019...