

# College of Natural Resources & Sciences



Photos taken from @humboldtstate Instagram. clockwise from top: (1) HSU SAFE Crew during week long fire training. #club #firecrew @humboldtstatesafe. (2) The Coral Sea is living its best life. Sunken treasure, smugglers, marine science ... it's a boat with history. (3) HSU Geology field trip to Trinidad State Beach. Had a great time photographing the intro geology class for the department. It was interesting to observe the class because it reminded me of when I first came out to this beach with my intro class. It was cool to watch as the students came up with their own interpretations of how certain outcrops were formed and placed along the beach.

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# MESSAGE FROM THE DEANS



DR. DALE R. OLIVER

*The faculty and the students are returning to campus after a long winter break, eager to get back to the business of questioning, observing, analyzing, synthesizing, and presenting about all things STEM (Science, Technology, Engineering, and Mathematics). We are eager to see classrooms, laboratories, and field trips filled with students engaged in learning.*

*We hope you enjoy reading about some of our program, faculty, and student highlights from the fall semester. We are just skimming the surface of the good work going on in CNRS. We will bring you more stories in our Spring 2019 issue (April).*

*Best wishes on a productive and peaceful 2019.*

*- Dale and Rick*



DR. RICK ZECHMAN

## UPCOMING EVENTS

### GEOLOGY COLLOQUIUM

Mondays at 5:00pm  
Founders Hall Rm. 025

### WILDLIFE LECTURE SERIES

Thursdays at 4:00pm  
Wildlife & Fisheries Rm. 258

### PRESIDENTIAL SEARCH STUDENT PRE-FORUM

January 31, 2019 2:00-5:00pm  
University Center 225 - Kate Buchanan Room (KBR)

### MATHEMATICS COLLOQUIUM

Thursdays at 4:00pm  
Behavioral & Social Sci Rm. 204

### BIOLOGICAL SCIENCES SEMINAR

Fridays at 4:00pm  
Sci B Rm. 133

### PRESIDENTIAL SEARCH OPEN FORUM

February 4, 2019 1:00pm - 3:00pm  
University Center 225 - Kate Buchanan Room (KBR)

### SUSTAINABLE FUTURES SERIES

Thursdays at 5:30pm  
Siemens Hall Rm. 108

### SCIENCE ON TAP!

First Wednesday of the month at 6:00pm  
Blondies Food & Drink, Arcata

### VISITING PHYSICS PROFESSOR: DEREK KIMBALL

March 11, 2019 and 4:00pm  
Science A Rm. 475

# Rangeland Resources & Wildland Soils Program celebrates a successful 50th year

HSU has the only comprehensive Rangeland Resources degree program, serving a state whose land cover is between 40 to 60% percent rangeland vegetation cover, including oak woodlands, annual grasslands, sagebrush steppe, and coastal prairie.



This October the Rangeland Resources & Wildland Soils program hosted their 50th anniversary program. The multi-day event included Cal-Pac meetings and a technical session, faculty and agency speakers, a banquet, and a field trip to the Mattole/Petrolia area the next day.



The featured speaker at the 50th Anniversary celebration was Bill Lauenroth (range class of 1968) who had a successful professorial career with Colorado State University and the University of Wyoming before transferring to Yale University where his spouse Ingrid "Indy" Burke serves as the first female Dean of the School of Forestry. Other alumni speakers included Jim Redd (Four Star Realty, Eureka), Kenneth Fulgham (HSU Professor Emeritus), High Barrett (Sage Advice Consulting), Dawn Coultrap (USFS), Jennifer Wheeler (BLM), and Dustin Detweiler (NRCS).



## Susan Marshall named Range Manager of the Year

Awarded by California Pacific Section of the Society for Range Management on Oct. 12 during our HSU 50th anniversary celebration.



*Contributions to help support student travel and co-curricular activities may be made at <https://alumni.humboldt.edu/giving/rrows>*

# Our college is grateful for these recently established student opportunities

## **Schmidbauer Family Forestry Foundation Scholarship**

*The purpose of this fund is to provide scholarship support to students who graduated from Humboldt or Trinity County High School and are actively enrolled in an option within the Forestry and Wildland Resources Department Programs.*

## **The Tuttle Climate Graduate Fund**

*Will provide support for student work related to environmental climate policy or science, with preference for forests, range and wildlands, but other topics as justified. The intent is to provide partial support for graduate thesis in the area of climate policy or science, with emphasis on the land sector (forests, wildlands, range) up to \$15,000 per year; up to 2 years per awardee.*

## **The Tuttle Climate Conference Fund**

*The purpose is to strengthen student understanding of climate and environmental policy at the international level, primarily focused on aspects of climate change mitigation and adaptation by providing financial assistance to students to attend conferences.*

## **Carin Kaltschmidt Computer Science Scholarship**

*Will provide scholarship support for computer science majors with an interest in pursuing a career in web design, gaming, film, or journalism.*

If you're interested in giving to any of these opportunities or would like to create your own, contact our Philanthropy Advisor Maria Forrest at 707.826.5038

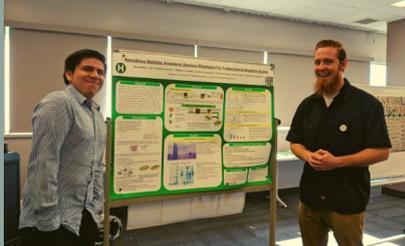
# 2018/19 James F. Welsh Biology Scholarship recipients announced



Amanda Agosto Ramos (right) is a first-generation college senior majoring in Cellular Molecular Biology and maintains a 4.0 GPA. She is planning on attending graduate school working on resolving the hindrances that limit the improvement of plant engineering. Ultimately, she would like to obtain a PhD researching the development of specialized metabolites in plants and to support students who are underrepresented in the sciences.

Clare O'Connell (left) is a senior majoring in Zoology and maintains a 3.97 GPA. She is planning on attending graduate school researching the biogeography influencing the gene flow in the grey fox and the genetic divergences across the landscape as depicted by Canine Distemper. Her goal is to go to school for Zoology to speak for those that cannot speak for themselves through research or through educating others.

# CHEMISTRY



**Dr. Matthew Hurst** has research interests in two areas: (1) the development of analytical methods for the determination of trace metals in aquatic systems, and (2) the study of metal and nutrient cycling in natural waters with a particular interest in toxicity and/or bioavailability of elemental species. Currently, electrochemistry is being used to determine iron bioavailability in the Pacific Ocean. Other projects in Humboldt Bay and the Arcata Marsh are ongoing.

**Dr. Chris Harmon** studies the degradation of environmental pollutants over representative mineral dust surfaces using the Diffuse Reflectance Infrared Fourier Transform Spectroscopy technique. He has created a novel apparatus that simulates specific chemical and physical processes in the Earth's atmosphere and allows the chemical reactions of interest to be studied in real-time using in situ kinetics.

**Dr. Josh Smith** is spending this academic year carrying out synthetic and computational research on triplet state aromatic compounds at Ångströmlaboratoriet, Uppsala University, Sweden. He received a Fulbright Scholar award and an American Scandinavian Foundation award to support this work.

**Dr. Claire Till** is studying the distributions of metals in the surface of the Pacific Ocean with the international program GEOTRACES and a 3-year award from the National Science Foundation. The focus of Till's research is investigating the micronutrient metals that are essential for phytoplankton, yet are so exceptionally low in concentration in many regions of the ocean that phytoplankton growth is limited by them.

**Dr. Kjirsten Wayman** is currently characterizing the floral scent composition of western North American Trillium species, using gas chromatography - mass spectrometry, to provide insights into their taxonomy, hybridization, and pollination biology. Her study focuses on wild populations of all Trillium species found mainly in California, Oregon, and Washington.

**Dr. Kimberly White** is investigating the decomposition of skeletal muscle proteins for use as "molecular clocks" in assessing the postmortem interval (PMI), or time since death. A key question asked during the investigation of wrongful death is, "When did the death occur?" Despite the importance of this question, quantitative methods for determining PMI have lagged behind other advances in the field of forensic science.

**Dr. Robert Zoellner's** research is focused on the calculation of the structures and properties of interesting molecules through the lens of research-quality computer programs.

Undergraduate research students working with Dr. Zoellner use these programs to study many different types of molecules, to determine such things as the ability of the molecules to store energy or how to change how a molecule absorbs light (i.e., how to change the color of a molecule).

**Dr. Jenny Cappuccio's** Lab research involves protein biochemistry at the interface. Students are conducting research on a light active membrane bound protein from cyanobacteria using protein lipid nanoparticles to facilitate these studies. Second, we are investigating the binding of natural and modified surface layer proteins to heavy metals and chitin waste products for bioremediation.

## Department Announcements

In collaboration with St. Joseph's Hospital in Eureka, Humboldt State University established pre-pharmacy "Save-a-Seat" program agreements with the School of Pharmacy at Oregon State University and the School of Pharmacy at Washington State University. The program allows students to apply during the spring of their freshman year to the "Save-a-Seat" program at each pharmacy school and that guarantees them a position in pharmacy school provided that they and meet course pre-requisites and maintain GPA requirements. Information sessions were held with students from Arcata, Eureka, Fortuna, and McKinleyville high schools. High school students also visited classes at HSU.

The HSU Chemistry Club, "The Free Radicals" has won National recognition for the fourth year in a row for as an honored student chapter and green chemistry chapter from the American Chemical Society.

# CNRS Students Recognized for Outstanding Undergraduate Distinction

CSU-LSAMP PROUD is the annual online publication of the California State University Louis Stokes Alliance for Minority Participation. This publication features outstanding students from throughout our Alliance, who are being recognized in our new Program Recognizing Outstanding Undergraduate Distinction (PROUD).

## Samuel DeGrey

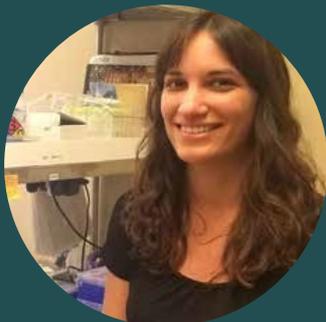
BIOLOGICAL SCIENCES  
Outstanding Academic,  
Research in STEM, &  
Service/Leadership



Samuel works on research with Dr. Michael Camann, where he sorts through the collections at the end of each entomology class. His ex-periences working for Dr. Camann gave him leverage and allowed him to teach himself about entomology. He has worked on several research projects in aquatic insect ecology in Dr. Camman's lab, and later with Dr. Alison O'Dowd. In the summer of 2017, he was accepted into the American Museum of Natural History Biology REU program in New York City, where he researched on the development of the mosquito mouthparts, as well as scale structure and evolution in primitive insects. He presented the results of his research at the Entomological Society of America's national meeting last fall, with an oral talk on scale structure, and a poster on mosquito development. In addition to his research, he also ran the HSU Entomology club, where he gave talks on ice crawlers and jumping bristletails. He has worked as a statistics course teaching assistant since 2016. Samuel is planning to attend graduate school in entomology at University of Wisconsin-Madison. He will be studying the genetics, ecology, and physiology of cold adaptation in *Drosophila suzukii*, which is a major introduced pest of many fruits.

## Dixie Blumenshine

CELL & MOLECULAR BIOLOGY  
Outstanding Academic,  
Research in STEM, &  
Service/Leadership



Dixie is a senior cell & molecular biology major with a chemistry minor graduating in fall 2018. She has maintained a high GPA, excellence in research, and serves as a leader and mentor for others. She has served two years as president for the Indigenous Natural Resource Science and Engineering Program Club. She is a peer tutor in multiple STEM subjects at HSU's Learning Center. Her ongoing research with Dr. John Steele involves the development of a cellular model of Huntington's Disease in induced pluripotent stem cell-derived neurons, that will simultaneously investigate the effects of huntingtin protein accumulation. Her central hypothesis is that overexpression of hunting-tin protein, with the eventual inhibition of cells' autophagy pathway, will lead to a disease-like state. She is currently using a novel human cell model that will allow assessment of how excess huntingtin is managed or cleared by cells, and precisely how cell death occurs upon buildup of huntingtin protein. Overex-pression of endogenous HTT gene products is being induced using a stably integrated inducible CRISPR transcriptional activator (dCas9-VP64 fusion) tools, allowing for transient and reversible transcriptional activation of the HTT gene, and enabling the study of the response of human induced pluripotent stem cell-derived neurons following overexpression of HTT gene to reveal how abnormal expression contributes to cell death. Dixie has presented this research at four meetings, from local to international level. She is hoping to pursue a career as a physician and research scientist.

## Carla Quintero

PHYSICS & ASTRONOMY  
Outstanding Academic,  
Research in STEM, &  
Service/Leadership



Carla is a physics & astronomy student, who has distinguished herself as a leader, researcher and scholar. She is a proud daughter of immigrants, who overcame obstacles to give their children better opportunities than the ones they had. She has been interested in astronomy since a young age and was fortunate to have a family to support her.

# CNRS Students Recognized for Outstanding Undergraduate Distinction, continued

*Carla Quintero, continued*

As a first-generation student, she wishes to honor their sacrifices and help create a supportive environment to encourage underrepresented students to feel welcomed and encouraged to stay in STEM. Carla works with Dr. Paola Rodríguez Hidalgo's research group on quasars, which are incredibly luminous objects that reside in the core of most massive galaxies but, are so distant to us, they resemble stars. Her work involves finding and studying extremely high velocity outflows in quasar spectra and their relation to X-ray absorption. Carla has presented her research at the 2017 American Physical Society Far West conference, several local HSU IdeaFests and has attended the Conference for Undergraduate Women in Physics. She maintains a high standard of academic excellence in her field. Carla is the president of the Society of Women in Math and Sciences and the Physics & Astronomy clubs. Carla has helped organize the community building workshop for women in science, "You Belong Here!", and she has contributed in the development of "Crafternoon" and "Codernoon", activities where future female scientists build skills and community. Carla plans to attend graduate school and continue her studies in physics and astronomy.

## Alyssa Suarez

ENVIRONMENTAL SCIENCE  
& MANAGEMENT

Outstanding Academic,  
Research in STEM, &  
Service/Leadership



Alyssa completed her degree in environmental science & management: environmental planning & policy with a minor in geospatial analysis in spring of 2018. Alyssa has excelled at research during her time at HSU. She has participated in two summer research experiences for undergraduates.

Recently, as part of the NSF Rroulou'sik Summer REU, she reported on the assessment of sea level rise on Humboldt Bay waterfront infrastructure and locations significant to the fishing community. She also has international research experience with the NAPIRE Program, Organization for Tropical Studies where she spent a summer investigating habitat effect on bird plumage in 49 species. Alyssa also maintains an excellent GPA while contributing significantly to the Indian Natural Resources, Science and Engineering Program (INRSEP) at Humboldt State as a Peer Mentor and leader. She has presented her research at several national conferences, including AISES and SACNAS. Alyssa had a summer position as a GIS biotechnician for the Humboldt Bay National Wildlife Refuge, where she will assist with a sea level rise vulnerability study. She plans on attending graduate school to further her environmental policy and planning background. She is also interested in law school, where she would like to study environmental law, with a focus on Native American or Water Law.

## Wildlife Student Team wins International Wildlife Quiz Bowl

This October, in Cleveland, Ohio, undergraduate students Samuel Vassallo, Devon Michels, Alex Lewis, Evan Miller, Marcie Mathieu beat out 22 other teams from research universities and teaching colleges around North America. They were supported by their coach, M.S. student Andria Townsend and faculty adviser, Dan Barton.



# Facility Spotlight

## HSU Herbarium

The HSU Herbarium just received their third award of a four-year grant to support the Consortium of California Herbaria's research in phenological change in biodiversity hotspots in California.

Upon entering the HSU Herbarium, located on the 2nd floor of Science D, you'll see a room with back-to-back metal cabinets and small walkways between. Hidden inside these cabinets are approximately 100,000 vascular plant specimens, largely from northwestern California. The herbarium collection can be referenced in a database through the Consortium of California Herbaria (CCH), which is supported by 36 institutions and holds over 2.2 million vascular plant records. The latest grant money awarded to the HSU Herbarium will allow Robin Bencie, Herbarium Manager, and her crew of student workers and volunteers to take pictures of 30,000 target taxa and upload them to existing database records. Researchers in San Luis Obispo will use the photos, along with the date and location collected, to determine if there are trends in flowering, fruiting, and leaf budding over the last century. Target taxa include records prior to 1940, endemic and threatened plants, and plants from diverse families.

In addition to the maintenance and enhancement of the CCH database, other groups benefit from the herbarium, including HSU students and staff, and community members. This semester, Robin gave introductory tours to students in Plant Taxonomy, Biogeography, and Klamath Connection. The collections are used for student projects, including a recent student study on the antimicrobial assessment of fern species. The herbarium assisted the students in identifying the correct species and other "look alike" species, as well as the location and time of year specimens were gathered.



In another student project, Art students were assisted in identifying invasive species, specifically to use for isolating pigments for an art show. The show will be displayed on campus in February 2019. Robin welcomes student volunteers that want to assist in curating, and thanks to the grant, she will be able to reimburse them for some of their time.

In addition to supporting HSU students and faculty, the facility supports community members that would like to compare samples they have collected to confirm the species, to review locations where specimens were found so they know where to search, or review specimens so they know what they're looking for.

# Give to CNRS

We can help you find the best way to make your gift, and perhaps find a gift option that you might not have otherwise thought was possible.

[Give Now](#)

If you'd like to setup a gift through an estate plan, please contact our Philanthropy Advisor Maria Forrest  
707.826.5038

## Happy Retirement, Mary Comella!

All of the faculty and staff of the Departments of Chemistry & Physics will miss Mary immensely when she retires. She was the backbone of our department and made our professional lives easier in far too many ways to list here. Mary was been the go-to person for everyone in the department, whether that person had just arrived or had been here for many years. She always knew the answer to the questions we had and was always willing to answer them even when she had answered them many times before! More importantly, she was always there for help. Her dedication to the department and to our students was far above and beyond remarkable!

Mary, thank you for everything you did for the department and our students. We know you will enjoy your well-deserved retirement!

## CNRS Dean's Office

VISIT US IN FORESTRY RM. 101



**WE'RE HERE  
TO HELP!**

Dale Oliver, Dean  
Rick Zechman, Associate Dean  
Anthony Baker, Budget Analyst  
Maria Forrest, Philanthropy Advisor  
Cortney Koors, Admin Coordinator  
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