# UCLA La Kretz Center for California Conservation Science



## The year in review

In 2019 the La Kretz Center made major strides toward our long-standing goal of catalyzing and conducting genomic research supporting conservation. Our Los Angeles Basin project, headed by La Kretz postdoc Joscha Beninde, is assembling and sequencing thousands of samples from 17 species of plants and animals that will enhance and protect LA's urban biodiversity. At the other end of the geographical spectrum, we are leading a major effort to produce the first comprehensive map of genomic resilience to climate change and human-mediated stressors across the state. As of July, our efforts are now funded by the state legislature. With support from a \$10 million dollar grant and input from across the UC and partner agencies, our goal is to identify California's most climate-resilient landscapes for conservation actions. Our postdocs, students and faculty are all contributing to these efforts, and together we're making a difference for California conservation.

Over the past year, we also doubled down on our efforts to integrate the missions of the La Kretz Field Station and the Stunt Ranch Reserve. We have always viewed the two as complimentary— the Field Station had housing and meeting space, and Stunt has pristine land for research. The 30 minute drive between the two was not ideal, but together, they worked. As we explore options to rebuild the Field Station after the Woolsey fire, we are increasingly hopeful that we can do so at Stunt, eliminating the commute and enhancing both enterprises.

To learn more, read on or give me a ring. I love to talk about our people and programs.

Brad Shaffer, Director

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The La Kretz Center is made possible by a generous endowment by UCLA alumnus and philanthropist Morton La Kretz

#### Director's Initiative



# California Conservation Genomics Project

The La Kretz Center will lead a \$10 million California conservation project. This state-funded initiative will deliver scientific knowledge to battle biodiversity loss due to climate change.

"This project has the potential to revolutionize how we manage our land," said Brad Shaffer, UCLA distinguished professor of ecology and evolutionary biology and Director of UCLA's La Kretz Center for California Conservation Science. "We will apply state-of-the-art techniques to California's most pressing conservation problems and provide government agencies with the best scientific data to make informed decisions as California's climate continues to undergo rapid change."

The initiative is intended to provide state officials with current scientific data and analyses they can use to make decisions about conserving the state's species and their habitats, better protect natural resources and create strategic plans to ensure that California's people, places and wildlife are resilient to climate change now and in the coming decades.

We are pleased to see California leading the way with the nation's first statewide conservation genomics project." Harris Lewin, Distinguished Professor of Evolution and Ecology at UC Davis

### The multi-campus project will be led by UCLA scientists

The California Conservation Genomics Project involves conservation biologists, geneticists, ecologists and climate scientists from all 10 University of California campuses, the Lawrence Berkeley National Laboratory and Los Alamos National Laboratory, the UC Natural Reserve System and California State University campuses, as well as officials from state and federal regulatory agencies and nongovernment agencies.

The project will be based in the La Kretz Center. Among the UCLA faculty who will play key leadership roles are La Kretz director Brad Shaffer and Victoria Sork, a distinguished professor of ecology and evolutionary biology, and Dean of Life Sciences in the UCLA College (see a brief report on Victoria's latest work on page 3).

## Genomics informs conservation actions

Genomics, the science at the heart of the project, involves analyzing the genetic material of animals and plants. Researchers from across the UC system will study the DNA of endangered and threatened animals and plants to help preserve species — for example, to better understand the genes that help species adapt to temperature change and to learn which animals and plants, based on their genetics, are more vulnerable to climate change.

"The California Conservation Genomics Project will bring together many of the state's leading experts in genomics and conservation science to work in a coordinated manner to provide decision makers with sound science in their efforts to address the rapidly accelerating species declines resulting from habitat destruction and climate change," said Harris Lewin, a distinguished professor of evolution and ecology at UC Davis. "This effort fits seamlessly into the goals of other large scale initiatives ... and we are pleased to see California leading the way with the nation's first statewide conservation genomics project." Read more on UCLA News



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#### **Postdoc Research**



# One of California's iconic tree species offers lessons for conservation

<u>New research</u> led by La Kretz postdoc Luke Browne and UCLA evolutionary biologist Victoria Sork examines whether the trees being replanted in the wake of California's fires will be able to survive a climate that is continuing to warm.

The study, which was recently published in the Proceedings of the National Academy of Sciences, focuses on California's iconic valley oak. The research is among the first to demonstrate the potential of using genomics to inform conservation strategies — essentially giving species an evolutionary boost. The study showed that planting trees that are genetically better suited to higher temperatures makes them more likely to survive and grow to maturity.

"When we think about managing ecosystems under rapidly changing climates, we have to realize trees need to be able to survive past 50 years," Sork said.

The paper also discovered something surprising: The valley oak, an essential component of many ecosystems in California, is already poorly adapted to its environment — even considering climate conditions in 2019.

"They actually seem to grow better in cooler climates than they're in right now," said Browne. "They might grow better if climates were more like they were 21,000 years ago, during the last ice age."

In the fields of conservation and land management, it is a common assumption that plants and animals are adapted to their local micro-environments — that's how evolution and natural selection generally work. However, there can also be mismatches, and particularly for long-lived species like trees, time lags as organisms evolve to "catch up" with rapid environmental change. This new research highlights the importance of understanding such lags and mismatches, and challenges the fundamental idea that replanting and other human-assisted migration should always use local genetic stocks for those important efforts.

Read more on UCLA Newsroom

### Landscape genetics study will help to protect Los Angeles biodiversity

La Kretz postdoc Joscha Beninde uses landscape genetics to learn how plant and animal species survive and persist in Los Angeles. His research focuses on how the city's built infrastructure— the concrete freeways, high rise buildings and urban sprawl — affect the health of multiple species of spiders, insects, slugs, lizards and plants.

To quantify the effects of urban infrastructure on biodiversity, Joscha looks at the genetic relatedness of individuals and populations within the same species across different areas of the city. Partners like the National Park Service, the U.S. Geological Survey and the Natural History Museum of Los Angeles County have all contributed to his collection, and he has also spent many days in places like Laguna Beach, Malibu State Beach, and Compton, collecting samples himself.

Joscha's project will be important for protecting L.A. biodiversity as the climate changes and the region grows. L.A. is home to more than 4,000 unique native plant and animal species, qualifying the region as one of California's most important biodiversity hotspots. Conservation policies implemented in L.A. will serve as a model for cities worldwide.

#### Fellowships & Grants



# 2019 fellowship awarded to Rachel Blakey

In collaboration with the National Park Service, La Kretz postdoc Rachel Blakey is investigating how large wildfires influence the movement and behavior of California's top carnivore: the mountain lion. Rachel will leverage 17 years' worth of GPS tracking data from the Santa Monica Mountains mountain lion population and work with JPL NASA scientists to characterize landscape structure before and after fire. Her goal is to help improve conservation and management of large carnivores that are faced with the dual pressures of urbanization and increases in the frequency and intensity of wildfire.

Rachel's previous work on the influence of fire regime and vegetation structure on top (avian) predators of Northern California has helped inform best conservation practices for the USDA Forest Service.

Training and funding graduate students and postdoctoral researchers is our investment in the future of California conservation

### Justin Valliere accepts faculty position at CSU Dominguez Hills

As a La Kretz postdoc, Justin Valliere explored how nitrogen deposition resulting from urban Los Angeles influences native plant diversity, invasion of nonnative species, and post-fire recovery of coastal sage scrub in the Santa Monica Mountains of southern California. He also evaluated methods for restoring native plant and soil microbial communities of invaded and disturbed ecosystems that will be resistant to drought and re-invasion.

After a year abroad as a research fellow at the University of Western Australia, Justin has just accepted a position as an assistant professor at CSU Dominguez Hills. Congratulations! We can't wait to have Justin back in the Southern California conservation arena.

# La Kretz Center awards \$32,000 to UCLA grad students for conservation research

Our seven 2019-20 awardees, working on projects ranging from the effectiveness of Marine Protected Areas to the impact of urbanization on biodiversity, each contribute to our goal of supporting and promoting the best possible student research that helps conserve California biodiversity.

<u>Robert Cooper</u>: Managing pond hydroperiod to reverse invasive tiger salamander introgression

<u>Vivien Enriquez</u>: Effects of urbanization on the diet, gut microbiome and prevalence of antibiotic resistance in the dark-eyed junco (*Junco hyemalis*)

Zack Gold: Utilizing environmental DNA to understand its efficacy to detect rare fish and the effectiveness of Marine Protected Areas

<u>Benjamin Ha</u>: "Fishing" out the exomes of the federally endangered tidewater gobies to identify potential genes under selection

<u>Maura Palacios</u>: Environmental DNA as a tool for assessing microbial diversity & ecological impacts by contaminants at The Bowtie Parcel Brownfield site in Southern California

<u>Samantha Snowden</u>: Characterizing interactions between mountain yellow-legged frog and unarmored threespine stickleback fish to assess the potential for their coexistence

<u>Regina Zweng</u>: Does eutrophication first drive "basification" then acidification in California estuaries?

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### **Field Station**



# Reimagining the Field Station by rebuilding at UCLA Stunt Ranch Reserve

The La Kretz Field Station provided long term housing for field researchers, and dormitory space for classes and workshops. The Woolsey fire changed all that.

As we move past the devastation of the Woolsey fire, our future goal is to consolidate and coordinate research and teaching activities between the La Kretz Center and the Stunt Ranch Reserve. Our new annex building, which survived the fire (see sidebar, at right), provides housing and research space that we jointly manage with the National Park Service. However, the opportunity to rebuild our primary housing facility at Stunt, roughly 15 miles to the east, is incredibly appealing.

The La Kretz Center and Stunt Ranch Reserve are natural partners, bringing together the scientific resources and collaborations that have been the hallmark of La Kretz with the land-based opportunities that Stunt uniquely presents for research and teaching. Rebuilding at Stunt is a natural continuation of our long-standing goal of aligning the joint missions of the La Kretz Center and Stunt Ranch Reserve. By providing on-site housing at Stunt, we will encourage even more of UC's amazing academic and conservation partners to work in the Santa Monica Mountains, providing the scientific research needed to protect LA's wildland back yard. Housing will also allow more university classes, from all UC campuses and other universities, to spend time studying, conducting research in, and exploring the mountains that are so critical to our ecological health.

As this report goes to press, we are completing the first phase of a feasibility analysis of rebuilding at the UC Natural Reserve System Stunt Ranch Santa Monica Mountains Reserve. In the coming year, we hope to launch this ambitious rebuilding effort.

You know what they say, about lemons and lemonade...

### La Kretz Center supports NPS museum collection and curation in the aftermath of the Woolsey fire

Our new annex building at the Field Station, which miraculously emerged intact from the Woolsey Fire, is the temporary home of the archaeology collections rescued from the wreckage of the National Park Service (NPS) museum in Rocky Oaks.

Two NPS archaeology volunteers are living in the annex building, where they will spend three months sifting through artifacts and cataloging the collection.

In addition to the in-residence archeologists, wildlife ecologists from the NPS and UCLA continue to use the necropsy lab, built as part of the new construction, to analyze wildlife mortalities as they occur in the Santa Monica Mountains.

In the coming year, our goal is to help complete the post-fire cleanup of the La Kretz Field Station, and brainstorm with the National Park Service on the future of the site. Meanwhile, our annex building continues to enable research in the mountains.



#### **Stunt Ranch Reserve**



# Climate effects on local amphibian populations

Gary Bucciarelli is the director of research at the Stunt Ranch Reserve. Gary's own research is based in the Santa Monica Mountains and Cold Creek watershed that runs through the Reserve. In a recent collaboration between Stunt, UCLA, and the La Kretz Center, along with local government entities, NGOs, land trusts, and other university partners Gary determined how local amphibian populations have been impacted by recent record-setting drought and warmer air temperatures over the last decade and how these populations may be negatively affected by future extreme climatic events. This work was recently published and can be read here. In the coming months, Gary will continue to collaborate with the NPS to optimize a long-term management plan for amphibians in the Santa Monicas.

Established as a reserve site of the UC Natural Reserve System in 1995, <u>Stunt</u> <u>Ranch Reserve</u> has been partnering with the La Kretz Center since 2015.

Southern California is a biodiversity hotspot and ground zero for climate change. This poses extreme challenges for researchers and land managers who work to understand and protect resources and biodiversity. In my role at Stunt Ranch Reserve, I am constantly awed by the passion, creativity, and results of our visiting scientists, educational programs, and outreach that help make California more sustainable. I highlight some of this work in the following sections, but truthfully, this is only a sample of all the incredible efforts taking place at Stunt. As a research space, the Reserve has fostered mentorship programs for graduate, undergraduate, and high school students that promote handson, place-based learning to understand the importance of declining, threatened, or endangered animals and plants and to develop conservation solutions for these species. Stunt Ranch has also promoted conservation collaborations and interactive workshops between the UCLA La Kretz Center, National Park Service, US Geological Survey, and California Dept. of Fish and Wildlife, and numerous local entities working in the Santa Monica Mountains. And, last year our partnership with the Cold Creek Docents brought more than 3,000 students from Los Angeles area schools to learn in the outdoors. Partnerships like these are critical to the mission of Stunt and the UC Natural Reserve System. -Gary Bucciarelli, Research Director

# CSUN researchers at Stunt investigate the fear effects of predators on their prey

CSUN professor Tim Karels and graduate student Carson Keller completed a study investigating fear effects of predators on woodrats (*Neotoma macrotis*). Fear effects of predators on their prey are the result of antipredator defenses to the perception of risk. The concurrent behavioral and physiological effects of increased perceived risk were measured experimentally by exposing woodrats to the odor of bobcat urine. Behavioral responses were measured using "giving up densities" in artificial food patches and physiological responses were measured via fecal glucocorticoid metabolite levels. The CSUN researchers found that woodrats exhibited an acute behavioral and stress hormone response when first exposed to predator odor, but no measurable response in behavior, body condition, or stress hormone level to continuous risk exposure. They suggest that the lack of woodrat response to chronic stressors is due to the species' short lifespan and non-cyclic populations. The role of fear in the wild is seldom studied, and this work provides a clearer picture of how fear affects predator-prey relationships.

CSUN also brought their Wildlife Ecology and Management class (BIOL428) to Stunt to conduct a study of avian nest predation. They used artificial nests provisioned with quail and clay eggs to test the frequently cited hypothesis that edge habitat negatively effects songbird nest success. They found that 100 out of 110 artificial nests were raided by predators over a two-day period—a lot of potential predation. However, there was no significant difference between edge and non-edge habitats. Evidence from the clay eggs as well as camera traps show that avian predators (e.g. scrub jays) were the most important predator followed by mammalian predators (woodrats).

# Competition in the floral neighborhood

Lea Richardson is a visiting researcher conducting multi-year experiments at Stunt. She is currently working to complete her PhD at Northwestern University in collaboration with the Chicago Botanic Garden. Here's how Lea describes her project and its significance: "To better understand how competition between coflowering species both in time and space influences individual fitness in terms of biomass and fecundity, I've conducted a common garden experiment in 2019 and 2020 at Stunt Ranch utilizing four annual plant species that are all native to the site. Competition between and within species can affect plant growth, and competition for pollination can affect individual reproductive success, but few studies have incorporated experimental manipulations of diversity and density of the floral neighborhood with detailed observations of flowering phenology in order to understand the relationship between these potential drivers of variation in plant fitness. Data from this study will be utilized in a chapter in my dissertation and in a future publication."

# Climate responses of native plant species

In Mediterranean ecosystems across the globe, including southern CA, it is important to understand how extreme drought and heatwave events impact the resilience and recovery of plant species with different life strategies as climates change. In Southern California's Mediterranean woodlands, observed recent dieback of native woody vegetation has been attributed to these extremes in water availability and heat. At the Stunt Ranch Reserve, UCLA researcher Sol Cooperdock and professor Ulli Seibt are testing the climate responses of four native plant species in flow-through monitoring chambers that have been installed to continuously collect data on water and atmospheric gases and other environmental variables for individual plant branches across seasonal and annual timescales. These data will provide real time information about how droughtadapted plant species respond to extremes in climate which can then be used to understand how these and similar plants may survive as climates continue to change and drought and heatwaves become even more extreme.

### **Research at Stunt Ranch**

### Identifying drivers for the decline of the endangered California tiger salamander

Santa Barbara County populations of the endangered California tiger salamander exhibit severely reduced levels of genetic diversity, high levels of genetic isolation, reduced dispersal, and reduced annual recruitment. To examine potential causes of decline, La Kretz postdoc Erin Toffelmier first compared egg and larval survival of Santa Barbara County populations to that of healthy, unimpacted populations from the UC Merced Vernal Pool and Grassland Preserve. Over a period of eight months, she monitored survival of eggs and the resulting larvae in aquatic mesocosms established under common garden conditions at UCLA's Stunt Ranch Reserve. Her results demonstrated that survival from egg to metamorphosis was significantly lower in Santa Barbara County populations, suggesting a potential driver of poor recruitment. Santa Barbara County individuals that survived to metamorphosis were also smaller, on average. Because size at metamorphosis has been tied to lifetime reproductive success in this species, successive years of fewer and lower quality recruits may contribute to demographic decline. Based on these results, Erin is now developing new experiments to examine whether genetic inbreeding is finally catching up with these isolated, endangered populations. If so, then she will help lead a genetic rescue program, with captive breeding and release into the wild, to help to bolster genetic variation in these inbred populations.

### **Public Outreach**



# Conservation Genomics Workshop hosted by Calamigos Guest Ranch

The 7<sup>th</sup> annual La Kretz Conservation Genomics Workshop featured a fabulous cast of UCLA faculty and postdocs - with guest lecturers from UC Berkeley and Michigan State University - who led an animated group of 20 graduate students in the use of cuttingedge genomics to inform and improve conservation biology.

With the Field Station out of commission after the Woolsey Fire, our

neighbors at Calamigos Ranch came to the rescue, offering us housing and lecture space for the entire 5-day workshop. We literally could not have done it without them, and the generosity and good will of Calamigos will never be forgotten. Our students and instructors raved about the facilities, and all of us at the workshop want to send our sincerest thanks to the Calamigos team!

*Our annual workshop provides an informal training environment for motivated graduate students to explore how conservation problems can be addressed with modern genomic data* 

### Bruin Naturalists Club

The Bruin Naturalists Club completed their third annual Bioblitz on May 25, 2019 at UCLA's Stunt Ranch Reserve. This was the first Spring Bioblitz conducted by the BNC, which was held in lieu of the previously planned Fall 2018 Bioblitz that was cancelled due to heavy smoke from the Woolsey Fire. This group of 15 UCLA undergraduates, graduate students, and affiliates collected 422 iNaturalist observations, documenting 166 species of plants, fungi, reptiles, insects and birds from the reserve. This is about 40 more species than were identified in their previous Fall Bioblitzes, and probably reflects the greater biological activity in the spring. Spring rains leading up the event no doubt led to the abundance of blooming plants, and the group identified 115 plant species, a BNC record.

View the species list and images on iNaturalist.org



# California on Fire

At the 10th La Kretz Annual Lecture, three preeminent ecologists offered their perspectives on the impacts of wildfire on California conservation.

Featuring Carla D'Antonio from UC Santa Barbara, Jon Keeley from US Geological Survey, and Seth Riley from the National Park Service, the event was moderated by Victoria Sork, UCLA Dean of Life Sciences. It's hard to imagine a more timely topic, or a better team of scientists, than our panel. And if there was a single message from the lecture, it was that fire is part of our lives in Southern California, and we need to learn to live with it, especially at the urban-wildland interface.

Plants, animals and people all suffer from wildfires, especially huge ones like the Woolsey fire. But the resilience of our southern California ecosystems was also a theme of our speakers—many plants respond relatively quickly, and animal populations can and do rebound, especially if we can minimize fragmentation and allow healthy populations to return.

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- Benson, John F., Peter J. Mahoney, T. Winston Vickers, Jeff A. Sikich, Paul Beier, Seth P. D. Riley, Holly B. Ernest, Walter M. Boyce. 2020. <u>Conserving</u> <u>ecological roles of top predators in isolated mountains</u>. Ecological Applications 30(1)e02029. DOI:10.1002/eap.2029
- Benson, John F., Jeff A. Sikich, Seth P.D. Riley. 2020. <u>Survival and</u> <u>competing mortality risks of mountain lions in a major metropolitan area</u>. Biological Conservation 241:108294. DOI:10.1016/j.biocon.2019.108294
- Blakey, R., R. Siegel, E. Webb, C. Dillingham, M. Johnson and D. Kesler. 2020. <u>Multi-scale habitat selection by Northern Goshawks</u> (*Accipiter* <u>gentilis</u>) in a fire-prone forest. Biological Conservation 241 (2020) 108348 DOI:10.1016/j.biocon.2019.108348
- Browne, Luke, Jessica W. Wright, Sorel Fitz-Gibbon, Paul F. Gugger, Victoria L. Sork. 2019<u>. Adaptational lag to temperature in valley oak</u> (*Quercus lobata*) can be mitigated by genome-informed assisted gene flow. Proceedings of the National Academy of Sciences Dec 2019, 116 (50) 25179-25185; DOI:10.1073/pnas.1908771116
- Chock, R.Y., Grether, G.F. and Shier, D.M. (2019) <u>Cache pilfering in a granivore guild: Implications for reintroduction management</u>. Jour. Wild. Mgmt., 83: 1607-1616. DOI:10.1002/jwmg.21736
- Gallego-Garcia, N., G. Forero-Medina, M. Vargas-Ramirez, S. Caballero, and H. B. Shaffer. 2019. <u>Landscape genomic signatures indicate reduced</u> gene flow and forest-associated adaptive divergence in an endangered <u>neotropical turtle</u>. Molecular Ecology 28:2757–2771.
- Lambert, M. R., J. M. McKenzie, R. M. Screen, A. G. Clause, B. J. Johnson, G. G. Mount, H. B. Shaffer, and G. B. Pauly. 2019. <u>Experimental removal</u> of introduced slider turtles offers new insight into competition with a <u>native, threatened turtle</u>. PeerJ 7:e7444. DOI:10.7717/peerj.7444
- McCartney-Melstad, E., M. Gidiş, and H. B. Shaffer. 2019. <u>An empirical pipeline for choosing the optimal clustering threshold in RADseq studies.</u> Molecular Ecology Resources 19:1195-1204. DOI:10.1111/1755-0998.13029
- Pezner, Ariel K., Alexandria L. Pivovaroff, Wu Sun, M. Rasoul Sharifi, Philip W. Rundel, and Ulrike Seibt. <u>Plant functional traits predict the drought</u> <u>response of native California plant species.</u> International Journal of Plant Sciences 181, no. 2 (February 2020): 256-265. DOI:10.1086/706451
- Pivovaroff, Alexandria L., Nathan Emery, M. Rasoul Sharifi, Marti Witter, Jon E. Keeley and Philip W. Rundel. 2019. <u>The effect of ecophysiological</u> <u>traits on live fuel moisture content</u>. Fire 2019, 2(2), 28. DOI:10.3390/fire2020028
- Valliere, Justin M., Evelin B. Escobedo, Gary M. Bucciarelli, M. Rasoul Sharifi and Philip W. Rundel. 2019. <u>Invasive annuals respond more</u> <u>negatively to drought than native species.</u> New Phytologist(2019) DOI:10.1111/nph.15865
- Wielstra, B., E. McCartney-Melstad, J. W. Arntzen, R. K. Butlin and H. B. Shaffer. 2019. <u>Phylogenomics of the adaptive radiation of *Triturus* newts supports gradual ecological niche expansion towards an incrementally <u>aquatic lifestyle</u>. Molecular Phylogenetics and Evolution 133: 120-127. DOI:10.1016/j.ympev.2018.12.032
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### **Selected Publications**

### Highlighted paper

Lambert et al (2019) focuses on one of the great problems facing conservation globally-invasive species and their impact on threatened native fauna. The red-eared slider is the most commonly kept and traded turtle on Earth, and unwanted pets are often released into the wild by wellmeaning owners. Sliders are native to the Central US, but can now be found across the globe. In California, they are presumed to complete for food and basking space with western pond turtles, our only native turtle and a species in decline across the state. But the extent to which sliders are causing problems for pond turtles has never been scientifically established.

In a massive project that removed hundreds of invasive red-eared sliders from the UC Davis Arboretum waterway, Brad Shaffer, Greg Pauly, and a group of former undergraduates decided to quantify how western pond turtles fared before and after slider removal.

The results of the study, <u>published in the</u> <u>journal PeerJ</u>, showed that western pond turtles gained weight and changed their basking habits when released from competition after sliders were removed, confirming for the first time the negative impacts of sliders on wild pond turtles.

Another great aspect of this study? It was conceived and initially carried out as an undergraduate class project.

Read more on UC Berkeley News

### **Contact Us**

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# CALLA LA KRETZ CENTER

The La Kretz Center, a research unit of the UCLA Institute of Environment and Sustainability, is jointly administered by UCLA College, Division of Life Sciences and the IoES. Our partners

We are affiliated with a diverse network of UCLA faculty, postdocs and students, and we work closely with the U.S. National Park Service, the Museum of Natural History of Los Angeles County, the Orange County Natural Communities Coalition, The Nature Conservancy, the US Geological Survey, the US Fish and Wildlife Service, the California Department of Fish and Wildlife, the US Bureau of Land Management and the Mountains Restoration Trust to protect and restore California's biodiversity resources.

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