The Aggie Brickyard

assembling the blocks of ecology at UC Davis

SPRING FORTH

Sea Turtle, photo by Erin Satterthwaite

✦ COVER: *Yosemite Falls roars thanks to May snowmelt — something that has been all too rare in California over the last 5 years. Photo by* ***Shannon Skalos****.*

LETTER FROM THE EDITORS

From left: John Mola, Matt Williamson, Ryan Peek, Madeline Gottlieb

Summer beckons! Thanks for reading Volume II of The aGGiE Brickyard!

Another quarter has come and gone, and we enter the summer chaos of field work, analysis, writing, and catching up on all that reading you planned on doing during the quarter. Or maybe none of those things. Hopefully it will at least provide a change of pace from the academic quarter that seems to speed past. For this issue we wanted to provide some different viewpoints on peer reviews, along with the usual interesting pieces on field research, community activities, and some alumni perspectives.

Since reviews and reviewing journal manuscripts are a key piece of the professional and academic responsibility we all (should) share, it seemed important to think about how the review system works (or doesn't), what we should expect as grad students, post-docs, and potentially as editors. We received some very thoughtful insight from our own GGE Chair, Dr. Ted Grosholz, as well as Dr. Mary Cadenasso about the review process and some tips for navigating the responsibility and time commitment that reviews can require.

We've also gotten some great art and photography in this issue, as well as our first ecology crossword, courtesy of Allie Weill! Please enjoy this issue (and your summer) and we look forward to hearing your feedback or as future contributors. We hope The Aggie Brickyard can continue to serve as a conduit among students and faculty allowing us to bridge knowledge gaps and leverage the diversity of expertise we have here at UC Davis.

Your Aggie Brickyard Editors

Why The Aggie Brickyard?

Bernard Forscher invokes the brickyard metaphor in his classic essay "Chaos in the Brickyard" (Science, 1963, Vol. 142, No. 3590, p339) to illustrate the dangers of becoming focused simply on producing bricks rather than on building edifices. As graduate students, we are trained to become specialized in whatever narrow area of expertise we have chosen for ourselves. We continue to discover new facts and, in the process, become excellent brickmakers. Yet, to truly understand the complexity of ecological systems we must do more than produce facts, we must integrate them into a structure. In a graduate group that includes soil chemists, shark biologists, resource economists, social scientists, and everything in-between there is little doubt that we can produce some of the finest bricks. Our challenge remains to create buildings that are both more beautiful and durable than the sum of the bricks on which they rest.

CHAIR-ISHED REFLECTIONS

A Teditorial

photo by Rob Blenk

"It is important for younger scientists to get involved in the review process." - Ted Grosholz, GGE Chair

Hi folks, once again, here are some of my idiosyncratic thoughts in response to questions posed by the thoughtful staff of the Brickyard. In this issue about reviews, my answers are my own and based on my biased and limited views of these questions. My experiences are the result of good and bad experiences on grant review panels, my work as an Associate Editor for several journals and as a reviewer for many others, and, of course, as someone who has had his papers and grants soundly bounced.

What is wrong with the peer review system?

The peer review process is pretty ingrained and I don't see it changing any time soon. However, it's like Churchill's view of democracy: "the worst form of government, except for all others". There are certainly ways to improve it and I provide an idea or two below. My first observation and one I see frequently is that well-known scientists get less critical reviews than newer scientists. Reviewers will state that some aspect of the study is lacking or not described well, but because the famous investigator has published using this method or approach, he or she is more likely to be trusted as having done it correctly. Also, senior investigators are often allowed to 'generalize' their results more than younger investigators, based on the perceived stature or experience of the investigator.

There is also a considerable amount of careerism in the review process, especially when reviewing the work related to the reviewer's own area. Certainly if the reviewer disagrees with the author's conclusions because the reviewer holds a different view, this is more likely to lead to rejection. Alternatively, the reviewer may view the work as supporting his or her own research agenda and give it a more favorable review than it deserved. Grant reviews by investigators that are closer to the field are often more critical. Hopefully this isn't based on perceived competition for funds, though it may be, but it is often due to that reviewer knowing well the limitations of certain approaches.

What can be done to fix it?

For journals, science is moving toward greater reliance on online and open source journals with hopefully some new review models, although this is not happening as fast as many of us would like. There are few things that might help the process along. In the field of ecology, there is no tradition for 'double-blind' reviews as there is in a field like economics. I think this would go a long way to reduce the 'senior scientist softball' review. Also, I would like to see conflict of interest in some cases applied to the field of review in the same way it is applied to the institution. Of course you need people familiar with the field to properly review it, I would hope to see more oversight by grant panel directors or journal editorial staff with respect to professional conflicts over turf.

What is the role of reviewing for a developing scientist?

It is important for younger scientists to get involved in the review process for both manuscripts and grants, although grant reviews are likely to come later. Opportunities for reviewing either can happen through many

CHAIR-ISHED REFLECTIONS

avenues. You are most likely to receive a request to review something because someone has forwarded your name if you haven't published much. Take advantage of that offer and follow through on the review. Your major professor might ask you to 'ghost' review a manuscript or a grant for him or her. So you would take the first stab at it and write a detailed review, which your professor might then take and add/subtract and submit the review. Alternatively, your major professor or other senior colleague might ask you to co-review a manuscript. For manuscripts, it is good practice to see how manuscripts evolve from submission to publication, what the bar is for acceptance in a particular journal and to learn how to make the conclusions from your own manuscripts as an broadly applicable as possible. For grants, it really helps to see other proposals and to see how well the investigator fulfilled the requirements of the grant application (or not) and to see the level of detail needed to explain both the motivation for the research as well as the work proposed.

As GGE Chair, what do current students need to know about reviews and reviewing?

A few things to consider about receiving reviews. First, they differ between types of journals. At second tier journals, the reviews often focus on minor issues more than the more substantive ones you thought were critical. Reviews at higher end journals are more likely to focus on the big picture, but you may be rejected because the results of your study aren't sufficiently general and of interest to scientists beyond your study system or organisms. Second, reviews can be overly critical for newer authors (see my point about softball reviews for well known scientists). So develop a thick skin early and don't take a tough review personally. Also realize that everyone, yes everyone (even that famous professor down the hallway) has had papers rejected. I have seen students especially finishing ones trying to publish their first paper and suffer a real setback if their first paper gets rejected. So if your manuscript gets rejected, stand up, dust yourself off and reformat it for another journal. It's a big world out there.

The decision about which journal to send your manuscript should be based on several criteria. Determine how quickly you need to have it published (upcoming postdoc applications) and how fast a particular journal is in its review process. Try to shoot as high as you can on the journal hierarchy based on your results and conclusions, but talk it over with your professor and others that have more experience with this. Don't just send it to Science or Nature because you can (these can be returned to you in the same day, which is deflating). Think about the type of journal and how you want to be viewed in the future (more ecological, physiological, applied, etc.). Where you publish actually goes a long way towards defining your research area and focus. Don't publish in just one journal, but try to broaden the base of journals to which you submit your manuscripts.

Here are some thoughts about being a new reviewer. First, make sure to be familiar with both the focus of the journal you are reviewing for (what area it accepts papers) and what the bar is for acceptance (how general/ novel the results need to be). Second, try to make an effort to fix up a manuscript even if you decide to 'reject' it from that publication. A famous ecologist told me he really tries to improve every paper he agrees to review since it will likely end up published somewhere.. He feels obliged to do this for the sake of the field as well as the next journal it may be submitted to. Third and most importantly, don't be harsh or personal. Provide guidance that you would want to receive and don't be condescending or vaguely insulting. Be authoritative and insightful and avoid vague guidelines. If something has been done incorrectly, don't just say it's wrong, but explain how that omission or incorrect analysis could alter the results.

Dr. Ted Grosholz

FACULTY Q & A

Reviewing the work of colleagues

Mary L. Cadenasso

Reviewing the work of colleagues is one of the most important service tasks we do as members of the scientific community. Though we frequently think about peer review within the context of journal publications, peer review of all types is a central process throughout our training and careers. In graduate school we critique each other's presentations and writing in class and lab group, and as professionals we vet manuscripts submitted for publication in journals, evaluate the "transformative-ness" of research proposals seeking funding, and consider the contributions of colleagues that are up for tenure or promotion. Careful review of our colleagues' work improves the communication of science and its relevancy, and also provides an opportunity for us to learn from, and be inspired by, each other's work. My opinions about the peer review system and the role of reviewers have been informed by participation in the system as both author and reviewer and also as an editorial board member for 3 journals.

It is difficult to provide an opinion on how much time should be dedicated to reviewing the work of colleagues. To be a full member of the scientific community means participating as a reviewer in some way. Because peer review is crucial to the process of science, we engage with it continually and that engagement can span from an informal conversation in the lab to more formal opportunities to provide written critiques. Each takes a different amount of time. I think an appropriate "rule of thumb" is to provide 2-3 reviews to journals for every paper submitted. Assuming each submitted manuscript is reviewed by 2-3 colleagues, this balances the benefits and burdens of peer review. How much time to spend reviewing a manuscript often comes down to how familiar the reviewer is with the literature in the topic area and the quality of the writing in the manuscript. The goal of the review is twofold – assist the author in a revision and assist the editor in evaluating the soundness and novelty of the research. To achieve these goals comments need to be supported with specific examples from the text and that demands a careful read. We are trained to be critical but critical does not always mean negative. Positive feedback is important as well and specific examples to support positive comments are helpful for the editor as they evaluate why the work is compelling and exciting to the scientific community.

Though the ultimate decision resides with the editor, reviewers are extremely valued in the system and the editor generally bases their decision and request for revisions on reviewer comments. Authors may sometimes see reviewers as barriers to publication but feedback is almost always useful and improves the clarity of the paper. Peer review offers an opportunity to be intellectually generous and to push our science forward. It's not a perfect system, however. Done inappropriately or with bias it can result in keeping new ideas or perspectives from gaining traction in the field. Bias can take many forms – gender, career stage, perceived expertise or prominence. Everyone has biases and the review process assists with fairness by diluting biases held by any single reviewer. Through the peer review system we collectively create norms of communication, expectations for the rigor of the science, and the boundaries of our discipline.

UNSOLICITED ADVICE

WITH MIKAELA HUNTZINGER AND RICK KARBAN

Screwing up? You may be onto something…

Before grad school, being a successful student often meant memorizing concepts from a textbook. The rude but awesome shock of grad school is that that's no longer the point. Now, the point is to create the concepts that other people will have to memorize.

Great, so how do you do that? You have to try out a lot of ideas and then pick the best ones. Thinking is useful; just don't sit around waiting for the perfect idea to fall into your head. Work with the imperfect ideas. That's how they get better.

Here are some tips:

1. **Develop a "bias toward action."** Don't contemplate; get out there and get your hands dirty. Even when your organisms are dormant, you can still have a bias toward action – do analyses, prepare questions and methods for your next field season, and write (at least your methods and results). Don't do what you are doing right now. Act instead.

2. **Take risks.** Your bias toward action means you will take a lot of chances doing things that will fail. It's unintuitive, but that's what you want. Ideas that succeed come from a bunch that failed.

3. **Find the right colleagues.** Surround yourself with people who will celebrate every time you take a risk, not just when the risk pays off with a strong result. Especially find these people if your major professor is not one of them.

The point in grad school is to develop a mindset that allows for new, meaningful ideas. Have a bias toward action and take risks. Most of all, surround yourself with people who are excited to do the same and are supportive of you.

RESEARCH SPOTLIGHT


photo by Scott Burgess

Diversity of both grazers and habitats is key for healthy ecosystems

Matt Whalen

In order to maintain healthy ecosystems, we need to consider how environments change in relation to the organisms living in those environments. My colleagues and I recently published a paper (*Whalen, M.A., K.M. Aquilino & J.J. Stachowicz, J.J. 2016. Grazer diversity interacts with biogenic habitat heterogeneity to accelerate intertidal algal succession. Ecology*) showing how the varieties of both habitats and animals interact to speed the recovery of seaweeds on a rocky shore. Habitat and animal diversity were important on their own, but having a range of habitats was essential to promoting recovery of seaweeds when an important grazing animal species was removed from the community. Thus, a mix of habitats for organisms to utilize may provide a buffer against the loss of species. Maybe variety really is the spice of life.

Understanding the causes and consequences of biodiversity is a major motivation for ecologists, and these causes and effects may be related in important ways. The aspects of an environment that allow diverse communities to develop may also help explain how biodiversity influences essential processes in ecosystems, such as the ability of communities to recover after being disturbed. In our study, recovery meant that seaweeds grew back quickly after we removed them from small areas.

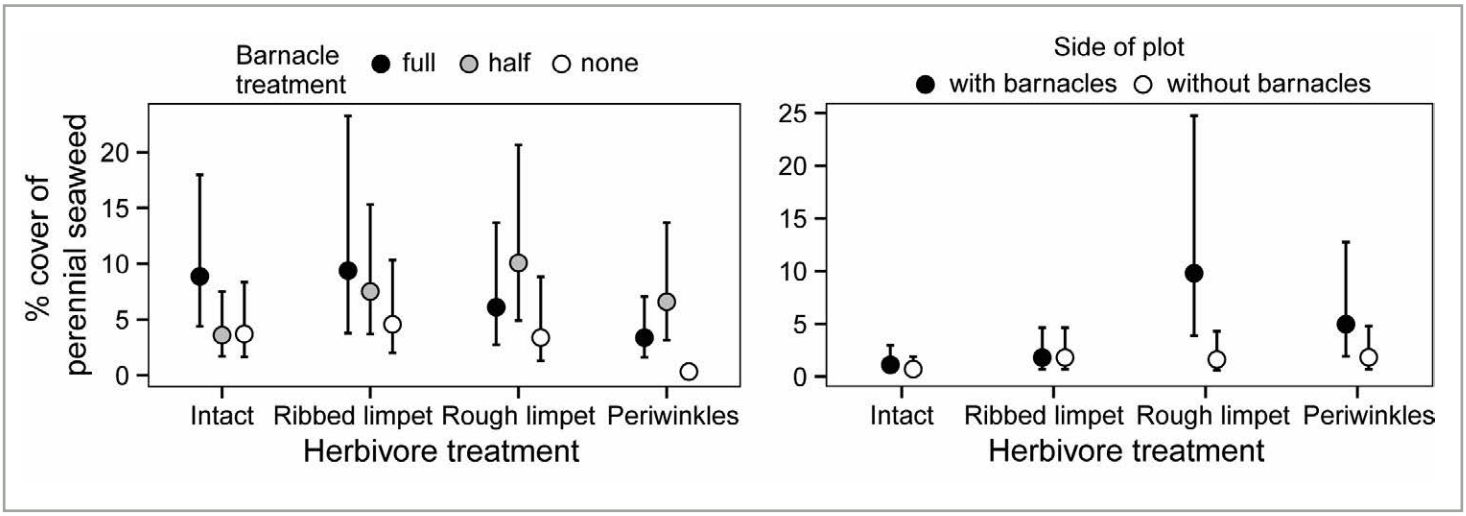
The stage for our study was a vertical rock wall high up in the intertidal zone at Bodega Marine Reserve. This location features a wide variety of life in very small areas, and much of this life is slow-moving or does not move at all. These aspects, along with steep environmental gradients where land becomes sea, have made rocky shores ideal systems for conducting experiments in the rough and tumble of nature for many decades.

Our cast of characters included stalwart barnacles, several varieties of snails (periwinkles and limpets), and a mélange of green and red seaweeds. These creatures interact with one another in a number of ways: seaweeds and barnacles compete for space on rocks, snails eat seaweeds, barnacles protect small seaweeds from being eaten by snails (they can't reach between the barnacles), limpets can bulldoze young barnacles from rocks, and tiny periwinkles live inside dead barnacle shells. Given all of these interactions, it can be difficult to predict what will happen when we change something in the system, but this is exactly what excites me about ecology.

Here's how we designed our experiment: we manipulated the cover of barnacles and the number of species of snails after removing seaweeds from small areas on the shore, and we tracked the recovery of seaweeds over the course of one year. We first set up areas in which we 1) left barnacles completely intact, 2) removed all barnacles, or 3) removed barnacles from only one half of the area. This last "half barnacle" treatment we considered to be more diverse because it contained two distinct habitat types. For every habitat type we then manipulated the number of snail species that were present: an intact snail community with periwinkles and two types of limpets, and three communities each with only one type of these snails (we removed the other snail types).

The figure (below) summarizes the results for the seaweeds that grow slowly and tend to stay on the shore for long periods of time, so-called "perennial" seaweeds. The panel on the left shows the final percent cover of perennial seaweed in each barnacle and herbivore treatment, while the panel on the right shows cover of perennial seaweeds on each side of the areas in the half barnacle treatment. When the ribbed limpet was present, seaweeds recovered fastest in areas completely covered with barnacles likely because barnacles provided predation refuge from the ribbed limpet, which is the largest of the snails and a habitat generalist. However, when the ribbed limpet was removed (the rough limpet and periwinkle treatments) seaweeds recovered fastest in areas in which both barnacles and bare rock habitats were present. This happened because of the characteristics of the other snails that were present. The rough limpet tends to avoid barnacle areas (its shell actually grows to fit the shape of the rock surface!) so seaweeds were able to recover on the side with barnacles where it did not graze (see photograph). Tiny periwinkles, on the other hand, hang out near barnacles, but seaweeds recover faster there, too, because the barnacle-free side became covered with weedy seaweeds that choke out the perennials.

The results of our experiment were complex and not easy to predict ahead of time based on our natural history knowledge, even though we worked in a relatively small and simple ecosystem. For me, this is much like changing your look when you only have a few articles of clothing at your disposal. A typical suit can look very different if you add a cowboy hat or a bolo tie. What if you threw some spandex into the mix? Chaos?



GGE Abroad: Adventures in Indonesia

Jordan A. Hollarsmith & Christine Sur

After over 30 hours of airplanes and international terminals, we finally arrived in the crowded, smoggy, loud, and utterly beautiful city of Makassar, on the island of Sulawesi in eastern Indonesia. Known as a hotspot of biodiversity, Indonesia is home to more different species than almost any other place on the planet. The land is lush jungle and highly active volcanos; the ocean is full of coral reefs teeming with aquatic life.

However, Indonesian biodiversity is currently at extreme risk. A lucrative export sector for coal, palm oil, rubber, and other plantation crops is driving extensive deforestation that fragments habitat and destabilizes land. Add this to a burgeoning population – almost 250 million at last count – and you get at the core of much of Indonesia's environmental struggles. Mitigating such a complex convergence of threats requires high-quality science and local expertise and investment. Enter Professor Susan Williams of the Bodega Marine Lab and her collaborators, Australians from Mars Symbioscience and Indonesians from the lab of Professor Rohani Ambo-Rappe of Hasanuddin University.

Earlier this year, we joined Katie DuBois and Prof. Williams to assist her in field work and to learn about the difficulties and rewards of conducting research abroad. Over the past four years, Prof. Williams has brought 13 graduate students form the Bodega Marine Lab - Jessica Abbott, Brian Cheng, Elliot Crafton, Sarah Hameed, Brittany Jellison, Lisa Komoroske, Gabriel Ng, Erin Satterthwaite, Christine Sur (currently working in Indonesia for the year), and Dale Trockel.

Despite towering language and cultural barriers, we were united in our curiosity and love for the ocean and worked together to collect data on coral health, seagrass biodiversity, fish market species compositions, marine debris, and reef fish diversity. In the field our female colleagues dove in their head scarves; when not in the field we discussed research, practiced language, and paused work for the call to prayer.

In the face of so many anthropogenic threats, the reefs and seagrass beds in our field sites remain relatively intact and breathtakingly beautiful. But with persistent local human pressures and the impacts of global climate change, how much longer can the reefs and seagrass beds be sustained? Part of this sustainability will hopefully come from research and community involvement in reef protection and restoration in the region, the crux of the collaboration between Prof. Williams, Prof. Ambo-Rappe, and Mars Symbioscience. International collaborations such as this, though difficult due to cultural and geographic distances, are crucial to address the increasingly complex and interconnected threats to marine ecosystems worldwide.

Black Oystercatcher - Shannon Skalos

Osprey - Matt Savoca [An Osprey glares at a potential threat (me) while feeding its chicks a fish dinner. San Ignacio Lagoon, Baja California Sur, Mexico]

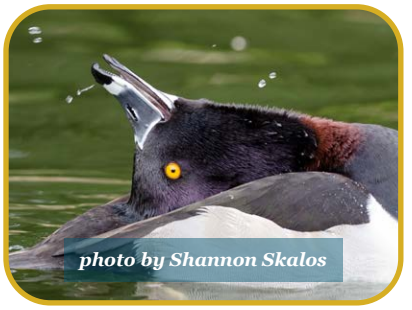


photo by Shannon Skalos


photo by Matt Savoca


photo by Shannon Skalos

(SOME) RECENT STUDENT PUBLICATIONS

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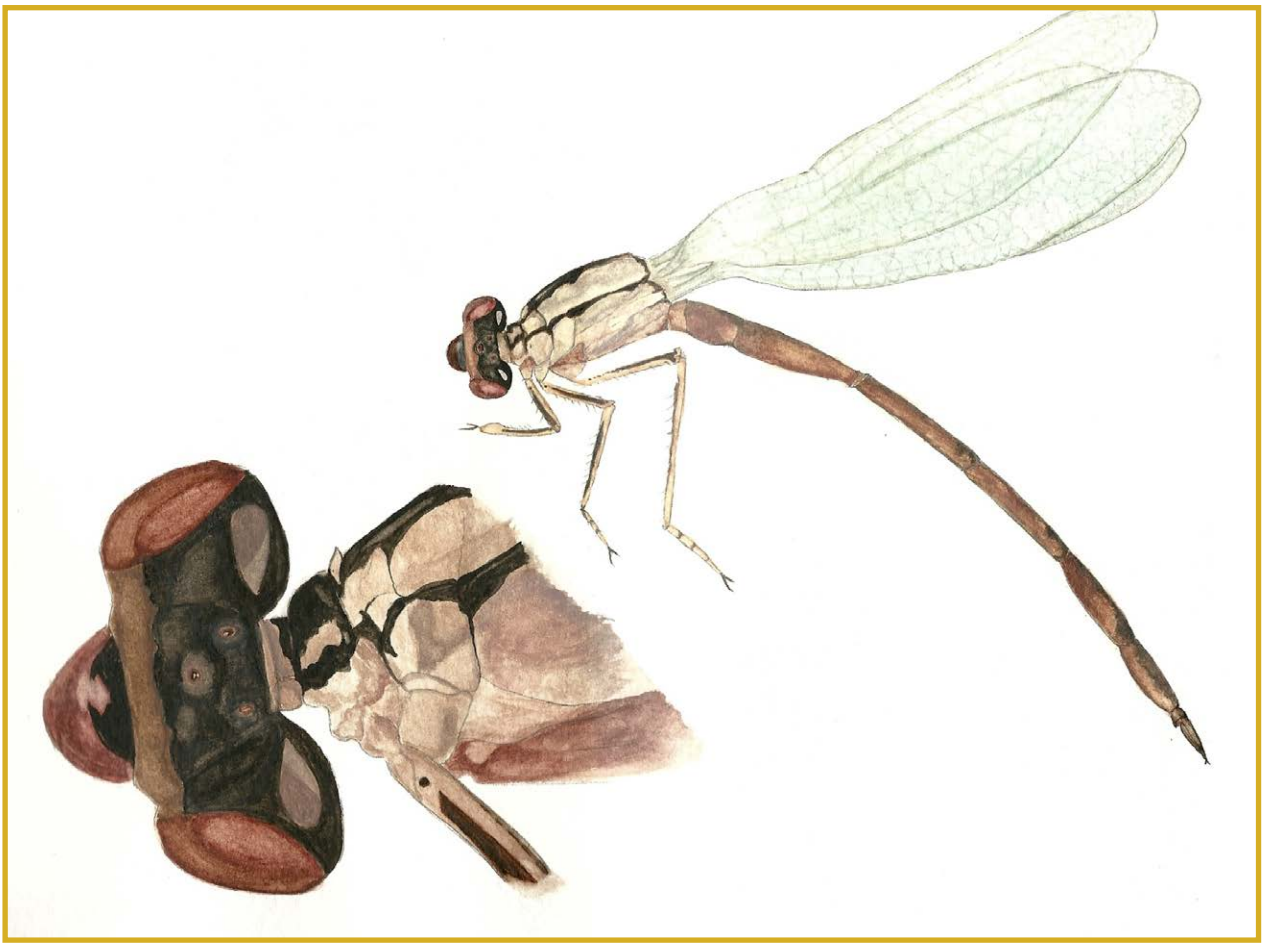


KRISTEN ELSMORE - Dragonfly (TOP) and Perch (BOTTOM), in watercolor

Mardis Gras 2016!

Charity Gala raises Funds for Firefighter Relief Fund

Rachel Wigginton

Another carnival season has come and gone, and with it, another GGE Mardi Gras Charity Gala is in the books. This was, indeed, a Mardi Gras for the GGE record books. We packed the US Bicycle Hall of Fame with over 150 attendants throughout the evening, making this one of the largest Mardi Gras parties anyone can recall in the nine year history of the event! With the help of all those in our Ecology community who solicited for business donations, donated their talents and crafts, and all those attendants bidding on auction items, we were able to raise a total of $3106.44, which we donated to the Forestry Crab Feed Firefighter Relief Fund to support first responders affected by the Valley Fire. We believe we can speak on behalf of this worthy charity in thanking you for your generosity.

Every year is a little different at our annual Mardi Gras event, and this year was no exception. We were lucky enough to have Dr. Sharon Lawler, Dr. Ted Grosholz, Holly Hatfield, and Elizabeth Sturdy as our guests of honor. These individuals represent leaders within our graduate group, and the students wanted to make sure they knew how much we appreciated them and all their hard work (both past and present)! This year, we attempted to form a bit of friendly competition by organizing the first annual Mardi Gras Gala costume contest. We gave away prizes for best individual and best group costume. Sharon Lawler won best individual for her spot on genie get-up, and Rachel Anderson and Matt Savoca took home the group prize as a pair of Blue Footed Boobies. The fun was also supported by the great live band as well as the DJs who donated their time, talents, and groovy tunes. Last, but most certainly not least, we were excited to feature the delicious homebrews of Brian, Chris, and Matt! Needless to say, much fun was had by everyone in attendance, and we are already eagerly looking forward to next year's event.

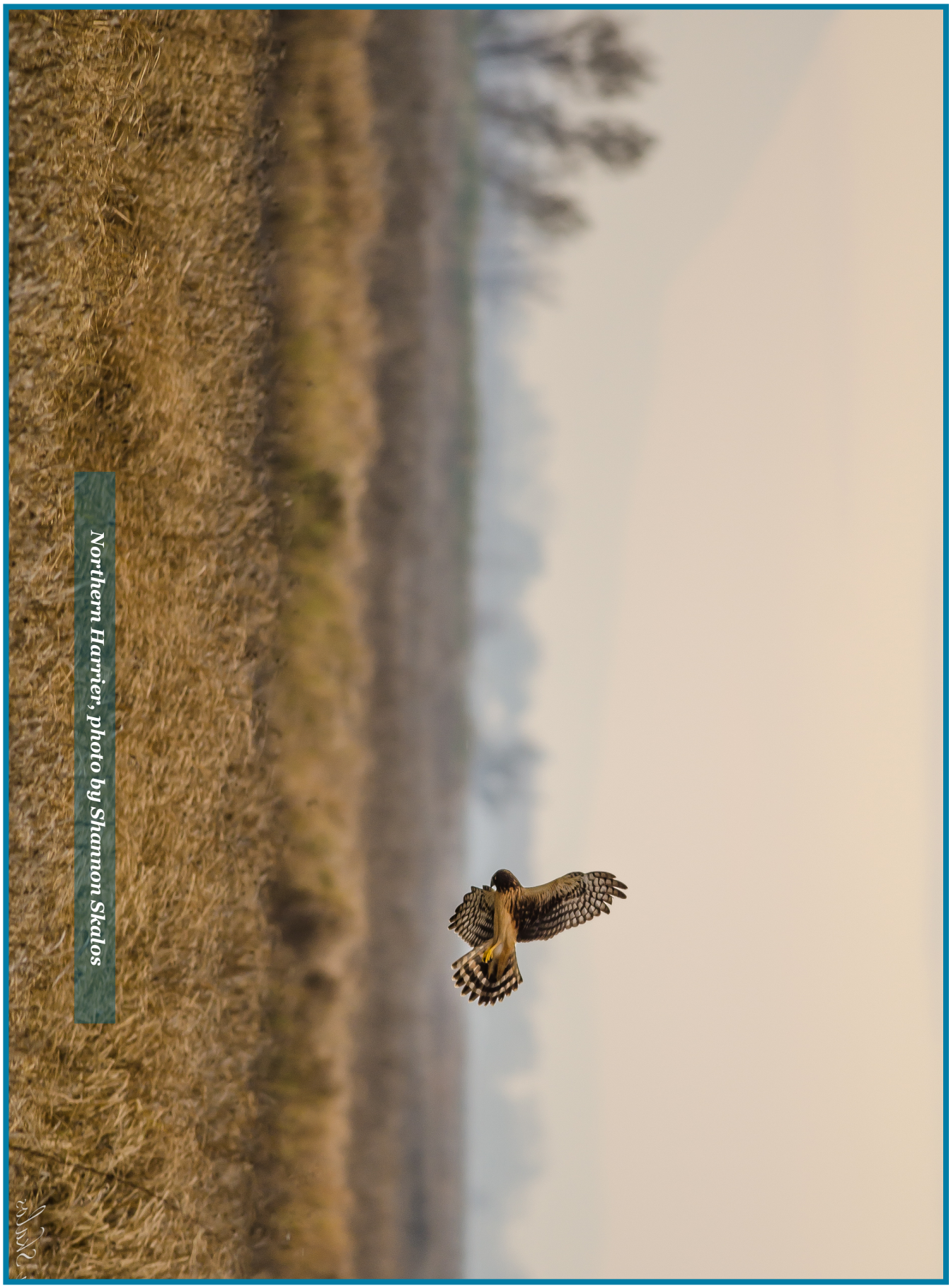
Elizabeth and Holly…people that make the GGE go round

The Graduate Group in Ecology at UC Davis is passionate about many things and one of those things is giving back to our larger local community. The firefighters who responded to the Valley Fire last year protected many landscapes valuable to us as researchers. We hope our own small efforts can help these individuals who so generously gave of themselves to help us.

The fantastic 2016 Mardis Gras Charity Co-Chairs (from left to right): Rachel Wigginton, Katie Smith, Amanda Coen

Folks from the 2013 cohort!

My process involves finding and producing materials from found, organic sources, then making paintings and monotypes with them using large quantities of solvents. The intention is not to just reference color, but to take advantage of the inconsistencies of these materials to bring forth chance imagery, integrating physical and mental interpretations of nature — ***Faith Sponsler***



Northern Harrier, photo by Shannon Skalos

COMMUNITY

Food Waste & The Freedge

Ernst Bertone

Food waste in the United States

Just yesterday I read an article about how much food we waste in the United States - around 40% of our food production. We see statistics about food waste almost every day, yet we prefer buying new food instead of eating those 2-day old leftovers. So what is going on? Why do we keep wasting food? Why do we keep destroying forests to produce more food yet we still have almost 1 billion hungry people living on our planet?

In my opinion, it's the system's fault. We have systematically, artificially reduced the price of food so that we are spending less of our income on food than ever before. We as a society have become so busy that we no longer take the time to keep track of our perishable foods in the fridge or pantry. If the system is to blame for our current predicament, our only solution is to change the system.

The idea of food sharing

About two years ago my roommates and I installed a refrigerator in front of our house on Douglass Avenue. The fridge had glass doors so that passers-by could see what was inside with a sign saying "Take what you need, leave what you don't." The principle was simple: anyone could leave or take any food item from the fridge, for free. The idea was that by promoting food sharing in our neighborhood we would reduce food waste.

Soon we started having all sorts of food appearing in the fridge, and disappearing too: tomato sauce, kiwis, walnuts, spices, and fancy Japanese desserts. We started to have neighbors knock on our door and ask about the fridge. Most of the comments we received were: "This is cool", "I love this idea" or "Come for dinner in our house". The neighborhood was excited. It was the beginning of the freedge movement.

The bumpy road

Unfortunately the county health authorities didn't see things the same way. Concerns about food safety and lack of operating permits led to the shut-down of our fridge. To make matters worse our landlord and the real state agency threatened to evict us. We tried to resist - we created a petition online, we wrote an article in the Davis Vanguard, we talked to the mayor, we appeared on TV and radio. In short, we generated debate about food, waste, community, liability, and responsibility. The media exposure produced some enlightening comments:

"What if my 2-year old get stuck in the fridge?"

"What if someone allergic to peanuts eats some peanuts from the fridge and dies?"

"What if homeless people start coming to my neighborhood?"

We decided that instead of fighting the county we should sit with the health authorities and discuss our conundrum. Our main arguments were: "this is not a retail activity, therefore we can't be ruled by the Food Retail Code" and "we are protected by the Good Samaritan law" (The Bill Emerson Good Samaritan Food Donation Act was signed by Bill Clinton in 1996). The authorities didn't agree with our arguments, but after the meeting the county agreed to let the freedge operate as gleaner for fruits and vegetables. At last, the freedge was legal!

Thinking differently about food

Our Davis freedge has now been operating since October 2015 at 235 3rd street. You can take or leave any fruits and vegetables in it, or write anything on the "Community Wall." We frequently get produce from the farmers' market and the student farm, which normally disappears fast. The freedge is checked daily for safety.

We don't know how much this movement will continue to grow, but what matters most is that we keep generating debate and making people think differently about food. The road is still bumpy, and probably always will be; it's a great sign, it means the system is fighting back. Join the movement!

Do you want to have a freedge in your neighborhood? Are you a farmer willing to give away your ugly produce? Are you a lawyer willing to help us navigate the legal jungle? Get in touch!

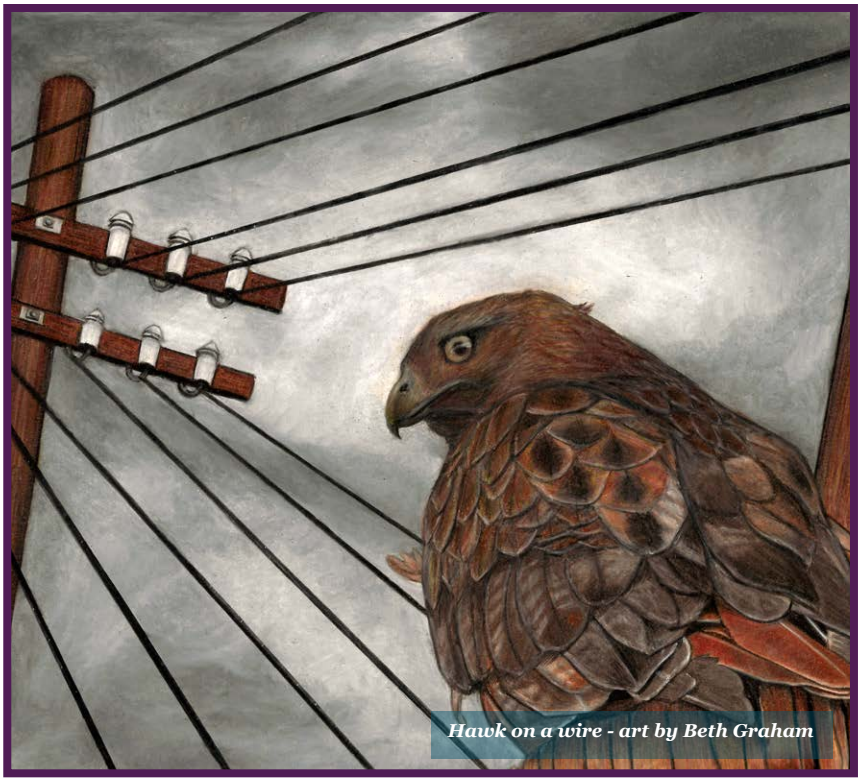
The freedge team,

Ali Hill, CJ, Eric Yen, Ernst Bertone, Greg, Julia Michaels, Maya Argaman and Rich Pauloo

freedge.org ***(ebertone@ucdavis.edu)***

Whale Shark - photo by Matt Savoca

Coyote at streetlight - art by Beth Graham



Hawk on a wire - art by Beth Graham

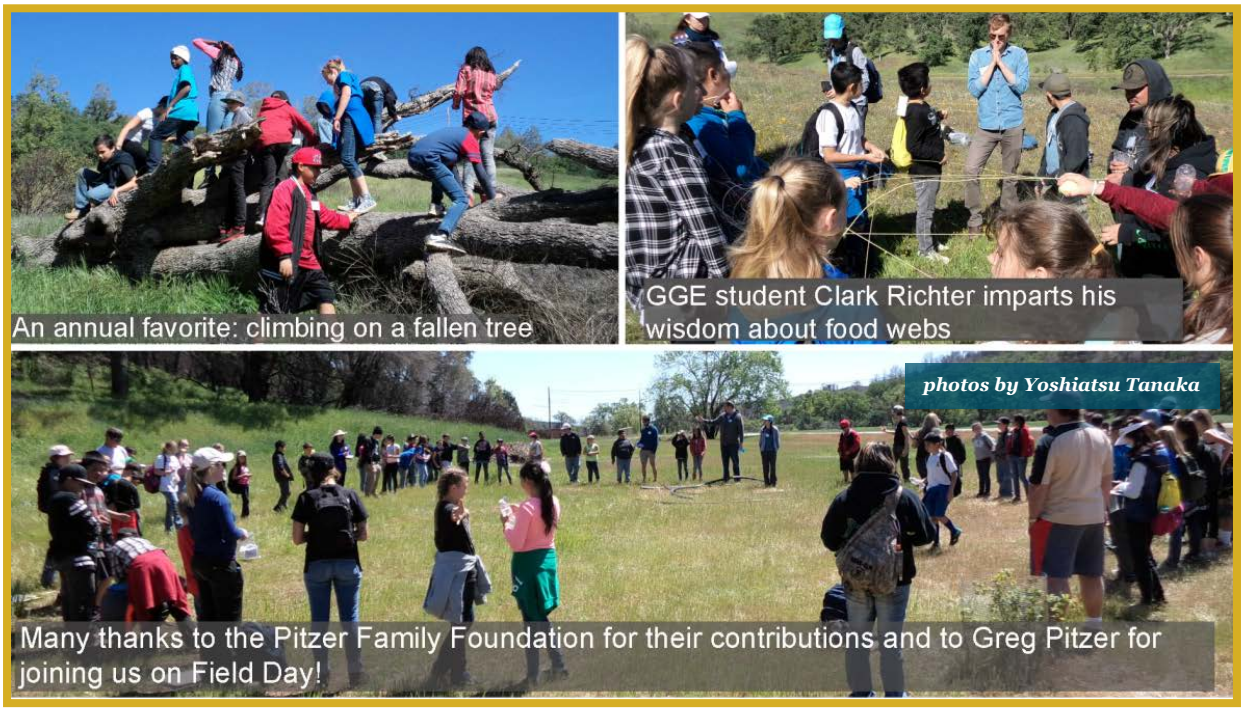
Kids into Discovering Science (KiDS)

Lauren Miller, Jan Ng, & Allie Weill

The Kids into Discovering Science (KiDS) program was founded by UC Davis faculty and graduate students to promote science literacy, sense of place, and connection to nature in Lake County. For the past six years, KiDS has been bringing UC Davis affiliates into fourth and fifth grade classrooms at Lower Lake Elementary School. Through a series of weekly lessons, Lower Lake students learn how to ask questions, form hypotheses, run experiments, and analyze data. The program culminates in a field trip to the UC McLaughlin Natural Reserve, where participants learn about ecology via outdoor activities. This year, 63 fifth graders had a field day full of fun, exploration, and education among rolling hills and a fantastic post wildfire showing of flowers.

Signs featuring images taken just after the Rocky and Jerusalem fires from July 2016 showed how quickly the landscape can change.

If you are interested in participating in the KiDS science outreach program or would like more information, please email ***kids.ucdavis@gmail.com.***



KiDS (cont.)

GGE student Evan Eskew shows off a local lizard, photo by Allie Weill

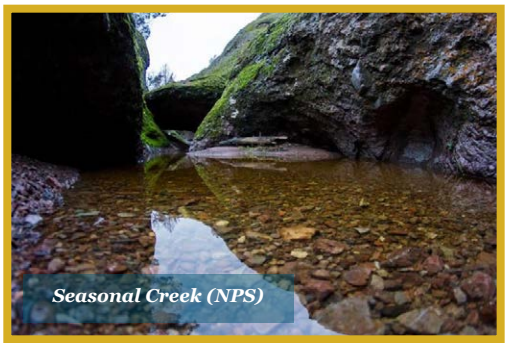
UC Davis Graduate Students Inspire Future Scientists at the 2016 Kids Into Discovering Science Field Day

Getting Out and About

Pinnacles National Park

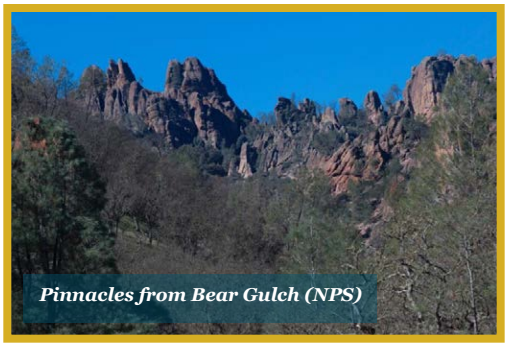
Ken Zillig

Only a short three hour drive from Davis, America's newest National Park, Pinnacles rises from the hazy Central Valley. Despite being one of the smallest parks in the country Pinnacles contains a splendid amount of beautiful views, unique species and epic rock formations.



Seasonal Creek (NPS)

The attraction the park is probably most famous for are condors. Before being a National Park the unique rock formations and high cliffs were protected as crucial habitat for the California condor. Now with condors making a comeback, Pinnacles is an excellent location to attempt to see the largest land bird in North America. In addition to condors, roadrunners and prairie falcons can be seen streaking through dry scrub or cruising aside the impressive cliffs.



Pinnacles from Bear Gulch (NPS)

Speaking of, the namesake geological formations are really what set Pinnacles apart. Rising out of the flat land of the central valley are the ruins of an old volcano. Strange alien spires accompany long cliff faces to create a maze of canyons and caves that can be explored. For those chiropterologists out there, the talus caves contain a variety of bat species including the Townsend's big-eared bat. These can be seen most of the year as you tour the caves.

Aside from the unique critters and landscape, Pinnacles offers a splendid array of climbing routes for the Californian climber. Routes for any skill level and opportunities for all disciplines provide a unique way to experience what made landscape worthy of promotion to National Park status. If you prefer to adventure in a more horizontal fashion but still enjoy a touch of vertigo, the Steep and Narrow trail will not disappoint. Hand-crafted by the Civilian Conservation Corps the steep and narrow trail lives up to its name. The trail leads you around the highest points of the park, providing a condor's perspective of Pinnacles and the surrounding valley.

Pinnacles is a small park, but packed to the borders with adventure and beauty. A long weekend is ample time to explore the wildlife and take in some of the finest views in the Central Valley. Remember to take water, binoculars and sunscreen. Happy Adventuring!

Ring-necked snake (NPS)

Getting Out and About

Spring Break Multi-Park Party!

Sarah Friedman

California is one of those regions in the world that is difficult to describe in a few words let alone a short article in the Aggie Brickyard. Not only is it the birthplace of Hollywood, hippie counterculture, and the "techie" revolution, but it has a diversity of ecosystems and natural wonders to rival its eclectic cultural diversity. Exhausted after finals, five of us crammed into a car with camping supplies, stocked up on a week's supply of Cliff bars, and set out to explore the sights California has to offer. Over the next week we explored Tahoe's forests, soaked in natural hots springs in the Eastern Sierra Mountains, slept among the Bristlecone pines, drove by the rare Super Bloom of wildflowers in Death Valley, hiked to an oasis in Joshua Tree National Park, and discovered wild condors in Big Sur. Despite our whirlwind (and hastily-planned) expedition, here are a few tips that might be of interest to future California road trippers:

1. Plan campsites ahead of time or be prepared to spend the night on BLM land, which is always free for the public to camp on and a good alternative if you find yourself in need of a campsite last minute.
2. Visit Hidden Valley in Joshua Tree. It is a short hike that offers an abundance of beautiful sights, but be sure to go early because it gets crowded with tourists in the afternoons.
3. See Devil's Postpile National Monument. This unusual basalt formation is an interesting and worthwhile sight along the way.
4. Visit Crowley hot springs in the Mammoth Lakes area. While they get a bit crowded at times, keep driving down the dirt road where there are many more natural hot springs available. Bonus: the hot springs are on BLM land (see number 1).
5. While we missed this sight during our trip, we heard good reviews from other travelers of the Lava Tube Trail in the Mojave Desert.
6. Always end your days in the desert watching sunsets atop sand dunes while drinking beer.

Hopefully I leave you slightly jealous of my Spring Break expedition and—even more so—inspired to discover the natural diversity of California in your own adventure.

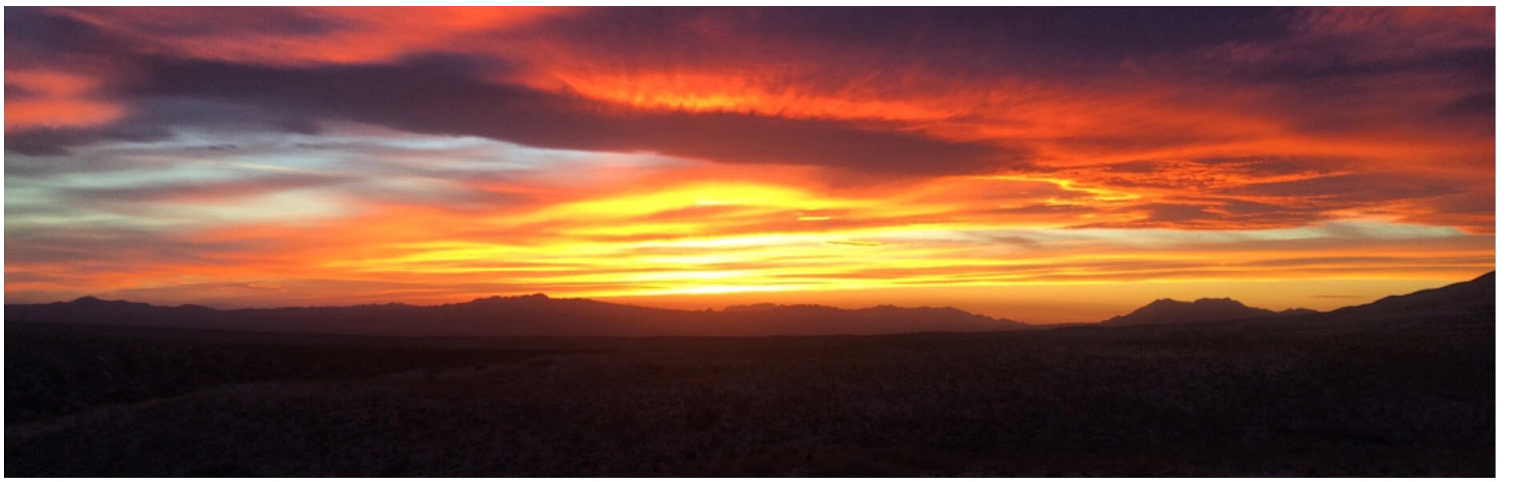
Death Valley National Park

Annelise Del Rio

Death Valley National Park, named for its extreme heat and inhospitable landscape, may be a surprising location to see large numbers of wildflowers. Despite being the driest place in North America, flowers bloom in Death Valley every spring. Most of these flowers are short-lived annuals that sprout and bloom in the spring before producing seeds that will lie dormant through the hottest and driest parts of the year. When there is heavy fall rain to wash the protective coating off the dormant seeds and regular intervals of winter rains allow the plants to grow the wildflowers can bloom in large numbers all at once. In addition to creating a beautiful desert landscape it is advantageous for the flowers to bloom at the same time so the high density will attract more pollinators that might not otherwise spend much time in Death Valley.

This year Death Valley was affected by El Nino weather patterns and experienced ideal conditions for wildflowers which resulted in such high densities of flowers that many sources called it a "superbloom" year. Driving along highway 190 through the park in March, it was easy to see why. Much of the valley was carpeted in bright yellow blooms called desert gold. You can admire the display from your car easily but to see the full diversity of wildflowers you have to walk through these fields. Scattered among the desert gold plants are smaller ones whose pink and white flowers aren't visible from the road such as desert five spot, gravel ghost, and pebble pincushion along with the occasional sphinx moth caterpillar. Fortunately you will find different species of wildflowers along the numerous hiking trails in the park. The bloom occurs from February through July starting in low elevations and gradually shifting as species that thrive at higher elevations begin to bloom in the later months. Given the rarity of superbloom events, it is well worth the trek down to Death Valley National Park this season.

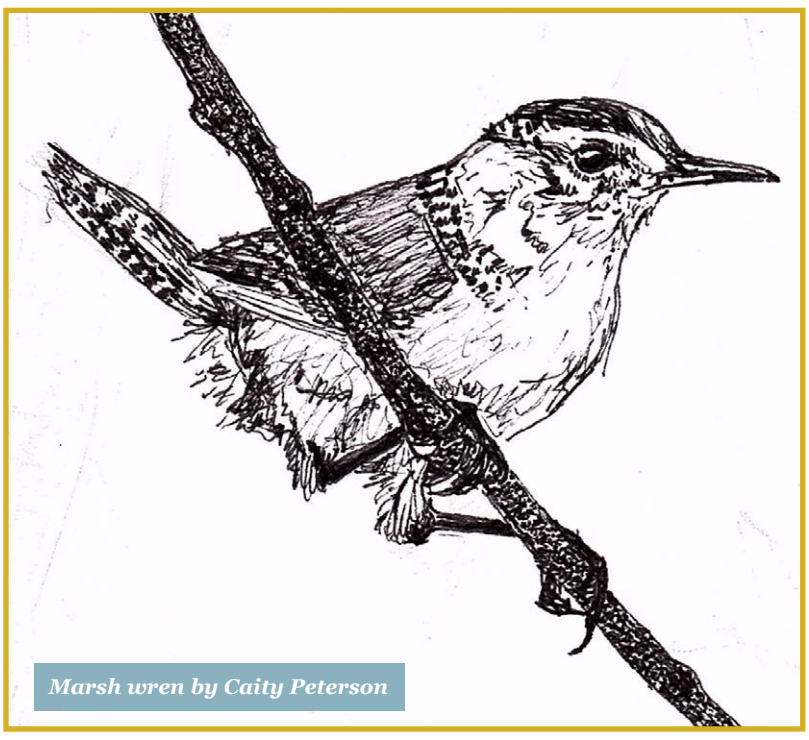
Getting Out and About



photos by Emily Abernathy

Flowers - Gabe Ng

Wild Turkey - Shannon Skalos



Marsh wren by Caity Peterson

Conservation Career Panel

Thoughts on the Non-Academic Careers in Conservation Panel

"What does it mean to be a scientist outside of a university and how do I cultivate the skills necessary to be successful in that role?" Getting advice on careers outside of academia can be challenging for graduate students -- we are at an academic institution, after all. The Davis Chapter of the Society for Conservation Biology (SCB-D) hosted scientists from the California Council on Science and Technology (CCST), the California Landscape Conservation Cooperative (CA LCC), Conservation Science Partners (CSP), The Nature Conservancy (TNC), Ocean Science Trust (OST), and the Wilburforce Foundation (WF) in mid-April to participate in a panel discussion, a series of short workshops, and happy hour discussion focused on what it takes to be successful as a scientist outside of academia. Thanks to support from the John Muir Institute of the Environment, GradPathways, and the Graduate Student Association, we were able to provide almost 100 students with a forum for asking questions on topics ranging from improving the effectiveness of science communication, achieving work life balance, and defining success when primary research becomes a smaller portion of one's job.

Drawing on experiences from governmental, non-profit, and philanthropic sectors; panelists offered an amazing assortment of insights. Some of our favorites are here (we hope to offer more through the Schwartz Lab's Natures Confluence blog).

Why get a Ph.D. if you are not going work in academia? Several of our panelists no longer maintain active research programs, but emphasized the importance of the credibility provided by their degrees. Whether representing the work of other scientists or providing advice to policy-makers and land managers, the training and credibility provided by our panelists' graduate training was critical to their ability to be effective in bridging the science-implementation gap.

Students attend the morning panel discussion of the Non-Academic Careers and Conservation event hosted by SCB-D. From left to right: Rachel Wigginton (SCB-D), Megan Kelso (SCB-D), Heather Tallis (TNC), Amber Mace (CCST), Benét Duncan (OST), Amanda Stanley (WF), Deb Schlafmann (CA LCC), and Brett Dickson (CSP).

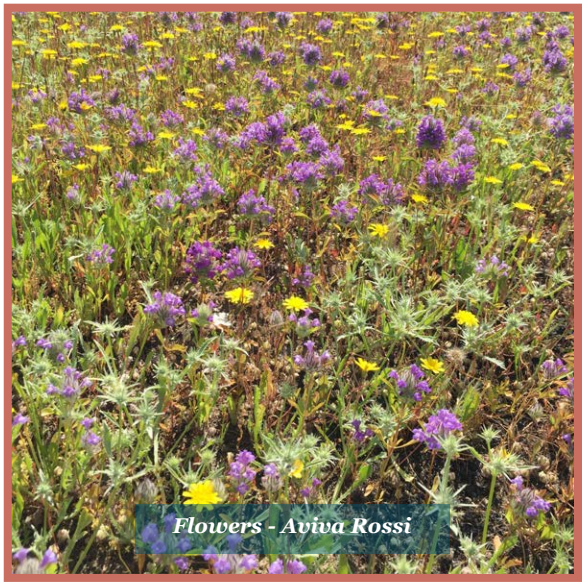
Conservation Career Panel

Saving the world starts with small bites: Amanda Stanley, Conservation Science Program Officer for the Wilburforce Foundation, urged students to recognize the emotional challenges posed by a career in conservation. She noted that the urge to "save the world" can be a tricky place for young scientists. The enormity of the challenge can be both embarrassing (it may seem naïve to many other professionals) and demoralizing especially when thinking about issues like global climate change. She urged us to choose a *little bit* of the world that we can actually save; to pick something that you think is the most precious or the most important and strive to save *that thing*.

The path is not always smooth or straight: Heather Tallis, Lead Scientist for The Nature Conservancy, explained that many people, when they describe their career path, tell their story with purpose and continuity that may not have been present in its unfolding. Throughout the panel, she, and many of the other panelists, highlighted the twists, turns, and bumpy detours in their own career paths. They emphasized the importance of life's "Aha!" moments – those rare instances of self-discovery and risk that help shape who we become as people and professionals. These moments may be difficult (or impossible) to manufacture, but we should be ready to seize them when they arise!

Black-chinned hummingbird - Shannon Skalos

Western tiger swallowtail - Ryan Peek



Flowers - Aviva Rossi

Alumni Perspectives

JENS STEVENS

PhD, 2014

As I leave Davis after seven years (five as a PhD student and two as a postdoc), I find myself reflecting more on what this place has meant to me, and what I'll take away from it. While recognizing that everyone's experience in grad school is unique, and no program is perfect for everyone, I think that coming to Davis was one of the best personal and professional development decisions I ever made.

The reason for that, in a word, is community. Many words have been written on this (See the program review report to read some of them!), especially on the social side of things. I won't add much more to that than has already been said, but it has been truly amazing. This graduate group is full of creative, smart, friendly, and self-deprecating folks that make the grad student community here totally unique. There's a reason that the Odyssey, the Tour, Mardi Gras, Thursdays at Sophia's, and countless other GGE-inspired events have continued as strong traditions from before I was here to after I'm leaving, and it's because of all the people here, who value community and work to maintain it.

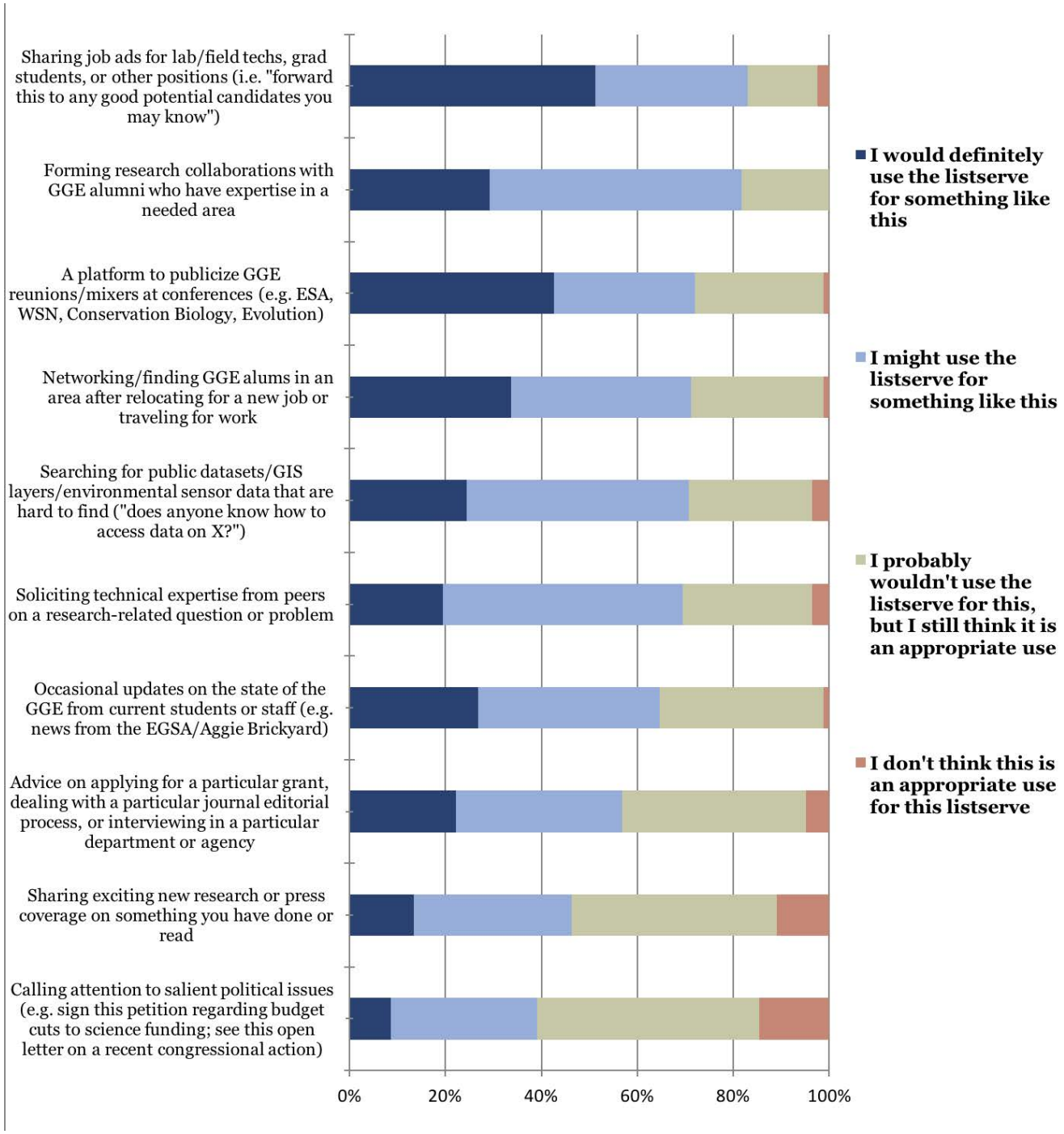
But that costume-filled, party-loving social scene isn't for everyone – it's certainly not for me all the time – and it's probably not the main reason most of us came to Davis. So I wanted to touch on another aspect of community that I don't think I fully realized when I came here to get a PhD: the knowledge community that every student will take with them when they graduate. The large size of this graduate group may have some drawbacks, but one of the biggest strengths is the personal connection we make here with our peer ecologists who study just about everything imaginable. I love that the Odyssey, the Tour and Mardi Gras exist alongside the Symposium, the EGSA blog, and the Student Seminar. I love that you can be at a dance party with someone on Saturday, and be talking to them about a research collaboration on Monday. I love that I'm leaving here with a network of peers that I can ask if I ever have a question the rest of my life about bird migration, human migration, fish conservation, nitrogen cycling in crops, which side of the house to plant a tree on, tick identification, or native plant landscaping. That's just within my cohort- and I know what they all look like in spandex. When your professional colleagues are also your friends, it makes asking new questions, gaining new perspectives, and building your career in new directions much more fun.

Somewhat selfishly, perhaps, I don't want to lose that knowledge community access when I leave Davis. It's not as easy now to just email gge-students with a question, and I don't really need to know when everyone's progress reports are due anymore. But thanks to the organization of Elizabeth and current and former GGE chairs, we now have a new **GGE alumni list** that is more complete than ever before!

ecology-alumni@ucdavis.edu is here for anyone who wants to keep their connection with the incredible hive mind of the GGE, after their time as a student is done. The list contains hundreds of alums, on every career path imaginable. It is here for alums to connect, hatch ideas, and share information with each other, and with current students who want to take advantage of the resource. The results of the inaugural listserve survey are on the following page. I hope The Brickyard will make its way to the subscribers of the alumni list, and I hope to keep reading about what this weird and brilliant graduate group is up to for many more years.

ALUMNI PERSPECTIVES

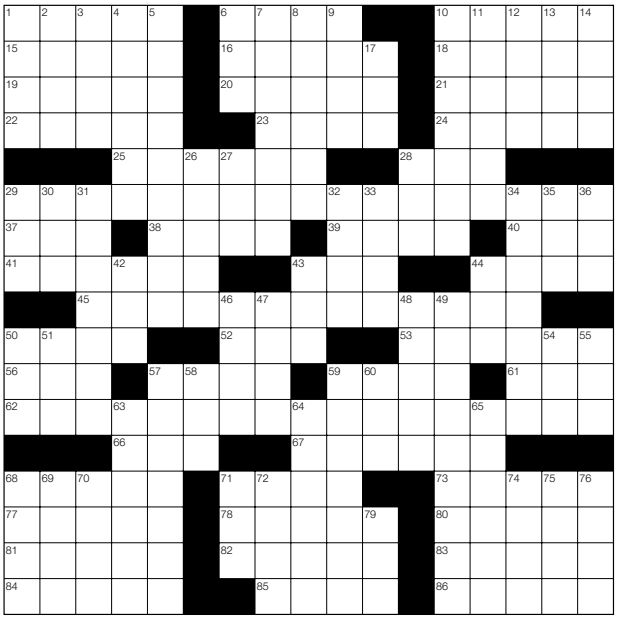
Survey Results: What would you use the GGE Alumni Listserve for?



Star Gazing

"The Unicorn Mollusk"
by Kristen Elsmore

Crossword



Ecological Theories

Across

1 Meaty flavor
6 Exam for future J.D.s
10 Nano and Touch, e.g.
15 Any "Friends" episode, nowadays
16 Showy display
18 Limited release coconut cookie
19 Unpleasant winter precipitation
20 Expression of excitement, or its opposite
21 Great ape found in Borneo
22 Amount of salt a recipe might call for
23 Not as much
24 Lodgepoles,e.g.
25 Participated in a sage grouse mating ritual
28 Young elephant's weight, maybe
29 Theory used by Goldilocks when looking for food?
37 Ovine sound
38 Modern ecology tools, for short
39 Volatile-containing plant compounds
40 Hurdle for high schoolers
41 Words of decree
43 Resident of Rivendell or Lothlorien
44 Treat that dunks well in milk
45 Models of competition for Jewish holiday treats?
50 Clump of fur or feathers, as on a titmouse
52 Come out ahead
53 Fades, with "out"
56 Newbery winner for "The True Confessions of Charlotte Doyle"
57 Lots
59 La ____ Tar Pits
61 Fib
62 Theory used by an ecologist and evolutionist planning a wedding?
66 Not requiring an Rx
67 Give, as a note in class
68 Spring blooms
71 Tasty German sausage
73 Clumsy
77 "They're _____ get me!"
78 _____ incognita
80 Prize for "Birdman" in 2015
81 Vegetable known for its layers
82 Up to
83 Foamy beer style
84 NSF-sponsored ecological research areas, for short
85 NYC transport
86 New York's Memorial _____-Kettering Cancer Center

Down

1 _____ minor
2 Combine
3 Region
4 Breakfast choice from Whole Foods
5 Fossey biopic "Gorillas _____"
6 "Titanic" heartthrob
7 Hauls around
8 Measure of reflectivity of Earth's surface
9 New Mexico town
10 Roly-polys, technically
11 Reducing in size, with "down"
12 Arabian peninsula country
13 Finished
14 Droops
17 Athlete Cobb and others
26 Tree species in the Malvaceae that produces cotton-like fluff
27 Airline with its hub at AMS
28 "...___ the cows come home"
29 Japanese sash
30 Have it down ____ (know well)
31 Caudal appendage
32 What square wheels don't do
33 Cause of a breakup
34 Resident of Tel Aviv
35 Scottish denial
36 Bygone muscle car
42 Plopped down
43 The Proterozoic or Phanerozoic
44 Leftover tidbit
46 Species native to Endor
47 6-second online video
48 Some fencing equipment
49 Equal and opposite things to 57-down
50 Substance that may trap animals for thousands of years
51 School founded by Jefferson
54 Site of the 2016 Olympics, briefly
55 Title for Sanders or Clinton
57 See 49-down
58 Tic-___-Toe
59 Potter of kid lit and natural history
60 "Goosebumps" initials
63 Title for grad school alumni
64 Ancient Greek city-state
65 Body part frequently removed
68 Rad
69 Like Wilbur of "Charlotte's Web"
70 Cartoon canine
71 Unit of work
72 Skyrocketing figure in San Francisco
74 Thermal lead-in
75 Normal prefix
76 Futuristic 80s movie, or its 2010 remake
79 Boxer played by Will Smith

This is our first crossword, designed and constructed entirely by our own Allie Weill!

Email us for the answers: brickyardeditors@gmail.com

The Aggie Brickyard

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