

genomics
phylogenetics
Variation
Statistics
Physiology
Adaptation
form
bioinformatics
Biodiversity

BioDiverse

Ecology and Evolutionary Biology

mutualism
Ecosystem
genetics
Community
Ecology
networks
Evolution
behavior
computational
traits
Competition
population
function

EEB @ UA
Winter 2014



We Explore Life's Diversity from Genomes to Ecosystems

People/Places/Ideas

EEB in the Community

UA Science: Sky School

Inspired by a comprehensive exam question “Propose new initiatives you would take to increase science relevancy if you were the next president of the U of A”, Benjamin Blonder envisioned transforming the Sky Center campus at the summit of Mt. Lemmon into a residential science school for K-12 students throughout Arizona. Pacifica Sommers was able to help bring this vision to life after receiving the prestigious UA-NASA Space Grant Graduate Fellowship.



The creation of the *UA Science: Sky School* became a story of teamwork and building connections between academic disciplines within the University, as well as with public schools and community organizations. The program exposes students to diverse content areas, including Sky Island ecology from low desert to the sub-alpine, and builds deeper

connections between students and their local environment. *UA Science: Sky School* quickly found support with Dr. Alan Strauss, Director of the Mount Lemmon Sky Center in the Department of Astronomy's Steward Observatory, and with Tucson school districts, and was the catalyst for Pacifica's application to the UA-NASA Space Grant Graduate Fellowship. The team quickly grew when Pacifica Sommers received the UA-NASA Space Grant Graduate Fellowship that supported her strong interest in science education. During the academic year 2012-2013, after receiving the NASA fellowship, she was sponsored jointly by EEB and Steward Observatory to pilot and co-develop the Sky School in partnership with Tucson Inner City Outings and the Sky Center. Middle school students from TUSD's Miles Exploratory Learning Center were the first to participate in the pilot program. The first four overnight trips with Tucson ICO partner schools were funded by a combination of the national Sierra Club ICO, Steward Observatory, and Tucson Unified School District's Education Enrichment Fund. With the success of the four overnight trips, Benjamin organized a four day program in spring 2013 for Advanced Placement science students from Flowing Wells High School.

Pacifica Sommers

Pacifica is a doctoral candidate in the Department of Ecology and Evolutionary Biology. Her research focuses on the ways in which behavior affects population dynamics to ultimately promote or reduce diversity, especially in the case of the ongoing buffelgrass invasion of the Sonoran Desert. She taught as a graduate teaching assistant and as an NSF GK-12 teaching fellow paired with seventh grade classes, as well as a leader for Tucson Inner City Outings.

Benjamin Blonder

*Benjamin is a doctoral candidate in the Department of Ecology and Evolutionary Biology. His research focuses on predicting plant response to climate change based on physiological principles, and involves extensive fieldwork throughout the Neotropics. Benjamin taught science in rural Idaho before coming to graduate school, and has served as a NSF GK-12 teaching fellow in Tucson as well as a trip leader for Tucson Inner City Outings. These experiences inspired him to co-found the *UA Science: Sky School*.*

Sky School Cont.

UA Science: Sky School is a year-round residential science program for K-12 students. Housed at Steward Observatory's Mount Lemmon Sky Center, the curriculum is based on world class research at UA in the areas of sky island ecology, biology, geology, and astronomy, and uses graduate fellows as instructors to directly link participating students to the researchers themselves.

The long-term goals of the Sky School requires them to develop partnerships with 20-30 additional schools, create a core team of supporting staff, hire 6-8 graduate students to instruct year-round programs, and to modernize facilities.

Now in its second year, and with a solid foundation, the Sky School can look ahead to fulfilling these long-term goals. The Department of Astronomy and the College of Science have sponsored six graduate student fellows who contribute their individual expertise to develop the curriculum. However, to meet the interest from schools in Tucson alone in the coming years, they will need to further expand the number of graduate students involved in this program. These fellowships are unique experiences for graduate students to bridge disciplines, interact with immersive, inquiry based outreach programs, learn to explain their research in layman's terms, and guide and mentor independent research projects from conception to presentation. The Sky School also faces some critical needs as it expands. There is no dedicated instructional space for the program to have meals or group meetings. A new building or yurt that could provide shelter and workspace would solve this challenge, and the organizers are actively seeking funding infrastructure.

While the Sky School strives to be financially sustainable by charging schools for the program, it is critical that schools and students who have financial need can access the educational opportunities available at the Sky School. Director Alan Strauss continuously pursues funding opportunities that will support students who cannot afford to participate in this program.

***See links below to learn more about the UA Science: Sky School
and how you can contribute to their efforts.***

***Sky School:
<http://skyschool.arizona.edu/>***

***To support Gk-12 student(s) contact the
Director of Developement for Astronomy and Steward Observatory, Daniel Petrocelli
dpetrocelli@email.arizona.edu***

***Explore the Scenic and Scientific Wonders of Southern Arizona
<http://seetucson.org/>***

W I N S

Women in the Natural Sciences



Nicole Rafferty is a PERT postdoctoral fellow in Judie Bronstein's lab. As a community ecologist, Nicole is interested in species interactions and the ways in which interactions are influenced by environmental conditions, particularly by the drivers of global change. Most of her research addresses how climate change-induced shifts in the timing of life history events affect plant-pollinator interactions. In Arizona, she is studying the consequences of delayed flowering in pointleaf manzanita.



Loren Albert earned her bachelor's degree in Biology at Reed College and then spent several years as a research technician studying plant ecology and evolution at Rice University before commencing her graduate studies at the University of Arizona in the Ecology and Evolutionary Biology Department. For her dissertation research, Loren is studying plant ecophysiology and ecosystem ecology with a focus on forests of the Amazon.

Women and men in the life sciences are earning Ph.D's at similar rates, yet women are still underrepresented at senior levels. We want to learn about what challenges women face in science careers, and what we can do to support and retain women in science. We saw a need for a group that could provide an outlet for women in EEB and related departments to benefit from the collective wisdom and experiences of each other and successful faculty and administrators. Postdoctoral fellow Jen Koop initiated the group, inspired in part by her experience in spearheading a similar group at another university, and invited others to join in shaping WINS to best meet identified needs. Departments related to the natural sciences are some of the largest science departments at the University of Arizona. Until now there were no groups specifically focusing on women in the natural sciences: a group like WINS fills an important gap.

EEB: Who is the primary population you are trying to reach and who else are you hoping will get involved?

WINS: We want to raise awareness about the issues women face in academic careers, not just among other women but also within the larger academic community. Our group is inclusive, encouraging people of all gender identities to participate. Our events are designed to be relevant for the natural sciences community as a whole, including undergraduate and graduate students, postdocs, and faculty.

EEB: What is your vision and how do you plan to sustain WINS?

WINS: Our goal is to support the success and retention of women in the natural sciences. We hope to accomplish this goal by organizing mentoring opportunities, panel discussions, round table discussions, and seminars that seek to overcome hurdles in the way of pursuing careers in the natural sciences. WINS is new, and will evolve

based on the needs of the community that supports it. To sustain WINS, incoming graduate students and postdocs will be encouraged to get involved in organizing events and steering WINS.

EEB: How has WINS been received thus far?

WINS: Our first event, a panel discussion with faculty on career-life balance, was a huge success with more than 30 people from various departments and career stages in attendance. Faculty have been very supportive of our group; in particular, Judie Bronstein, Mike Barker, and Virginia Rich who graciously gave their time to serve on our first panel. The EEB Department as a whole has encouraged our efforts by generously providing funds to help WINS get off to a great start.

WINS: To get involved join us for our next meeting, January 31st, 1-2:30pm in BSW 302.

Visit our website at <http://uazwins.weebly.com/> for upcoming events.

We're also on facebook: Uaz WINS

Beyond BSW

For the last several summers I have been trying, ever so slowly, to build a timber frame cabin on the West Coast of Vancouver Island in British Columbia. My wife and I are both from BC, and about 15 years ago we bought a 2-acre lot near the only hotsprings on the island. There are no roads, no power lines, no cell phone service, and, often, no other people for miles (we get there by boat). On the other hand, there are lots of whales (humpbacks, grays, orcas), sea otters, sea lions, bald eagles, as well as a marten (who goes by the name of Martin) and Roger, a crow. Within spitting distance of the front porch there is also a kelp forest and beautiful tide pools, which our daughters explore endlessly.

One of the main attractions of the place was a large pile of cedar logs (some more than 1000 years old) that the previous owner had felled, stacked, and abandoned. One by one, I have been winching each log off the pile then using a Husqvarna 395 chainsaw, with an Alaskan mill attached to the bar, to fashion 8 inch x 8 inch timbers, some almost 40 feet long. I then use a chain mortiser, augers, and large chisels for the mortise and tenon joinery that holds the frame together. No metal hardware is required, just a few hardwood pegs.

The ocean, the weather (12 feet of rain annually), and the rainforest all conspire to reclaim what little order I extract from the chaos each summer. But I hope to have the place done before my daughters grow up. Or at least before any future grandchildren do.

- Michael Worobey

To learn more about Alex and Adriana, as well as other EEB award recipients (past and present), go to the EEB Awards page on our website www.eeb.arizona.edu/eeb-awards

Help us stay in touch by updating your information
<http://www.eebweb.arizona.edu/development/update.html>

EEB Suggested Reading

Brilliant Blunders: From Darwin to Einstein: I recently read the non-fiction *Brilliant Blunders: From Darwin to Einstein* by Mario Livio and loved it. The book is about colossal mistakes made by a few of the most brilliant scientists in history—Charles Darwin, William Thomson (Lord Kelvin), Linus Pauling, Fred Hoyle, and Albert Einstein. The narrative about how personality, competitiveness, and ignorance led up these mistakes is particularly interesting. **Brittany Barker - Postdoc in the Dlugosch Lab**

EcoBloggers: I'd recommend people check out *EcoBloggers*, a blog aggregator for ecology run by INNGE (the International Network of Next-Generation Ecologists). The RSS feed and more info is available online (<http://innge.net/ecobloggers>). Currently, it pulls together posts from 57 blogs, and anyone is free to submit their own ecology-related blog for inclusion. **Naupaka Bruce Zimmerman - Postdoc in the Arnold Lab**

The Dechronization of Sam Magunder: G.G. Simpson, an important contributor to the modern synthesis and namesake of the building due north of BSW, was also the author of the novella *The Dechronization of Sam Magruder*. A classic time-travel tale, the protagonist becomes unstuck in time and has to cope with the certain knowledge of being alone for the rest of his life. If you are familiar with Simpson's research, you can probably guess the time period in which Sam Magruder finds himself stranded. **Dawn Higgins - Postdoc in the Badyaev Lab**

Calder Awards 2013

Alex Ochoa



Alex explores the evolutionary consequences of the 1995 Texas puma genetic introgression into the Florida panther gene pool. Currently, the Culver Lab at the University of Arizona is developing a whole-genome capture solution to target and sequence Florida panther functional (i.e., coding) genetic diversity.

Adriana Zuniga



Adriana studies different neighborhood designs and their impacts on the usage of natural open spaces (NOS) (e.g., parks, greenways) in cities and how this affects the wellbeing of their residents and their level of conservation support for wilderness.