



# Biosphere

## The Weekly Bulletin of Biology

**Biology Colloquium (Friday 2 PM in CR 5125)**

Dr. Ryan Harrigan  
*University of California, Los Angeles*

*“The Past, Present, and Future of Vector-Borne  
Diseases in a Changing World”*

### **CSUN student presentation at Scientific Society**

**Maria Akopyan**, from Dr. Jeanne Roberston’s lab, presented “It’s Not Easy Being Green: Evolution of Diversity in Red-eyed Treefrogs” to the *Southwestern Herpetologists Society* last week at the East Valley Animal Shelter.

### **Research workshops by CSUN graduate students**

The **Marine Biology Graduate Student Association** will hold a series of Research Skills Workshops. The series starts tomorrow, October 12, when **Brian Peña** and **George Jarvis** will introduce fishery sampling and how to properly dissect (and filet!) a fish. On October 17, **Russell Dauksis** will discuss identification of marine invertebrates, and on November 2 **Sarah Merolla**, **Alicia Siravo**, and **Zoë Scott** will discuss algal identification and pressing techniques. All are welcome to attend – just RSVP to [csunmbgsa@gmail.com](mailto:csunmbgsa@gmail.com) for more details and information.

### **New site with Job listings!**

The Partnership for Undergraduate Life Sciences Education (PULSE) has recently added a [Job Listings page](#) to their website. Access to the information is free to all members of the site.

### **UC Santa Cruz in search of PhD students**

UC Santa Cruz faculty are looking for motivated graduates who might be interested in pursuing a PhD in Ecology & Evolutionary Biology and/or Environmental Studies. If you’re interested, please contact Drs. [Ingrid Parker](#) and [Greg Gilbert](#) to discuss your goals and background, before applying formally to UCSC (by December 15).

**SAVE THE DATE** for the next **Biology Alumni Association BIOBASH**  
Thursday November 3 at 6PM (free for Faculty and Students!)

## Research Focus

### When a bigger pie won't ease the quarrel

What do you think happens when a limiting resource becomes more abundant? For starters, most of us would think that individuals competing for said resource would lessen the competition, right...?

Well, think again. A recent study by **Erica Holdridge**, **Catalina Cuellar-Gempeler** and **Casey TerHorst** published in *Ecology and Evolution* [1] found that under certain conditions, increasing the availability of a resource does not alleviate competition among its consumers.

Erica explains that “competition between individuals of the same species (intraspecific competition) comes in two forms: Exploitative competition, when individuals compete indirectly by consuming a shared resource, and interference competition, when individuals compete directly by inhibiting each other's ability to access the resource”. Working with a laboratory microcosms of ciliates (protozoans) that are competing for the same yummy bacterial meals, they found that as the density of ciliates increased, their competition shifted from exploitative to interference. Due to this shift, adding more bacteria to the mix could alleviate competition and improve the growth rates of the ciliates, but only at low population density. At higher densities, interference competition kicked in and increasing resources had no effect. Erica now wonders what role evolution might play in this phenomenon. “We know that certain traits, like body size, can make individuals better exploitative competitors or better interference competitors” says Erica. “We also know that, with ciliates, small cells tend to divide more quickly than large cells, resulting in higher growth rates.

This could create an eco-evolutionary feedback loop between population density, competition mechanism and traits (like body size) of the organisms”.

#### From the lab class to a Yale PhD

This story began much earlier, in a classroom experiment that Dr. Casey terHorst did with undergraduates in an ecology class. “He had them basically do the same thing (manipulate resource availability and population density) and expected that adding more resources would increase growth rates across all densities” recalls Erica. Then, the surprising observation that resource availability didn't seem to matter at high population densities came in and turned into Erica's thesis project. Now Erica is a second year PhD student at Yale University, and she says that her work in the terHorst lab changed the way she thought about her science. “This was my first experience using theoretical models to get at the mechanism behind an observation. Without the models I would have just said that resource availability does not affect growth rates under high densities. With the models, I can actually explain why that is. Now, I'm in a theoretical biology lab, which I never would have imagined before working on this project”.

[1] Holdridge EM, Cuellar-Gempeler C, terHorst CP. A shift from exploitation to interference competition with increasing density affects population and community dynamics. *Ecol Evol.* 2016 Jul 1;6(15):5333-4

### UC Riverside Graduate School Open House

UC Riverside's College of Natural and Agricultural Sciences and the School of Medicine is hosting a Graduate School Open House Day on Friday, October 28th.

For more information and to RSVP, click [here](#).

Continental Breakfast. Lunch and Parking provided!