14 Tina Beveridge

Dr. Elsa Cleland

Effects of Rainfall on Soil Moisture Conditions and Phenology in Coastal Sage Scrub and Chaparral Species

Global climate change has caused shifts in plant ecology and resource availability and these changes are anticipated to increase as further warming occurs. One influential factor that is affected by the changing climate is precipitation and corresponding water availability. The effects of extreme rainfall conditions were tested on coastal species at the Elliott Chaparral Reserve with watering treatments varying from drought to twice the ambient precipitation. We observed whether the treatments achieved soil moisture consistent with their watering regime and how shifts in timing, or phenology, of plants responded to these treatments. Hobonode wireless soil moisture sensors were deployed in all 28 plots to take measurements and the daily average soil moisture was used for analysis. Plant phenology was observed by noting time of flowering three times a week for 2 months. It would be expected that in drought plots and very high precipitation plots, the timing of flowering would accelerate and species richness would decrease because fewer plants are well adapted for those extreme conditions. ***PLEASE NOTE****This is a team project: Dallas Sherman and I (Tina Beveridge) are sharing the undergrad work on this equally.

15 Corinne Handelman

Dr. Josh Kohn

Hummingbird color preference within a natural hybrid population of Bush Monkeyflower

The great diversity of floral forms found in nature is thought to be caused, at least in part, by the association of different species of plants with different types of pollinators. Hummingbirds, for instance, generally visit red-flowered species but the causes for this association are not well understood. In San Diego county, the native perennial bush monkeyflower (Mimulus aurantiacus) is represented by two forms. In coastal regions red-flowered M. aurantiacus puniceus occurs, while yellow-flowered M. aurantiacus australis is found in inland populations. Hummingbirds prefer the red form when given the choice between red and yellow plants, but whether this is because they prefer red or because red flowers produce more nectar is not known. The two types of monkeyflower are separated by a narrow hybrid zone and hybrid populations display a continuous range of flower color from yellow to red. The present study took advantage of a large natural hybrid population between the red and yellow forms of bush monkeyflower to ask whether hummingbirds preferentially visit red flowers when continuous variation in flower color is present in the population. Our goal was to examine the role of hummingbird color preference in a natural hybrid zone and to determine whether it was influenced by correlated floral traits.

16 Giovanni Hanna

Dr. Therese Markow

Understanding the mating system of a rapidly invading Drosophilid, Zaprionus indianus

Zaprionus indianus is an invasive Drosophilid that poses major economic threats to a host of fruits including figs, barbados cherry, and longan. They arrived in the new world from Africa where they were first recorded in Brazil in 1999, and has expanded their range reaching California, Arizona, Texas, South Carolina and Florida in the U.S. Very little is known, however, about those aspects of their reproductive behavior that make them a successful invasive. In order to characterize their reproductive biology, I asked the following questions of Z. indianus: (1) at what age do males and females become sexually mature? (2) How many progeny can females produce from a single mating? (3) How many females can a single male inseminate? Knowledge of these reproductive characteristics are useful to understand features of invasive as compared to noninvasive species of the same insect family as well as to suggest possible targets for biological control.

17 Bryan Lam

Dr. Howard Taras

Community Outreach Methods in Clinical Research, Clinical & Translational Research Institute

Objective: Community engagement activities through electronic means and through social media platforms such as Facebook have the potential to inform the public about health sciences, enhance public trust in clinical research, enhance recruitment of research participants from the community, and enhance the applications of science to the general community. Effective partnership models are important for creating sustainable health disparities outreach and dissemination efforts. However, community receptiveness and partnership models for electronically based academic-community partnerships remain unstudied. Our survey of community agencies assesses the adoption of electronic communications and community interest in electronically based, academic-community partnership. Methods: A telephone-based, interview survey of community agencies was conducted regarding forms of electronic contact with the general public (email, website, and Facebook), and interest in forming an electronic partnerships. The primary outcome measure will be the number and type of community agencies interested in partnering with CTRI clinical research events. Research Findings: Forty community agencies including health-related, social services, and ethnic organizations were surveyed. Email and email newsletters were cited as the predominant form of electronic contact with social media platforms used as a supplementary form that specifically reached a younger computer-literate subset of their client population. There is high adoption of electronic and social media communications with 34 agencies surveyed (85%) maintaining Facebook accounts and 8 (20%) currently sending research-related information electronically. 29 (72.5%) of agencies indicated interest in electronic partnership formation through either Facebook and email with an academic health center. Health condition-related agencies were more receptive to disseminating research information through an electronic-based partnership but all agencies indicated preference to receiving specific types of research information from the academic health center believed to be of interest to their clients. Summary : Broadening the knowledge of effective community engagement practices by academic health centers is vital to initiating new electronic academic-community partnerships. We have found that community agencies are primarily

using electronic media communication and increasingly interested in adopting social media outreach. Academic health centers have the opportunity to analyze and develop such electronic partnerships that allow the bidirectional flow of research and health information that can result in improved health outcomes in the surrounding community.