

## Guest Blogger: Mark Brunson

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USU Extension Sustainability helps everyday people live more healthy, happy and sustainable lives. This is the twenty-first of a series of posts that feature real people who are making real changes in their lives to be more sustainable.

This month we are featuring USU Environment and Society Professor Mark Brunson. Discover Mark's thoughts about his study on non-native frogs in Hawaii, the role of social acceptability in natural resource management, his own efforts to live sustainably, and more!

### 1. What are some major research projects you are currently engaged in?

My students and I are currently studying:

- How rangeland products and services other than forage for livestock influence management decisions by ranchers;
- Factors that influence the adoption of new rangeland management practices and tools by public land managers;

- Connections between water and people in the diverse working-class neighborhoods near the Jordan River on Salt Lake City's west side; and
- Public perceptions of urban deer issues along the Wasatch Front, and preferences for different deer management options.

In addition I'm about to start two new projects, one that looks at cross-boundary partnerships in U.S. national parks (see answer below) and another that looks at the feasibility of a new approach to restoring sagebrush ecosystems that are at risk of being degraded by non-native invasive grasses.

### 2. What part does social acceptability play in managing our natural resources?

State and federal public lands are managed by governments on behalf of their citizens, and that means land managers must take into consideration how society views natural resource conditions and the management practices that can create and maintain those conditions. Of course there are other considerations as well, including economic costs and benefits as well as ecological processes and species protections, and land managers' job is to balance those considerations. That means managers should understand how the public views the land and its management. Without intentional measurement of public attitudes and social acceptance, the only viewpoints they'll hear will be from the loudest voices and those paid to lobby government, whose ideas may not match those of the citizenry.

### 3. You are participating in a multi-institutional initiative researching national parks, can you tell us a little bit about that? What did you enjoy most?



That project is just beginning now, so I can't tell you what I enjoyed most. Our idea is that when new national parks or monuments are created, their boundaries represent a political compromise between the desire to protect natural or cultural resources and the need to address other demands on the land. (Think of how the Bears Ears National Monument boundaries were created.) Thus the boundaries typically don't have any ecological meaning at first, but over time, differences in management will lead to differences on the land that affect wildlife habitats and plant communities and ecological processes such as

wildfire or non-native species invasions. Our research over the next four years will quantify some of the ecological effects of boundaries, and also explore how different sorts of cross-boundary partnerships can diminish those ecological effects to improve park sustainability.

#### **4. Which of your past projects are you most proud of?**

That's an interesting question that I've never been asked before. There are two reasons why I might be proud of research: because it did something new that advanced the types of science that I do, or because it made a difference on the land.

For the first reason, one study I'm proud of looked at a non-native frog called coqui that's become widespread on the island of Hawaii. The state of Hawaii has spent millions trying to eliminate the frog because it's an invasive species and its very loud night-time calls are a nuisance for some people, but success has been low because not everyone wants to participate in frog control. We learned that Hawaii residents are becoming "habituated" to coqui so their interest in outright eradication has decreased. We think rather than spraying chemicals we should help residents reduce habitat quality so there are fewer frogs and their impacts are reduced, so we did a study where we simultaneously measured habitat quality, sound levels, insect prey density, frog density, and landowner opinions at the individual property level. To our knowledge no one's ever done something like that before.

However, I don't know if that study has affected the land very much so far. A study I've been part of that has made a difference is SageSTEP, a long-term research project that since 2005 has examined different approaches for restoring and sustaining sagebrush ecosystems in the Great Basin. We've made discoveries about why some sagebrush landscapes are more likely to be invaded by cheatgrass or encroached upon by pinyon and juniper than others, and also about which restoration and risk-reduction practices are most effective and most socially acceptable. SageSTEP findings have greatly influenced the government's Integrated Rangeland Fire Management Strategy, which is designed to reduce wildfire risk and non-native species invasion.

#### **5. What does sustainability mean to you?**

I'm not always sure that the word "sustainability" is the best one to use, because it seems to imply that there's a single ideal condition of social or ecological systems that, if we could only find it, we should strive to maintain in perpetuity. That's impossible, because

there always are "perturbations" (disturbances or events) that knock systems out of the optimal condition. To me, the most sustainable systems aren't ones that maintain an optimal state, but those that are most resilient to inevitable perturbations – this could be anything from a severe drought to a devastating wildfire to a change in presidential administrations – so that they can withstand the disturbance while retaining fundamental conditions, processes, and components that protect the integrity of the system.

#### **6. Can you provide a couple of examples regarding how you practice sustainable living?**

Two things that matter a lot in my household are organic food production and waste reduction. We compost everything that might be compostable, including household waste as well as leaves and other landscape plant materials, and we use that compost in the spring to build up soil to help us grow many more vegetables that we can consume. From July into October we give away a lot of what we harvest to students and senior citizens, and we preserve (often by freezing rather than canning) as much as we can while also having meals centered around fresh vegetables pretty much every night. Meanwhile, our composting behaviors plus our reuse of paper products and careful attention to reducing packaging means that we only need to take our recycling can out to the curb every 4-6 weeks and our trash can every 2-3 weeks. Because the trucks don't have to stop at our house every week, that saves a small amount of gasoline and exhaust into the air – if everyone in Cache Valley did this we could reduce the economic and environmental costs of fuel as well as extending the life of the landfill.

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