

The Imperatives and Challenges of Addressing Climate Risk in Cooperative Extension Communities



An Opportunity or an Obstacle to Extension Work?

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Challenges with Climate Change Discourse

In a recent issue of the *Journal of Extension*, the editor stated that “[c]limate change is obviously on Extension’s radar screen” (Hoelscher, 2013). This statement is supported by a number of publications addressing the topic (e.g., Fraise et al., 2009; Layman et al., 2013; Burnett et al., 2014), by formal Extension programs and initiatives aimed at informing Extension professionals and clientele (e.g., eXtension Climate, Forests and Woodlands Community of Practice) and initiatives for coordinating with and learning from the research and practitioner community (e.g., Association of Natural Resources Extension Professionals’ Climate Science Initiative) and working with communities to anticipate, prepare for, and respond to climate change challenges (e.g., Haden and Jackson, 2011).

However, at the 2013 Extension Sustainability Summit, Extension professionals expressed a diversity of opinions on whether the topic should be viewed as an opportunity or an obstacle to Extension work (Brain et al., 2013). Some participants in climate change discussions expressed discomfort about discourse with their clientele on the topic; their group conclusion, crudely stated, sounds something like “climate change is the third rail for most Cooperative Extension professionals.” An informal tally of Cooperative Extension climate change web-based pages, products, initiatives, formal programs, annual report announcements and strategic plan commitments, which I conducted for this

article, demonstrates the diversity of approaches to the topic. My tally shows that 16 states have explicit climate change programs or research and outreach themes, and 14 refer to climate change in documents and news articles, but lack programs. For eight states, climate change information can only be found by way of the website Search function or links to resource pages (many times only in conjunction with College of Agriculture research, and not explicitly Cooperative Extension work), and 12 states do not mention climate change anywhere on their Extension websites. This diversity of opinions and levels of commitments, within Cooperative Extension, to address climate change reflects the concerns and attitudes of the broader society in the United States (Burnett et al., 2014). This array of attitudes has been well documented in the ongoing Six Americas study (Leiserowitz et al., 2011).

The origins of discomfort with climate change discourse among some communicators, based on their experiences with clientele, have also been well documented, and include: clientele’s lack of trust in government or international sources of information (Brugger et al., 2011), differing tolerances for risk and understanding of uncertainty (Creighton et al., 2011; Moser, 2014), clientele’s bias toward confirming previously held beliefs (Creighton et al., 2011), reliance of some clientele on feeling-based decision-making (Brugger et al., 2011), conflicts with available

information (Burnett et al., 2014), or disbelief in the attribution of any climate changes to human activity (Moser, 2014; Peterson et al., 2013). Dealing with attitudes that contrast with scientific findings is not new, but the cultural polarization associated with attitudes about climate change may be more characteristic of the ways in which some people hold to particular cultural world views (Kahan et al., 2012; Kahan, 2012; McCright and Dunlap, 2011). I think it is safe to say that cultural polarization may be anathema to an organization like Extension, which aims to build bridges between university research and the potential users of that research, and which relies on working within the cultural contexts of its clientele and their communities (Brugger and Crimmins, 2013).

Climate Challenges for the Southwest

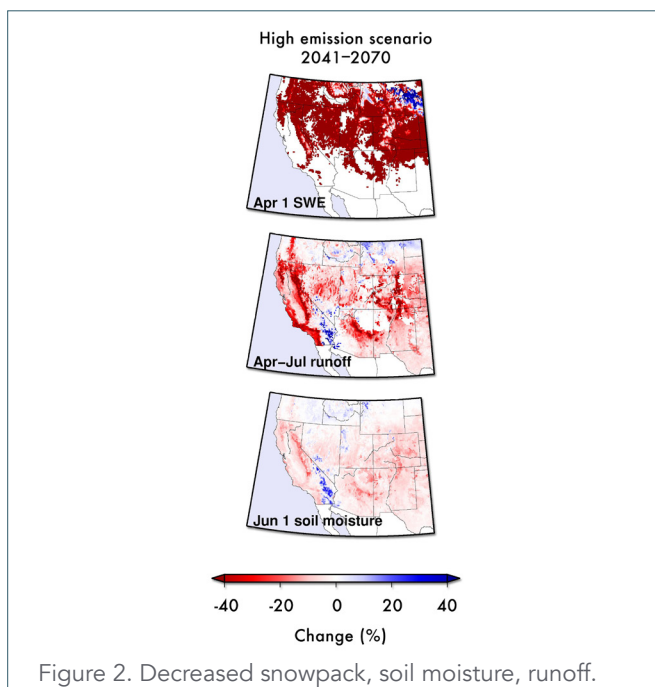
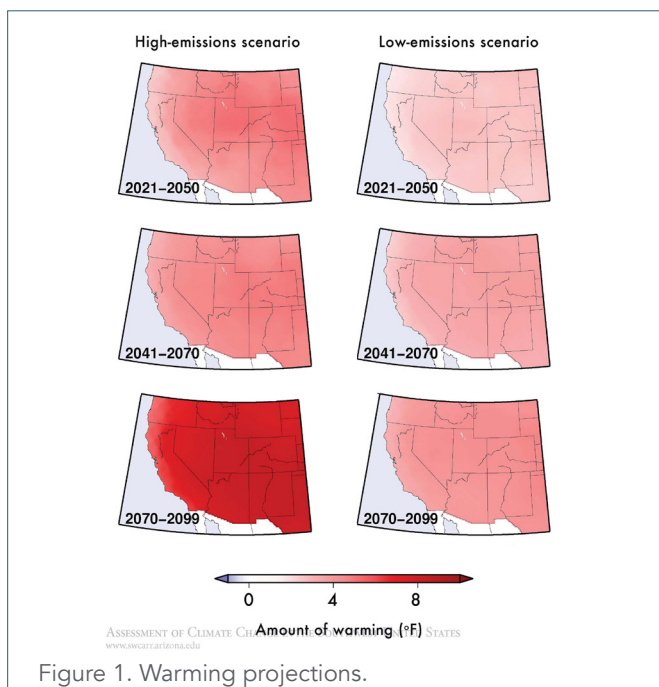
Front and center among concerns about sustainable resource management in the Southwest are issues related to water, forests, agriculture, and human well-being. The recently published Assessment of Climate Change in the Southwest (Garfin et al., 2013), a comprehensive scientific review and synthesis of studies on climate change and its impacts in the region, notes two key climate facts that affect six southwestern states: during the last 110 years, regional temperatures have increased, precipitation has not (Hoerling et al., 2013). Given that the Southwest is prone to multi-year dry and wet periods (Hoerling et al., 2013), the observed increase in temperature profoundly affects snowpack and evapotranspiration, which

affects the character of drought. These proximate effects have led to cascades of ultimate effects, such as longer frost-free season length, which impacts crops (Frisvold et al., 2013), the life cycles of insect pests (Fleishman et al., 2013), and vegetation diseases, or longer, hotter, and more destructive fire seasons (Fleishman et al., 2013).

Climate models, which afford scientists the opportunity to conduct multiple experiments to understand the effects and interactions between aspects of the global and regional climate systems, project further warming (Figure 1), decreased snowpack, soil moisture and runoff (Figure 2) (Cayan et al., 2013). Given the assumption that one so-called climate forcing factor, heat-trapping gases in the atmosphere, will continue to increase at rapid rates, these projections lead to plausible impacts that can affect every economic and resource management sector in the region. Projected impacts, for a Southwest that is 5-8°F warmer during the course of this century, include less reliable surface water supplies, increased extent of wildland fires, increased risk of the spread of illness and disease, and greater risk of the encroachment of ocean waters into coastal environments and infrastructure (highways, airports, sewage and wastewater facilities, power plants).

Opportunities

The aforementioned climate challenges can suggest a gloomy outlook, but can also create



opportunities for maintaining, developing, and implementing practices for sustainable resource management. One frame that bridges the worlds of climate change, extension, and sustainability discourse is adaptation, or adjustments “in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (McCarthy et al., 2001). This very technical definition can be translated into something along the lines of *something’s coming down the road, climate-wise, so let’s get ready, and maybe make some changes so we can get through it, or be first in line to take advantage of it*. Moser (2014) mentions “that talking about adaptation rid climate communication of ideological baggage, because it addresses common local interests and occurs far away from the big media and policy arenas where discourses are trapped in polarized camps.” Fraisse et al. (2009) find this particular climate change framing attractive, because it also focuses on developing strategies to prepare for risks associated with seasonal climate variability. Again, the adaptation framing, combined with activities to assess community needs and the state of resource stewardship, builds on Extension’s institutional knowledge, community programs, and “social capital – the trust, respect, and cooperation between its members and stakeholders on both sides of the boundary” (Brugger and Crimmins, 2013). Extension’s deep understanding of local issues, its practice of meeting face-to-face to focus on the concerns of clientele, and its

ability to bridge between networks of scientists, professionals, agencies, and residents gives Extension the ability to create neutral environments for discussion, deliberation, and consensus.

The recently formed USDA Regional Climate Hubs also provide an opportunity and support for Extension to successfully and fruitfully engage in work on climate change. Secretary of Agriculture, Tom Vilsack, announced the Regional Climate Hub concept in June 2013, and the locations and more specifics about the USDA Regional Hubs for Risk Adaptation and Mitigation to Climate Change in February, 2014 (USDA, 2014). Cooperative Extension is explicitly mentioned in literature on the Hubs, and Extension can play an important role in planning and developing various Hub functions and activities, such as program delivery, partnership development, risk and vulnerability assessments, interpretation of forecasts and information for adaptation planning, and outreach to farmers, ranchers, forest landowners, and rural communities. Moreover, the USDA Climate Change Science Plan (USDA, 2010) suggests numerous opportunities for Extension to engage with USDA clients in applied climate change science, planning, extension, leadership, and outreach activities. The Science Plan articulates four elements: effects, adaptation, mitigation, and decision support (See inset on page 20 for a few of the most germane priorities.)

The Way Forward

“We can’t keep doing the same things of the past and expect to solve the problems of the future,” 2013 Extension Sustainability Summit participant citing one of the presenters.

How might Cooperative Extension move forward to address climate change, a topic clearly on the institution’s radar, in ways that honor the scientific evidence, resonate with clientele and cooperators, and benefit communities, and yet maintain a healthy distance from the third rail? Clearly, not by side-stepping the issue...addressing climate variability and change is essential, if we are to manage natural resources sustainably, and maintain value and vitality in our economic endeavors. Fraisse et al. (2009) suggest the first step is to understand the perceptions, attitudes, goals, decision-making needs and processes of clientele. They, and others (e.g., Brugger et al., 2011; Cone et al., 2011, NRC, 2009), suggest



doing this through participatory methods, face-to-face interactions, and user-focused communication – in other words, start with the perspectives of community participants. This is a time-honored approach in Extension.

After laying a foundation of mutual understanding, Extension professionals can rely on other time-honored tools in their toolkit: facilitation and discussion. Creighton et al. (2011) refer to this as helping people to express their concerns about the uncertainties and the limitations of scientific knowledge, data, and models. They suggest that the use of scenarios, narratives, and analogies may be most productive. These kinds of approaches, used by federal agencies, the military, and businesses (e.g., Schwartz, 1991; Weeks et al., 2011) can help people explore their concerns about plausible future changes, lead to potential pathways that inform the management of risk, and lead to acceptable outcomes (Haden and Jackson, 2011), without resorting to the use of complicated models.

Hand-in-hand with such futuring exercises is the process of deliberation with analysis (NRC, 2009). Extension professionals can use an effective low-tech approach, such as assessing stakeholder needs in person and then framing responses in terms of trade-offs, benefits, opportunities, and threats, which can then be deliberated over by Extension personnel, collaborators, and community members (Brugger and Crimmins, 2013). A more high-tech version of this is discussion support (Nelson et al., 2002), in which conceptual or process models are used not to make a specific prediction of the future, but to inform discussions about community vulnerability, or explore the ways in which a system is sensitive to change.

A down to earth way of thinking about living with climate change is to build on experiences of living with climate (Brugger and Crimmins, 2013). They mention that adaptation to change resonates with Extension's rural clientele when the focus is on what we can control – meshing the larger context of past management, easy and cost-free individual and household level approaches, and integrating climate change practices into existing procedures and policies. These do not require accurate or controversial projections of future climate. Moser (2014) points out that pointing to past experience, or experiences in other locations, can help people

visualize and ground their thoughts about adapting to change, and can provide a sense of continuity between past and future risk.

Finally, Extension professionals can build capacity within its ranks, and within willing communities of interest, by focusing on early adopters – the “army of the willing” – another time-honored practice. One approach is to prioritize audiences, based on their receptivity to the scientific community's messages on climate change, and to incorporate climate adaptation messages into their existing programs (Burnett et al., 2014). Outreach and training can take many forms, including the use of webinars to reach remote populations, and the formation of knowledge-exchange networks or communities of practice (Gamble et al., 2011).

USDA Climate Change Science Plan Priorities

Effects

- Enhance our understanding of social and economic indicators relevant to production systems, rural communities, the agricultural workforce, and other human dimensions, and how these sectors are affected by climate change

Adaptation

- Strengthen science-management connections (education, extension, and management input into research direction)
- Identify strategies and practices to enable farmers and other landowners to manage for longer growing seasons, increased CO₂ concentrations, and potential productivity increases
- Devise new risk assessment and planning processes while improving existing mechanisms

Mitigation

- Build stakeholder capacity for estimating, measuring, and tracking GHG emissions and C sequestration at agricultural and forestry production scales

Decision Support

- Increase public awareness of climate change science and solutions for policy and behavior change
- Extend models and tools developed to assess adaptation and mitigation strategies with user-friendly interfaces that facilitate decision support
- Inform both public and private decision-making authorities for rural development to protect ecosystems and the environment

