

# Speaking With People in Our Profession

## An interview with Dr Jayne Belnap

Jayne Belnap is a soil ecologist with the United States Geological Survey based in Moab, Utah. She received undergraduate degrees in biology and natural history from the University of California, Santa Cruz, her MS in ecology from Stanford, and her PhD from the Botany and Range Management Department at Brigham Young University in 1991. She is an extremely productive scientist, and a sought-after colleague, speaker, and collaborator. Jayne is internationally recognized for her work on biological soil crusts, and in identifying their numerous functions in arid environments around the world. She has been invited by numerous governments on five continents to train scientists and land managers on issues of soil ecology and natural resource management. Jayne is Past President of the Soil Ecology Society and on the Governing Board of the Ecological Society of America. Recently, I encountered her coming out of a 400-year-old church in a desert area of North America, and she was in a reflective mood and willing to sit down and talk about her work.

### Learn Globally, Act Locally

*Question: What activities are most meaningful to you right now?*

*Answer:* I really want to help address our natural resource problems. I know I can't save the world, but I would like to help create conditions where people can expect a certain minimum quality of life. I'd like to think I can bring a little dignity, a little elegance to those lives. We have to try and think about how we are going to live sustainably, and I am working to this end.



Jayne Belnap at ease in her work environment.

*How do you define "sustainability"?*

I don't agree with a lot of the existing definitions. I think we need to distinguish between needs and wants. I don't think we should reduce our needs to a level of grubbing for worms in the dirt, but we need to get everybody to a level where they have what is required to provide a sense of security.

*Given that much of the rest of the developing world seems to aspire to consumption levels of the developed world, this must mean your interests and activities are at a global scale?*

Yes, we cannot just be American in our perspectives, but we must have a global course of action. However, I am very frustrated trying to work at large political scales. I am a big fan of working at the scale of local communities, and hopefully if those communities operate sustainably, then we can impact larger-scale decisions. Really, I work around the globe as a way to learn about where I live. My view of life often is too simple, and it needs to be broadened. In a sense, learning globally and acting locally may be a correct summary of my philosophy.

*You are saying that we still often think too simply about the use and management of our natural resources?*

Yes. It is important to remember everything is connected. For instance, some people talk about increasing soil carbon in rangelands by trampling in plant litter that is on the soil surface. But that plant litter on the surface protects the soil from erosion, helps keep soils moist and cool, and often provides a safe site for seedlings. Thus, if we trample that material into the soil, we lose those services. We need to keep all the implications of our actions in mind.

*Not recognizing unintended consequences is a recurring mistake?*

Over and over again. For example, drilling water bore holes in arid environments without addressing other resource limitations, despite the best of intentions, certainly has become a classic mistake that often results in lasting land degradation and famine. People like Bill Gates, even with their phenomenal philanthropic gestures to end disease, also need to be thinking at the same time about how the people who have been saved will make a living and obtain food. We often come up with half-solution prescriptions all the time, not thinking of the unintended consequences of our actions. Developing more drought-resistant beef cows is another example of this problem. In this case, these animals had some tremendous advantages, but the local herders wouldn't use them, to the great puzzlement of the scientists. Finally, someone asked the herders why, and they explained that during droughts, cows would often lie down, refuse to get up, and die of thirst. If the herders got them on their feet, they often would last a few more weeks. The new animals were too big to pick up and thus were unlikely to survive severe droughts.

Here in the United States, we have very recently had a very successful release of the beetle from central Asia to control salt cedar along the Colorado River. As a result, we now have miles and miles of dead and dying trees. Ok, we've gotten rid of the salt cedar. Now, what's next? There is no plan for what's next: no one has looked at what will replace the salt cedar, and there is no plan for planting desired species. There could be some serious unintended consequences to releasing the beetle, which might manifest itself in a serious invasion of noxious weeds. It would have been good to have thought this through, from beginning to end, so we could better plan our response. We don't seem to often take the time to always think things through.

*Yet, we have over one billion people living in these highly variable, often poorly productive and highly unpredictable environments. What is to be done?*

These people often live on the edge, without a buffer, without long-term savings. We need to create long-term security, and assurances that they can be cared for in their old age. We also need to think about policies that encourage livelihoods that allow them to live in these environments, with a diversified income beyond a reliance on livestock.

We also have to keep in mind that here in the United States, and in many arid regions around the world, we will be looking at much drier environments in the coming decades. In the next 30 years we are going to see *average* soil moisture levels reduced to the levels seen during the Dust Bowl. We are going to see stressed rangelands in the United States like we have never seen before. We are going to have to come up with some new approaches to land use in these regions. This is going to take foresight and willpower on the part of everyone, from local producers to policy makers in Washington.

*Do we have examples of success that we can draw upon?*

Yes, there are people I work with, like Jeff Herrick, who are working to bring people together at the local, regional, and national levels and are accomplishing change. There are also institutions that can and do respond, when the individuals within those institutions figure out how to work together. These institutions often have considerable inertia, but they still can respond. We need individual people to make the difficult decisions needed to preserve our soils and our rangeland health into the future, and to then insist that policy makers back up these decisions with policies and laws. This will take guts and sacrifice on everyone's part, because these decisions might not be in anyone's short-term interest. We can change our ways, we can be effective, we just need to have the will power to do it. But we can't depend on others to do it for us: for example, there are some field offices in the US land management agencies that are marvelous, but there are others that are less so. So, in the end, it is the local people, the producers on the ground, who

need to stand up and insist on the changes we need to conserve our resources. This is asking a lot from everyone.

*So, you should feel quite meaningful in what you are doing?*

In one moment, yes, but in the next moment I can find despair. I am always afraid I won't be able to do enough soon enough.

*But you won't quit?*

No way. I feel like my activities are buying time, that we really can meet this challenge. People can change things in

a heartbeat—just look at the Berlin Wall that nobody thought would ever come down—but we just have to get us all to that heartbeat of change.

---

*Interview was by Susan R. McGuire, a pen name used by the author of this article. Her interviews with members of our profession are a regular contribution to Rangelands. All costs of publishing these interviews are sponsored by a research unit of the Agricultural Research Service, the in-house research agency of the United States Department of Agriculture, whose rangeland scientists are a segment of our Society.*