

BRIAN:

When Tom asked me to moderate this panel and he handed me a list of panelists, when I looked at it I said, “Boy, that's interesting. There are some pretty extraordinary people on that list.” But it was a really eclectic mix. It wasn't immediately apparent to me how this thing would fit together and what the complementary between the talks was. So I had to think a little bit about what is the common story, what's the common thread that's running through this set of panelists this morning.

And the one obvious common thread is that these are all individuals who have all been trying to keep water in rivers, trying to restore water in rivers. Instream flow, environmental flows, have been at the heart of the work that each of them are doing. But what's really interesting about the talks that you're going to be hearing this morning is the variety of different approaches, ranging from the scientific to interacting with corporations and water utilities and other water managers and that sort of thing.

I thought I'd try to illustrate that common storyline by sharing with you a little bit about some of the evolution of our own thinking within The Nature Conservancy about this challenge, and how much that has changed and evolved over time. And I think that most of you, or probably all of you, like us, find your work being oftentimes a challenge of trying to adapt to what you perceive as being insufficient. Things aren't the way we want them to be. What are we going to do about that? How are we going to get it -- and how are we going to accomplish that? How are we going to get more water back into rivers? How are we going to keep more water from being removed from rivers?

We're all facing barriers, of course, barriers and hurdles and people who don't see the world the way that we do. We're all having to adjust as we go. And so, as I thought about this panel, I thought back over the history of what The Nature Conservancy has been involved with over the last 20 years. So let me wind back to 20 years ago. When I first started getting into this arena, this discussion about instream flows, I started reading some of the work that was being done by some of the leading scientists from around the world, people like Angela Arthington and Stuart Bunn and some of the others down in Australia that were doing some really, really interesting work, as well as Jackie King, Cate Brown, Rebecca Tharme, and Jay O'Keefe out of South Africa, and then of course within the United States, such as many of you that are in the room here, and people like LeRoy Poff. And I saw that there was a fundamental change in thinking, a

change in theory, a change in direction that was happening but it really wasn't being expressed as such, it wasn't being really articulated or at least not congealed into any sort of a statement. That was when we came forth and we said, "I think they're talking about a paradigm shift here," and that was when we coined the phrase "natural flow paradigm." We thought that it would be helpful to just kind of recognize that there was something different about the direction this thinking was headed in.

But there are always questions about what is "natural" and how much change has occurred. I would be in a meeting with 20 different scientists, and they each would have a different perception about how things used to be or how things should have been or what flows would have been like under natural conditions. I remember very well a meeting about the Missouri River back about 20 years ago, there was one scientist that was arguing that things were really relatively unaltered, and then others that were saying, "What are you talking about? It's hammered, it's completely different than it used to be." And so, that insufficiency of having a common vocabulary and having a way to measure the differences between time periods and that was really the motivating factor for us then to develop some tools. Like the IHA - the Indicators of Hydrological Alteration.

Then of course there was the challenge that so many of you were undertaking of trying to apply these new thoughts, these new directions, these theories, these conceptual frameworks to real places. There was a real acceleration of activity of trying to do site-specific, reach-specific, river-specific analyses on environmental flow. And in that, came a broadening out of the considerations of the plants and animals and ecological processes that should be considered in trying to define these interactions between natural flow conditions and how that ecosystem functions now. People were really facing the challenge of trying to integrate that information and pull that all together. But it wasn't too long before we started to look around. We said, "There's some excellent work being done in different parts of the world," but it was rather labor- and time- and cost-intensive. And because we were a global organization, we're looking around and saying, "How in the world are we going to do this in the hundreds of thousands of rivers and streams that need attention that are being utilized for human development purposes?"

And so, that sort of insufficiency of being able to take the site-specific approach and multiply it by those kind of numbers was really the motivation behind trying to bring a group of scientists together that we convened in a workshop, about 20

individuals, including some of the folks here in addition to Angela, Jonathan Kennan, and some others, and really trying to hammer out, “Well, how would we take what we've learned and what we've been thinking about and leverage it into something where we could perhaps address many, many more places simultaneously?”

And so we tried to work through that logic, and of course came up with the Ecological Limits of Hydrologic Alteration, the idea being that you could categorize or type streams and rivers into different classes, different categories, and if you understood at least some of those individual examples within the class, then perhaps you could legitimately extrapolate those relationships to other streams and rivers within that class.

I thought that was a really, really important bit of progress, but then again, after spending a couple of years and watching people taking up ELOHA and trying to apply it in different places—and as Jonathan Kennan is going to share with you here in a moment—some really interesting and really important progress has been made in applying that approach. But at the same time, we said, “Okay, well this is kind of getting batches of standards developed for streams,” but again, as compared to the size of the challenge, were insufficient still. So what are we going to do about that?

Then, we started to push on, well, we're not going to be able to do much science for too many places, and so then what do we do? What's the default? How do we backstop for places that would still lack scientific assessment? How do we offer something and put it forth in as scientifically credible of a manner as we can so that if somebody says, “If you don't have any science information, then we just won't suggest that there needs to be any protection there.” Well, we wanted to reverse that thinking, of course, and so this idea of a presumptive standard really came out of that, again, gap filling as a consequence of the insufficiency of not yet having the approach and the logic, and the tools to be able to apply -- to be able to cover literally the planet, all the rivers and streams that were being developed and utilized.

So, where are we today? Taking stock, I don't think it's news to any of you in the room that for most of the world, we're still losing ground. In this picture, any place that's got a color here—yellow, orange deep red, magenta—these are places where more than 75 percent of the renewable natural flows are being depleted on

a regular basis, either on an ongoing, continuous basis, or at least episodically, say, when you get into a string of dry years – when you get into a drought.

These are places where the river gets shrunk by more than three-quarters on a recurring basis. As you all know, that's absolutely certainly ecologically damaging to those places. Here's a little bit of closer perspective zooming into United States. Again, with the deeper reds, you're getting into depletion of more than three-quarters on a regular basis.

This is the month of August, but this is an average August condition, and these are modeling results but we've also looked at USGS stream gauge data and it correlates very, very strongly to this. We've got a tough situation here. We've got rivers that are being utilized to a very, very heavy extent, and unfortunately for many of them, they're not getting any better. And so, for us and for many of you and for some of the speakers that you're going to hear from, again it forces us to shift. We're passionately committed to trying to keep some water in streams and to restore some water in streams.

One thing that has happened to us in the last few years, particularly at the global level of our organization but also across a lot of our field programs is a little bit of a shift in strategy. I shouldn't say a little bit. It's a pretty fundamental shift in strategy in many places toward thinking about rather than just trying to stand on good, solid science, let's have some conversations with the users of the water resources. With the people that are seeking more water supplies, let's have that conversation. Let's try to understand the way that they're thinking about this. Let's try to engage with them directly so that we can perhaps find ways that they can lessen their needs or perhaps they can invest in some innovative ways to actually reduce their current demands on the water resources.

So we started looking at different ways to approach this with cities and urban water supplies, engaging directly with dam operators, of course, and the dam industry, both for existing dams and for future plan dams, thinking about certification programs, and recognizing companies or utilities that were practicing good stewardship, as you'll hear from Michael Spencer here in just a moment as well. And thinking about the role of water trading, water markets, that sort of thing, and how does that work out within the local economies, within meeting the variety of needs and demands on the systems, and can we find some way to get some water back into the rivers using some of those sorts of approaches.

For myself, I had the opportunity a couple of years ago to think about this a little bit more deeply. And one of the things that really influenced my decision to write a book was that we have been doing some market research on what the general public understands about water and water management situations. As part of that process we did one market survey. The survey was limited to the United States, but it revealed that about 80 percent of Americans have absolutely no idea where their water comes from. They don't know whether it comes from surface water, they don't know if it comes from groundwater, they know it comes out of the tap, but by no means could they name the river that it's coming out of.

Some additional polling and anecdotal research that I have been doing suggests that if you look at how many people in the world understand the concept of a watershed, it's a much smaller fraction. If you're to then probe further and see how many people understand the basic concept behind supply and demand, the concept of a water budget or a water balance and the need to pay attention to that so that you can manage through scarcity and shortages, you're probably down to a couple of percentage points of everybody on the planet that understands those concepts.

The motivation for writing this book was to try to offer some thinking about those basic fundamentals of water and water budgets and watersheds, and try to help people understand those issues so that perhaps university students and local watershed groups and watershed councils might have a deeper understanding and be able to apply those principles more effectively in their work.

So the question that we are going to be asking this panel this morning is reflecting on this and reflecting on the different approaches that they're taking, to try to accomplish similar goals that all of us are working on. Is it the scientific uncertainty that's holding us back from securing instream flows, from keeping water in rivers and restoring water flows in rivers? Or do we need to start thinking about some other strategies, not replacement of the science, but what else do we need to do? What are the mix of activities and communications and skill sets that our community of instream flow conservationists and instream flow interests really need to be thinking about?

So this morning's panel is going to really help to illustrate that for you. We've got a couple of top-notch, world-class scientists in Jonathan Kennan with the US Geological Survey and Angela Arthington from Griffith University in Australia. You heard some of the accolades for Angela last night. She is going to share with

you some of the progress and the work that they have been doing down under in Australia. Jonathan is going to bring us up to speed on some of the work going on here within the United States and particularly within his agency to really bring these issues into the frameworks of water use accounting and water budgets, and really starting to make a placeholder if you will, for in-stream flow considerations in that milieu of activities that are so important within the US Geological Survey.

Unfortunately, Dave Murray was not able to be here today, so we're going to have a little bit of extra time for the panel discussion for the Q&A at the end, but we also have a little bit more time for some of these speakers to be able to share some of their thoughts with you. Stuart Orr comes to us from great distance, from Switzerland, where he heads up a water stewardship program for World Wildlife Fund International. Stuart's been doing a lot of really, really interesting work with big corporations and investment banks from all around the world, and he's going to, I think, really open your eyes to some of the potential for protecting in-stream flows through that kind of activity.

And then Michael Spencer, also from Australia. We've brought in people from all over the world for this morning's panel. Michael's worn many, many different hats over the course of his career, but what he's going to be sharing with you this morning are some of the ideas and motivations behind this concept of developing a certification program around good water stewardship, around sustainable water use practices and some of the thinking that's come out of this coalition of groups called the Alliance for Water Stewardship. And so, without further ado, Jonathan, if you're ready I'm going to go ahead and ask you to come up and get this started. Thank you.