Transcript - Native Waters on Arid Lands Podcast

Episode 2: Archaeology and Paleoecology of the Great Basin and Southwest with Dr. David Rhode
http://nativewaters-aridlands.com/2017/05/rhode/

Abbreviations:

KF: Kelsey Fitzgerald
DR: Dave Rhode

KF: Hi, This is Kelsey Fitzgerald with the Native Waters on Arid Lands project. Welcome back to our podcast, where we're talking with different members of our research team about their work. Today we're sitting down with Dr. David Rhode, who is a Research Professor of Archaeology at the Desert Research Institute in Reno, Nevada, to learn a little bit about how the climate in the Great Basin and American Southwest has changed over the past 20,000 years, and how people in ancient cultures lived and adapted.

KF: Dave, Can you tell us a little bit about your background and area of expertise?

DR: I am an archaeologist and paleoecologist. I've worked in Western North America in prehistory for the past 40 years or so, pretty much throughout western North America, but I specialize in the dry-lands, so the Great Basin and the Southwest are my main areas of expertise.

KF: In your work, what are some of the methods that you use to learn about ancient environments and cultures?

DR:The main methods that I have expertise in on an archaeological standpoint is looking at ancient plant remains from archaeological sites to understand how people were using the natural environment, the plants that grew around them, and what the plants were used for food, what plants were used for constructing shelter, textiles, and so forth. So, that gives me an insight into the kinds of ways that people lived-in the past and used the natural environment. That's one part of my research. The other part of my research is looking at the past environments themselves, and by utilizing a number of techniques also including plant remains, but these are fossil remains from sediment from lakes or bogs, looking at changes in pollen, or using ancient packrat nests to find plant remains going back thousands of years, to understand what specific plants grew in specific areas. And in that way, I can reconstruct the vegetation history and compare it to what I find in the plant record for archaeological sites.

KF: What do we know about how the environment in the Great Basin and southwest has changed over time, and what sort of evidence do you look for to learn about that?

DR: Since the last glacial maximum, about 20,000 years ago, the environments of the Great Basin and Southwest have changed dramatically. Back 20,000 years ago, it was very much a cold and much wetter place, with large lakes, forests covering much of the area that is now desert.

So, now we live in a dry, arid southwest, with lots of scrublands and grasslands, and a few forests on the mountains, but it's a very different place. The ways that we have developed to reconstruct that history uses fossil evidence such as ancient pollen and packrat middens, as well as tree rings from ancient bristlecone pine trees and other pine or other conifers, that gives us a wonderful record on an annual basis of very detailed climate changes.

KF: How far back into history does our archeological knowledge go in the southwest and Great Basin?

DR: We have recent information that people were in the Southwest and Great Basin at least 14,000 years ago.

KF: How did the ancient communities of the Great Basin and southwest respond to changes in climate?

DR: The societies in the Great Basin and Southwest both had a wide array of responses to climate variability and long-term climate changes, ranging from migrations on the very large end, or depopulation - abandonment - of regions for long periods of time, down to much more finer adaptive responses such as changing their diet, changing how much land they cultivated, what kinds of crops they cultivated, and also how much they traded or interacted with their neighbors, with their extended families and other societies.

KF: And what do we know about the types of crops that were cultivated here in the southwest?

DR: In the southwest proper, a whole range of different plants were cultivated in one way or another. On the agricultural side, the mainstay was maize. The agriculturalists in the region - the Hopi, the Tohono O'Odham, developed a wide variety of different maize strains that were adapted to lots of different environments. And had important social and religious meaning to them. In addition to maize, native squashes were developed, varieties of bean - domesticate - were also developed. Cotton was developed among the Hopi. And in some of the southern desert areas, agave plantations were farmed using natively domesticated agave types. If you get away from the pure domesticates, a whole wide range of wild crops including pine nuts, including a variety of small seeds, mesquite pods - these were all crops that were very important in some areas for the diet, and they were cultivated to some extent in terms of pruning, broadcast sowing, irrigation and other what we consider horticultural practices.

KF: What do we know about livestock, and animals that were used by people in ancient cultures?

DR: In the southwest, there were two major domesticated animals: One was the dog, which was brought in by Native Americans very early on in the colonization of North America, and was an important hunting companion and alarm system. And the other, in the Southwest, was the domesticated turkey. It was the only true domesticated animal in the American Southwest. Some parts of the southwest also show archaeological evidence of macaws, large parrots that were brought in from southern Mexico and Central America and brought up for ceremonial purposes, we believe. But it's really only the dog and the turkey that were domesticated in the southwest. Other livestock such as sheep, goats, cattle, and the horse were only brought in to the southwest

at European contact.

KF: Have you learned anything from studying the ancient cultures and environments that might be helpful or applicable to people in the present-day who are looking to adapt to life in a changing climate?

DR: One of the most important things that I think we have learned is how the past climates have changed on fairly abrupt time-scales, and for fairly long, persistent durations, particularly droughts. Large, multi-decadal drought periods have occurred within the past that really profoundly affected how people were able to make a living in the southwest and in the great basin. And in some cases were so significant that people could not make a living, and they had to move out of their areas, not to really return in any great numbers for decades and sometimes even centuries.

KF: What's the most challenging thing about studying archaeology and paleoecology in arid environments?

DR: Getting funded. No, the most challenging thing about studying these fields in dry lands is that the records of both archaeology and paleo environments are often difficult to decipher. They are proxy records of the kinds of patterns that you would love to be able to see playing out, but what we have are fossil remains and a few artifacts, and trying to know that what you think they're telling you is actually what they're telling you is always one of the biggest challenges.

KF: What's next for your research in the coming year?

DR: What I would like to learn about going forward with the project is to get a better understanding of the range of options that people had for adapting to environmental change. Ranging from whether to intensify the amount of farming that you did, or developing new fields in different areas, or changing the amount of different crops in a person's diet, or conducting exchange with other groups, or sharing food resources with other groups, or expanding your seed or crop storage facilities. Or, at the broader end, if you might have to move out of your area. There's a whole range of options that people have, and those options may be tied to different levels of climate change or different levels of intensity of drought, and I would love to be able to find out more about how those two properties scaled, one to the other.

KF: What do you like best about doing what you do?

DR: It's always a very entertaining puzzle, to try and figure out what is going on in the past. We have not experienced it on the timescales that I study, and so learning about the kinds of changes that occurred in the past - what conditions were like, and how people might be able to cope with them, is always a very interesting area of study. It is always fascinating to me.

KF: Thank you for talking with us.

Funding for the Native Waters on Arid Lands project is provided by the United States

Department of Agriculture - National Institute of Food and Agriculture. Music for this podcast came from Podington Bear on the Free Music Archive. If you'd like to learn more about the Native Waters on Arid Lands project, please visit our website at nativewaters-aridlands.com, where you can find more episodes of this podcast, and also supplemental info to go along with each episode.