Archaeobotany, Historical Ecology, and Contemporary Land Stewardship

Rob Q. Cuthrell

Introduction

In our research, we use archaeobotany within the framework of historical ecology, which is an integrative approach to research that brings together many disciplines to understand changes through time in the relationships between humans and the environment. These relationships constitute the *landscape*, a central focus of research. In our context, it is also key to work in partnership with tribes to guide research questions and methods. We work in partnership with the Amah Mutsun Tribal Band, who have established the non-profit Amah Mutsun Land Trust to revitalize indigenous stewardship practices.

In the past, open space conservation often focused on acquisition and protection from development. Open spaces were often managed as wilderness, meaning human participation in the landscape was minimized. However, humans continued to make major interventions in open spaces by suppressing fires. Today land managers are realizing this approach often cannot meet society's goals for stewardship, w.r.t. topics such as fire safety, biodiversity, endangered species conservation, climate change resilience, and other concerns. Land managers are now working on developing more sustainable and *active* land stewardship approaches.

Our work has been a collaborative effort between researchers, the Amah Mutsun Tribal Band, State Parks, and other agencies to revitalize indigenous stewardship and use it to inform contemporary land stewardship. Today I'll describe three ways archaeobotany can contribute to such efforts.

1. Understanding historical species composition.

Archaeobotany supplies information about the plants that were present before Euro-American exotic taxa invasions, land modifications, and land use changes. This information provides guidance for decisions about re-introducing native plants that have been extirpated and expanding existing native plant populations. The purpose is not simply to reconstruct a historical

baseline to serve as a restoration target, but rather the data is considered in historical ecological context. Which taxa are capable of being re-established, given environmental changes? Which species will contribute to landscape resilience? What ecosystem services would be enhanced by choices to manage for different vegetation types or species?

Archaeobotanical approaches also engage land managers in the concept of natural resources as cultural resources. Healthy stands of ethnobotanical plants suitable for contemporary cultural use are often rare. Treating them as sensitive cultural resources encourages monitoring and protection.

Archaeobotanical data also guides us in identifying vegetation communities or stands that could represent the legacy of historic land use or indigenous management. For example, the Amah Mutsun Land Trust recently began studying a small meadow surrounded by mature forest in the Santa Cruz Mountains that is unusually rich in native and ethnobotanical taxa, while most other grasslands in the area are exotic. This has become an important place for stewardship and research by Amah Mutsun tribe members.

2. Revitalizing and continuing cultural traditions.

Working in partnership with tribes, we can provide information about the plants that were used culturally in particular locations. Tribes can use this data to guide decisions about tending plants in those locations and about reintroducing or revitalizing the use of species in ethnobotanical practice. For example, based on archaeobotanical evidence for the regular use of hazelnuts in our research area at Quiroste Valley, the Amah Mutsun Tribal Band has initiated new research on the fire ecology and nut productivity of hazelnut. In another example, archaeobotanical evidence of tarweed contributed to the tribe's decision to focus on tending a large stand of tarweed in Quiroste Valley, where they have been working over the last few years to remove exotic poison hemlock from the tarweed stand. The poison hemlock needs to be removed so that the tarweed seeds can be harvested safely, without mixing with the toxic hemlock seeds. But this also contributes to broader goals of reducing invasions of native plant communities by exotics.

3. Addressing important conservation issues.

An important outcome of our research at Quiroste Valley was that indigenous people likely used prescribed burning to maintain open grasslands in that area over at least the last 1000 years. For the last century, wildfire suppression has been in effect and many areas have been managed as wilderness. In some cases, this has resulted in the buildup of fuel loads and consequent catastrophic wildfires, as well as lowered landscape diversity. Archaeobotany has been an important part of the research that suggests these undesirable conditions are novel, and that over the long term landscapes would have been actively stewarded in ways that reduced these adverse conditions.

Through the historical ecological approach, archaeobotany can also draw attention to conservation issues that have flown under the radar among the public. Archaeobotany has documented how indigenous people relied heavily on native grassland resources for over a thousand years. Grasslands are extremely important in the ethnobotanies of many tribes, and California's coastal prairie is the most biodiverse grassland in North America. Today, native grasslands are very rare in California, especially outside of serpentine areas. There are few places that tribes can go to harvest grassland efficiently, and populations of many native grassland species are much smaller than they were in the past. In many cases, species that were once present have probably been locally extirpated. However, there is little consciousness among the public about the need to conserve native grasslands. Most are unable to connect with grasslands as they do with vegetation types like redwood forests because they lack the cultural context.

Conclusion

Making archaeobotanical research relevant outside of archaeobotany means working in partnership with others and designing research projects that address contemporary issues. One of the most important issues in California today is the need for greater public engagement and investment in active land stewardship, as illustrated by the increasing prevalence of catastrophic wildfires. By working in partnership with tribes to revitalize dormant ethnobotanical knowledge and contextualize the deep history of cultural engagements with native plants, archaeobotany can help members of the public to form more meaningful relationships with open spaces and more

informed political opinions about land stewardship. Over the long term, we hope this will lead to more active and sustainable land stewardship in California.