

**Kramer, Stephanie.** "Camas Bulbs and Some Considerations of Evidence of Plant Food Intensification in the Willamette Valley of Oregon." *Current Archaeological Happenings in Oregon*. 26.2 (2001): 3-14. (Reviewed by Alexis Steinberg)

Through an archaeological study, Stephanie Kramer investigates the extent to which the Kalapuya Native Americans of the Willamette Valley were utilizing camas lily bulbs for subsistence. Her initial hypothesis suggests that the Kalapuya were not just burning the land to increase camas productivity, but were intentionally manipulating bulb size.

Kramer first discusses the biological potential of camas bulbs to intensification and manipulation. Bulb size, apparently, is very susceptible to environmental changes and could successfully be manipulated by humans. Kramer next discusses ethnographic evidence for camas intensification (accounts from living ancestors of nearby Native American groups as well as accounts by early European-Americans). Kramer's final method of analysis involves archaeological evidence of earthen ovens containing charred camas bulbs. To test her hypothesis that the Kalapuya were manipulating camas bulb size, she measured changes in bulb size over time from three archaeological sites.

Kramer's final results produced no evidence of a significant change in camas bulb size over time. She concludes that, perhaps the Kalapuya were not manipulating the size of camas bulbs, but that further studies would help clarify this issue.

## **Critique**

Kramer's hypothesis leads to questions of early domestication and subsistence practices among Native American groups (hunter-gatherer vs. horticulture). This issue is important for understanding early human land use practices, especially the history and purposes of regular burning in the Willamette River Basin. Archaeologists have an 11,500 year-old record of camas roasting in the Valley and a better understanding the change in this practice over time would be helpful.

There seem to be several problems with Kramer's study. Namely, she did not control for environmental differences between archaeological sites. These differences could be the reason we don't see significant changes in bulb size between sites. If there were significant changes in bulb size, they were probably due to ecological and/or climatic factors. Another problem with this study (and with most archaeological studies) is that the bulbs recovered archaeologically were those that were not eaten by the Kalapuya. These were the discarded bulbs, for whatever reason, and do not reflect the full assemblage of bulb size from the respective time period.

I would also recommend obtaining better ethnographic evidence in future studies. Discussing changes with camas farmers in the Valley today would be helpful, as well as depending less on European-American historical documents for accurate information. In general, I think Kramer's study was well documented and asks important questions.

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