

Pipes and Smoking in Pre-Contact Pacific Northwest North America

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Abstract

Smoking has been practiced by native peoples throughout the inland Pacific Northwest—and especially along the Columbia and Fraser River systems—for several millennia. This is evinced by the presence of stone pipes and pipe fragments in sites across the region. This poster presents the spatial and chronological distribution of archaeological smoking pipes throughout the inland Pacific Northwest based on literature and database searches, with a particular focus on those collections held or formerly held by the Washington State University Museum of Anthropology. In addition, the results of chemical residue analyses determining the material smoked in a number of pipes and pipe fragments from sites spanning the region will be reviewed, including the results of new testing by the authors. The research, developed in collaboration with indigenous communities in the USA and Canada, sheds light on the practice of smoking in the past and addresses questions relating to pipe form and distribution and the traditional use and management of smoke plants throughout the Pacific Northwest.

Ethnographic and Historical Background

- A variety of plants were smoked by groups throughout the Pacific Northwest of North America (Kroeber 1941; Figure 1)
- Some Inland Plateau groups had access to local tobacco, especially along the middle Columbia and the Fraser River (Kroeber 1941).
- Coastal peoples used plant materials to construct pipes, so evidence of pre-contact smoking in these places is elusive.
- Ethnographic evidence is supported by the accounts of Europeans in the early post-contact period such as botanist David Douglas, whose notes and samples allow us to confidently conclude that the preferred smoking plant of the Inland Northwest was *Nicotiana quadrivalvis*, known as Native or Indian Tobacco (Nisbet 2003).

Smoking Pipes in the Archaeological Record

- Stone pipes are an uncommon, if not exceedingly rare, artifact class in the Pacific Northwest.
- Pipestone varies from fine carved steatite to more robust ground sedimentary stones, especially those of finer grain size.
- To better understand the spatial and temporal distribution of pipes in this region an extensive literature search (using Hayden and Schulting 1997 as a starting point) as well as a methodical search of the collections databases of the Washington State University Museum of Anthropology (WSU MoA) and the Reciprocal Research Network were undertaken.
- Stone pipes almost exclusively occur west of the Cascade Range and are concentrated along the major rivers of the region (Figure 2). This may be an artifact of sampling bias, as the Columbia River system was extensively surveyed during the construction of Washington's dam network last century.
- The oldest archaeologically collected pipes in this region come from the Cox's Pond (45DO172) site in central Washington, which is dated to 4418 – 4630 cal BP (example on right). Pipes seem to become more common in later pre-contact periods.
- Radiometric dates associated with the pipes we analyzed for residue indicate the long history of tobacco smoking in the region (Table 1).



Table 1. Radiocarbon Dates Associated with Pipes Analyzed for Residue

| Site/Sample Designation | Reported Date | Calibrated Date (2σ) ^a | Reference |
|-------------------------|----------------|-----------------------------------|-------------------------|
| 45DO172-Feat6 | 4030 ± 40 B.P. | 4418 – 4589 cal B.P. | Galm and Komen 2012 |
| 45DO172-Feat10 | 4050 ± 40 B.P. | 4422 – 4630 cal B.P. | Galm and Komen 2012 |
| 45GR27-198 | 1520 ± 40 B.P. | 1334 – 1524 cal B.P. | Pouley 2001 |
| 45GR27-196 | 1390 ± 70 B.P. | 1176 – 1416 cal B.P. | Pouley 2001 |
| 45GR27-224 | 800 ± 60 B.P. | 657 – 803 cal B.P. | Pouley 2001 |
| 45GR30-1988 | 884 ± 66 B.P. | 693 – 922 cal B.P. | Obtained for this study |
| 45GR30-1574 | 670 ± 52 B.P. | 549 – 687 cal B.P. | Obtained for this study |

^aDates calibrated against the IntCal13 curve (Reimer et al. 2013) using CALIB rev. 5.0 (Stuiver et al. 2005).

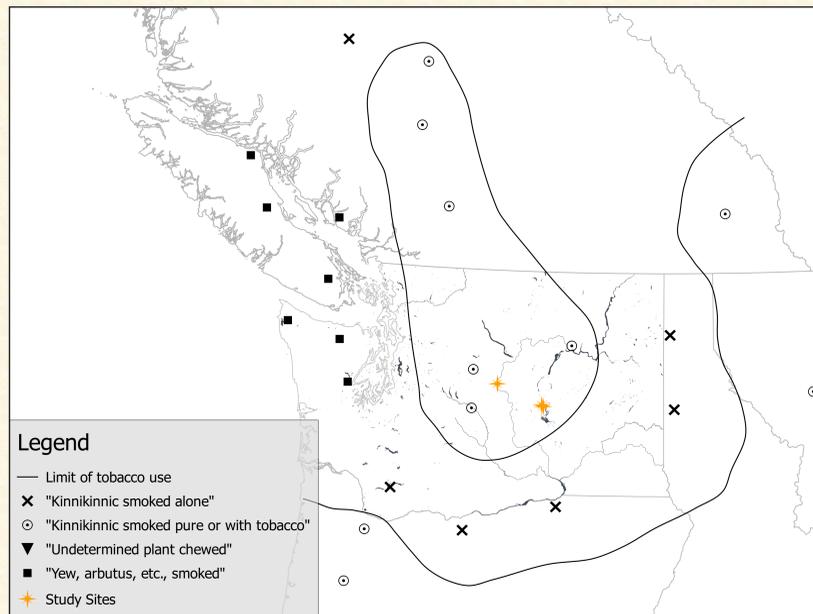


Figure 1. This map was produced by digitizing and georeferencing Map 8 from Kroeber's 1941 publication on the distribution of tobacco, and other things, among Native peoples throughout the western United States. Note the lines separating areas recorded as having tobacco and areas without the plant. Points marking the sites from which the pipes tested in the residue analysis part of this study have been added. The legend reflects the labels used by Kroeber in his original figure.

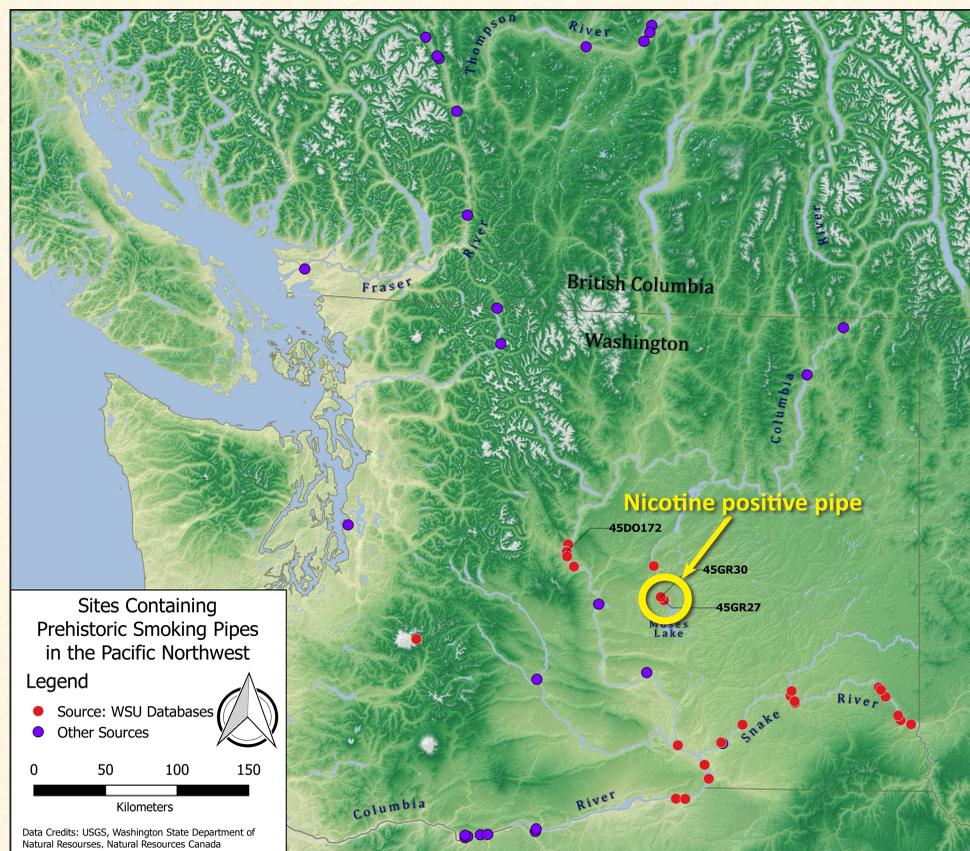


Figure 2. This map shows the generalized locations of archaeological sites in the Pacific Northwest from which stone smoking pipes were collected. The red points indicate sites where collections are currently or were once housed at the WSU MoA. Purple represents sites located through a database and literature search. Only well documented sites are included here. As a result, some known pipes—such as those which ended up in private collections with limited provenience—are excluded. The site containing a nicotine-positive pipe is circled in yellow.

Chemical Residue Analysis

Previous Research:

- Tushingham et al. (2013) identified nicotine in six pre-contact pipes and pipe fragments from the northern California coast.
- Tushingham, Matson, Brownstein, and Gang are currently investigating an assemblage of pipes from British Columbia using similar methods.
- Snyder and Tushingham (forthcoming) found evidence of tobacco smoking in a pre-contact pipe of currently indeterminate age from a southern Plateau site.

Current Study:

- Twelve pipes and pipe fragments currently held by the WSU MoA were analyzed.
- The method, developed by Brownstein, Tushingham, and Gang, uses a series of three solvents to extract residues from archaeological specimens. Residues are analyzed using ultra-performance liquid chromatography mass-spectrometry (Figure 3).
- Brownstein, Tushingham, and Gang have developed residue profiles of several smoke plants from this region against which archaeological residues can be compared.
- Based on ethnography and historical accounts, target species selected for this study were: *N. attenuata* (Coyote Tobacco), *N. quadrivalvis* (Native Tobacco), *Arctostaphylos uva-ursi* (bearberry or kinnikinnick).

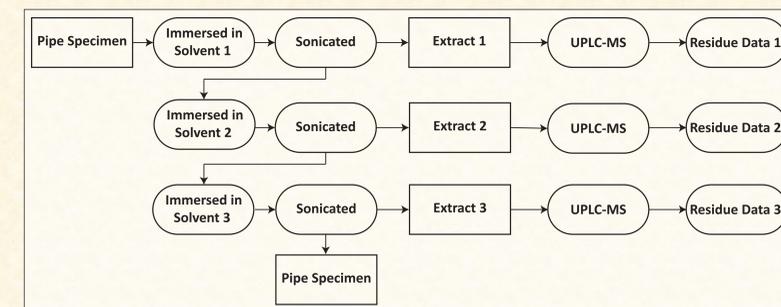


Figure 3. This flowchart is a simplified of the method used to extract residues from the archaeological specimens in this study. The solvents are relatively mild, making this a non-destructive process (except for the extracted residues) which causes no detectable change in the artifacts beyond a cleaning.

Results and Conclusions

- One of the twelve tested specimens (see right) contained nicotine. This is a complete siltstone pipe from a site near Moses Lake in Grant County, Washington.
- A number of other nicotine-negative specimens contained other metabolites shared with *Nicotiana* species, suggesting that they also may have been used to smoke tobacco.
- The results of the residue study allow us to conclude with confidence that people in the middle Columbia region were smoking tobacco as early as c. 1420 cal BP. The distribution of smoking pipes in general suggests that smoking has been a widespread practice, at least in the Inland Pacific Northwest, for several thousand years.
- Further methodological refinements will hopefully allow for species level determinations about smoke plants. This question is of interest in this case as the historically attested preferred tobacco variety, *N. quadrivalvis*, was managed to extend its range northward into this region from California. Identifying its use in the past would shed light on the time depth of plant management practices.



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