



Hunter-gatherer tobacco smoking: earliest evidence from the Pacific Northwest Coast of North America

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ABSTRACT

Chemical analysis of residue extracted from stone pipes and pipe fragments excavated at sites in the southern Pacific Northwest Coast of North America demonstrate that hunter-gatherers smoked the psychostimulant tobacco (*Nicotiana* sp.) by at least AD 860. Non-farming ethno-historic Native Americans throughout the west gathered and sometimes cultivated tobacco for ritual and religious purposes, but until now the antiquity of the practice on this part of the continent was unknown. Method validation includes chemical characterization of a suite of smoke plants and experimental reproduction of “smoked” pipe chemistry; results indicate biomarkers are traceable for several species commonly smoked by ethnographic native peoples, including tobacco (nicotine, cotinine), tree tobacco (anabasine), and kinnikinnick (arbutin). Developed methods—where residue is extracted directly from the stone or clay matrix of whole and fragmentary archaeological pipes—may be applied in similar studies investigating the spread and use of ritual smoke plants in the ancient Americas and elsewhere.

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1. Introduction

While tobacco (*Nicotiana* sp.) is exploited today by hundreds of millions of people around the world, we know surprisingly little about early use of the plant. At the time of European contact, tobacco was the most widely used intoxicant plant throughout the Americas. Whether farmed, cultivated, gathered, or obtained by trade, tobacco use cross-cut ecological zones and was a central part of Native American ritual and ceremonial life (cf. Balls, 1962; Harrington, 1932; Kroeber, 1941; Winter, 2000a). Tobacco's attractiveness to humans is clearly related to its physiological effects when ingested, most often through smoking, but also through chewing, eating, snuffing, or by enema (Robicsek, 1979). The alkaloids present in this plant include nicotine and nornicotine, psychotropic chemicals that act as stimulants, with effects including increased heart rate, heightened mental acuity or alertness, suppression of hunger and thirst, and an increased sense of calm. In large doses tobacco can cause out of body experiences, trances, hallucinations or visions, color blindness, seizures, catatonia, and, in extreme quantities, even death (Siegel, 1989:96;

Wilbert, 1987:19). Some of these mind altering effects were sought after by shamans for vision quests, curing, and other religious purposes.

How ancient is Native American use of tobacco in North America? Most of what we know about early tobacco smoking comes from agricultural cultures in the eastern United States and parts of the American southwest. In these places, domesticated tobacco is thought to have been added to the suite of plants people were already farming, or spread in tandem with the rise of maize agriculture (Driver, 1970:106; Yarnell, 1964:85), though the development of different crops likely had different trajectories (Fritz, 1990). Some believe that the domesticated species *Nicotiana rustica* reached the eastern part of the continent from South America between 3000 and 2000 years ago, while *Nicotiana tabacum* likely spread to parts of the southwestern United States and the Caribbean sometime afterward (cf. Winter, 2000a, 2000b; Rafferty, 2006, 2012) (Fig. 1). Other scholars place domesticated tobacco later in time. For example, Ford (1981, 1985) suggests tobacco was part of the late period emergence of the southeastern agricultural complex around AD 1000, and only dates to the historic period in the southwest. Furthermore, photogrammetric studies of tobacco seeds found at sites in the eastern Woodlands suggest they more closely resemble wild tobacco species found in the west such as *Nicotiana quadrivalvis* (Haberman, 1984; Pauketat et al., 2002). Thus, there

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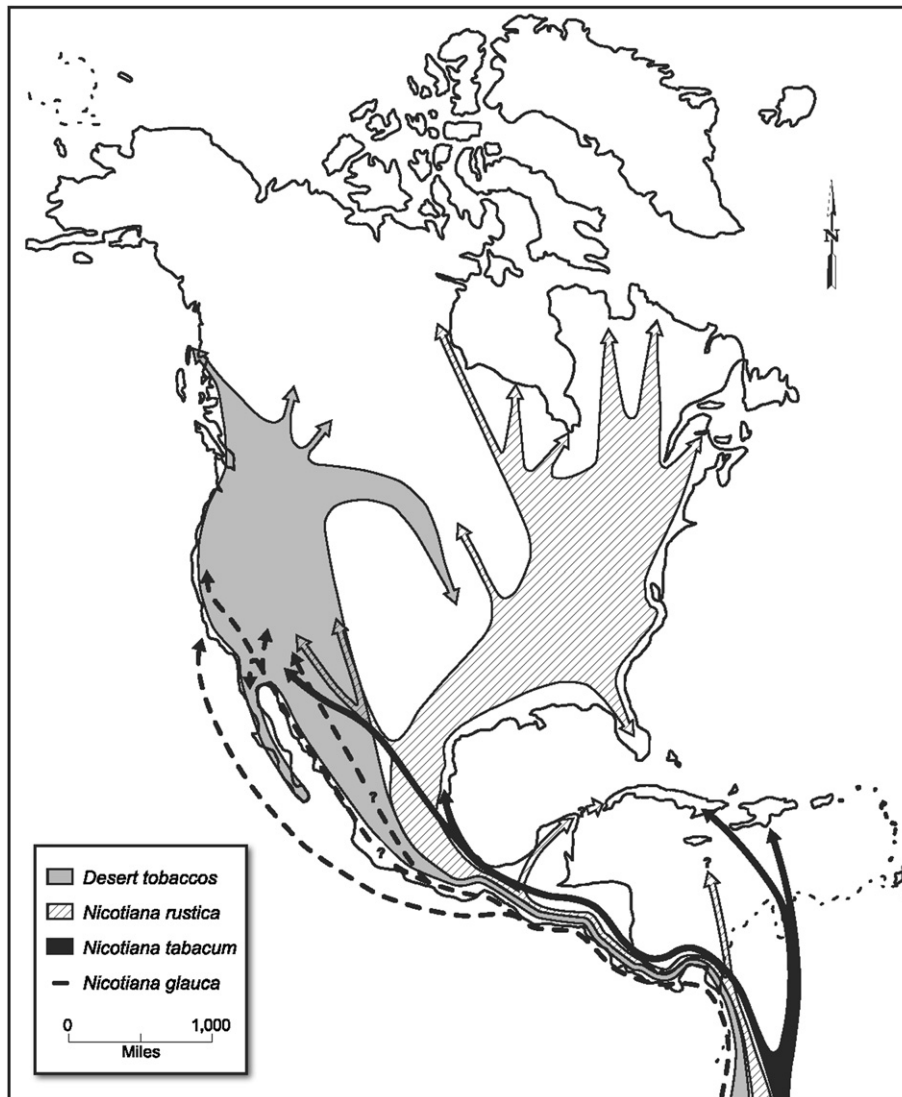


Fig. 1. Map showing hypothesized spread of wild or desert and domesticated tobaccos into ancient North America (from Winter, 2000b). Desert tobaccos arrive in western deserts probably by Late Pleistocene; spread into non-arid regions possibly by human management. Domesticated *N. rustica* spreads into eastern North America by 2000–3000 BP. Domesticated *N. tabacum*, used by some farming cultures in American southwest and Caribbean, is thought to postdate arrival of *N. rustica*. *N. glauca* (“tree tobacco”) introduced to parts of the southwest and California in the historic period.

remains the possibility that these wild species spread from the west, perhaps as early as 3500 years ago, but were displaced after the introduction of *N. rustica*. In any case, there is little consensus about the timing and spread of domesticated tobacco, and there remains the possibility that more than one species was used in eastern North America.

Even less is known about the timing and trajectory of tobacco use in the west. Historic hunter-gatherers in western North America gathered and often cultivated wild (also known as desert or “coyote”) tobacco. Yet it is unknown when and how these wild species spread and how long non-farming peoples were smoking these psychoactive plants. Tobacco cultivation included the preparation of plots, burning, sowing of seeds and pruning, and was practiced by many groups, including people as far north as British Columbia (Kroeber, 1941; Turner and Taylor, 1972). In the Pacific Northwest Coast, where tobacco is a non-native plant, human management of these species is seen as “a special and dramatic case of geographic range extension.... However, there is no archaeological evidence of its use in the more distant past” (Lepofsky and

Lertzman, 2008:136). In many parts of the west tobacco smoking is thought to be a very recent practice brought by Euro-American traders in the contact period (cf. Dixon, 1933; Kroeber, 1941:14).

While prehistoric evidence of tobacco smoking in the west remains elusive, many scholars believe the practice has very ancient origins (Dobkin de Rios, 1984:6; Furst, 1976:5–6; Heiser, 1969:16; La Barre, 1970; Siegel, 1989:3; von Gernet, 1989:713; von Gernet and Timmons, 1987:41; Winter, 2000b; Winter and Hogan, 1986:120). As wild tobacco is thought to have spread naturally into the deserts and arid zones of the southwest, Great Basin, and California by the early Pleistocene (Goodspeed, 1954:45–46), tobacco use could plausibly date to as early as the Paleo-Indian period. In this scenario, people living in these areas would have readily recognized the intoxicant qualities of tobacco, and incorporated the plant into already existing ritual and medicinal complex. Winter (2000b) further argues that, over time, human action—specifically plant management and cultivation—probably extended the range of wild tobacco and led to the development of new species in some areas.

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