Preliminary Revision of Western Stemmed Tradition Chronology

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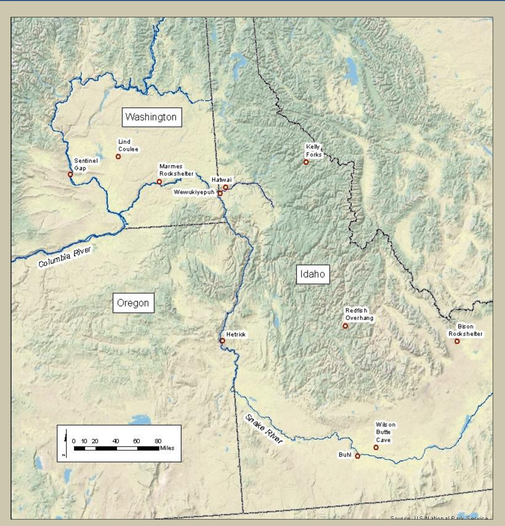
Western Stemmed Tradition

- The Western Stemmed Tradition (WST) is an early cultural phase in western North America.
- Two to three WST point types are recognized on the Columbia Plateau: Windust/Lind Coulee and Haskett.
- Much of the seminal work establishing the timeframe of Windust is now decades old and suffers from imprecise dating.
- The radiocarbon record of WST has never been systematically studied.

Synthesis, Calibration and Chronology

- Synthesize records of radiocarbon dated sites attributed to the WST on the Plateau.
- Calibrate dates to better understand the timing and duration of the WST.
- Array local chronology against timing of environmental and cultural phases to ***address these questions*:**

1. What is the start, end, and duration of WST on Plateau?
2. What is the relationship between WST age and the Younger Dryas Stadial?
3. Is there a temporal difference in the timing of Windust and Haskett?
4. What is the relationship between the timing of WST, Clovis and Cascade?
5. Is there spatial patterning to the timing of WST sites on the Plateau?

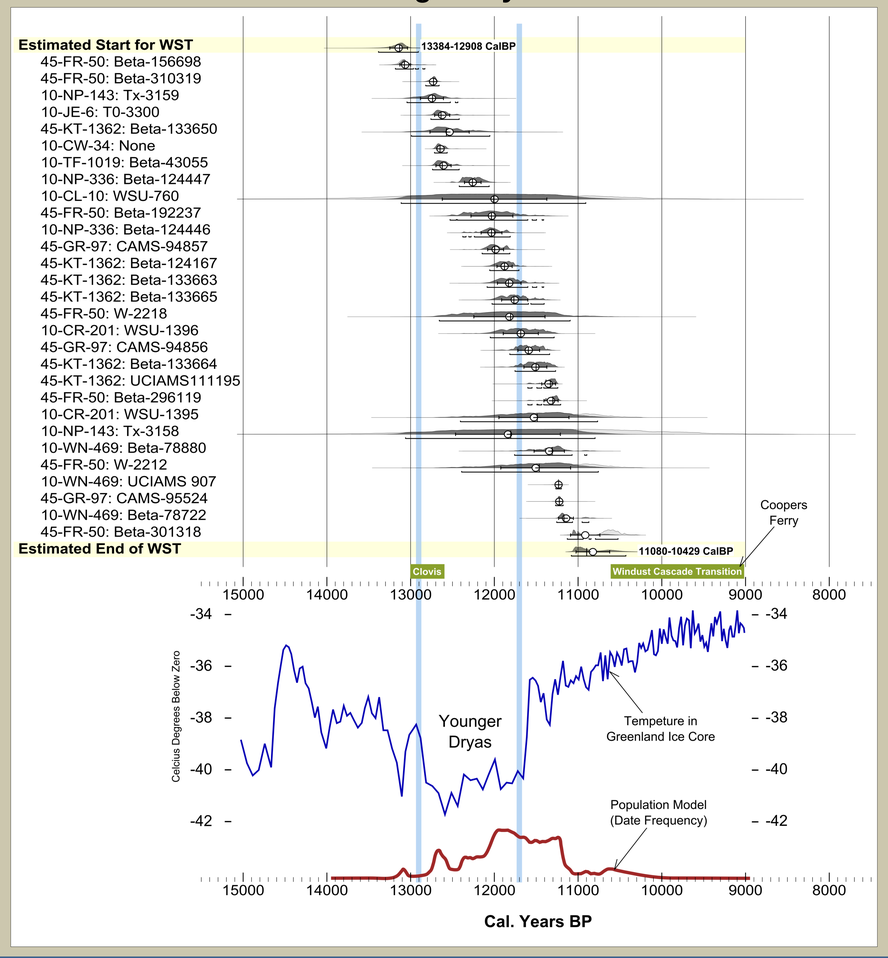


Study area showing locations of sites included in study.

Methods and Radiocarbon Hygiene

- Compiled existing data and radiocarbon date modeling using OxCal and CalPal.
- Excluded dates that original investigator expressed skepticism over. Excluded shell dates because of reservoir effect issues.
- Following Reid et al. 2015, searched for dates associated with actual stemmed points.

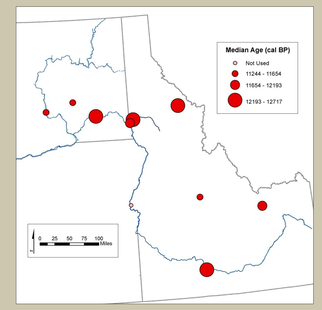
Calibrated Dates vs. Younger Dryas and Cultural Phases

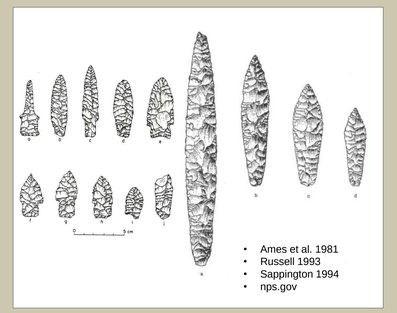


Estimated start date for WST: 13,384-12,908 cal BP

Estimated end date for WST: 11,080-10,429 cal BP

- The WST on the Columbia Plateau spanned at least ~1,900 calendar years, but possibly 2,800 years (modeled span between 1,931-2,826 years).
- The earliest age ranges overlap with the Clovis Window (13,000-12,600 cal BP) and could possibly pre-date Clovis.
- A population model based on date frequency suggests WST groups peaked between 12,100 and 11,200 cal BP.
- WST thrived during the Younger Dryas, a period long considered a possible cause for the collapse of Clovis and the extinction of ~35 genera of animals.
- Dated WST sites decline after ~11,100 cal BP. Windust and Haskett were contemporary.
- Given available data, Haskett may have a briefer duration (918-2,380 years) than Windust (2,003-3,096 years).





Geographic Patterning

Compared WST sites west-to-east and north-to-south:

- There is no pattern to the ages. Sites do not become older further inland or vice versa.
- The two mountain sites (Kelly Forks and Redfish Overhang) are as old as the sites along the river systems.

Implications

- The WST on the Columbia Plateau spanned nearly 2,000-3,000 calendar years, an astonishing duration given the generally briefer temporal spans of Paleoindian complexes elsewhere in the North America.
- WST thrived, and achieved its maximum, during the Younger Dryas.
- WST sites rapidly diminish after 11,200 cal BP. This period coincides with the increased temperatures and environmental stabilization characteristic of the early Holocene.
- There is no difference in the age ranges of Windust and Haskett sites, though Haskett may have existed for briefer duration.
- While the earliest dated samples do overlap with (or even predate) Clovis, WST appears to have flourished after the Clovis window.
- Populations peaked between 12,100 and 11,100 cal BP.
- The WST's rapid decline after 11,200 cal BP, however, preceeds the earliest date for the transition from WST to Cascade at Coopers Ferry (Davis et al. 2014).
- We found no spatial pattern in the data (i.e., sites in the north are not older than sites in the south, nor east-west).
- WST peoples had penetrated deeply into the interior mountain systems (Kelly Forks and Redfish Overhang) near the end of the Pleistocene, not what would be expected from a population fresh on the landscape.

Acknowledgments

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