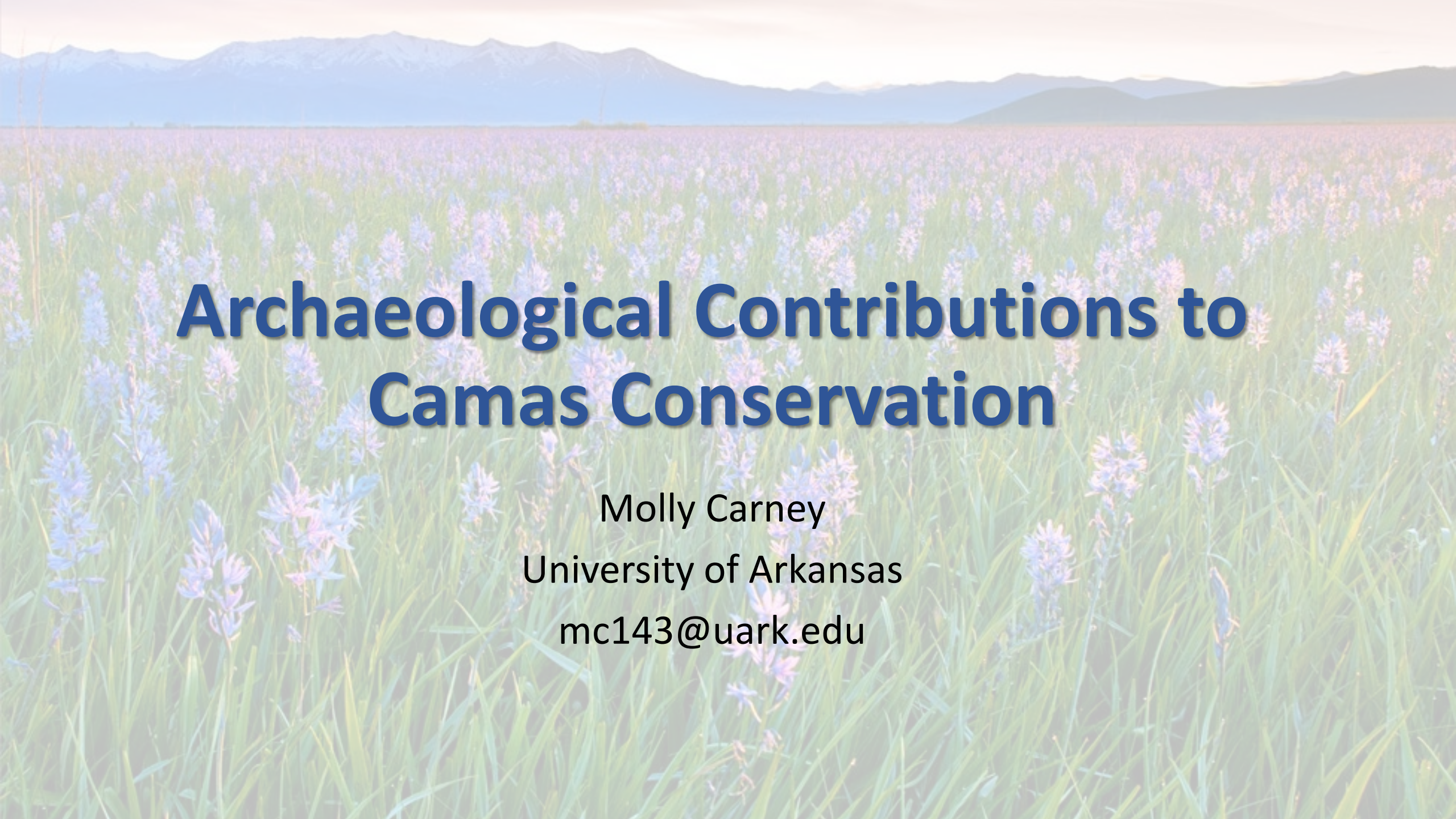


A wide-angle photograph of a vast field of purple wildflowers, likely lupines, stretching towards a range of mountains under a clear sky. The flowers are in sharp focus in the foreground, while the mountains in the distance are slightly hazy.

Archaeological Contributions to Camas Conservation

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mile) and is approximately 120 miles long (north-south) and 40 miles wide (east-west), bound by the Coast Range to the west and Cascade Range to the east.

4.2 Historical Context

4.2.1 Native American Influences and Cultural Significance

Humans have lived in the Willamette Valley for over 10,000 years and were known to have had significant influence on the Valley's vegetation patterns. Prior to Euro-American habitation, most native inhabitants in the Willamette Valley belonged to the Kalapuya Tribe, made up of numerous bands. The Kalapuyan people were known to have regularly set fires throughout the Willamette Valley, likely in an effort to manage the land to improve hunting, forage, and travel. These fires helped maintain the Valley's mosaic of open prairies and oak savannas that the early Euro-American explorers and settlers encountered.

The Kalapuyans were known to have used grasslands (prairie and savanna) and oak dominated areas intensively for food production and utilized at least 50 species of plants (Christy et al. 2011). Important food plants included bulbs of camas (*Camassia* spp.), brodiaea (*Brodiaea* spp.), and checker lily (*Fritillaria affinis*); acorns from Oregon white oak (*Quercus garryana*) and California black oak (*Quercus kelloggii*); roots of biscuitroot (*Lomatium* spp.) and yampah (*Perideridia* spp.); and seeds of tarweed (*Madia* spp.) and balsamroot (*Balsamorhiza* spp.). Evidence of these food production



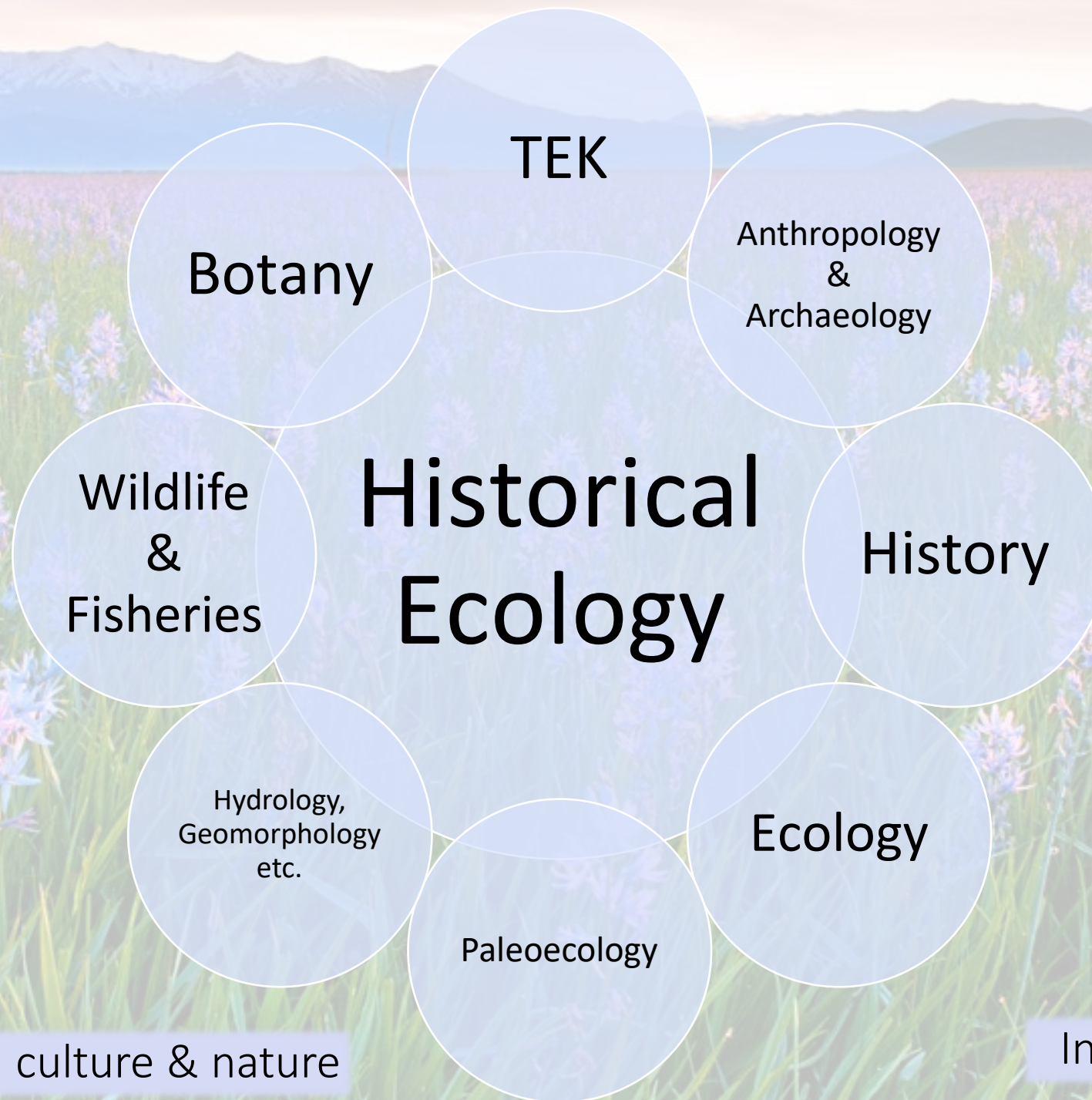
Camas (photo: E. Alverson)

practices can be found in the form of camas oven remnants located throughout the Willamette Valley. The oldest archeological evidence of camas ovens and charred bulbs in the Willamette Valley date back 7,750 years. Several ovens excavated near Eugene measure six feet in diameter and contain the remains of cooked camas and baking stones (Sultany et al. 2007).

With increased pressure from settlers to control fire and the devastating decline of the Kalapuyans due to introduced diseases and forced removal from their traditional lands, the practice of large-scale burning had largely ended by the late 1840s. In the wake of this cultural suppression, these traditional ways of knowing and the habitats supported by them continue to be threatened by a variety of prevailing societal, political, and environmental limitations. These include human impacts, varying land stewardship and control patterns, intergenerational poverty, historical trauma, public misconceptions regarding Tribal Sovereignty, dismissive attitudes toward treaty rights, legal challenges, and changing climate patterns.

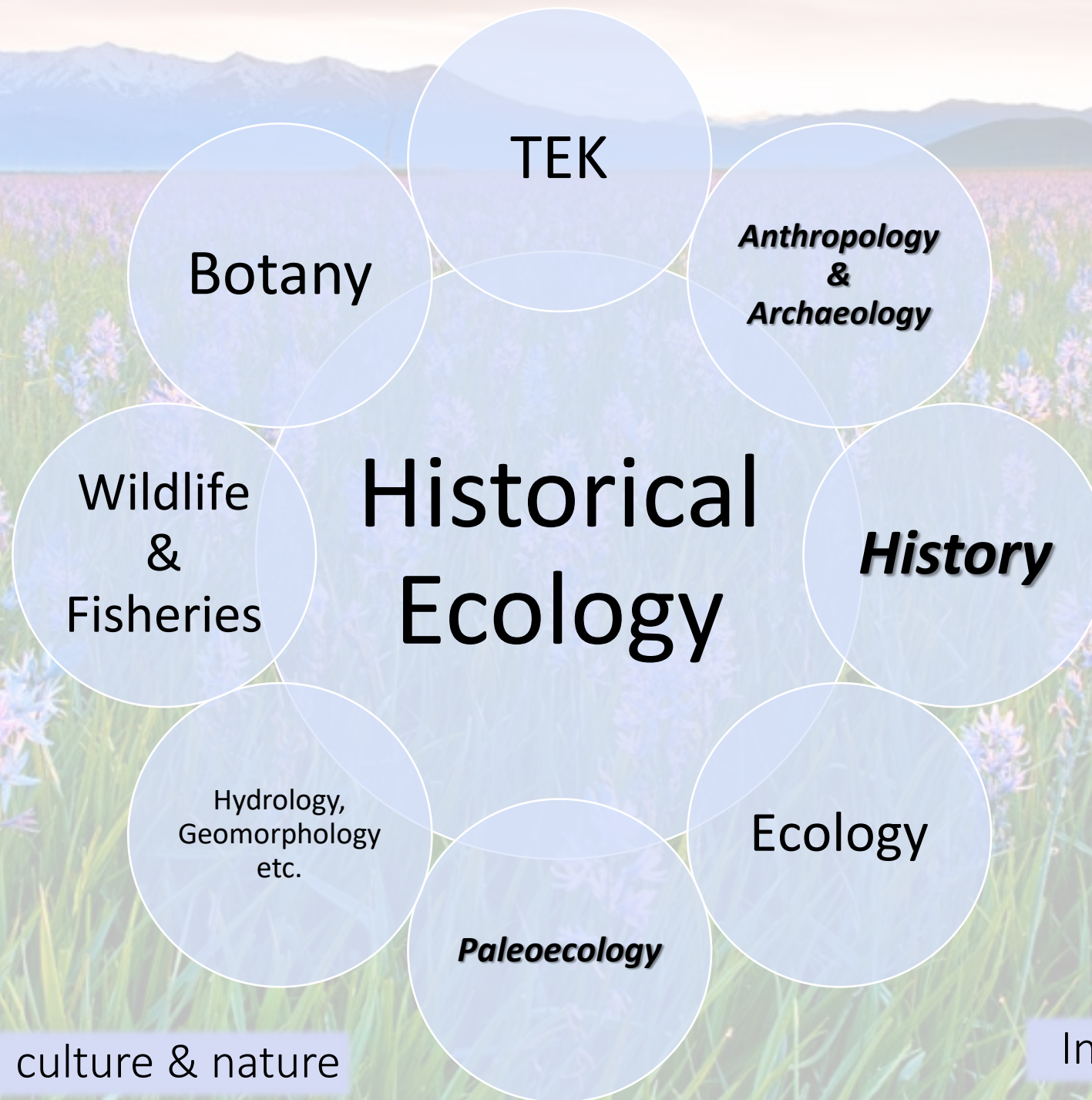
4.2.2 Historical Vegetation Patterns

Accounts from early explorers and settlers to the Willamette Valley indicate that, prior to Euro-American settlement in the mid-1800s, large expanses of grassland and oak dominated habitats covered the valley floor, forming a complex



No division between culture & nature

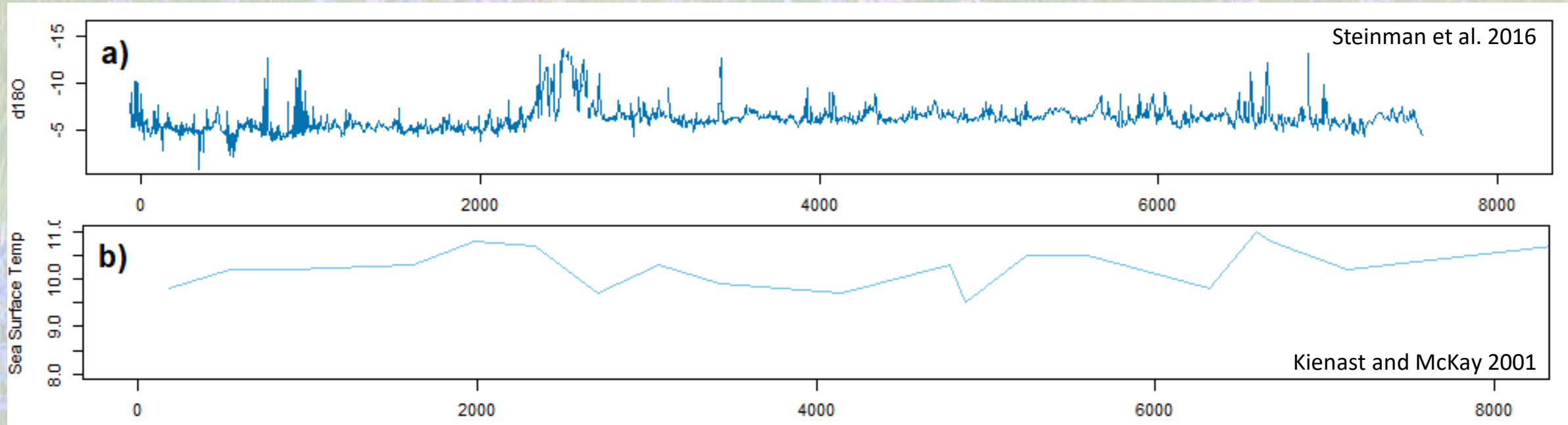
Interdisciplinary



No division between culture & nature

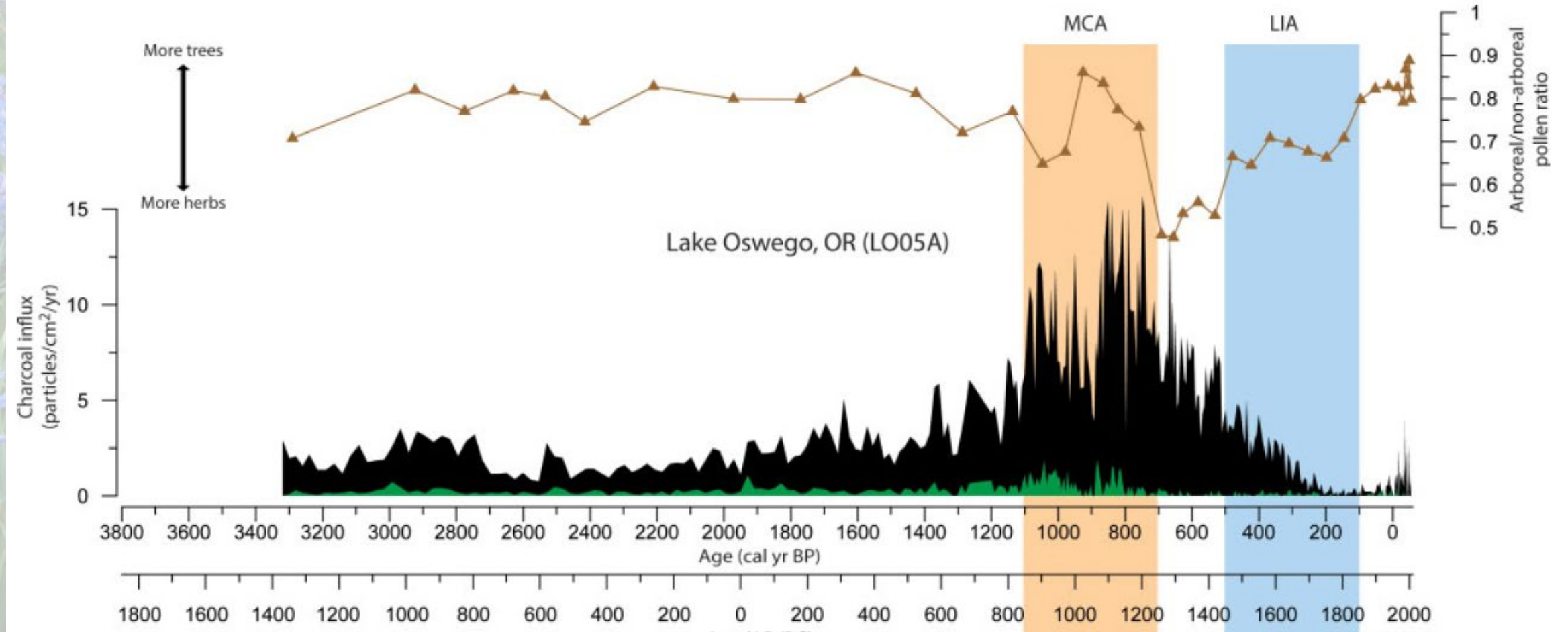
Interdisciplinary

Paleoecology – Holocene / 10,000+ to present



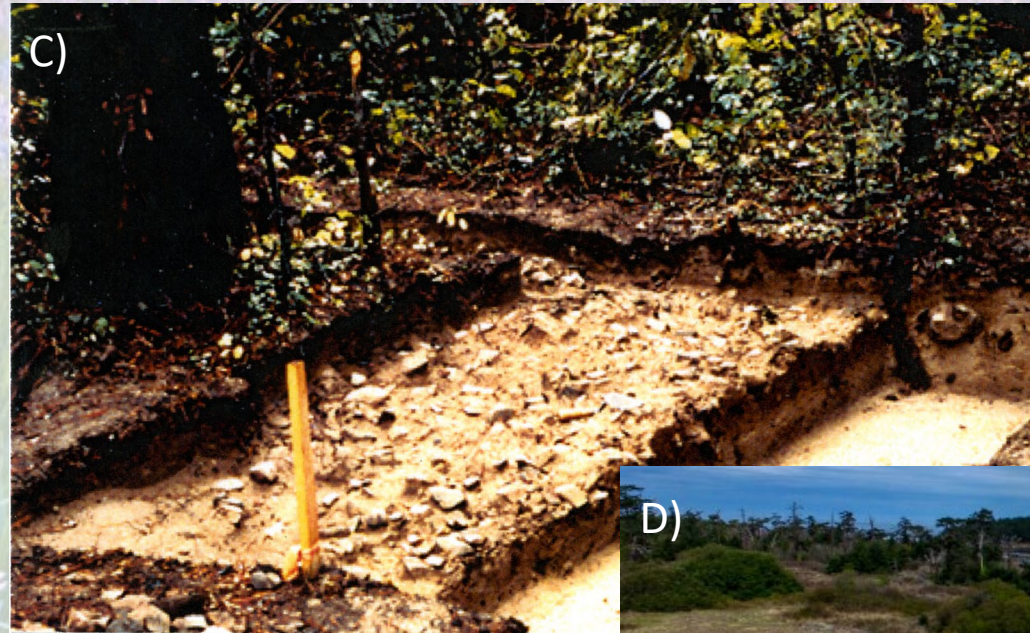
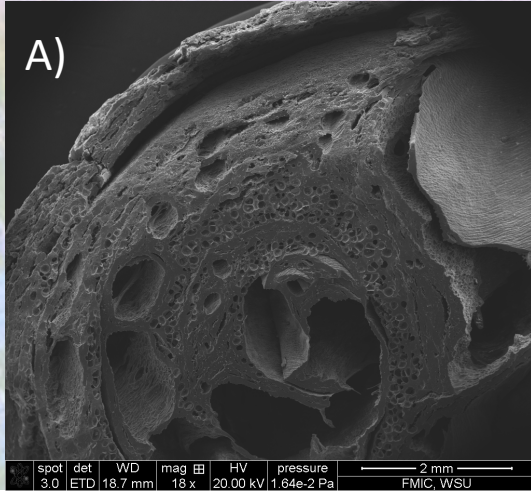
- A) Oxygen isotopic data from BC interior lake provides a proxy for precipitation through time.
B) Sea surface temperature reconstructions from Vancouver Island as a general proxy for temperature change

Paleoecology – Holocene / 10,000+ to present



Lake Oswego, OR charcoal influx graph demonstrating an increase in fires 2,000 years before present, interpreted as anthropogenic (Walsh et al. 2018:490, Figure 6).

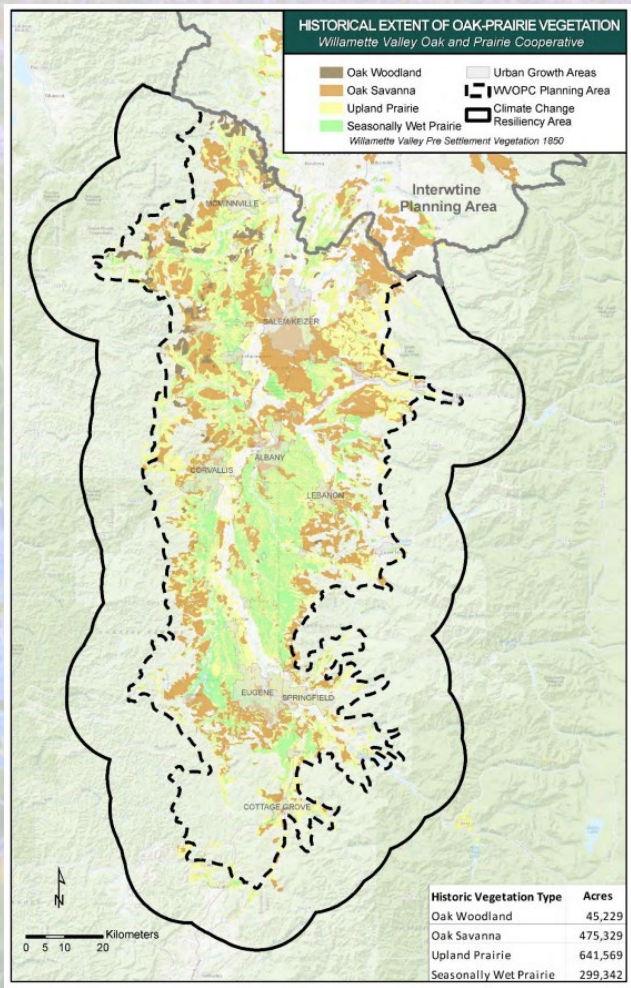
Archaeology – 8,000 years to present



A) & B) Archaeological camas bulbs from the Pend Oreille Valley, WA C) Archaeological camas oven from the Pend Oreille Valley, WA (Thoms 1989)

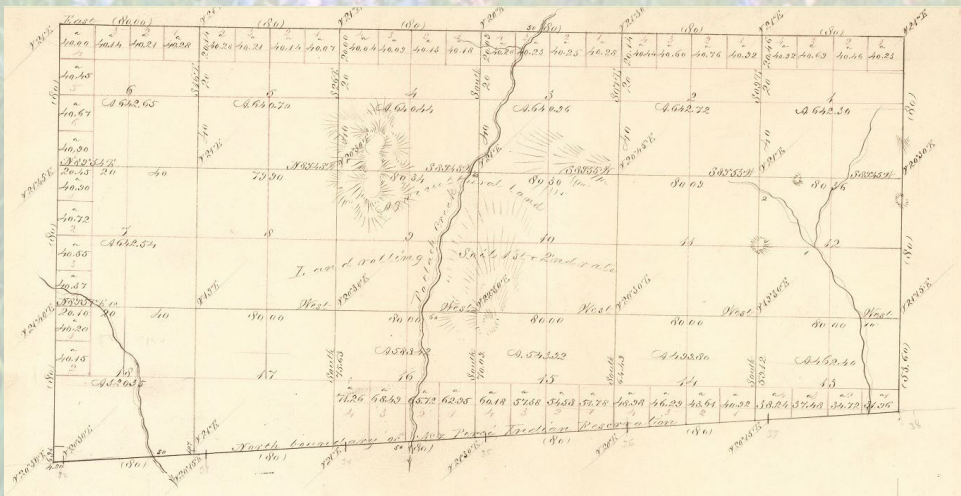
D) Meadow in the *Tl'chés* archipelago near Vancouver Island, inhabited by ancestors of the Songhees Nation, showing location of camas fields to archaeological residential features (Lowther 2022:20)

Historical data – 400 years to present



Elizabeth Wilson at
Musselshell Meadows

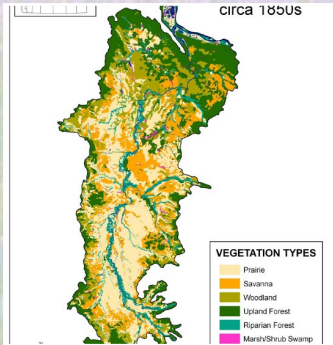
Agnes Moses at
Musselshell Meadows



Left: Willamette Valley vegetation reconstruction (Willamette Valley Oak and Prairie Cooperative)
Center: Elizabeth Wilson and Agnes Moses at Musselshell Meadows, Joseph Library and University of Idaho
Right: Potlach Creek, Latah County, 1871 original survey by Henry Meldrum.

Combining lines of evidence – Summary

more
recent



History: Vegetation patterns & landscapes planned
& maintained through fire
3-200 years before present

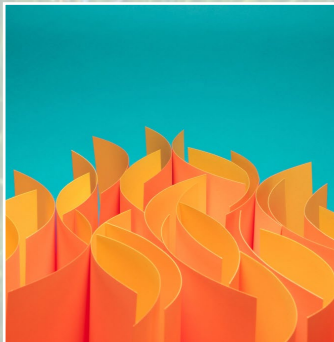
“pre-settlement conditions” = open fields, mosaics

Archaeology: Camas harvested according to life cycle stages
3,500 BP - present

Fields are meant to be harvested
What other field inputs?

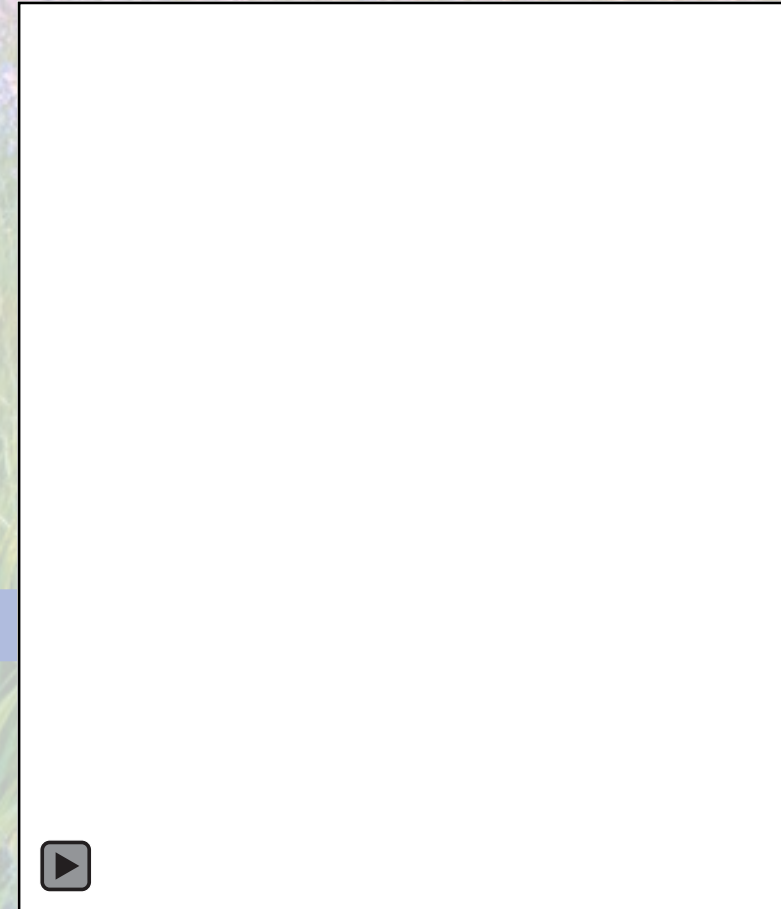
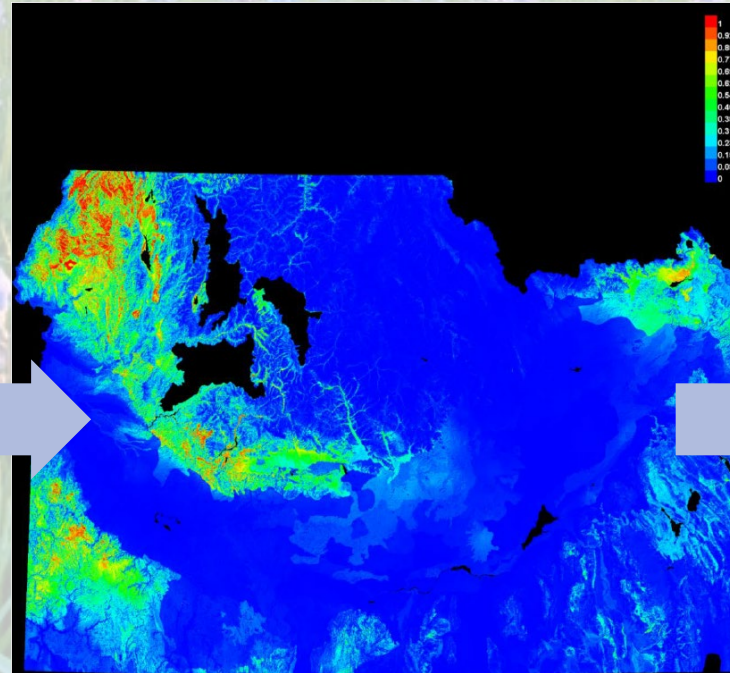
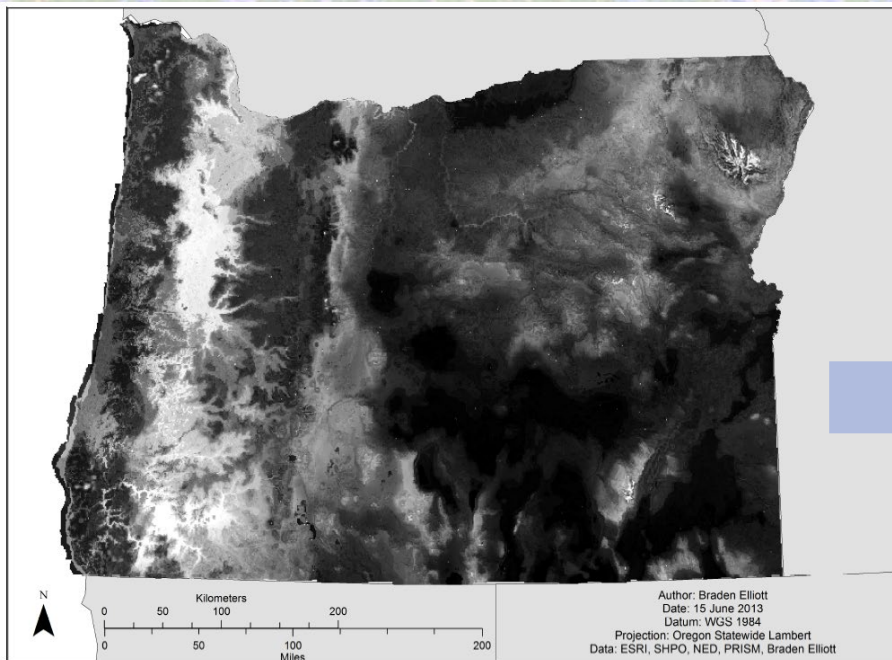


older



Paleoecology: Anthropogenic fires by
4-5,000 years before present, widespread/in-place by 2,000 BP
Fire used to maintain fields & open spaces

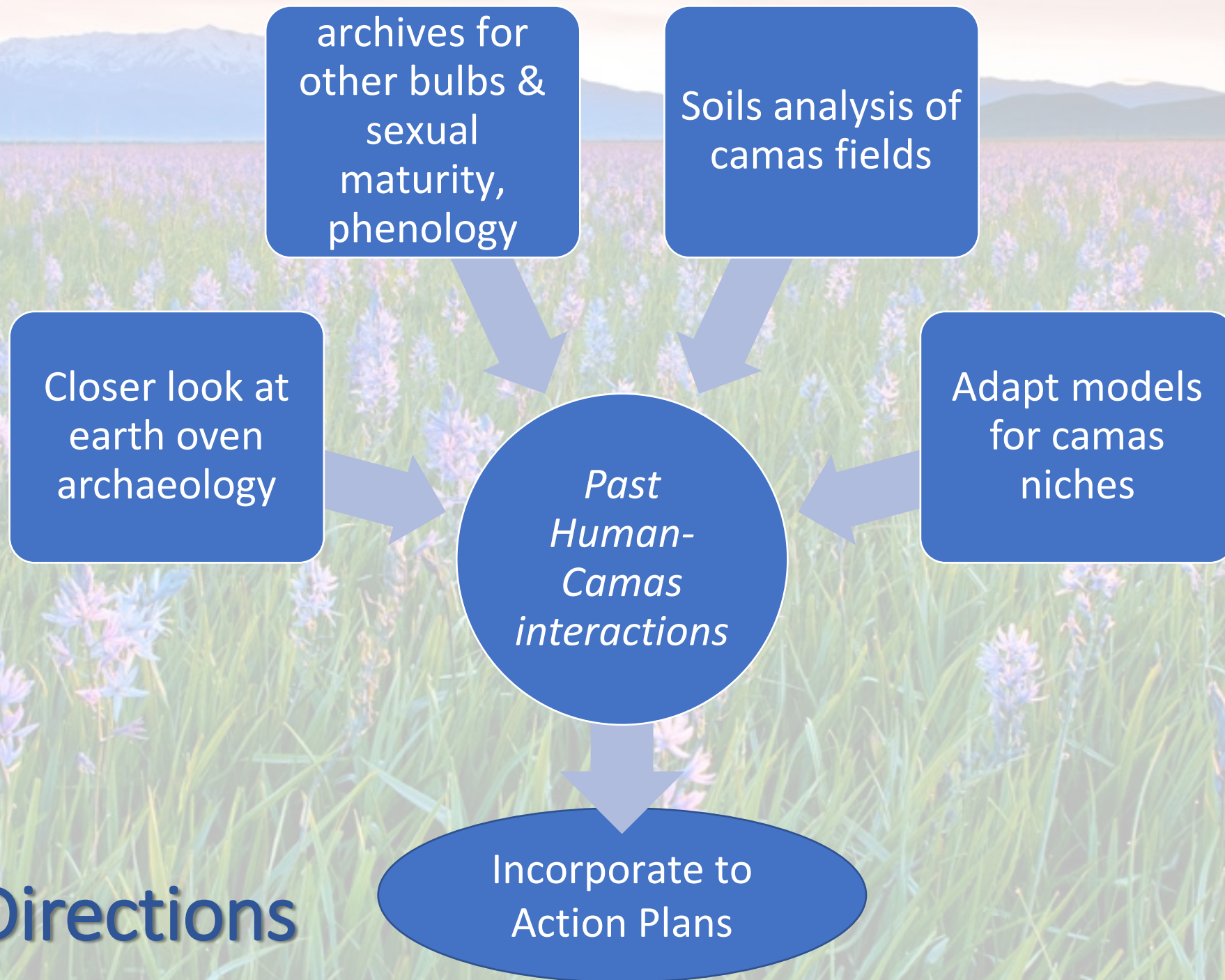
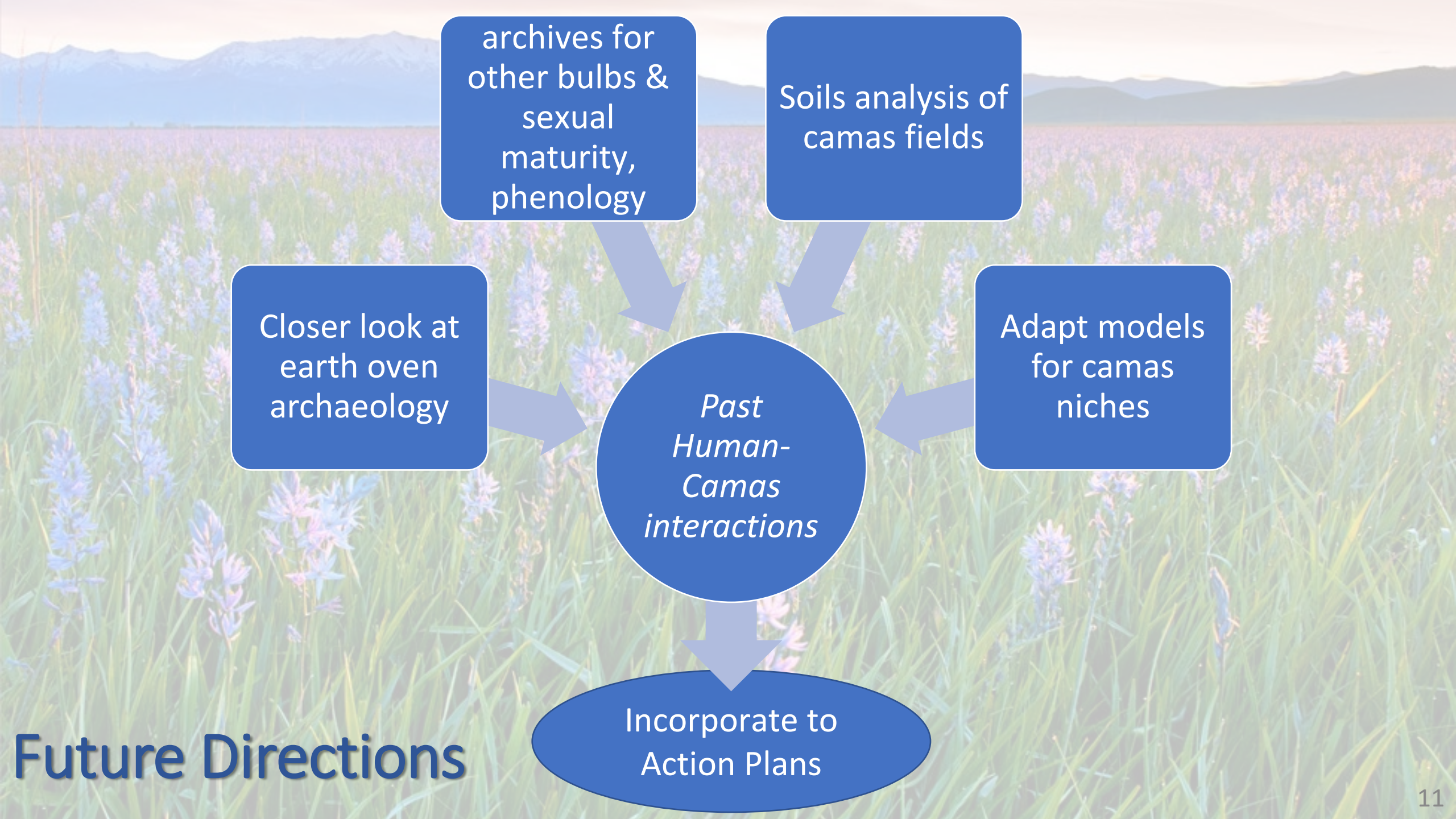
Combining lines of evidence – Modeling & Hindcasting



Left: Camas habitat suitability model for Oregon (Braden 2013:84)

Center: Camas habitat suitability model for southern Idaho (Johnson 2020:27).

Right: Varying precipitation and growing degree days for foxtail millet niches through time (d'Alpoim Guedes and Bocinsky 2018)



Future Directions

Thank you!

Kalispel Tribe: Jessie Isadore, Kendra Maroney, Kevin Lyons, Natural & Cultural Resources

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Oregon: Pam Endzweig, Tom Connolly,

& Elizabeth Kallenbach

OAS Roy F Jones Scholarship

WSU Foley Fellowship

UCSD & AWA

Washington Research Foundation

Background credit: Charles Knowles



Washington Research
FOUNDATION

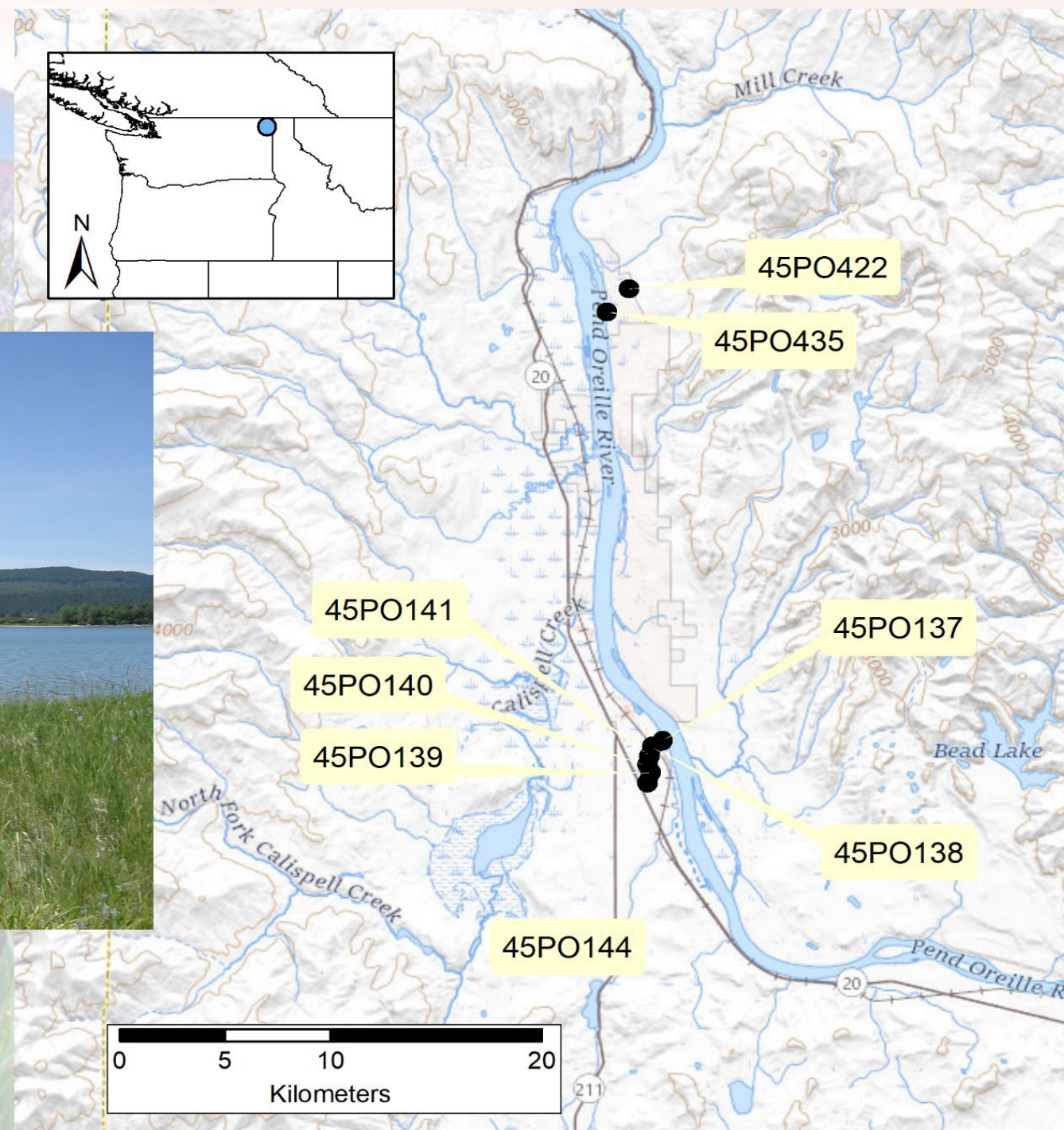


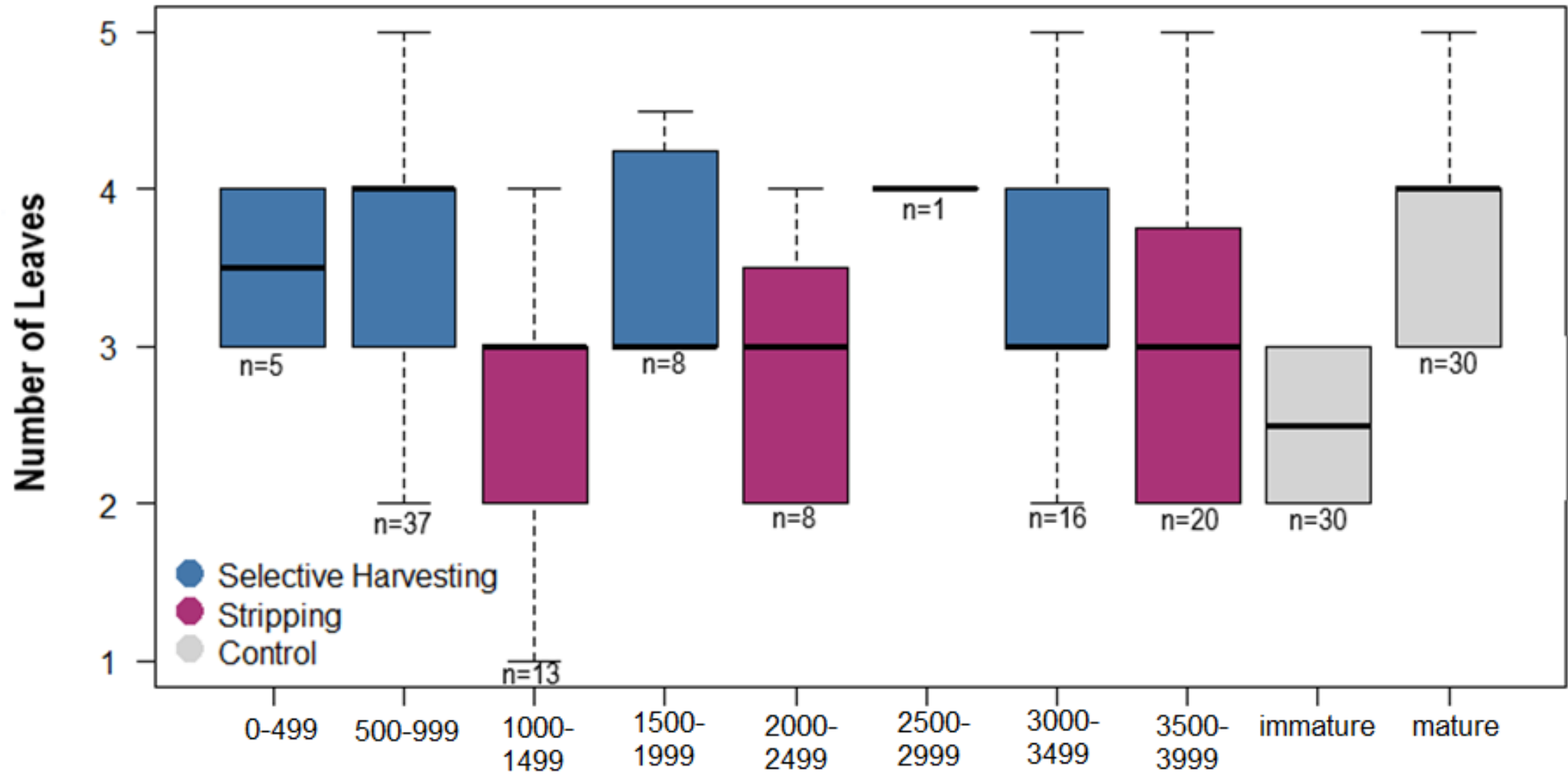
Pend Oreille Valley



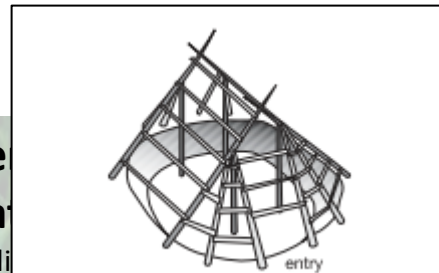
**Harvesting strategies as evidence for 4000 years of
camas (*Camassia quamash*) management in the
North American Columbia Plateau**

2021 Carney, M., S. Tushingham, T. McLaughlin, J. d'Alpoim Guedes
Royal Society Open Science

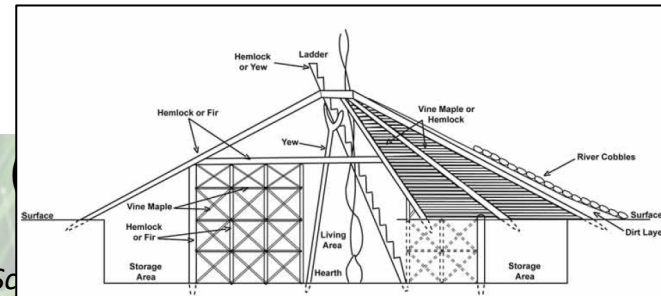




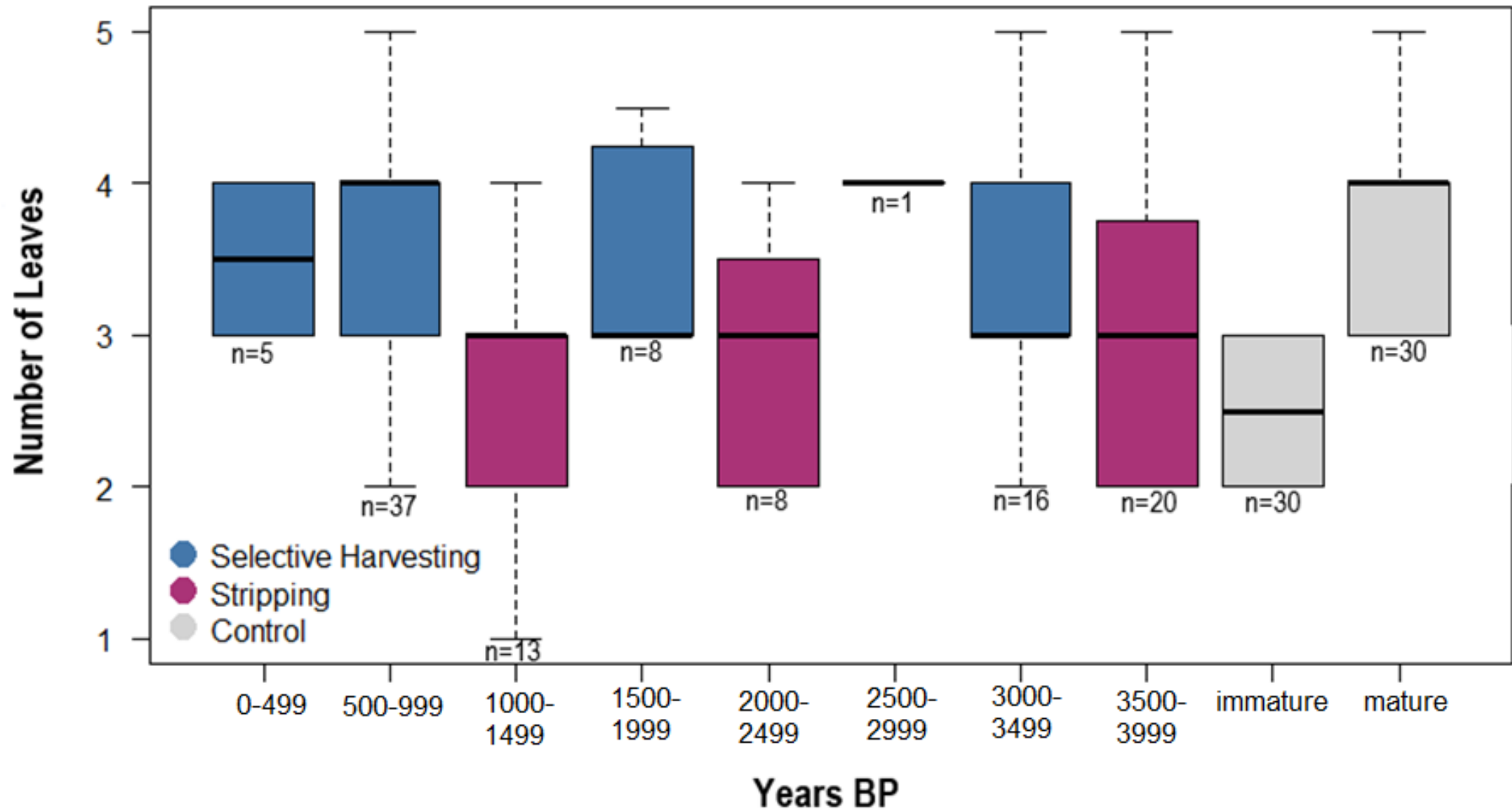
Harvesting strategies as evidence
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 2021 Carney, M., S. Tushingham, T. McLaughlin



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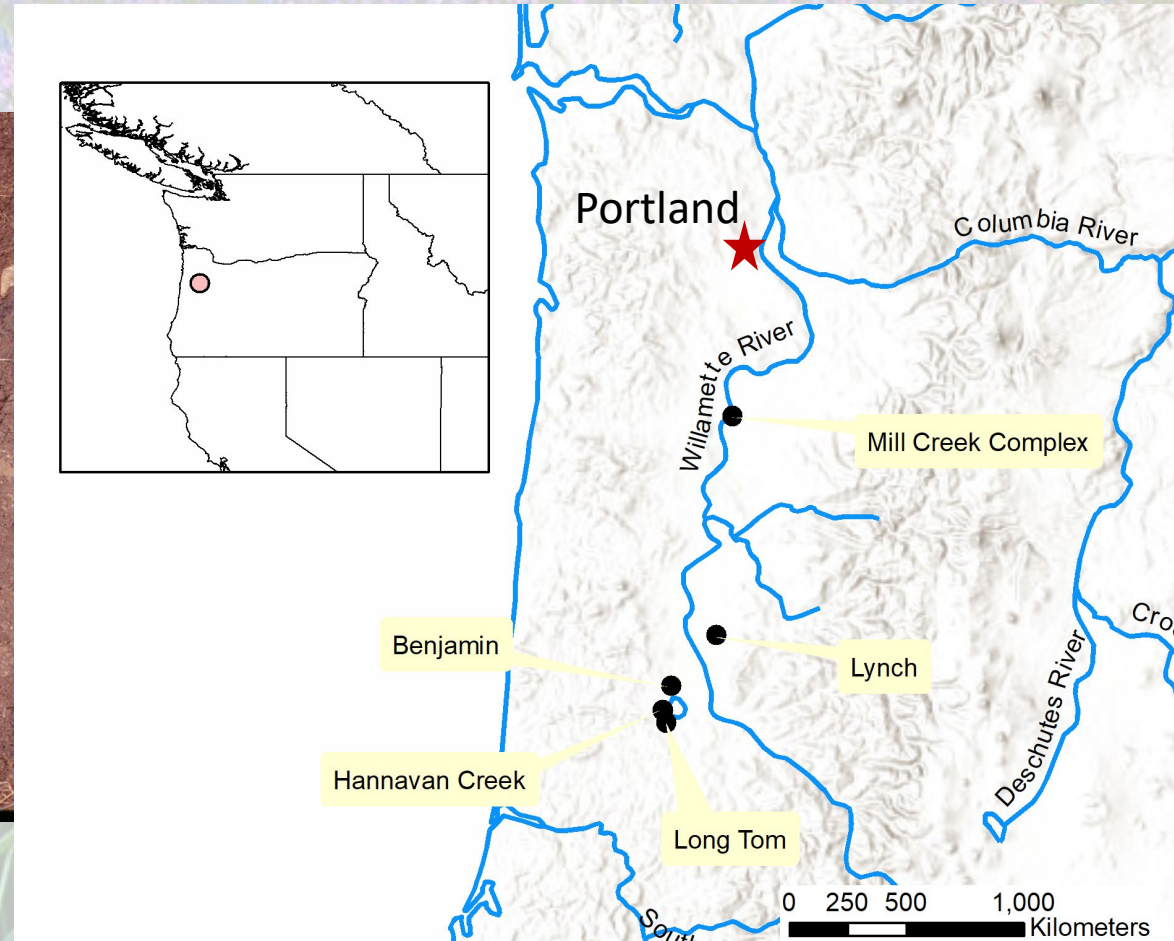
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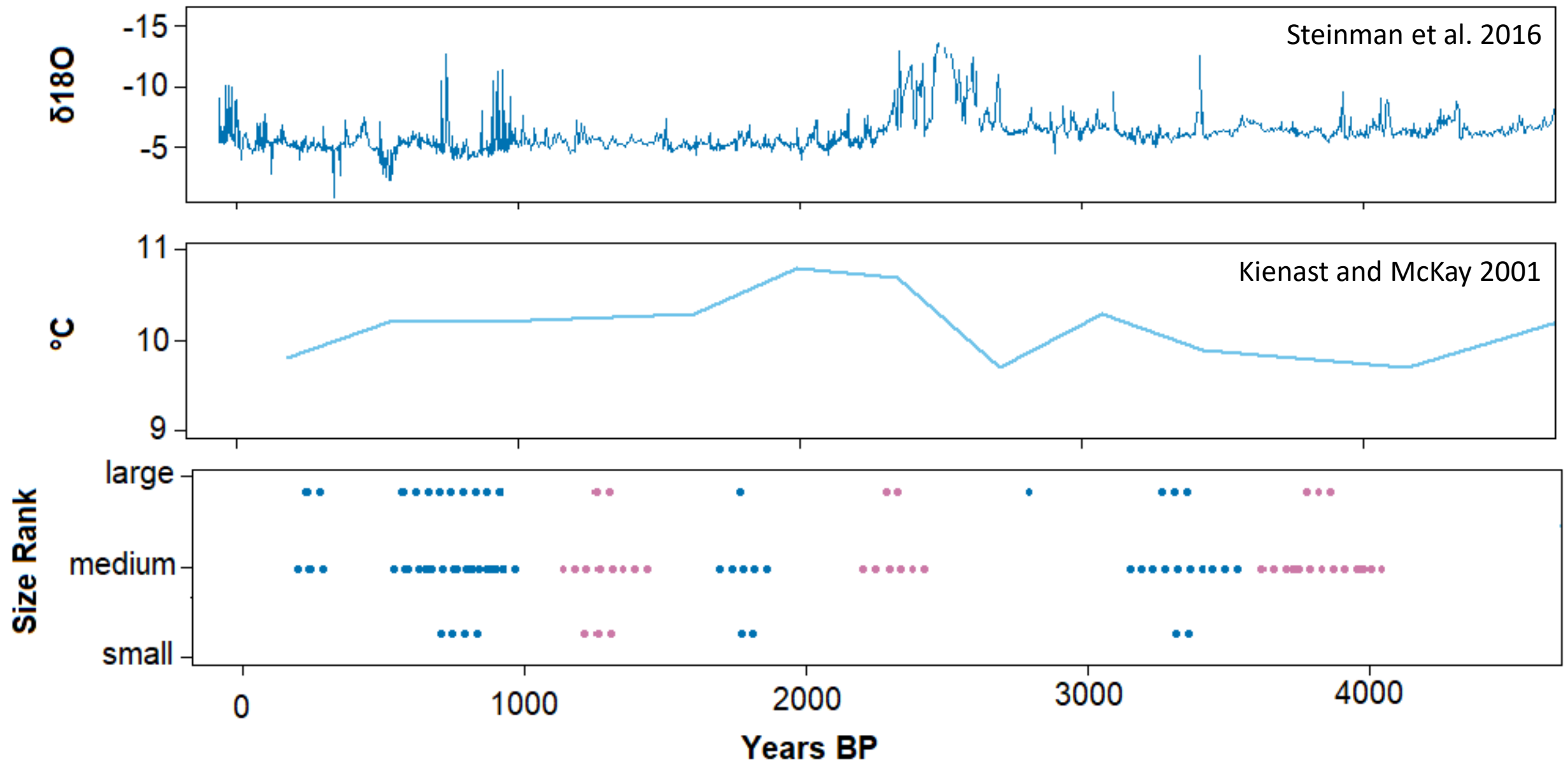
Harvesting strategies as evidence for 4000 years of camas (*Camassia quamash*) management in the North American Columbia Plateau

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Willamette Valley



Left to right: 4000-year-old camas oven from 35MA9, Mill Creek complex, map of archaeological sites in study, 8000-year-old camas bulbs under the microscope from 35LA647 Hannanvan Creek



Harvesting strategies as evidence for 4000 years of camas (*Camassia quamash*) management in the North American Columbia Plateau

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- Selective Harvesting
- Stripping
- Control/Unknown

