# The Virginia Lake Stake Feature, Sauvie Island, OR: Updates from Fieldwork and AMS Dating

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Project Goals

- Determine age, function, and cultural affiliation of the Virginia Lake feature.

- Conduct inter-site comparisons with similar regional wetland sites (e.g. Vancouver Lake weir).

- Place feature as component in broader system of wetland ecosystem engineering in the Lower Columbia using historical ecology and niche construction theory.

USGS topographic map
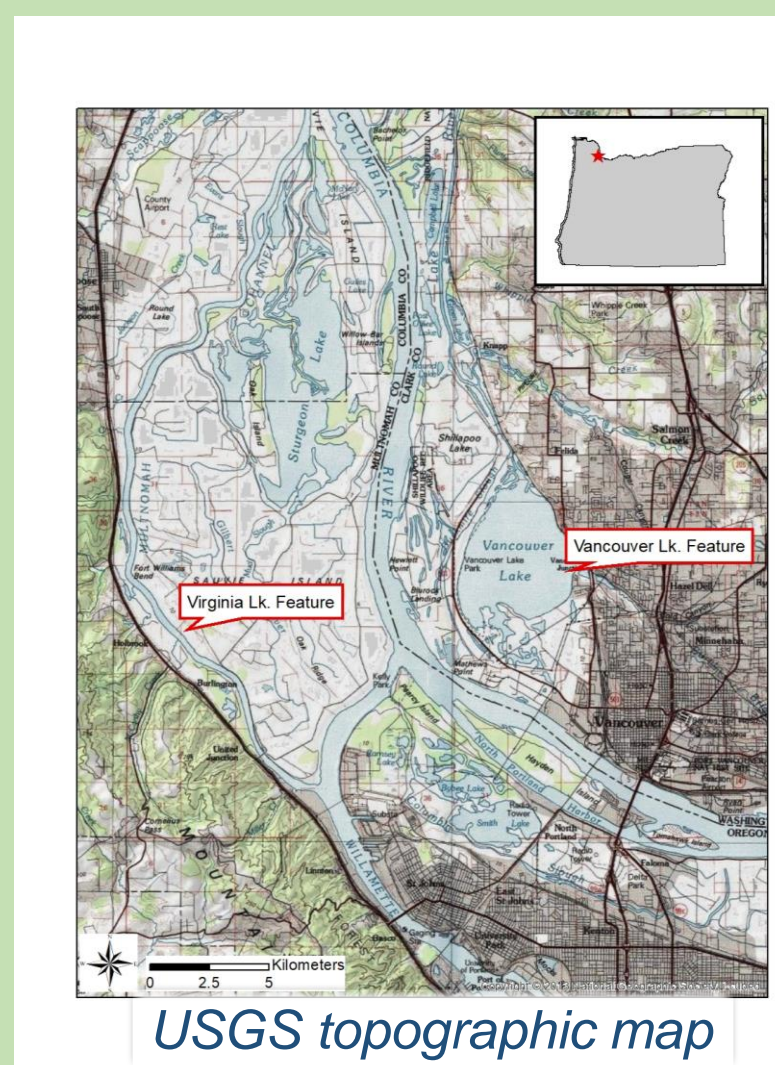
Field Methods

- Pedestrian survey.
- Detailed mapping and recording.
- Sample collection.
- Subsurface testing (11 shovel tests and two 1x.5m test excavations).
- Metal detecting.

Map of pedestrian survey

Map of feature

Test unit 2, stake 13 & 14

Virginia Lake Feature

Table 1: Research questions and associated hypotheses and tasks

Question 1: What is the age of the Virginia Lake feature?

Hypotheses	Tasks
H1: Precontact era	• AMS Dating
H2: Historic era	• Metal detector survey
H3: Multi-component- spanning the precontact and historic era.	• Modification Analysis • Subsurface testing (temporally diagnostic artifacts?)

Question 2: What is the cultural affiliation of the Virginia Lake feature?

Hypotheses	Tasks
H1: The feature is Indigenous	• AMS Dating • Metal detector survey
H2: The feature is Euro-American	• Modification analysis • Macrobotanical ID
H3: The feature is multi-component and/or repurposed	• Pedestrian survey (ID associated features) • Subsurface testing (ID associated components or artifacts)

Question 3: What is the function of the Virginia Lake feature?

Hypotheses	Tasks
H1: Fish weir	• Stratigraphic analysis
H2: Walkway or dock	• Pedestrian Survey
H3: Hunting Structure/blind: (waterfowl, muskrat, beaver, etc.)	• Metal detector survey • Subsurface testing
H4: post and line structure for holding/straightening cedar planks	• Inter-site comparisons • Collect surface elevation data
H5: Multi-use	• Accurate map/spatial data
H6: boundary line or fence	

Question 4: How does the feature relate to human ecosystems in the Lower Columbia backwater wetlands?

	Tasks
	• Inter-site comparison • Synthesize results of first three questions and place in broader regional context

Modification Analysis

"Anatomy of a wood scar": modified from Arcas Associates (1984)
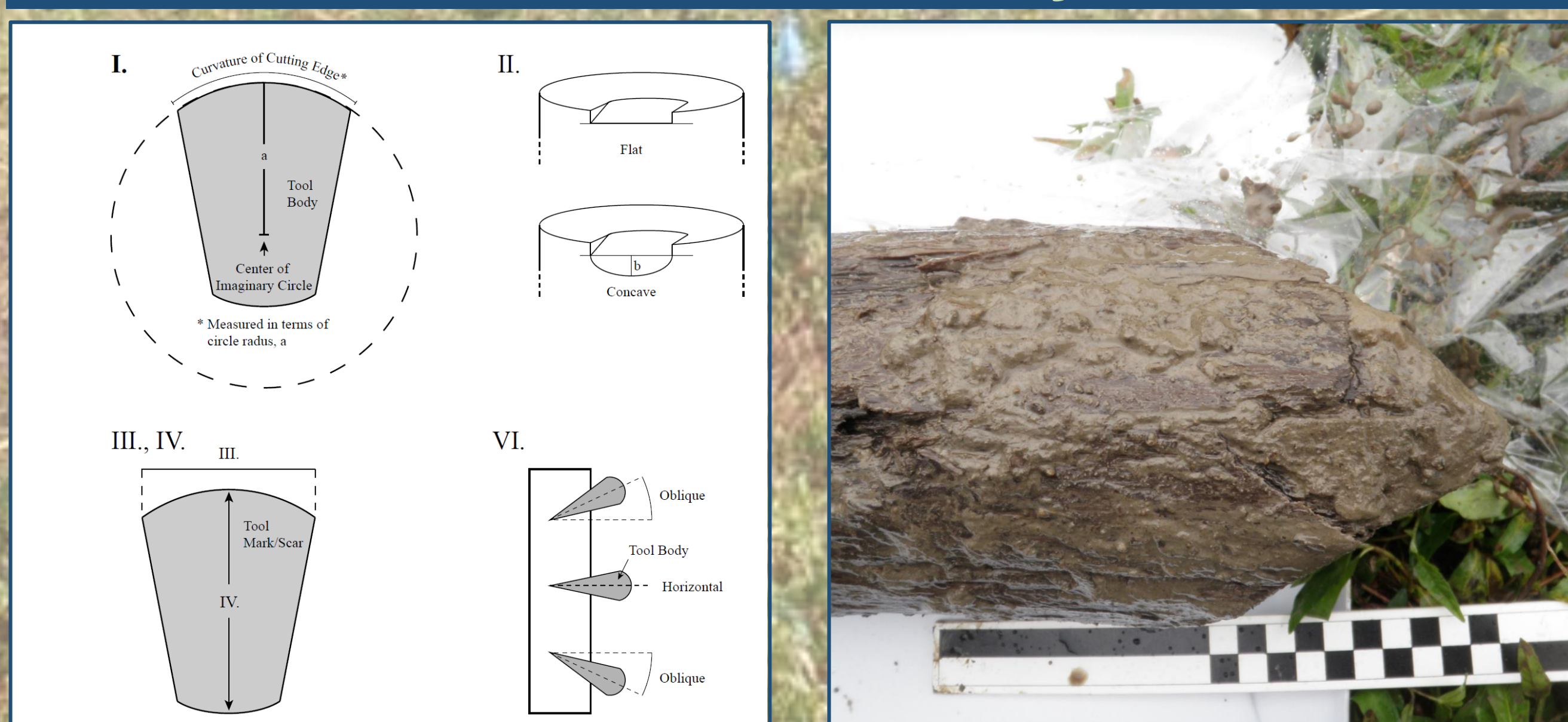
Stake #13 distal end

Table 2: Toolmark morphology analysis protocol

I. Curvature of cutting edge (cm)	II. Shape of X section	III. Length of cutting edge (cm)	IV. Max penetration (cm)	V. Neatness of cut	VI. Angle of attack	VII. Edge angle (in degrees)
Straight	Flat	<3	<2	Clean	Horizontal	None
<2	Concave	≥ 3 <5	≥ 2 <3	Ragged/ sheared	Vertical	<35
≥ 2 <5	Deeply concave	≥ 5 <7	≥ 3 <5	Unknown	Oblique	≥ 35 <45
≥ 5 <10	Very deeply concave	≥ 7	≥ 5		Unknown	≥ 45 <50
≥ 10	Unknown	Unknown	Unknown			≥ 50
Unknown						Unknown

Preliminary Results

Dates and Macrobotanical ID

Sample ID	Macrobotanical ID	Radiocarbon age	
		BP	1σ error
1*	-	Modern	
2	Western redcedar (*Thuja plicata*)	72	27
3	Western redcedar (*Thuja plicata*)	127	26

*sample 1 taken from stake with metal in it

- Younger than Vancouver Lk. stakes (310 +/-60) (Wessen 1983).
- 2 modern, 1 from 19th century.
- Youngest stake different morphology/ metal.
- 2 stakes western redcedar.
- Calibration issues.

Field Testing:

- 23 stakes total, 2 identified in subsurface testing.
- Extends ~70m into the wetland, oriented in a NE/SW direction.
- 6 instances of paired stakes in alignment.
- 2 stakes with metal (nails?)
- Mean stake diameter at base (max width) =5.57 cm.
- Artifacts, lattice, or additional features not found (no metal artifacts, buckshot, cans, or other historic remains).

Future Work

- 2 additional AMS dates.
- 3 additional macrobotanical identifications.
- Analyze tool marks.
- Analyze historic water-level and elevation data.
- Compare with Vancouver Lake weir.
- Additional analysis of ethnohistoric records of backwater land use.
- Evaluate hypotheses.

Virginia Lake Feature 2018, blue flags= stakes

Plank straightening structure. Stewart (1995)