

Modifying Forest Operations to Promote Huckleberry

By Andrew Addressi, Lindsay Chiono, and Gerald Middel

Restoring the abundant natural resources that have long sustained indigenous peoples in the Pacific Northwest requires restoring their ecosystems. In the case of huckleberry, a resource vital to native people in the region, restoration means setting back forest succession to allow more light into the understory. Yet the silvicultural tools forest managers apply to open forest canopies can damage huckleberry shrubs and slow their recovery. As forest managers for the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) in northeastern Oregon, we offer these recommendations for implementing thinning to promote huckleberry.



Andrew Addressi



Lindsay Chiono



Gerald Middel

species in their landscape. For the Walla Walla, Umatilla, and Cayuse Tribes that compose the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), five core groups of traditional foods are central to tribal culture and religion. These groups are called **First Foods**. In the Tribes' Creation story, representative species from each of the First Foods promised themselves (and were followed by associated species in their group) to nourish and sustain the Tribal People: **Salmon** (fish and other aquatic species); **Deer** (game); **Cous-Lomatium** (roots/celery) and **Huckleberry** (berries); **Water** precedes all the other First Foods in this order. In return, the Tribes promised to respectfully harvest and care for the Foods.

In 2007, the CTUIR formally adopted this promise in the form of its First Foods mission, which is a unifying framework for all natural resource stewardship carried out on lands managed by the CTUIR. The CTUIR further advocates measures to protect and enhance First Foods habitat on public lands throughout the Tribes' ancestral territory, as well as safeguarding the Tribes' treaty rights to access and harvest First Foods where they were traditionally gathered. Work continues to refine management strategies and monitoring approaches to advance the First Food Mission across these ecosystems.

Huckleberry in the Northwest

Huckleberries (*Vaccinium spp.*) are key species in the CTUIR's First Foods framework. Huckleberries are harvested by the broader public as well, and they are also important to many wildlife species. Their recognized value notwithstanding, scientists, forest managers, and

CTUIR Department of Natural Resources Mission

To protect, restore, and enhance the First Foods—water, salmon, deer, cous, and huckleberry—for the perpetual cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.

berry gatherers have noted declining huckleberry cover and berry production throughout our region. A major contributing factor is the encroachment of shade-tolerant conifers into berry patches that were historically maintained by fire, including human-ignited fire. In the North Cascades, for example, indigenous people applied fire to maintain subalpine huckleberry fields. Exclusion of indigenous peoples from traditional burning of their ancestral land and the aggressive wildfire suppression policies of the past century have allowed conifers to encroach upon many huckleberry patches. Regular periods of drought stress due to a shifting climate further threaten huckleberry habitat in its historic range.

Given the role of historical fire in establishing and maintaining huckleberry cover, restoration efforts often focus on returning fire as a disturbance agent, or at least mimicking the open structure of fire-maintained forests. Commonly this involves thinning tree density in overgrown stands. Restoration-focused forestry can improve huckleberry productivity by reducing overstory competition: while the shrubs can tolerate shading, fruiting and flowering are negatively correlated with canopy cover. However, huckleberries primarily reproduce asexually through sprouting of rhizomatous roots, and since huckleberry rhizomes appear sensitive to soil compaction, harvesting equipment can injure roots and set back recovery. Concentrations of logging slash deposited in huckle-



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berry patches can also interfere with their growth. Keeping these potential impacts in mind, mechanical treatments intended to promote huckleberry can be modified to reduce the harmful effects of equipment operations.

There are at least a dozen huckleberry species found across our region, but perhaps the most important and well researched is *V. membranaceum* (big huckleberry, also called thin-leafed or mountain huckleberry). While *Vaccinium* species differ to some degree in their distribution and habitat requirements, many of the widely harvested species are similar to big huckleberry in their botanical and ecological characteristics. The species' similarities allow us to define some general expectations for how forest management activities will affect huckleberry and make recommendations for protecting it.

Safeguarding huckleberry

On lands managed by the CTUIR, tribal foresters work closely with operators to avoid damaging huckleberry during thinning treatments. Best management practices include minimizing the area affected by equipment trails and avoiding huckleberry patches when piling slash. During commercial harvest, cut-to-length harvest systems, where tracked machinery operate over slash beds, can minimize scarification and soil compaction as compared to whole tree yarding performed with rubber-tired skidders. Harvesting over winter snowpack provides further protection to huckleberry rhizomes. Additional recommendations include avoid dense patches of huckleberry when locating landings; minimize repeated stand entries; and consider the influence of fuel loads on fire intensity if prescribed fire is planned, as high soil temperatures can injure huckleberry rhizomes.

In the Inland Northwest, retaining some overstory cover may benefit huckleberry production by moderating environmental extremes, reducing frost damage to early buds in the spring and transpiration demands in the summer, and maintaining soil moisture from



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On land managed by the Confederated Tribes of the Umatilla Indian Reservation, care is taken to protect huckleberry, a Tribal First Food, but this protection doesn't preclude active management. On this huckleberry site, a prescribed burning was conducted after a thinning operation. (Huckleberry visible in the foreground)

winter snowpack longer into the growing season. The CTUIR therefore typically uses uneven-aged management techniques including single tree selection and small group selection to retain partial canopies. (Whether this residual shading would benefit huckleberry in milder west side climates is uncertain.)

A recent thinning project provides an example of our recommendations put into practice. On 200 acres of mixed conifer forest in the northern Blue Mountains, we sought to increase tree vigor and stand resilience to wildfire and drought while also promoting big huckleberry. Pre-treatment huckleberry cover in the stands was modest and patchy. Increasing diversity in the stand structure was one objective of the thinning treatment, and we used existing huckleberry patches as the nuclei for canopy gaps. The patches were flagged to exclude harvesting equipment, and most trees within a half acre were designated for cutting. In this previously closed can-

opied forest, we expect that the increased light levels in the understory, as well as follow-up prescribed burning, will promote huckleberry production. Since big huckleberry may take over a decade to recover from disturbance and resume abundant fruit production, these efforts

represent a long-term investment.

Refining best management practices

Managers can hedge against damage to huckleberry during thinning operations by applying the best practices outlined above. Significant uncertainty as to the long-term impacts of forest management on huckleberry remains, however, and these recommendations should continue to be tested and refined in an adaptive management context. With this aim in mind, CTUIR forest managers actively monitor the impacts

of thinning and burning treatments on tribal properties, and we are a part of a larger Northern Blues All Lands Partnership effort to monitor the effects of forest health treatments on huckleberry across land ownership types—an effort that should strengthen best practice recommendations in our region. *WF*

Andrew Addessi is the supervisory forester for the Confederated Tribes of the Umatilla Indian Reservation. He can be reached at (541) 429-7245 or AndrewAddessi@ctuir.org. **Lindsay Chiono, PhD**, is a restoration ecologist with the Confederated Tribes of the Umatilla Indian Reservation. She can be reached at (541) 215-7752 or LindsayChiono@ctuir.org. **Gerald Middel** is a project leader with the Confederated Tribes of the Umatilla Indian Reservation. He can be reached at (541) 969-9925 or GeraldMiddel@ctuir.org.