

**AN OAK MONITORING TOOL FOR HABITATS
EAST OF THE CASCADES in Oregon and Washington:**

East Cascades Oak Partnership Disturbance Monitoring Tool

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Who is the East Cascades Oak Partnership?

Why did the partnership develop a monitoring protocol?

How can we answer key management uncertainties?

How has the partnership launched a multistate monitoring effort?

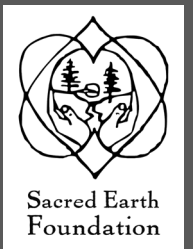
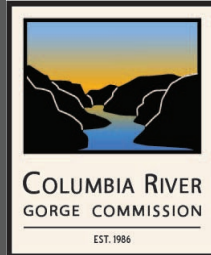
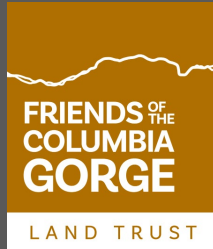
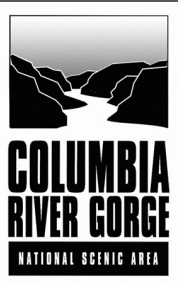
How is it going in our first full year of installing plots?

Next steps



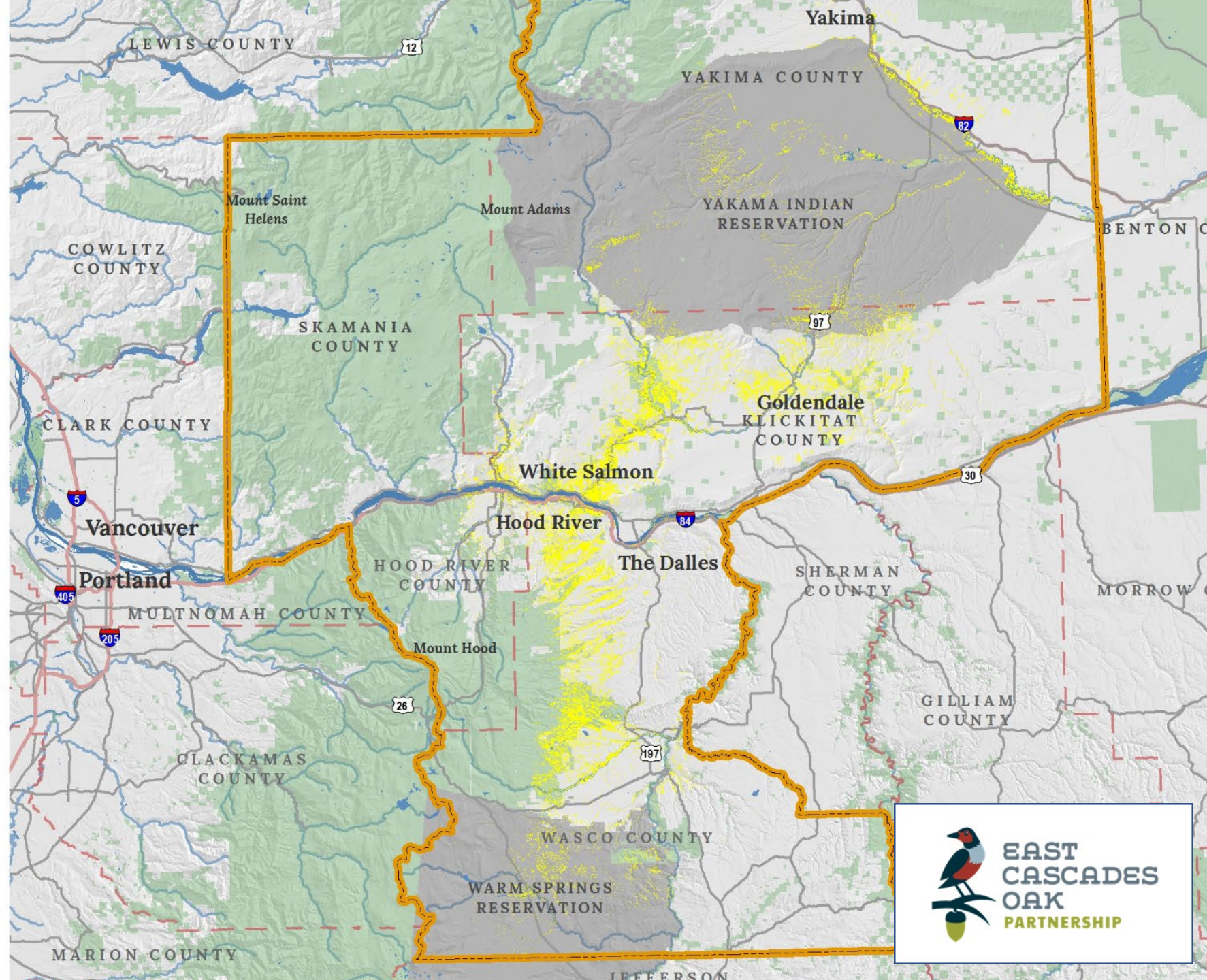
EAST CASCADES OAK PARTNERSHIP

Lifting Up Nature & People



ECOP REGION

We serve people interacting with oak systems in an area roughly bound by the Yakama Nation Indian Reservation to the north and the Warm Springs Indian Reservation to the south



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East or West ...?

Why does it matter?



Sun exposure and rainfall dramatically impact what grows where in the East Cascades.

Fire-Adapted

Oaks have thick bark and waxy leaves that resist burning, and often sprout back after being burned.

Safe Homes

Oak cavities and bark provide safe homes for wildlife. Acorns provide the richest plant protein in the woods.

The Role of Oaks in the East Cascades



100"

Mountains

Mt. Hood

11,250 ft.

Forest

Precipitation Rate

Oak Woodland

Lively Landscape

A steep decline in rainfall over lively terrain creates a tapestry of unique habitats, generating biodiversity and climate resilience!

Oak Savanna

Grasslands

10"

Hood River

Hood River

Mosier

Columbia River

Lyle

The Dalles

Mt. Adams

White Salmon River

White Salmon

160 ft.

Klickitat River

Providers

Foods and medicines grow and live near the oaks — including deer, elk, roots, and berries.

Not Just Oaks

Flowering plants and grasses grow under the oaks. They feed pollinators and house insects — the base of a food chain.

Key management uncertainties for ECOP Partners

How do oak systems respond to wildfire of varying intensities?

How does understory structure and species composition impact fire intensity, timing, and frequency?

When do oak crown buds initiate following oak canopy top kill?

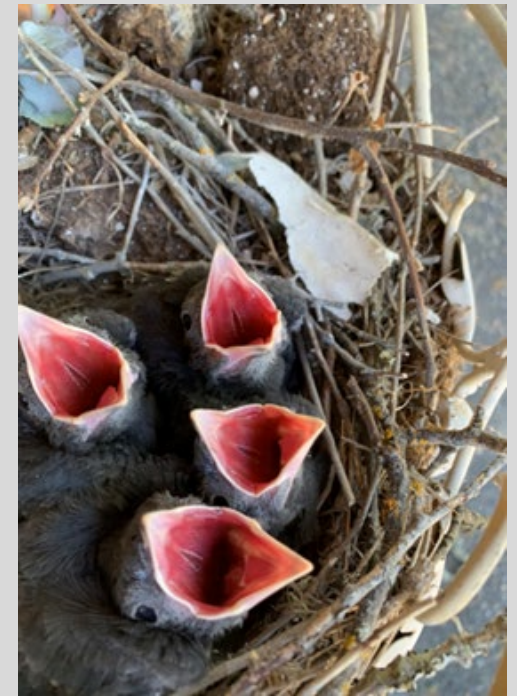
How does management of oak systems (thinning, fire...) impact listed sensitive or priority native species?

What role does fire play in habitat creation?

How does understory vegetation respond to mechanical thinning?

Which livestock grazing regimes improve native composition, structure, and forage quality in the understory?

How do disturbance events impact wildlife habitat for priority and common species of plants and animals?



2020-21

Developing a monitoring tool to
answer our questions

Don't reinvent the wheel

- USFS Forest Inventory Assessment methods
 - Tree inventory and stand condition
 - Plot and landscape condition
 - Land use / Previous disturbance indicators
- Browns transects for fuel loading

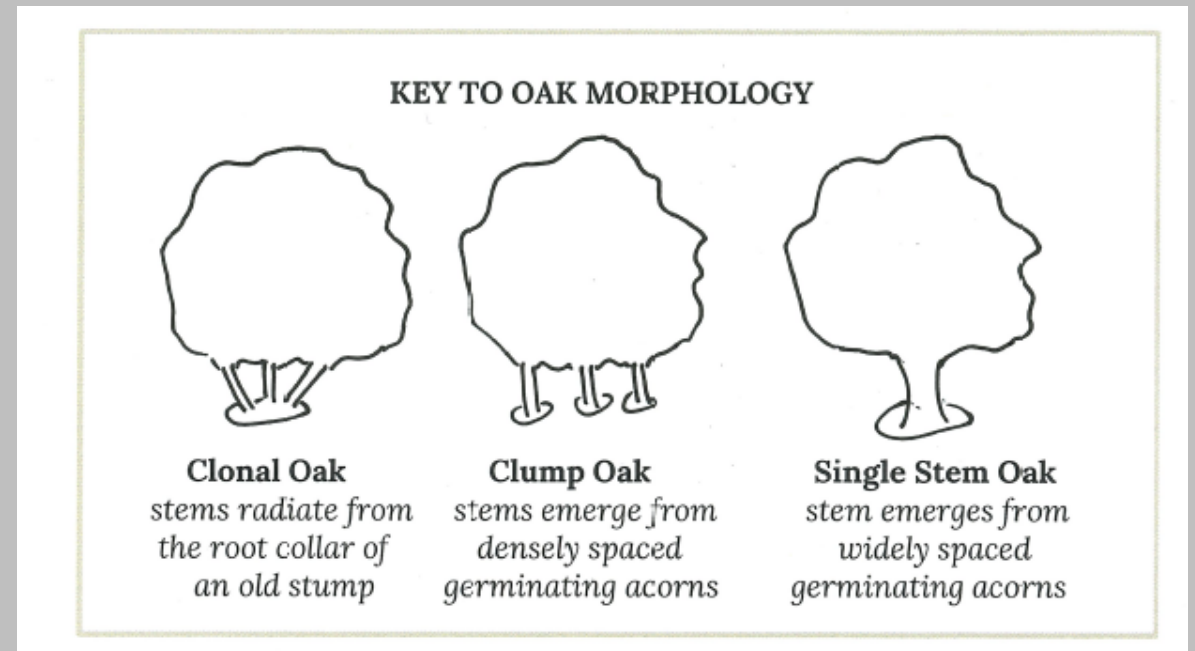
Browns planar intercept method

- Photo points



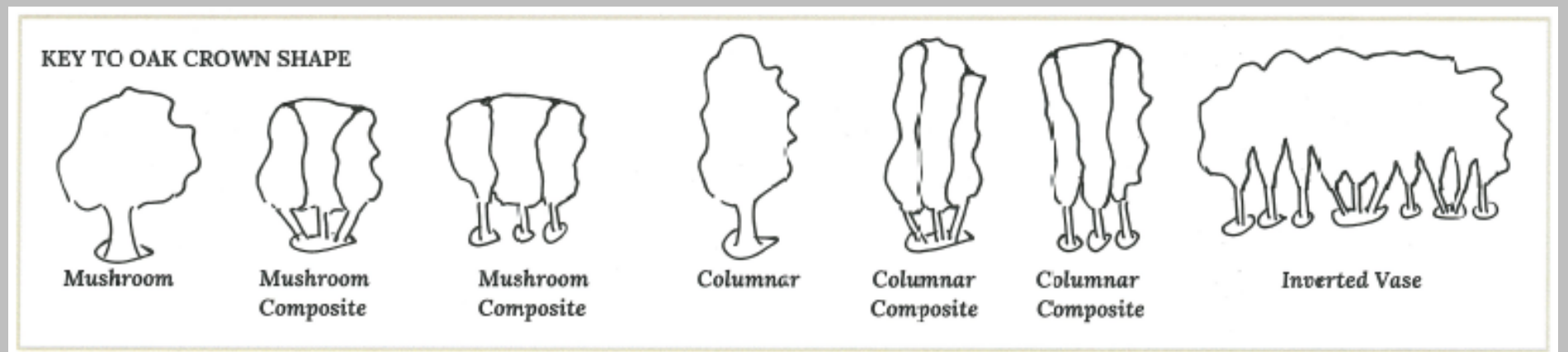
Don't reinvent the wheel... well we “kind of” did

- Oak tree responses to change
 - Morphology
 - Epicormic branching
 - Stump sprouting
 - Cavities
 - Snag presence and condition



Don't reinvent the wheel... well we "kind of" did

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Added vegetation indicator species for East Cascades oak and oak pine systems

- Understory plants that are increasers and decreaseers in response to stressors

Genus	species	Common	Exotic	Increaser	Decreaser	USFS Plan	Plant form
Achillea	millifolium	Yarrow		x			forb
Collomia	grandiflora	Collomia		x			forb
Lathyrus	lanszwertii	Nevada sweet pea /peavine		x			forb
Lupinus	arbusus	Longspur lupine		x			forb
Potentilla	gracilis	Slender or graceful cinquefoil		x			forb
Centaurea	moncktonii	knapweed	x				forb
Cirsium	spp	undetermined thistle	x				forb
Cirsium	arvense	canadian thistle	x				forb
Cirsium	vulgare	Bull thistle	x				forb
Onopordum	acanthium	scotch thistle	x				forb
Centaurea	spp	knapweed	x				forb
Chondrilla	junceae	skeletonweed	x				forb
Centaurea	stoebe	spotted knapweed	x				forb
Centaurea	diffusa	diffuse knapweed	x				forb
Frasera	albicaulis	Frasera			x		forb
Balsamorhiza	species	Balsamroot			x		forb
Hieracium	scouleri	wooly hawkweed				x	forb
Lomatium	tritenatum	nineleaf lomatium				x	forb
Lomatium	nudicauli	barestem lomatium				x	forb
Carex	rossii	Ross' sedge		x			graminoid
Elymus	glaucus	blue wildrye		x			graminoid
Bromus	diandrus	great brome	x				graminoid
Bromus	tectorum	Cheatgrass	x				graminoid
Bromus	commutatus	meadow brome	x				graminoid
Bromus	japonicus	Japanese brome	x				graminoid
Cynosurus	echinatus	dogtail grass	x				graminoid
Bromus	hordeaceus	chess or soft brome	x				graminoid
Poa	bulbosa	bulbous grass	x				graminoid
Ventenata	dubia	N. Africa grass	x				graminoid
Bromus	spp	undetermined brome	x				graminoid
Festuca	idahoensis	idaho fescue			x		graminoid
Poa	cusickii	Cusick's bluegrass			x		graminoid
Elymus	elymoides	bottlebrush squirreltail				x	graminoid
Koeleria	macrantha	prairie junegrass				x	graminoid
Pseudoregnaria	spicata	bluebunch wheatgrass				x	graminoid
Poa	sandbergii	sandberg's bluegrass				x	graminoid
Carex	geyeri	elk sedge				x	graminoid
Stipa	occidentalis	western needlegrass				x	graminoid
Rosa	woodsii var.ultram	Woods rose		x			shrub
Rosa	gymnocarpa	baldhip rose				x	shrub
Symphoricarpos	spp	(includes both tall and spreading snowberry)				x	shrub
Purshia	tridentata	bitterbrush				x	shrub
Ceanothus	prostratus					x	shrub



East Cascades Oak Systems

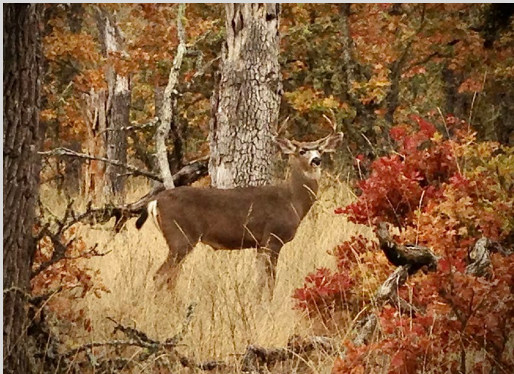
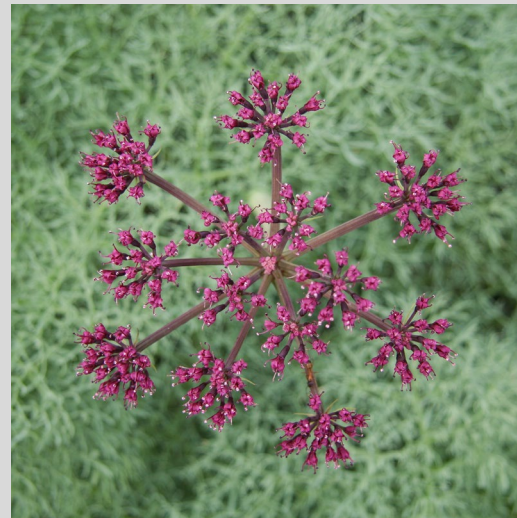
Disturbance Monitoring Protocol

Field Notebook and Instructions¹



Last Updated: March 4, 2022

2022 - Launched multistate plot installation



ECOP Oak Disturbance Monitoring Survey 2022

ECOP Monitoring Survey 2022



XLSForm



Update



Files



Publish



Oak Monitoring Survey

This survey is designed to efficiently collect comprehensive ground, surface, herbaceous, shrub, and tree data to determine East Cascade oak system response to disturbance events such as grazing, wildfire, prescribed fire, thinning, and fuels reduction. The protocols from which this survey was developed borrow heavily from the USFS - Forest Inventory Analysis Protocol, as well as the BLM - Assessment, Inventory, and Monitoring Protocol. It has been supplemented with metrics that capture Oregon white oak tree responses to disturbance, that were collectively developed by ECOP partners and staff.

Please refer to the Field Instructions and Field Notebook materials to support your selections in answering questions.

To begin, establish 3 transects. Place a permanent stake into the ground at the center of the monitoring plot. Starting with 0 degree azimuth, extend a tape in the azimuth direction for 50 ft and anchor the far end of the transect with a stake/chaining pin. Be careful to place the tape as close to soil surface as possible without disturbing the soil surface. Repeat this twice more, once at the 120 degree azimuth and once at the 240 degree azimuth.

If plot center falls at a position where it is not safe to install three transects, consider installing one transect **or moving the location of plot center** to a safer location as nearby as possible. You may also choose to reject the plot altogether if safety is of concern. Note any alterations from plot location in the notes.

Note: When establishing and reading your plot, attempt to minimize trampling and disturbance along the transects that may impact your observations.

Proposed Management Activities *

Please check all that apply - PROPOSED management activities (within the next 5 years), that will be implemented on the plot and in the project area.

- ☐ Unknown / None
- ☐ Oak removal/thinning
- ☐ Conifer removal/thinning
- ☐ Hand cutting/limbing/pruning
- ☐ Mechanical mastication
- ☐ Prescribed fire
- ☐ Pile burning
- ☐ Coarse woody debris removal (not burned)
- ☐ Snag creation
- ☐ Herbicide application to oaks
- ☐ Herbicide application to understory species
- ☐ Mechanical weed control
- ☐ Understory planting/seeding



Results

First full year – many project types

- **91 permanent plots installed in Oregon and Washington**
 - **State lands 22**
 - Large scale mastication - Fuels project
 - Oak release (large conifer removal)
 - **Federal lands 32**
 - Hand thinning (lop and scatter) Fuels project
 - Prescribed fire Fuels project
 - **Private Lands 26**
 - Mechanical precommercial thinning
 - Hand thinning / fuels reduction
 - Oak release
 - Targeted invasive control (Skeletonweed)
 - **Tribal lands 11**
 - Post wildfire recovery
 - Juniper removal

Next steps

- We are funded to revisit 50 of the 2022 plots in 2023, after management activities
- Continue to train partners to use the monitoring protocol
- Begin data analysis to measure projects toward goals
- Talk with researchers, universities about mining the data for landscape scale research
- Restoration projects funded by OWEB will include monitoring using this protocol
- Expand to include fire severity and more detailed understory vegetation monitoring



Thank you to our funders



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FOUNDATION

WASCO COUNTY FOREST
COLLABORATIVE



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Questions?



Columbia Land Trust

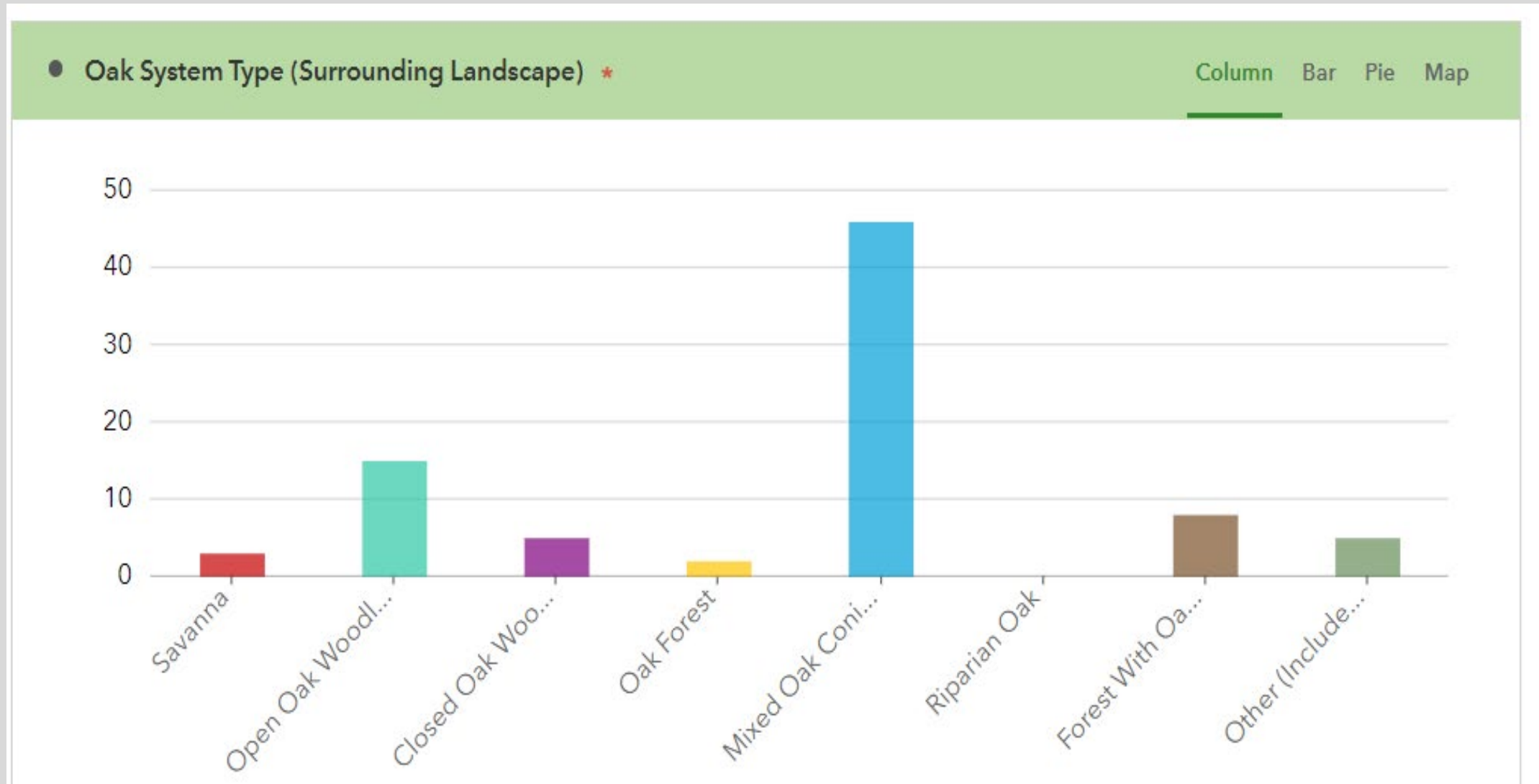
CONSERVING THE NATURE YOU LOVE

Some results



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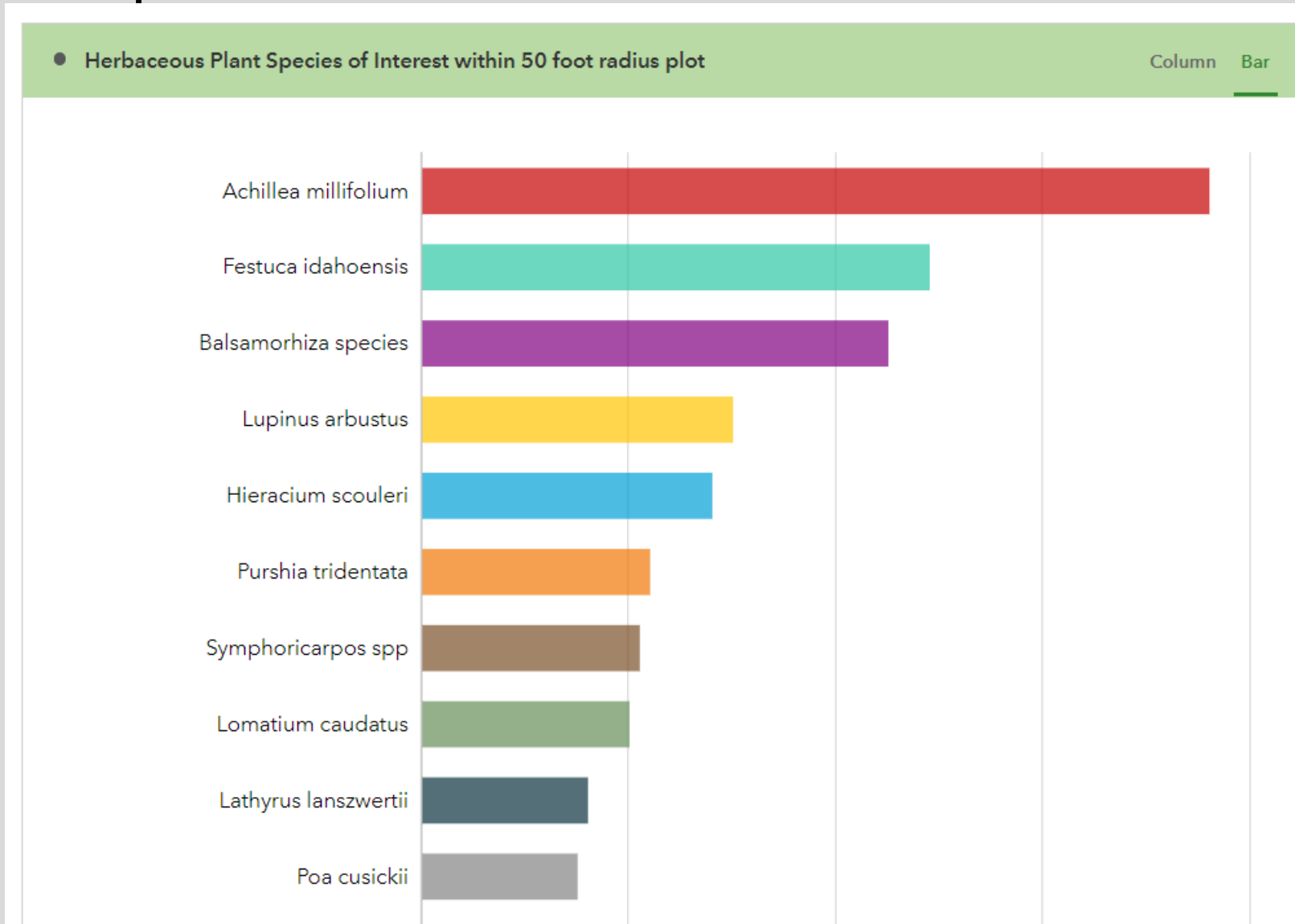
Mixed oak conifer forest was dominant oak system type



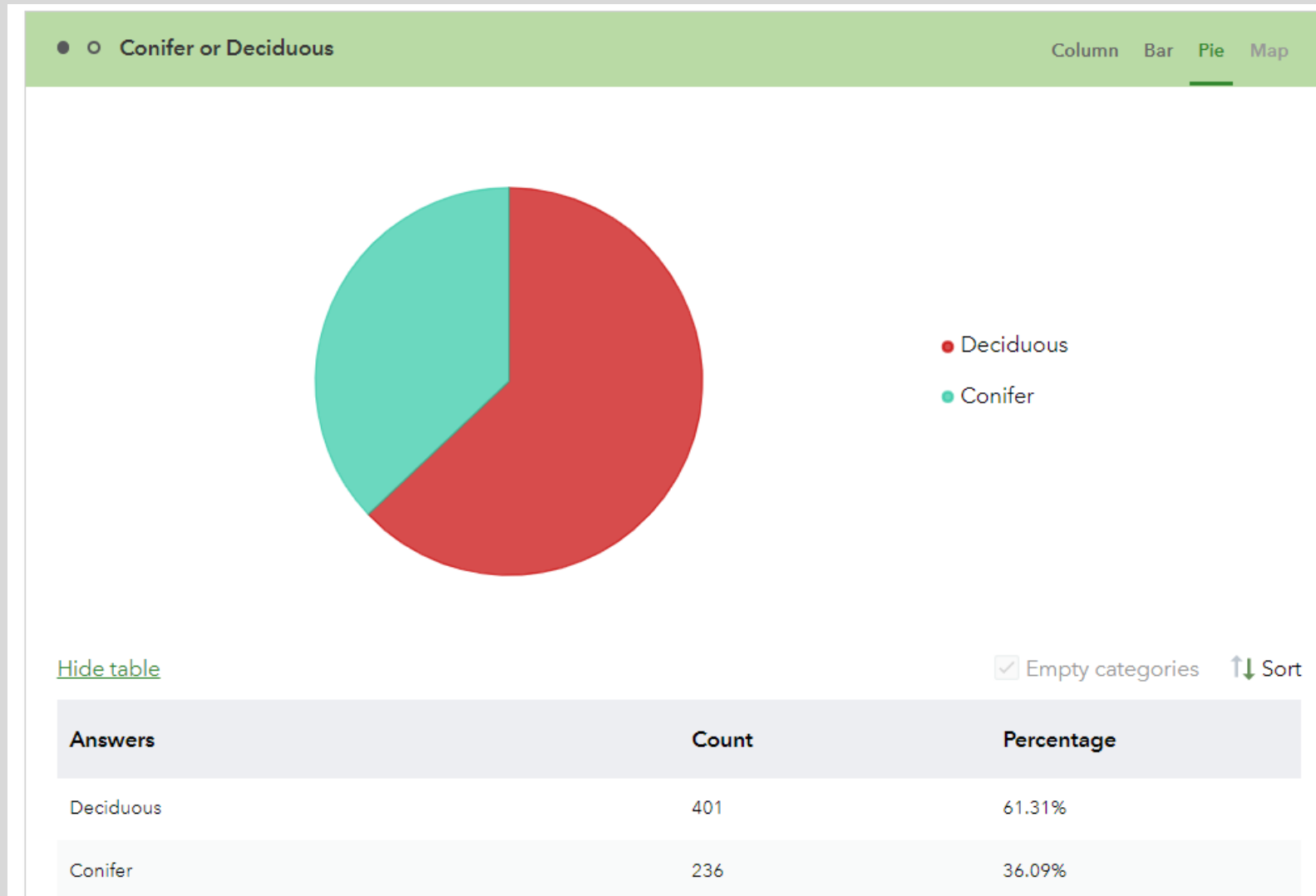
Land use history dominated by previous fire events

- 52 % of plots had experience wildfire that was either detected by scarred vegetation or known history of fire
- 15% of plots had been recently grazed (signs of grazing visible)
- Woodlands were managed for timber production on 32 % of plots
- Oak trees had been removed (cut) on 8% of plots

Top 10 understory native species identified in plots, no surprises



Oak seedlings (61%) predominated over conifers (36%)



Percent live crown ratio indicates the canopy is more closed than open



Wildlife Snags

- No shortage of snags in plots (642)
- but size may be limiting wildlife use, most snags were short in stature and most snags had no cavities.