Researching the Recovery

Community scientists investigate the complexity of forest recovery in the Opal Creek Wilderness and Scenic Recreation Areas after the 2020 Beachie Creek Fire

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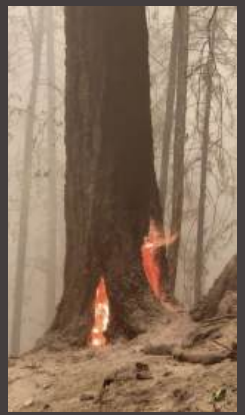
Opal Creek Pre-fire

Beachie Creek Fire

- Began 2 miles south of Jawbone Flats in the Willamette National Forest on August 16, 2020
- Difficult to reach location
- Windstorm on Monday, September 7 caused rapid spread
- Heavily impacted towns of Elkhorn, Gates, Mill City, Lyons, Mehama, Detroit
- Encompassed 193,556 acres, many in the Opal Creek SRA and Wilderness



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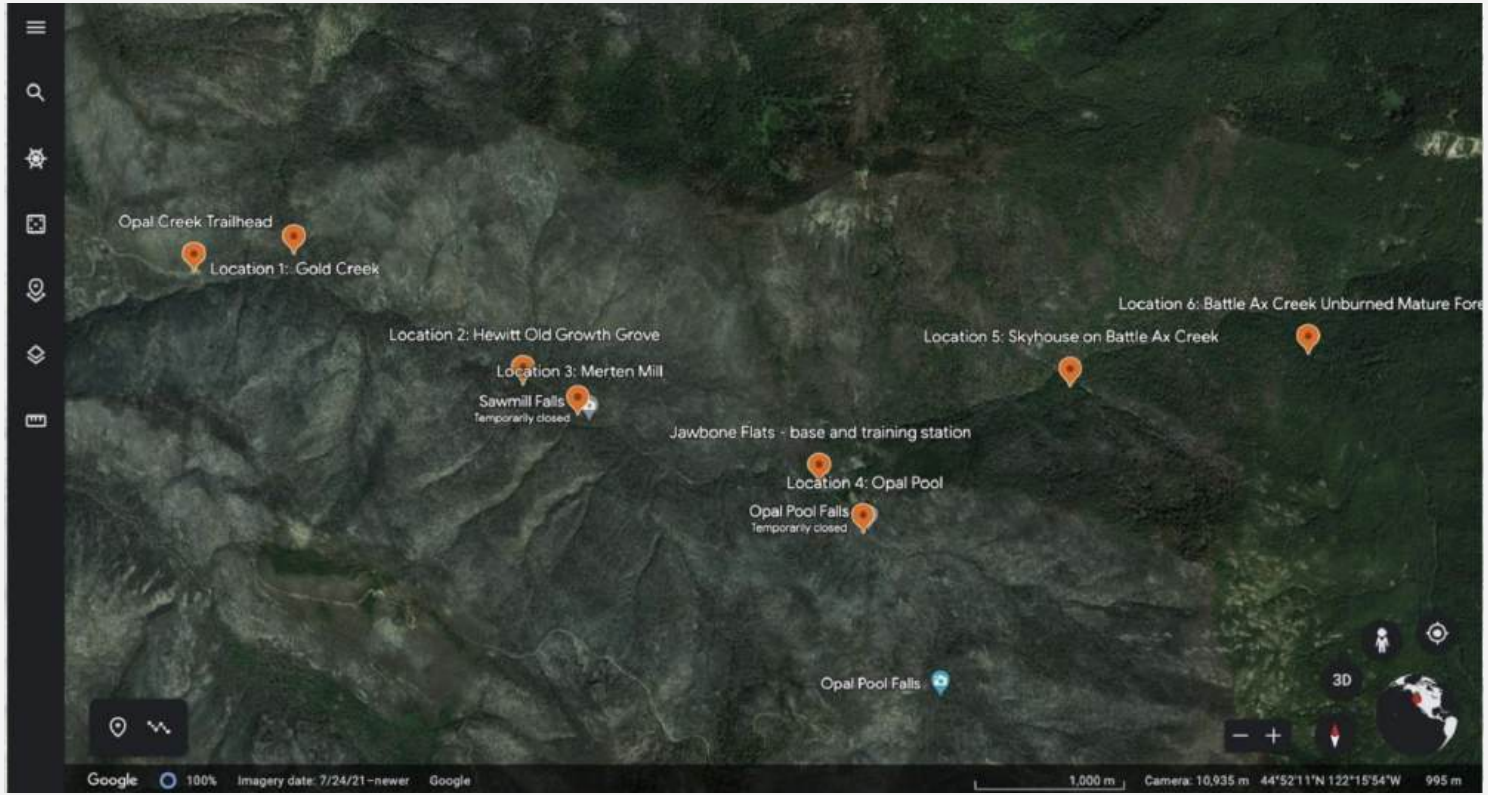
Opal Creek Post-fire

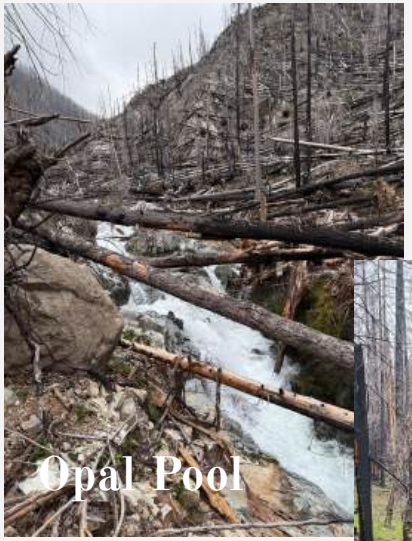
- How is this forest recovering?
- Are there differences between areas with different pre-fire conditions and/or different burn severities?

Plot Set-up Crew

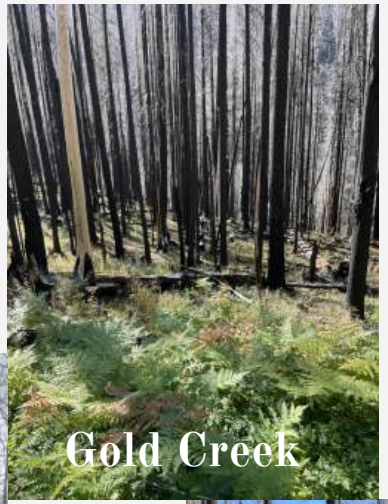
Location and Distribution of Research Locations

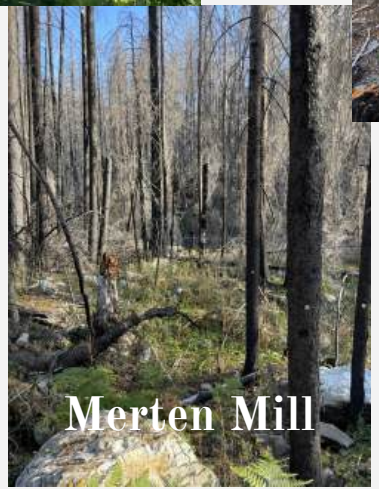


Research locations


Opal Pool


Hewitt Grove


Gold Creek

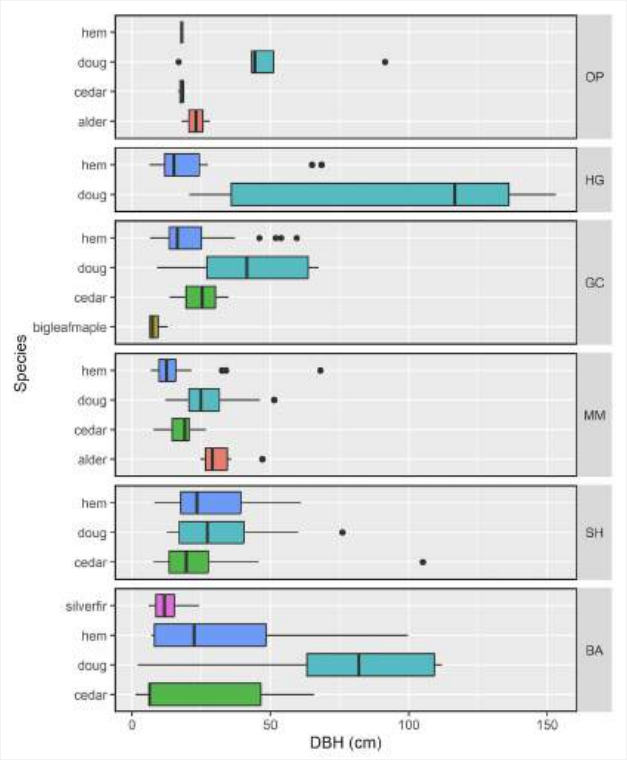

Merten Mill


Skyhouse


Battle Ax

Site Comparison

Average DBH of Standing Dead and Living trees in Each Location



Characteristics of the Six Research Locations

Location	Pre-burn forest type	Type of burn
Opal Pool	Mature	Severe burn and blowdown
Hewitt Grove	Old growth	Severe burn
Gold Creek	Second growth	Severe burn
Merten Mill	Clear cut / Second growth	Moderate-Severe burn
Skyhouse	Second growth	Mosaic burn
Battle Ax	Mature	Unburned

- Most abundant tree species
  - Western hemlock
  - Douglas fir
  - Western red cedar
  - Red alder
  - Big leaf maple
  - Silver fir*
- DBH range: 6cm - 140cm

Research layout

Study design:

- 6 culturally relevant locations
- 3 1/20th acre plots within each location
- 10 1m^2 quadrats within each plot

Allows:

- Assess variation within location
- Compare recovery between locations

Four research trips a year with community members:

- April = lichens
- June = birds
- July = plants
  - Standing dead trees
  - Vascular plants
  - Tree seedlings and saplings
- October = fungi

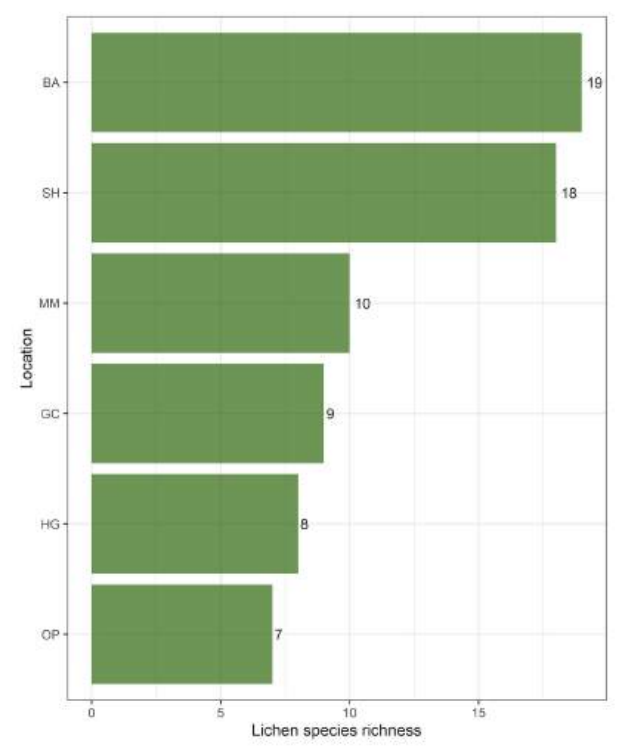
A few of our volunteers

Our community scientists:

- 48 unique community members
  - Aged 10-82
  - Opal Creek alums and first-timers
- 10 community science weekends since Spring 2023
- 6 people on multiple trips
- 1 person on 5 trips!

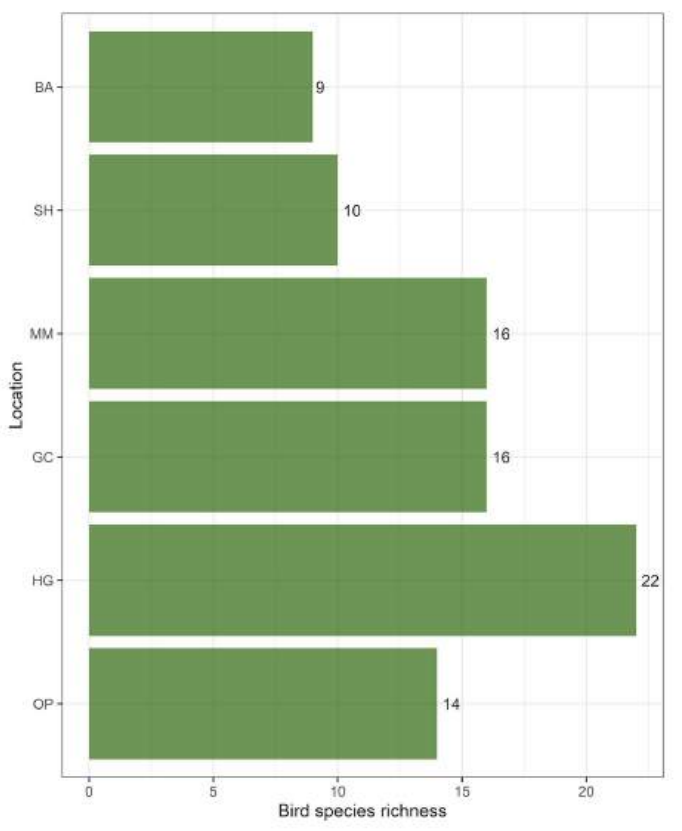
(Yes, she did win the community researcher of the year award!)

Lichen species richness in each location



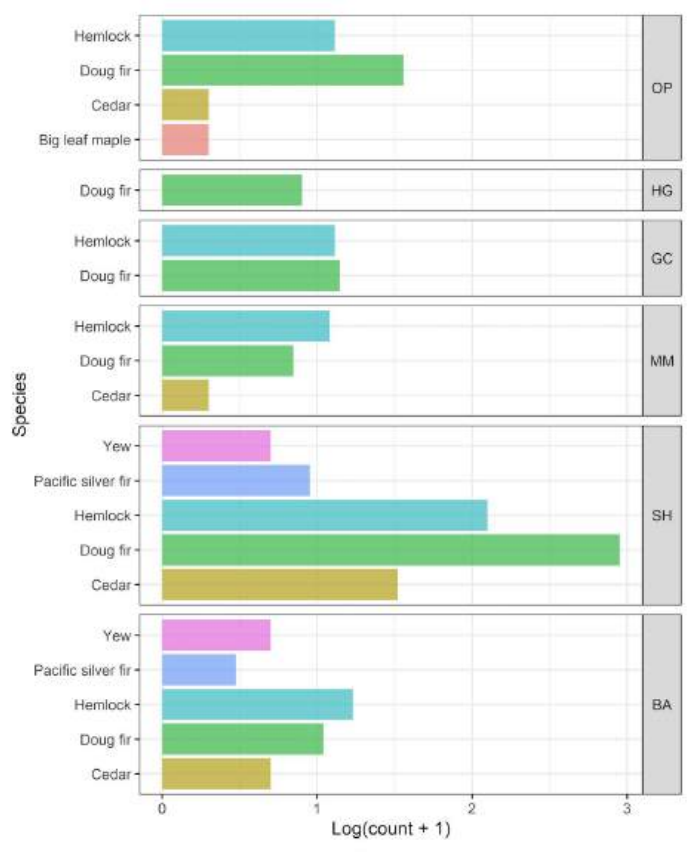
- 141 lichens observations
- 61 lichen species identified
- 4 lichens found in all 6 locations
  - Beard
  - Bulgy Bone
  - *Cladonia*
  - Rag Bag
- 6 lichens found only in one location, 4 of these were at Battle Ax
  - Frog's Pelt
  - Membranous Dog
  - Netted Specklebelly
  - Tapered Matchstick
- 17 lichens awaiting identification!!

Bird species richness in each location



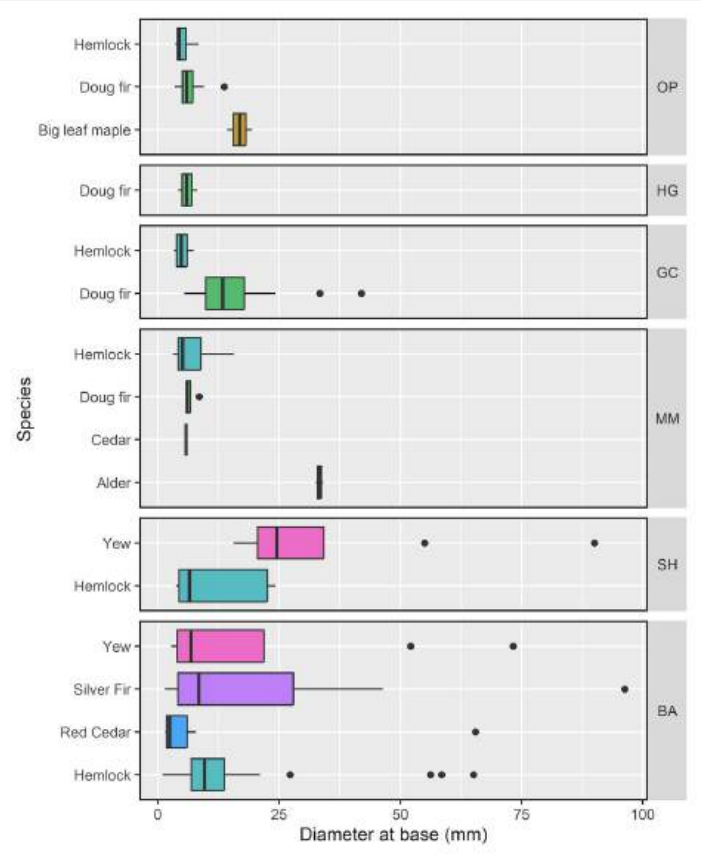
- 46 unique bird species recorded
- 21 species recorded in only one location
- 7 species recorded in 4 locations:
  - White-crowned sparrow
  - Steller's jay
  - MacGillivary's warbler
  - Lazuli bunting
  - Black-headed grosbeak
  - Dark-eyed junco
- First 6 in severely burned areas (MM, GC, HG, OP)

Tree seedling count (log) in each location



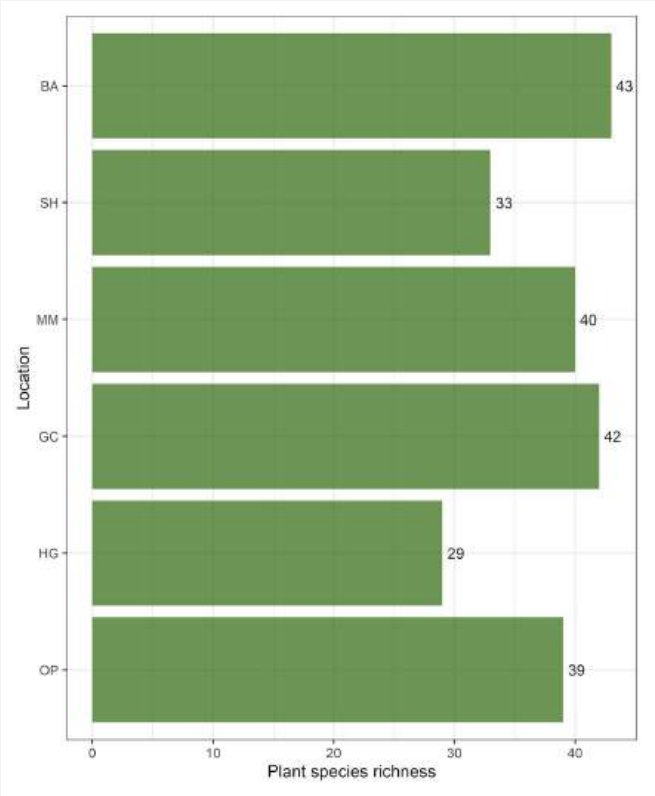
- Seedling count varied widely from year to year and location to location
- Skyhouse (mosaic burn) had one plot with 898 seedlings
- In 2025 every plot had at least one seedling, but many had only two or three
- By 2025, 93 seedling taller than 30cm had established across all burned plots, only 5 of these were in Skyhouse plots

Diameter at base of seedlings taller than 30 cm in each location



- Hemlock seedlings - 5 locations
- Douglas fir seedlings - 4 locations
- Western red cedar - 2 locations
- Mosaic burn and unburned locations had yew seedlings
- Battle Ax is at highest elevation of all plots and unburned, accounts for outliers in data set

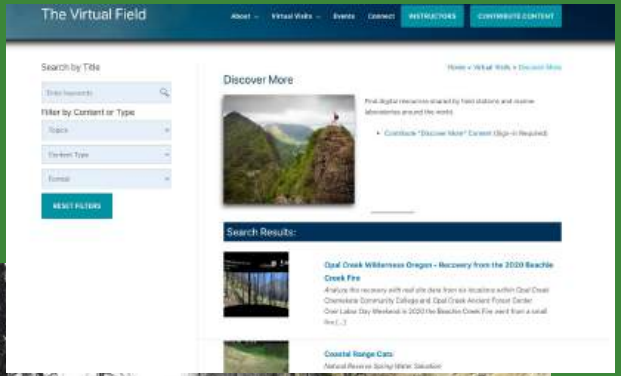
Vascular plant species richness in each location



- Approximately 101 unique species identified
- No species found in all 18 plots
- Douglas fir seedlings and trailing blackberry in 17 plots
- Fireweed appears in all burned plots
- 45 species appear in only one plot
- 3 “unknowns” still await identification

From the field to the classroom: Putting the data to educational use

- Community outreach
- Teach the teachers
- Student field trips and poster presentations
- The Virtual Field
- Ecological Society of America's QUBES site
- NWBio meeting for Community Colleges
- Outdoor School
- Come see our poster!



Summary of findings

- Severely burned locations (GC, HG, MM, OP) similar in
  - bird species richness
  - lack of lichens
  - presence of fireweed
- Skyhouse stands out
  - number of tree seedlings
  - abundance of lichens

Many thanks!

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Diana Burgos
Amy Weeden
Cyrus Weeden
Beth Gates

Questions?

Future plans

- Continue with four research weekends per year (lichens, birds, vascular plants, and adding mushrooms) for next five years
- Invite taxonomic experts to advise and collaborate with us
- Seek out and encourage research about other taxonomic groups
- Add students to research outings
- Fund short term research projects for students
- Continue outreach to area high schools and middle schools