



California State University, Chico



Fire Line Restoration

Restoration Treatments

- 39 plots (100 m² in diameter) were stratified randomly by burn treatment & veg. type
- % cover recorded in three 1m² subplots, pres/absence data collected for larger circular plot

Non-native Average % Cover by Treatments

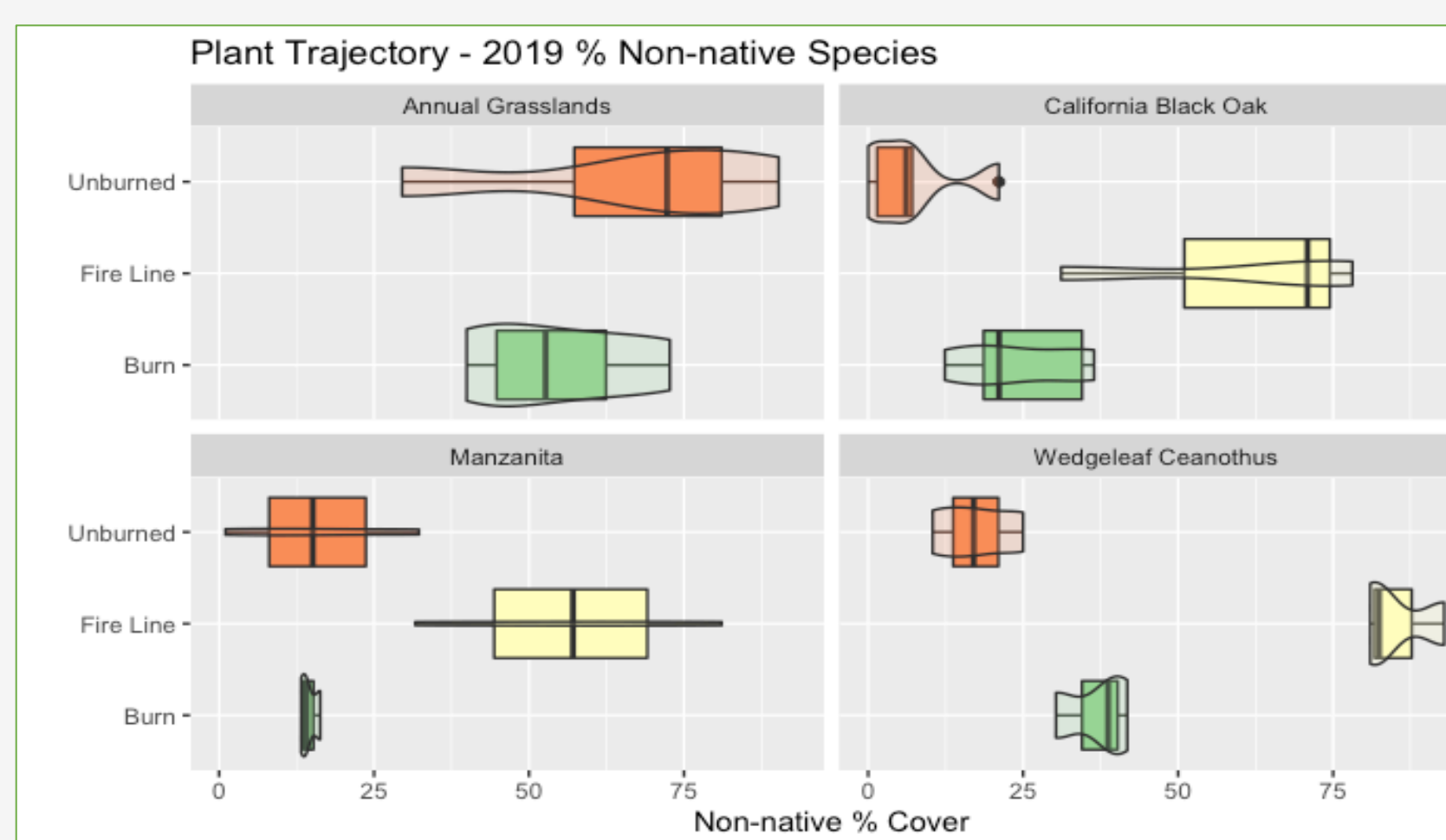


Fig. 4: 2019 Non-native Plant Trajectory Averages

Conclusions & Future Research

- 60 seedlings planted – watered twice after planting
- Survey of seedling survival & % plant cover was conducted in May & Sept. ('18), Jan & Mar ('19)
- Seedling survival dropped to 50% survival after summer months
- Rest of seedlings were lost by the end of winter - January = 11.7% survival, March = 0% survival

- Regeneration of Manzanita and Wedgeleaf species on site occurs post-fire from the seedbank, so future recruitment in fire line is less likely.

All fire line saw large amounts of non-native cover. Due to this and these areas possibly going away from original trajectory, **highlights importance of looking into fire line restoration practices**

Additional research will be necessary to better inform fire line restoration practices:

- **Research assessing** experimental plantings of fire-adapted shrubs for chaparral fire line areas or **burning in fire lines would be beneficial**, due to main species being unable to regenerate in areas that remain unburned.

Literature Cited

Acknowledgments

Author's Contact

Hannah Weinberger:
hweinberger@mail.csuchico.edu

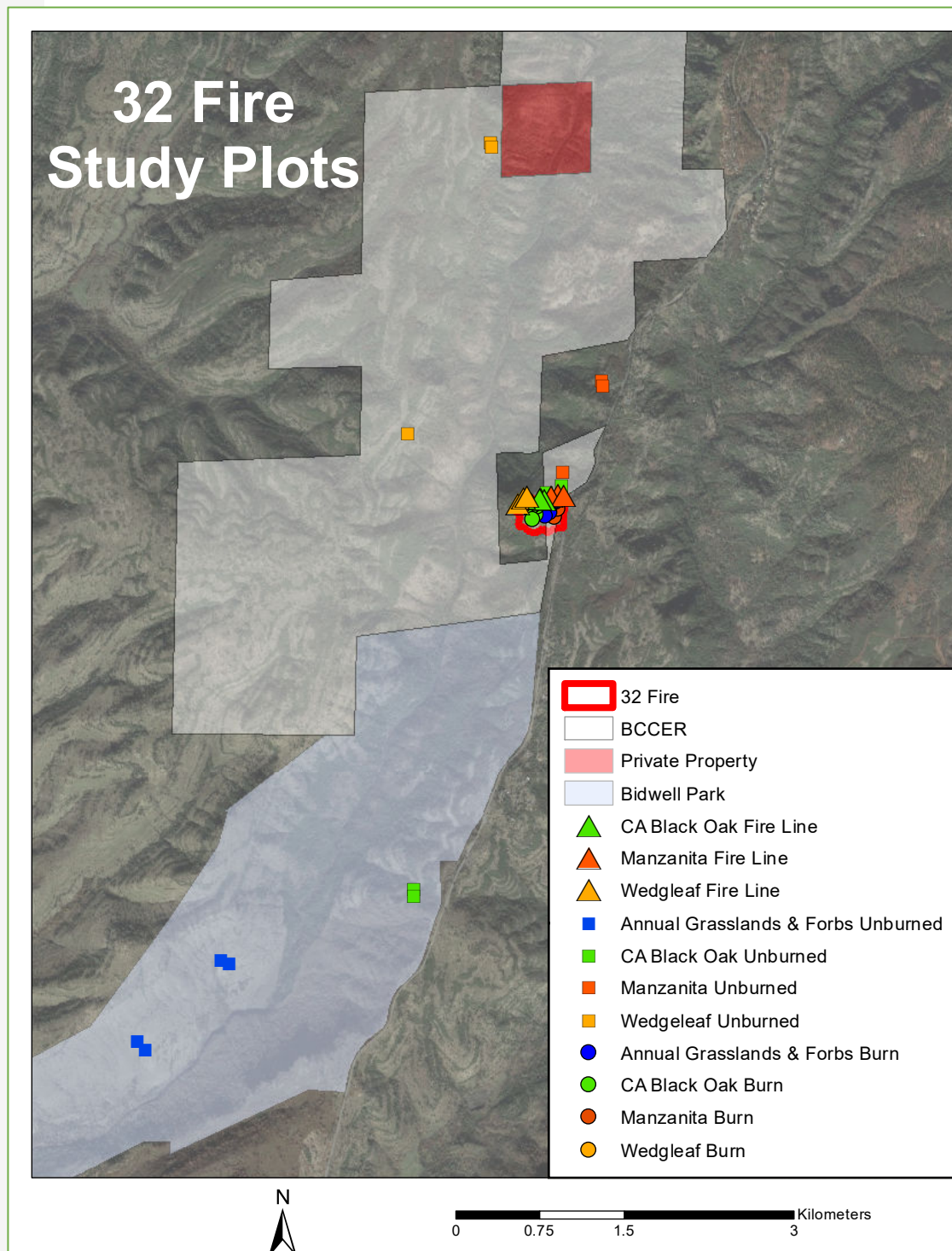


Figure 2: 32-Fire Survey Plots

Hectares: 11.33 **Date:** Sept. 2017

Site Elev.: 463–548 m

Vegetation: chaparral, oak woodland & annual grasslands

Fire adapted plant species present such as *Arctostaphylos* spp. & *Ceanothus cuneatus* – all require fire for germination of seeds found in the seedbank



Temperature (avg): Minimum of 0°C in the beginning of January, and a high of 31.7°C in the middle of July

Precipitation (avg): Maximum of 16.3 cm of rain at the end of February, and a low of 0.25 cm of rain in the middle of July

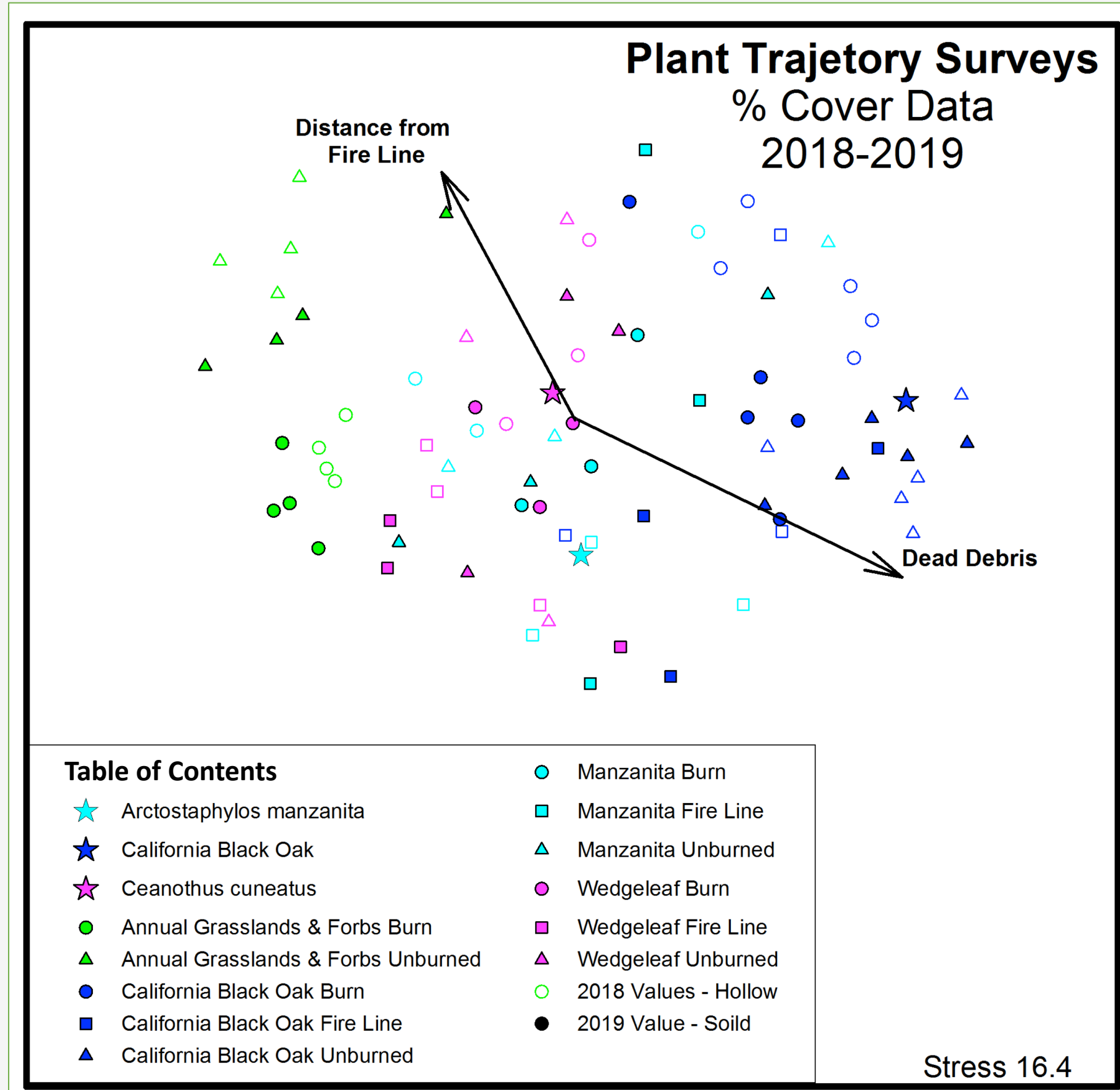
Plot types:

1. Burn
2. Disturbed Fire Line
3. Unburned Reference



Fire Line:

- Installed on the north side of the fire site with a bulldozer to prevent fire from spreading and allow firefighter access
- Width 6–12.2 m



Nonmetric Multidimensional Scaling Plot

Bray Curtis Index

Comparing similarities of species cover:

Unburned	CA Black Oak Fire Line	Manzanita Fire Line	Wedgeleaf Fire Line
CA Black Oak	19.9		
Manzanita	4.7	8.7	
Wedgeleaf	5.7	11.2	6.9

Annual Grasslands and Forbs	CA Black Oak Fire Line	Manzanita Fire Line	Wedgeleaf Fire Line
Burn	6.4	6.5	19.9
Unburned	3.6	5.4	14.5

Sorenson Index

Examining species presence/absence:

	Annual Grasslands Burn	CA Black Oak Burn	Manzanita Burn	Wedgeleaf Burn
Annual Grasslands Unburned	48.6			
CA Black Oak Unburned	4.5	25.6		
Manzanita Unburned	31.9	25.6	32.7	
Wedgeleaf Unburned	38.8	36.1	42.7	46.4

- Sorenson Index utilized due to primary species of Wedgeleaf vegetation type only appearing in presence/absence data in burned area
- Manzanita burn measured with Sorenson for comparison