

Spatial Distribution of Yellow Star Thistle at Fairfield Osborn Preserve



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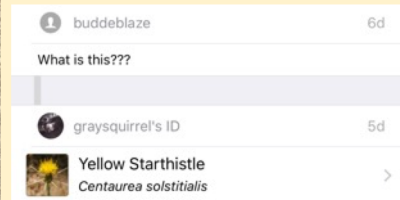


Background I

- ❖ What is the spatial distribution of *Centaurea Solstitialis* (Yellow Star Thistle)?
- ❖ invasive species
- ❖ taking over preserve
- ❖ used as reference to track future growth



<https://www.tri-cityherald.com>



iNaturalist



Background II

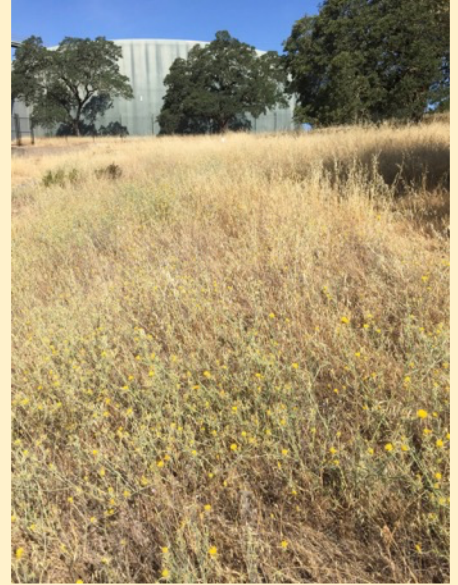
- ❖ Roots grow to soil depths of 3 feet or more
 - Survives well in dry months
- ❖ Thrives in areas with high light intensity (DiTomaso et al, 2007)
 - Roadsides
 - Grasslands
 - South-facing slopes at high elevation



<http://www.washoeweeds.com>

Background III

- ❖ High densities make it difficult for the growth of other plants (Zouhar, 2002).
- ❖ Infested 15 million acres in CA (*The Sacramento Bee*, 2018)
- ❖ 57/58 counties in CA are infested with yellow star thistle (*The Sacramento Bee*, 2018)



<https://overlookmontini.org>

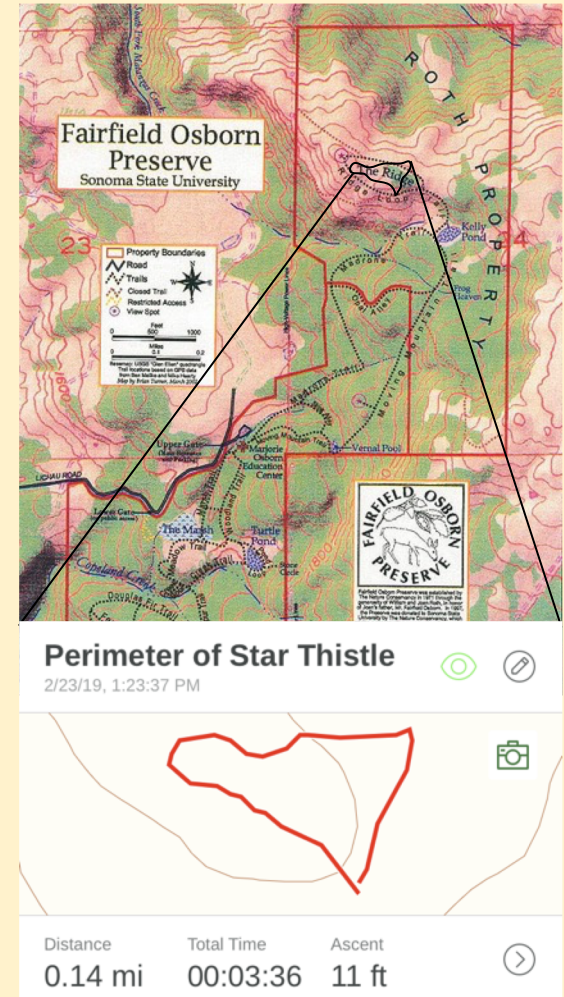
Hypothesis

- ❖ We hypothesize that we will find an abundance of yellow star thistle in exposed regions of Fairfield Osborn Preserve because of its preference for sunlight.



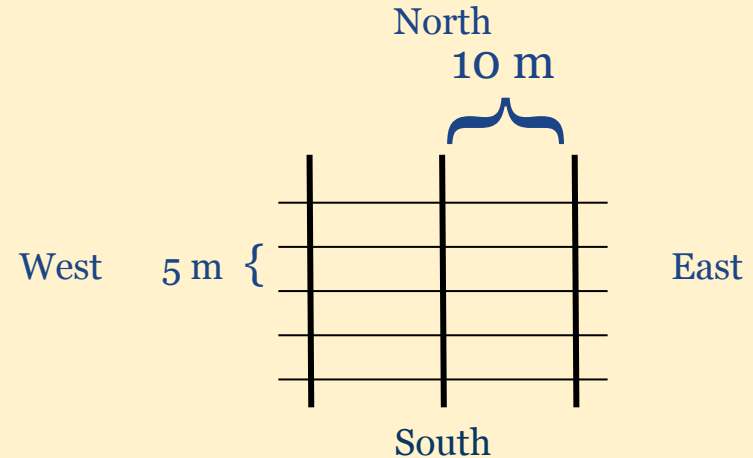
Methods I

- ❖ Located major area of star thistle in the North region
- ❖ Take observations on surrounding location
- ❖ Took perimeter of area with Gaia GPS app



Methods I (continued)

- ❖ Started at top point in area of the Ridge Loop Trail
- ❖ Took transects every 10 m West to East
- ❖ Took points from North to South every 5 m along transect
- ❖ Categorized density (high, medium, low) at each point



Categorizing by Density

High



Medium



Low



Field Work



Methods II

❖ Equipment Needed:

➤ GPS

- Coordinates
- Gaia GPS
- Compass

➤ Map of Osborn Preserve

➤ Transect tape

Compass



<https://www.wonderoftech.com>



<https://web.sonoma.edu>

Transect Tape



<https://www.amazon.com>

Coordinates



<https://itunes.apple.com>

Gaia GPS



<https://itunes.apple.com>

Methods III

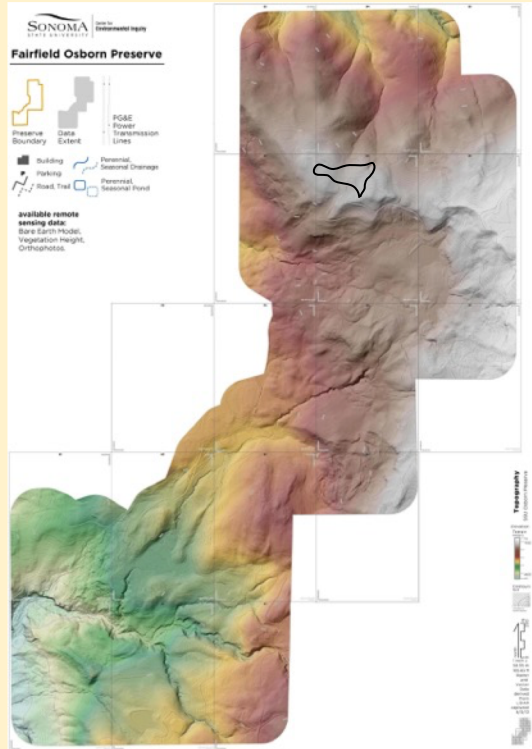
❖ Group Roles:

- Kelsey: took North to South coordinates, took pictures
- Tori: took East to West coordinates, recorded data
- Natalie: measured East to West transects, took pictures, took observations
- Kaila: measured East to West and North to South transects, took pictures, took observations

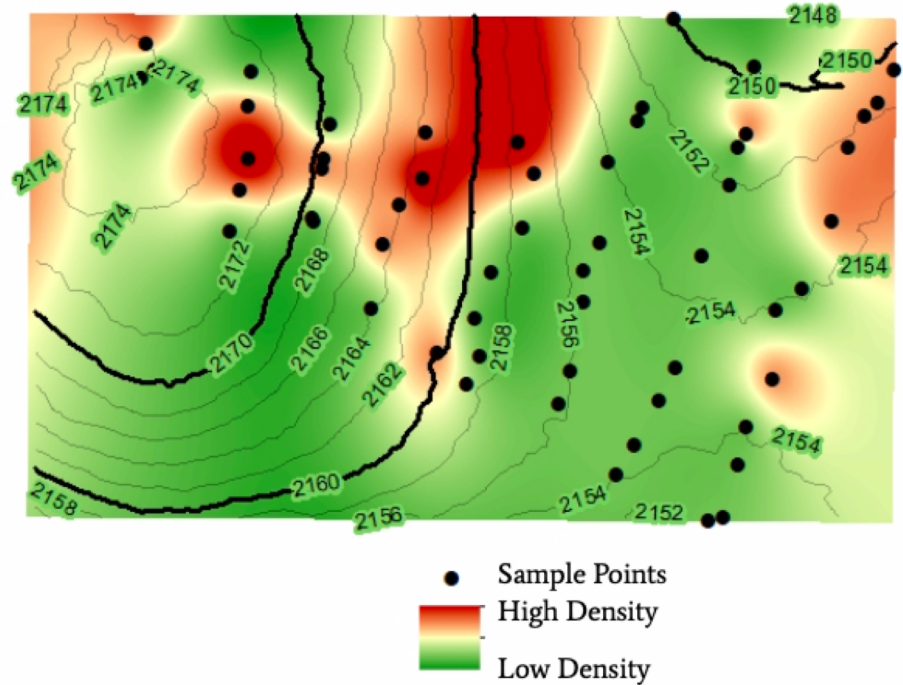


Results I

The map shows that yellow star thistle is denser in higher elevations.

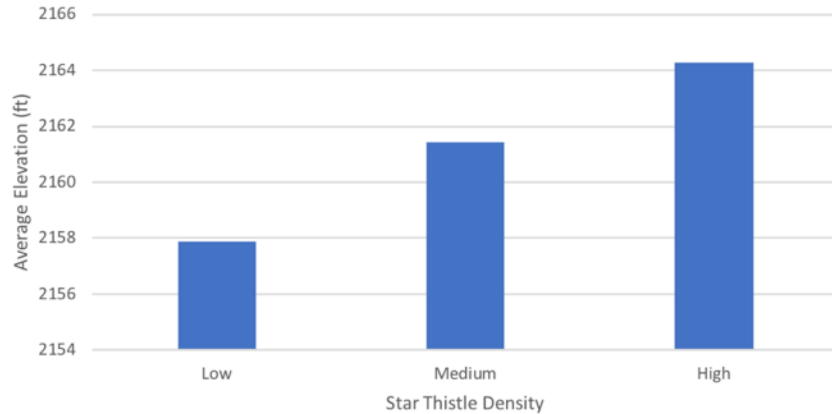


Density of Yellow Star Thistle

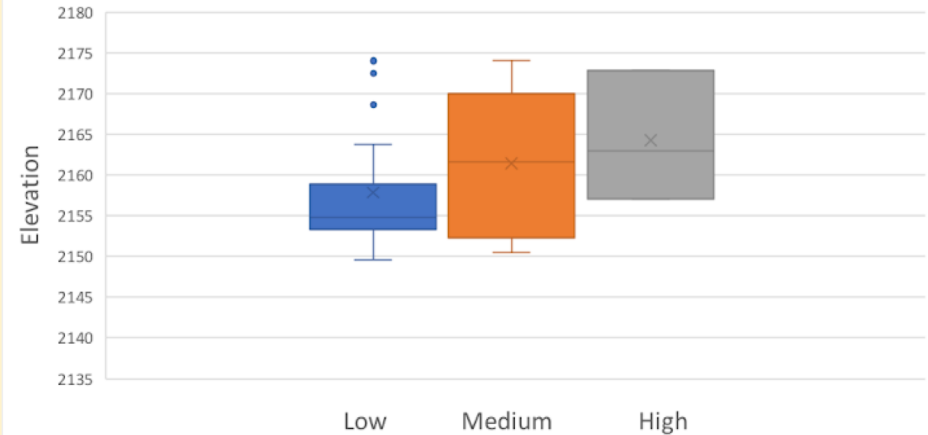


Results II

Average Elevation and Density



Elevation and Density Boxplot



- ❖ Higher average elevation had high density
- ❖ Lower average elevation had low density

Conclusion

- ❖ Found correlation between the density of yellow star thistle and elevation
- ❖ Only collected data in one area of the field
- ❖ Future work could include comparisons between North and South facing slopes



References

- ❖ DiTomaso, J. M., Kyser, G. B., Lanini, W. T., Thomsen, C. D., & Prather, T. S. (2007, September). *Yellow Starthistle: Integrated Pest Management for Home Gardeners and Landscape Professionals*[PDF]. Davis, CA: UC Statewide IPM Program.
- ❖ Zouhar, K. (2002), *Centaurea solstitialis*. In: Fire Effects Information System, [Online]. *FEIS*. Retrieved from <https://www.fs.fed.us/database/feis/plants/forb/censol/all.html#BOTANICAL%20AND%20ECOLOGICAL%20CHARACTERISTICS>
- ❖ Yellow star thistle covers 15 million acres in California. (2018, December 10). Retrieved from <https://www.farmprogress.com/management/yellow-star-thistle-covers-15-million-acres-california>

Thank You!



<https://www.honeytraveler.com>