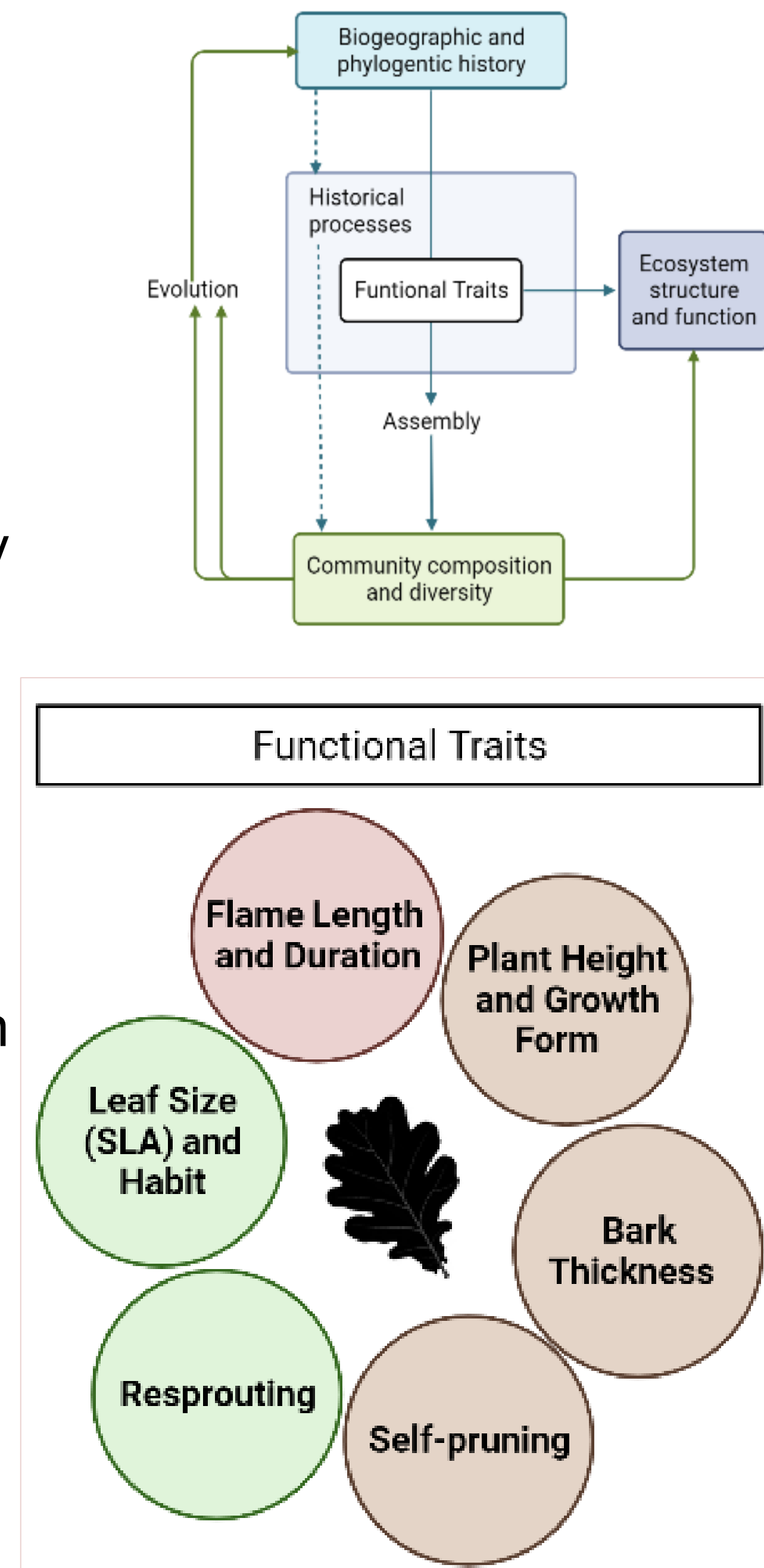


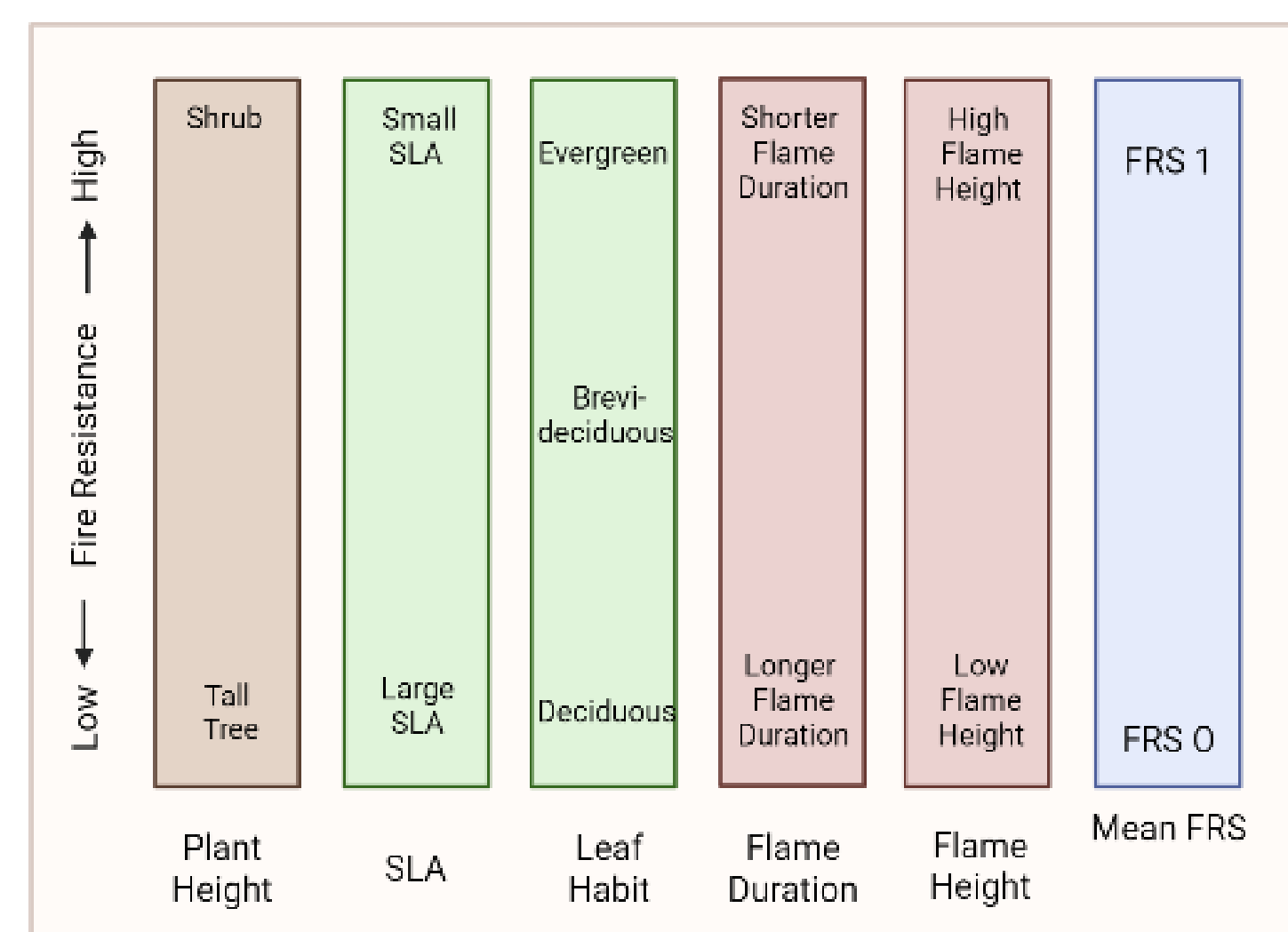
Introduction

- Fire regimes are environmental drivers responsible for shaping plant communities
- Fire Regime Groups (FRG) are distinguished by frequency and intensity of fire, classified into five regimes
- The relationship between fire regime factors and oak functional traits has not been thoroughly explored within the US
- We are interested in finding if there are communities with mismatched traits for future FRG

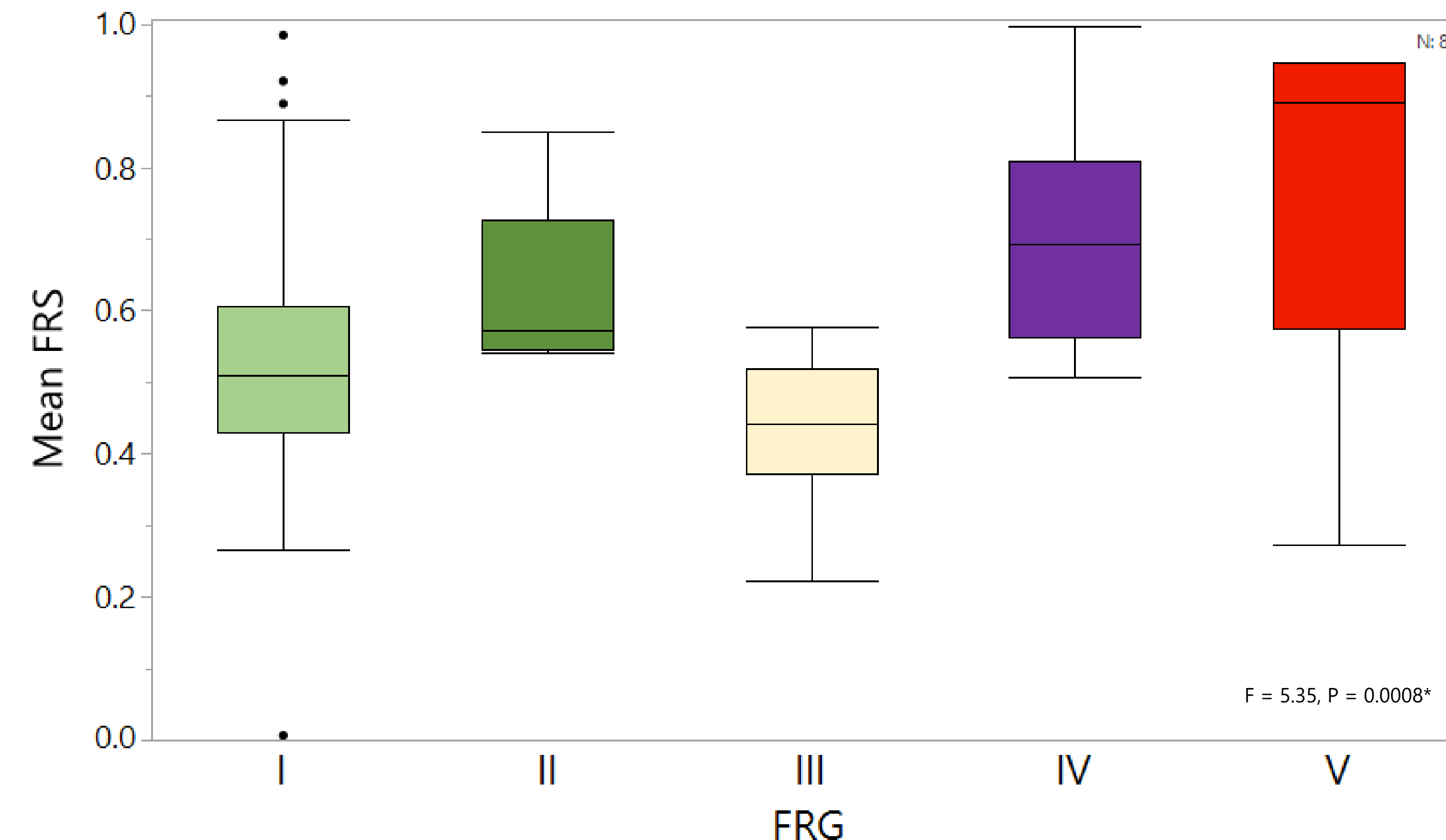


- We examined patterns of trait adaptation related to fire resistance and ranked species assigning their fire resistance scores (FRS)
- Classification of species' FRG was calculated based on distribution and LANDFIRE maps
- Oak functional trait data was obtained using field collections (arboreta), herbarium databases, greenhouse data and literature
- Percentile scoring was used for each trait
- FRS values are the mean of five traits

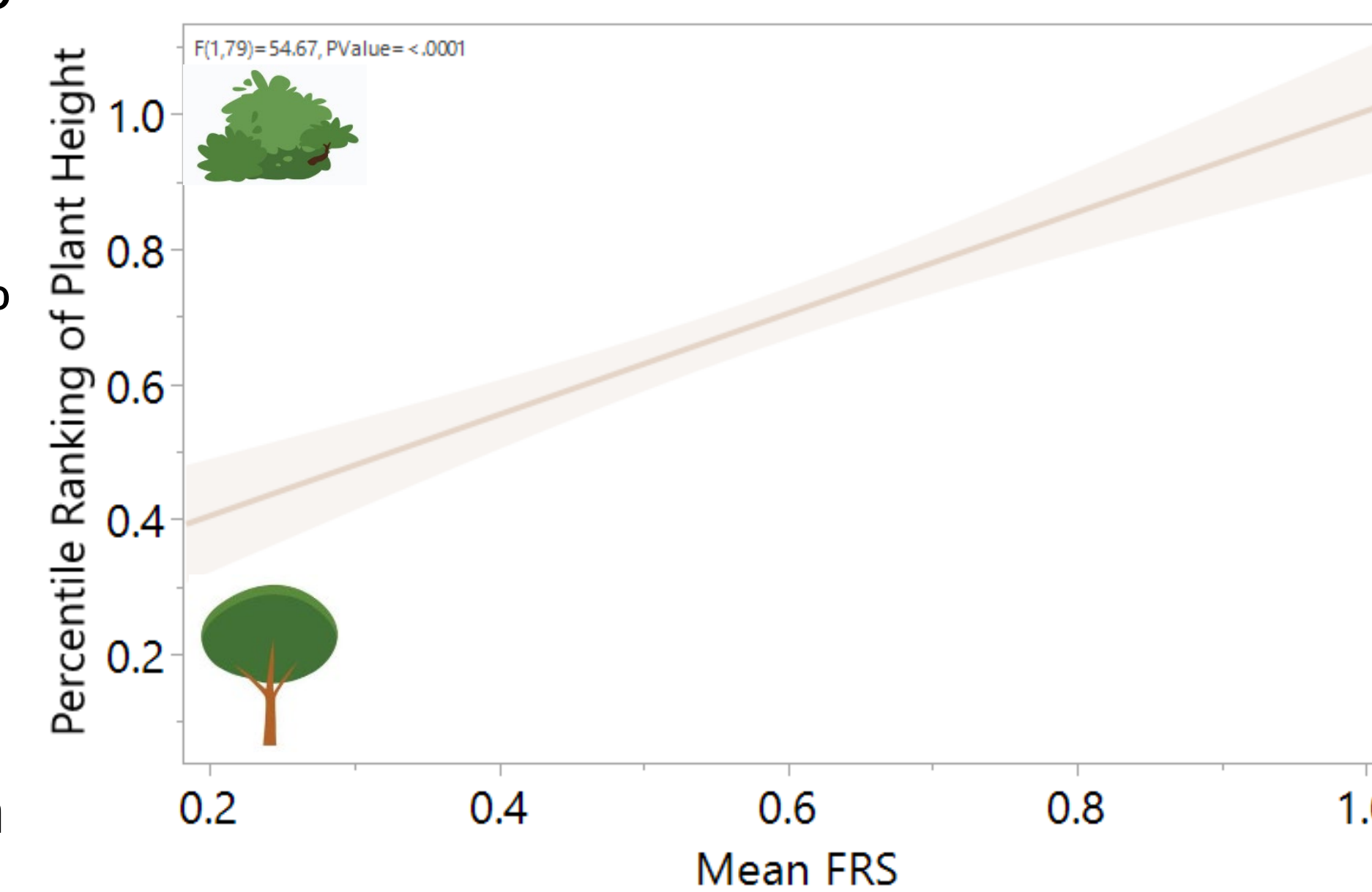
Methods



Results

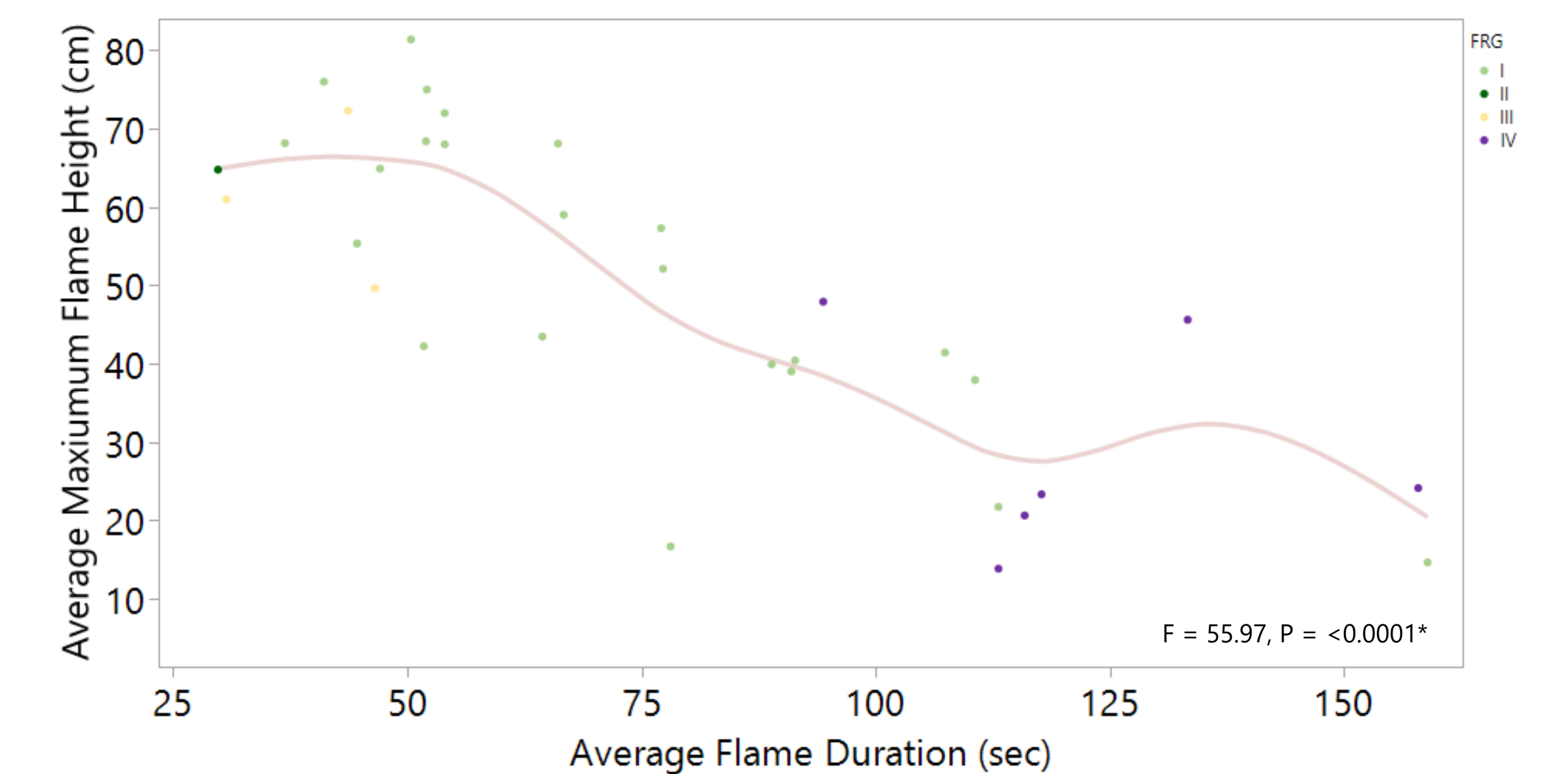


- Oak species Fire Resistance Scores (FRS) correlate with increasing Fire Regime Groups (FRG)
- FRG V oaks have 50-80% higher mean FRS compared to FRG I & III oaks
- Smaller shrub species have a higher mean FRS compared to taller oaks
- This pattern is reversed in western conifers (Stevens et al., 2020)



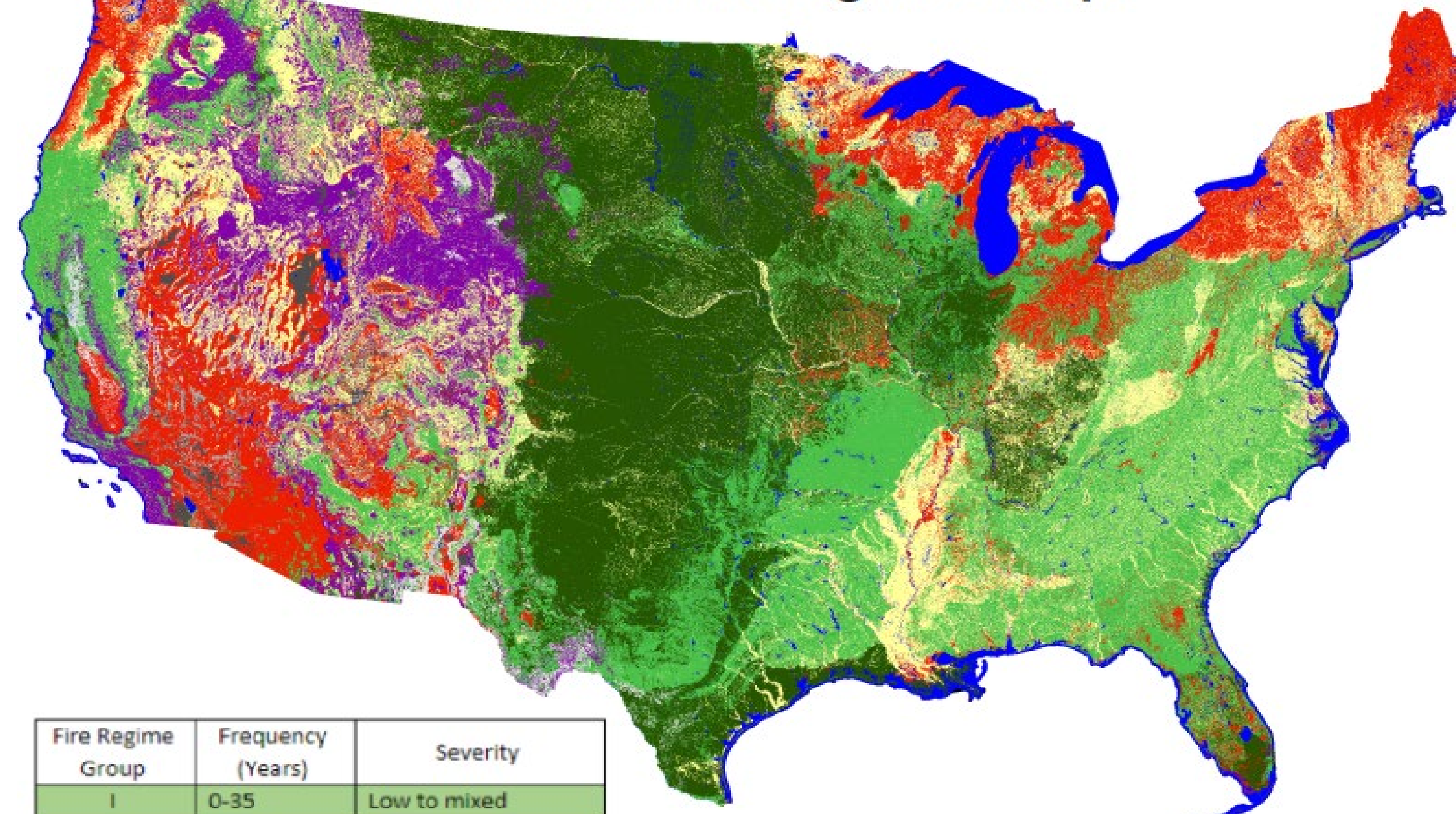
Conclusions

- Aggregation across functional traits allows a score and ranking for each species' fire resistance
- Oak species have evolved in response to fire regimes
- Next steps: Improving our understanding of communities that may be at risk in the event of shifting fire regimes resulting from climate change
- Score communities based on USFS FIA basal area data
- Identify communities that have mismatched traits within their fire regimes



- Leaf litter flammability shows expected results of a negative relationship between flame height and flame duration (Kane and Varner, 2008)
- Patterns of litter flammability and FRG are still undetermined

LANDFIRE: Fire Regime Groups



Fire Regime Group	Frequency (Years)	Severity
I	0-35	Low to mixed
II	0-35	Replacement
III	35-200	Low to mixed
IV	35-200	Replacement
V	200+	Replacement/any severity

- Our project involves conducting leaf litter flammability tests

Contribute

- Contribute as a citizen scientist! We are asking for fallen oak leaf litter collections to be mailed to MNSU



- Scan to learn more!

References & Acknowledgements

- Stevens, J. T., M. M. Kling, D. W. Schwilk, J. M. Varner, and J. M. Kane. 2020. Biogeography of fire regimes in western U.S. conifer forests: A trait-based approach. *Global Ecology and Biogeography* 29:944-955.
- Kane, J.M., J.M Varner, and J.K., Heirs. 2008 The burning characteristics of southeastern oaks: Discriminating fire facilitators from fire impiders. *Forest Ecology and Management* 256:2039-2045.
- Thank you to the Radichel Herbarium & The Vonderharrs