Exploration of Potential Inbreeding Effects in Connected vs. Isolated Populations

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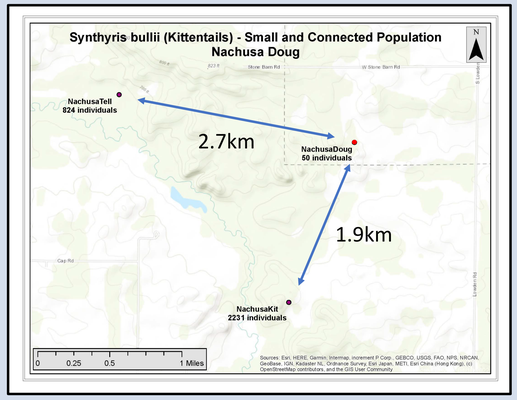
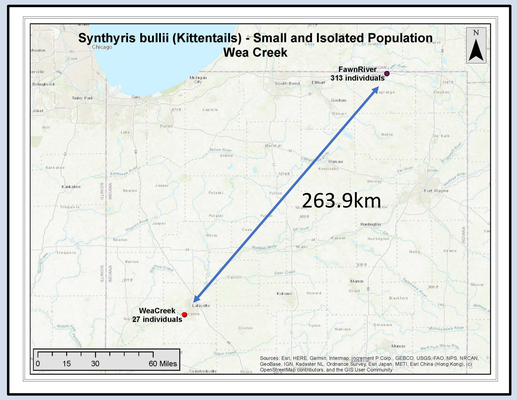
Synthyris Bullii (Kittentails)

Rare plant native to sand prairies in the Midwest that is threatened at the state level. This project compares two small populations with different degrees of connectedness to larger populations to assess impacts of isolation in the context of an extinction vortex (Gilpin and Soule, 1986).



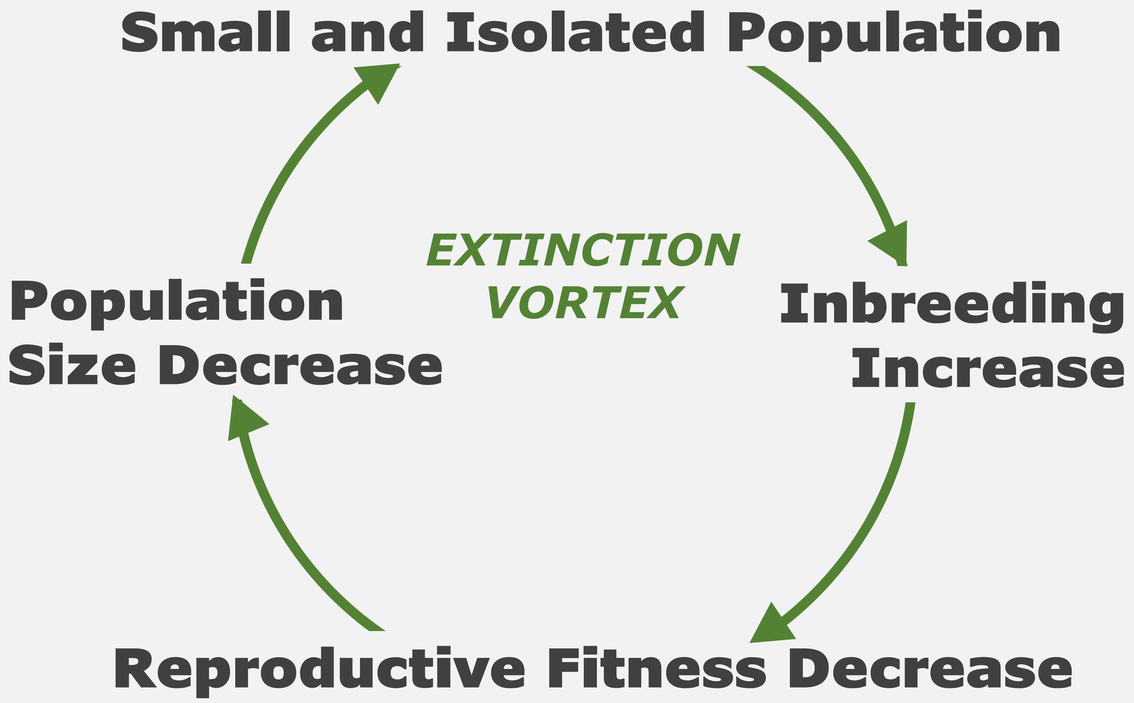


HYPOTHESIS

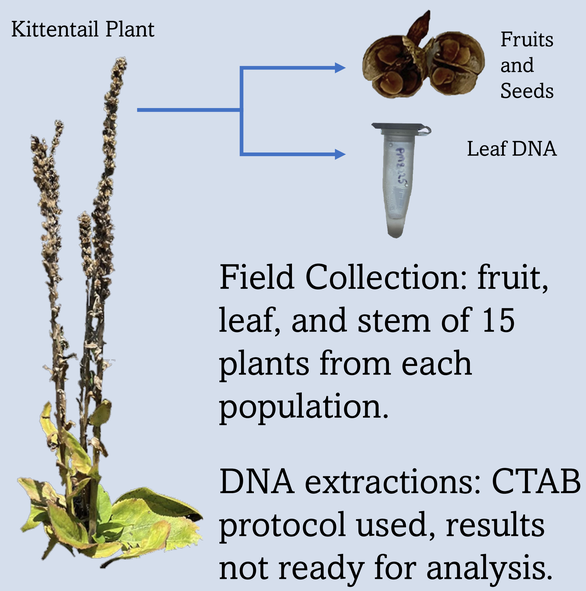
Small and connected populations will have higher reproductive fitness – measured through plant size and seed production – than small and isolated populations.

TAKEAWAYS

- Plant size and seed production did not differ between isolated/connected populations
- Future research could explore differences in pollinator dynamics between populations
- Genetic data and additional fitness measures may show differences in isolated vs connected populations (Frankham 2005)

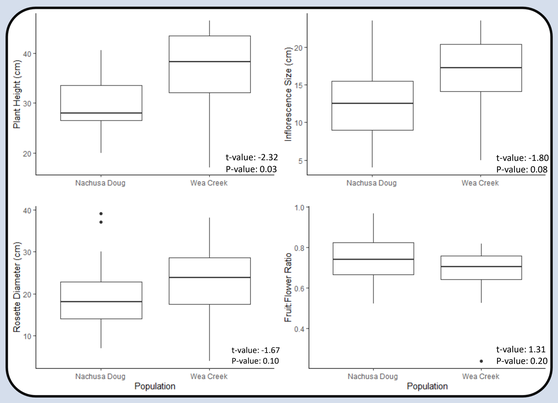


METHODS



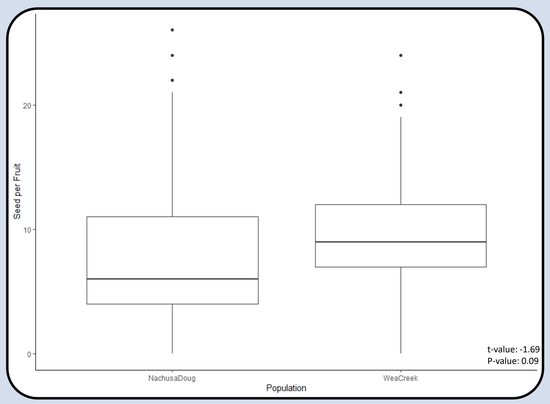
Field Collection: fruit, leaf, and stem of 15 plants from each population.

DNA extractions: CTAB protocol used, results not ready for analysis.



PLANT SIZE

Plants from Wea Creek generally were larger than those from Nachusa Doug. However, the plants of the two populations had about the same number of flowers pollinated.



SEED PRODUCTION

Plants from Wea Creek generally had fruits that produced about the same number of seeds as those from Nachusa Doug. For each site there were several outliers on the upper end.

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CHICAGO BOTANIC GARDEN

2022 Research Experiences for Undergraduates Program

Illinois Native Plant Society

***Gilpin, M. E., and M. E. Soulé.** 1986. Minimum viable populations: processes of species extinction. Pages 19-34 *in* M. E. Soulé, editor. *Conservation biology: the science of scarcity and diversity.* Sinauer Associates, Sunderland, Massachusetts, USA

****Frankham, Richard.** 2005. Genetics and Extinction. Pages 131-140. *Biological Conservation.*