

Do human disturbances and plant traits predict local extinction?

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URA Project Description:

Anthropogenic alterations such as urbanization and agriculture are a primary cause of decreasing biodiversity and produce high local extinction rates. However, we still lack a predictive framework for understanding species loss. Functional traits influence species interactions and responses to the environment, including to anthropogenic disturbance, and can be used as early-warning indicators of species response to global change. My research focuses on investigating how two predicted drivers of loss, nitrogen deposition and herbivory, interact with plant traits to influence the extinction risk and the population dynamics of declining species. I hope this work will contribute to a more applicable model of extinction risk under various land use changes and be used by conservation biologists and local practitioners to incorporate biodiversity in land value and conservation strategies.

A student working with me this summer would assist in setting up a field experiment exploring the combined impacts of nitrogen and herbivory on species and trait diversity. The experiment will be set up in prairies around Kellogg Biological Station. We will be setting up the research plots and collecting data on species traits, reproduction and survival throughout the summer. The student will gain experience in setting up experiments, measuring traits, and collecting and analyzing data. The student may also be able to take the lead in a small project monitoring the population dynamics of some local established populations of the species we are studying.

Schedules permitting, we may also resurvey a number of historical sites throughout Kalamazoo County that were surveyed in 1947; the goal of this project will be to quantify changes in plant communities from 1947-2017, and examine what disturbances might be driving species decline at these sites. (No prior knowledge of plant ID is required!)

This position will consist mostly of outdoor field work, with some lab work and data analysis. The project will take place at Kellogg Biological Station from May 21-August 5, 2017. Students will average 20-30 hours of work a week. The student will be able to participate in Lau lab meetings and have the option to develop a more independent project, in addition to taking summer courses. Please email Meredith (zettlem2@msu.edu) with any questions.