

Natural History Documents Loss of Plant Species in Kalamazoo County

Plants Disappear, Some Re-emerge, as Prairie Habitat Lost and Restored

by Meredith Zettlemoyer, Earth Team Volunteer

The adder's fork fern. Winged loosestrife. Nodding lady's tresses. They sound like the witch's list from 'Macbeth', but these are just three of the many native plant species that disappeared from Kalamazoo County. We know what plant species once called the county home back in the late 1800s- 1940s because of the work done by Clarence and Florence Hanes, two local botanists occupying themselves during the Great Depression by adding to the natural history of Kalamazoo County. This work, which began as a way to curtail stress and distract themselves from financial losses, expanded into a permanent collection of botanical specimens and field notes that would one day be the first Flora of Kalamazoo County.

Meredith Zettlemoyer, a graduate student at Michigan State University's W.K. Kellogg Biological Station, is using these historical records along with another survey done nearly a century later by Dr. Duane McKenna, then an undergraduate at Western Michigan University. They, in collaboration with Dr. Jen Lau, are examining what species have disappeared locally (i.e. became locally extinct, even if they persist elsewhere).

After pouring through this treasure trove of specimens and field notes, Zettlemoyer realized that Kalamazoo had lost 12 percent of its local flora (43 species of its original 1,200 recorded). She was curious whether species characteristics, such as rarity or a species' affinity for a particular habitat, or relatedness (or a common ancestry) explained those local species losses.

Zettlemoyer found that rare, specialist species occupying threatened prairie habitat were most vulnerable to loss. She also found that species at the edge of their native range and plants that are

vines or forbs tend to have higher extinction rates. Zettlemoyer detected no evidence that more closely related species are more or less likely to go extinct than less closely related species. This is likely due to the disproportionate amount of prairie habitat lost during the 19th and 20th centuries as natural grasslands were converted for agriculture and development – in fact, Kalamazoo County now supports only 1 percent of the prairie it historically had.



Compassplant (above left) and eastern purple coneflower are two plants that disappeared from Kalamazoo County as prairie habitats were lost.

- photos by Jeff McMillian, hosted by USDA Plants Database

Zettlemoyer describes this project as being an historian. These historical datasets and herbaria are extremely valuable in understanding and potentially predicting biodiversity loss as well as guiding conservation of rare species. For example, some of these species have been successfully reintroduced into local restored prairies, and it remains to be seen whether restorations can reverse the declines of these taxa.

In a study of 29 restored prairies near Kalamazoo, eight locally extinct species were included in seed mixes and three of the eight (*Silphium laciniatum*, *S. terebinthinaceum*, and *Echinacea purpurea*) were able to establish in a few sites. Given the vulnerability of our native prairie species to local extinction, restoration may be one mechanism to prevent further losses.

NRCS Earth Team

There are many ways to contribute as a member of the NRCS Earth Team volunteer program.

Meredith Zettlemoyer is contributing by sharing her research expertise as a graduate student at Michigan State University. Writing, photography, creating videos, and helping with events, are among the many ways to support conservation through the Earth Team program.