

Measuring Habitat Quality of Tallgrass Prairie Remnants Using an Auchenorrhynchous Homoptera Index (Insecta, Hemiptera, Auchenorrhyncha)

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Tallgrass prairies are the most endangered ecosystems in North America, often restricted to small isolated remnants in parks and preserves (Hamilton 2005). Their health is often measured based on information from small subsets of organisms such as plants, vertebrates, and butterflies. Unfortunately, these taxa do not always show a strong correlation in patterns of species richness to those of other under-sampled groups (Anderson and Major 2004), and they may respond differently to different environmental perturbations (Panzer 2001). Thus, assessments of prairie health based on such taxa are incomplete at best. Auchenorrhyncha are potentially excellent bioindicators of prairie health. They represent some of the most speciose and abundant taxa in prairies (Hamilton 1995), are ecologically important (Nickel and Hildebrandt 2003), and are sensitive to environmental perturbations (Harper et al 2000).

The focus of this project is to develop a habitat quality index (i.e., AHI) to measure prairie health along disturbance and moisture gradients. Life histories and species richness variables will be used to develop the index. Each auchenorrhynchous species encountered will be assigned a ranked score, from 0 to 4, based on the level of conservatism or tendency for the species to be restricted to a remnant prairie. A score of 0 indicates a low level of conservatism, whereas a score of 4 indicates a high level of conservatism. Life history variables to be scored for each species include voltinism, host plant affinity, microhabitat preference, wing length, and remnant-dependence. For each sampled site, a mean coefficient of conservatism (Cavg) will be calculated by averaging coefficients over all species encountered. This will be combined with other variables such as species richness and evenness and corrected for site size to produce an Auchenorrhynchous Homoptera Index of habitat quality. The development of an AHI could provide an alternative measure of prairie health to those currently based on less diverse groups of organisms, and preserve management practices

References

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