

**EVALUATING NORTH AMERICAN TALLGRASS PRAIRIE QUALITY USING THE
AUCHENORRHYNCHA (Insecta: Hemiptera) QUALITY INDEX.**

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Abstract. Numerous reports indicate that insects respond differently to disturbance-based management (fire) than prairie vegetation. Therefore, plant-based measures, such as the Floristic Quality Index (FQI) may not be sufficient in measuring prairie quality. This project is the first attempt to develop a habitat quality index based on prairie Auchenorrhyncha. The goal of this study was to develop the Auchenorrhyncha Quality Index (AQI) and examine its robustness using different environmental and sampling conditions; examine how the AQI correlates with other measures of prairie quality (FQI); and investigate the effects of burn management on prairie Auchenorrhyncha quality. We sampled Auchenorrhyncha from 71 sites in Illinois, Wisconsin, Missouri, and Iowa from the summer of 2004 through 2008 using a sweep net and vacuum. Results show that AQI values calculated from vacuum samples is a robust measure of prairie quality when computed under different environmental and sampling conditions. No significant difference in prairie quality was detected by either the AQI or the FQI. Strong correlations were observed between percent cover of both perennial C4 grasses and perennial forbs and conservative Auchenorrhyncha, whereas adventive Auchenorrhyncha were more strongly associated with trees and shrubs. Values of AQI, Auchenorrhyncha mean coefficient of conservatism, and auchenorrhynchan species richness were significantly greater on unburned sites than recently burned sites. Because other studies have shown that conservative Auchenorrhyncha respond negatively to frequent fire while the effects of fire on vegetation seem to be positive it is important to incorporate insects as well as plants into the assessment of prairie quality.