

USE OF LOW-LEVEL AERIAL PHOTOGRAPHY FOR DELINEATION OF BIOLOGICAL AND PHYSICAL FEATURES OF TALLGRASS PRAIRIE

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Abstract: Delineating biological and physical features of large tracts of prairie communities are challenging – especially when annual monitoring is needed and major disturbances (natural or human-induced) are frequent. On the Fort Riley Military Installation in eastern Kansas, frequent disturbance is normal because of major training events that involve wheeled and tracked vehicles. Our objective was to document long-term disturbance trends to the tall-grass prairie ecosystem. We used a low-level aerial photography system (a remotely-controlled camera system suspended from a tethered blimp) to obtain high resolution digital photographs to determine if delineation of major plant forms (i.e., woody vs. non-woody vegetation) and tracks created by military vehicles could be achieved for 1-ha (100 m x 100 m) sized study plots. Field methodology developed included identifying placard/field marker design and placement to enhance georeferencing, the efficient transportation of equipment to facilitate site-to-site transport of an inflated blimp, and demarcation of digital images from plot-to-plot without field review of images. Protocols for post-field processing of images refined included identifying ≥ 1 quality image per plot, inspection for key features (i.e., tracks, vegetation patches, and placard placements) and file labeling to facilitate subsequent analysis and long-term archiving. The aerial photography method may produce more accurate results, be more efficient, and provide more information than what a traditional ground-based sampling method is capable of producing. The option to archive the digital photographs for future reference and evaluation—including other features currently not considered—provides an added benefit not possible with non-photography ground-based sampling methods.