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 is 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 sized study sites. We examined the replicability, precision, and efficiency of two lab techniques and one field technique to estimate the percent coverage of tracks and vegetation. The two lab techniques were manual digitizing and visual scoring, and the field technique was a point intercept method. 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.