

Abstracts of Presented Fisheries and Wildlife Technical Papers

Aerial Surveys for Prairie Grouse Leks: Detectability, Disturbance Response, and Distance Sampling

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Abstract: Prairie grouse (*Tympanuchus* and *Centrocercus* spp.) once occupied wide expanses of North American grass and shrub habitats. In the last three decades, prairie grouse populations have exhibited precipitous declines, often because of altered land use practices. There is a need to develop new research and management techniques to facilitate prairie grouse conservation efforts. We evaluated aerial survey capabilities to assist in the management of lesser prairie-chickens (*Tympanuchus pallidicinctus*; [LPC]). Our objectives were to determine the most efficient aircraft type and flight parameters to locate leks, determine if adverse lekking behavior results from aircraft disturbance, and determine if distance sampling can be used to estimate the number of leks in suitable LPC habitat. Aerial surveys were conducted during the spring 2006–2008 in the Texas Panhandle and eastern New Mexico using three aircraft platforms: a Cessna 172 airplane and Robinson-22 and Robinson-44 helicopters. We used passive cameras to monitor leks during aerial surveys, enabling us to estimate detectability. We conducted ground-based lek observations in conjunction with aerial surveys to determine behavioral response of LPCs to aircraft disturbance. Lek detections were greatest from helicopters, with the Robinson-44 most effective. Lek detections were most influenced by aircraft platform, distance from the aircraft to the lek, and lek size. We identified appropriate flight parameters for each aircraft. Aircraft platform, distance to lek, and survey date influenced disturbance response of LPCs, but aircraft disturbance did not negatively affect lek use. Line transect-based distance sampling was a good technique for estimating lek density from helicopters, but surveys from fixed-wing aircraft were limited to observation probability models to estimate density. Although this research had a single species focus, we believe these techniques and conclusions can be applied to monitoring activities of other prairie grouse species.

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