Using Animal Movement Data to Uncover Hidden Links Between Long-Billed Curlews and Black-Tailed Prairie Dogs

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Black-tailed prairie-dogs (PDs) are keystone species and ecosystem engineers in grassland systems of western North America. However, they have been eradicated from greater than 90% of their range through grassland conversion, persecution by humans, and introduced sylvatic plague. Because of how quickly and thoroughly prairie-dogs were lost from our grassland ecosystems, their role as a keystone species remains poorly understood. Based on field observations of large aggregations of breeding long-billed curlews (LBCU) in the vicinity of PD colonies, we hypothesized that curlews were using prairie-dog colonies for breeding and foraging disproportionately compared with their availability on the landscape. To test this, we tagged 32 LBCU over 4 years with GPS satellite tags and modeled resource selection on the breeding grounds in a study area containing several large PD colonies. Using continuous-time resource selection functions we found curlews do, in fact, select for active PD colonies. Confirmation of this pattern sets up several hypotheses for the mechanism underpinning this association, which out research group is currently testing. Finally, this PD-LBCU link is an example of a potentially important keystone function of PDs in grassland systems, one that we stand to lose in the absence of large-scale PD conservation efforts.