Mabley, S. and E. Paul. 2007. Critical Literature Review**:** Impact of Wind Energy and Related Human Activities on Grassland and Shrub-Steppe Birds. Prepared for The National Wind Coordinating Collaborative by the Ornithological Council. http://www.nationalwind.org/assets/publications/IMPACTOFWINDENERGYANDRELATEDHUMANACTIVITIESONGRASSLANDANDSHRUB-STEPPEBIRDS.pdf

Abstract: Background and purpose of project: The Grassland and Shrub-Steppe Species Collaborative (GS3C) subcommittee of the Wildlife Working Group of the National Wind Coordinating Collaborative (NWCC), commissioned this critical review of literature. This review pertains to the impacts of wind energy on grassland and shrub-steppe bird species. Its purpose was to examine the actual and potential impacts of wind energy facilities on grassland and shrub-steppe avian species. The impacts included mortality, avoidance, reductions in nesting success and adult survival, and behavioral changes. Commercial wind energy began in the United States in the early 1980s and did not grow appreciably until 1999. Thus, there is relatively little literature, and most comprises site-specific pre-construction wildlife evaluations with post-construction assessments of actual impacts. Studies of sublethal impacts (behavioral responses such as avoidance) are even rarer. The GS3C therefore requested that other anthropogenic activities that are components of or share some common features with wind farms be included, in an attempt to understand potential impacts in the absence of a substantial body of literature. These other activities are roads, urbanization, tall structures (including telecommunications towers and electric transmission lines and stanchions), and oil and gas extraction facilities.

We conducted a comprehensive literature search that included "gray" literature – a wide range of papers, articles, summaries and transcripts of talks, and other materials that did not appear in the peer-reviewed literature – and research from around the world (provided that the paper was available in English). All papers were screened through quality and relevance filters. We considered studies that pertained to grassland or shrub-steppe species or habitats to be relevant. The goal of the quality screening was to focus on well-designed research with adequate sample sizes and sound statistical or qualitative analyses. The selection process was based on the premise that papers of greatest interest would be those from which inferences could be drawn. This aspect of the review was particularly critical because many key questions about human activities have not been studied, or have been studied inadequately. Further, despite some commonalities, the human activities covered by the review were so diverse that only studies that investigated and assigned causation were deemed useful for understanding which components of these activities are of concern in wind energy development. For example, if a study showed that traffic on heavily traveled roads leads to settlement of particulate matter on plants, which destroys food sources or nesting materials or sites, the low level of traffic on roads leading to wind farms is not likely of concern, at least insofar as this particular effect is concerned. In contrast, a paper that shows an effect of weather – such as low cloud cover – on the rate of collisions with obstructions such as telecommunications towers – has implications for any obstruction. Weaknesses in the design or analysis of the papers included in this review are identified and discussed. Some papers have significant weaknesses, but are the best (or only) studies that examined a particular aspect of the activity or behavior of interest.