

Suarez, M., P. Heglund, R. Kratt, and E. Kirsch, 2008. A Landscape Scale Decision Support Tool for Monitoring Bird and Bat Migration Across Wisconsin. Public Service Commission of Wisconsin and the Statewide Energy Efficiency and Renewables Administration Environmental and Economic Research and Development Program. Final Report.
http://www.focusonenergy.com/files/Document_Management_System/Environmental_Research/heglundmigration_report.pdf

Abstract: Migratory birds and bats face many challenges as they traverse the airspace between wintering and breeding grounds. Among these challenges are tall structures, including wind turbines and communication towers that are being erected or proposed across the United States and off shore. Complicating factors include the knowledge that birds and bats migrate at night and are therefore very difficult to track over long distances. In particular, neotropical migrant birds and bats tend to have small body sizes and therefore are too small to wear radio transmitters with enough capacity to monitor for long distances and long periods of time. Indeed, few tools exist for deciphering the migratory habits of volant species, but incorporating the use of radar to better understand migration movements and habitat use patterns, holds promise. Nexrad Weather Surveillance Radar (WSR-88D) is increasingly viewed as a potentially valuable resource in the study of bird and bat migration (Gauthreaux and Belser 1998b, 2003; Diehl et al. 2003; Diehl and Larkin 2005). The NOAA National Climatic Data Center (NCDC) archives WSR-88D data and makes it freely available through their website. We captured 6 years of data from the Nexrad WSR-88D sites located in Wisconsin (and in neighboring states) by generating time-series mosaics of the radar products. The animations allow the viewer to identify and summarize timing, stop over locations, and general pathways of movement across Wisconsin where Nexrad coverage exists. Only by understanding the behavior and phenology of migrating birds and bats can we hope to minimize the impact of wind power generation projects on those populations. We are providing Wisconsin resource managers with a tool to help them better understand where and when large numbers of birds and bats are most vulnerable to development and operation of wind power generators. With this tool, managers can then better target site specific evaluations as individual projects arise as well as work preemptively with industry managers to select or avoid specific sites for future projects. Perhaps most importantly, managers and scientists can use the data for additional summarization of migration events. This report addresses the Siting of Renewable Energy Projects: Wind energy concern of the Wisconsin Focus on Energy: Environmental Research Program. The recent workshop entitled: "Applying radar technology to migratory bird and bat conservation and management: strengthening and expanding a collaborative effort" held October 23-26, 2006, in Albuquerque, New Mexico, identified the need of resource managers for decision support tools with regard to wind energy development as a high priority for future work.