

Manville, A.M., II. 2005. Bird strikes and electrocutions at power lines, communication towers, and wind turbines: state of the art and state of the science – next steps toward mitigation. Pp. 1051-1064. *In*: C.J. Ralph and T. D. Rich (editors) Bird Conservation Implementation in the Americas: Proceedings 3rd International Partners in Flight Conference 2002. U.S.D.A. Forest Service General Technical Report PSW-GTR-191, Pacific Southwest Research Station, Albany, CA.

Abstract: Migratory birds suffer considerable human-caused mortality from structures built to provide public services and amenities. Three such entities are increasing nationwide: communication towers, power lines, and wind turbines. Communication towers have been growing at an exponential rate over at least the past 6 years. The U.S. Fish and Wildlife Service is especially concerned about growing impacts to some 836 species of migratory birds currently protected under the Migratory Bird Treaty Act of 1918, as amended. While mortality estimates are often sketchy, and won't be verified until nationwide cumulative impact studies are conducted, current figures are troubling. Communication towers may kill from 4-50 million birds per year. Collisions with power transmission and distribution lines may kill anywhere from hundreds of thousands to 175 million birds annually, and power lines electrocute tens to hundreds of thousands more birds annually, but these utilities are poorly monitored for both strikes and electrocutions. More than 15,000 wind turbines may kill 40,000 or more birds annually nationwide, the majority in California. This paper will address the commonalities of bird impacts among these industries; those bird species that tend to be most affected; and research (completed, current, and proposed) intended to reduce bird collisions and electrocutions nationwide. The issues of structure location (siting), lighting, guy supports, lattice or tubular structures, bird behavior, and habitat modifications are reviewed. In addition, this paper reviews the respective roles and publications of the Avian Power Line Interaction Committee and the Wildlife Workgroup of the National Wind Coordinating Committee, the roles of the Service-chaired Communication Tower Working Group and Wind Turbine Siting Working Group, and the Fish and Wildlife Services voluntary communication tower, and turbine siting and placement guidelines. An update on recent Communication Tower Working Group research initiatives will also be discussed along with promising research findings and needs.