

Young, Jr., D.P., W.P. Erickson, R.E. Good, M.D. Strickland, and G.D. Johnson. 2003. Avian and Bat Mortality Associated with the Initial Phase of the Foote Creek Rim Windpower Project, Carbon County, Wyoming (November 1998 - June 2002). Report prepared for Pacificorp, Inc., Portland, Oregon; SeaWest Windpower Inc., San Diego, California; and Bureau of Land Management. http://www.west-inc.com/reports/fcr_final_mortality.pdf.

Introduction: An estimated 100 million to 1 billion birds die annually in the United States by colliding with manmade objects (Klem 1991). Although generally considered environmentally friendly, windpower, at most locations, has been associated with avian fatalities caused by collisions with turbines and other wind plant structures (e.g., Orloff 1992, Erickson *et al.* 2000, Erickson *et al.* 2001, Johnson *et al.* 2002). Studies conducted to date indicate that raptors and passerines appear to be the most susceptible to turbine collisions in the U.S. (AWEA 1995). At a few specific locations, such as the Altamont Pass Wind Resource Area (WRA) near Livermore, California, there have been higher levels of raptor fatalities than at other wind facilities (Orloff and Flannery 1992). However, in comparison to TV/radio and other communications towers, the number of bird mortalities in wind power facilities is thought to be relatively small (AWEA 1995, Erickson *et al.* 2001). TV/radio towers often result in episodic mortality events that may result in thousands of dead birds when inclement weather occurs during migration periods (Avery *et al.* 1980, Trapp 1998, Kemper 2000). Based on wind development in operation at the end of 2001, it has been estimated that wind turbines cause 0.01 to 0.02 percent (1-2 of every 10,000 fatalities) of collision-caused bird mortality in the U.S. (Erickson *et al.* 2001). Early wind energy facilities in the U.S., such as those in the Altamont Pass, were placed without regard to factors such as avian use, and some of these sites are located where birds are abundant and the risk of turbine collisions is high (AWEA 1995). As a result, higher levels of raptor mortality have been reported there than at other wind facilities. In the Altamont Pass area, where more than 5,000 turbines exist within the WRA, Orloff and Flannery (1992) estimated 567 raptors were killed over a 2-year period from colliding with turbines. Researchers estimated 6,800 birds, primarily passerines, were killed annually at the San Geronio, California wind facility based on 40 dead birds found while monitoring nocturnal migrants (McCrary *et al.* 1986). The 40 dead birds were comprised of 15 passerines, seven waterfowl, two shorebirds, and one raptor. Because most of these birds were passerines and large numbers of passerines migrate through this area, it was concluded that this level of mortality was not biologically significant (Southern California Edison Company, unpublished data). Studies conducted on other wind generation facilities have not detected these levels of mortality (e.g., Erickson *et al.* 2000, Young *et al.* 2001, Johnson *et al.* 2002), and numerous factors including avian abundance, species composition, geographic area, landscape features, prey abundance, and wind plant features are believed to influence the potential for and level of avian mortality (Nelson and Curry 1995, Orloff 1992, Erickson *et al.* 2000). Although avian mortality associated with windpower development has been of primary concern, recent studies have found that bat mortality also occurs at wind plants. Bat mortality at wind plants was first documented in Australia (Hall and Richards 1972). At a 107.25 MW wind plant on Buffalo Ridge, Minnesota, 184 dead bats were found over a four year period (Johnson *et al.* 2002). Bat mortality has also been documented at wind plants in California (Howell 1997), Oregon (Erickson *et al.* 2000), Wisconsin (Steve Ugoretz, Wisconsin DNR, pers. comm.), Colorado (Ron Ryder, Colorado State University, pers. comm.), and Wyoming (Young *et al.* 2001).

In December 1998, SeaWest completed development of a 41.4 megawatt (MW) wind plant on Foote Creek Rim (FCR) in Carbon County, Wyoming. This initial construction phase of the Foote Creek Rim wind plant (hereafter referred to as FCR I) is comprised of 69 600-kilowatt Mitsubishi turbines (41.4 MW capacity) and related facilities, including distribution lines, five meteorological (met) towers, communication system, transformers, substation, roads, and operations and maintenance facilities. Formal carcass searches to locate dead birds and bats were initiated at all turbines in November 1998, when approximately 25% of the turbines became operational. The balance of the turbines became operational shortly thereafter. This report presents results of approximately 3.5 years (November 3, 1998 to June 5, 2002) of carcass search studies for FCR I (Turbines 1-69 and associated met towers). Subsequent construction phases II and III (FCR II, FCR III) of the wind plant development on FCR are the subject of a comparable study funded by the National Renewable Energy Laboratory (NREL) and SeaWest Windpower, Inc. Fatality searches for construction phases II -IV were initiated following completion and start-up of each phase: July 1999 for FCR II and FCR III; and November 2000 for FCR IV. Results of these additional studies are partially reported in Young *et al.* 2002.