

Information Crossfile*

ARTICLES

Avian fatalities and anthropogenic structures: Simple solutions and complex considerations

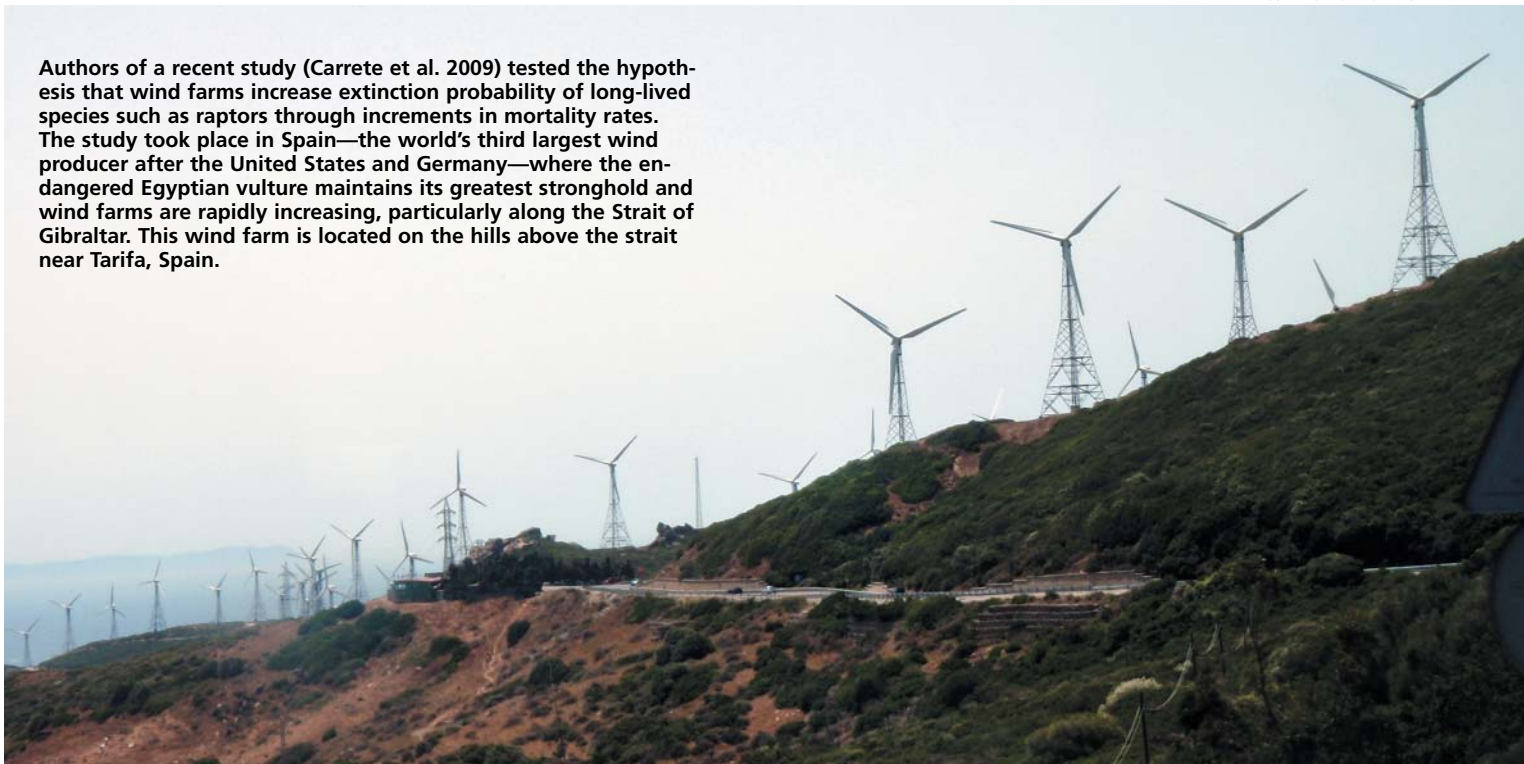
GEHRING ET AL. (2009) PROVIDE A REFRESHINGLY SIMPLE solution to a growing environmental concern: avian mortality due to collision with anthropogenic structures. The solution: remove nonflashing lights from communication towers. The status quo lighting system of Federal Aviation Administration (FAA) communication towers consists of a combination of red, flashing lights and red, nonflashing lights (Gehring et al. 2009). Results of a study of 24 communication towers in Michigan showed that avian fatalities can be reduced by 50–71% by removing nonflashing/steady-burning red lights. On 20 consecutive days during early-morning hours in May and September (peak songbird migrations) 2005, investigators simultaneously documented avian fatalities at 21 towers that were 380–480 feet (116–146 m) high and four towers that were more than 1,000 feet (305 m) tall. The communication towers had a variety of lighting systems: white strobe lights only; red strobe-like lights only; red, flashing, incandescent lights only; and red, strobe-like lights combined with nonflashing, steady-burning, red lights. Investigators found a mean of 3.7 bird carcasses under towers equipped with only red and white flashing obstruction lights, but a mean of 13 bird carcasses under nonflash-

ing/steady-burning lights in addition to the flashing lights. Hence, “removing nonflashing lights from towers is one of the most effective and economically feasible means of achieving a significant reduction in avian fatalities at existing communication towers” (Gehring et al. 2009, p. 505).

Carrete et al. (2009) take on a more complex scenario involving avian mortality and anthropogenic structures. In this case, wind turbines are the structure, and the subject of avian mortality is an endangered species, Egyptian vulture (*Neophron percnopterus*). Although the study took place in Spain (see photo), and this endangered species’ range does not occur in the United States, Carrete and colleagues contend that their findings have worldwide application for long-lived species with slow maturation rates and low productivity (i.e., produce few offspring), such as many raptor species. Model results of Carrete et al. (2009) show that low levels of additional mortality from wind turbines on an already declining population can be biologically significant; that is, reducing the time to extinction. Furthermore, model results show that survival rates varied with age: “Survival increased with age until birds acquired their adult plumage and searched for a breeding territory, at which point it decreased. At older ages (>6 years), survival was higher for both nonbreeding and breeding adults” (Carrete et al. 2009, p. 2956).

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Authors of a recent study (Carrete et al. 2009) tested the hypothesis that wind farms increase extinction probability of long-lived species such as raptors through increments in mortality rates. The study took place in Spain—the world’s third largest wind producer after the United States and Germany—where the endangered Egyptian vulture maintains its greatest stronghold and wind farms are rapidly increasing, particularly along the Strait of Gibraltar. This wind farm is located on the hills above the strait near Tarifa, Spain.



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Carrete et al. (2009) make one of the few attempts to assess the demographic consequences of wind-farm mortality; most research to date has focused on quantifying collision rates of birds with turbines. As such, the authors counter the assumption that, all things considered, wind farms have low impact on animal populations, which power companies and some wildlife agencies support. For example, a 2003 report by the American Wind Energy Association puts wind power's effect on birds "into perspective" (Sagrillo 2003). According to this report, the 15,000 wind turbines in existence in the United States in 2001 caused 33,000 avian mortalities. By comparison, buildings and windows caused 100 million–1 billion bird fatalities that year, power lines caused 130–174 million, motor vehicles caused 60–80 million, agricultural pesticides caused 67 million, communication towers caused 40–50 million, cats (feral and house) caused 39 million, and other types of human infrastructure and industrial activities (e.g., jet engines, smokestacks, and bridges) caused 1–4 million. Although the sources of these data seem reputable (e.g., scientific journals such as *Bioscience* and *Earth Island Journal*, as well as findings of the American Bird Conservancy, Wisconsin Department of Natural Resources, and National Wind Coordinating Committee), listed in this way the outcome of avian mortality as a result of wind turbines seems inconsequential. Hence, Carrete et al. (2009) highlight the need for demographic considerations when placing wind farms, particularly for maintaining the precarious balance of a population of territorial raptors faithful to their breeding sites.

[The authors] highlight the need for demographic considerations when placing wind farms.

References

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