



Wind Turbine Interactions with Wildlife and their Habitats: A Summary of Research Results and Priority Questions

What's New in the 2016 Edition?

The updated, June 2016 edition of *Wind Turbine Interactions with Wildlife and their Habitats: A Summary of Research Results and Priority Questions* reflects the latest assessment of wind energy impacts on wildlife based on a review of the available literature including new, peer-reviewed studies published since the previous edition of May 2015. The new studies mostly confirm and refine previous findings.

References to the new studies and corresponding new information are highlighted in the excerpts below:

DIRECT MORTALITY

Birds

A substantial majority of bird fatalities at wind energy facilities are small passerines.

[...]Fatalities of waterbirds and waterfowl, and other species characteristic of freshwater, shorelines, open water and coastal areas (e.g., ducks, gulls and terns, shorebirds, loons and grebes) are recorded infrequently at land-based wind facilities (e.g., Kingsley and Whittam 2007; Gue et al. 2013), although this could change as more development occurs offshore or in regions where waterfowl abundance is high (e.g., Graf et al. 2016).

CUMULATIVE IMPACT OF BIRD AND BAT COLLISIONS

[...]

The status of bat populations is poorly known and the ecological impact of bat fatality levels is not known.

[...] Studies have focused on estimating effective population sizes from genetic data, and these estimates might be useful as baselines for evaluating future impacts of collision mortality and other threats to bats (Korstian et al. 2015; Vonhof and Russell 2015; Sovic et al. 2016).

AVOIDING AND MINIMIZING BIRD AND BAT FATALITIES

[This section has been reorganized with two new headings, "Siting" and "Operations"]

Siting

[...]

Operations

[...]

Efforts intended to increase turbine visibility and reduce collision fatalities has met with limited success.

[...] Several raptor species have shown little response to ultraviolet light (Hunt et al. 2015).

Full citations to the new studies are:

Graff BJ, Jenks JA, Stafford JD, Jensen KC, Grovenburg TW. 2016. Assessing spring direct mortality to avifauna from wind energy facilities in the Dakotas. *Journal of Wildlife Management* 80(4):736-745.

Hunt WG, McClure C, Allison TD. 2015. Do Raptors React to Ultraviolet Light? *Journal of Raptor Research* 49(3): 342–343.

Korstian JM, Hale AM, Williams DA. 2015. Genetic diversity, historic population size, and population structure in two North American tree bats. *Journal of Mammalogy* 96(5):972–980.

Sovic MG, Carstens BC, Gibbs HL. 2016. Genetic diversity in migratory bats: Results from RADseq data for three tree bat species at an Ohio windfarm. *PeerJ* 4:e1647.

Vonhof MJ, Russell AL. 2015. Genetic approaches to the conservation of migratory bats: a study of the eastern red bat (*Lasiurus borealis*). *PeerJ* 3:e983.