

Bats



- “Bats are probably the creatures most affected by wind turbines in areas like Illinois. They appear to be especially subject to harm during migration to hibernation sites or to southern regions in August and September. Although migratory bats are many fewer in number than night-migrating birds, perhaps 10 times as many bats as birds are killed at wind turbines at upland sites.” (IDNR 2017)

Bats



- Wind energy development poses a serious threat to North American bats, second only to White-nose Syndrome disease (Hammerson et al. 2017).
- 13 species of bats occur in Illinois. Species of special concern potentially affected by this project include: little brown bat, hoary bat, Indiana bat, northern long-eared bat, silver-haired bat, and eastern red bat.

Bats



- Data from Alberta and Oklahoma suggest that the presence of nearby trees does not add to the hazard for bat kills at wind power facilities; wind turbines in open areas kill bats. Indications are that bats are killed or injured as they actively approach or remain near the turbines in some undefined fashion. The migrating bats fly close—and may actually be attracted—to the rotating blades and perish close to the turbine support structure, particularly in the first part of the night. (IDNR 2017)

Bats



- “Most species of bats have low reproductive potential and high adult survivorship. Little is known about population size or trends in migratory tree-roosting bats, the group of bats with highest reported turbine-related fatalities across the U.S., but modeling results suggest some of these species are at risk of population decline due to collision fatalities.”
- “The ecological consequences of turbine-caused mortality of cave-dwelling bats such as the little brown bat, northern long-eared bat, or Indiana bat may be significant because of already high mortality and recent population declines caused by white-nose syndrome (WNS).”
- “The declining status of many cave-dwelling bat species raises concerns about the ecological consequences of any additional mortality.”

(Allison 2019)

▶ Insects – Concern over dramatic rates of decline in recent years

- Insects are at the structural and functional base of many of the world's ecosystems and provide many vital ecosystem services – pollination, decomposition, predation of agricultural pests, serve as critical food of many animal species, including those of songbirds and bats.
- The Intergovernmental Science-Policy Platform on Biodiversity (IPBES) estimated the annual value of crops directly affected by pollinators as US\$235-577 billion, and that over 40% of invertebrate pollinators were facing extinction. IPBES, 2016.
- “Insects have experienced dramatic rates of decline in Europe and North America – 41% of species are rapidly declining, 75-98% loss of insect biomass over two to three decades in several long-term studies— believed largely driven by habitat loss and chemical pollution.” ... “Average decline of terrestrial insect abundance by about 9 percent per decade in North America and some European regions over an average time span of 20 years – means 24% fewer insects in 30 years’ time and 50% fewer over 75 years... high local and regional variability in these trends. Declines were strongest in the Midwest and West and in Europe, particularly in Germany. Patterns of variation suggest that local-scale drivers are likely responsible for many changes in population trends.” (Van Klink et al. 2020)

▶ Insect interactions with wind turbines

- Many insect species and migrating insects typically fly at the critical height of modern wind rotors.
- Insect collisions with wind turbine blades “contaminate” the blades by causing roughness and diminish wind power, sometimes as much as by half (Corten and Veldkamp 2001).
- Trieb (2018) estimates that wind farms in Germany damage around one thousand billion insects per year or about 5 billion per day during the warm season, which translates into the death of several thousand tons of insects per year.
- A recent study by Hallmann et al. (2017) found flying insect biomass has declined more than 75% over a 27 year period in Germany. More studies and data are needed to define impacts.

- Turbine Height

Increasing the height of wind turbines to 660 feet is likely to have adverse impacts on birds, bats, and insects.