

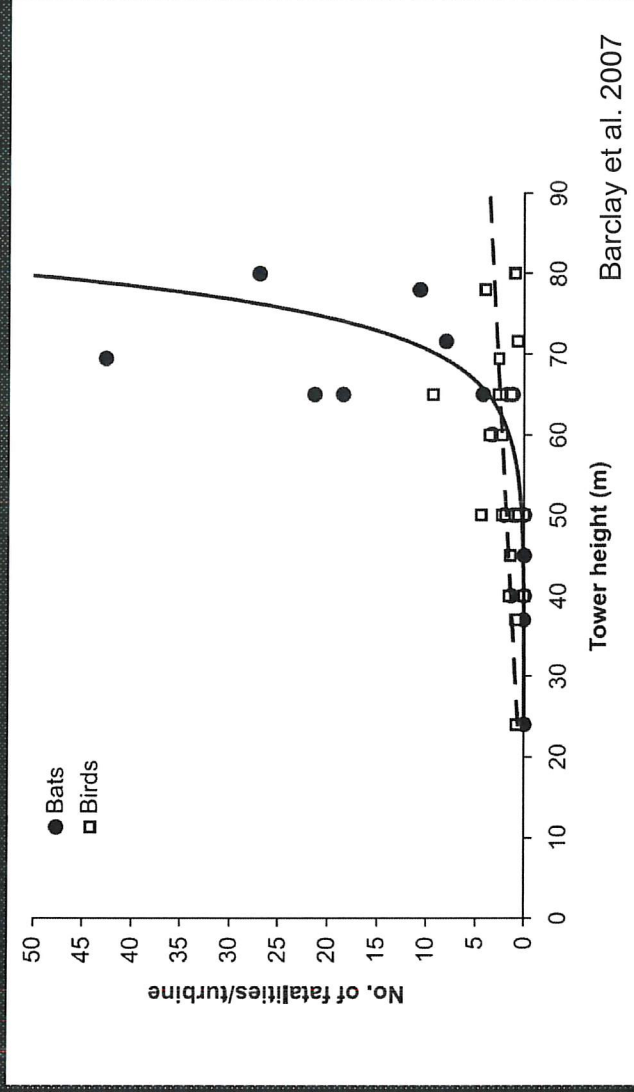
▶ Radar studies indicate that 90% of night-migrating birds fly above 460 feet (Allison 2019)

- “The number of birds that migrate at these (current) heights” (i.e., 100-450 feet above the ground) “is not as well understood as one might expect, but during cruising flight many or most birds fly higher than the maximum blade height of current wind turbines. Important exceptions include takeoff (usually at dusk), descent, and landing (usually in the second half of the night), and perhaps nights with a low cloud ceiling. Cloud height may induce birds to fly lower.” (IDNR 2007)
- “Land-based wind turbines have been developed that extend almost twice the height of existing turbines reaching higher into the space used by nocturnal migrants, and there are concerns that this will increase bird collisions” ... “Further analysis of this relationship for birds is warranted.” (Allison 2019)

▶ Turbine Height

- “Another study based on data from 67 facilities estimated US mortality from monopole turbines at between 140,000 and 328,000 birds (Loss et al. 2013a). The latter study showed that, as for communication towers, mortality rates at monopole turbines increase with height. However, Loss et al. (2013a) and others have been unable to disentangle turbine height from other strongly correlated metrics of turbine size (e.g., rotor diameter). Nonetheless, increased mortality likely occurs because large turbines both reach into altitudes through which large numbers of birds fly and have rotors that affect a larger volume of airspace.” (Loss et al. 2015)
- Bat fatalities have shown a positive correlation with tower height (Allison 2019).

Turbine Height



Cumulative Effects

- Cumulative Effects - Changes to the environment caused by the combined impact of past, present and future human activities and natural processes.
- “No published projections of cumulative impacts are available for Midwestern states like Illinois. In the mountainous eastern USA, however, various wind energy facilities are projected to kill from 6,000 to 25,000 birds (both migratory and resident) each, per year. Total bat fatalities in the four-state mid-Atlantic region are projected to be approximately 30,000 to 100,000 animals per year based on projections of growth of wind energy as a source of electricity. Many authorities have noted that as wind energy continues to expand the cumulative rate of mortality of endangered and threatened species rises steadily.” (IDIL 2017)

Federal and State Legislation

- **Migratory Bird Treaty Act (1918)**
 - Protects native migratory birds (pretty much all wild birds except English sparrows, starlings, and rock pigeons), prohibits the take of migratory bird species without prior authorization by the US Fish and Wildlife Service
- **Bald and Golden Eagle Protection Act (1940)**
 - Protects bald and golden eagles; prohibits the take of bald and golden eagles
- **Illinois Endangered Species Act (1972)**
 - Protect plants and animals native to Illinois which are in danger of being lost from the wild in Illinois
- **Endangered Species Act (1973)**
 - Designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untempered by adequate concern and conservation"

Threatened and Endangered Bird, Bat, or Insect Species in Christian County

- Indiana bat, *Myotis sodalis* (Endangered)
- Northern long-eared bat, *Myotis septentrionalis* (Threatened)



Indiana Bat

Photo credit: USFWS



Northern Long-eared Bat

Photo credit: USFWS



Rusty-patched Bumblebee, *Bombus affinis* (Endangered)
 (no record in CC since before 2000, but CC is historic range.
B. affinis documented near Blue Mound, IL, in 2013)

Photo credit: USFWS

Threatened and Endangered Species in Christian County (as of July 23, 2018)

Christian

<i>Borremania longicauda</i>	Upland Sandpiper	LE	1	1979-07-28
<i>Chionophis kirtlandi</i>	Kirtland's Snake	LT	4	2018-05-12
<i>Lanius ludovicianus</i>	Loggerhead Shrike	LE	1	2000-06-12
<i>Psaltriparus franklinii</i>	Franklin's Ground Squirrel	LT	1	2009-06-18
<i>Sedum telephium</i>	American Orpine	LT	1	1948-06-02

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7/23/2018

Scientific Name

Common Name

State Status

of Occurrences

Last Observed

Christian

<i>Tyto alba</i>	Barn Owl	LT	2	2015-07-17
Total # of Species			4	

LE – Listed as Endangered

LT – Listed as Threatened



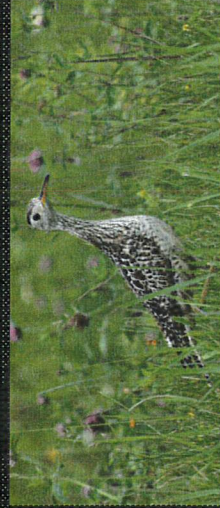
Loggerhead Shrike

Photo credit: USFWS



Barn owl

Photo credit: USFWS



Upland Sandpiper

Photo credit: USFWS

https://www2.illinois.gov/dnr/ESPB/Documents/ET_by_County.pdf