

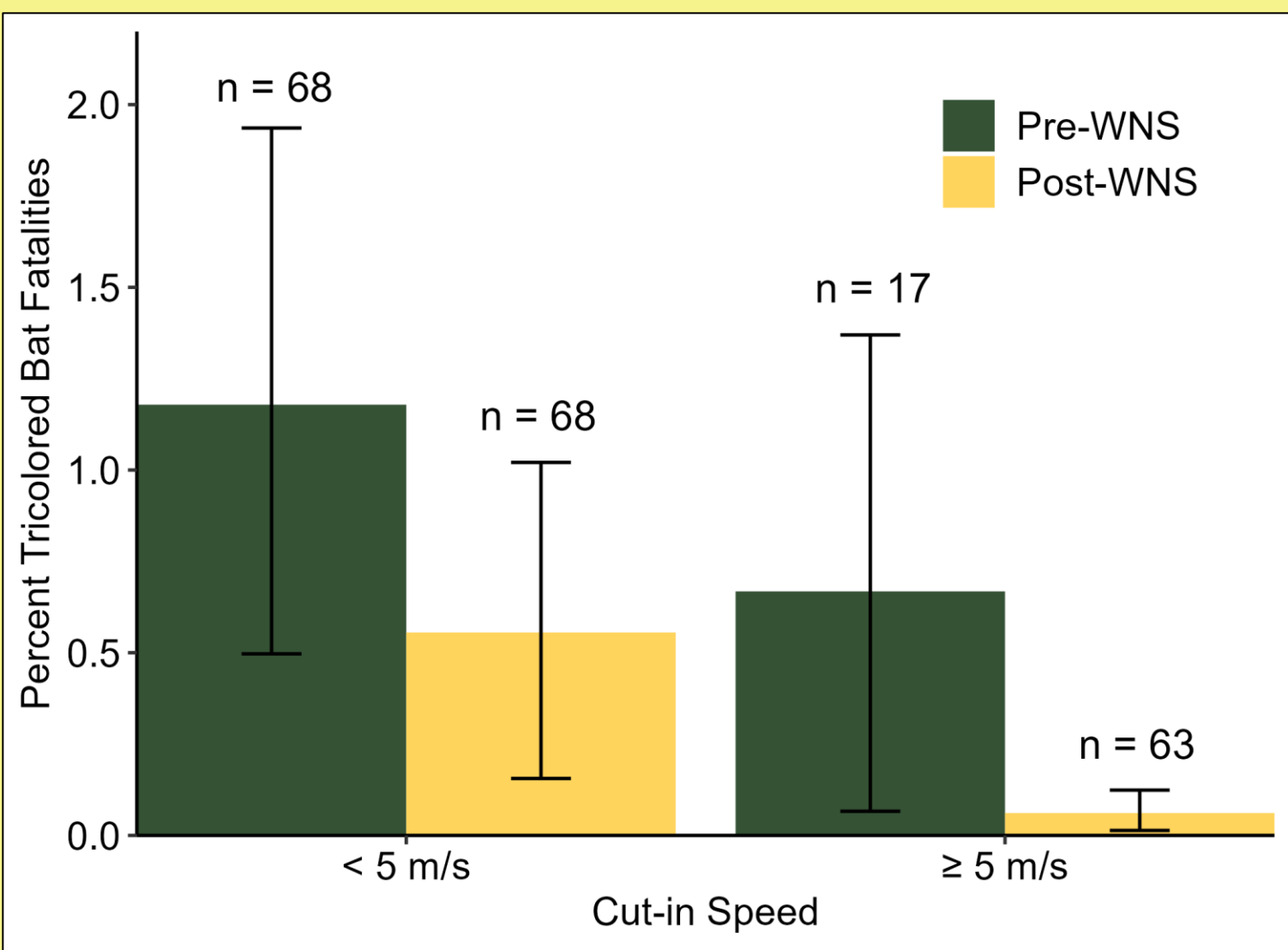
Tricolored bats, a declining species, are impacted by wind facilities throughout the eastern and central US.



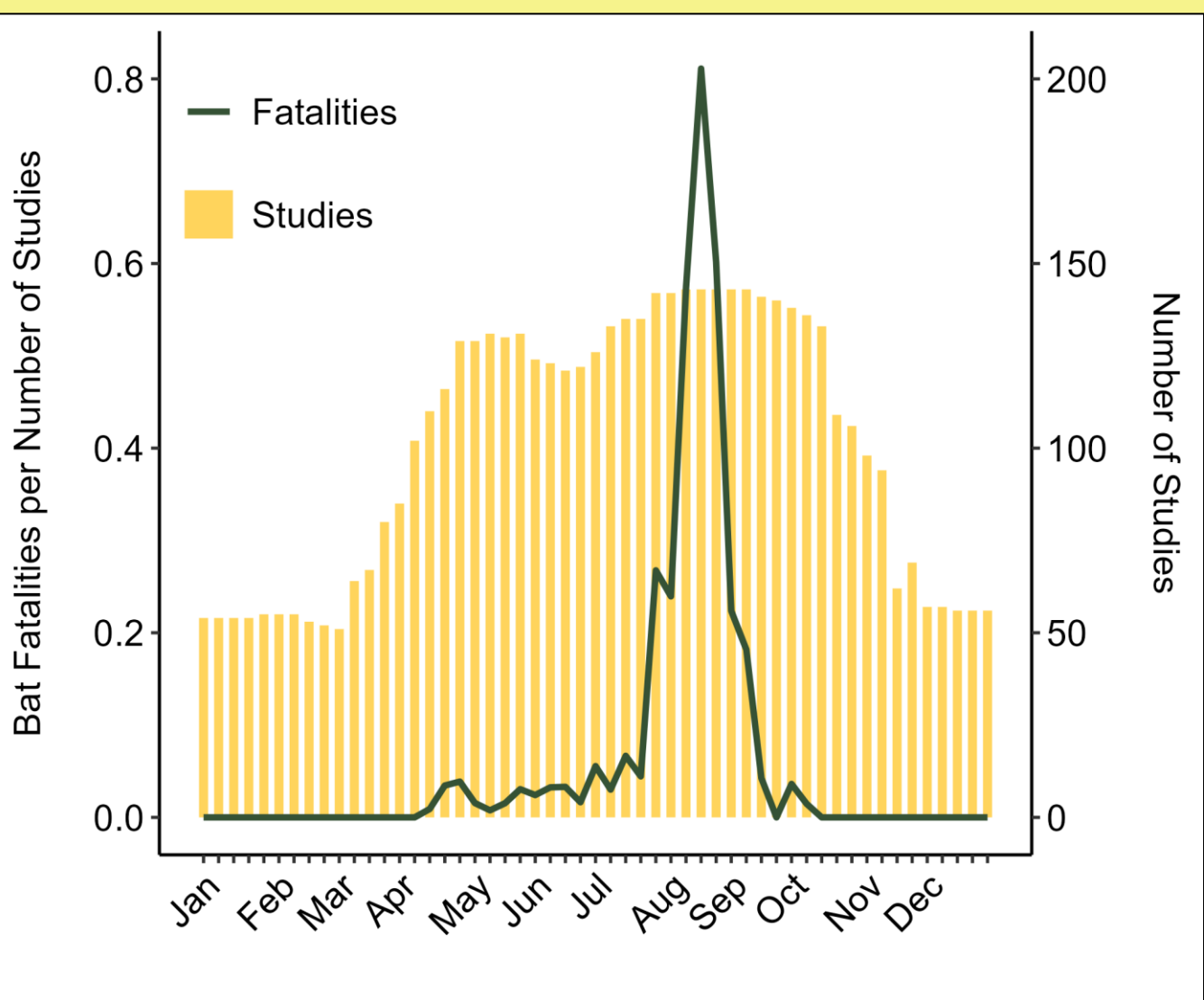
Tricolored bat risk: What can we learn from public fatality data?



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Percent tricolored bat fatalities (the fraction of all-bat fatalities comprising tricolored bats) at cut-in speeds below 5.0 meters per second (m/s) compared to cut-in speeds at 5.0 m/s and higher, before and after the impacts of white-nose syndrome. Curtailment at intermediate wind speeds reduces but does not eliminate tricolored bat collisions. Cut-in speeds of studies ranged from 2.3 to 8.0 m/s. Sample sizes shown are number of studies. Carcass counts were bootstrapped to produce 90% confidence intervals.



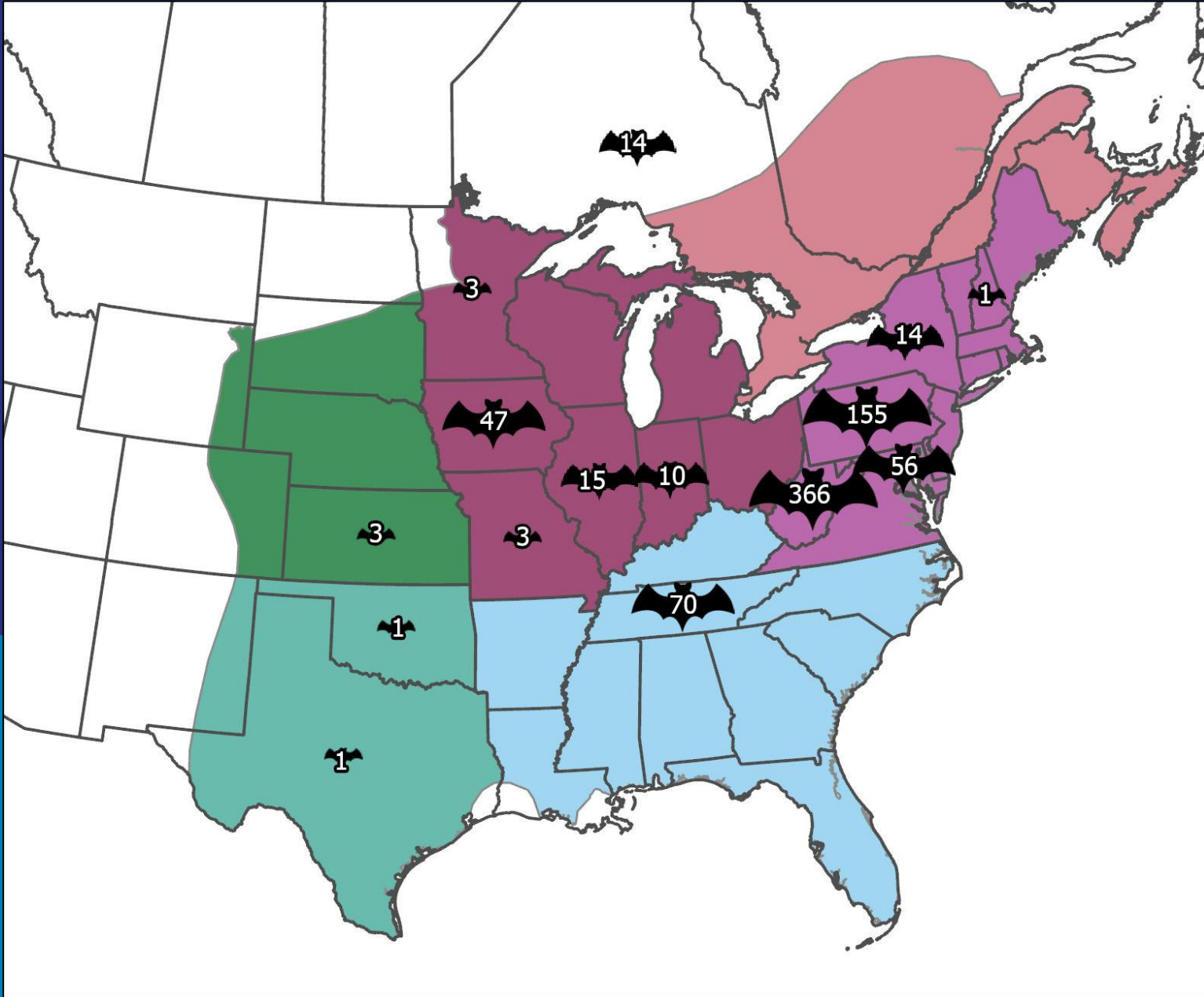
The timing and rate of tricolored bat fatalities, corrected for the number of studies conducted in any given week, throughout the year. Like other bat species, the tricolored bat is most at risk of collision during fall migration. This dataset comprises 144 studies conducted throughout the ranges of this species.

Background

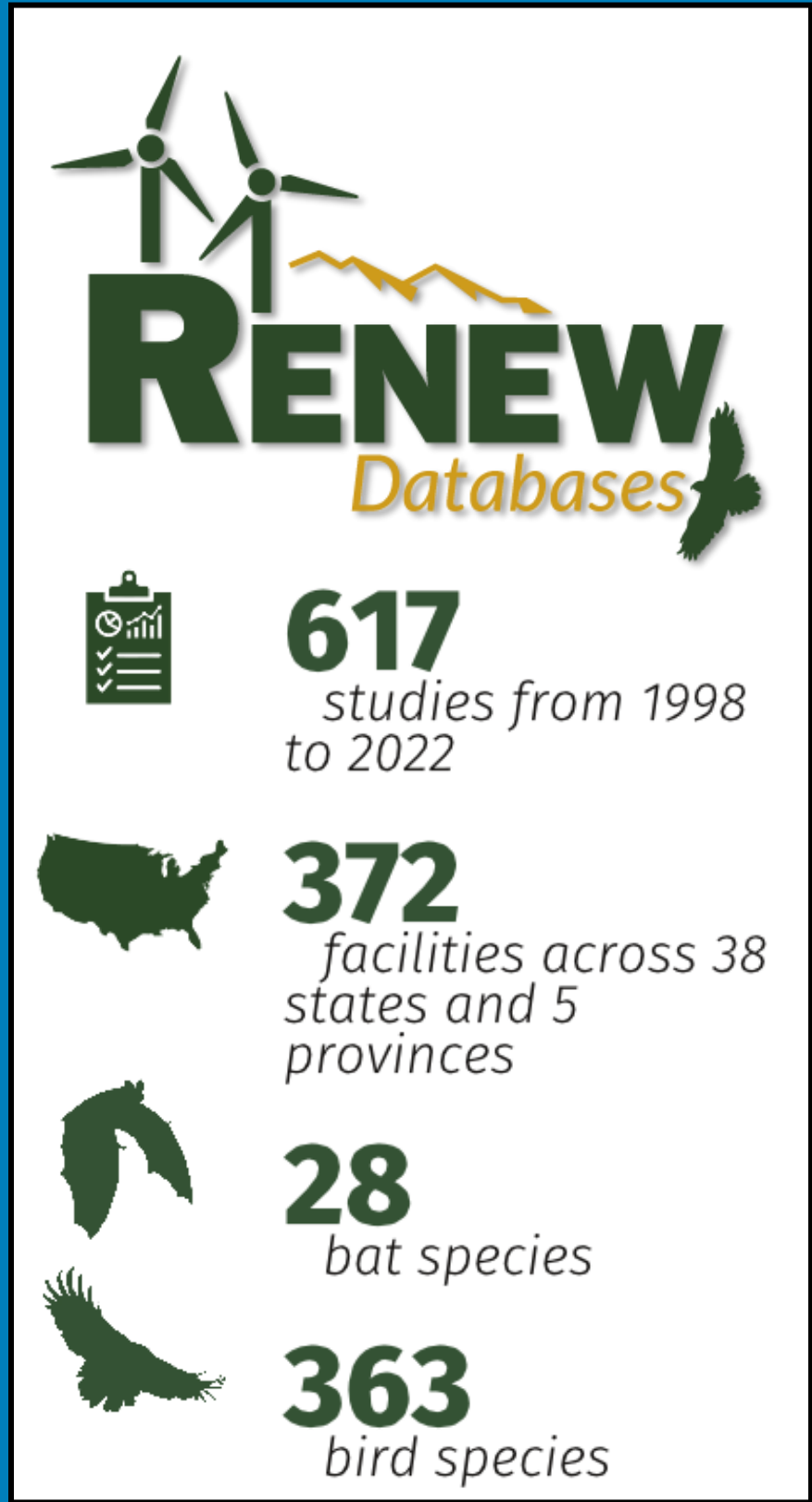
- The species was once widespread and common.
- In the last two decades, **populations have declined precipitously** due to a disease that infects hibernating bats.¹
- As a result, the species is proposed to be listed under the US Endangered Species Act.
- Tricolored bats have been federally protected in Canada since 2014.
- Although declines are due mainly to disease, there are concerns that habitat loss, climate change, and **collisions at wind facilities** may exacerbate the trend.^{2,3,4,5}

Results and Discussion

- Since 2001, there have been at least 759 publicly reported tricolored bat fatalities.
- This species accounts for approximately 1% of all bat fatalities within its range in the US and Canada.
- Curtailing turbines** to a cut-in speed of 5 meters per second or higher **greatly reduces the risk of collision**.
- Such **curtailment is likely to be most effective in the late summer and fall**; most fatalities occur mid-July through mid-September.



Fatalities of tricolored bats by state or province, mapped against the species' range. Each color represents a different US Fish and Wildlife Service region (some partial regions shown). This represents 759 public fatalities recorded throughout the US and Canada since 2001.



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References

1. Cheng, T. L. 2021. The Scope and Severity of White-Nose Syndrome... *Conserv. Biol.* • 2. Frick, W. et al. 2020. A Review of the Major Threats... *Annals of the New York Academy of Sciences*. 1469(1):5-25. • 3. Hammerson, G. A. et al. 2017. Strong Geographic and Temporal Patterns... *Biol. Conserv.* 212: 144-152. • 4. Hein, C. and M. R. Schirmacher. 2016. Impact of Wind Energy on Bats...*Human-Wildlife Interactions* 10(1): 19-27. • 5. Sherwin, H. A. et al. 2013. The Impact and Implications of Climate Change... *Mammal Rev.* 43(3): 171-182.

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