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**Subject:** Fwd: R-line, Study on Whoopers avoiding Wind-energy infrastructure  
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**Subject:** R-line, Study on Whoopers avoiding Wind-energy infrastructure

I guess this is good news on the R-line HCP remand (still no take of Whoopers):

<https://esajournals.onlinelibrary.wiley.com/doi/10.1002/eap.2324>

Article

## Migrating Whooping Cranes avoid wind-energy infrastructure when selecting stopover habitat

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### Abstract

Electricity generation from renewable-energy sources has increased dramatically worldwide in recent decades. Risks associated with wind-energy infrastructure are not well understood for endangered Whooping Cranes (*Grus americana*) or other vulnerable Crane populations. From 2010 to 2016, we monitored 57 Whooping Cranes with remote-telemetry devices in the United States Great Plains to determine potential changes in migration distribution (i.e., avoidance) caused by presence of wind-energy infrastructure. During our study, the number of wind towers tripled in the Whooping Crane migration corridor and quadrupled in the corridor's center. Median distance of Whooping Crane locations from nearest wind tower was 52.1 km, and 99% of locations were >4.3 km from wind towers. A habitat selection analysis revealed that Whooping Cranes used areas  $\leq 5.0$  km (95% confidence interval [CI] 4.8–5.4) from towers less than expected (i.e., zone of influence) and that Whooping Cranes were 20 times (95% CI 14–64)

more likely to use areas outside compared to adjacent to towers. Eighty percent of Whooping Crane locations and 20% of wind towers were located in areas with the highest relative probability of Whooping Crane use based on our model, which comprised 20% of the study area. Whooping Cranes selected for these places, whereas developers constructed wind infrastructure at random relative to desirable Whooping Crane habitat. As of early 2020, 4.6% of the study area and 5.0% of the highest-selected Whooping Crane habitat were within the collective zone of influence. The affected area equates to habitat loss ascribed to wind-energy infrastructure; losses from other disturbances have not been quantified. Continued growth of the Whooping Crane population during this period of wind infrastructure construction suggests no immediate population-level consequences. Chronic or lag effects of habitat loss are unknown but possible for long-lived species. Preferentially constructing future wind infrastructure outside of the migration corridor or inside of the corridor at sites with low probability of Whooping Crane use would allow for continued wind-energy development in the Great Plains with minimal additional risk to highly selected habitat that supports recovery of this endangered species.