eBird data used to shape eagle management

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Millions of people donate billions of dollars' worth of their time to citizen-science projects each year. While these efforts have broadened our understanding of everything from birds to bees to bracken ferns, rarely has citizen-science data informed policy at the highest levels of government. But that may be changing.

One of the world's largest citizen-science efforts, the Cornell Lab of Ornithology's eBird, is now helping the federal government streamline and refine its process for assessing eagle populations and informing eagle management.

New research out this week in the *Journal of Applied Ecology* finds that citizen-science data collected by 180,000 birdwatchers through eBird is the most accurate and reliable data source for the U.S. Fish and Wildlife Service to use to help identify areas of low and high abundance of Bald Eagles as the Service fine-tunes its eagle permitting policy.

The research team, including scientists at the U.S. Fish and Wildlife Service and the Cornell Lab of Ornithology found that eBird data and the advanced statistical models generated by eBird Status and Trends provided the best available picture of Bald Eagles across space and time, when compared to other datasets.

"It is important to account for eagle use throughout the entire year, at a refined spatial scale, in order to have confidence that activities in the low-exposure zones would pose less risk to eagles overall," says Emily Bjerre, wildlife biologist at the National Raptor Program at the USFWS.

Brian Millsap, national raptor coordinator at the U.S. Fish and Wildlife Service, says that the "wall-to-wall" coverage provided by eBird was critically important. "The other data or surveys we evaluated generally cover a specific 'season'—for example, winter or breeding," says Millsap, "but then you don't have any information of what eagle abundance in that area is the rest of the year."

Thanks to advances in quantitative methods, researchers can now overcome biases, such as observer error, that are often associated with citizen-science data. Viviana Ruiz Gutierrez, assistant director of the Cornell Lab's Center for Avian Population Studies and lead author of the

study, says the key is the validation process—cross-checking eBird models with existing bird population data to confirm their accuracy.

The research suggests that eBird data can be the primary data source used to define areas of low abundance for Bald Eagles, paving the way for this kind of citizen-science data to potentially be used in the future to shape policy decisions at the federal level.

Millsap says that using eBird for these kinds of assessments could provide significant cost-savings in the future, for example potentially reducing or eliminating the need for multiyear survey periods to inform energy-related eagle permitting decisions—a win-win for Bald Eagles and green energy.

According to Ruiz Gutierrez, the collaboration between the U.S. Fish and Wildlife Service resulted in a framework that other agencies and governing bodies can follow to make use of citizen-science data going forward. "This case study could help convince other agencies and governments around the world to use citizen-science data to compliment existing methods of assessing and safeguarding bird populations," she says.

More information: Viviana Ruiz-Gutierrez et al, A pathway for citizen science data to inform policy: A case study using eBird data for defining low-risk collision areas for wind energy development, *Journal of Applied Ecology* (2021). DOI: 10.1111/1365-2664.13870

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