Wind

Wildlife and Wind Power

Studies show that wind power has a minimal impact on most wildlife while providing affordable, American-made energy that supports both our economy and conservation values.

Key Takeaways

1. **Wind energy has one of the lowest impacts** on wildlife and their habitats of any utility-scale electricity generation.
2. Wind energy is responsible for **less than 0.01% of human-caused bird fatalities.**
3. **Wind energy and eagle conservation have proven to be compatible** as wind development has grown: the golden eagle population has remained stable and the bald eagle population has boomed.
4. **Best management practices, guidelines, operational adjustments, and investment into research** help the industry further reduce wildlife impacts at wind projects.

Background

ACP and the wind industry collaborate with government agencies and conservation groups to refine best practices for wind development and operations, including technology improvements to continue minimizing its impacts on birds, bats, and other species. By continuously advancing minimization tools and strategies, the industry balances domestic energy development with protecting wildlife.

Environmental Advantages of Wind Energy Generation

The overall environmental footprint of wind energy is significantly lower compared to traditional energy production.

- **Wind turbines have a limited footprint,** leaving 98% of project land undisturbed and available for wildlife habitat and movement, farming, ranching, or recreation[1].
- **Wind power does not produce air pollution,** like nitrogen oxides, sulfur oxides, and mercury, which harm both humans and wildlife[2].
- **Wind energy does not require water for generation** and has no negative impacts on water quality with proper management practices in place.
- **Wind power requires no fuel extraction,** a leading source of habitat disruption.
- **Wind turbines repay their carbon footprint** in six months or less[3].

Wildlife Impacts of Wind Energy Generation

Researchers routinely find that wind energy has one of the lowest impacts on wildlife and their habitats of any utility-scale electricity generation. That's why many wildlife groups support responsibly-sited wind farms. Still, the wind industry is committed to reducing its comparatively small impact.

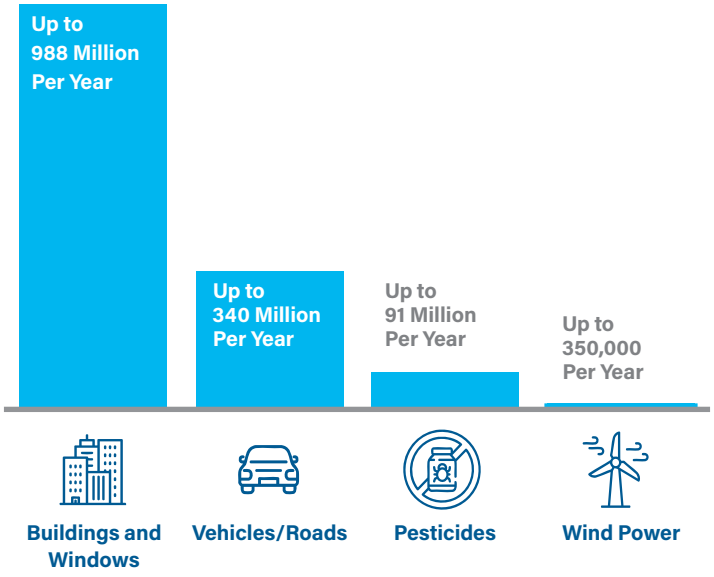
Bats

Hundreds of studies demonstrate a generally **low level of impact from wind power on protected bat species**, according to data reported by the Renewable Energy Wildlife Institute (REWI) and Western Ecosystems Technology, Inc.[4,5].

- The wind industry is actively taking steps to further reduce the impact to all bat species and investing in research to develop more efficient and effective methods to coexist with bats.

Birds

Causes of Bird Mortality

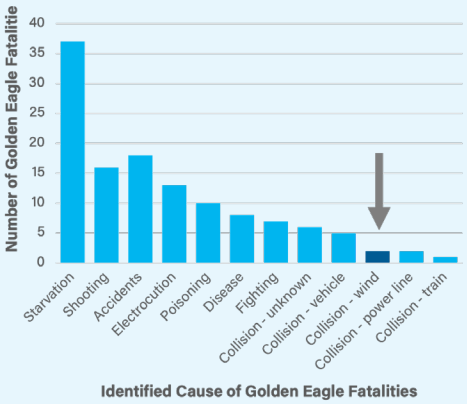


Cause of Mortality	Number of Birds per Year (thousands)
Buildings and Windows[6]	365,000 – 988,000
Vehicles/Roads[7]	89,000 – 340,000
Pesticides[8]	17,000 – 91,000
Overhead Lines[9]	8,900 – 68,900
Communication Towers[10]	6,600
Lead Ingestion[11]	1,000 – 2,000
Mowing, Agricultural Cultivation[12]	1,000 – 2,000
Commercial Fishing[13]	750 – 2,000
Oil Pits[14]	500 – 1,000
Forestry[15]	300 – 1,000
Wind Power[16,17]	140 – 350

Wind Energy Does Not Drive Eagle Population Dynamics

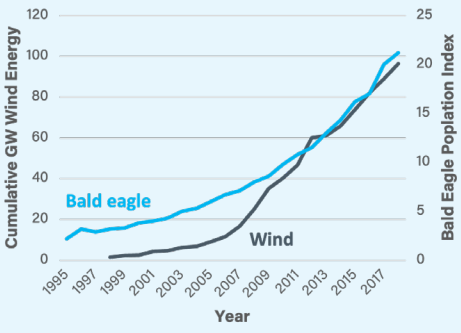
Golden Eagle Fatalities
Wind Energy Is Small Percentage

Causes of Golden Eagle Fatalities Based on GPS Recovery[18]



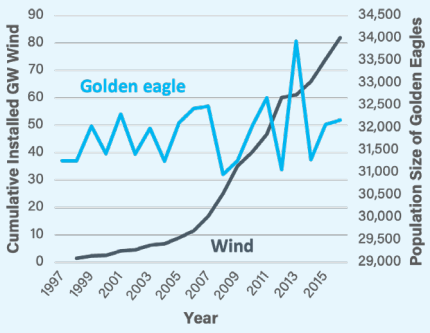
Bald Eagle Populations
Have Grown with Wind Development Growth

Bald Eagle Population Index and GW of Wind Buildout[19,20,21]



Golden Eagle Populations
Remained Stable with Wind Development Growth

Golden Eagle Population Size and Cumulative GW Wind[18,20,21]



Climate Change's Impact on Wildlife

Climate change is the largest threat to birds in North America, according to the National Audubon Society[22], and the top threat to bats in the US, according to a panel of 102 scientists[23].

- Research shows that climate change already affects the breeding, distribution, abundance, and survival rates of half the world's species[24].
- A review of more than 130 scientific studies found that one in six species worldwide could face extinction if climate change continues unabated[25].

The National Wildlife Federation has found that **wind power is a key solution to addressing the threat of climate change**, and that significantly more wind power will be needed in the future to keep warming levels safe for wildlife[26].

On average, **a wind turbine repays its carbon footprint in six months or less** and provides **carbon-free electricity** for the remainder of its 20-30 year lifespan, reducing the emissions leading to climate change.

In 2023 alone, U.S. wind energy cut over **76 million** cars' worth of carbon emissions.

Further Reducing Wind's Impact on Wildlife

The wind industry is committed to minimizing its impacts to wildlife while delivering reliable energy that coexists with local ecosystems.

Guidelines

The wind industry supports the U.S. Fish and Wildlife Service's Land-based Wind Energy Guidelines, which provide a framework for project proponents to **conduct a tiered assessment of wildlife considerations during the development of a wind project**. The guidelines were modeled on consensus recommendations from a federal advisory committee that included representatives from states, federal agencies, conservation organizations, the science community, tribes, and the wind industry.

Communication Protocols

ACP and the Association of Fish and Wildlife Agencies jointly developed a Wind Communications Protocol to **provide a framework for mutually beneficial communication between project proponents and State Fish and Wildlife Agencies**.

Best Management Practices

ACP also created the first industry-wide voluntary best management practice for wildlife to **reduce bat fatalities at wind power projects through operational adjustments**, endorsed by wind power companies operating the majority of wind farms across the U.S. as well as Bat Conservation International and other conservation organizations.

Research Investments

The industry partnered with the Renewable Energy Wildlife Institute (REWI) to create the Renewable Energy Wildlife Research Fund[26]. The Fund supports **independent research projects that produce scientifically robust solutions to enable the continued expansion of wind power**, while also increasing our understanding of wildlife protection. REWI has published a Guide to Wind Energy & Wildlife summarizing the state of the science, maintains the American Wind Wildlife Information Center database to leverage the data collected from wind power projects for research purposes, and hosts a renewable energy research hub.

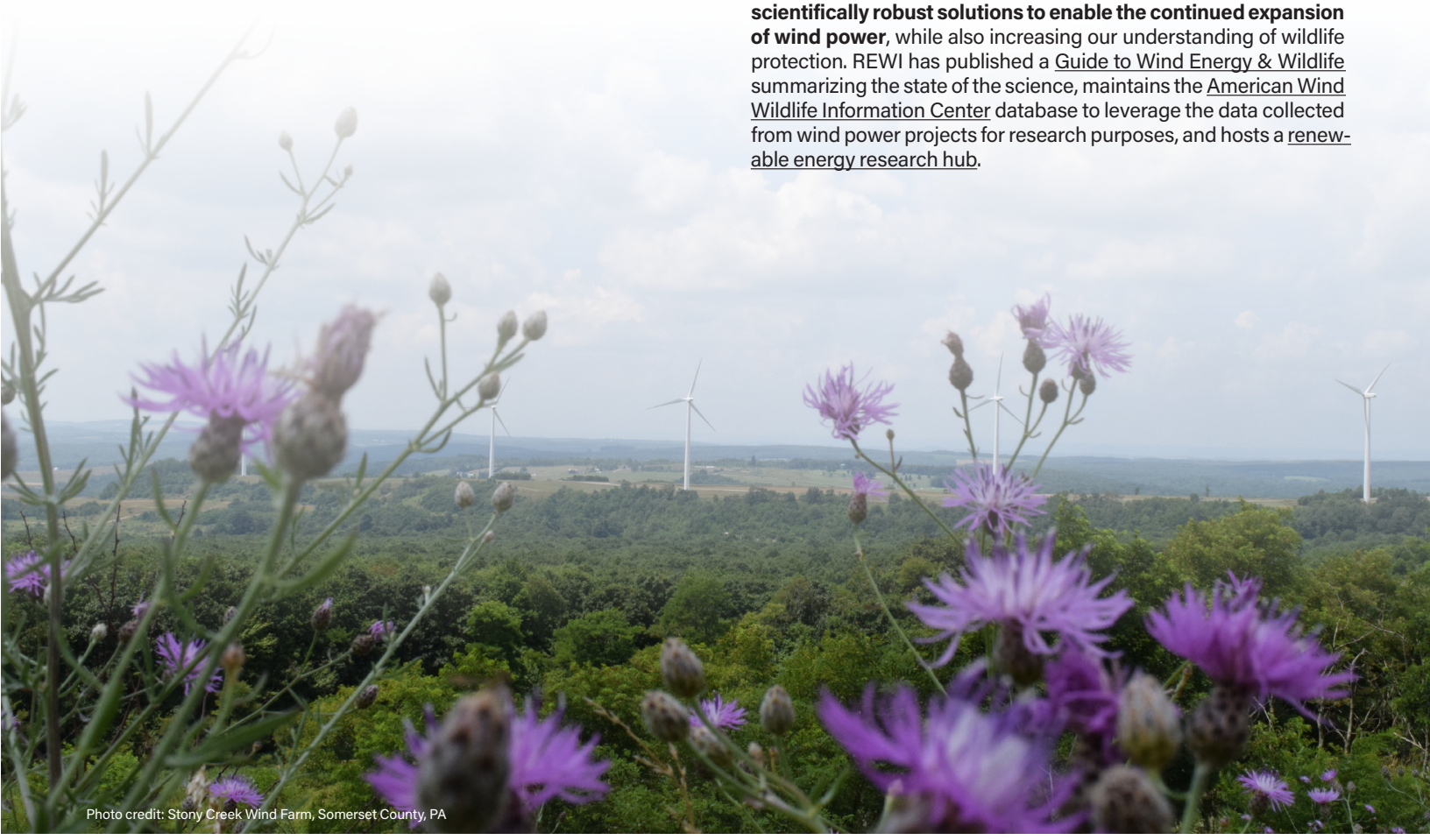


Photo credit: Stony Creek Wind Farm, Somerset County, PA

Endnotes

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