

How birds have been affected by some of the first wind farms in South Africa.

Ms Samantha Ralston-Paton¹, Mr Jon Smallie², Mr Andrew Pearson³, Dr Ricardo Ramalho⁴, Ms Vonica Perold⁵

¹Birdlife South Africa, Cape Town, South Africa, ²WildSkies Ecological Services, Port Elizabeth, South Africa, ³Arcus Consulting, Cape Town, South Africa, ⁴BioInsight, Cape Town, South Africa, ⁵Percy Fitzpatrick Institute of African Ornithology, University of Cape Town, Cape Town, South Africa

Motivation

Healthy ecosystems and renewable energy are both important in the fight against global climate change. As we increase our reliance on low-carbon power generation, we must also seek to understand and minimise negative environmental impacts associated with these technologies.

Problem Statement

Wind energy facilities can negatively affect birds in a number of ways. Birds may be injured or killed if they collide with wind turbines and associated infrastructure (e.g. powerlines). They may also be indirectly affected by habitat loss, or be displaced from the area of a wind farm. The extent and significance of these impacts are likely to vary according to the local context. but wind energy is relatively new in South Africa and as a result impact assessments have relied largely on data from countries with more established industries.

Methodology

We reviewed avifaunal monitoring reports for the first eight wind farms of the Renewable Energy Independent Power Producer Programme in order to help contextualise, improve predictions, and ultimately minimise negative effects of wind energy on birds. Post-construction monitoring data included in the review was gathered at each wind farm over a period of between one and two years, using protocols outlined in BirdLife South Africa and the Endangered Wildlife Trust's Best Practice Guidelines for Avifaunal Impact Assessment and Monitoring at Wind Farms in Southern Africa.

Results

No conclusive evidence of displacement of birds was reported for any of the sites in the study, but a more detailed analysis of the raw data (which was not available at the time of the review) would be of value. The average estimated fatality rate was 4.1 birds per turbine per year (285 turbines), and falls within the range of estimated fatality rates reported in for the United States of America and Europe. All wind farms in the review reported at least one fatality of a threatened species. Raptors accounted for 37% of carcasses found. Amur Falcon (*Falco amurensis*) and Jackal Buzzard (*Buteo rufofuscus*) made up the majority of raptor carcasses, but threatened species such as Martial Eagle (*Polemaetus bellicosus*), Verreaux's Eagle (*Aquila verreauxi*) and Black Harrier (*Circus maurus*) were also affected. Over a third of carcasses found were swifts, swallows, martins and other small songbirds.

Conclusions

The results should be considered preliminary, but have already provided useful information for site screening and impact mitigation at wind farms in South Africa. The study reinforces the value of post-construction monitoring and information sharing, particularly where wind energy is developed in new environments.