

Working with us

The Wind Impact Tool has been developed in the specific context of assessing wind farm collision impacts for any threatened Australian species.

Future projects could include:

- Building new population models for other at-risk priority species in the wind farm context,
- Applying this analysis framework to other sources of impact, such as predation mortalities or disease,
- Refining the tool's functionality to include other ecological processes and outputs.



Contact

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This work was undertaken on the lands of the Wurundjeri People



Photo by Justin Cally

Wind Impact Tool

Quantifying the population-level impacts of
wind turbine collisions on threatened birds
and bats

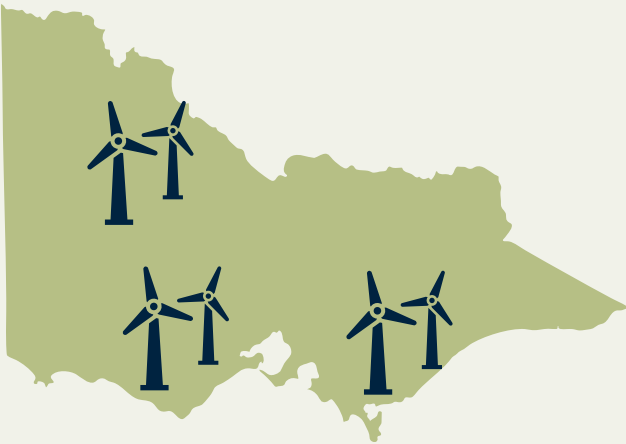
Arthur Rylah Institute for Environmental Research
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In short

- This online tool can be used to:
- Estimate the impact of collisions from a single wind farm on a threatened species population,
 - Assess the cumulative impact of multiple wind farms, including future developments, on a given population, and,
 - Explore impact scenarios and sources of uncertainty and their effect on future populations.

This tool aims to provide a transparent, quantitative evidence-based approach for environmental impact assessments and strategic planning processes



Context

While the transition to renewable energy offers clear environmental benefits, wind farms also impact biodiversity through habitat loss, disturbance, barrier effects, and collisions with turbine blades.

Many Australian birds and bats are at risk from turbine collisions. Population Viability Analyses evaluate whether a species can compensate for additional losses, based on their life history.

Who we are

Developing fit-for-purpose **Decision Support Tools** requires a team of scientists with a broad range of expertise, including:

- Population modelers** – who build complex, quantitative demographic models to forecast population trends and dynamics,
- Decision scientists and tool developers** – who work with clients to unpack the conservation problem and design bespoke, interactive tools, and,
- Threatened species experts** – who draw on their detailed knowledge of species ecology and field data to define and review models.

This work involved more than 20 ARI scientists, plus collaborations with researchers across federal and state governments, universities, consultancies, and other non-government organisations.

What we can do

The **Wind Impact Decision Support Tool** compares impact scenarios with and without wind turbine collision mortalities to assess the relative impact on a population over the next 30 to 50 years.

It has an interactive, user-friendly dashboard and a library of population viability analysis models for 30 priority bat and bird species:

BATS	
Ghost Bat	South-eastern Long-eared Bat
Grey-headed Flying-fox	Bat
Pilbara Leaf-nosed Bat	Southern Bent-wing Bat
BIRDS	
Australasian Bittern	Plains-wanderer
Australian Painted Snipe	Red Goshawk
Baudin's Cockatoo	Regent Honeyeater
Blue-winged Parrot	Sharp-tailed Sandpiper
Carnaby's Cockatoo	South-eastern Glossy Black Cockatoo
Curlew Sandpiper	South-eastern Red-tailed Black Cockatoo
Eastern Hooded Plover	Superb Parrot
Far Eastern Curlew	Swift Parrot
Forest Red-tailed Black Cockatoo	Tasmanian Wedge-tailed Eagle
Gang-gang Cockatoo	White-throated Needletail
Latham's Snipe	
Masked Owl (northern)	
Orange-bellied Parrot	
Painted Honeyeater	
Pink Cockatoo (eastern)	

What's at stake

For threatened species, even small increases in mortality rates can cause significant population-level impacts. To avoid contributing to their ongoing decline and increasing the risk of extinction, we need to estimate impacts and plan ways to avoid or mitigate potential losses.

This is critical for species that are already exposed to other threats (cumulative impacts),

especially those that are long-lived, have a low reproductive output, migratory species, and species with very small remaining populations in the wild.



Photo by Justin Cally