RANGER STU

HOW **BLACKOUTS** CAN **ILLUMINATE** BIRD BEHAVIOUR

In a recent opinion article we turned a spotlight – albeit a brief and dimmed one – on the unique opportunities presented by power outages to study the behaviour of birds and other wildlife. The article, published in the journal *Trends in Ecology and Evolution*, explores how the absence of artificial light during outages, such as those caused by load-shedding in South Africa, can provide valuable insights into the effects of artificial light at night (ALAN) on urban wildlife.

Artificial light has become a feature of urban life, brightening our cities but casting a shadow on our natural world. ALAN disrupts various aspects of animal behaviour, from movement patterns to feeding and species interactions, and its impact on wildlife is profound and far-reaching.

ABOVE Urban populations of nocturnal species, such as the Spotted Eagle-Owl, are likely to be influenced by artificial light at night.

We teamed up with an expert in ALAN, Davide Dominoni from the University of Glasgow, to highlight this idea. We propose that the scheduled blackouts in South Africa offer an opportunity to study the effects of artificial light. Unlike random power outages, South Africa's load-shedding is planned, creating predictable periods when large urban areas go dark. This regularity allows for controlled studies comparing wildlife behaviour in light and dark conditions within the same landscape.

Quantifying the impact

Using remote satellite data, we showed substantial decreases in night-time radiance in South African cities during recent years, when load-shedding has been at its worst. For instance, Johannesburg's night-time radiance (measured in nanowatts per steradian per square centimetre) dropped from an average of 15.6 in the period 2014–2018 to 12.6 in 2022–2023, when the load-shedding was a regular occurrence.

This reduction clearly indicates the impact that blackouts have on light pollution levels. For ornithologists and urban ecologists, they present an opportunity to explore how birds respond to the sudden absence of artificial light. The implications for urban-dwelling birds are particularly intriguing. Changes in movement patterns, foraging behaviour and interactions could now be studied with a new level of rigour.

We recognise the potential challenges, such as the risks associated with night-time research in high-crime areas, but we encourage the use of remote monitoring technology, including GPS tracking devices, camera traps and acoustic monitors, that can gather data safely. Several projects are under way or in the pipeline, including the study of owl movements in Cape Town with remote GPS tags and the use of bat detectors to monitor bats in Johannesburg.

A global research opportunity

The main goal of our paper is to encourage international collaboration. We invite experts in ALAN research to work with South African scientists who have an extensive knowledge of local species and ecosystems. Using the strengths of both parties, such partnerships could foster a holistic understanding of ALAN's impacts across different taxa and biomes.

As blackouts become more frequent worldwide due to increasing energy demands and climate-related events, research opportunities may arise in other regions. Thus, our article not only highlights a unique facet of South Africa's current energy crisis, but also opens the door to global insights into the interplay between artificial light and wildlife.

Although load-shedding is seen as disruptive, it may offer an unexpected silver lining. By harnessing these dark periods, we can reveal the subtle, often unseen, impacts of our illuminated world on wildlife.

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Reference

Amar A, Reynolds C, Thomson RL, Dominoni D. 2024. Investigating the impacts of artificial light via blackouts. *Trends in Ecology & Evolution*.

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