

Future of 200 migratory bird species put at risk by cyclones and droughts

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About 200 migratory bird species across the world—including swifts and eagles—are impacted by cyclones and droughts, and with these extreme weather events only set to worsen under a warming planet, the future of

these species is at risk.

A new study led by ZSL and Imperial researchers reveals the extent to which migratory birds—such as cranes, buzzards and nightjars—are exposed to cyclones and droughts. With these [extreme weather events](#) likely to intensify with climate change, scientists behind the study warn that conservation opportunities to protect these birds may be being missed.

Combining almost 30 years of global cyclone and drought data with information on 383 fully migratory [bird species](#), the team identified that 182 [species](#) were highly exposed to either cyclones or drought in either their breeding or wintering ranges, with an additional 67 species highly exposed to both types of events within a singular range.

The results of the study are [published](#) today in the journal *Global Ecology and Biogeography*.

Lead author Rhys Preston-Allen, a former student at ZSL's Institute of Zoology who is now completing his Ph.D. at in the Department of Life Sciences at Imperial, explained, "We are already seeing worrying declines in migratory species populations around the world. Birdwatchers across Europe have noted fewer songbirds returning from wintering areas each spring, year after year.

"The journeys carried out by migratory species are a massive undertaking. Even so, migration is a vital survival strategy that evolved because the benefits—such as increased food availability—outweighed the costs. Unfortunately, this balance is shifting under escalating pressures from climate change and other threats, leading to less predictable 'windows of opportunity' along their migratory routes. This trend not only endangers the bird species involved, but also threatens the entire global network of ecosystems reliant on their migrations."

Connecting ecosystems across the world

Many geese and duck species move seeds and nutrients across countries and habitats, increasing plant diversity and increasing the fertility of local soils. Meanwhile, other species such as common swifts—seen soaring and darting across the British skies in spring and summer—provide insect control and crop protection in both their Eurasian breeding grounds and wintering grounds in Africa.

However, they are also extremely exposed to drought—more than 95% of populations in both ranges have experienced extreme drought at some point in the last 30 years.

Senior author Professor Nathalie Pettorelli from ZSL's Institute of Zoology said, "We cannot ignore how important migration is for global ecosystem health. These birds travel huge distances every year to raise chicks and survive the colder months, connecting ecosystems across the world. They provide vital ecosystem benefits including pest control and pollination of plants, while sometimes acting as key food sources for [local wildlife](#)."

The study also reveals that cranes, crakes, rails and nightjars were most commonly exposed to cyclones, while hawks, eagles, vultures and kites were most exposed to droughts. The eastern whip-poor-will (a mottled North American nightjar named after its whistling song) and the gray-faced buzzard (one of the only raptors to migrate over the ocean as it travels from breeding grounds in Japan and Korea to Southeast Asia) are particularly exposed to both events. Records show 29% of the eastern whip-poor-will's wintering range has been hit by cyclones over the last 30 years, while almost all of the gray-faced buzzard's breeding and wintering range has experienced [drought](#) over the same period.

Professor Pettorelli added, "These birds are also a source of delight for

millions of [bird watchers](#) and enthusiasts around the world—and many species that we're used to seeing here in the U.K., such as swifts, pied flycatchers and house martins, are already being exposed to these extreme events."

Vital windows for action

The researchers call for joined-up conservation efforts across the wintering and breeding grounds of [migratory birds](#), along with global action to tackle climate change.

While the study identifies a significant number of species exposed to cyclones and droughts, only 10 are currently listed with cyclones as a threat under the IUCN Red List's "climate change and severe weather" category, and 18 are listed as threatened by droughts.

Dr. Henry Häkkinen, a researcher at ZSL's Institute of Zoology and co-author of the study, explained, "Protecting species begins with understanding the threats they face. Extreme weather events such as cyclones and droughts aren't always factored into extinction risk assessments—but our work shows they must be. The Red List is vital for guiding conservation, and, as our understanding of the threats wildlife face grows, our assessments of their extinction risk must adapt to ensure we don't miss vital windows for action."

Rhys added, "As it stands, key biodiversity indicators, such as the Red List, currently fail to assess the risks faced by [migratory species](#) across their entire range—so the vulnerability of many species could be severely underestimated. Our research shows there are clear and exciting opportunities to improve our estimates of extinction risk for these species. We hope this is another step towards the next generation of biodiversity assessments."

Biodiversity and climate change crises

With these threats likely to worsen with climate change, Professor Nathalie Pettorelli emphasized the need for global efforts to tackle the roots of the issue. "World leaders are currently in Dubai to discuss the action needed to tackle climate change.

"The biodiversity and climate change crises are two sides of the same coin. Not only is it imperative we significantly reduce [greenhouse gas emissions](#) to avoid climate chaos and protect people and wildlife, but it's also essential that decision-makers champion nature and healthy, functioning ecosystems as key players for climate change mitigation and adaptation.

"In the fight against [climate change](#), humans and wildlife are allies. We need action now: the road to a sustainable future where humans and wildlife thrive is clear; all we need is the political will to get us there."

More information: Rhys G. G. Preston-Allen et al, Geography, taxonomy, extinction risk and exposure of fully migratory birds to droughts and cyclones, *Global Ecology and Biogeography* (2023). [DOI: 10.1111/geb.13780](#)

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