

Flightless birds more common globally before human-driven extinctions

December 2 2020



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There would be at least four times as many flightless bird species on Earth today if it were not for human influences, finds a study led by UCL researchers. The study, published in *Science Advances*, finds that

flightlessness evolved much more frequently among birds than would be expected if you only looked at current species.

Researchers say their findings show how human-driven extinctions have biased our understanding of evolution.

Lead author Dr. Ferran Sayol (UCL Centre for Biodiversity & Environment Research and University of Gothenburg, Sweden) said: "Human impacts have substantially altered most ecosystems worldwide, and caused the extinction of hundreds of [animal species](#).

"This can distort evolutionary patterns, especially if the characteristics being studied, such as flightlessness in [birds](#), make [species](#) more vulnerable to [extinction](#). We get a biased picture of how evolution really happens."

For the study, the researchers compiled an exhaustive list of all bird species known to have gone extinct since the rise of humans. They identified 581 bird species that went extinct from the Late Pleistocene (126,000 years ago) to the present, almost all of which were likely due to human influences.

The fossils or other records show that 166 of these [extinct species](#) lacked the ability to fly. Only 60 flightless bird species survive today.

Birds that cannot fly were much more diverse than previous studies had assumed, the study shows. The findings also confirm that flightless species were also much more likely to go extinct than species that could fly.

Co-author Professor Tim Blackburn (UCL Centre for Biodiversity & Environment Research and the Institute of Zoology, ZSL) said: "Many [bird species](#) can become flightless in environments without their usual

predators, for example on islands. Flying expends a lot of energy that birds can use for other purposes if they don't need to take to the air. Unfortunately, though, this makes them easier prey if humans—and their associated rats and cats—suddenly turn up.

"Extinction has all too often been the result, and is likely to continue as flightless birds are overrepresented, compared to avian species, on global lists of animals under threat."

The researchers report that most island groups worldwide had [flightless birds](#) before humans arrived, occupying [ecological niches](#) that otherwise would have been filled by mammals, with particular hotspots in New Zealand (26 species such as the extinct moa) and Hawaii (23 species, all of which are extinct, such as the flightless goose).

Adding extinct birds to the global picture of bird diversity reveals that flightlessness evolved in birds at least four times as often as we would expect if we only looked at living birds.

Dr. Sayol said: "Our study shows that the evolution of flightlessness in birds is a widespread phenomenon. Today, most flightless species are penguins, rails or ostriches and their relatives. Now, only 12 bird families have flightless species, but before humans caused extinctions, the number was at least 40. Without those extinctions we would be sharing the planet with flightless owls, woodpeckers and ibises, but all of these have now sadly disappeared."

More information: "Anthropogenic extinctions conceal widespread evolution of flightlessness in birds" *Science Advances* (2020).
[advances.sciencemag.org/lookup...1126/sciadv.abb6095](https://advances.sciencemag.org/lookup?...1126/sciadv.abb6095)

Provided by University College London

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