

Study finds potential climate change side effect: More parasites on South American birds

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Veterinarians from the Wildlife Conservation Society and other organizations conducted a study examining the role of environmental factors on the abundance of parasites on South American birds. This great kiskadee chick is covered with parasitic fly larvae, the result of increased temperatures and precipitation levels that possibly stem from climate change. Credit: Pablo Beldomenico

A Wildlife Conservation Society (WCS) study on nesting birds in Argentina finds that increasing temperatures and rainfall—both side effects of climate change in some parts of the world—could be bad for birds of South America, but great for some of their parasites which thrive in warmer and wetter conditions.

The study, which looked at nesting forest birds in Santa Fe, Argentina,

found that increases in temperature and precipitation produce a bumper crop of parasitic fly larvae of the species *Philornis torquans*, [parasites](#) that burrow into the skin of baby birds to feed. The researchers also found that these greater parasite burdens result in higher probability of mortality and impaired growth for the parasitized chicks.

The study now appears in the online edition of the [Journal of Zoology](#)—published by the Zoological Society of London. The authors of the study are: Pablo Beldomenico of the Wildlife Conservation Society's Global Health Program; and Leandro Antoniazzi, Darío Manzoli, David Rohrmann, María José Saravia, Leonardo Silvestri of Universidad Nacional de Litoral in Argentina.

"Although ours is a short-term study looking at within-year variability, we clearly show that higher temperature and precipitation result in greater parasitic fly loads. This is a striking example of the kind of negative effects on wildlife that can arise as a result of [climate change](#)," said Dr. Pablo Beldomenico of the Wildlife Conservation Society's Global Health Program. "The greater precipitation and warmer weather predicted for some areas of South America could have a significant impact on native birds because of a large increase in parasites like these."

Carried out by field veterinarians and biologists between September and March of 2006-7 and 2007-8, the study focused on both the prevalence and abundance of parasitic larvae in the study area's bird community and the impact of parasites on the growth and survival of bird nestlings.

The researchers also examined the influence of environmental factors on parasite prevalence and abundance, noting a positive correlation between variations in climatic variables (temperature and precipitation levels) and parasite loads on nestlings. They found that increases in temperature and rainfall resulted in more parasites.

During the course of the study, researchers examined the nests of 41 bird species (715 chicks) within a 30-hectare area (74 acres) of forest, gathering data on nest height, brood size, body mass of chicks, and the number of parasites on each bird. The fly larvae—large in relation to the size of the chick—were easily identified by the bulges on the heads, bodies and wings of the baby birds. The parasites were found on half (20) of the bird species studied, with the majority found on only four passerine species: the great kiskadee, the greater thornbird, the little thornbird, and the freckle-breasted thornbird. These species were monitored every three days for data on the impact of parasites on survival and growth.

Predictably, researchers found that the more larvae the baby birds carried, the higher the chance of mortality; chicks with 10 larvae were twice as likely to die as chicks without parasites. One chick had as many as 47 larvae on its body. The [fly larvae](#) also impacted the growth rates of the baby birds; in five days, chicks that hosted 10 larvae grew 1.85 fewer grams than chicks that were parasite-free.

"Understanding how environmental factors influence the health of wildlife populations, and how this is changing in response to climate change, will help inform strategies to mitigate its deleterious effects," said Dr. Paul Calle, Director of Zoological Health for the Wildlife Conservation Society's Global Health Program.

Ongoing studies funded by Morris Animal Foundation will shed new light on the ecology of Philornis and their impact on [chicks](#) in the realm of climate change.

Provided by Wildlife Conservation Society

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