

More at-risk bird species in Brazilian forest than previously thought, study says

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Dysithamnus xanthopterus, the Rufous-backed Antwreio, is shown at Monte Verde, Brazil, on April 16, 2009. This species is not listed as threatened by the International Union for the Conservation of Nature, but according to the researchers, its habitat is severely fragmented. Credit: Courtesy Fábio Olmos/NJIT

In a study published today in the journal *PLOS ONE*, a team of researchers led by NJIT Associate Professor Gareth Russell has applied a novel method for linking large-scale habitat fragmentation to

population sustainability.

"Our goal was to assess the extinction risk for bird species in the Atlantic Forest of Brazil, a global 'hotspot' of bird diversity," said Russell. "Based on elevation restrictions and forest type requirements, as well as ongoing [tropical deforestation](#), we already knew that most species have access to far less [habitat](#) than typically assumed. But what habitat remains is also highly fragmented. Looking at area alone is not enough."

Other researchers included Stuart Pimm, Doris Duke Professor of Conservation Ecology, Duke University; Grant Harris, chief of biological sciences (Southwest region), U.S. [Fish and Wildlife Service](#); and Jessica Schnell, recently graduated, now at the Max Planck Institute for Ornithology, Germany.

More accurate habitat maps show the extent of fragmentation, but researchers still must link the particular habitat distribution of a species to its extinction risk in an objective and consistent manner.

In a recent, more technical publication in the journal *Conservation Biology*, the same authors showed that a modified version of a metric called meta-population capacity has the right characteristics to assess the impact of fragmentation. Meta-population capacity takes information about the sizes of fragments and the distances separating them and summarizes the influence of these geographic factors on long-term population persistence.

The current study applied this metric to 127 forest-dependent passerine birds inhabiting the Atlantic Forest of Brazil, an area that has lost over 90 percent of its original forest. There were two key results:

First, the species fell into two distinct groups: those where the fragmentation impact was severe, and those where it was relatively mild.

There were few species in the middle. This immediately suggests a straightforward way in which fragmentation patterns can contribute to threat assessment.

The authors also found that out of 58 species that have severely fragmented habitat, 28 are not currently considered to be threatened, according to the latest red list published by the International Union for the Conservation of Nature.

Taking these results into consideration, the authors recommend that the classification of these species be reexamined.

Russell also hopes this work will have a broader impact. "[Assessing extinction risk](#) is enormously challenging, and the dedicated teams that do this work are faced with many unknowns," he said. "The most endangered species are often the most rare, and therefore also the hardest to find and study. Our approach requires only basic knowledge about a species, but optimizes that information by linking it to the recent flood of data about the environment."

The researchers believe that their work could be applied widely, helping to identify at-risk [species](#) from many different groups and from many regions of the planet.

Provided by New Jersey Institute of Technology

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