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NEW STUDY DOUBLES THE ESTIMATE OF BIRD SPECIES IN THE WORLD

NUMBER OF AVIAN SPECIES SOARS TO 18,000

New research led by the American Museum of Natural History suggests that there are about 18,000 bird species in the world—nearly twice as many as previously thought. The work focuses on “hidden” avian diversity—birds that look similar to one another, or were thought to interbreed, but are actually different species. Recently published in the journal *PLOS ONE*, the study has serious implications for conservation practices.

“We are proposing a major change to how we count diversity,” said Joel Cracraft, an author of the study and a curator in the American Museum of Natural History’s Department of Ornithology. “This new number says that we haven’t been counting and conserving species in the ways we want.”

Birds are traditionally thought of as a well-studied group, with more than 95 percent of their global species diversity estimated to have been described. Most checklists used by bird watchers as well as by scientists say that there are roughly between 9,000 and 10,000 species of birds. But those numbers are based on what’s known as the “biological species concept,” which defines species in terms of what animals can breed together.

“It’s really an outdated point of view, and it’s a concept that is hardly used in taxonomy outside of birds,” said lead author George Barrowclough, an associate curator in the Museum’s Department of Ornithology.

For the new work, Cracraft, Barrowclough, and their colleagues at the University of Nebraska, Lincoln, and the University of Washington examined a random sample of 200 bird species through the lens of morphology—the study of the physical characteristics like plumage pattern and color, which can be used to highlight birds with separate evolutionary histories. This method turned up, on average, nearly two different species for each of the

200 birds studied. This suggests that bird biodiversity is severely underestimated, and is likely closer to 18,000 species worldwide.

The researchers also surveyed existing genetic studies of birds, which revealed that there could be upwards of 20,000 species. But because the birds in this body of work were not selected randomly – and, in fact, many were likely chosen for study because they were already thought to have interesting genetic variation – this could be an overestimate. The authors argue that future taxonomy efforts in ornithology should be based on both methods.

"It was not our intent to propose new names for each of the more than 600 new species we identified in the research sample," Cracraft said. "However, our study provides a glimpse of what a future taxonomy should encompass."

Increasing the number of species has implications for preserving biodiversity and other conservation efforts.

"We have decided societally that the target for conservation is the species," said Robert Zink, a co-author of the study and a biologist at the University of Nebraska, Lincoln. "So it follows then that we really need to be clear about what a species is, how many there are, and where they're found."

John Klicka, from the University of Washington, Seattle, also was a co-author on this study.

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PLOS ONE paper:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0166307>

AMERICAN MUSEUM OF NATURAL HISTORY (AMNH.ORG)

The American Museum of Natural History, founded in 1869, is one of the world's preeminent scientific, educational, and cultural institutions. The Museum encompasses 45 permanent exhibition halls, including the Rose Center for Earth and Space and the Hayden Planetarium, as well as galleries for temporary exhibitions. It is home to the Theodore Roosevelt Memorial, New York State's official memorial to its 33rd governor and the

nation's 26th president, and a tribute to Roosevelt's enduring legacy of conservation. The Museum's five active research divisions and three cross-disciplinary centers support approximately 200 scientists, whose work draws on a world-class permanent collection of more than 33 million specimens and artifacts, as well as specialized collections for frozen tissue and genomic and astrophysical data, and one of the largest natural history libraries in the world. Through its Richard Gilder Graduate School, it is the only American museum authorized to grant the Ph.D. degree and the Master of Arts in Teaching degree. Annual attendance has grown to approximately 5 million, and the Museum's exhibitions and Space Shows can be seen in venues on five continents. The Museum's website and collection of apps for mobile devices extend its collections, exhibitions, and educational programs to millions more beyond its walls. Visit amnh.org for more information.

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