

There may be more bird species in the tropics than we know

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White-crowned Manakin. Credit: Phillip Edwards, Macaulay Library, Cornell Lab of ornithology.

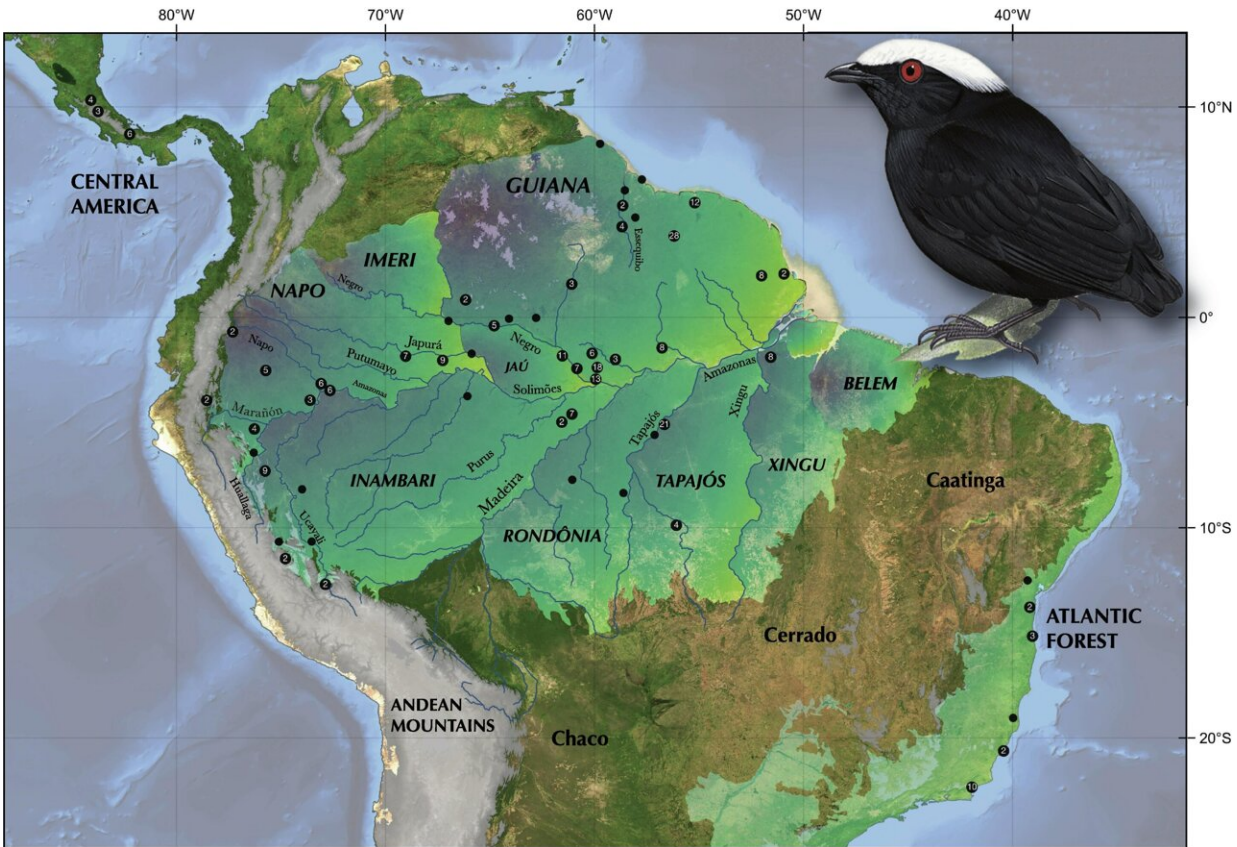
Study of a perky little bird suggests there may be far more avian species in the tropics than those identified so far. After a genetic study of the

White-crowned Manakin, scientists say it's not just one species and one of the main drivers of its diversity is the South American landscape and its history of change. These results are published in the journal *Molecular Phylogenetics and Evolution*.

"We found that the White-crowned Manakin probably originated in the highland forests of the Andes Mountains in northern Peru," explains lead author Jacob Berv. "Today, this bird is also found across the Amazon Basin, in the lowland rainforests of Brazil, Peru, and many other countries, including parts of Central America." Berv conducted this research while a Ph.D. student at the Cornell Lab of Ornithology and is currently a Life Sciences Fellow at the University of Michigan.

"This study shows that there is a lot of evolutionary history embedded in what is commonly referred to as a 'single widespread' species in Amazonia," says co-author Camila Ribas at Brazil's National Institute of Amazonian Research. "The White-crowned Manakin is an example of a phenomenon that is probably more the rule than the exception in Amazonia—diversity is vastly underestimated by the current taxonomy."

Around 2.5 million years ago, populations of this manakin species expanded out of the Andes, though many populations remain there today. Those that moved eventually became isolated in pockets of habitat defined by mountains, plains, rivers, and climate. Over the course of time, White-crowned Manakin populations evolved independently, accumulating differences in their songs and plumage patterns. Study authors suggest many of these pocket populations are now different enough from one another that they should be recognized as separate species. This is especially true if the variations in song make it unlikely that isolated populations would be able to recognize one another and breed—the biological definition of a species.



Over a few million years, ancestors of the White-crowned Manakin expanded from the Andes Mountains into a wide variety of other habitats and became isolated by landscape features. Map markers indicate the locations and number of genetic samples used in the study. Credit: Manakin illustration reproduced with permission from the Handbook of the Birds of the World.

"In order to understand [evolutionary processes](#) in Amazonia we need many more studies like this one, with dense geographical sampling," Ribas says. "For this we need to support biological collections that are able to accumulate samples through time." Study authors say underestimating the number of species in South America has important consequences for conservation, especially for endemic species threatened by ongoing loss of habitat. "We've basically just scratched the

surface," notes Berv. "If what holds true for this species is indicative of what's taking place in other poorly studied [species](#), then we have hugely underestimated the amount of biodiversity in the South American tropics."

More information: Jacob S. Berv et al, Genomic phylogeography of the White-crowned Manakin *Pseudopipra pipra* (Aves: Pipridae) illuminates a continental-scale radiation out of the Andes, *Molecular Phylogenetics and Evolution* (2021). [DOI: 10.1016/j.ympev.2021.107205](https://doi.org/10.1016/j.ympev.2021.107205)

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