

# Team defines new biodiversity metric

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The Brazilian Atlantic rainforest photographed by Ivan Prates during the CCNY-led team's research on biodiversity there.

To understand how the repeated climatic shifts over the last 120,000 years may have influenced today's patterns of genetic diversity, a team of researchers led by City College of New York biologist Dr. Ana Carnaval developed a new biodiversity metric called "phylogeographic endemism."

It quantifies the degree to which the genetic variation within species is restricted in geographical space.

Dr. Carnaval, an assistant professor of biology, and 14 other researchers from institutions in Brazil, Australia and the United States, analyzed the effects of current and past climatic variation on the [genetic diversity](#) of 25 vertebrates in the highly diverse yet much threatened Brazilian Atlantic rainforest.

"We discovered that the climatic regimes of the northern and southern portions of the Atlantic forest are strikingly different. While past climate dynamics predicted phylogeographic endemism in the northern forests, contemporary climatic heterogeneity explains endemism in the south," she said. "Studying these forest domains in isolation helped us to identify those areas holding most unique and small-ranged [genetic variation](#), guiding research and conservation."

The research findings appear in a paper entitled, "Prediction of phylogeographic endemism in an environmentally complex biome," in the latest edition of the British journal *Proceedings of the Royal Society B*. The latter is the Royal Society's flagship biological research journal, dedicated to the rapid publication and broad dissemination of high-quality research papers.

The work is one of the first broadly integrative outcomes of a multi-million dollar grant awarded by the National Science Foundation's Dimensions of Biodiversity program to Professor Carnaval and fellow CCNY scientists Dr. Mike Hickerson (biology) and Dr. Kyle McDonald (NOAA-CREST), in collaboration with the New York Botanical Garden. Their partners include several Brazilian institutions funded by the Brazilian research agency FAPESP.

**More information:** Prediction of phylogeographic endemism in an environmentally complex biome, [rsos.royalsocietypublishing.org/.../20141461.abstract](https://rsos.royalsocietypublishing.org/doi/10.1098/rsos.140461)

Provided by City College of New York

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