

New study suggests birds began diversifying long before dinosaurs went extinct

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Artist's depiction of the genesis of modern birds during the Late Cretaceous Epoch, portraying their coexistence with dinosaurs and their resilience through the Cretaceous–Paleogene mass extinction. Credit: Shaoyuan Wu

A multi-institutional, international team of evolutionary biologists,

genetics specialists and phylogenomicists has found evidence that bird species began diversifying long before the dinosaurs went extinct.

In their project, [reported](#) in *Proceedings of the National Academy of Sciences*, the group analyzed the genomes of hundreds of species of birds to create a high-resolution [evolutionary tree](#) for Neoaves.

Prior research has suggested that the asteroid that struck Earth millions of years ago not only killed off the non-bird dinosaurs, it also set Neoaves (which include 95% of all [modern birds](#)) on a path of great divergence. In this new effort, the research team found evidence that the Neoaves divergence path began long before the asteroid struck.

Little research has been done regarding the evolutionary history of Neoaves, and because of that, their family tree is incomplete. To address that oversight, the researchers obtained samples of 118 species, and as part of their study, analyzed their genomes. They looked at data from 25,460 [genetic loci](#) spread across four classes of DNA, which they used to build a family tree.

The team found Neoaves had a [common ancestor](#) that lived approximately 130 million years ago. They also found that the two main branches of Neoaves split early in their history, with one branch eventually representing land birds and the other waterbirds.

They estimated that the split occurred during the Late Cretaceous, which was, of course, long before the K-Pg boundary event—the arrival of an asteroid 66 million years ago that wiped out the dinosaurs and approximately 90% of land animals. The researchers found that diversification then occurred at a steady pace after that, similar to that of plants, fish, insects and mammals. They conclude that more research is required to better fill out the Neoaves family tree.

More information: Shaoyuan Wu et al, Genomes, fossils, and the concurrent rise of modern birds and flowering plants in the Late Cretaceous, *Proceedings of the National Academy of Sciences* (2024).
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