

DNA robbery in progress in Australia's copperback quail-thrush

June 2 2020



Male and female Copperback Quailthrush specimens in the Australian National Wildlife Collection. Credit: CSIRO

Quailthrush are a group of songbirds unique to our region. They are widespread throughout Australia and New Guinea and there are eight recognized species.

In 2015 DNA studies we carried out revealed Australia's Chestnut Quailthrush was actually two different species that look very similar. They are now known as the Chestnut Quailthrush, which occurs in south-eastern Australia, and the Copperback Quailthrush, which is widespread from Shark Bay in Western Australia to just west of the Flinders Ranges in South Australia.

Knowing that one [bird species](#) is in fact two is fundamental to how we manage conservation in a changing environment.

Now, using new technologies to extract DNA from museum and collection specimens, we have looked closer at the genetic history of the newly recognized Copperback Quailthrush and discovered a genetic robbery in progress.

In the past this species became separated into two populations, one eastern and one western, which developed genetic differences over time. Then birds from the western population began to move east, invading the range of the eastern population. As they did so, the mitochondrial DNA (mtDNA) of the eastern population began to move in the opposite direction, replacing western mtDNA, a genetic robbery in progress.

This can be explained by population genetics theory. One idea, which we think the evidence favors, is that the cause is a neutral process arising from the wave front of the western bird population fragmenting into smaller subpopulations as it moves east. Another idea is that there is a survival advantage for birds that have the eastern mtDNA.

More information: Kerensa McElroy et al. Robbery in progress:

Historical museum collections bring to light a mitochondrial capture within a bird species widespread across southern Australia, the Copperback Quail-thrush *Cinclosoma clarum*, *Ecology and Evolution* (2020). [DOI: 10.1002/ece3.6403](https://doi.org/10.1002/ece3.6403)

Provided by CSIRO

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