

Genetic barcoding determines which tree tool-making crows prefer

July 13 2021, by Bob Yirka



A wild New Caledonian crow holding a hooked stick tool. Credit: James J. H. St Clair.

A team of researchers from the U.K., Australia and France has used genetic barcoding to determine the tree favored by groups of New

Caledonian crows to make their tools. They published their results in *Proceedings of the National Academy of Sciences*.

Prior research has shown that New Caledonian crows are clever birds. One experiment showed that they are among the few species able to correctly process imagery they see in a mirror. They are also well-known users of tools—the only known non-primate vertebrates to do so. The tools are made from twigs they cut off of [trees](#). The birds remove the leaves and then bend the twigs such that the end forms a hook. The hook is then used to poke under [tree bark](#) to retrieve beetle larvae. In this new effort, the researchers wondered which types of trees the birds use for fashioning their tools. Prior efforts to identify the tree types had failed due to the difficulty of capturing the birds in the act of making their tools. In this new effort, the researchers turned to genetic barcoding to solve the problem.

Genetic barcoding is a plant and animal identification technique that involves studying a small section of a strand of DNA. To use this approach, the researchers ventured to a small village near the coast in New Caledonia and selected three sites as study areas. The year-long study involved watching and waiting for one of the birds to create a [tool](#) and then to retrieve the tool after the crow dropped it after use. The three sites were chosen because of their [different environments](#)—one was in a mixed dry forest, another near farmland and the third from a residential area very close to the sea.



A wild New Caledonian crow using a hooked stick tool to probe behind bark.
Credit: James J. H. St Clair.

The researchers found that the birds from all three areas preferred to use twigs from the *Mimusops elengi* (Spanish Cherry) tree. The findings will help to better understand the behavior of the unique [birds](#), and also show that barcoding is a viable way to learn more about [tool use](#) by animals in general.

More information: Matthew P. Steele et al, DNA barcoding identifies cryptic animal tool materials, *Proceedings of the National Academy of Sciences* (2021). [DOI: 10.1073/pnas.2020699118](https://doi.org/10.1073/pnas.2020699118)

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Citation: Genetic barcoding determines which tree tool-making crows prefer (2021, July 13)
retrieved 26 June 2024 from <https://phys.org/news/2021-07-genetic-barcoding-tree-tool-making-crows.html>

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