

Was Betty the crow a genius – or a robot?



- 1 Fourteen years ago, a bird named Betty stunned scientists with her humanlike ability to invent and use tools. Captured from the wild and shown a tiny basket of meat trapped in a plastic tube, the New Caledonian crow bent a straight piece of wire into a hook and retrieved the food. Researchers hailed the observation as evidence that these crows could invent new tools spontaneously – a sign of complex, abstract thought that became regarded as one of the best demonstrations of this ability in an animal other than a human. But a new study casts doubt on at least some of Betty’s supposed intuition.
- 2 Scientists have long agreed that New Caledonian crows (*Corvus moneduloides*), which are found only on the South Pacific island of the same name, are accomplished toolmakers. At the time of Betty’s feat, researchers knew that in the wild these crows could shape either stiff or flexible twigs into tools with a tiny, barb-like hook at one end, which they used to lever maggots from rotting logs. They also make rake-like tools from the leaves of the screw pine (*Pandanus*) tree.
- 3 23 Betty appeared to take things to the next level. Not only did she fashion a hook from a material she’d never previously encountered – a behavior not observed in the wild – she seemed to know she needed this specific shape to solve her particular puzzle.
- 4 To figure out how much of an advance Betty had really made, Christian Rutz, a behavioral ecologist at the University of St. Andrews in the United Kingdom, and colleagues spent 4 years studying 18 wild-caught crows they kept temporarily in aviaries on New Caledonia. Under controlled conditions, the scientists videoed the animals as they made 85 of their twig tools. Most of the crows followed the same method. Using

their beaks, they broke off small branches from a shrub, one end of which they then fashioned into tiny hooks by snipping and biting the joint where the twig had attached to the shrub. And then, unexpectedly, 10 of the birds did one more thing: They bent the shaft of their tool into a curve by sticking it in a hole or trapping it with a foot, while pulling the other end into an arc, the researchers report today in *Royal Society Open Science*.

5 “It was exactly what Betty had done, and a complete surprise,” says Rutz, who had been a postdoc in the University of Oxford in the United Kingdom lab that studied Betty, although he was not involved in research on the bird. “We now think that they bend their tools to get them ready to use; bending is thus part of their natural repertoire.” A follow-up experiment tested eight crows to see whether they preferred to use a straight or slightly curved tool to search holes for food. All the birds chose the curved tools, and used the arced end as the probe. The scientists are now investigating why the birds prefer this shape.

6 So what does all of this mean for Betty? Now that scientists know wild crows bend twigs, it may be that Betty didn’t use insight after all, says Corina Logan, a behavioral ecologist at the University of Cambridge in the United Kingdom who was not involved with the study. (The original study didn’t claim that she did, although others asserted this.) In fact, “she might have been a little robot,” Rutz says, “just following a natural, behavioral routine.” However, there still remains the significant finding that Betty solved a novel problem using an innovative solution with a novel material.

7 In the end, Betty may be even more like us than scientists originally thought, says Alex Kacelnik, a behavioral ecologist at Oxford and a co-author of the original study. She was simply doing what comes naturally to New Caledonian crows, he says: using her “genetic ability, experience, and creative thinking” to solve a problem. Just as humans do.

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