

TRILOBITES

Bruce Is a Parrot With a Broken Beak. So He Invented a Tool.

The bird is a kea from New Zealand, and his fabrication of an instrument to help him preen his feathers appears to be unique, researchers say.



By Nicholas Bakalar

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Many animals are known to use tools, but a bird named Bruce may be one of the most ingenious nonhuman tool inventors of all: He is a disabled parrot who has designed and uses his own prosthetic beak.

Bruce is a kea, a species of parrot found only in New Zealand. He is about 9 years old, and when wildlife researchers found him as a baby, he was missing his upper beak, probably because it had been caught in a trap made for rats and other invasive mammals the country was trying to eliminate. This is a severe disability, as kea use their dramatically long and curved upper beaks for preening their feathers to get rid of parasites and to remove dirt and grime.

But Bruce found a solution: He has taught himself to pick up pebbles of just the right size, hold them between his tongue and his lower beak, and comb through his plumage with the tip of the stone. Other animals use tools, but Bruce's invention of his own prosthetic is unique.

Researchers published their findings Friday in the journal *Scientific Reports*. Studies of animal behavior are tricky — the researchers have to make careful, objective observations and always be wary of bias caused by anthropomorphizing, or erroneously attributing human characteristics to animals.

“The main criticism we received before publication was, ‘Well, this activity with the pebbles may have been just accidental — you saw him when coincidentally he had a pebble in his mouth,’” said Amalia P.M. Bastos, an animal cognition researcher at the University of Auckland and the study's lead author. “But no. This was repeated many times. He drops the pebble, he goes and picks it up. He wants that pebble. If he's not preening, he doesn't pick up a pebble for anything else.”

Dorothy M. Fragaszy, an emerita professor of psychology at the University of Georgia who has published widely on animal behavior but was unacquainted with Bruce's exploits, praised the study as a model of how to study tool use in animals.

“The careful analyses of the behavior in this report allow strong conclusions that the behavior is flexible, deliberate and an independent discovery by this individual,” she said.

The researchers set themselves careful rules.

First, they established that Bruce was not randomly playing with pebbles: When he picked up a pebble, he used it for preening nine times out of 10. When he dropped a pebble, 95 percent of the time he either retrieved it or picked up another one and then continued preening. He consistently picked up pebbles of the same size, rather than sampling pebbles at random.



Preening is essential to kea and other parrots that need to keep their feathers clean and parasite-free. Patrick Wood, University of Auckland

None of the other kea in his environment used pebbles for preening, and when other birds did manipulate stones, they picked pebbles of random sizes. Bruce's intentions were clear.

"Bruce didn't see anyone do this," Ms. Bastos said. "He just came up with it by himself, which is pretty cool. We were lucky enough to observe this. We can learn a lot if we pay a little more attention to what animals are doing, both in the wild and in captivity."

Kea in general are quite intelligent, but Ms. Bastos said that Bruce was clearly brighter than other birds, very easily trained in fairly complex tasks in addition to developing his own ideas. Ms. Bastos said she was sometimes asked why she didn't provide Bruce with a prosthetic beak.

"He doesn't need one," she always responds. "He's fine with his own."