

# Cockatoos keep their tools safe

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After a brief learning phase, they keep their tools safe nearby without dropping them while feeding until the last of five difficult-to-obtain food rewards has been retrieved. In order to succeed, they are able to adapt their behavioural routines in a way that allows for feeding and holding the [tool](#) both at the same time. This not only highlights the learning abilities of these [animals](#) but also suggests the ability to plan their body movements. The study was published in the scientific journal *Animal Behaviour*. Any craftsman knows that it is much easier to always keep a pair of pliers or a hammer safe at hand inside a belt instead of having to retrieve it every time it is needed. Having to look for tools, to buy or to manufacture them usually involves a much larger effort than keeping them safe to reuse them at any time.

## **Cockatoos can learn to use and make tools**

Only a few animals, including some primates and New Caledonian crows, are able to use tools. Amongst other things, they employ tools to get access to out-of-reach resources. Even fewer [animal species](#) are known to be able to manufacture their own tools. While the ability to use and/or make tools is often an inborn trait, the Goffin's [cockatoo](#) can invent them largely through flexibility. For these animals, it can be just as efficient to keep a tool safe instead of looking for or making a new one every single time. Researchers at the University of Veterinary Medicine Vienna and the University of Vienna were able to show that these Indonesian parrots can solve this mental and motoric challenge.

"Tool use is not a species-wide trait in the Goffin's cockatoos and it is not common in the wild. Nonetheless, confronted with the right setup, many of them start using sticks or other tools after a short acquisition phase in order to obtain an out-of-reach food reward," explains Alice Auersperg from the Messerli Institute of Vetmeduni Vienna. "We are now testing to what extent these skilled problem-solvers can learn that a tool can be recycled to minimize work effort."

## **Feeding without dropping the tool? No problem for a cockatoo**

During testing, the cockatoos were allowed to use a single stick as a tool to retrieve a nut from several low-level or highly elevated food boxes. As an additional difficulty, the nuts were encased inside small pill capsules in half of the cases. The birds not only had to show that they were able to use their tool, they also had to consider the possibility of recycling their tool to retrieve the next reward and how to keep the tool safe on the perch while handling the nut. The results showed that birds more often kept their tools safe without dropping them once the first food appeared when the reward was placed in the elevated feeding position.

Nevertheless, even on a low platform the cockatoos kept their sticks safe after a few tool losses. Interestingly, the birds used different tool-safekeeping modes on the two platforms. When safekeeping tools while feeding on the low platform, they simply held the tool in one of their claws while picking up the food reward with their beak. On the high platform, they arguably used a safer mode of keeping their tool from dropping: they partially inserted their tools into a previous foraging hole while additionally holding it with one foot. "The animals could flexibly adjust their behaviour depending on the situation: putting more effort into avoiding tool losses on the high platform had a higher payoff as retrieving lost tools from the floor caused a higher work effort," says Auersperg.

## Individual learning and adjusting behavioural routines

The patterns that the animals show to avoid tool losses are similar to those of another bird in which tool use is an inborn trait, the New Caledonian crow. In the cockatoos, however, behavioural predispositions do not seem to play a major role and the acquisition of the behaviour seems to be through individual innovations. This is also shown by the fact that different individual birds used different techniques to keep their tools safe. While some birds predominately held it in their claws, others would press it against the apparatus and yet another would temporarily deposit its tool while foraging. To employ the box, the birds had to additionally adjust their regular tool use behaviour. Their original behavioural routines were impeded by the additional object and the space in front of the foraging box was restricted by elevation. The birds learned how to approach the next food box while carrying the tool and how to pick up the food without losing the tool. Once the routine was perfected, it was repeated up from the first to the last [food](#) box. "The cockatoos proved in previous studies that they are capable of adjusting their behaviour to complex setups. In this study, we could show that even the prospect of feeding did not keep them from safeguarding their tools and from keeping them at hand for further foraging events."

**More information:** A.M.I. Auersperg et al. Safekeeping of tools in Goffin's cockatoos, *Cacatua goffiniana*, *Animal Behaviour* (2017). [DOI: 10.1016/j.anbehav.2017.04.010](https://doi.org/10.1016/j.anbehav.2017.04.010)

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