How birds spot the cuckoo in the nest

July 15 2008

It's not always easy spotting the cuckoo in the nest. But if you don't, you pay a high price raising someone else's chick. How hosts distinguish impostor eggs from their own has long puzzled scientists.

The problem remained largely unsolved while looking at it through our own eyes. It was only when people started thinking from the birds' perspective that they began to understand how hosts recognise a cuckoo egg in the nest.

Marcel Honza from the Academy of Sciences of the Czech Republic explains that birds see UV wavelengths that are well outside our own visual range. Knowing that many bird eggs reflect UV wavelengths, Honza wondered whether altering the reflected UV spectrum of an egg would affect a bird's ability to recognise it as foreign and reject it. Would a blackcap recognise and evict an impostor egg if the reflected UV spectrum were different from the wavelengths reflected by the bird's own clutch?

Teaming up with Lenka Polaèiková, Honza headed into a near-by forest to test blackcap responses to impostor eggs and publish their findings on July 18th in *The Journal of Experimental Biology* at jeb.biologists.org .

But instead of testing the birds' reactions to real cuckoo eggs, the team found abandoned blackcap eggs, introducing them as impostors to successful blackcap clutches. Having identified nests with well-established clutches, the team coated some impostor eggs in UV blocker, to alter their UV appearance, and others in Vaseline, which didn't alter

the egg's UV reflectivity, before planting the impostors in their new nest. Then the team kept their fingers crossed, hoping that the nests weren't washed out by a heavy downpour or raided by a hungry predator, as they waited 5 days to see if the parents rejected the interlopers.

Of the 16 eggs coated in Vaseline, 11 of the impostors were accepted by the nesting parents, while five were rejected; most of the interloper blackcap eggs were visually indistinguishable from the nesting parents' own eggs and were accepted as belonging to the brood. However, it was a different matter for the birds sitting on UV-block-coated impostors. Seventeen brooding parents evicted the strange looking egg, pecking at the shell until they had made a large enough hole to stick their beak in and carry it away. Only 11 blackcaps accepted the interloper with its altered appearance.

The UV appearance of the eggs was very important in enabling the blackcaps to recognise the new eggs as impostors. The blackcaps rejected far more eggs when Polaèiková and Honza covered them in UV block. By altering the eggs' UV reflectivity the team had made them stand out from the crowd.

Honza admits that he was surprised that the UV reflectivity had such a significant effect on the blackcap's ability to reject an impostor. Having found that an interloper's UV appearance is key to its acceptance in a clutch, Honza is keen to see whether cuckoos try to outsmart their victims by choosing clutches that closely match their own eggs' UV reflectivity.

Source: The Company of Biologists

https://phys.org/news/2008-07-birds-cuckoo.html