

Cuckoo tricks to beat the neighborhood watch

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Common cuckoo. Image: Wikipedia.

To minimise the chance of being recognised and thus attacked by the birds they are trying to parasitize, female cuckoos have evolved different guises. The new research, funded by the Natural Environment Research Council, was published today in the journal *Science*.

The common cuckoo (*Cuculus canorus*) lays its eggs in the nests of other birds. On hatching, the young cuckoo ejects the host's eggs and chicks from the nest, so the hosts end up raising a cuckoo chick rather than a [brood](#) of their own. To fight back, [reed warblers](#) (a common host across Europe) have a first line of defence: they attack, or 'mob', the female cuckoo, which reduces the chance that their nest is parasitized.

Some female common cuckoos are grey and hawk-like, and previous

research has shown that their resemblance to [hawks](#) reduces host bird attack. However, other females are bright rufous (brownish-red). The presence of alternate colour morphs in the same species is rare in birds, but frequent among the females of parasitic cuckoo species. The new research shows that this is another cuckoo trick: cuckoos combat reed warbler mobbing by coming in different guises.

Cuckoos are secretive. To widen their source of information about local cuckoo activity, reed warblers eavesdrop on the mobbing behaviour of their neighbours. In the study, the researchers manipulated local frequencies of the more common grey colour cuckoo and the less common (in the United Kingdom) rufous colour cuckoo by placing models of the birds at neighbouring nests. They then recorded how the experience of watching neighbours mob changed [reed warbler](#) responses back at their own nest.

They found that reed warblers increased their mobbing, but only to the cuckoo morph that their [neighbours](#) had mobbed. Therefore, as one cuckoo morph increases in frequency, local host populations will become alerted specifically to that morph. This means the alternate morph will be more likely to slip past host defences and lay undetected. This is the first time that 'social learning' has been documented in the evolution of mimicry as well as the evolution of different observable characteristics - such as colour - in the same species (called polymorphism).

Dr Rose Thorogood, of the University of Cambridge and co-author on the paper, said: "When mimetic disguises become less effective, evolving a polymorphism can be a successful trick. Our research shows that individuals assess disguises not only from personal experience, but also by observing others. However, because their learning is so specific, this social learning then selects for alternative cuckoo disguises and the arms race continues."

Professor Nick Davies, of the University of Cambridge and co-author on the paper, added: "It's well known that cuckoos have evolved various egg types which mimic those of their hosts in order to combat rejection. This research shows that cuckoos have also evolved alternate female morphs to sneak through the hosts' defences. This explains why many species which use mimicry, such as the [cuckoo](#), evolve different guises."

More information: 'Cuckoos combat socially transmitted defences of reed warbler hosts with a plumage polymorphism,' *Science*, 2012.

Provided by University of Cambridge

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