Birds use social learning to enhance nest defense

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Reed warblers live with the threat that a cuckoo bird will infiltrate their nest, remove one of their eggs, and replace it with the cuckoo's own. This 'parasitism' enables the cuckoo to have its young raised by unsuspecting reed warblers.

However, scientists at the University of Cambridge have discovered that reed warblers will attack or 'mob' cuckoos on their territory and so prevent the parasites from laying eggs in their nests. However, this behaviour can backfire because it may cause injury and expose warblers to predators.

New experiments show that inexperienced warblers can learn to defend themselves against cuckoos by observing the mobbing behaviour of other members of their species. This social learning was specific to cuckoos but not to harmless control birds, such as parrots, suggesting that the warblers are primed to learn defensive behaviour but only in response to true threats. These findings were reported today (05 June) in the journal *Science*.

Dr Justin Welbergen explained the significance of their research: "Our previous work showed that reed warblers distinguish cuckoos from other nest enemies and adjust their defences according to local parasitism risk. Our current work demonstrates that reed warblers can use social information to fine-tune their defences to the nature of the local threat."

It had previously been established that cuckoos (the parasites) and reed

warblers (the hosts) are engaged in a co-evolutionary arms race - once one had evolved an advantage (such as the reed warblers' ability to eject the cuckoos' eggs), the other would evolve a counter tactic (as when the cuckoo evolved eggs similar to the warblers' eggs). However, although genetic adaptations were to be expected, it was a surprise to the scientists that social learning provided another mechanism by which the warbler rapidly increased their nest defence.

Dr Welbergen continued: "Studies of co-evolutionary arms races between brood parasites and hosts have emphasised genetic adaptations and counter adaptations; however, our field experiments show that transmission through social learning provides a mechanism by which hosts can adjust their nest defence and so respond rapidly to changes in parasitism."

More information: The paper, "Social Transmission of a Host Defense Against Cuckoo Parasitism", by Nicholas B. Davies* and Justin A. Welbergen* (*authors contributed equally to the work), will be published in the 05 June edition of the journal *Science*.

Source: University of Cambridge (news : web)