

Animal Behavior and Intraspecific Brood Parasitism

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Perspective

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ABOUT THE STUDY

Common cuckoos in Europe and brown-headed cowbirds in North America lay their eggs in the nests of other species and leave them to the care of their respective host. A Cuckoo female searches for an unguarded nest of another species and then replaces an egg in it with one of her own. The mother then abandons her egg leaving it to be raised by the nest's natural owners. Clearly, lacking a distinct ability to identify and remove foreign eggs from among its clutch appears maladaptive. As an example of an evolutionary arms race, cuckoos have adapted their kleptoparasitic strategies to the host behavior. Upon return, hosts may reject the foreign egg if it is a poor match, added at the wrong time of day or the cuckoo's presence has been witnessed. Different cuckoo strains exhibit distinct preferences for a specific host species which provide a close visual match to their own eggs. Likewise, hosts have adapted to selection from cuckoos where species suffering high amounts of parasitism are much better at identifying and removing cuckoo eggs than those who suffer little. When parents remove an egg from their nest they do risk removing one of their own or breaking some of the others in the process. Whether taking such risks will be worth it depends on the overall rate of parasitism and the ability to discriminate foreign from own eggs.

The lack of co-evolution in brood parasitism of cowbirds compared to that of cuckoos is puzzling. Do these two cases represent different stages of the arms race? Are cowbirds in the early parts of the game while cuckoos have had a chance to adapt for a much longer time? Has the recent change in North America landscape from forest to agricultural lands brought cowbirds into contact with a much greater number of new hosts? Alternatively, both species may be at

an evolutionary equilibrium with stabilizing selection. Differing degrees of rejection may well depend on their respective costs of rejecting vs. accepting any given egg.

A basic problem for all brood parasites resides in the fact that young birds raised by parents of another species will be unsuitable as tutors for its own songs. Cowbirds, which may parasitize the nests of over 200 different species are nevertheless able to learn the right species specific song. Brood Parasitism conventionally involves the laying of one's own eggs into the nest of another species, most commonly seen in species such as the cuckoo and brown headed cowbird. Most often fatal to the offspring of the host and detrimental to the host parents that must satisfy the begging behavior of chicks far greater in size than often themselves. Intraspecific brood parasitism however is a common occurrence in ducks and allies, though not unheard of in other families of birds. Several hypotheses have been put forth as to why IBP occurs, including limitation of suitable nesting sites or intrinsic individual limitations such as lack of experience rearing offspring or poor physical condition. Still more hypothesize that the parasites maintain their own clutch but lay eggs in host nests because they have lost eggs of their own, to spread the risk of predation, or that her physical health is well enough that she can increase her fitness by laying more eggs. And still more hypothesize that if IBP is linked to kin selection; since colony formation and female philopatry is common in ducks then the host female could gain indirect fitness through the rearing of kin offspring. It is argued, however, that the loss in direct fitness of the host is not compensated enough by the increase in indirect fitness of the host.