RESEARCH NEWS

Complex domestic conflicts in a bird family

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Birds exhibit, more than any other group of higher animals, such noble virtues as monogamy, pair-bonding for life, male parental care and cooperative efforts by both parents in nest building and care of the chicks. Not surprisingly, these virtues of the birds are often extolled by poets and philosophers, especially while admonishing fellow humans. However, as scientists probe deeper into the secrets of bird family life, many unexpected domestic conflicts are coming to the fore.

A particularly devastating revelation has come from the recent use of DNA technology in determining the parentage of chicks being reared in nests of monogamously paired parents, much as forensic laboratories have begun to do in cases of disputed parentage among humans. Many species that were fondly thought to be monogamous have turned out to be rather promiscuous. Females from apparently monogamous pairs often mate, on the sly as it were, with males from neighbouring monogamous pairs and lay at least some of the eggs that are not sired by the partners who help them in parental duties.

A novel and more complicated domestic conflict has recently been documented by Norwegian scientists at the University of Oslo. Slagsvold et al. conducted a four-year study of the breeding biology of the blue tit, a small passerine bird, not unlike the common house sparrow. These birds are monogamous and both parents share parental duties. The female lays about 10 eggs in a span of about 10 days and incubates them. While the male does not help with the incubation, he feeds the female while she does so and, later, when the chicks hatch, both parents feed the chicks. A matter of dispute concerns when the female should start incubating. If she starts too early (say, as soon as she lays her first egg), the chicks will all hatch on different days and the parents will have a very asynchronous batch of brood to take care of. If she starts late (say, after she has already laid all her eggs), then the chicks will all hatch at about the same time and the parents will have a very synchronous batch of brood.

It turns out that synchronous and asynchronous broods have very different consequences for the male and female parents. In one experiment, broods were artificially manipulated to produce especially synchronous or asynchronous broods. Male parents had a higher chance of surviving to breed again the following year when they were given asynchronous (47%; n = 46) brood than when they were given synchronous brood (25%; n = 36). Conversely, female parents had a higher chance of surviving to breed the following year when they were given synchronous brood (43%; n = 43) rather than asynchronous brood (29%; n = 51). As a precaution, it was confirmed that male and female parents had similar survival rates when synchronous and asynchronous broods were combined in the analysis (males = 35%; n = 82, and females = 37%; n = 94). Similarly, when data on male and female parents were combined in the analysis, birds attending synchronous and asynchronous brood have similar survival probabilities (synchronous brood = 37%; n = 79, and...
asynchronous brood = 36%; n = 97). Thus, the mother is better off raising a
synchronous batch of brood while the father is better off with an asynchronous
batch of brood.

The most likely reasons for these male­
female differences are the following. The
authors of the same study have data
suggesting that male blue tits, while par­
ticipating in parental care, are apparently
not as conscientious as the females. They
take care of the larger and stronger
chicks, and when such chicks are successfully
fledged, they stop working and pay more
attention to territorial defence and moulting
and enhance their future survival prob­
abilities. The burden of difficult and
prolonged care of small and weak chicks
falls on the mother. When the chicks are
all of more or less
the same age, the
mother thus has more
help from the
father, who in tum has to work harder
as all the chicks satisfy his criteria of
being big and strong. When the brood
is asynchronous, however, it is the female that
appears to win in this domestic quarrel
about whether the brood should hatch
synchronously or asynchronously. Only
the female incubates and it is thus only
she who decides when to start incubating
and, therefore, how synchronous the brood
should be.

Until not too long ago, unexpected
conflicts among animals were buried
under the carpet as being pathological.
The evolutionary approach to animal
behaviour permits us to face such unex­
pected conflicts head-on and even to
predict when conflicts may occur and
how they may be resolved. As a bonus,
our understanding of animal behaviour
grows in richness. But if these revelations
of domestic conflict in birds appear to make them unsuitable as role models of
good behaviour, we must reflect on the
fact that they are still able to maintain
an external appearance of faithfully
bonded monogamous pairs in spite of
such simmering discontent!

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