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BRAINS VS BRAWN – STRATEGIES OF A CRIMINAL

Conflict is common when animals compete for scarce resources such as food or mates, and it can be costly, sometimes resulting in injury or even death. One way to avoid conflicts over food is to scare away competitors through the use of false-alarm calls, thus allowing the user to maintain resources through deception rather than aggression. If this strategy works, the competitor flees for cover, abandoning its prey. A recent study by Fitztitute post-doctoral fellow Dr Tom Flower, published in the journal *Animal Behaviour*, was the first to investigate what benefit animals gain from making false-alarm calls. Tom studied the Fork-tailed Drongo *Dicrurus adsimilis*, a bird renowned for its aggressive behaviour, harassing raptors and stealing food from other birds.

Like sophisticated criminals, the Fork-tailed Drongos of the southern Kalahari employ brains as well as brawn, using false-alarm calls, including the mimicked alarms of other species, to scare birds and steal their food. Tom recorded when they used false alarms, aggressive mugging or both of these strategies to steal food from more than 25 different bird species, including Sociable Weavers *Philetairus socius* and Southern Pied Babblers *Turdoides bicolor*, and even a mammal, the meerkat. Drongos gave false alarms most often when trying to steal small, low-value food items from species larger than themselves, which were better at defending their resources. They could try to steal food by force after false alarms failed, but rarely did so, even though such muggings were no less successful than when a false alarm was not made.

False alarms therefore appear to be of particular benefit when the costs of mugging are likely to result in low payoffs and they could even increase opportunities for food theft when mugging is unprofitable. Although false alarms were not more likely to succeed than mugging attempts, when drongos did try to steal food in the wake of failed false alarms, the success of these strategies was combined. Consequently, the overall success of food theft was higher when drongos made false alarms.

Tom's study showed that false-alarm calls both reduce costs and increase success in competition. More generally, animals have evolved a number of strategies to reduce costly conflict for resources, for example, by using threat displays to assess rivals and avoid unnecessary fights. False-alarm calls appear to function similarly in food theft and may also do so in other agonistic social contexts. Several other bird species, as well as monkeys and apes, are known to cry wolf by producing false alarms. It has even been suggested that this complex deceptive behaviour may indicate that animals understand the mental state of others. In humans this is referred to as theory of mind, a cognitive ability that only fully develops in children at the age of three.

One puzzle remains: given that making false alarms increases overall success, why don't drongos make them in all food theft attempts? A possible explanation is that, just as in Aesop's fable 'The Shepherd's Boy and the Wolf', when false alarms are made too frequently they cease to work. This suggests that drongos may strategically limit the use of their false alarms to those occasions when they are of most benefit. Tom is continuing his investigation of the drongo's strategic use of false alarms, in particular to discover what benefits drongos derive from employing vocal mimicry to vary their false-alarm calls.