



puppet masters of the Kalahari

TOM FLOWER

Many animals benefit by associating with other species. This behaviour is well developed in bird parties, where individuals from different species respond to one another's alarm calls to gain warning of approaching predators. Some species even act as specialised sentries, perching as lookouts and producing sentinel calls that flock members use to increase the proportion of time they can spend foraging. However, it is unclear whether these flocking species are trying to talk to one another or are simply eavesdropping on other species' conversations. Recent work at the Fitztute by Honours student Bruce Baigrie and his

Friends or enemies? Fork-tailed Drongos warn other birds of impending danger, but also use false alarms to steal prey.

supervisor Dr Tom Flower, published in the journal *Proceedings of the Royal Society B*, went some way to answering this question.

Bruce and Tom studied the behaviour of Fork-tailed Drongos *Dicrurus adsimilis*, which commonly follow flocks of foraging birds in the Kalahari Desert. They often utter alarm calls at predators and it has been suggested that they perform the role of sentinels. However, such sentinel calling would be puzzling because drongos have a well-deserved reputation as thieves, and often use aggression and false alarm calls to scare flock members into dropping their food. Bruce and Tom therefore looked more closely at why drongos might benefit by helping the species they pillage, and whether they use the apparently benevolent sentinel calls for a more devious purpose.

Each morning, Bruce and Tom tracked foraging flocks of Sociable Weavers *Philetairus socius* as they left their huge colonial nest to forage, and recorded their interactions with drongos, the weavers' favourite partner. Sure enough, drongos made a special sentinel call only when with the weavers, and the latter consequently spent less time looking for predators and more time foraging when with drongos. The weavers did the same thing in response to recordings of sentinel calls played back from a speaker, showing that it was the sentinel calls and not just the presence of a drongo that caused the response.

Furthermore, drongos made more sentinel calls when they saw weavers nearby and sentinel call playbacks attracted weavers, suggesting that the calls also help drongos and weavers to form their foraging associations. Finally, drongos sentinel-called most often immediately after they had used a false alarm call to scare weavers into cover and steal their food. Amazingly, despite the drongos' previous food pilfering, these sentinel calls sounded the 'all clear' and reduced the time it took weavers to come out of cover and resume foraging.

Drongos and weavers therefore appear to be engaged in a fascinating relationship that balances conflict and cooperation. On the one hand, the weavers benefit because drongos advertise their sentinel services, helping the weavers find more food while avoiding becoming lunch for a predator. On the other hand, by using a cooperative sentinel call to help weavers find more food, the drongos are helping themselves because this likely increases the amount of food available for the drongos to steal. This is particularly evident in the drongos' production of 'all clear' sentinel calls after making their false alarms, behaviour akin to mugging a passer-by and then driving them to the cash machine. Nevertheless, given that both these species seek each other's company, it's likely that their relationship provides mutual benefits overall.

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