



Vocal mimicry by a passerine bird attracts other species involved in mixed-species flocks

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Little is known about how vocal mimicry affects the behaviour of members of other species. Such effects might, however, be especially likely in mixed-species flocks in which birds of some species directly benefit from the behaviour of members of other species. In mixed-species flocks in Sri Lanka, the greater racket-tailed drongo, *Dicrurus paradiseus*, mimics the songs and contact calls of other flock participants. We hypothesized that this mimicry attracts other species, as drongos are well known to increase their foraging efficiency in association with other species. Consistent with the predictions of this hypothesis, we recorded the most mimicked vocalizations during the rare occasions in which drongos were outside of flocks. In addition, we performed a playback experiment, which showed that taped drongo vocalizations that included song mimicry were more than twice as attractive to birds of other species as were taped vocalizations that lacked mimicry. We suggest that mimicry is a way in which drongos manage the behaviour of flockmates in what appears to be overall a mutualistic relationship.

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Although avian vocal mimicry is widespread, occurring in 15–20% of bird species in the world (Marshall 1950; Vernon 1973), its function remains controversial (Baylis 1982). Mimicry could simply be a nonadaptive by-product of the learning process (Hindmarsh 1986), or it could be a way of extending a sexually selected signal repertoire (Nottebohm 1972; Howard 1974; Loffredo & Borgia 1986), or, in the case of brood parasites that specialize on one host species, it can provide species recognition (Payne 1973; Payne et al. 1998). Mimicry could also affect members of other species, either by repelling them from a territory (Catchpole & Baptista 1988) or by attracting them in situations in which the caller would benefit by their approach (e.g. during mobbing; Chu 2001). There has been little evidence, however, that mimicry does affect other species (Baylis 1982; Owen-Ashley et al. 2002; but see Chu 2001).

One situation in which mimicry might be expected to influence other species is in mixed-species bird flocks. Such flocks are found throughout the world, but they are

particularly cohesive and stable in the forested tropics (Powell 1985; Thiollay 1999). Species may benefit from associating in mixed flocks by reducing their risk of predation and/or increasing their foraging (Morse 1977; Terborgh 1990). A species that benefits from flocking might be expected to evolve communicative behaviours, such as mimicry, that influence, or ‘manipulate’, other species into behaving in ways that benefit it (Krebs & Dawkins 1984). For example, mimicry could be beneficial if it served to recruit other flock members. Although mimicry has been documented in mixed-flock participants (Bell 1983; Goodale & Kotagama 2005a), its effects on other flock members have not been investigated experimentally.

We investigated the interspecific effects of mimicry in the greater racket-tailed drongo, *Dicrurus paradiseus*, a frequent member of mixed-species flocks in Sri Lanka (Kotagama & Goodale 2004), renowned for its powers of vocal mimicry (Ali & Ripley 1987; Henry 1998). Drongos are fly-catching birds that increase their foraging in flocks both by catching the insects disturbed by other species and by kleptoparasitism (Hino 1998; King & Rappole 2001); in Sri Lanka, drongos forage successfully five times more frequently when inside flocks than when outside of flocks (S. H. A. Satischandra, E. P. Kudavidanage, S. W. Kotagama & E. Goodale, unpublished data). In previous studies, we have found that drongo mimicry is contextual: drongos include imitations of predators and the alarm or mobbing notes of other birds

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