

TWO RED-CAPPED ROBIN-CHATS *COSSYPHA NATALENSIS* IMITATE ANTIPHONAL DUET OF BLACK-FACED RUFOUS WARBLERS *BATHMOCERCUS RUFUS*

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ABSTRACT

During my studies of primate behavioral ecology in the Kibale Forest, Uganda, I documented the first cases of red-capped robin-chats *Cossypha natalensis* imitating an antiphonal duet. In one case two individual robin chats imitated the entire duet of the black-faced rufous warbler *Bathmocercus rufus*, each giving both the male and female components. In a second case one robin chat gave the male components and another gave that of the female warbler. The lack of temporal separation between the male and female components of the warbler's antiphonal duet indicates an unusually high level of auditory perception and response time and cognitive ability on the part of red-capped robin-chats.

Keywords: auditory perception, response time, cognitive abilities

INTRODUCTION

The red-capped robin-chat *Cossypha natalensis* A. Smith, 1840 is a common bird of the forest understory with a widespread distribution throughout central, eastern, and southern Africa. It is perhaps best known for its vocal repertoire. The typical song of *C. natalensis* sounds to me like a long, rambling human-like whistle. Similarly, Mackworth-Praed and Grant (1960; p. 298) describe it as "...a remarkably human whistle. The song is a sweet rather incoherent whistling...". On many occasions I was able to engage in counter-whistling with this species. The bird would often respond to my whistles by replying and approaching closer to me. When I slightly altered the pitch and sequence of the notes in my whistle, the robin chat sometimes altered its reply. Likewise, Oatley (1959; p. 428) notes that "...It is adept at mimicking an African native whistling or playing a reed-pipe...". A recording and sonogram of a *C. natalensis* whistling in the Mainaro area, Kibale National Park, Uganda is available at the xeno-canto website: Josh Engel, XC137553, www.xeno-canto.org/137553.

One of the most striking features of *C. natalensis* is its outstanding ability and propensity to imitate the calls and songs of a wide range of other bird species (Chapin, 1953; Oatley, 1959; Farkas, 1969; Ferguson *et al.*, 2002) *e.g.* 25 species on Zanzibar island (Pakenham cited in Mackworth-Praed & Grant, 1960), 23 at Richards Bay, South Africa (Ferguson, *et*

al. 2002), and up to 40 at an unspecified location, presumably in South Africa (Oatley & Arnott, 1998; Clement & Rose, 2015).

MATERIALS AND METHODS

The observations I report here were collected opportunistically during the course of my studies of primate behavioral ecology in Kibale National Park, Uganda from 1970 to 1988. My two main study sites in Kibale were Kanyawara (~0°34'N, 30°21'E) and Ngogo (~0°29'N, 30°26'E). The ecology of these two rain forest sites is described in Struhsaker (1975, 1997).

RESULTS

The *C. natalensis* I heard in Kibale imitated at least 12 other sympatric bird species and this is surely an underestimate. The species I heard them imitate were:

- 1) Western black-headed oriole *Oriolus brachyrhynchus* Swainson, 1837: both the “wee!, weeee” and “ori’oo” calls.
- 2) Red-chested cuckoo *Cuculus solitarius* Stephens, 1815: “it-will-rain” call.
- 3) Domestic rooster *Gallus gallus domesticus* (Linnaeus, 1758) (note: Linnaeus named the original red junglefowl [*Phasianus gallus*], not the domesticated subspecies): typical crow.
- 4) Unidentified dove.
- 5) Black-faced rufous warbler *Bathmocercus rufus* Reichenow, 1895: “'seee-oooo-ee” duet call.
- 6) Grey parrot *Psittacus erithacus* Linnaeus, 1758: whistle often given by parrots in flight.
- 7) Crowned eagle *Stephanoaetus coronatus* (Linnaeus, 1766): whistle given by eagles during aerial display, “puweepuweepuwee...”, undulating in pitch and volume.
- 8) Crested guineafowl *Guttera pucherani* (Hartlaub, 1861): courtship call?; sounds a bit like a tambourine, a series of “tink, tink, tink....” sounds followed by a long, drawn out rattling-like sound “trrrraa....”.
- 9) Glossy starling, probably *Lamprotornis splendidus* (Vieillot, 1822).
- 10) Buff-spotted flufftail *Sarothura elegans* A. Smith, 1839: long, mournful call.
- 11) African green pigeon *Treron calvus* (Temminck, 1811): long, complex series.
- 12) Long-crested eagle *Lophaetus occipitalis* (Daudin, 1800).

Cossypha natalensis in Kibale sometimes imitated several species in a single bout of singing. For example, I once heard a *C. natalensis* first imitate the complex “song” of the crested guineafowl (see above), followed by the crowned eagle whistle, then the rain call of a red-chested cuckoo, and finally the song of a species I did not recognize.

Bathmocercus rufus is the only species that I heard *C. natalensis* imitate which sings antiphonally. The contributions of the male and female warbler to this antiphonal duet are so closely spaced in time that, unless the observer is situated between the male and female, it often sounds as if there is only one singer. This antiphonal duet has been described as “... a measured 'seee-oooo-ee' the 'seee' and 'ee' by the male and 'oooo' by the female; no pauses between the three notes; male's voice very thin and reedy, female's lower-pitched and

euphonic; in six 'see-oooo-ee' duets given in 16 seconds at even rate with short pauses between them." (Urban *et al.*, 1997: 83). A recording and sonogram of the antiphonal song of *B. rufus* is available at the xeon-canto website: Hans Groot, XC157029, www.xeon-canto.org/157029.

On two separate occasions I heard single *C. natalensis* give both the male and female portion of the *B. rufus* antiphonal duet. One of these incidents warrants detailed description. On 10 October 1972 between 15:30 h and 15:50 h two *C. natalensis* were seen mobbing a Jameson's mamba *Dendroaspis jamesoni* (Traill, 1843) at Kanyawara. They gave "mewing" calls with their tails widely spread and slightly elevated while mobbing the snake. Soon both the birds imitated the entire antiphonal duet of *B. rufus*, each of them giving both the male and female portions. One of them followed this by imitating a western black-headed oriole.

The most unusual imitation of the warbler antiphonal duet I heard was on 23 February 1973 at Kanyawara when two *C. natalensis* imitated the antiphonal duet of *B. rufus*, with one of them giving the male portion and the other giving the female part. The two *C. natalensis* continued imitating this antiphonal duet for about 45-60 seconds and then they reverted to the rambling whistle typical of their own species. This event occurred in ridge-top vegetation and well away from the valley-bottom vegetation that is the common habitat of *B. rufus* in Kibale. In other words, individual *C. natalensis* are capable of imitating the entire antiphonal duet of the warbler on their own and also imitating it in an antiphonal manner with one bird giving the male portions and another the female portion.

DISCUSSION

During the breeding season, territorial *C. natalensis* often counter-call with their neighbours, each imitating the same species (Oatley & Arnott, 1998). Furthermore, *C. natalensis* has a two-note contact call that is usually given by one bird, but is sometimes "...employed as an antiphonal duet by two birds...", one giving the first note and the other giving the second note, the two birds separated by up to 30 m (Oatley & Arnott, 1998; p. 102). The typical song of the closely related Heuglin's robin-chat *Cossypha heuglini* Hartlaub, 1866 is sung antiphonally between a male and female, but if the female does not sing, the male sings the entire song by himself (Thorpe, 1972; Farkas, 1973; Oatley & Arnott, 1998).

My observations in Kibale of *C. natalensis* imitating the antiphonal duet of *B. rufus* are the first records of this species imitating the antiphonal duet of another species. It is also the only case known where two members of this species imitate the antiphonal duet in the same way as does the species being imitated, *i.e.* one giving the male part and the other giving the female portion. A similar case has been described for the Chorister robin-chat *Cossypha dichroa* (Gmelin, 1789) in which a banded (ringed) pair of these robin chats imitated the antiphonal calls of the southern boubou shrike *Laniarius ferrugineus* (Gmelin, 1788) with the male imitating the first part of this call and the female the second in the same manner that male and female boubou shrikes do. This exchange went on for some time at a nest site and was heard on subsequent occasions and years (Oatley & Arnott, 1998).

The lack of temporal separation between the male and female components of the *B. rufus* antiphonal duet indicates an unusually high level of auditory perception and response time and cognitive ability on the part of *C. natalensis*. For without such capabilities it is difficult to understand how an individual *C. natalensis* can sometimes imitate the entire duet and at other times two individuals sing the antiphonal duet just as do the warblers. Furthermore,

this case of antiphonal imitation raises the question as to whether or not *C. natalensis* is using the warbler's antiphonal duet in the same behavioral context as do the warblers.

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REFERENCES

- Chapin, J.P. (1953). The birds of the Belgian Congo, Part 3. *Bulletin of the American Museum of Natural History* **75A**: 1-821.
- Clement, P. & C. Rose (2015). *Robins and Chats*. Christopher Helm, Bloomsbury Publishing PLC, London and New York.
- Farkas, T. (1969). Notes on the biology and ethology of the Natal robin *Cossypha natalensis*. *The Ibis* **111**(3): 281-292.
- Farkas, T. (1973). Notes on the biology and ethology of Heuglin's robin *Cossypha heuglini*. *Ostrich* **44**(2): 95-105.
- Ferguson, J.W.H., A. van Zyl & K. Delport (2002). Vocal mimicry in African *Cossypha* robin chats. *Journal für Ornithologie* **143**: 319-330.
- Mackworth-Praed, C.W. & C.H.B. Grant (1960). *Birds of Eastern and North Eastern Africa*. Vol. 2, 2nd edition. Longmans, London.
- Oatley, T. (1959). Notes on the genus *Cossypha*, with particular reference to *C. natalensis* Smith and *C. dichroa* (Gmelin). *Ostrich* **30**(S3): 426-434.
- Oatley, T. & G. Arnott (1998). *Robins of Africa*. Acorn Books, Randburg, South Africa.
- Struhsaker, T.T. (1975). *The Red Colobus Monkey*. The University of Chicago Press, Chicago and London.
- Struhsaker, T.T. (1997). *Ecology of an African Rain Forest: Logging in Kibale and the Conflict between Conservation and Exploitation*. University Press of Florida, Gainesville.
- Thorpe, W.H. (1972). Duetting and antiphonal song in birds: its extent and significance. *Behaviour* supplement **XVIII**: 1-197.
- Urban, E.K., C.H. Fry & S. Keith (eds). (1997). *The Birds of Africa*, Vol. 5. Academic Press Ltd., London.