

Notes on the vocalizations of Bicoloured Antbird (*Gymnopithys leucaspis*)

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In the following we briefly analyze and compare voice of the different races of Bicoloured Antbird (*Gymnopithys leucaspis*). We also try to quantify the extent of any vocal differences using the criteria proposed by Tobias *et al.* (2010), as a support for taxonomic review. We have made use of sound recordings available on-line from Xeno Canto (XC).

As an introductory remark, it should be said that the loudsong and calls of many ant-following antbirds are quite similar (It wouldn't be surprising that this is an adaptation to efficiently communicate the location of army ant swarms among these species). Also, there is quite some variability in the song depending on the level of excitement.

We have compared the loudsong of all races of *G. leucaspis* by dividing them into two groups: races occurring West of the Andes (*olivascens*, *bicolor*, *daguae*, *aequatorialis*, *ruficeps*) and East of the Andes (*leucaspis*, *castaneus*, *lateralis* and *peruanus*).

Group 1: West of Andes (Central America and Chocó region) (n=10)

total length	2.88-3.70s
# of notes	13-26
max. freq.	4200-5040Hz
lowest max. freq.	2400-3500Hz
first note length	0.18-0.29s
max. pace*	0.085-0.14
max. length harsh note	0.21-0.28 (present in 75% of songs)
average pace	0.14 - 0.22

(*pace is measured here as period, the duration between 2 subsequent notes)

Group 2: Amazon region (n=8)

total length	2.95-4.20s
# of notes	13-21
max. freq.	4300-5200Hz
lowest max. freq.	1850-2840Hz
first note length	0.25-0.48s (once 0.145s)
max. pace	0.105-0.17
max. length harsh note	0.24-0.25 (present in 30% of songs)
average pace	0.16 -0.24

It is clear that differences in the basic sound parameters of loudsong are very small. Birds of group 1 tend to have a shorter first note (with considerable overlap, score 0-1), tend to reach the highest level of acceleration (with considerable overlap, score 0-1) and use more often harsh notes as an end to the song (score 0-1)(Fig. 1). Total score about 1-2.

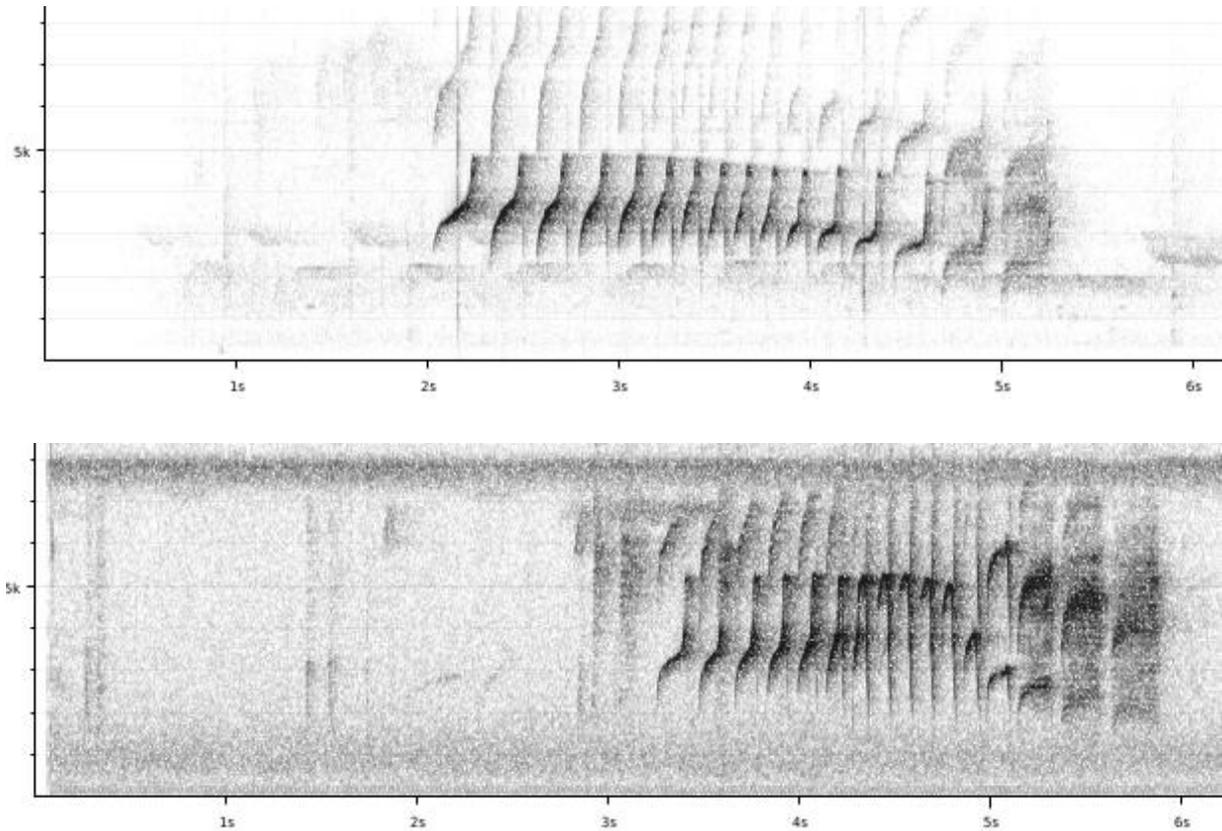


Figure 1: top to bottom: typical loudsong of group 1 (Panama) and group 2 (Ecuador)

It would thus seem that the difference in loudsong is smaller than has been suggested in the past (Zimmer 2003).

While difference in loudsong has been used as an important criterion for redefining taxonomy in Antbirds, in some cases (e.g. *Hypocnemis*) call notes have been the main vocal driver. We therefore also compared the main call of the 2 groups:

Measurements of the long churr call

Group 1: West of Andes (Central America and Chocó region) (n=9)

total length	0.55-0.75s
max. freq.	1690-3200Hz (once 3900Hz)
min. freq.	820-1290Hz
freq. range	830-2200Hz

Group 2: Amazon region (n=8)

total length	0.40-0.59s
max. freq.	3100-4700Hz
min. freq.	780-1290Hz
freq. range	2320-3640Hz

Here there seems to be a clear difference:

Birds of group 1 tend to have a longer churring call (score 1-2), which has usually a lower max. frequency (score 1-2) and a smaller overall frequency range (score 2) (Fig. 2).

If we consider max. freq. and freq. range as independent variables, this would lead to a score of 3-4.

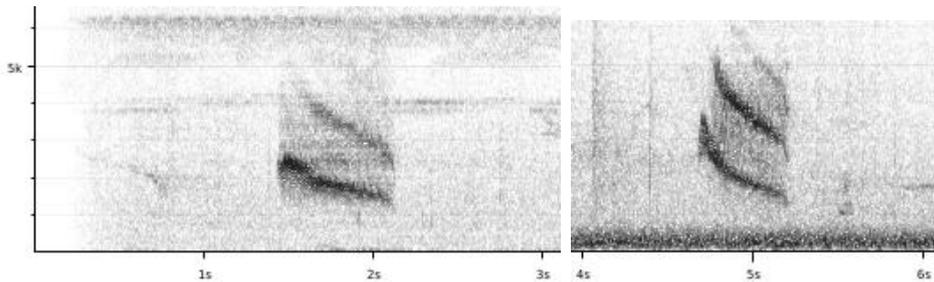


Figure 2: from left to right typical churring call of group 1 (NW Ecuador) and group 2

This quick analysis shows that the best way to tell voice apart is actually the churring call (total score 3-4), while the loudsong only shows minor differences which would need a more in depth statistical approach to determine any consistent differences, but for which one can predict that score will probably be 2 or less.

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References

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