

## Notes on the vocalizations of Blackish Antbird (*Cercomacra nigrescens*)

Peter Boesman

In the following we briefly analyze and compare voice of the different races of Blackish Antbird (*Cercomacra nigrescens*). 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).

Loudsong of male in all races is a single lower-pitched note followed by a (usually descending) series of notes. There is however a great variation in pace and note shape (Fig.1).

We have measured a number of basic sound parameters for the six recognized races:

	<i>fuscicauda</i> (n=6)	<i>aequatorialis</i> (n=7)	<i>notata</i> (n=2)
length first note	0.145-0.185s	0.12-0.18s	0.12-0.2s
max. freq. first note	1950-2300Hz	1700-2000Hz	1900-2000Hz
max. freq. 2nd note	2600-3000Hz	2600-3000Hz	2700-2900Hz
length 2nd note	0.016-0.02s	0.085-0.11s	0.07-0.08s
number of notes	30-47	6-10	8-13
length last note	0.012-0.018s	0.036-0.05s	0.035-0.04s
max. freq. last note	1800-2400Hz	2100-2300Hz	2100-2400Hz
pace*	0.0165-0.0215	0.09-0.12	0.09
pause between 1 and 2nd note	0.17-0.21s	0.12-0.2s	0.12-0.14s

	<i>approximans</i>	<i>ochrogyna</i>	<i>nigrescens</i>
length first note	0.12-0.16s	0.14-0.17s	0.13-0.15s
max. freq. first note	1900-2150Hz	1700-2100Hz	1550-1700Hz
max. freq. 2nd note	2700-3200Hz	2300-3100Hz	2200-2600Hz
length 2nd note	0.055-0.08s	0.065-0.11s	0.05-0.07s
number of notes	6-13	5-11	14-26 (occasionally shorter, incomplete song?)
length last note	0.04-0.045s	0.05-0.07s	0.035-0.04s
max. freq. last note	2200-2600Hz	2300-2500Hz	2200-2300Hz
pace*	0.075-0.1	0.13-0.23	0.07-0.09
pause between 1 and 2nd note	0.16-0.21s	0.14-0.28s	0.1-0.23s

(\*pace expressed here as period, duration between two subsequent notes)

From these measurements, it is clear that *fuscicauda* has by far the fastest pace (score 3 or 4) and number of notes (score 2 or 3), which results in a total score of about 6.

*ochrogyna* has clearly the slowest pace (score 2 or 3), note length reduces only slightly resulting in the longest end notes (score 1 or 2). Also, in most cases, every note is preceded by a short artefact note, which if present is quite diagnostic (score 1). Finally, note shape shows a peak when starting. This results in a total score of about 4 vs. all other races.

*nigrescens* has the largest number of notes after *fuscicauda* (score 2), has the lowest max. frequencies of the initial note (score 1 or 2). Also, the shape of the notes is quite diagnostic, a sharply descending spiky note (rather than round upslurred such as e.g. *aequatorialis*). This results in a total score of 3-4 vs. all other races.

The remaining races have smaller differences, which would need more samples to establish any significant difference.

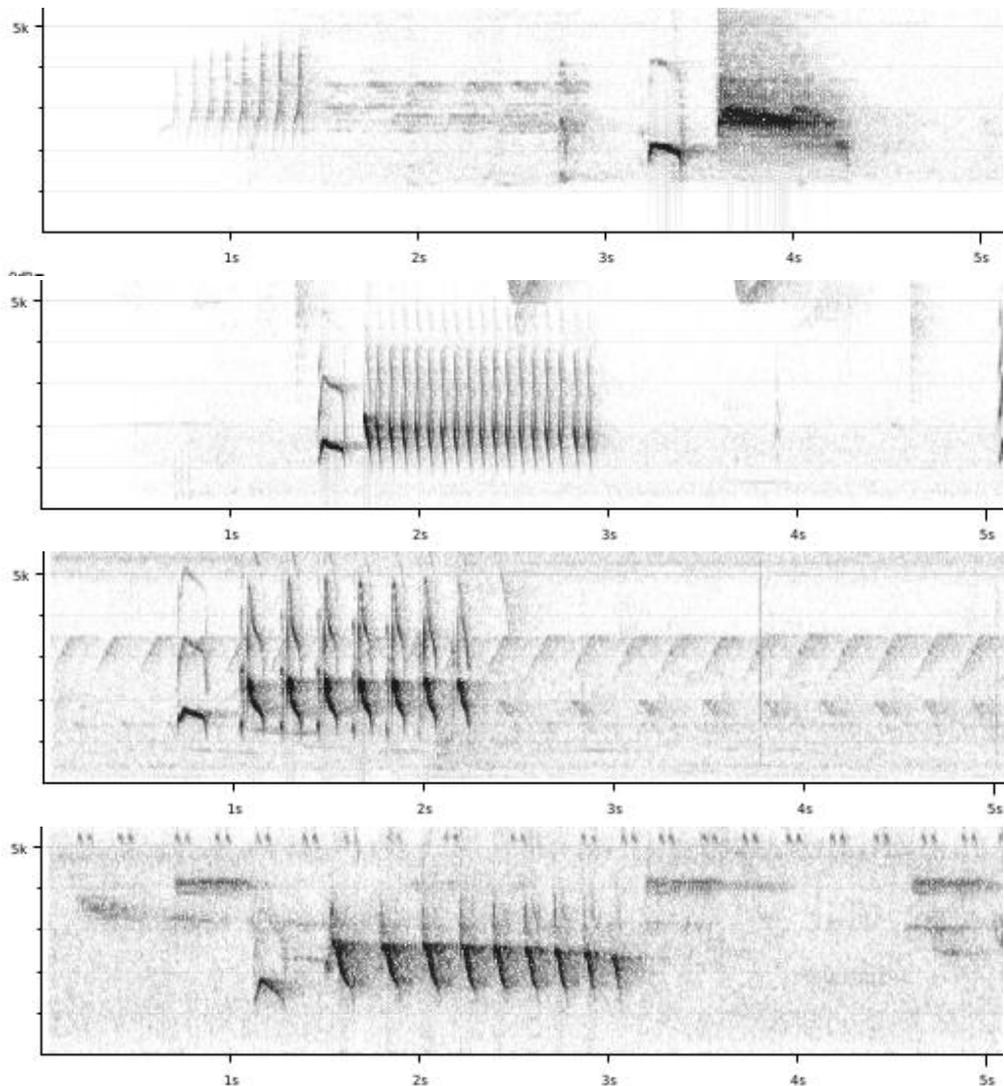


Figure 1: from top to bottom: loudsong of *fuscicauda*, *nigrescens*, *ochrogyna*, *aequatorialis*

After doing the above analysis, I became aware of a similar published study (Mayer *et al.* 2014). Data are given for the male loudsong (mean  $\pm$  standard deviation), for which effect size can be calculated (only races side by side however, as no grouping was done after defining species limits).

Results are very similar to the above analysis, as can be expected. For example:

*aequatorialis* vs. *fuscicauda*

# notes            9  $\pm$  2 vs 32  $\pm$  6 -> effect size 5.14 -> score 3  
duration           1.1  $\pm$  0.3 vs 0.6  $\pm$  0.1 -> effect size 2.23 -> score 2  
mean pace         8  $\pm$  1 vs 53  $\pm$  5 -> effect size 12.48 -> score 4  
pitch drop         2.4  $\pm$  0.8 vs 6.5  $\pm$  2.9 -> effect size 1.93 -> score 1  
-> total score 7

*ochrogyna* vs. *approximans*

duration           1.5  $\pm$  0.3 vs 0.9  $\pm$  0.3 -> effect size 2 -> score 2 (borderline)  
mean pace         5  $\pm$  1 vs 10  $\pm$  2 -> effect size 3.16 -> score 2  
pitch drop         0.4  $\pm$  0.4 vs 2.4  $\pm$  1.1 -> effect size 2.42 -> score 2  
-> total score 4

*nigrescens* vs. *approximans*

highest pitch     2728  $\pm$  225 vs 2275  $\pm$  144 -> effect size 2.4 -> score 2  
(pitch of first note is not given, but is slightly more significant in my measurements)  
# notes            9  $\pm$  2 vs 13  $\pm$  4 -> effect size 1.26 -> score 1  
(number of notes seems to be lower in the samples here -> difference is weaker)

We can thus conclude that the taxon which vocally stands most apart is *fuscicauda*, having a loudsong which is much faster (score 4) and has higher number of notes (score 2-3).

Races *ochrogyna* and *nigrescens* are also moderately differentiated, and each reach a score of about 3-4 vs. all other races.

This note was finalized on 7th May 2015, using sound recordings available on-line at that moment. We would like to thank in particular the many sound recordists who placed their recordings for this species on XC.

### References

Mayer, S., P. Coopmans, N. Krabbe, and M. L. Isler. 2014. Vocal evidence for species rank to *Cercomacra nigrescens fuscicauda* J. T. Zimmer. Bulletin British Ornithologists' Club 134: 145-154.

Tobias, J.A., Seddon, N., Spottiswoode, C.N., Pilgrim, J.D., Fishpool, L.D.C. & Collar, N.J. (2010). Quantitative criteria for species delimitation. *Ibis* **152**(4): 724–746.

### Recommended citation

Boesman, P. (2016). Notes on the vocalizations of Blackish Antbird (*Cercomacra nigrescens*). *HBW Alive Ornithological Note* **55**. In: *Handbook of the Birds of the World Alive*. Lynx Edicions, Barcelona. (retrieved from <http://www.hbw.com/node/931934> on 30 April 2016).