

Notes on the vocalizations of Barred Antshrike (*Thamnophilus doliatus*)

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In the following we briefly analyze and compare voice of the different races of Barred Antshrike (*Thamnophilus doliatus*). 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).

When listening to the loudsong of the many subspecies of Barred Antshrike, it becomes quickly apparent that there are some vocal differences between races north and south of the Amazon river.

Furthermore, the caatinga race *capistratus* was proposed as a separate species (Assis *et al.* 2007), for which we will consider this as a third group in our comparison (Fig. 1).

We have taken a random sample of 10 songs for each of the following 3 groups: *capistratus*, races north of the Amazon and races S of the Amazon (excl. *capistratus*). We measured several basic sound parameters, and given that differences may be rather small, we have calculated for all average, standard deviation and effect size in order to reach calculated scores.

capistratus

	data range	Av	SD
total length	2.09-3.0	2.56	0.32
# notes	14-20	17.9	2.13
max pace*	0.094-0.115	0.101	0.008
length last note	0.11-0.21	0.158	0.034
max. freq. start	750-1120	937	171
max. freq. middle	720-930	852	56
max. freq end	640-780	730	40
max. freq last note	620-790	745	51
delta end vs last note	-20 to 55	15	26

N of Amazon

	data range	Av	SD
total length	2.48-3.6	2.94	0.39
# notes	20-30	25.9	4.4
max pace	0.07-0.1	0.088	0.011
length last note	0.11-0.165	0.135	0.017
max. freq. start	700-940	836	75
max. freq. middle	870-1000	945	46
max. freq end	750-920	860	56
max. freq last note	800-1040	940	85
delta end vs last note	30-180	80	48

S of Amazon

	data range	Av	SD
total length	1.9-2.76	2.24	0.29
# notes	12-20	14.9	2.4
max pace	0.08-0.16	0.12	0.021
length last note	0.105-0.20	0.137	0.027
max. freq. start	1000-1340	1102	103
max. freq. middle	960-1200	1112	132
max. freq end	718-900	786	69
max. freq last note	730-990	877	90
delta end vs last note	25-210	89	57

* pace is here measured by the period, duration between 2 subsequent notes

Effect size

	<i>capistratus</i> vs North	<i>capistratus</i> vs South	North vs South
total length	1.065	1.048	2.037
# notes	2.31	1.32	3.1
max pace	1.35	1.20	1.91
length last note	0.86	0.68	0.089
max. freq. start	0.76	1.17	2.95
max. freq. middle	1.81	2.56	1.69
max. freq end	2.67	0.99	1.18
max. freq last note	2.78	1.8	0.72
delta end vs last note	1.68	1.67	0.17

Assis *et al.* (2009) state that *capistratus* has 'more elements' and 'longer final element' . The former could be confirmed, although with considerable overlap. Length of final note seems to be rather similar in the samples checked.

At the other hand, in comparison with other races south of the Amazon, *capistratus* seems to reach a higher pace. Also, there is more a tendency for the song going up and down in pitch, rather than going down in pitch in other races, possibly linked with a slightly different note shape. Differences are however not large at all, and may well blur further when a larger set of recordings is investigated, for all races south of the Amazon.

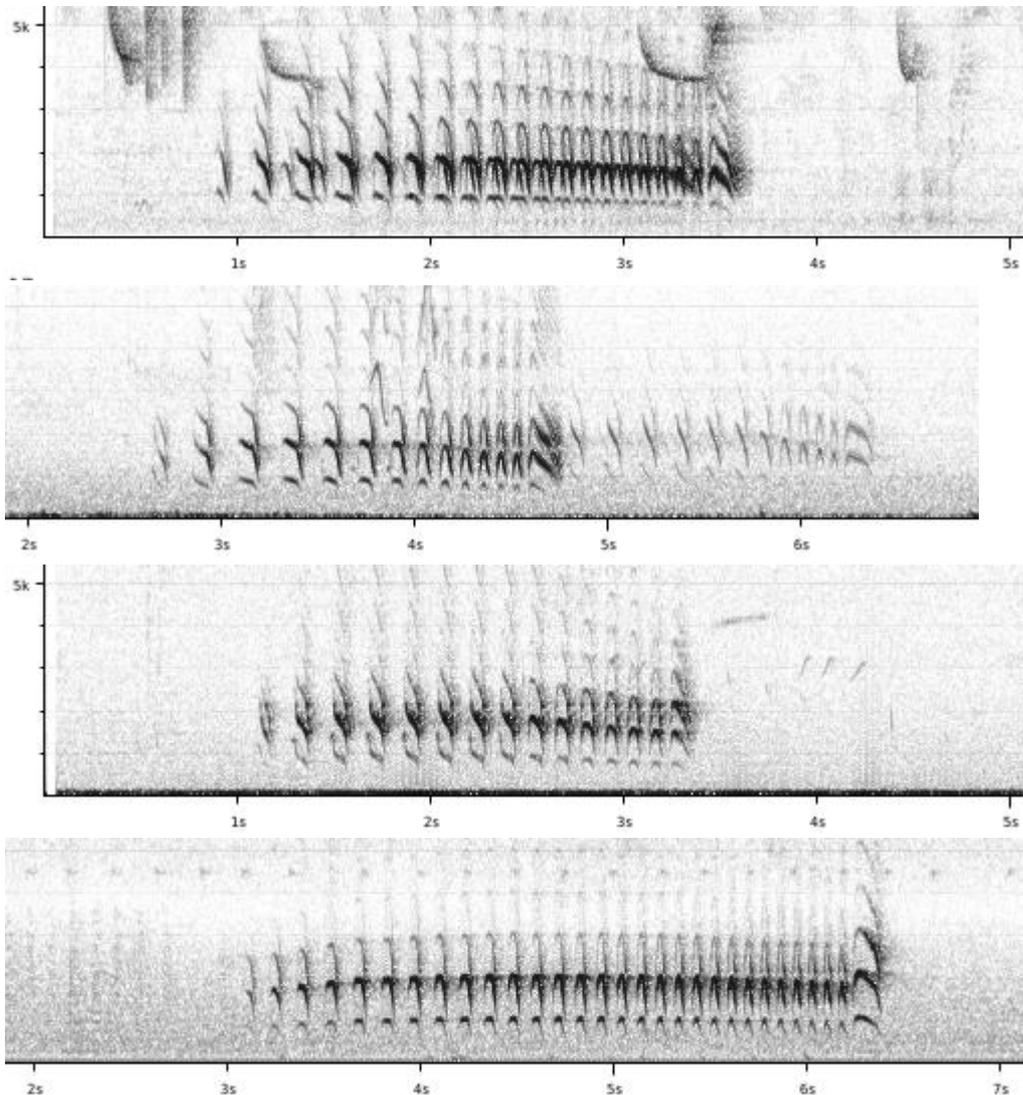


Figure 1: from top to bottom: typical loudsong of *capistratus* (2 examples), S of Amazon (Bolivia), N of Amazon (Mexico)

From the above, we can conclude that there is no parameter where *capistratus* differs from birds N and S of Amazon with an effect size larger than 2 (needed to reach a score of 2).

There are however differences that reach a score of 1: *capistratus* has a last note which is on average lower in frequency, and which does not rise a lot versus the previous note. Also in the middle and end of the note series, the max. frequency is lower. Other differences are in between N and S birds, and would thus be even less outspoken if these 2 groups were to be merged. Total score for *capistratus* vs. all others is thus 1 or 2.

N and S birds differ mainly in number of notes (score 2), total length (2), etc. and would thus reach a total score of 4 (when *capistratus* is not included in S birds) or about 3 (when *capistratus* is included in S birds).

One could argue that with more recordings for N and S groups, differences may get less distinct. However, the recordings were taken randomly from a wide range, and we did not distinguish between male/female song or whether playback was used or not, which typically increases the variability. All in all, this score is thus quite representative we believe, and reflects a clear but moderate difference in loudsong between birds north and south of the Amazon river.

This note was finalized on 31st August 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

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