

## Notes on the vocalizations of Short-tailed Antthrush (*Chamaeza campanisona*)

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In the following we briefly analyze and compare voice of the different races of Short-tailed Antthrush (*Chamaeza campanisona*). 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) and Macaulay Library (ML).

Song of all races is structurally similar, but with clear differences in a number of parameters (Fig. 1). Twelve races are currently recognized, but from a first comparison, it would seem that there are five vocal groups. We have taken measurements for a number of basic sound parameters of the loudsong:

### Group 1: Northern Venezuelan mountains (*venezuelana*)

#### First part of song

# notes	13-18
pace* at start	0.42-0.47
pace at end	0.25-0.275
max. mid freq.	930-1040Hz
max. note length	0.2-0.215s

#### Second part of song

# notes	6-9
freq. drop	150-380Hz
note length	0.16-0.2s
pace	0.344-0.37

Total length 7.25-8s

### Group 2: Tepuis of SE Venezuela (presumed *obscura*)

#### First part of song

# notes	>50, barely countable at end
pace at start	0.34-0.47
pace at end	0.074-0.076
max. mid freq.	811-880Hz
max. note length	0.16-0.2s

#### Second part of song

# notes	4-7
freq. drop	140-220Hz
note length	0.14-0.16s
pace	0.35-0.37

Total length 9.3-10.3s

\* pace: measured here as period, duration between 2 subsequent notes in seconds.

Group 3: Andes from Colombia to N Peru

First part of song

# notes	21-29
pace at start	0.30-0.36
pace at end	0.18-0.20
max. mid freq.	1050-1120Hz
max. note length	0.13-0.15s

Second part of song

# notes	8-12
freq. drop	350-480hz
note length	0.14-0.18s
pace	0.34-0.39

Total length 9.0-11.0s

Group 4: Andes from C Peru to Bolivia

First part of song

# notes	48 - >60
pace at start	0.15-0.16
pace at end	0.09-0.12
max. mid freq.	1100-1180Hz
max. note length	0.10-0.11s

Second part of song

# notes	11-22
freq. drop	400-420Hz
note length	0.09-0.14s
pace	0.17-0.22

Total length 9.84-11.65s

Group 5: Atlantic Brazil

First part of song

# notes	52 - >80
pace at start	0.155-0.21
pace at end	0.12-0.15
max. mid freq.	1060-1140Hz
max. note length	0.095-0.12s

Second part of song

# notes	3-11 (usually just a few, occasionally more)
freq. drop	180-400Hz
note length	0.05-0.08s
pace	0.12-0.17

Total length 8.3-14.5s

Discussion:

Group 1: Northern Venezuelan mountains (*venezuelana*) stands apart in many aspects: lowest number of notes, slowest pace at start, slowest pace at end, longest notes and shortest song (even compared to N Andes group) !

Group 2 is unique in having an extreme acceleration (ratio 'pace at start/pace at end') (score 3-4) and having the lowest frequency (score about 2 if more samples confirm this)

Group 3, while less so than group 1, differs from group 4 and 5 in its lower number of notes, slower pace at start and end, and equally so in the second part of the song.

Group 4 and 5 are quite similar, but can still be safely separated by the second part of the song, which is quite different: group 4 has more notes which are longer and delivered at a slower pace (total score approx. 3).

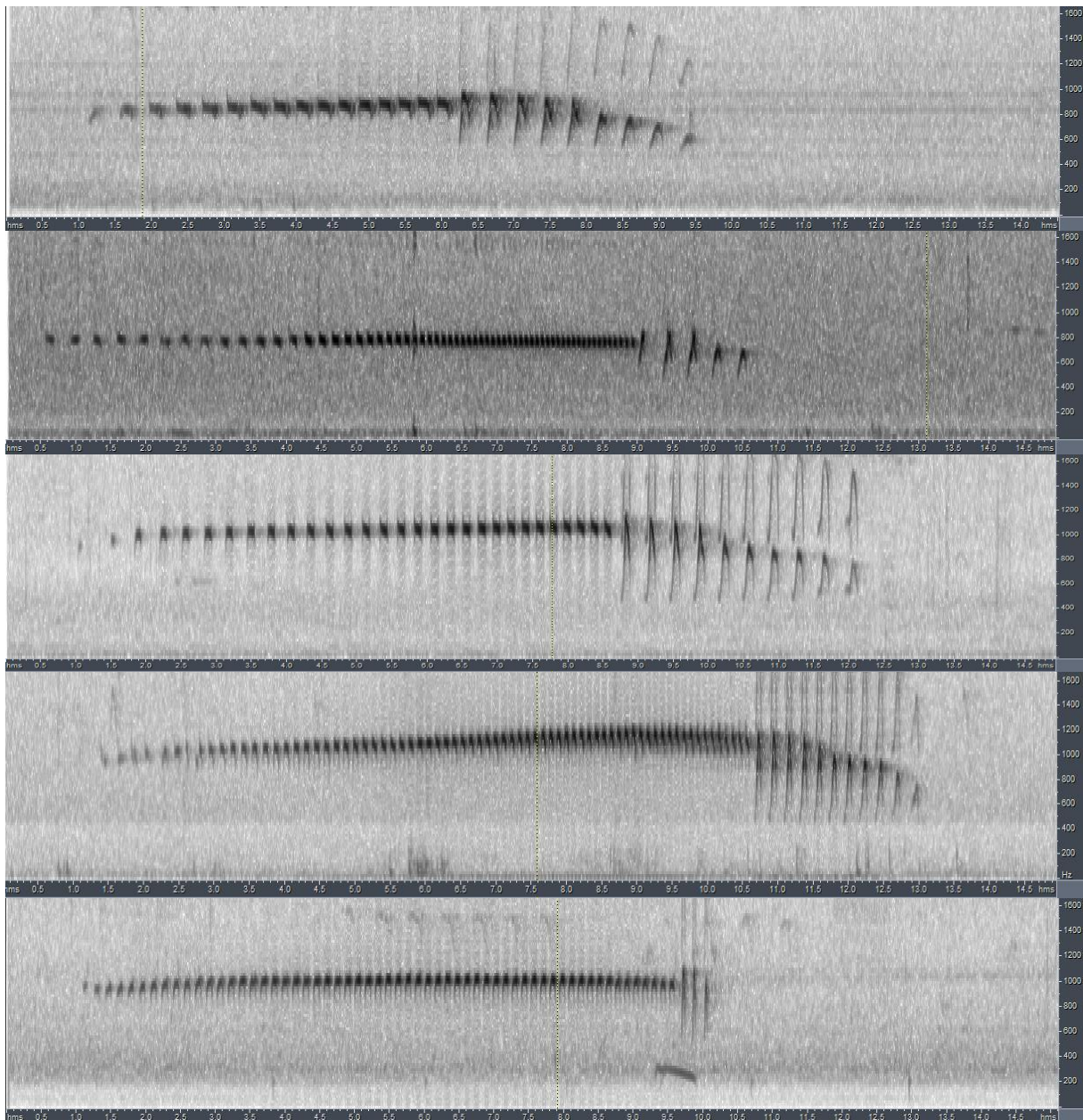


Figure 1: from top to bottom: Group 1, 2, 3, 4 and 5.

If a 5-way separation in groups or species can't be supported by other characters, then clustering group 1 and 3, and group 4 and 5 would result in 3 groups with still clearly defined vocal differences:

	Group 1 and 3 combined	Group 4 and 5 combined
First part of song		
# notes	13-29	48 - >80
pace at start	0.30-0.47	0.15-0.21
pace at end	0.18-0.275	0.09-0.15
max. note length	0.13-0.215s	0.095-0.12s
Second part of song		
note length	0.16-0.2s	0.05-0.14s
pace	0.344-0.39	0.12-0.22

The clustering of group 4 and 5 seems however somewhat counter-intuitive based on distribution.

This note was finalized on 12th June 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 and ML.

## References

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

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