

**Notes on the vocalizations of Giant Antpitta (*Grallaria gigantea*), Great Antpitta (*Grallaria excelsa*) and Undulated Antpitta (*Grallaria squamigera*)**

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In the following we briefly analyze and compare voice of the different races of Giant Antpitta (*Grallaria gigantea*), Great Antpitta (*Grallaria excelsa*) and Undulated Antpitta (*Grallaria squamigera*). 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).

Giant and Great Antpitta are closely related, and their song is very similar, also compared to Undulated Antpitta, which I include in this analysis for comparison (Fig. 1).

There are no recordings of races *phelpsi* or *lehmanni*, both races lacking any observations in recent decades, the latter possibly extinct.

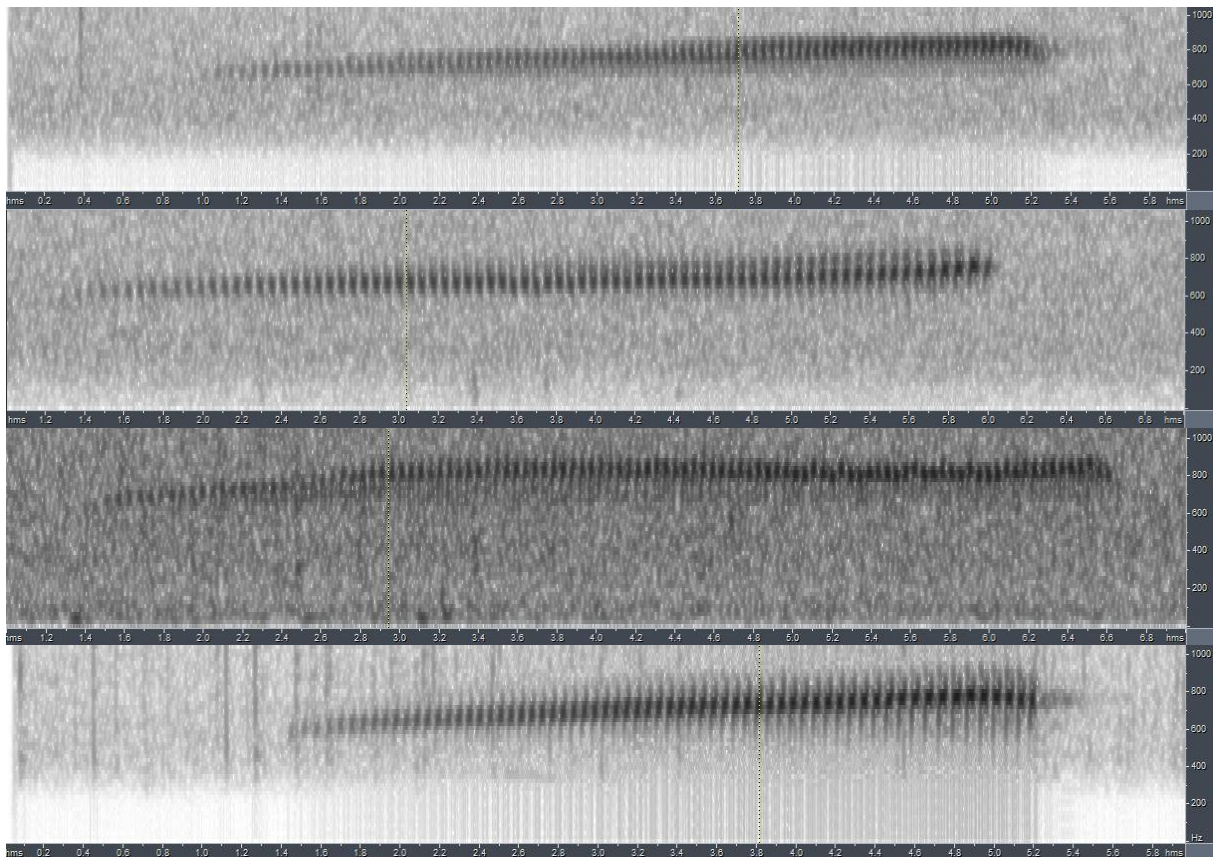


Figure 1: from top to bottom: Great Antpitta, Giant Antpitta *hylodroma*, Giant Antpitta *gigantea* and Undulated Antpitta

I have measured a number of basic sound parameters, but have omitted recordings which I believe are wrongly identified, e.g. all recordings in Macaulay library of Great Antpitta are rather Undulated Antpitta based on voice, and are recorded at 2450m which is also slightly above the elevational range of the former.

	Great Antpitta race <i>exce/lsa</i> (n=6)	Undulated Antpitta (n=9)
total length	4.04-5.15s	3.7-5.4s
start freq.	570-660Hz	530-730Hz
end freq.	730-830Hz	690-790Hz
pitch rise	90-210Hz	110-230Hz
start pace*	0.05-0.055	0.049-0.062
end pace	0.039-0.042	0.062-0.076
pace ratio	1.24-1.31	0.74-0.86 (1 rec. from Peru 0.95)
end drop notes	0-3 (mostly 2-3)	0-2

	Giant Antpitta race <i>hylodroma</i> (n=7)	Giant Antpitta race <i>gigantea</i> (n=3)
total length	4.2-7.05s	5.3-8.1s
start freq.	580-650Hz	550-670Hz
end freq.	695-800Hz	750-860Hz
pitch rise	95-170Hz	190-200Hz
start pace	0.057-0.07	0.05-0.055
end pace	0.06-0.074	0.045-0.05
pace ratio	0.81-1.08	1.0-1.22
end drop notes	0-1	0-2

\* pace is measured here as period, the duration between two subsequent notes

From these data, it would seem that the main vocal difference is the acceleration of the song, with Undulated Antpitta slowing down most towards the end, and Giant Antpitta race *hylodroma* only slightly less. Giant Antpitta race *gigantea* accelerates slightly towards the end, and Great Antpitta accelerates most, reaching the highest pace of all towards the end. Other vocal differences would need more samples to substantiate, but it would seem that Giant Antpitta (all races) tends to have a longer song, and race *gigantea* tends to end at the highest frequency (followed by Great Antpitta).

It is clear that the differences in song are subtle. Also, when two birds are counter-singing, they do so at slightly different pitch, increasing to some extent variability. We can nevertheless conclude the following:

Song of Great Antpitta differs the most from Undulated Antpitta (much higher end pace and acceleration rather than deceleration, total score about 4). Giant Antpitta race *hylodroma* is closest to Undulated Antpitta (total score about 2), and Giant Antpitta race *gigantea* is in between.

Comparing Great and Giant Antpitta gives a similar picture: the vocal difference is largest between Great Antpitta and Giant Antpitta of the race *hylodroma* (total score about 2-3). Giant Antpitta race *gigantea* is in between with respect to pace, but the difference in song length becomes more pronounced, ultimately also leading to a score of about 2-3 (assuming this is confirmed by more samples).

The vocal difference between both groups of Giant Antpitta is still smaller, with song length marginally different and pace ratio slightly overlapping, but *gigantea* reaching fastest pace, thus score about 2.

In summary, Giant Antpitta race *gigantea* is vocally about equally distant between Giant Antpitta race *hylodroma* and Great Antpitta.

Vocally there is at most a very slight preference for keeping Giant Antpitta race *gigantea* with Giant Antpitta race *hylodroma*.

This note was finalized on 15th June 2015, using sound recordings available on-line at that moment. We would like to thank in particular the sound recordists who placed their recordings for this species on XC and ML: Roger Ahlman, Nick Athanas, Peter Boesman, David Edwards, Jon King, Niels Krabbe, Jose Gustavo Leon, Hans Matheve, Scott Olmstead, Andrew Spencer and Sam Woods.

## 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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