

Notes on the vocalizations of Spotted Antpitta (*Hylopezus macularius*)

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In the following we briefly analyze and compare voice of the different races of Spotted Antpitta (*Hylopezus macularius*). 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).

This case was studied in Carneiro *et al.* (2012). They indicate the presence of 4 distinct groups, which redefines present treatment of subspecies (in the following I use the proposed names and corresponding distribution). In table 1 of this paper a series of measurements (average + standard deviation) is given for the loudsong. Pair-wise effect sizes (ES) can thus be calculated for the basic sound parameters:

paraensis vs. *whittakeri*:

# of notes	ES 5.4 -> score 3
song length	ES 1.2 -> score 1
pace	ES 4.99 -> score 2
note shape	different -> score 1-2

paraensis vs. *dilutus*

# of notes	ES 0.0 -> score 0
song length	ES 1.85 -> score 1
pace	ES 1.96 -> score 1-2
note shape	different -> score 1-2

paraensis vs. *macularius*

# of notes	ES 0.0 -> score 0
song length	ES 0.0 -> score 0
pace	ES 0.0 -> score 0
note shape	different -> score 1-2

whittakeri vs. *dilutus*

# of notes	ES 6.25 -> score 3
song length	ES 2.1 -> score 2
pace	ES 5.8 -> score 3
note shape	different -> score 1-2

whittakeri vs. *macularius*

# of notes	ES 4.57 -> score 2
song length	ES 1.09 -> score 1
pace	ES 4.24 -> score 2
note shape	different -> score 1-2

dilutus vs. *macularius*

# of notes	ES 0.0 -> score 0
song length	ES 1.87 -> score 1
pace	ES 1.88 -> score 1
note shape	almost identical -> score 0

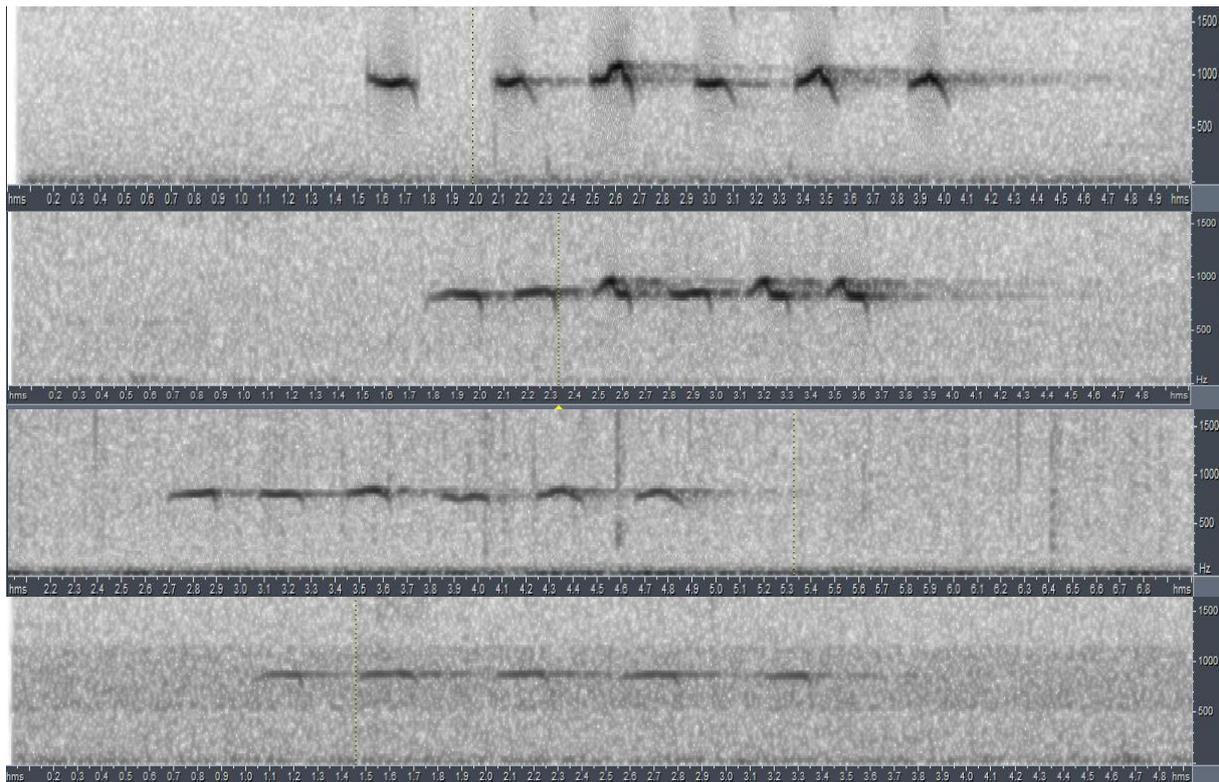


Figure 1: from top to bottom: *macularius*, *dilutus*, *paraensis* and *whittakeri*

Discussion of vocal differences

The authors consider *dilutus* and *macularius* not to be sufficiently divergent to consider them as two distinct BSC species. The remaining 3 groups are proposed as distinct species, although the authors indicate they don't meet the 3-differences yardstick proposed by Isler *et al.* 1998). SACC confirmed surprisingly 'strong vocal evidence' as an important reason for elevating these to species rank <http://www.museum.lsu.edu/~Remsen/SACCprop622.htm> .

The score for vocal difference between *dilutus* vs *macularius* is 2. The authors themselves propose to treat these as a single species. This means however that *dilutus/macularius* should be grouped, and previous scores should be reviewed in comparison with this clustered group.

paraensis vs. dilutus/macularius

# of notes	score 0
song length	score 0
pace	score 1
note shape	different -> score 1-2

whittakeri vs. dilutus/macularius

# of notes	score 2-3
song length	score 1-2
pace	score 2-3
note shape	different -> score 1-2

It would seem that the vocal difference of *paraensis vs. dilutus/macularius* is quite small as well: total score 2-3 (also confirmed by listening to recordings of both groups: they are identifiable but difference is small (Fig. 1).

Race *whittakeri* on the other hand retains a score of about 5 vs. the two other groups (even if *paraensis* would also be lumped with *dilutus/macularius*, which would be a bit awkward distribution-wise). Main differences are that song consists typically of 5 notes rather than 6, delivered at a slower pace, resulting in a marginally longer song strophe.

We can thus conclude that the proposed recognition of 4 races is supported by moderate scores (following Tobias 2010) for vocal differences, but only the newly defined race *whittakeri* stands out.

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