

Notes on the vocalizations of White-throated Spadebill (*Platyrinchus mystaceus*)

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In the following we briefly analyze and compare voice of the different races of White-throated Spadebill (*Platyrinchus mystaceus*). 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).

White-throated Spadebill is typically detected in the field by its day-time voice, abrupt single or multiple calls. Much less known is its song, which is mostly given at dawn and early morning. As a consequence, despite being a fairly common bird in most of its range, there are relatively few recordings of its song.

The song is a trilled sequence of notes, and features are somewhat variable depending on the excitement of the bird (e.g. after playback). As such, there is more variation in this analysis of the recordings than would probably be the case if only song under natural conditions would be analyzed. Nevertheless, the analysis showed some very interesting results.

We studied 5 groups (Fig. 1):

1. the W Andean group (*neglectus*, *albugularis*)(no recordings of *perijanus*)

The song is a series of rising notes, introductory note is typically lowest in pitch and longer than subsequent notes.

2. The E Andean group (*zamorae*)

The song is a series of rising notes, introductory note is typically lowest in pitch and longer than subsequent notes. Very similar to the previous group.

3. The S Andean group (*partridgei*)

The song is a series of notes, first falling then rising, introductory and end note are thus more or less on same pitch.

4. The Caribbean group (*insularis*)(no recordings of *imatatacae*, *ptaritepui*, *duidae*, *ventralis*)

The song is a series of falling notes, well separated introductory note highest in pitch and longer than subsequent notes, which are given at a much faster pace than previous group.

5. The Brazilian group (*mystaceus*, *cancromus*)(no recordings of *bifasciatus*, *niveigularis*)

The song is a series of falling notes, introductory note highest in pitch and longer than subsequent notes, which are given at a much faster pace than group 1-3. Overall very similar to group 4.

We have measured basic sound parameters for all available recordings of song (n=29).

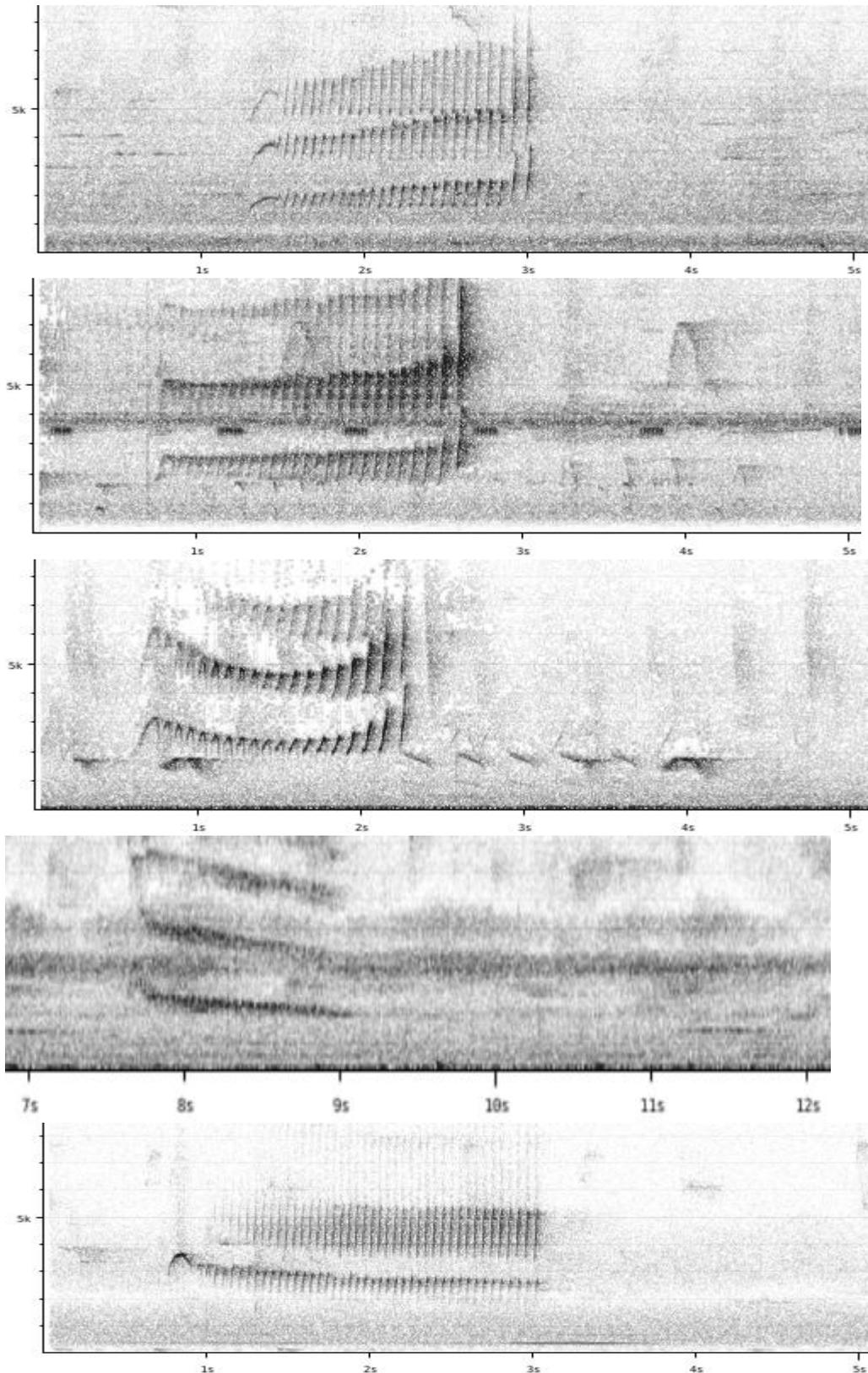


Figure 1: typical song of the 5 geographical groups, top to bottom: W Andean group, E Andean Group, S Andean group, Caribbean group and Brazilian group

Because of the vocal similarities, we have clustered group 1 and 2 and group 4 and 5 in our calculations (Table 1).

Cluster 1: the northern Andean group (*neglectus, albogularis, zamorae*)(no recordings of *perjanus*)

Cluster 2: the southern Andean group (*partridgei*)

Cluster 3: The Caribbean/Brazilian group (*insularis, mystaceus, canchromus*)(no recordings of *imatacae, ptaritepui, duidae, ventrali, bifasciatus, niveigularis*)

Taxon	Number Notes	Total length	Pace	max freq intro note	max freq end note	difference
cluster 1. W Andean and E Andean group: typically rising song, trilled slow	20,7 ± 5,48	1,59 ± 0,31	0,0783 ± 0,007	1608 ± 317	2658 ± 409	1028 ± 390
cluster 2. SE Andean group: typically falling then rising song, trilled slow	17,58 ± 4,9	1,494 ± 0,35	0,086 ± 0,004	2800 ± 163	3000 ± 282	200 ± 163
cluster 3. Caribbean and Brazilian group: typically falling song, trilled fast	39,4 ± 8,2	2,064 ± 0,56	0,052 ± 0,006	3695 ± 346	2615 ± 517	-1080 ± 438

Table 1: Summary of measurements for the 3 vocal clusters (average ± SD)

Cluster 1 and 3 have the largest divergence:

Introductory note frequency (effect size 6.29, score 3) , pitch trend (effect size 5.08, score 3), number of notes (effect size 2.68, score 2) and pace (effect size 4.034, score 2).

Cluster 2 is actually intermediate (first falling then rising, a little bit of both!), but closer to Cluster 1.

Difference with Cluster 1 is mainly introductory note frequency (effect size 4.73, score 2) , frequency evolution (effect size 2.77, score 2),

Interestingly, this seems to be exactly the same conclusion as in HBW (Tello 2015) based on morphological characters (e.g. cluster 1 dark lower mandible, cluster 3 pale lower mandible, cluster 2 intermediate), including the rather surprising affinity between Brazilian and N Venezuelan races.

We can thus conclude:

(Northern/Andean) White-throated Spadebill

The song is a rising series of notes, with the lowest pitched introductory note longer. Compared with 'Eastern White-throated Spadebill' which has a falling series with high-pitched introductory note and much faster pace, main differences are frequency of introductory note (effect size 6.29, score 3), frequency evolution (effect size 5.08, score 3), number of notes (effect size 2.68) and pace (effect size 4.034). When applying Tobias criteria this would lead to a total vocal score of 6.

(Eastern) White-throated Spadebill

The song is a fast descending series of notes, with a long high-pitched introductory note. Compared with 'Northern/Andean White-throated Spadebill' which has a rising slower song, main differences are pitch of introductory note (effect size 6.29, score 3), pitch trend (effect size 5.08, score 3), number of notes (effect size 2.68) and pace (effect size 4.034). Total score 6.

(Southern Andean) White-throated Spadebill

The song is a falling then rising series of notes, with introductory and end note well pronounced and at similar pitch. Compared with (Northern) Andean White-throated Spadebill which has a rising song, , main differences are frequency of introductory note frequency (effect size 4.73, score 2) and frequency evolution (effect size 2.77, score 2). Total score 4.

If *partridgei* would not reach the threshold for species recognition based on all characters together, then it is closest to the Northern Andean group, and should be included in this enlarged Andean group, while giving it a separate group status.

The main differences of the enlarged Andean group compared to the Eastern group are: Eastern group has a song starting with higher-pitched introductory note (2) and is followed by many more notes (2) given at much faster pace (2), with an overall longer duration (1).

We did not analyze the possible difference in call notes.

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References

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