

Notes on the vocalizations of Olivaceous Flatbill (*Rhynchocyclus olivaceus*)

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In the following we briefly analyze and compare voice of the different races of Olivaceous Flatbill (*Rhynchocyclus olivaceus*). 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).

There seem to be 2 groups which have a very different song (Fig. 1):

Group 1: birds from Panama south to Bolivia and E to NE Venezuela (races *bardus*, *mirus*, *flavus*, *aequinoctialis* and *jelambianus*)

Song is a series of typically 5-10 whistles, initially flat and burry, gradually shifting to louder purer whistles which accelerate and rise in pitch (sometimes ending in a stuttered series, possibly when excited or after playback).

We measured following parameters (n=12):

# of notes	5-10 (up to 18 in excited songs)
total length	1.72-3.0s
longest note	0.31-0.47s (down to 0.20s in excited songs)
start mid freq.	1940-3000Hz
end mid. freq.	2900-3600Hz
start minus end freq	-550Hz to -1100Hz
total freq range	1700-3000Hz (less in poor recordings not capturing all frequencies)
average pace	0.31-0.46s (down to 0.14s in excited songs)

Group 2: birds from the Guianas and S of the Amazon east of the river Madeira (races *guianensis*, *sordidus* and *olivaceus*)

Song is a fast series of very buzzy notes (covering a wide freq. range with many close frequency bands), which descend in pitch. There is no clear acceleration/deceleration.

Measurements:

# of notes	8-20
total length	0.85-2.9s
longest note	0.075-0.13s (up to 0.26s when excited, with emphasized initial notes)
start mid freq.	3500-4500Hz
end mid. freq.	2100-2900Hz
start minus end freq	+600Hz to +1900Hz
total freq range	2100-3000Hz
average pace	0.08-0.11s (up to 0.145s when excited, with emphasized initial notes)

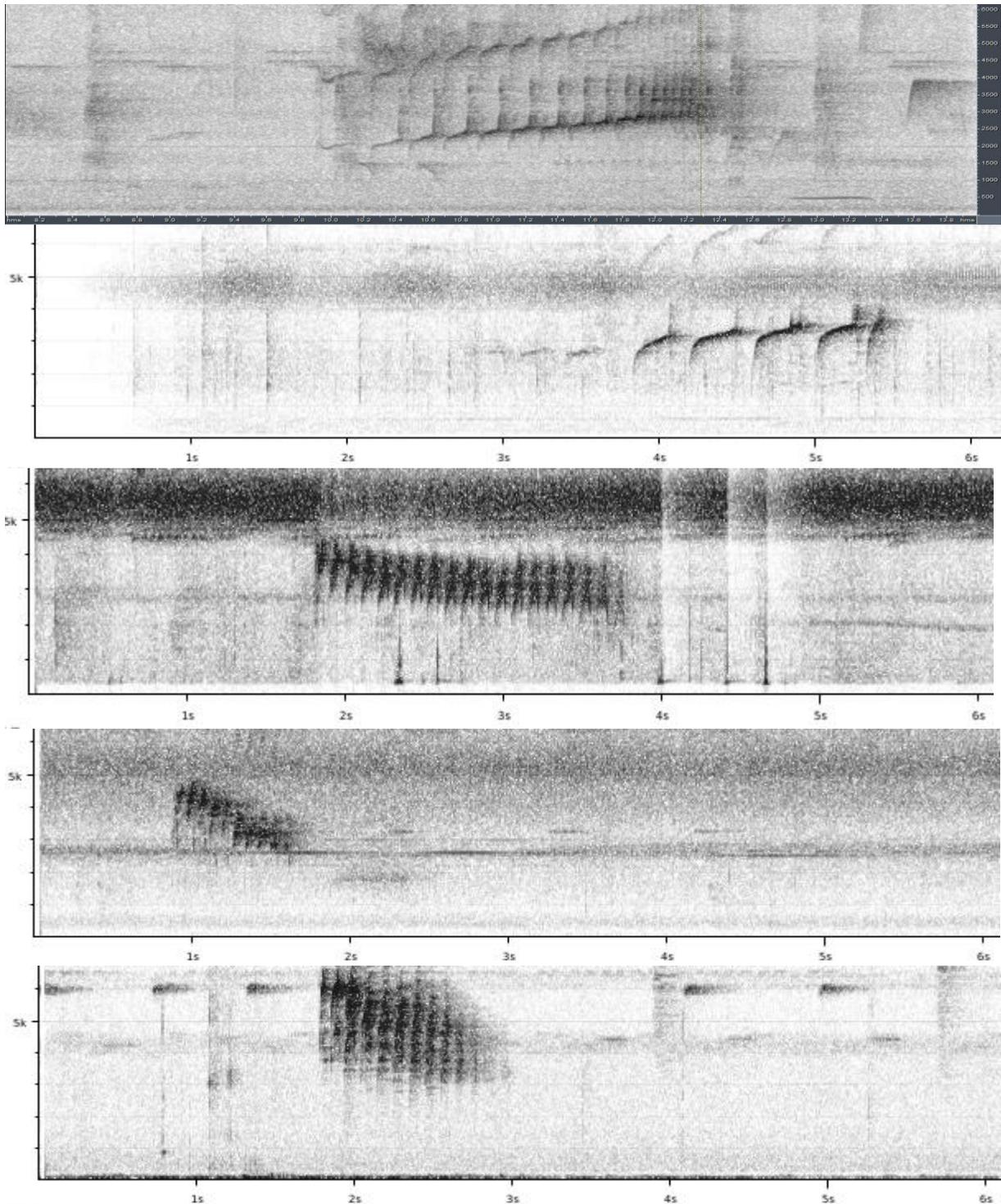


Figure 1: top to bottom: typical song of races *flavus*, *aequinoctialis*, *guianensis*, *sordidus* and *olivaceus*

Comparison of the 2 groups:

The rising vs. descending series is reflected in the parameter 'start freq. minus end. freq.' (score 3-4), also average pace is much faster in eastern birds (score 2-3), while song of the latter group is further typified by a higher start frequency and a lower end frequency (score 2-3), shorter notes (score 2-3). When applying Tobias criteria this would result in a total score for vocal difference of about 6.

Some caution is needed however:

There is a single recording (XC90673) from W Amazonia (the only recording in a radius of c. 800km), which has a somewhat intermediate voice, lacking the typical parameters of any group. This may be an indication of a clinal zone in W Amazonia south of the Amazon river.

More vocal differences may be found in call notes, as Group 1 frequently utters a short explosive harsh rising rattle while this is not the case in Group 2.

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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.

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