

Notes on the vocalizations of Lesser Wagtail-tyrant (*Stigmatura napensis*)

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In the following we briefly analyze and compare voice of the different races of Lesser Wagtail-tyrant (*Stigmatura napensis*). 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).

Song is a lively asynchronous duet, one bird uttering a descending rattle, the other uttering several more melodious notes. Structurally similar in all races. (There is apparently also another song-like vocalisation, different from the melodious notes uttered during duet, not clear in which context. This was not analyzed further).

More detailed analysis reveals however clear differences in duet (Fig. 1):

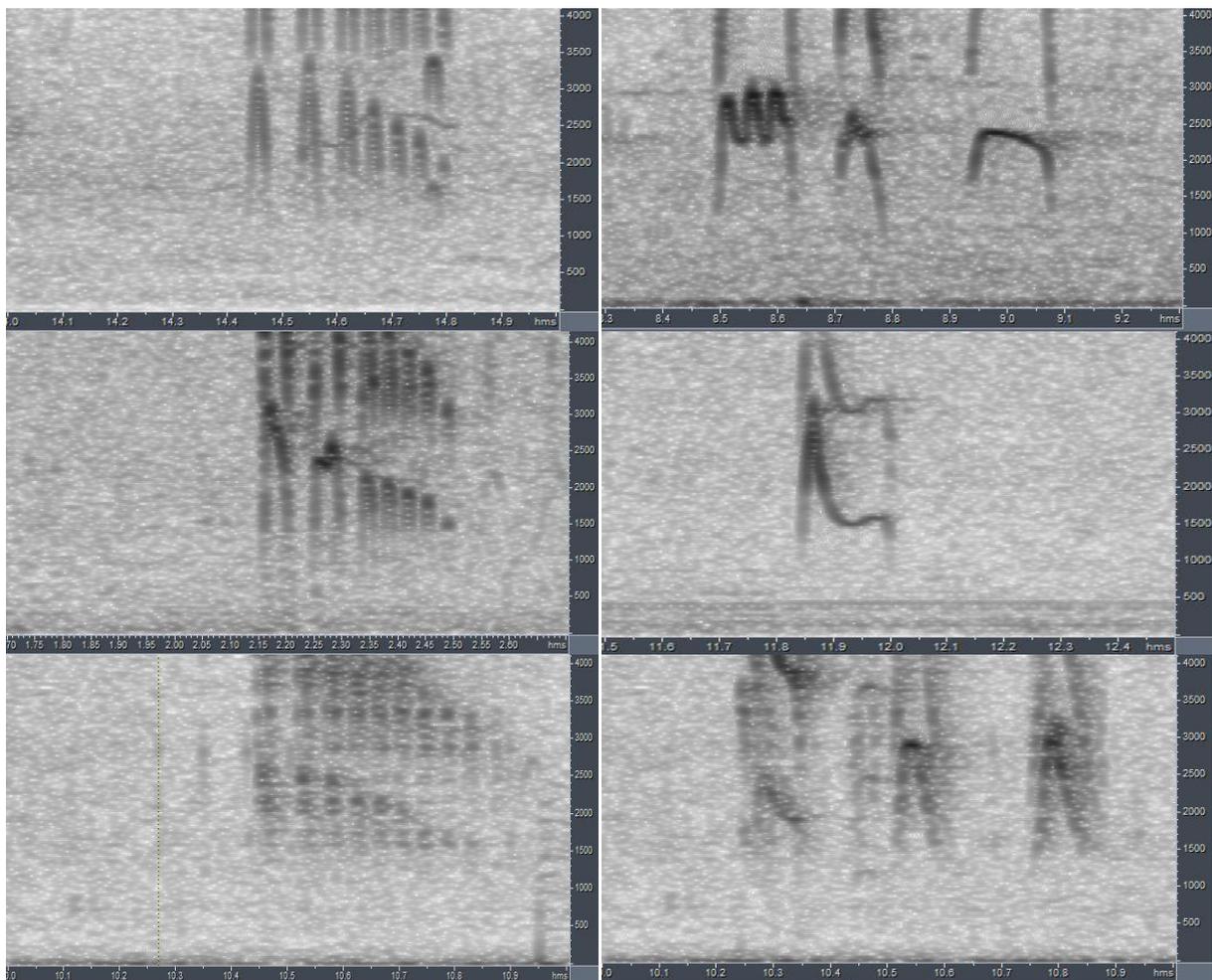


Figure 1: top to bottom: *bahiae*, *napensis* and orinoco population, left: rattle, right: melodious notes of partner

These differences can be quantified as follows:

bahiae (n=8)

descending rattle	
# notes	6-10
pace	0.055-0.06
max. note length	0.05-0.06s
acceleration	60-90% (ratio final pace/initial pace)
melodious notes	
pattern	trrr...tree...tuu
note shape	first note curly, second note shortest and slightly curl, last note clear and rounded or flat and lowest in pitch
max. note length	0.14-0.17s
min. note length	0.085-0.11s
max. freq.	2900-3760Hz (first note highest)

napensis(n=7)

descending rattle (more a stutter or 'bouncing ball' series than a rattle)	
# notes	6-12
pace	0.045-0.06
max. note length	0.065-0.09s
acceleration	35-50%
melodious notes	
pattern	'chiow...chow' or just 'chow'
note shape	both notes similar and like 'accent circonflexe' (triangle head) with right leg more or less extended
max. note length	0.13-0.18s
min. note length	0.115-0.14s
max. freq.	2800-3700Hz

Orinoco population (n=2)

descending rattle	
# notes	8-10
pace	0.045-0.05
max. note length	0.04-0.05s
acceleration	80%
melodious notes	
pattern	'chew!...chee...chee' (last note sometimes omitted)
note shape	first note dagger-shaped, second two nicely rounded, last note highest in pitch
max. note length	0.12-0.13s
min. note length	0.09s
max. freq.	3050-3100Hz

There are clear differences between the 3 easily identified populations, with the Orinoco population sharing also features with *bahiae* rather than *napensis*, e.g. a fast descending rattle which is fast from the start (unlike the stuttering series of *napensis* which starts with long emphasized differently-shaped notes).

This strongly suggests that the Orinoco population is an undescribed taxon with its own vocal features (rather than being part of *napensis*).

If we don't merge the Orinoco-population with *napensis*, then vocal differences can be quantified as follows:

bahiae vs *napensis*: *napensis* has a more accelerating rattle(score 2) with longer initial (irregularly-shaped) notes (score 2). Melodious notes of partner fewer (score 2-3) and about equal in length (score 1-2). When applying Tobias criteria, this would lead to a total vocal score of 4.

orinoco vs. *napensis*: *napensis* has a more accelerating rattle (score 2) with longer initial (irregularly-shaped) notes (score 2). Melodious notes of partner fewer (score 1) and longer in length (score 1-2): total vocal score about 4.

orinoco vs. *bahiae*: *bahiae* has longer melodious notes (score 2) and note shape very different (score 1-2) with highest pitch on first note rather than last note (score 1-2): total vocal score 3-4.

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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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