

## Notes on the vocalizations of White-browed Shortwing (*Brachypteryx montana*)

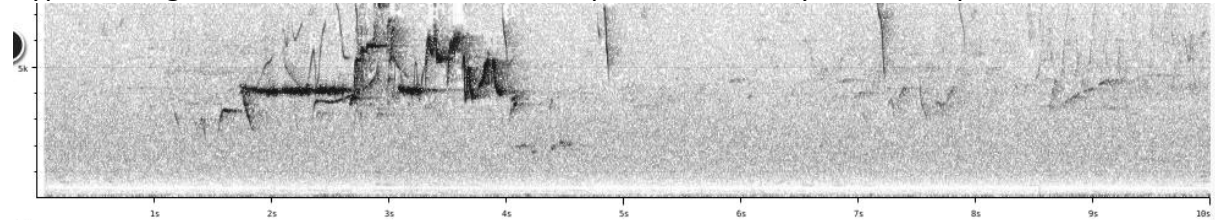
Peter Boesman

In the following we briefly analyze and compare voice of the different races of White-browed Shortwing (*Brachypteryx montana*). 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).

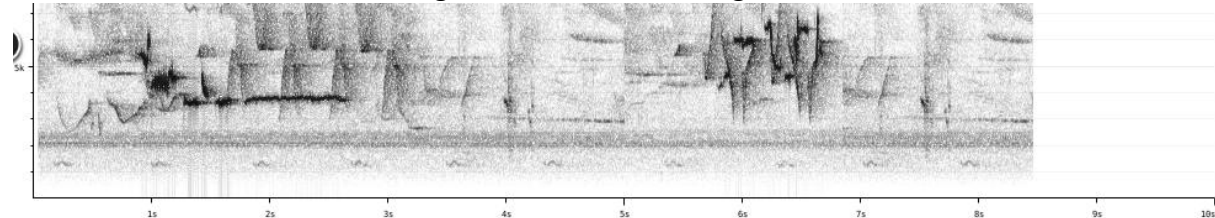
Song of *B. montana* shows significant variation over its extensive range. An overview of song per race with some examples (supported by more similar recordings for every race, unless mentioned otherwise):

*cruralis* (Himalayas):

'Typical' song: some intro notes at about flat pitch followed by a warbled phrase

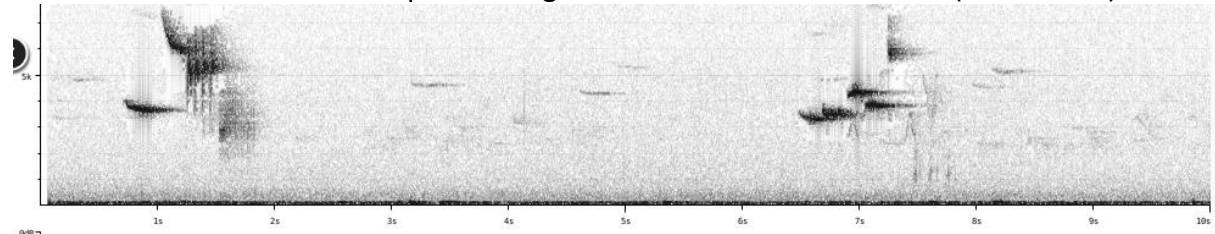


but sometimes inverted with long note at end, or lacking:



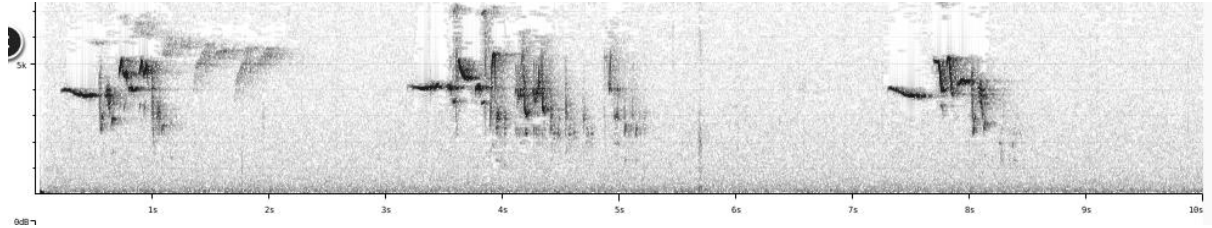
*sinensis* (C & SE China):

Typical song is a short phrase with few notes, starting with a fairly short note at flat pitch. Differs from *cruralis* in shorter phrase length and lower number of notes (less warble).



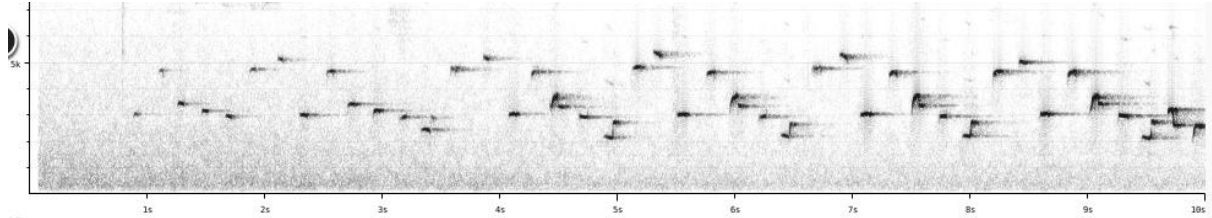
*goodfellowi* (Taiwan):

Typical song is a short phrase, starting with a fairly short note at flat pitch. Very much like *sinensis* (probably not safely told apart).



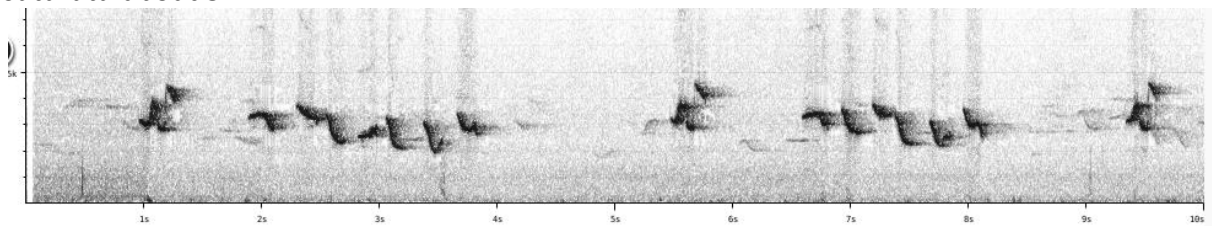
*saturata* (Sumatra):

Typical song is very different from above races: a long phrase of short staccato notes going up and down the scale many times, gradually increasing in volume.



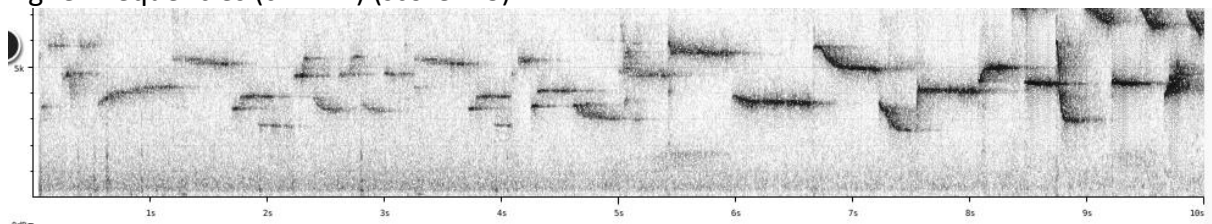
*montana* (Java):

Typical song is a pleasant leisurely-delivered melodious song phrase, at rather stable pitch (all notes typically between 2kHz and 4-4.5kHz). Irregular pauses and longer phrases alternated by shorter ones. Has longer, more flute-like notes than *saturata* (2) and notes don't show an up-and-down repetitive pattern (1-2), with narrower frequency range (1-2). Phrase lengths shorter (3) and no gradual build-up of amplitude (2). Total score vs. neighbour *saturata* about 5.



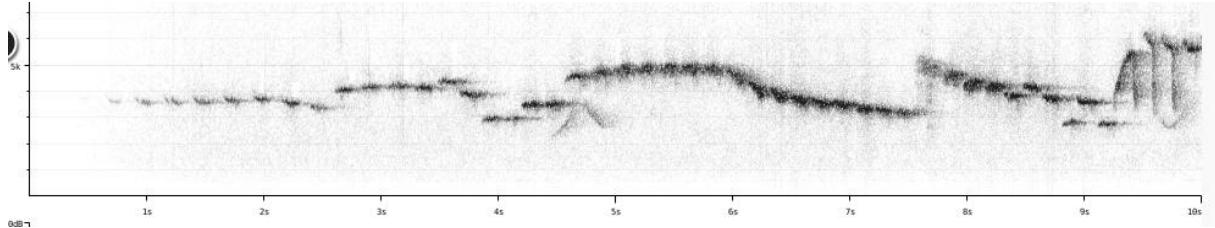
*erythrogyna* (Borneo):

Song has more flute-like notes than *saturata* with a somewhat similar up-and-down the scale structure but lacking a clear repetitive pattern, vocally closer to *saturata* than *montana*. Differs from *montana* by longer song phrase (score 2-3) and larger frequency range reaching higher frequencies (c. 7kHz) (score 2-3).



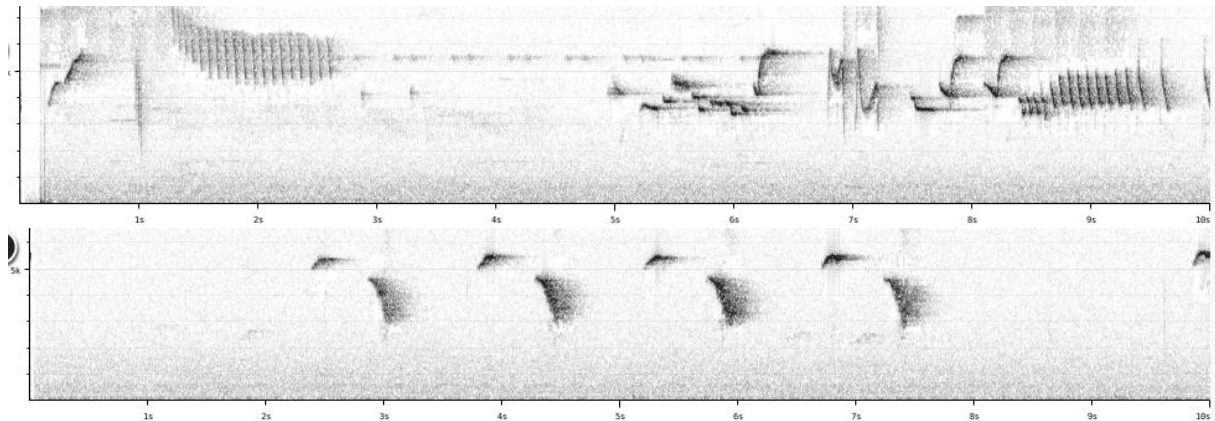
*mindanensis* (Mindanao, Philippines):

Typical song is very peculiar, quite unlike any other race, starting with a long series of repeated notes, gradually increasing in volume, and continuing with many repeats. A long phrase!



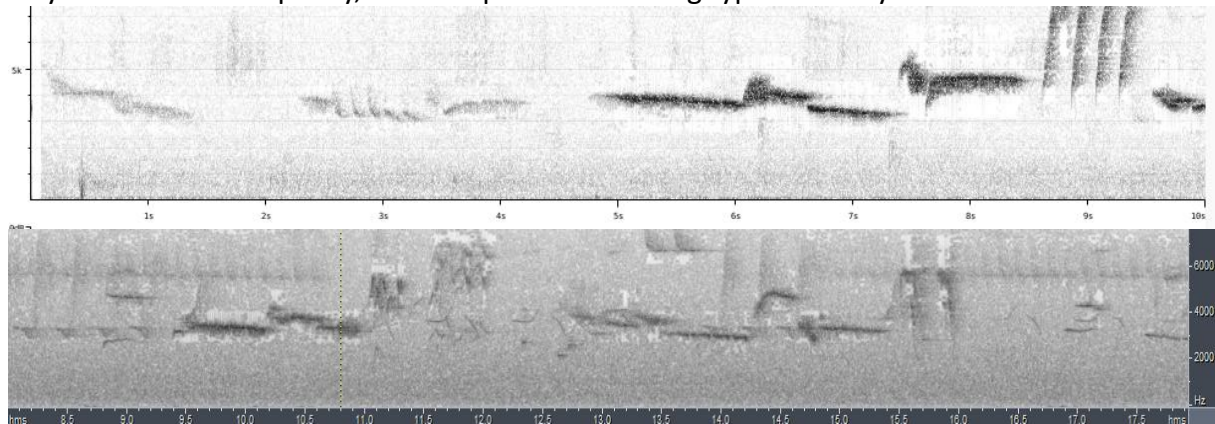
*brunneiceps* (Negros & Panay, Philippines):

Song is quite different from its more southern neighbour *mindanensis*. Only a few recordings available and seems to have two song types, a simple 2 notes repeated and a more complex warbling song. Not closely resembling any of the above races, but neither showing specific characteristics.

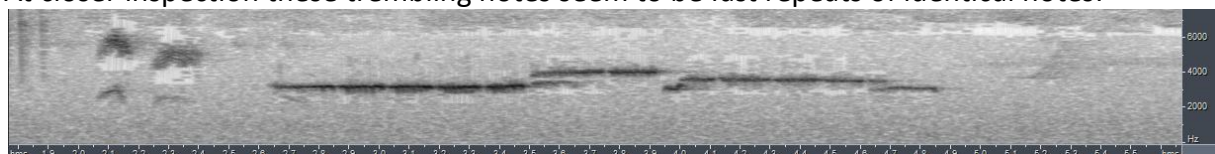


*poliogyne* (Luzon, Philippines):

Song is a leisurely delivered whistled phrase, not unlike *montana*, but whistled notes have a very eerie trembled quality, which separates this song type from any other race.

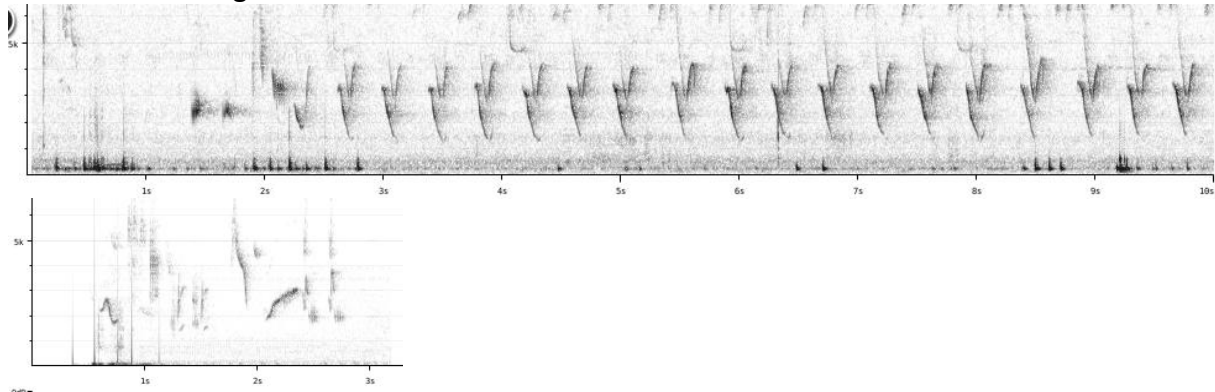


At closer inspection these trembling notes seem to be fast repeats of identical notes:



*floris* (Flores, Indonesia):

We have only 2 recordings available of song, which don't allow to draw any firm conclusions, but both recordings different from above races:



Compared to other races lower frequencies seem to be reached.

There are no recordings available for several additional Philippine taxa (and there is seemingly an additional undescribed taxon on Mindanao with a song different from *mindanensis*).

From the above, it is clear that this is quite a complex case. There are vocally several fairly distinct groups:

*Group 1: cruralis/sinensis/goodfellowi*

Song is a typical robin-like song often starting with an initial whistle, followed by a short melodious phrase, occasionally ending with a more scratchy or rattling part. Within this group, *sinensis* and *goodfellowi* are very similar. *cruralis* somewhat different, with typically a longer song phrase (score 1-2) and on average more notes/phrase (score 1), total score about 2-3.

*Group 2: saturata/erythrogyna/montana* is a more heterogeneous group:

*saturata*: song closest to *erythrogyna*, but still unique by its short staccato bell-like notes going up and down the scale in a repetitive pattern. Score vs. *erythrogyna* based on note length and repetitive pattern 3 + 1=4. Score vs. *montana* 5 (see above). Score vs.

*cruralis/sinensis/goodfellowi* based on much longer phrase length (score 3-4), short notes (score 2-3) and high number of notes (3). Total score about 6.

*erythrogyna* vs Group 1: much longer song phrase (3-4) and much more notes/phrase (score 2-3) total score about 6.

*montana* vs Group 1: narrower freq. range (score 2) with lower max. freq. (score 3) and slower average pace (score 2). Total score 5.

*mindanensis*: just like *saturata* standing apart because of its unique song structure, gradually building up with pulsed note repetitions (score 2) smoothly changing into series with a larger pitch change up and down, resulting in a very long song phrase. Difference vs. Group 1 are the much longer song phrase (3) and higher number of notes (3), vs. group 2 difference less straightforward to quantify, could be expressed e.g. as # of repeated near-identical notes (score 3) and additionally longer song phrase than *montana* (2), no phrase repeat as in

*saturata* (2).

*poliogyna* is unique in having long trembled notes which are actually pulsed repeated notes (score 3 vs. all other races, score 2 vs. *mindanensis*). Phrase length longer than group 1 (2) and shorter than *saturata*, *erythrogyna* and *mindanensis* (score 2-3). Phrase length similar to *montana*, but differs from this taxon by pace (1-2).

*brunneiceps* and *floris* are poorly documented, and only roughly estimated scores can be given:

*floris* looks quite distinct with low frequency burry notes, and apparently peculiar long repeats of short phrases (estimated score about 4 vs. other races).

*brunneiceps* even less clear, given the apparent existence of 2 song types. One song type somewhat similar to *erythrogyna*, the other rather unique a double note repeated (estimated song score about 4-5 vs. group 1, about 3-4 vs. other races except *erythrogyna*).

In summary, we get the following score table:

	<i>montana</i>	<i>erythrogy</i>	<i>brunneice</i>	<i>poliogyna</i>	<i>mindanen</i>	<i>cruralis</i>	<i>sinensis</i>	<i>goodfello</i>	<i>saturata</i>	<i>floris</i>
<i>montana</i>	-	5	(3-4)	5	5	5	5	5	5	(4)
<i>erythrogyna</i>		-	(?)	5	3	6	6	6	4	(4)
<i>brunneiceps</i>			-	(3-4)	(3-4)	(4-5)	(4-5)	(4-5)	5	(4)
<i>poliogyna</i>				-	4	5	5	5	5	(4)
<i>mindanensis</i>					-	6	6	6	5	(4)
<i>cruralis</i>						-	2-3	2-3	6	(4)
<i>sinensis</i>							-	0	6	(4)
<i>goodfellowi</i>								-	6	(4)
<i>saturata</i>									-	(4)
<i>floris</i>										-

All mentioned scores are well-considered estimations, but would obviously benefit from confirmation by a more detailed measurement and quantification of the sound parameters (which was not possible here due to time constraints).

This note was finalized on 22nd June 2016, using sound recordings available on-line at that moment. We would like to thank in particular the many sound recordists who placed their recordings for this species on XC.

## 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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