

## Notes on the vocalizations of Northern Scrub-flycatcher (*Sublegatus arenarum*), Amazonian Scrub-flycatcher (*Sublegatus obscurior*) and Southern Scrub-flycatcher (*Sublegatus modestus*)

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In the following we briefly analyze and compare voice of the different races of Northern Scrub-flycatcher (*Sublegatus arenarum*), Amazonian Scrub-flycatcher (*Sublegatus obscurior*) and Southern Scrub-flycatcher (*Sublegatus modestus*). 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).

Formerly considered one single species, all recent taxonomies recognize three distinct *Sublegatus* species, although there seems to be little or no published research that supports this: Northern Scrub Flycatcher *S. arenarum*, Amazonian Scrub Flycatcher *S. obscurior* and Southern Scrub Flycatcher *S. modestus*.

There has been some debate where taxon *orinocensis* belongs, but typically it is included in *S. arenarum*.

*S. arenarum* and *S. obscurior* are not very vocal, as a consequence there are not many recordings available of these species.

All three (currently recognized) species have a typical dawn song, and at least one day-time call note. *S. arenarum* seems to have the most extensive day-time vocabulary. There are also quick note successions, typically of very excited birds. We have compared these voices, except for the latter.

### 1. Dawn song

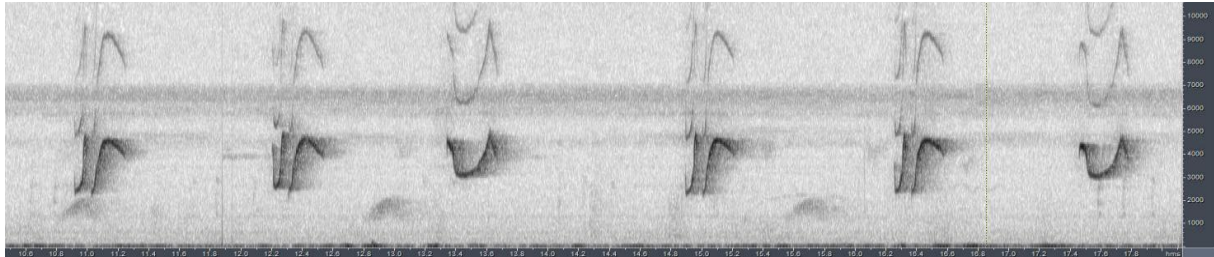
The dawn song of *Sublegatus* members consists of 2 phrases which are repeated intermittently with fairly long pauses in between, e.g. ABABAB.. or AABAAABABAAB.. etc.

There are very few recordings of *S. arenarum* and *S. obscurior* (too few for a statistical analysis), but the existing recordings coincide in the following:

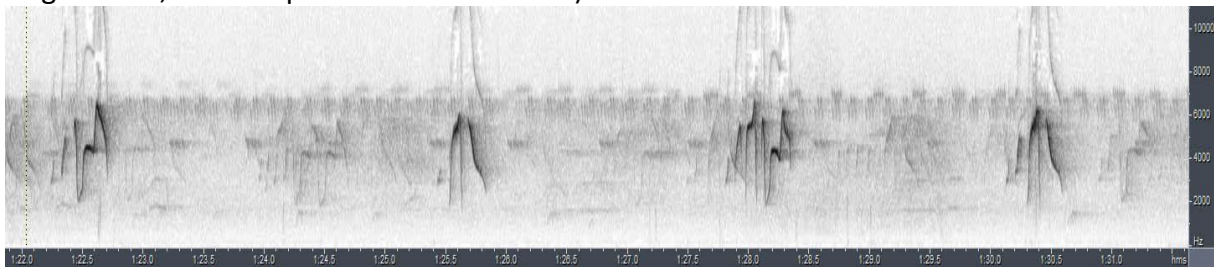
*S. arenarum (glaber)*: two simple phrases, one is a bisyllabic 'wee-eew' (min. freq. 2000Hz, max. freq. 4000Hz, length 0.34s) with max. amplitude in the center, the other is a bisyllabic 'tsee-weeh!' (min. freq. 2000Hz, max. freq. 4600Hz, length 0.33s) with max. amplitude towards the end:



*S. obscurior*: two simple phrases, one is a slightly plaintive underslurred 'tseeet' (min. freq. 3000Hz, max. freq. 5000Hz, length 0.34s) with max amplitude in the beginning, the other is a double-noted 'chee-weeh!' (min. freq. 2100Hz, max. freq. 5000Hz, length 0.33) with max. amplitude at 1/3 of the second note (equivalent to the centre of the phrase).



*S. modestus (brevirostris)*: two phrases which are far more complex than previous two species, and which can be transcribed as 'tsee-tsee-leweet!' (min. freq. 2000Hz, max. freq. 6500Hz, length 0.55s, max. amplitude on last syllable) and 'tswee-tsew' (min. freq. 1500Hz, max. freq. 5900Hz, length 0.31s, max. amplitude on both notes).



The following scores could be given for vocal differences:

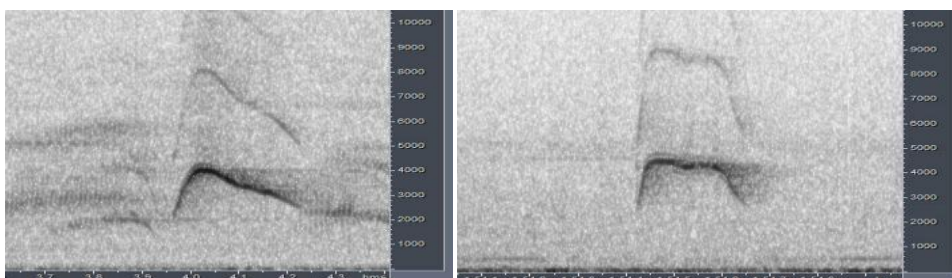
*S. modestus*: Dawn song has clearly a higher 'number of note elements per phrase' (score 4), a longer 'length of longest phrase' (score 3), and a higher 'max. frequency' (score 3; all scores vs. both other species)

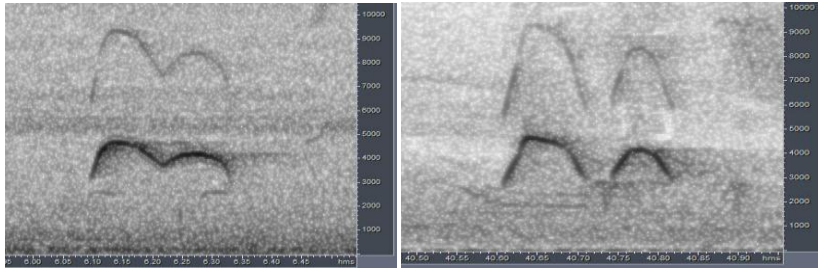
*S. obscurior* (vs. *S. arenarum*): 'Max. frequency' is higher in *obscurior* (score 2) and has bisyllabic notes vs. double and single notes (but barely audible) (score 1-2).

## 2. Day-time calls

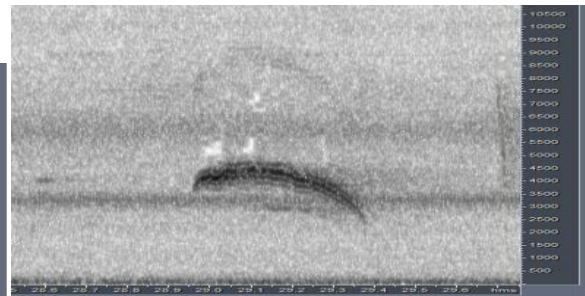
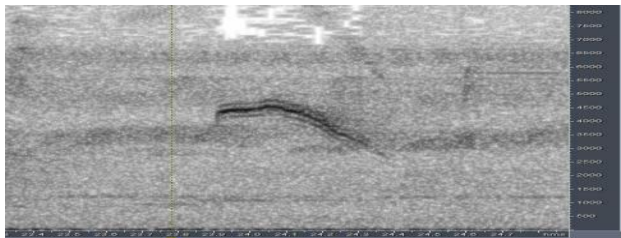
*S. arenarum*: Unlike the other two species, several calls have been recorded, although most seem to be 'related variants', ranging from (rarely) a single overslurred whistle to a bisyllabic whistle to two separate overslurred notes. (This is valid for *S.a. glaber*, but also (based on few samples) for *S.a. arenarum*, *pallens* and *orinocensis*, no samples for the island races *atirostris* and *tortuguensis*).

Min freq. 2500Hz, max. freq. 4400Hz, length 0.25s, max. amplitude on highest frequency:

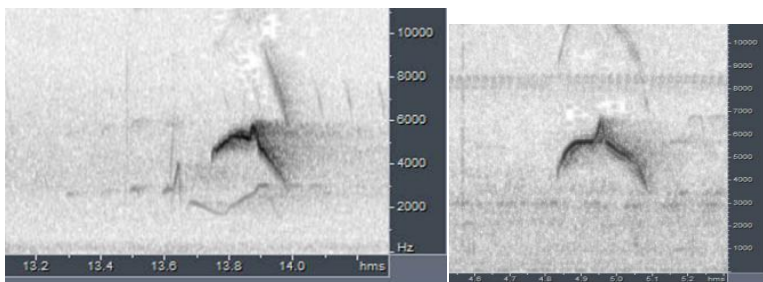




*S. obscurior*: The c. 10 recordings available all are of a (usually slightly burry) descending call note 'pzzeew', occasionally preceded by a single note 'pee-pzzeew', possibly when excited. Single call note: min. freq. 2800Hz, max.freq. 4750Hz, length 0.40s, max. amplitude in the first 1/4 length:



*S. modestus*: Almost all of the available recordings (approx. 30) are of the same type of call note, indicating this may be the only one commonly used: a short overslurred whistle 'pseeew!', with a distinct frequency peak in the middle of the note (when excited with faint introductory notes). Min. freq. 3200Hz, max. freq. 6200Hz, length. 0.25s, max. amplitude at approx. 1/3 of note length(both *S.m.modestus* and *S.m. brevirostris*):



The following scores could be given for vocal differences:

*S. modestus* reaches a 'Max. frequency' considerable higher due to central peak (score 3), and 'Note length' is shorter vs. *obscurior* (score 3).

*S. obscurior* (vs. *S. arenarum*) has a longer 'Note length' (even vs. double note of *arenarum*) (score 3) and seems to have a smaller vocabulary (score 1-2).

**In summary:**

***S. arenarum***

Dawn song, a long series of two phrases repeated intermittently, differs from *obscurior* in lower max. frequency (score 2), notes/phrase and general pattern. Day-time calls cover a continuum from a single overslurred whistle to a bisyllabic whistle to two overslurred notes. Main differences with *obscurior* are shorter note length (score 3) and vocabulary range.

***S. obscurior***

Dawn song, a long series of two phrases repeated intermittently, differs from *arenarum* in higher max. frequency (score 2), notes/phrase and general pattern. Day-time call is a single descending note, with an initial burry quality, longer than *arenarum* (score 3) and much less variable.

***S. modestus***

Dawn song, a long series of two phrases repeated intermittently, differs from both *arenarum* and *obscurior* in much higher complexity (number of note elements per phrase or length of longest phrase: score 4 and higher frequency: score 3). Day time call is a short overslurred whistle with a distinct frequency peak halfway (higher frequency: score 3) and shorter note length vs. *obscurior*.

This note was finalized on 27th March 2015, 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 and ML.

**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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