

Notes on the vocalizations of Golden-crowned Flycatcher (*Myiodynastes chrysocephalus*) and Golden-bellied Flycatcher (*Myiodynastes hemichrysus*).

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In the following we briefly analyze and compare voice of the different races of Golden-crowned Flycatcher (*Myiodynastes chrysocephalus*) and Golden-bellied Flycatcher (*Myiodynastes hemichrysus*). 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).

Both species have a dawn-song and a commonly heard loud day-time song. We will compare both vocalizations for the 4 taxa. (There are also interaction calls etc. which we are discarding here).

Myiodynastes hemichrysus

dawn-song: a repeated "kwee!-tee-t-tu" (n=1)

min. freq.	2140Hz
max. freq.	5600Hz
total length	0.39s
length 1st note	0.13s

day-time song: a repeated loud strident "skeew!" (n=6)

min. freq.	1200-1550Hz
max. freq.	5350-5830Hz
total length	0.18-0.25s

M. c. minor

dawn-song: a repeated "kwee!-tee-tu" or "kwee!-tee-tu-ti-lu" (n=3)

min. freq.	1380-1590Hz
max. freq.	5290-5740Hz
total length	0.32-0.43s
length 1st note	0.12-0.14s

day-time song: a loud strident "skeeeuw!" (n=6)

min. freq.	1030-1450Hz
max. freq.	5000-5550Hz
total length	0.15-0.29s

M. c. cinerascens

dawn-song: a repeated "kwee!-tee-tu" (n=2)

min. freq.	1300-1320Hz
max. freq.	5030-5120Hz
total length	0.37-0.39s
length 1st note	0.15-0.16s

day-time song: a loud strident "skeew!" or "skeeeuw!" (n=6)

min. freq.	1060-1400Hz
max. freq.	4540-6340Hz
total length	0.17-0.28s

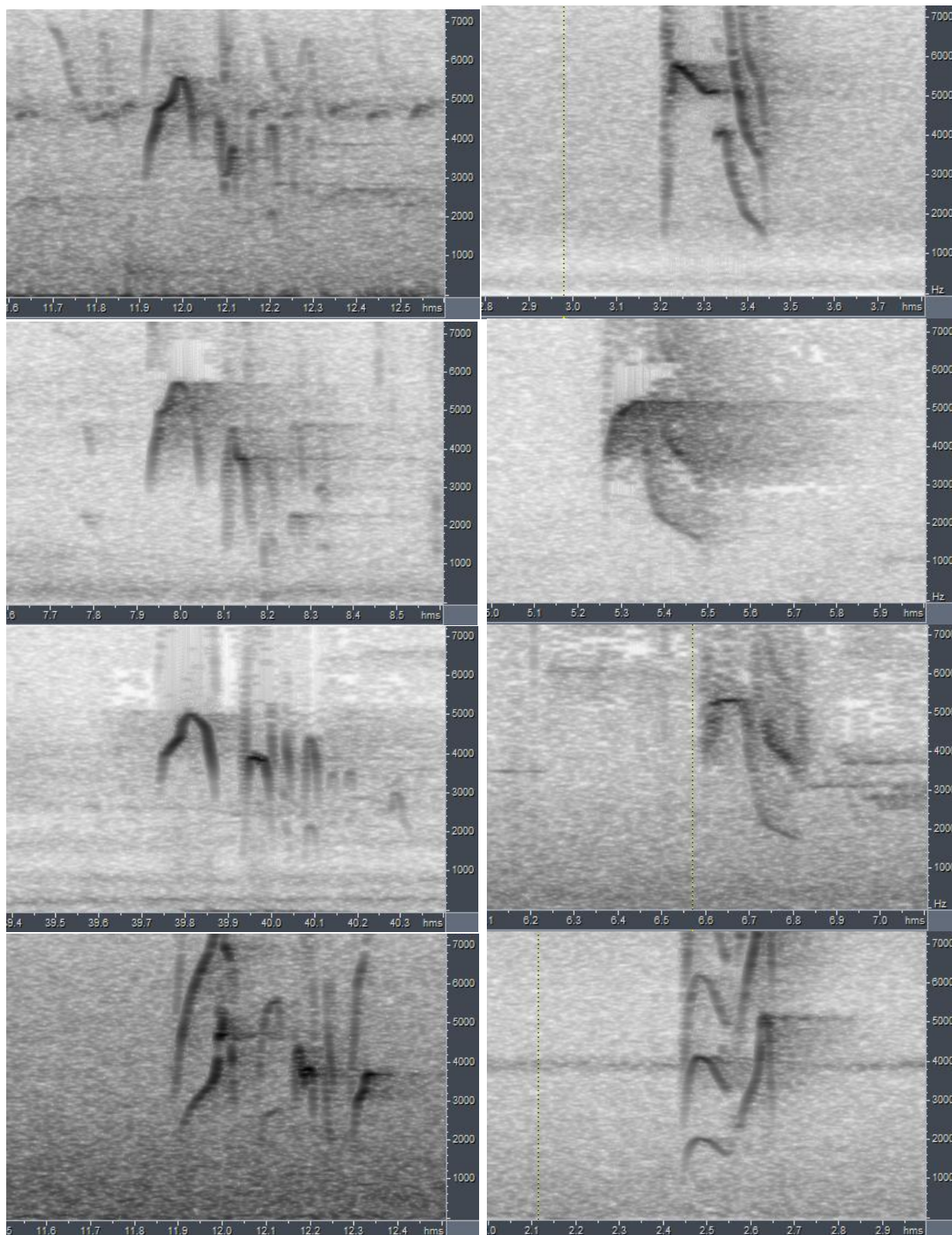


Figure 1: from top to bottom: dawn song (left) and day-time song (right) of *M. hemichrysus*, *M.c.minor*, *M.c.cinercens* and *M. c. chrysocephalus*

M. c. chrysocephalus

dawn-song: a repeated "kwee!-tlu-tee" (n=2)

min. freq.	1950-2050Hz
max. freq.	5220-5300Hz
total length	0.42-0.46Hz
length 1st note	0.12-0.13s

day-time song: a loud strident "ku-weet!" or "ku-weet!.. weet!" (weet! sharply rising and much higher-pitched than first note) (n=8)

min. freq.	1150-1380Hz
max. freq.	4000-5300Hz
total length	0.22-0.66s
# of notes	2-3

It is clear from the above analysis that the only race which has clear vocal differences is *M. c. chrysocephalus*.

Voice of *Myiodynastes hemichrysus* is about identical to *M.c. minor* and *M.c. cinerascens*.

We would need a large number of samples to prove any consistent difference, but in any case it would be very small. (Possibly the note shape is slightly different, with *M. hemichrysus* having a little notch at the right side of the day-time song). Difference score for these taxa is thus 0 (or possibly 1).

Difference with *chrysocephalus* at the other hand is quite noticeable:

Day-time song has 2 (or 3) distinct notes (score 3) with very different note shape (score 1) and slightly longer overall length (score 1).

Dawn song ends with a fairly emphasized rising note (unlike all other races which end in subdued notes) (score 2) and note shape of first note different (score 1).

The fact that both dawn song and day-time song are clearly different makes this case even more convincing. When applying Tobias criteria, this would lead to a total vocal score of about 5.

This note was finalized on 13th July 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.

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