

Field notes on two subspecies of the Variable Sunbird *Cinnyris venustus* in an area of parapatry in western Kenya

The subspecies *falkensteini* is the common Variable Sunbird *Cinnyris venustus* taxon in much of Kenya, being present in gardens and shrub habitats in the central Kenya highlands, extending west to Mt Elgon, Bungoma, Kakamega, Kisumu and the Lambwe Valley (Britton 1980, Zimmerman *et al.* 1996, JB, pers. obs.). Meanwhile, the subspecies *igneiventris* is strictly western, occurring from lowlands in Uganda eastwards into western lowland areas of Kenya at Malaba, Bungoma and Siaya (Britton 1980, Zimmerman *et al.* 1996, JB, pers. obs.).

On 19 November 2021 we birded a small rocky hill 6 km north of Bungoma at 0°37.3' N, 34°33.17' E in western Kenya, at the periphery of the range of *falkensteini*, and simultaneously made close observations of both this form and taxon *igneiventris*. These two taxa were apparently coexisting side by side, but were evidently separated ecologically and behaviourally in a number of ways.

Here we detail our field observations of these two sunbird taxa across a distance of barely 200 m, commenting on differences in appearance, song, behaviour and habitat selection.

Habitat selection and physical appearance

We found a single individual of taxon *igneiventris* near the top of the rocky hill that we were surveying at an altitude of 1550 m. The area consisted of huge granite boulders with interspersed pockets of trees including species from the genera *Combretum*, *Erythrina* and *Terminalia*. When we saw the bird making the fast and unfamiliar trilling song, we immediately recognized it as this form on the basis of a strong orange wash to the upper breast, becoming whitish on the lower belly and undertail coverts (Fig. 1A). We noted the upperparts to be particularly blue, with barely a hint of green. Unfortunately, we did not see a female or a juvenile male that was present as well, although the poor photograph we obtained of the male showed a bird that resembled exactly an individual we had seen nearby at Mumias (0°23'11" N, 34°30'46" E) the previous day (Fig. 1B).

Following our observations of *igneiventris* at the hill top, we descended to the base of the hill at an elevation of 1525 m, and only 230 m distance from the top of the hill, where we heard and immediately recognized the slower and less twittering Variable Sunbird song with which we were familiar from Nairobi. On sighting one of three singing males, it clearly lacked the orange wash to the breast, being a uniform sunshine yellow almost to the undertail coverts, which were a slightly dirtier whitish colour than in the *igneiventris* male seen 15 minutes previously. We confidently referred these males to the form *falkensteini* (Fig. 1C), and also noted the upperparts to be distinctly greener than in the *igneiventris* male, and again, consistent with the appearance of birds eastwards in the central Kenya highlands. The three *falkensteini* males were observed in taller woodland with a more complete canopy than at the hill top, and which was comprised solely of mature *Acacia polyacantha*. To us, this area at the base of the hill felt slightly cooler and more humid than the summit of the hill, perhaps as a result of being more shaded by the large trees, and in being less exposed to the drying effect of the sun.



Figure 1. Images of the Variable Sunbird subspecies *C. v. igneiventris* at Bungoma (A; J. Bradley) and at Mumias (B; P. Steward), and of *C. v. falkensteini* (C; J. Bradley) at Bungoma on 18-19 November 2021, with upperparts bluer, breast more orange vs. yellow, and lower underparts whiter in the *C. v. igneiventris* males.

Vocalizations and behaviour

Before observing taxon *igneiventris* at the hill top, we were drawn to it by its song. This was unlike the song of birds in Nairobi, referable to *falkensteini*, and was not recognized as the voice of Variable Sunbird by either of us, and we are very familiar with the song of *falkensteini* from central Kenya. It was with some surprise that we found the bird to be a Variable Sunbird when we did finally set eyes on it. We observed it several times, but only briefly as the bird was highly mobile and actively chasing a single female (or juvenile male) around the trees on the hilltop. The song was noted to be fast and the typical phrases of the same repeated notes were interspersed with more varied and creative phrases incorporating notes with a sizzling and/or rapid chittering quality. From recordings taken on site (Fig. 2a, recording archived at ML#392791291), it could be seen that the delivery rate of notes in the typical phrase was 14.4 notes/second, and that the phrase begins with three to four short and clean, squeaky introductory notes. Gaps between phrases were measured to range from 2.1 to 7.9 seconds.

As with *igneiventris*, we were alerted to the individuals of *falkensteini* at the base of the hill by their song, which was consistent with what we were familiar with for the species. Three males were singing in a small area measuring approximately 50 m across, and were highly static, remaining in their chosen trees and favoured perches, unlike the feverish activity of the *igneiventris* male on the hill top. No females were observed and the males seemed engaged purely in counter singing. The song was audibly slower than that of the *igneiventris* male with the repeated notes of the typical phrase being delivered at 8.8 notes/second (Fig. 2b, recording archived at ML#392791321). Additionally, the phrase was not varied but remained the same for each repetition, and was introduced not by clean squeaky notes as in the *igneiventris* male but by either two short whistles or two distinctive sounding buzzy notes. All three of the *falkensteini* males were singing the same song phrase and the gap between phrases averaged longer than in the song of the *igneiventris* male, ranging from 4.5 to 10.7 seconds.

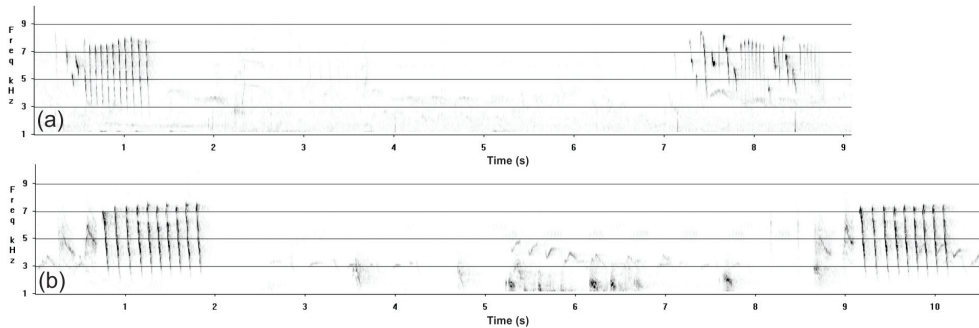


Figure 2. Sonograms of the song phrases of the Variable Sunbird subspecies *C.v. igneiventris* (a) and *C.v. falkensteini* (b) recorded in close proximity to each other near Bungoma on 18–19 November 2021, showing the faster delivery and more varied phrases of *igneiventris* (audio: J. Bradley).

Discussion

That two visually and vocally distinctive forms of the Variable Sunbird occur together in parts of western Kenya is not widely recognized. Granvik (1934), however, noted that some birds in the Mt Elgon region have the belly colour orange-yellow, and others plain chrome-yellow, presumably reflecting the two different taxa discussed here.

Whether the differences in vocalizations we recorded are maintained by each form, respectively, with increasing distance away from zones of overlap, is not known. We considered the possibility that the *igneiventris* male was singing a fast, high and twittering song different to the song of the *falkensteini* males on account of the female (or juvenile male) observed to be present with that bird. However, this seems unlikely to us as we are quite familiar with the song of *falkensteini* in the central highlands at Nairobi, and have never heard this song there at any time of year. While beyond the scope of this study, a review of vocalizations across a wider area could be informative in ascertaining whether the differences in song between the two taxa that we noted are consistent everywhere. We note further that not only were appearance and song of the birds different but the two taxa appeared to show quite different habitat preferences and behaviour on the date they were observed as well.

Based on the differences we observed, it seems possible that these two forms are reproductively isolated in this narrow area of parapatry where they appear to be separated by a mere 230m. Further research should specifically seek establish whether this is the case, as well as to more accurately define the extent of any broader overlap in range for these two taxa. A molecular comparison of the two forms to assess the level of correlation between any genetic divergence and the phenotypic, behavioural and vocal differences we observed, could also be informative.

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