

A survey of Echuya Central Forest Reserve, Uganda, for the breeding population of Grauer's Swamp Warbler *Bradypterus graueri*

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Summary

During March and April 2007 a survey was undertaken of breeding Grauer's swamp warblers *Bradypterus graueri* within Echuya Central Forest Reserve. Thirty-one breeding territories were discovered during the study, which translated to a total of about 50 territories (ranging between 40 and 73 territories) for the entire swamp.

Introduction

Echuya Central Forest Reserve (ECFR) is located in the extreme south-west of Uganda, straddling the border with Rwanda at 01°17' S 29°49' E. It is a montane rainforest of c.3400 ha extent incorporating the c.7 km long, 700 ha, high-altitude swamp of *Muchuya*. The forest lies between two north-south-aligned ridges, with its eastern and western borders lying essentially on the ridge tops and falling down steep sides into Muchuya swamp in the valley between. It ranges in altitude between 2270 and 2570 m. It is one of Uganda's 30 identified Important Bird Areas (IBAs) (Byaruhanga *et al.* 2001).

The forest is dominated by mature *Macaranga kilimandscharia* and *Hagenia abyssinica* together comprising c.80% of the forest cover, with a declining but still significant Mountain Bamboo *Yushania alpina* presence comprising c.20% of the forest cover. Muchuya swamp is dominated by the sedge *Pycneus nigricans*, with heather *Erica kingaensis*, giant lobelia *Lobelia mildbraedii* and red hot-pokers *Kniphophia* spp. being well represented.

Echuya was surveyed first in August 1993, and again in July, November and December 1994, as part of a broader National Forest Biodiversity Inventory Programme. About 150 species of birds have been recorded at Echuya, a relatively low number for its size and habitat diversity (Byaruhanga *et al.* 2001). However, this list includes 13 Albertine Rift endemics including an important population of the globally-threatened Grauer's Swamp Warbler *Bradypterus graueri* which lives within Muchuya swamp.

Methods

From 10 March to 18 April 2007, with the aid of staff from Nature Uganda,

I undertook a survey of the breeding population of the Grauer's Swamp Warbler within Muchuya swamp. The swamp was divided into four transect sections: northern, central, south-central and southern. These allowed for c.60-70% of the swamp area to be covered by our survey. Territories were mapped using a technique adapted from the UK Common Bird Census (CBC) territory mapping survey method, designed by the British Trust for Ornithology (Marchant 1983), which involved making multiple visits to each of the four transect sections. Although we initially aimed to visit each section three times, bad weather prevented third visits to the south-central and southern sections. The northern section had four full visits with additional monitoring in the course of other activities.

Results

Thirty-one breeding territories of Grauer's Swamp Warblers were discovered as follows: northern section 18; central 7; south-central 5; and southern 1. It was clear that the birds were clearly not uniformly distributed across the swamp, being apparently thinly distributed across the bulk of Muchuya swamp with the exception of the northern section, which is where more than half of all singing birds were recorded.

A rough extrapolation was made to give an estimated total number of territories for the whole swamp, based on the observed patchy distribution of warbler territories found during the study. Given that c.65% of the total swamp area was surveyed, with c.15% comprising the northern transect with 18 territories, and the remaining c.50% of the total swamp area having 13 territories, the following three assumptions can be made about the unsampled 35%:

- i) *Optimistic*: good (northern-type) quality habitat which may yield an additional 42 territories for a total of 73 territories for the swamp
- ii) *Pessimistic*: poor quality habitat (e.g. the southern and central sections), which may yield an additional 9 territories for a total of 40 territories
- iii) *Middle ground*: habitat quality was in the same proportions as the surveyed area, thus 8% good quality and 27% poor quality: this may yield an additional 17 territories (10 in the good quality and 7 in the poor quality) for a total of 48 territories.

In sum therefore, it is likely that the number of territories in the entire swamp ranged from 40 to 73, and was likely to be around 50 breeding territories at the time of this study.

Discussion and Conclusion

Although no previous complete studies of Muchuya swamp have been undertaken it has been thought that the swamp holds a very important population of Grauer's Swamp Warblers (Byaruhanga *et al.* 2001). In this first survey of the entire swamp, I found a total of 31 breeding territories,

translating to *c.*50 breeding pairs for the entire swamp. Though this is a notable population for this globally-threatened species, is perhaps smaller than has been assumed. Higher densities had been anticipated because previous estimates (obtained from yearly index survey work undertaken by the Institute of Tropical Forest Conservation (ITFC) (Carswell *et al.* 2005)) have been based on the relatively dense Grauer's Swamp Warbler population in the northern sector of the swamp. Indeed, assuming the rest of the swamp had similar densities as we observed on the northern side, then a total population of 120 breeding pairs could have been expected.

The uneven distribution of the Grauer's Swamp Warblers within the swamp may well be related to the variations within both the swamp's structure and plant species composition. The sparsely populated central, south-central and southern sections were fairly dry apart from along the central spring-line, and the vegetation was dominated by fairly tightly packed clumps of sedge with stands of giant lobelia, red-hot poker and tree heather. In contrast, the densely populated northern section of the swamp was notably wetter than the other sections and the dominant sedge species was present in more loosely packed clumps than found throughout the rest of the swamp. Better population estimates for the entire swamp could be obtained by surveying the vegetation structure at the non-surveyed areas to check if they are likely to be of high or poor quality.

This last point may be of particular significance because, when encountered, the Grauer's Swamp Warblers preferred to stay within cover, frequently being seen at one location only to reappear more than 10 m away. Indeed, they were only visible for any notable duration when singing. The looser structure of the vegetation in the northern swamp would allow the birds to move within cover whereas the tighter structure noted within the rest of the swamp may not be conducive to such movement and thus may be a significant factor limiting their breeding density here. More detailed research on the breeding requirements is required to elucidate this further.

As a comparison, Mubwindi swamp in Bwindi Impenetrable National Park was visited after the Echuya survey was completed. This swamp is estimated to have a population of 200-400 Grauer's Swamp Warblers (Byaruhanga *et al.* 2001). Though smaller than Echuya (*c.*400 ha swamp area, compared to 700 ha for Muchuya) the area visited appeared to have a structure akin to the northern sector of Echuya, which lends support to the hypothesis that a wet, more open structured swamp is more favourable to breeding Grauer's Swamp Warblers. Again, more detailed (comparative) breeding studies are necessary to establish the reasons for these disparities, besides building vital information for informing conservation actions for this species.

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References

- Byaruhanga, A., Kasoma P., & Pomeroy, D. 2001. *Important Bird Areas in Uganda*. Nature Uganda, East Africa Natural History Society, Kampala.
- Marchant, J.H. 1983. *Common Birds Census Instructions*. British Trust for Ornithology, BTO, Tring. 12 pp.
- Carswell, M., Pomeroy, D.E., Reynolds, J. & Tushabe, H. 2005. *The bird atlas of Uganda*. British Ornithologists' Union, Tring, United Kingdom.

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