



Some Aspect of the breeding ecology the Green-breasted Bush-shrike
Malaconotus gladiator

by

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Introduction

The range of Green-breasted Bush-shrike is restricted to some parts of western Cameroon and Cross River State (Obudu plateau and Cross River National park), Nigeria. They occupy forest habitats around the Nigerian-Cameroon highlands; they are mostly found secondary forests.

This species is listed as Vulnerable to extinction (Birdlife, 2016) based on small range which is currently fragmented. Its population size is also suspected to be declining due to loss of its habitat along its range (Birdlife, 2016). The rapid loss of habitat is due to anthropogenic activities such as agriculture, timber extraction and fuel wood collection.

There is very little information available on the breeding ecology of *M. gladiator*. Slightly hypertrophied gonads have been observed in December. The specific timing of the breeding period and breeding roles of individuals are not known. Also, the factors that determine the choice of breeding site and the diet of the young are not known.

This research will provide insight into when this species breed, their breeding sites, possible factors that may affect their choice of breeding sites and some aspects of their breeding activities. It will also aid in making management decisions on the conservation of the study species and its habitat.

The aim of this study is to investigate aspects of the breeding ecology of *Malaconotus gladiator*.

The specific objectives may include;

1. To determine the breeding period and habitat of *M. gladiator*
2. To investigate factors that may determine the choice of breeding habitat
3. To investigate if/how breeding roles are shared between individuals in a breeding pair

Research Methods

Study site

This project was carried out on the Obudu Plateau, Cross River State, South-eastern Nigeria (06°25'N 09°22'E). It is a western extension of the Cameroon mountain range. The terrain is mainly mountainous with plateau at about 1,500 m above sea level and peaks reaching up to 1,700 m. It has a large expanse of montane grasslands, with valleys supporting montane forests and streams. The Obudu Plateau is considered an Important Bird Area (IBA). This is owing to the fact that it consists of 8 globally threatened bird species, 18 endemic and 35 biome restricted bird species. Also, out of 550 locally endangered plant species, 52 are found on the Obudu plateau. The various forest patches/ sites that were visited during the field survey includes Banana village1 &2, Kejuckwu 1&2, Golf course, old Becheve Nature Reserve, Holy Mt, Anappe (Gorilla camp), Avase, Beleketete road, Becheve Nature Reserve2, Grotto, military barracks 1&2 behind government primary school. The livelihoods of the locals majorly depend on hunting, cultivation of cocoyam, and banana/plantain plantations within forest patches

Field methods

We surveyed each forest fragment for the presence of the study species. Each individual heard or seen was recorded. For sites where individuals were not observed, playback of the call of the study species was played to confirm their absence. For individuals present, their positions were recorded using a GPS. Vegetation variables were taken for all sites. The following variables were recorded;

- i. Number of large trees
- ii. Number of small trees
- iii. Percentage canopy cover
- iv. Number of shrubs
- v. Number of saplings

Statistical Analysis

All GPS points marked were transferred to the computer for analysis using Basecamp and were super-imposed on a Google earth map using Quantum GIS, so as to display the location of sites visited and where the study species was observed

All data collected were analyzed in R statistical Package. To determine the relationship between the study species and the vegetation variables collected models were fitted into a Generalized Linear Model with a binomial error structure.

Results and Discussion

Eight individuals of the study species were recorded in eight different sites. Four were seen (mostly perched or preening), while four were heard. All birds were recorded singly and never seen or heard in pairs. For first session (rainy season), no breeding activity was recorded. However, during the second session (dry season), no individual of the study species was recorded either heard or seen. We therefore believe that there is possible local movement of the study species within the Nigerian-Cameroon highlands during the dry season. By determining where they move to during the dry season, their breeding season may also be determined.

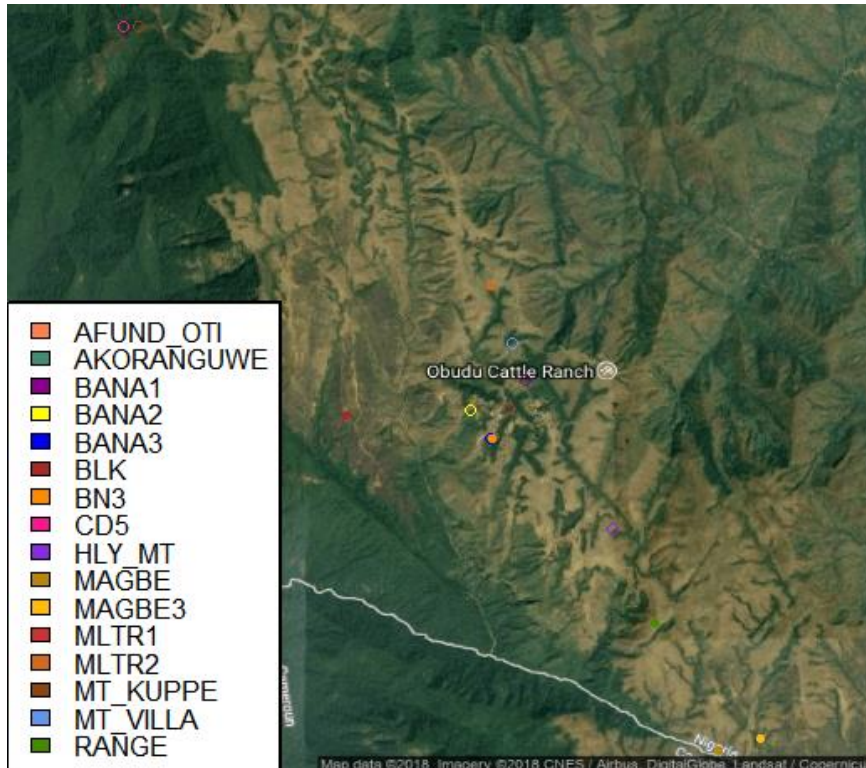


Figure 1. A map showing the location of the study sites (closed circles are sites with no record of the study species while open circles are sites where the study species were recorded)

During the rainy season, they were seen to occupy large forest fragments. It was also observed that the study species were territorial and held large territories which have not been estimated yet.

They were mostly found in thickets at the edges of forest and were perched not farther than 20 m away from the forest floor. They are large and shy birds. They were seen to move away from any slight disturbance by hopping away within the thickets and flying out for very short distance to get into the closest thicket for shelter.

There was no significant relationship between the presence of the Green-breasted Bush-shrike and all the vegetation variables measured, see Table 1 below. This may be because sites where the study species were found were mostly had similar habitat to the other sites where they were absent and formed a micro-climate which is distinct from other habitats. The major

difference across sites was the level of degradation and anthropogenic activities. It is important to note that no individual was recorded in the Old Becheve Nature Reserve, although its habitat takes the form of the sites where the bird can most likely be found and is protected from anthropogenic activities such as logging, hunting and farming. This may be because of the constant visits by tourists accompanied by loud noises. Individuals have been recorded in regenerating forests, which were once deforested due to farming activities and incessant logging of trees.

Table 1: The relationship between the presence of the study species and vegetation variables

	Estimate	Standard error	P-value
Intercept	13.392216	14.792528	0.365
Large trees	0.001562	0.405375	0.997
Small tree	3.256354	816.544529	0.997
Shrubs	-1.768076	1.647556	0.283
Saplings	0.099486	0.188525	0.598
canopy cover	-0.063423	0.067311	0.346

The bird was observed to be active during cloudy, dark weather and was also heard at early mornings at about 3:00hrs especially under moonlight. It also calls during the night at about 21:00hrs, however, no other activities have yet been recorded at such times.

The bird was last recorded by the Becheve Nature Reserve field assistants within the Obudu camp about ten years ago. It was then recorded in April, 2016. This may be due to the rapid development including the building of the resort, leading to rapid deforestation (75% of the forest hosting the resort was cut down). Population increased by about 50% between the years 2000 to 2006. However, the rate of development has decreased over the years, possibly allowing the remaining forest fragments to begin to regain its habitat. This may have led to the recent return of the study species.

Other Observations

The Monteiro's Bush-shrike *Malaconotus monteiri* is present in Angola and has also been recorded in western Cameroon. There are two subspecies of the species, *M. m. monteiri* and *M. m. perspicillatus*, found in Angola and Cameroon respectively. However, the subspecies found in Cameroon is suspected to be a colour morph of the Green-breasted Bush-shrike *Malaconotus gladiator* which is found in western Cameroon and eastern Nigeria. The call of this species is very similar to that of the Green-breasted Bush-shrike. According to Eddie Williams,

in 1997, he heard the call of the Green-breasted Bush-shrike and mistook it for that of the Monteiro's bush-shrike. During the field work, it was observed that the Green-breasted Bush-shrike did not respond to the call of the Monteiro's Bush-shrike *Malaconotus monteiri* which is considered its color morph. A specimen of the *M. m. perpicillatus* was obtained from Mt. Kupe in Cameroon and it is suspected that the subspecies may more likely be a colour morph of the *M. gladiator*. It has been proposed by Birdlife International (2016) that genetic materials of the specimen obtained be compared with samples from the *M. m. monteiri* and *M. gladiator* to ascertain the taxonomy of the species.

Further study

As part of further work to be carried out, we would like determine any local movement of the study species by trapping them and putting on radio tags in order to monitor their movements. When their movement is ascertained, we may then be able to determine if they have separate sites for breeding and non-breeding periods.

Blood samples will also be collected for DNA analysis to rectify any taxonomic uncertainties between the Green-breasted Bush-shrike and the Monteiro's Bush-shrike.

Recommendations

Some individuals of the study species were recorded in regenerating forests which are unprotected. We recommend that these forest patches are included in the protected forest fragments of the Obudu plateau.

Conservation awareness should be carried out and alternatives be given to the local community to discourage deforestation and encourage them to protect their native forests, hence protecting vulnerable species like the Green-breasted Bush shrike.

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Appendix

Appendix 1: List of sites where study species were observed with their locations

Sites	Latitude	Longitude	Status
Banana village 1	6.381659	9.376438	Seen
Banana village 2	6.377415	9.369502	Seen
Banana village 3	6.373441	9.372184	Seen
Camp site1(opposite Mt kuppe patch)	6.431753	9.325737	Heard
Holy Mountain	6.36051	9.387518	Seen
Military barracks1	6.377707	9.374348	Heard
MT KUPPE forest Patch	6.4319	9.327637	Heard
MT Villa	6.386963	9.374844	Heard



Plate 1: Researcher (Fatima Ramzy) and field assistant (Joe Parker) listening for a call during fieldwork.
Photo credit: Kevin Acha





Plate 2: A camping site during a visit to a distant site.