

Final Evaluation Report



Your Details	
Full Name	Simeu Nnoutchom Alain
Project Title	Distribution, bioecology and threats of katydid species in Mpem & Djim National Park, Cameroon
Application ID	41492-1
Date of this Report	07 January 2025

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
<p>Assessing the distribution of katydid species based on GPS coordinate in Mpem & Djim National Park</p>			<p>Fully achieved</p>	<p>Over the last 12 months, from January to December 2024, katydid species have been collected in two primary zones of Mpem & Djim National Park: the north, which is predominantly savannah, and the south, which is primarily forest. The study recorded 149 katydid specimens across forest and savanna habitats, with forest regions exhibiting greater species richness and diversity. This distribution pattern is closely tied to habitat complexity and moisture availability, as forests offer more microhabitats and resources, particularly during rainy seasons. GPS mapping enabled a detailed understanding of these species' spatial dynamics, highlighting the importance of preserving forest habitats to maintain biodiversity. Conversely, the savanna displayed a more even species distribution but lower overall richness, emphasizing its ecological differences. These findings illustrate how environmental factors and habitat structure influence species distribution and provide valuable data to guide conservation efforts aimed at mitigating threats from human activities and habitat degradation.</p>

<p>Assessing the Bioecology of katydid base on species richness, bundance and habitat characteristics in Mpem & Djim National Park</p>			<p>Fully achieved</p>	<p>Over the year-long study, 149 katydid specimens representing 10 species were recorded across two primary habitats: forest and shrub savanna. The findings underscored a marked contrast between these habitats, with forest ecosystems showing higher species richness and abundance compared to the savanna. The forest habitat's structural complexity, characterized by dense vegetation and diverse microhabitats, fosters an environment conducive to supporting a wide range of katydid species. In contrast, the shrub savanna's lower richness and abundance reflect its simpler habitat structure and the ecological constraints associated with it, such as reduced moisture availability and fewer resources.</p> <p>The study also revealed seasonal variations in katydid abundance, with forest-dwelling species thriving during rainy seasons when moisture levels and food availability are optimal. Species such as <i>Macroscirtus kekeunoui</i>, <i>Leprosirtus granulosus</i>, and <i>Apterocirtus denudatus</i> exhibited strong habitat specificity, primarily favoring forest environments rich in undergrowth, particularly marantaceous vegetation. These species' herbivorous feeding habits not only influence plant community dynamics but also position them as integral components of the forest ecosystem's nutrient cycling and trophic interactions.</p>
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<p>Assessing the threats of katydids species</p>			<p>Fully achieved</p>	<p>The study identified various anthropogenic activities as primary threats, including agriculture, logging, transhumance, bushfires, and poaching. These activities contribute to habitat degradation, fragmentation, and resource depletion, which severely impact katydid populations. Slash-and-burn agriculture, a prevalent practice among local communities, not only destroys vegetation but also disrupts the microhabitats essential for katydid survival. Logging activities, whether for commercial purposes or local firewood collection, further exacerbate the loss of forest habitats, which are crucial for species with specific ecological requirements.</p> <p>Transhumance, particularly by cattle herders, poses another significant threat. The overgrazing and trampling of vegetation by livestock degrade the park's ecological balance and reduce the availability of resources for katydids. Additionally, the presence of herders and livestock at watering holes often disturbs wildlife habitats, creating competition for resources. Bushfires, often set intentionally by shepherds and farmers, cause widespread destruction of habitats, particularly during the dry season. These fires not only reduce vegetation cover but also disrupt the lifecycle of katydids by destroying breeding and feeding grounds.</p> <p>The cumulative impact of these threats is particularly detrimental to katydid species with limited dispersal capabilities and specialized habitat</p>
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			<p>preferences, such as <i>Macroscirtus kekeunoui</i> and <i>Leprosclirtus granulatus</i>. These species are highly sensitive to environmental changes and require stable, undisturbed habitats to thrive.</p> <p>The study underscores the urgent need for conservation strategies aimed at mitigating these threats. Efforts such as enforcing stricter regulations on land use, promoting sustainable agricultural practices, and involving local communities in conservation initiatives are crucial. Raising awareness about the ecological roles of katydids, including their contributions to nutrient cycling and food webs, can foster a greater appreciation for their conservation. Protecting katydid populations is not only vital for maintaining biodiversity but also for preserving the ecological integrity of Mpem & Djim National Park.</p>
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2. Describe the three most important outcomes of your project.

a). Habitat-Specific Biodiversity Insights: The study highlighted the critical role of habitat complexity in supporting katydid diversity. Forest habitats exhibited significantly higher species richness and abundance compared to shrub savanna. The forest's dense vegetation and diverse microhabitats create a conducive environment for katydids, particularly during rainy seasons, while the savanna supports fewer species due to harsher ecological constraints. This outcome underscores the importance of forest conservation to maintain biodiversity.

b). Anthropogenic Threats: Various human activities, including agriculture, logging, transhumance, and bushfires, were identified as significant threats to katydid populations and their habitats. These activities result in habitat destruction, resource depletion, and ecosystem imbalance, disproportionately affecting katydid species with specific ecological requirements. The study emphasizes the need for targeted conservation efforts to mitigate these threats and protect the park's ecological integrity.

c). Katydid as Bioindicators: The research reinforced the potential of katydids to serve as bioindicators of ecosystem health. Species such as *Macroscirtus kekeunoui* and *Leprosirtus granulosis* were found to be highly sensitive to environmental changes, reflecting the state of their habitats. Monitoring their populations provides valuable insights into the impacts of environmental disturbances and will help guide conservation strategies for the park

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

During our work, the major difficulty was using Ecogard as planned in our methodology. According to the new administration rule, the Ecogard must walk in pairs to carry out any mission in the park. Indeed, in our initial methodology, we were supposed to use two teams in the field with one Ecogard for each team at the same time. To tackle this issue, we were forced to alternate the sampling areas after each field trip. For this purpose, the two teams were merged to complete the required number of ecoguards.

4. Describe the involvement of local communities and how they have benefitted from the project.

Community Involvement

1. Participatory Research: Local communities participate in data collection. This engagement also enriches the data collected about katydid populations and their habitats.
2. Capacity Building: Training sessions focused on katydid monitoring populations, species identification of Katydid and the use navigational aids in the field such as compass and GPS

Benefits to Local Communities

1. Financial : This project leads to financial benefits; stakeholders serve as guides, and they have earned money for their participation.
2. Cultural Heritage Preservation: helps preserve traditional knowledge about local species of katydids, which may have cultural significance

5. Are there any plans to continue this work?

Other research avenues have been brought to light by this study, which could benefit not just this park but also other protected regions and neighbouring parks. Throughout our research, we discovered that a large number of katydids make noises that are somewhat audible both during the day and at night. Finding further funding to pursue our studies on the acoustic diversity of Katydid species and their conservation in Cameroon will be an exciting endeavour.

6. How do you plan to share the results of your work with others?

Here's a suggested plan to share my findings with various researchers, including stakeholders, local communities, and the general public:

a) Academic and Scientific Communities

- **Publish in Peer-Reviewed Journals:** Submit my findings to journals specializing in ecology, entomology, or conservation, such as the *Journal of Insect Conservation* **Present at Conferences:** Attend international and regional conferences on biodiversity and conservation, such as the Society for Conservation Biology or regional biodiversity symposia, to share my results with experts and network with collaborators.
- **Collaborate with Researchers:** Share your dataset with other researchers who may build on my work, fostering collaborative projects.

b) Local Communities

- **Community Workshops:** Organize workshops in villages around the park to explain the study's findings and their implications for local ecosystems and livelihoods. Use visuals like maps, photographs, and videos to make the results accessible.
- **Educational Materials:** Develop simple brochures or posters in local languages that explain the role of katydid, threats to their habitats, and the importance of conservation.
- **Demonstration Activities:** Show sustainable practices, such as alternative farming techniques, that align with conservation goals and benefit local livelihoods.

c) General Public

- **Social Media and Websites:** Use platforms like researchgate, Twitter, Instagram, or LinkedIn to share infographics, photos, and key takeaways from my research

7. Looking ahead, what do you feel are the important next steps?

- We will combine different methods to gather more information on the katydid diversity in Mpem & Djim National Park, such as Passive acoustic monitoring and DNA analysis.
- In order to make sure that villagers, legislators, and forestry and non-forestry personnel understand the significance of safeguarding these species and encourage altering behaviour throughout the community, we will arrange awareness and education campaigns and continue the educational plan.
- Our research findings should be published in peer-reviewed journals and made available to Cameroonian stakeholders, including the local government agencies responsible for managing wildlife.
- Maintaining communication and disclosure of the acquired results at various scientific conferences

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, I have used the logo of Rufford Foundation during the training of our team concerned with this project.

9. Please provide a full list of all the members of your team and briefly what was their role in the project.

Dr. SIMEU NOUTCHOM Alain, the project leader and principal investigator, designed the survey, collected and analysed the data, and wrote the report.

Mme. GLWADYS ZANG AFFA'A, PhD Candidate, University of Yaoundé I (Research assistant). Assist the principal investigator in implementing the project protocol, in the field and assisting in katydid species sampling.

Mr. CHIMBIEN Jean Chretien, Mr. TCHANA NYA Brice Stéphane, Eco guards, representative of the Ministry of Forestry and Wildlife; Protect the team from dangerous animals during the fieldwork.

Mrs. Ndjouh Berenge, MOSSI Eric, KOUNGOU Romual and NYANDI AWA (stakeholders), They transported field equipment, including scientific equipment, camping gear and food for all team members. They also helped with katydids sampling.

10. Any other comments?

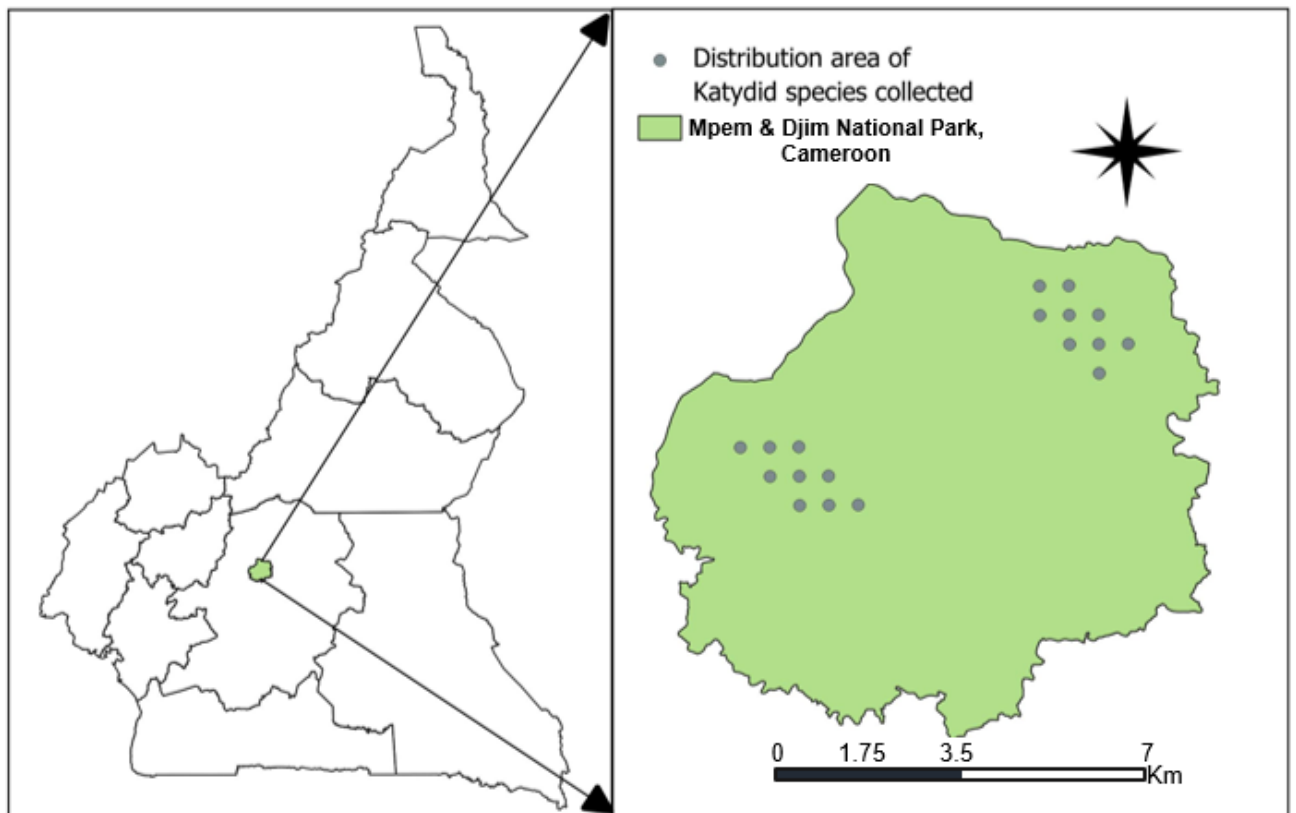
We thank the Rufford Foundation for financial support of this research through the Rufford Small Grant. We greatly thank our referee Pr. Klaus-Gerhard Heller, Pr. Sévilor Kekeunou, supervisor, and Charly Oumarou Ngoute for their support. We also thank the members of the field team, HERP Cameroon's Director Michele Marina Kameni Ngalieu for their cooperation and the entire population of the Mpem & Djim village.

ANNEX – Financial Report

10. Appendices

All photos of this report should be credited as follows: **SIMEU NOUTCHOM A.- Rufford Foundation/ University of Yaoundé 1**

Appendix 1. Distribution area of katydid species in Mpem & Djim National Park, during the past four months



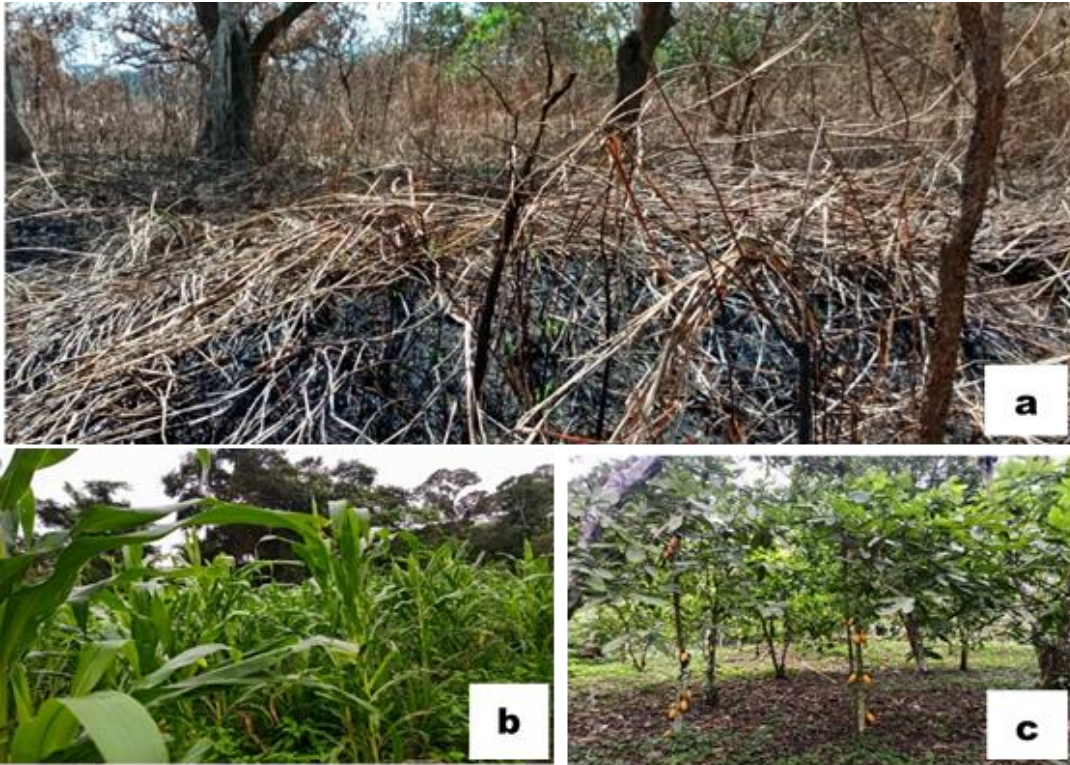
Appendix 2. Some Katydid species collected in Mpem & Djim National Park, during the past four months: a) *Macroscirtus kekeunoui*; b) *Zeuneria melanopeza*; c) *Apterocirtus* sp.; d) *Hexacentrus* sp.; e) *Lichenochrus congicus*, f) *Arantia* sp.; g) *Leproscirtus granulatus*; h) *Plastocorypha* sp.; i) *Zabalius ophthalmicus*; j) *Liocentrum rubripes*



Appendix 2 (continue). Some Katydid species collected in Mpem & Djim National Park, during the past four months: a) *Macroscirtus kekeunoui*; b) *Zeuneria melanopeza*; c) *Apterocirtus* sp.; d) *Hexacentrus* sp.; e) *Lichenochrus congicus*, f) *Arantia* sp.; g) *Leproscirtus granulatus*; h) *Plastocorypha* sp.; i) *Zabalius ophthalmicus*; j) *Liocentrum rubripes*



Appendix 3. Different anthropogenic practices threatening katydid species in Mpem & Djim National: **(a)** bush fires, **(b)** maize farms **(c)** cocoa farms plantation



Appendix 4. Team members



Appendix 4 (continue). Team members

