Final Evaluation Report

Your Details	
Full Name	Kier Mitchel E. Pitogo
Project Title	Unveiling the hidden amphibian and reptile diversity of a partially protected key biodiversity area, southern Philippines: conservation gaps, challenges, and opportunities
Application ID	42230-2
Date of this Report	January 7, 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
Refine and update existing list of Mt. Busa Key Biodiversity Area			/	Consolidated all the information from this project and the previous one, with some of its diversity currently under review. The updated list has already been provided to local management bodies for immediate reference and perusal.
Investigate unrecognized herpetological diversity using molecular phylogenetics		/		This project facilitated the export and deposition of 225 herpetofauna specimens, along with tissue samples, at the University of Kansas Natural History Museum, under an agreement with the Philippine government. Although the laboratory work has taken longer than anticipated, all necessary resources for molecular phylogenetics are in place, with more results expected in 2025.
Determine what portion of this diversity is adequately managed and require management attention			/	The updated diversity serves as a baseline to assess protection levels and identify urgent conservation needs. Technical reports are being prepared for delivery to relevant management bodies and local governments.

2. Describe the three most important outcomes of your project.

a). Near-accurate biodiversity baseline for a major vertebrate group (amphibians and reptiles) **within the largest Key Biodiversity Area (KBA) in southern Mindanao**. These biodiversity records are crucial for guiding management interventions, tailored to varying protection levels within the KBA. Evidence-based management ensures effective application of science and fosters stronger collaboration between scientists and management bodies. As results from this project emerge, we remain committed to providing updated and relevant information to the concerned management bodies.

b). Additional specimens from southern Mindanao were deposited in a major natural history museum. This region has historically been biologically underexplored in the Philippines, leading to gaps in biodiversity knowledge that limit effective management of its remaining forested habitats (see Meneses et al. 2024). The project contributed 225 herpetofaunal specimens from KBA 196, including species new to science, previously undocumented genetic data, and rarely encountered taxa. These specimens offer a rich source of genetic, ecological, and morphological data, paving the way for multiple research publications and strengthening evidence-based conservation strategies for KBA 196.

Reference: Meneses, C. G., Pitogo, K. M. E., Supsup, C. E., & Brown, R. M. (2024). Philippine herpetology (Amphibia, Reptilia), 20 years on: two decades of progress towards an increasingly collaborative, equitable, and inclusive approach to the study of the archipelago's amphibians and reptiles. ZooKeys, 1190, 213.

c). Robust biodiversity evidence supports ongoing protected area legislation for the Mt. Busa Key Biodiversity Area. My past and current projects contribute the majority of biodiversity data for this underexplored KBA, playing a crucial role in advancing protection measures for various parts of the KBA. Additionally, educational materials produced through this project have been instrumental in promoting awareness and advocacy for the area's conservation.

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

The project is structured into four phases: Phase 1 (Permitting, Coordination, and Planning), Phase 2 (Fieldwork and Data Collection), Phase 3 (Museum and Laboratory Work), and Phase 4 (Report Writing and Dissemination). The first two phases were successfully completed through close collaboration with the Philippine Department of Environment and Natural Resources and researchers from the southern Mindanao region, whose assistance was invaluable throughout. However, the prolonged El Niño event that affected the Philippines until June 2024, along with ongoing inflation, has resulted in price hikes for commodities and labor.

In Phase 3, the delay in laboratory work was not due to inherent difficulties but rather to unforeseen circumstances, specifically an extended timeline for depositing specimens at the natural history museum. As a result, many of the molecular laboratory results will not be available until the first half of 2025. However, the project was designed with built-in flexibility, ensuring that most laboratory results will not impact the overall timeline but will instead enhance the project's objectives and outcomes. Thus, while the second objective has been only partially achieved at this

stage, the other two objective were still met. I have secured all necessary resources to ensure seamless continuation and completion of laboratory work early next year.

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

The fieldwork was deeply rooted in collaboration with indigenous peoples and local communities near our study sites. We engaged 25 indigenous Tboli field assistants, whose contributions were indispensable. They provided critical logistical support, including coordinating with indigenous leaders, identifying suitable campsite locations, and assisting in wildlife specimen collection. To further benefit the community, the project also funded village accommodations, ensuring that community members who were not directly involved in the fieldwork could still participate by supporting local logistics. As a lasting contribution, educational materials developed from this project will be translated into the Tboli language and distributed to village schools, fostering environmental awareness and knowledge-sharing within the community for years to come.

5. Are there any plans to continue this work?

My research and conservation work in the Mt. Busa Key Biodiversity Area (KBA) has been a long-term endeavour, initiated in 2018 with a grant from The Rufford Foundation. Since then, I have expanded the scope of research sites, taxa studied, and stakeholders engaged to enhance the protection of this partially protected KBA. The project's outcomes have contributed to the ongoing establishment process of two gazetted protected areas and two additional other effective area-based conservation measures (OECMs) within this large KBA. My ongoing efforts aim to generate new knowledge, disseminate biodiversity information, and collaborate with stakeholders until full legal protection is secured. The biodiversity data collected is also being used to strengthen existing management mechanisms within the KBA. With new findings emerging from this project and further results anticipated in 2025, I am optimistic that these insights will significantly shape the conservation landscape of this critical biodiversity hotspot.

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

The results of my work will be disseminated across various platforms to reach diverse audiences:

1. **Scientific Community:** Scientific findings will be shared through publication in peer-reviewed, open-access journals to advance knowledge of Philippine biodiversity. These results will also be presented at scientific symposia in the Philippines to strengthen dissemination within the research community.

2. **Public Engagement:** Simplified, laymanized results will be shared via social media and popular news articles. Educational materials, such as posters, will be distributed to management offices, schools, local communities, and local government units to raise awareness and promote conservation at the grassroots level.

3. **Policymakers and Agencies:** Scientific results tailored for policymakers will be communicated to relevant agencies and decision-makers involved in establishing area-based protection measures within the KBA. Preliminary findings from this project have already supported the legislation process for a new protected area. The team maintains ongoing communication to ensure the provision of accurate, up-to-date information to policymakers.

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

The next critical step is to ensure that the results from this project are effectively utilized to guide conservation and management interventions. I intend to pursue two major approaches:

1. **Policy Advocacy:** By leveraging the biodiversity knowledge generated through sound science, I will continue providing policymakers with robust scientific information. This is essential to sustain their support and commitment throughout the often-lengthy process of establishing area-based conservation measures (PAs and OECMs) within the KBA 196.

2. **Science Communication:** To maximize the impact of these scientific findings, I will advocate for the protection and conservation of KBA 196 through diverse communication platforms, including news articles, social media, and websites. Effective science communication is key to broadening public awareness and engagement.

Conserving the remaining natural habitats is a **shared yet differentiated responsibility**. As an early-career researcher, I see my role as contributing to this effort by bridging science and actionable conservation strategies. Looking ahead, I aim to develop a comprehensive biodiversity database for the southern Mindanao region. This database will serve as an accessible, up-to-date, and accurate resource to support evidence-based conservation measures over the long term.

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 incorporated the logo and acknowledged The Rufford Foundation's support in all project deliverables. As more results emerge, particularly in scientific publications, I will ensure The Rufford Foundation is prominently recognized as a major funder.

9. Provide a full list of all the members of your team and their role in the project.

Rafe Brown – Dr. Brown is the Curator of Herpetology at the University of Kansas Natural History Museum and my Ph.D. adviser. With over three decades of experience studying Philippine amphibians and reptiles, he oversaw the scientific aspects of this project and provided invaluable guidance throughout the development of its scientific deliverables.

Aljohn Jay Saavedra – Aljohn is a graduate student in Biology at Mindanao State University–General Santos and serves as the acting Ecosystems Management Specialist at the Protected Area Management Office of Allah Valley Protected Landscape (PAMO AVPL). As my primary in-country collaborator, he played a key role in coordinating, planning, and implementing the fieldwork for this project. He also served as the main liaison with the Philippine Department of Environment and Natural Resources.

Mc Gabriel Fungan – Gab, an indigenous Tboli, works as a project support staff member at PAMO AVPL. He played a crucial role as a liaison with the indigenous Tboli communities during our fieldwork, facilitating communication and fostering collaboration. Gab also contributed to fieldwork and specimen preparation. As part of an agreement with the DENR, he received training in biodiversity fieldwork techniques to enhance technical skills of personnel in DENR field offices.

John Michael Zante – John Michael, a biology undergraduate from MSU–General Santos and now a Biology instructor at the same university, served as my field research assistant. As an aspiring herpetologist, he was trained in herpetological research techniques, specimen preparation, and other fieldwork skills, which he has since integrated into his teaching practices.

Angelica Emit – Angelica, a biology graduate from MSU–General Santos, assisted with fieldwork and specimen preparation. She also supported Aljohn in coordinating logistics and other aspects of project implementation.

Christian Supsup, Syrus Cesar Decena, and **Camila Meneses** – My fellow Filipino Ph.D. students in Dr. Brown's laboratory, they have provided critical support in the laboratory phase of this project. Their contributions include ensuring proper preservation, storage, and analysis of specimens for subsequent scientific publications.

10. Any other comments?

For updates on the results of this project and the broader initiative on the conservation and management of the Mt. Busa Key Biodiversity Area, please visit my website at **kierpitogo.com**.