Final Evaluation Report

Your Details	
Full Name	Bruktawit Gezahegn Kibret
Project Title	Ecology and Conservation Status of the Endangered Secretarybird in Hallaydeghe Asebot National Park, Ethiopia: Implications for Conservation and Community Based Ecotourism
Application ID	43692-1
Grant Amount	£6000
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Date of this Report	8 August, 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
Developing Species Distribution Modeling For Secretary Bird in Ethiopia			■	Our research focused on understanding the potential future of the Secretarybird (*Sagittarius serpentarius*) in Ethiopia. We achieved this by developing species distribution models that project how the bird's habitat might change under various future climate scenarios. Specifically, we used two contrasting Shared Socioeconomic Pathways (SSPs): SSP1-2.6, which represents a low-emission, sustainable development pathway, and SSP5-8.5, which depicts a high-emission, fossil-fueled development pathway. Our findings indicate a significant decline in the Secretarybird's suitable habitat by the year 2070 under both these scenarios, suggesting a challenging future for the species in the region.
To investigate the Land Use/Land Cover (LULC) dynamics of Hallaydeghe Asebot National Park and implement conservation measures within the area.		■		We analyzed LULC changes at ten-year intervals to track the progression of habitat alteration. A particularly concerning discovery was that half of the park's vital grassland areas have transitioned into bushland (*Prosopis juliflora*). The decision to incorporate an analysis of land cover changes was made during the initial field survey phase, after recognizing the necessity of developing a change map to accurately quantify the spread of the invasive species. This objective, though not in the original proposal, became essential for project execution because a comprehensive survey and change map were required prior to initiating any *Prosopis juliflora* removal activities. The analysis helps identify areas that have transitioned most significantly from grassland to bushland. Crucially, this map shows the total area occupied by *Prosopis* and, specifically, highlights areas where the invasive species overlaps with Secretarybird habitat. To fully achieve the objective, we need to complete the accuracy assessment for the change map. This requires gathering more

				ground truthing points from all represented land-use types. While we have collected sufficient ground points from grassland and woodland, we require additional data points specifically from bush land and other land-use categories to ensure the map is statistically reliable and fully finalized. Once these remaining ground points are collected and the accuracy assessment is complete, the objective will be fully met.
Assess Human - Secretarybird Interaction for Ecotourism Development				Local communities in the Secretarybird's habitat rely on traditional livestock production, which can conflict with conservation goals. To address this, diversifying livelihoods through bird-based ecotourism is proposed as a crucial step. However, implementing such initiatives first mandates a thorough assessment of Human-Secretarybird interaction to understand existing dynamics, mitigate potential conflicts, and ensure sustainable, mutually beneficial outcomes. We employed a purposive sampling strategy across three Kebeles for questionnaire surveys but, due to budget constraints, the scope was reduced to 27 respondents in one kebele, instead of the planned 124.  Despite the reduced sample size, the interviews yielded valuable insight: the majority of respondents expressed great interest in coexisting with the Secretarybird. This acceptance stems from the bird's benign nature (it does not attack hens or other products) and a deeply held traditional belief that the species brings a blessing to the area.

Identify Current population status and nesting site of Secretarybird In Hallaydeghe Asebot National Park				Understanding the current status of Secretarybirds in Hallaydeghe Asebot National Park, an exemplary habitat in Ethiopia, was a crucial first step for conservation. Researchers successfully pinpointed both the current population density and the specific nesting sites of the species within the park. This foundational data provides a vital baseline for future monitoring and gauging the effectiveness of conservation efforts. We worked with the Park scouts, experts and surrounding communities to understand the frequently observed areas of the species in and surrounding the park. In total we established 29 transect lines of varying lengths, in both open grassland and mixed vegetation. The longest transect was 14km and the shortest 3km. We recorded 21 secretarybirds in total, with the species mostly found in areas of higher open grassland cover outside the park area. (Please refer to Annex 1 for a comprehensive overview of the sampling design). Following this essential identification phase, a collaborative approach was adopted. Meaningful discussions took place with both the park management and the local community. The goal of these dialogues was to jointly develop and implement effective strategies for protecting these vital breeding areas. Engaging both authorities and the community is essential for long-term conservation success, as park managers offer technical expertise and enforcement, while local communities contribute invaluable knowledge and ensure sustainable practices around these sensitive sites. We have conducted two initial discussions (one with park staff and one with local community members), and these discussions are ongoing. Both groups have expressed a strong willingness to conserve the area and limit the expansion of the invasive *Prosopis*; this shared commitment represents the first progress in developing a conservation strategy. However, significant challenge remains, as the local community's need for grazing land to support their livestock-dependent livelihood must be addressed within any successful conservation plan.

Community-Based Mechanical Control for Invasive Species Removal and Secretarybird Habitat Restoration				This objective is to restore Secretarybird habitat through a community-based mechanical control of the invasive Prosopis juliflora. The finalized strategy tailors techniques to the species' root system, using clear cutting for deep-rooted plants and selective cutting or hand-pulling for smaller ones. However, the £6,000 allocated for the current phase has been fully utilized. This is because the funding, including a specific £1,000 initially ear-marked for removal, was prioritized to complete the foundational objectives (such as surveys and mapping) essential for the removal and restoration work to be effective. As a result, we are currently preparing a separate proposal to secure funding and carry out the physical removal work in a second project phase.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

Security presented the most significant initial hurdle to the study, frequently challenging field survey execution. Furthermore, the project's budget encountered unforeseen complications as expected costs effectively doubled during implementation. This substantial increase stemmed primarily from a drastic rise in the USD exchange rate, which ultimately prevented the completion of the planned social survey and crucial conservation interventions in the Secretarybird's habitat, such as the removal of invasive *Prosopis juliflora*.

3. Briefly describe the three most important outcomes of your project.

The main outcomes of our study are as follows:

- We identified the current and estimated future suitable habitat of the Secretarybird in Ethiopia. This involved using advanced ecological modeling techniques to map the geographic areas where the species' environmental requirements are met currently and where they are projected to be met by 2070, considering various climate change scenarios (e.g., SSP126, SSP585). This work provides crucial spatial data to inform strategic conservation planning for the species in a changing climate.
- We investigated Land Use/Land Cover (LULC) changes within the Hallaydeghe Asebot National Park over a 30-year period. We analyzed these changes at ten-year intervals to track the progression of habitat alteration. A particularly concerning discovery was that half of the park's vital grassland areas have transitioned into bushland. This detrimental shift is primarily attributed to two major factors: livestock encroachment, which degrades the grasslands through overgrazing, and the expansion of the invasive species *Prosopis juliflora*, which outcompetes native vegetation and further converts open grasslands into dense thickets.
- We identified the population and nesting sites of Secretarybird within Hallaydeghe Asebot National Park to inform targeted conservation efforts.
- The initiative to foster nature-friendly income sources among the communities, specifically through ecotourism, is currently in its emerging stages.

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

The project significantly boosted both conservation efforts and community empowerment. Two field assistants secured permanent employment, providing stable work and deeper integration into the project's long-term objectives. Additionally, two local field assistants from the study area actively participated, contributing invaluable local knowledge and strengthening the bond between the community and conservation initiatives. All these dedicated assistants brought considerable expertise in bird identification and assessment techniques, which was crucial for the survey's success and will be vital for future nature conservation endeavors, including potential ecotourism ventures. Beyond employment, the project played a key role in raising awareness about human-Secretarybird interactions within the community. This focus aims to reduce conflicts and foster coexistence, directly contributing to the conservation of this iconic bird species. Furthermore, by offering sustainable alternatives such as ecotourism, the project has actively supported the diversification of local livelihoods, creating new income streams that reduce pressure on natural resources and align with conservation goals. This comprehensive approach ensures that conservation efforts are effective, benefit the local population through sustainable economic opportunities, and contribute to the well-being and economic resilience of the community.

5. Are there any plans to continue this work?

This project has provided us with valuable information about Secretarybird in Ethiopia. It also reduced the anthropogenic impacts on the habitat of Secretarybird. Therefore, we have planned to continue our study and conservation intervention for this endangered species.

1. Investigate human-Secretarybird interaction and coexistence in the study area.
2. Develop a conservation intervention for Secretarybird in study area.

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

The findings from this study will be widely disseminated to key stakeholders to ensure their maximum impact. We'll share the results with policymakers and decision-making authorities, including the Ethiopian Wildlife Conservation Authority, the Ethiopian Biodiversity Institute, and the Ministry of Tourism, to facilitate the implementation of crucial conservation measures and inform sustainable tourism development strategies.

In parallel, we are preparing to publish our work in peer-reviewed journals, with two papers already ready for submission. Most importantly, we are committed to sharing the study's outcomes directly with the local community. This will be achieved through engaging community workshops, accessible audio-visual presentations, and outreach via local media channels, ensuring that the people most affected by conservation efforts are informed and empowered, and can actively participate in and benefit from sustainable tourism initiatives.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

Initially, the project was designed with a one-year funding timeline. However, **unforeseen challenges** have meant that some project activities remain unfinalized.

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

I identified the threats and ecology of Secretarybird's. My next goal is to identify community-based strategies to mitigate the risks and encourage conservation intervention between local community and wildlife in the area.

9. 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, we have used The Rufford Foundation logo in any materials we produced. For instance t-shirts and posters.

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

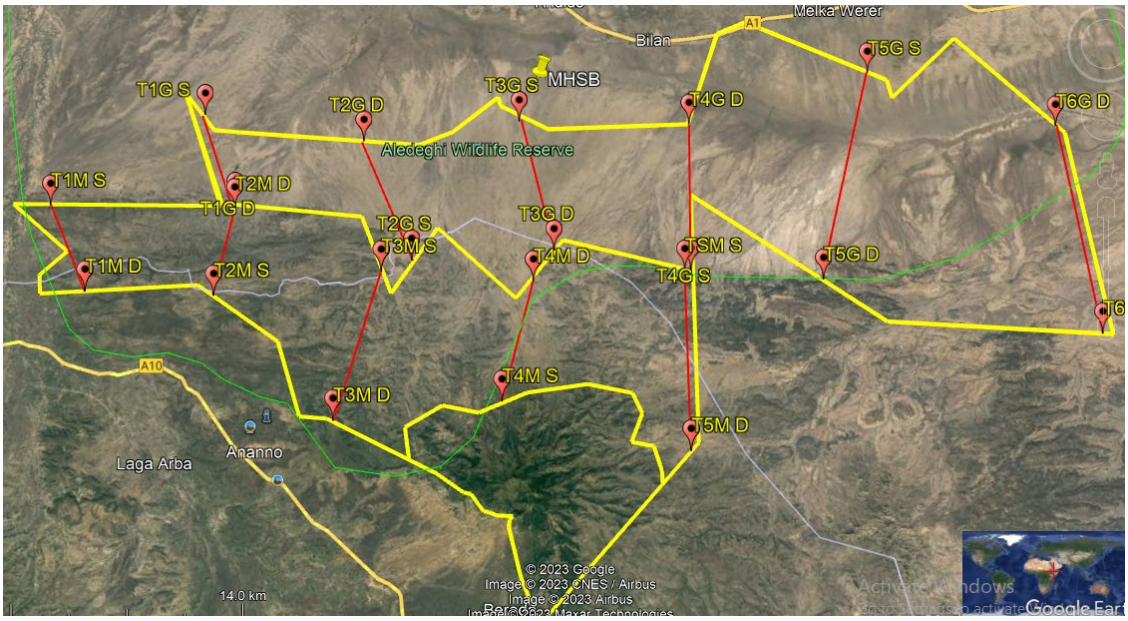
- Bruktawit Gezahegn (Principal investigator) https://drive.google.com/open?id=1q2l9Y9KUoyJbR1zYpNc5Rv8ZohuCdYHs&usp=drive_fs
- **Dr. Tariku Mekonnen Gutema** (Jimma University, Ethiopia): An Associate Professor and wildlife conservation and management expert with a PhD in Wildlife Conservation, Dr. Gutema has published over 32 research papers on natural resources and will serve as an advisor for data analysis and manuscript writing.
- **Dr. Evan R. Buechley** (The Peregrine Fund; IUCN Vulture Specialist Group): As Vice President of Conservation (International), Dr. Buechley is a renowned raptor expert specializing in endangered species conservation, scavenger ecology, and movement ecology, utilizing advanced tracking technologies. He will provide invaluable contributions to the proposed work.
- **Dr. Debisa Lemessa** (Addis Ababa University, Ethiopia): With over 25 years of ecological research experience and 79 publications, Dr. Lemessa specializes in functional biodiversity and ecosystem services. He will also serve as an advisor, assisting with data analysis and manuscript preparation.
- **Dr. Bruktawit Abdu** (Kotebe University of Education, Ethiopia): Ethiopia's leading female ornithologist with eight publications, Dr. Abdu is a conservation biologist specializing in threatened bird species. She will provide crucial assistance during field data collection.

Additionally, I will employ qualified park ecologists and field assistants to support data collection efforts. Zerubabel Worku Demeke and Ahmed Mohammed Abachebsa.

Project Highlights: Activities & Photos

Annex 1: Sampling Design

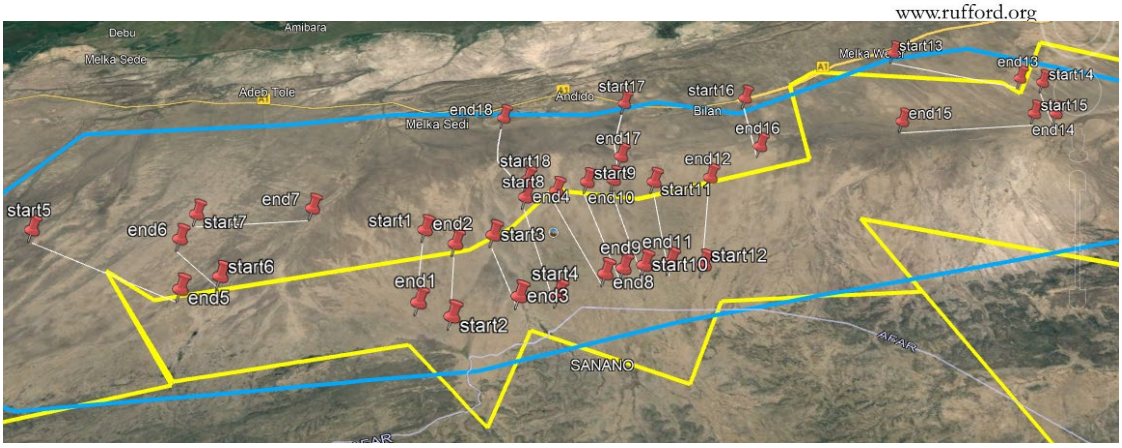
Before going to the area for survey we collected all information regarding the Secretarybird from Ethiopian wildlife conservation Authority and Birdlife international and also we developed transect lines using Google earth to have good information about the habitat of the species and its disturbance. As a first step, we categorized the area according to its elevation and vegetation. The first part is open grassland at an elevation of less than 1000 meters above sea level, the second part is mixed grasses surrounded by scattered acacia woodlands at an elevation between 1000 and 1300 meters above sea level, and the third part is forest on Asebot Mountain above 1300 meters above sea level (however, the third part was not included as it is not important for the species).



In total, we established a total of 11 transect lines of varying lengths: six in the open grassland (T1G−T6G) and five in the mixed vegetation (T1M−T5M). The letter suffix denotes the habitat type (G for grassland, M for mixed vegetation).

At least 5 km and at most 10 km separated adjacent transects. The ends of each transect were not less than 1000 m from the edge, and they all nearly parallel to one another (as much as possible). The longest transect was 14 km and the shortest transect was 6 km.

For 8 days from June 5, 2024 to June 12, 2024 the survey were conducted. We surveyed one transect per day starting early in the morning (6:00) to late afternoon (18:00) to have detail information regarding the Secretarybird habitat and the population. During the survey due to security problem we were not conduct survey on transect T4G, T5G and T6G. The species were observed in T1G and T3G. Most of the mixed vegetation is encroached through invasive *Prosopis juliflora* and we have never seen the species in the mixed vegetation. We worked with the parks scouts, experts and surrounding communities to know the frequently observed area of the species in and surrounding the park. After our field observation and gathering of the information from the park and surrounding community we decided to develop new transects to collect the concrete data.



Using preliminary survey results, 18 new transects of varying length was developed to collect data about Secretarybird population, distribution and disturbance on open grassland with sparsely distributed acacia species. From the total transects 7 transacts were outside parks area and 11 transects were inside parks area. The longest is 7 km and the shortest is 3 km.

We were collected the data both season from 24th June to 28th February, 2025. There were 21 pair of Secretarybird in all of transacts surveyed. The species were found on Transects 7, 9, 17 and 16. The species were most commonly found on Transect 9 and 16. The species were mostly found in areas of higher open grassland cover outside the parks area (communal grazing area). In each transects, number of Secretarybird, distance from transect, GPS coordinates (occurrence points), land use type, altitude, number of cattle, number of termite mound and number of invasive *Prosopis juliflora* species were counted. Additionally other co-existing bird species were recorded.