

Final Evaluation Report

Your Details	
Full Name	Russom Teklay Tewelde
Project Title	Seasonal variation in species richness and abundance of birds relative to habitat characteristics in the suburbs of Asmara City & Debubawi-Bahri, Eritrea
Application ID	34439-2
Date of this Report	August 29, 2023

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
Determine Seasonal variation in species richness and relative abundance of birds				<p>The seasonal variation in the species richness and relative abundance of birds was assessed using both a desk review and a field survey. Seasonality, which controls site productivity and, consequently, species diversity, is typically a major determinant of the congregating and diversification of the bird community. Species seasonal diversity and abundance is well described. During a thorough bird survey, over 155 avian species with about 19,500 individuals were identified.</p> <p>Significant variation was observed between seasons. According to the survey result, bird species were more diverse and abundant during the migration season.</p>
Determining the patterns of geographic distribution of birds relative to habitat characteristics and anthropogenic activities				<p>There were significant security worries in Eritrea as a result of the war that broke out in the Tigray Region in northern Ethiopia. Due to this, certain crucially essential study sites were either not visited at all during the whole study period or only once, which obviously results in information gaps. The team was unable to produce a clear picture of habitat preferences and patterns of birds distribution.</p>
Identify potential threats to birds and their natural habitat.				<p>The major conservation threats were identified as habitats destruction, and loss, due to overgrazing, habitat transformation to agricultural fields and deforestation for energy source and construction, with current expanding infrastructure and related anthropogenic activities.</p>
Increase awareness level of the local community and youth				<p>Seminars were organised for the local communities (elders, meriting students, group leaders, woman and more</p>

<p>through educational and promotional initiatives</p>				<p>enthusiastic locals) to increase awareness level on the role birds in the normal functioning of the ecosystem and foster conservation initiatives.</p> <p>Students from selected secondary schools and the graduating class of biology students were trained on bird identification techniques and the use of some field devices (Geographical Positioning System-GPS and binoculars). Additional training was given on study site management, and data collection and processing techniques. This involves lectures and documentary shows.</p> <p>Moreover, two graduating biology students were engaged in the project to study, as part of their senior project, the effect of Asmara sewage system and related irrigation farms on the diversity and the relative abundance of birds. The students finally presented their findings to the whole communities of the College of Science, including students.</p>
--	--	--	--	--

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

a). Population estimation: In addition to the Least Concern birds, the population sizes of large number of migratory birds and a significant number of endangered species (e.g., Maccoa duck, Rouget's Rail, common pochard, tawny eagle, eastern imperial eagle, steppe eagle and Rüppell's vulture) have been estimated or at least confirmed their presence. This will provide basic information and allow identifying key wintering sites for major migratory birds, especially those threatened, for the management and conservation of birds and their natural ecosystems. Most of all, majority vulture species are identified as the most threatened bird species which requires urgent action before it is too late.

b). Awareness rising and information dissemination: In collaboration with the department of Biology, College of Science and some school principals in Maekel Region, the team conducted awareness activities directed to college students and children respectively. Moreover, graduating biology students involved throughout the project and collected a manuscript on "the impact of irrigated farmlands in the distribution and abundance of birds" for publication. This will allow creating future environmentalists and nature conservationists regarding the conservation of birds, and their natural habitats, which are also crucial for local livelihoods. Data and information were shared using all existing opportunities, including public seminars and presentation for potential stakeholders, on social media, and organisational websites.

c). Bird checklist: A checklist of bird species of the study area was produced, and this will serve as a baseline data for further research and bird monitoring projects.

The team able to clearly identify the current status of a number of threatened species and their natural habitats that require an immediate action. As a team, we are now very clear what the next step will be.

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

The most unforeseen difficulties in this project were:

- I. Unable to reach all proposed study sites: Due to security reasons related to war in Tigray Region, the team were not able to reach some areas. The team looked for alternative similar habitats, within the study area, although partially affects the habitat related patterns of bird diversity. Moreover, we had trouble getting on to private farmlands to conduct surveys. We managed to explain the aims and outcomes of the project and reached at mutual consent.
- II. Financial constraints related to Hiring vehicle: The cost for car rent is very volatile, unpredictable, and generally very expensive. The budget for the project did not anticipate the level of price fluctuation. As a solution, the team deduced and shifted some amount of money from other activities to cover transportation cost difference.

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

We engage the locals, including the principals and elders, from the initial stage of the project and play a crucial role in leading the team, communication with the majorities and helping with inquiries of some cryptic species like owls and rail. They were very good at spotting birds and hotspot sites where birds congregate. It was helpful to take the local's insight on birds easily, and our approach to execute our bird survey plans. Field guides and field assistants were hired from the surrounding community to assist the team in the field. Selected elementary schools were involved in the promotional and educational programmes. Moreover, two graduating(4th year) biology students were involved throughout the project, have got significant experiences in field data collection and bird counting and identification skills which is also important for their involvement in further projects and conservation activities. Initially, they were given basic training to acquire skills on bird identification, population estimation and data processing techniques. Through this, the team created a strong partnership with the local communities (local leaders, elder, youth, woman, schools, and local authorities) for further conservation works.

5. Are there any plans to continue this work?

Considering the species diversity, distribution and status of birds in Eritrea is poorly studied (incomplete and in its infancy stage), we are very interested to continue the project and further explore the avifauna diversity of the area and other selected

potential sites. Currently, the team is interested, and particularly focused, to assess the population size, spatio-temporal dynamics, geographical distribution and potential threats of vulture species (including white-headed vulture, hooded vulture, white-backed vulture, Rüppell's vulture, Egyptian vulture and lappet-faced vulture) in the highland of Eritrea, and design effective conservation activities to their benefit. As a group, vultures are one of the most endangered groups of birds in the world. Despite their important role in the ecosystems where they occur, they are highly threatened and suffer serious declines in many parts of the world.

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

We share some of the findings, as a progress report, with selected schools, communities and on social media, including the ResearchGate. A detailed report will be produced and shared with all the potential stakeholders including Ministry of Agriculture, Department of Environment, Forestry and Wildlife Authority, College of Science, local libraries and interested private naturalists. Moreover, the results and outputs of the project will be communicated and shared with the scientific community and conservation societies through publications. Scientific papers will be published soon in reputable peer-reviewed scientific journals. Progress report and updates will be given regularly to Rufford Foundation website.

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

The result from the project helps us to clearly identify activities for the next step:

- Disseminate information through publication, public seminars, national and international conferences.
- Conduct further community outreach programme.
- Expand the existing project to reach out more species, especially those globally threatened species, including vulture species.

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, all project-related presentations (including banners, PowerPoint slides, and training materials for capacity building and awareness rising) have included the Rufford Foundation logo. Additionally, the foundation will be duly acknowledged in the manuscripts for publication, and public meetings.

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

The field team:

Russom Teklay: principal investigator

Angesom Abraham: investigator and project coordinator.

Dawit Berhane: field assistant.

Bereket Andeberhan: public relations and documentation.

Habte Rezene (local community): field assistant.

Merhawi Habrtom (local community): field guide.

10. Any other comments?

We are sincerely grateful to The Rufford Foundation for supporting the project. Such a grant plays a crucial role and makes a big difference to the conservation of several regionally and globally threatened species.