Final Evaluation Report

Your Details	
Full Name	Hassan Sesay
Project Title	Implementation of Conservation Strategies for the endemic and critically endangered freshwater crab, *Afrithelphusa afzelii* from Sierra Leone. Implication for conservation.
Application ID	40876-1
Date of this Report	August 8th 2024

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
To determine the abundance, distribution and habitat preference of freshwater crabs in and around the study area.				Between August 2023 and July 2024, surveys of the rivers, swamps, streams, wetlands and nearby lowland humid rainforests of Sierra Leone were conducted with respect to conservation action plan for the critically endangered freshwater crab *Afrithelphusa afzelii*, collected fresh materials from both genera (Afrithelphusa and Liberonautes) in the Mano Ecological Forest Moyamba District in the South, Outamba Rain Forest in the North and Gola Rain Forest in the East of Sierra Leone. They were collected terrestrially in humid lowland forests and swamps as well as rivers and streams, photographed live, details of their habitat status, threats and distribution was recorded. The results obtained, was classified, analysed and discussed as follows: Few specimens of *Afrithelphusa mano* (new species) recorded (lat. 8.032049N long. -12.078165W) in two fragmented humid lowland forest in Mano Moyamba District (lat. 8.032049N long. -12.078165W) about 30 km north-west away from the focal point of the project site where *Afrithelphusa afzelii* was rediscovered. Also in the same locality from the rivers and streams, 42 specimens (28 males /14 Females) of Liberonautes species were recorded and released back in their natural environment. Few of *Afrithelphusa* (lost species) recorded in two fragmented and lowland humid forests in Kotho village in Outamba Rain Forest (lat. 09°39'19.87N. long:-12°11'02.06 W.) North of Sierra Leone close to the border to Guinea. Specimens of *Liberonautes* species were also recorded in the same locality in rivers, streams and swamps. Specimens of *Liberonautes* species (new to science) were

				recorded in rivers, streams and swamps in and around Gola Rain Forest (lat. 07°41ˈ39.53 N. long:-10°57ˈ29.68) and no species of Afrithelphusa was recorded in the targeted area. Further surveys to other areas of the forest might uncovered new species since Gola forest is part of the Upper Guinea Rain Forest which harbours a lot of endemic species. Poor water quality was recorded in these habitats and also pollution and environmental degradation was observed. So habitats of the new materials collected including *Afrithelphusa afzelii* are under serious environmental degradation and poor water quality due to pollution from human activities. **Distribution of species** Three species of the genus Afrithelphusa were recorded during this research: A. afzeli at Moyamba (focal point of the research), a new species of Afrithelphusa from Mano Ecological forest, and *Afrithelphusa gerhildae* which was assessed as lost and critically endangered by IUCN was re-discovered from Outamba rain forest. The common freshwater crab genus Liberonautes that is used for food by the local community was recorded in rivers of Moyamba and its surrounding areas including Outamba and Gola forest. Of the two species of Liberonautes collected, the one was a new species from Gola forest. No Afrithelphusa species were recorded in Gola forest maybe due to the fact that only one zone was targeted of the three zones. Afrithelphusa species live in some distance from permanent water where more common species of freshwater crabs are typically found and they appear to be adapted to life in marginal habitats in closed canopy rainforest such as living in burrows on the forest floor. They are clearly semi-terrestrial freshwater crabs that can breathe air and comfortably inhabit terrestrial environments. They have a narrow range of distribution and are restricted to a specific environment. While species from the genus Liberonautes has a wider range of distribution and can be found in almost all rivering

				environments in Sierra Leone. **Species Abundance:** The two species from the genus Liberonautes have greater number of species abundance since more specimens were recorded throughout the survey. While species from the genus Afrithelphusa were less abundance, rare and very difficult to come across, only small populations were recorded from each species. **Habitat Preference** Species from the genus *Afrithelphusa* are found mostly in burrows from forested areas and are terrestrial freshwater crabs free from dependence on continuous immersion in water, while most crabs of the genus *Liberonautes*, are found in aquatic habitats (streams major rivers and swamp)
To determine the Threat posed to freshwater crabs in and around the study area.				We recorded serious environmental degradation and poor water quality due to pollution from human activities at the habitat of *Afrithelphusa afzelii*. Some of the human threats observed to this species habitats during monitoring activities are; intensive agriculture, uncontrolled use of pesticides, logging, firewood collection and gold mining.
To conduct educational messages				Our educational sessions were on Monthly basis and during monitoring in the field with presentation sessions that helped people to adopt practice that are less damaging to the sensitive habitats of the crabs

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

The three most important outcomes of my project are briefly outlined below:

a). Re-discovering of lost and critically endangered freshwater crab species *Afrithelphusa gerhildae*, Bott 1969 from Guinea that was recorded from Outamba Rain forest as was assigned by IUCN. Conservation action plan is needed to save this species since the area where it was re-discovered is a fragmented forest closed to the protected area and it environment is affected by agricultural and human activities such as

gold mining. If proactive measures are not taken by conducting further studies, *Afrithelphusa gerhildae* habitats will be totally destroyed and the species will become extinct.

b) We recorded two new species from this survey. One from the genus Afrithelphusa from Mano Ecological Forest and one from the genus Liberonautes from Gola Rain Forest National Park, and all have been identified with the help of two freshwater crabs specialist Dr. Pierre A. Mvogo Ndongo from Douala University Cameroon and Prof. Cumberlidge from Michigan University U.S.A. This is important for me as the first Sierra Leonean to have ever undertaken such research and the first to discovered new freshwater crabs species from Sierra Leone

c). Another important outcome of my research is that I was able to identify the threats to *Afrithelphusa afzelii* sensitive environment such as agricultural activities, hunting, over fishing, pollution from sewages and refuse disposal, pesticides and fertilizer run-off, mining activities, logging and fire wood collection. These anthropogenic activities were tackled during the conservation actions such as massive sensitization programs both in the field and seminar presentation in villages. Messages to local people encountered in the field and monthly workshops organised were on the importance of adopting practices that are less damaging on the freshwater crab's sensitive habitats. Currently, ongoing farming activities have relocated to areas far away from *Afrithelphusa afzelii* sensitive habitat and Local people have promised to adopt best agricultural practises since they now know the benefits of conservation. Also water pollution has reduced considerably.

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

There were three unforeseen difficulties that arose during the project: **Poor road network and high cost of fuel prices:** The road network to the habitat of Afrithelphusa afzelii was deplorable and motor vehicles cannot access through during the raining season and fuel prices shoot up to 100 %. Motor cycle prices per day of field work also shoot up. The motor cycle used was consuming a lot of fuel due to mechanical problem. We were able to solve such problems by taking the motor cycle to a nearby local mechanic for maintenance and the extra expenditure from the fuel and maintenance cost was adjusted from my own personal allowance for food.

lii, **Very difficult to search for *Afrithelphusa afzelii***: Searching for this rare species is one of the most difficult tasks I have ever encountered. In Moyamba District alone where this lost species was re-discovered, 16 nearby villages were targeted in order to increase the chances of finding more of this rare species populations. My team and I will search through the forests, rivers and streams of the surrounding villages in Moyamba District for the whole day, we will not find anything and these activities will continue for about a week or two with no success. It was really frustrating because local people sometimes tell me I can find the crab in some place and on going there, we would not find the crab at all.. We were however able overcome this difficulties by expanding the search to other areas were we recorded *Afrithelphusa gerhildae*, Bott 1969 from Outamba in the North and a new species from the genus Afrithelphusa in Mano Moyamba in the south of Sierra Leone.

Iii**, Difficulty in organising people for seminar presentation:** People in the surrounding villages of *Afrithelphusa afzelii* are very difficult to get them all in one place for a workshop presentation. The strategies applied were little incentives scheme for people at the end of the sensitization programs and visit them in their place of work. These two methods were very much successful in our education programs to people in the surrounding areas.

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

The local people were directly involved during the fieldwork of this project. They were key informants regarding the availability of these species in their different habitats.T he town chiefs also played a role in introduction of the project to locals, information and invitation of locals on the time of workshop through the town crier. They also helped in allocation of some locals to accompany us to the field as field guides. Some local people participated in the transect walk around in search of the species. The refreshments for the participants and incentives were provided from the project fund. There was a focus group discussion with the local people and guide regarding the rare and endangered species of *Afrithephusa afzelii* in Moyamba study sites and it surrounding areas. Discussions were held with locals on the importance of adopting good agricultural practices that will save the species and it sensitive environment. In the focus group discussion also, the local people came to know about the danger of anthropogenic activities on the species and it environment and the benefit they will derived from this good practices. This project played a significant role in creating awareness to locals regarding environmental degradation and the impacts on species life, the local communities and their environment.

5. Are there any plans to continue this work? Yes, I have a specific plan to continue this work regarding conservation action plan for critically endangered species like *Afrithelphusa afzelii* in order to save them from extinction. Sensitization and monitoring programs will continue even after the project tenure by me and my trained Local field assistant with time to time follow up. During the search for this species with respect to it abundance, distributional range, habitat preference and threat, we were able to uncovered new species and lost species from the genus Afrithelphusa . Sierra Leone is a biodiversity hot spot country. It is blessed with a lot of wet land forest ecosystem and many endemic species that are yet to be discovered. My plan is to uncover as many species as I can and develop a conservation action plan for their protection.

6. **How do you plan to share the results of your work with others**? I have plans to share my work with local NGOs, Conservation Societies Sierra Leone, Ministry of Agriculture and Food Security, Ministry of Environment and Climate Change, National Protected Area Authority (NPAA) and other Government agencies related to conservation of the environment and natural resources for them to know the status of this species and it environment. **International scientific communities**, through articles and publications.

7. Looking ahead, what do you feel are the important next steps? Important next steps are to uncover/identify many more endemic species that are critically endangered in Sierra Leone. After the identification of these species, conservation action plans to save them from extinction will be developed, I will consider searching for other species that are in the state of extinction alongside with new graduate students who are also interested in conservation of endangered 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, Rufford Foundation logo was used during educational programs through seminar presentations in the project. I also have plans to use it during my master's thesis presentations and my future publication on New Collections of Freshwater Crabs from Biodiversity Hotspot areas in Sierra Leone.

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

1. Hassan Sesay--- Team Leader

2. Professor Neil Cumberlidge….External supervisor

3. Dr. Pierre A. Mvogo Ndongo…External supervisor

4. Dr. Salieu K. Sankoh…….Local supervisor

5. Joseph Moseray…….Local Field guide

6. Santigie Kamara…….Local Field guide

Thanks to my external and local supervisors, who did extremely well in guiding me throughout the project. I received special training from Dr. Pierre on data collection and morphological analysis of freshwater crabs. Professor Cumberlidge from US and Dr. Pierre from Cameroon helped in the identification of freshwater crabs especially the naming of new and lost species recorded during the project. Dr. Sankoh my local supervisor gave me directives on how to collect data on the field and on how to secure permit from the government to enter the protected areas. The local chiefs were useful in giving recommendation on choosing the best guides and dissemination of information to locals through educational programs. The two field guides helped in data collection, transects lay out and direct the team to the location of freshwater crabs.

10. Any other comments?

Yes, Sierra Leone is rich with a lot of endemic species, since it is part of the Upper Guinea Rain Forest, but research work in this country had been neglected over the years. Therefore, more support is needed from Rufford Foundation in order to explore these forests. During the tenure of my project, I was able to create a lot of links between local people and government officers. I also explored a lot of areas in my country that I have never been into. The data collected during the project will be used for my MPhil thesis. The project has enabled me to gain a wealth of knowledge on research.

Figure 1: ***Afrithelphusa gerhildae*** **a lost species collected at Outamba Rain forest.**

Figure 2**:** *Afrithelphusa mano*. A new species collected at Mano Ecological Forest (The name of this new species is to be assigned on the up coming journal)

Fig.3. Liberonautes gola. A new species collected at Gola Rain Forest Reserve

Fig.4 Liberonautes species collected from Outamba Rain Forest

Figure 5: **Liberonautes species collected from Mano Ecological Reserve**