

Final Project Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Complete the form in English and be as concise as you can. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Houdanon Roël Dire
Project Title	Sustainable conservation and domestication of edible mushrooms in Benin
Application ID	21569-1
Grant Amount	£5000
Email Address	roelhoudanon@yahoo.fr
Date of this Report	4.04.2018

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
Assess the rural knowledge on useful mushrooms species;				In the frame of this objective, the study was undertaken within five villages of the township of Bassila. One hundred people were retained like sample. On the base of this sample, 20 people per village were selected for ethno-mycological surveys. The above mentioned surveyed revealed that 24 edible species were consumed by local population as food and medicinal. Ethno-mycological study revealed also that mushroom growing decreased over the years in the localities investigated. For most people, this situation is due to several factors including climate change (regression of rainfall), deforestation, the use of agricultural chemical products and soil compaction through the passage of cattle.
Reinforcement of competence of local people in fungal species recognition (threatened fungi and non-threatened fungi, edible and toxic close species), identification and their habitat preferences				During ethno-mycological studies, we realised that some species were confused mainly mushroom from the group of <i>Lactarius</i> and <i>Lactifluus</i> because of the similarity of the species of this family. The other groups of mushrooms are easily recognisable by local people. Our training sessions were therefore mainly based on this group of mushrooms and important information from the work of Maba et al. 2015a (<i>Lactifluus</i> (Basydiomycota, Russulales) in West Africa); Maba et al. 2015b (Diversity of <i>Lactarius</i> in Africa); Maba et al 2014 (Genus <i>Lactarius</i> in Togo) and Maba et al 2013 (Two new species

				of <i>Lactifluus</i> from Togo) allowed us to create didactic materials and posters to enable local people to better discern the fungi in this group. Also fungi that were recognised as toxic in the literature and which have been collected during our forest inventories in the region were also shown to rural in order to help local population to recognise them.
Training people on good harvesting practices fungi for their viability, conservation and the management of fungi habitat				This training was made at the same time as the previous one and was based on healthy harvesting techniques that do not harm the mycelium of fungi. During the ethno-mycological surveys, we noticed that the local populations knew the causes of decline of the production of mushrooms and the disappearance of some species. Our training courses on the management and the conservation of mushrooms have thus been accentuated on palliative solutions.
Produce and replant 4000 ectomycorrhizal trees, especially <i>Afzelia africana</i> ;				Two main actions have being conducted here. First, with village's gardeners we set a germination of 3000 seeds of <i>Afzelia africana</i> . Second with the pupils of forest administration we have set the germination of 1000 seeds. The emerged trees were used for the reforestation of species habitats.
Inform rural communities on the threats to different species and potential business opportunities				We conducted one semi-formal discussion with local chiefs and pupils in each of five villages to inform about the threats of different groups of mushrooms, in terms of their specificity and how to promote opportunity of business.

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

The germination has taken more than 6 months before seedling emerged. This affects the public awareness period as well as the reforestation of natural habitats. Indeed, the period of public awareness coincided with crop production and we have many difficulties to gather local population. But we had talked with the

authorities in order that they could bring the local people together. Similarly, our ethno-mycological surveys were conducted at night when rural people returned from the fields and were available to talk.

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

In the study area 24 edible fungal species have been identified. These species are mainly used as food and as medicine. Edible species differ from one ethnic group to another.

In ethnic groups, many local criteria are used to distinguish edible species to toxic species. In general, edibility criteria are related to the form, colour, fatness, and cap. All species who present strange colour (yellow) are considered as toxic.

The most appreciated mushrooms are *Termitomyces clypeatus*, *Termitomyces letestui*, *Psathyrella tuberculata* and *Volvariella volvacea*.

The causes of the disappearance of species are: climate change (regression of rainfall), deforestation, the use of agricultural chemical products and soil compaction through the passage of cattle

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

Mushrooms are very appreciated in the project area. They are used primarily to replace meat because of its comparable flavour. The whole population is concerned by their consumption. The popularity of mushrooms has meant that significant risks due to its consumption have often been noted. Thanks to this project, the populations have been able to deepen the notion of species, edibility and healthy mushroom harvesting. Business opportunities for popular species from other Benin localities were also revealed to them.

In achieving the objectives of this project, we had the help of local people and their implications. The plants of *Azizelia africana* were produced thanks to the forest management associations of the different villages. By the help of these associations we could identify the degraded parts of the forest. Reforestation of these degraded parts was done thanks them. Also, we had the large participation of the population for the various training sessions and sensitisation sessions that allowed us to reach our objectives.

5. Are there any plans to continue this work?

Many of the disappearing edible species in the study area have been reported by local people. Two of them have been highlighted (Gayaripicoco and Naoyoulé in local language) but have not been identified as species known by science. Similarly, the causes of their disappearance have not been elucidated or understood by local populations and efforts must be made to better understand these species, their ecologies and the causes of their depletion. In addition, people have

expressed the desire to learn how to produce edible mushrooms to put less pressure on wild edible mushrooms. Also species of trees on which sapotrophic mushrooms grow or with which they are in associations including *Berlinia grandiflora*, *Uapaca somon*, *Isobertinia doka* and *Isobertinia tomentosa* and *Parkia biglobosa* are more and more cut and their population is decreasing. Significant efforts must be made to increase their populations. In addition, pleading should be made with forest management authorities to include fungi in forest management and management plans.

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

With this work, additional data were collected about these species. It is resulted that a public sharing of this information throughout peer review published journal. Hence manuscript is ongoing writing and should be further submitted to "agroforestry system". Moreover, pamphlets shared with communities are currently requested by others primary schools where we have planned to visit sooner.

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

The RSG was used from May 2017 to January 2018. And the final report was submitted February 2016.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Equipment	£70	£70	£0	NA
Office supplies and communication	£425	£425	£0	NA
Local transportation	£1405	£1925	£520	The fuel has increased during survey period
Field Assistant	£1775	£1775	£0	NA
Public awareness	£1325	£1325	£0	NA
TOTAL	£5000	£5520	£30	

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

During this work, we have collected data on species use and its importance for rural household. And we have noticed the disappearance threat that menace species survival in their natural habitats. In addition we have implemented reforestation. But the most important part of this work is inventory of species to have specimen and to identify the most threatened. We have discussed with local population to have more information on them and we expect to focus our study on them in our next study.

10. 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?

For the public awareness we have set and distributed 500 t-shirts and 500 pamphlets where logo was used.

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

N/A

12. Any other comments?

I want to thank the Rufford Foundation for the support for the sustainable conservation of natural resources.