

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Kodjovi Mawuégnigan Léonard AGBODAN
<b>Project Title</b>	Diversity and ethnobotanical knowledge about threatened medicinal plants in the Guinean zone of Togo
<b>Application ID</b>	34986-1
<b>Date of this Report</b>	22 May 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
(i) inventory threatened medicinal plants (TMP)				Over 352 people from 62 localities and 20 ethnocultural groups were interviewed from April to September 2022 for the documentation of indigenous knowledge of threatened medicinal plants (TMP) within the study area. A total of 124 TMPs belonging to 118 genera and 47 families were identified and documented. The TMP list is available in the February update on the Rufford website. Some of these TMPs were collected and stored at the herbarium of the University of Lomé (for voucher code and species conservation).
(ii) identify the anthropological pressure, organs used, methods of preparation and administration of recipes				<p><b><u>13 anthropological pressures were identified :</u></b>            Overexploitation (71.93%), deforestation (56.14%), urbanisation (50.51%), pharmacy product (48.58%), agriculture (34.66%), carbonisation (30.23%), vegetation fire (30.11%), ignorance of virtues (19.03%), transhumance (7.95%) drought (1.93%) and religion (1.14%).</p> <p><b><u>11 plant parts were used for medicinal purpose :</u></b>            Leaves (64.84%), root (37.5%), bark (22.66%), stem (14.84%), fruit (6.25%), seed (6.25%), whole plant (6.25%), sap (2.34%), flower (1.56%), bulb (0.78%) and latex (0.78%).</p> <p><b><u>7 methods of preparation were collected:</u></b>            Decoction (76.56%), maceration (35.16%), trituration (17.19%), infusion (5.47%), food (3.91%), powder (2.34%) and torification (2.34%).</p> <p><b><u>6 methods of drugs administration were identified :</u></b>            Oral (72%), dermal (14%), rectal (8%), nasal (4%), ocular (1%) and auditory (1%).            Information about each TMP, such as families, plant parts and medicinal use, ecological zone distribution, ethno-</p>

				botanical indices (URs, CI, and CFI), local names, and IUCN status were available in the April update on the Rufford website.
(iii) Raise awareness among local populations on the importance of conservation of these plants, formations housing these plant and efficient uses of genetic resources.				<p>The dissemination was done by producing 40 books (46 pages) on the 25 most important TMPs based on ethnobotanical surveys. A workshop was held to improve the book before its distribution. These books were distributed free of charge to the CVDs and leaders (also in an electronic version). One radio programme in Ewé "main local language" (2 hours) was made to spread good practices for the use and TMP safeguarding.</p> <p>On the scientific level, communication was made during the scientific days in Lomé (JSIL 2022); one article on TMP has been published, and another is in press.</p> <p>The book about TMPs in Togo is available at the university' library, LBEV labs, and RSG project update via "Plantes medicinales menacees de disparition."</p>

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

- a). A list of the 124 TMPs in the Guinean zone of Togo was collected from 20 ethnocultural groups:** This provides a good resource for the best management policy development, especially for increasing the resilience and adaptive capacity of the population to climate change. This study provides a more comprehensive list of TMPs in the Guinean zone of Togo.
- b). The production of books on threatened medicinal plants in local languages:** It offers several advantages such as the preservation of local knowledge on TMPs, the accessibility of these data to a wider public, and the reinforcement of the cultural identity and pride of local communities. The credit of this book is that it presents the toxicology of TMP and the truthfulness of their medicinal uses.
- c). Radio broadcasts about TMP & its safeguarding:** The broadcast was made in Ewé, a widely spoken local language in southern Togo. Therefore, the broadcast reached a wide group of people, even those in isolated or rural areas where access to alternative forms of media is limited. The interest in the subject was demonstrated through live interactions with clarifying questions, comments, and orientations for better awareness of the extinction of medicinal plants.

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

**a). Inventory data gaps:** In the activities planned for this project, we conducted 93 inventory surveys to calculate the Gehu-Gehu rarefaction index. This index would allow us to confirm the occurrence of TMPs in the Guinean zone of Togo. However, after processing the data collected in the field, the results obtained didn't reflect reality. Medicinal species observed in abundance in the study area had an index of 96%, which means they are very rare plants. These data weren't sufficient for those calculations and were left for phase 2 of the current project.

**b). Collection of TMP plant parts for the herbarium of the University of Lomé:** Although inventories were conducted for the study of ecology and the collection of plant organs, some TMPs were hardly available in the localities. About 42 of the 124 TMPs couldn't be collected and deposited in the herbarium. As a solution, the voucher numbers of these specimens already collected by our laboratory were obtained for the Rufford report only.

**c). Specific risks to the project conduction:** In some localities, there was reluctance on behalf of some respondents to participate in the surveys and provide correct and verifiable information on medicinal plants. The survey strictly followed the ISE code, and the outcome of the survey through the production of a book was explained to the village leaders. The village chiefs played an important role in the enrolment and execution of the survey in their localities. Sometimes, compensation in cash or nature was given before the survey was carried out. We were very happy when they participated in the radio programme, testifying that this project is different from others that have passed through their villages.

**d). Raining season:** The survey had to be interrupted for nearly 2 months because of the intense rains. This allowed time to move on to other project activities. The collection restarted when the weather conditions became favourable.

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

Surveys were conducted with holders of rare medicinal plant knowledge. Guides and interpreters were contracted to facilitate the interviews in each locality. The involvement of traditional chiefs and leaders allowed building a climate of trust for data collection. The project allowed for a 1-day workshop to discuss and share knowledge about TMPs, their health importance, and opportunities for their conservation and cultivation. The participants testified that medicinal plant's status (a rarity), awareness, and documentation (capacity building) of traditional knowledge are important to avoid their loss and ensure their continuity for future generations (preserved cultural heritage). The populations had elements of answers during the radio broadcast on the preservation of the TMPs, the parsimonious uses, and the possibilities of cultures. For others, the need for these rare plants for the treatment of ailments and symptoms is an economic opportunity to be taken. It shows hopeful signs for domestication and TMP cultivation. The study of toxicology has allowed traditional therapists and users to utilise these TMP-based plant drugs

wisely and judiciously. Good sustainable practices were promoted at the workshop and on the radio for sound environmental management. Also, 40 books were distributed physically and more than 50 virtually (through social networks).

#### **5. Are there any plans to continue this work?**

The feedback session and the results broadcast on the radio provided us with an opportunity to discuss the continuity of the project for the sustainable conservation of TMPs. Thus, based on the key issues discussed, it would be ideal to continue the project in order to:

- Study the ecology of medicinal plants. This makes possible the identification of areas rich in medicinal plants and the development of conservation strategies.
- Identify current (favourable) and future habitats for in situ cultivation and TMP conservation purposes. Climate has a significant impact on the distribution and abundance of medicinal plants.
- Investigate and promote low-cost propagation techniques for TMPs. By developing these techniques, TMPs will be more accessible (domestication) and affordable (locally available) to communities. The population's dependence on these resources will help their living conditions improve economically and health-wise.
- Raise awareness and prioritise the TMP planting in agroforestry and reforestation initiatives at the school, region, commune, and at field level.
- Build capacity and understanding TMP economics for populations.

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

The outcomes of this research are disseminated to others through:

- Radio broadcasts in the local language (Ewé) to rural people.
- Sharing workshops on medicinal plants with herbalists and NGO leaders/CVDs.
- Free distribution of 40 catalogues (books) and via social networks (online version).
- One scientific article published (<https://leafletpub.com/images/articlesFile/1677602151.pdf>)
- A second article is being written and will be submitted to the Ethnopharmacology journal.

- A communication during the international scientific days in Lomé (JSIL 2022) at the University of Lomé (Togo).

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

I think the next steps with this project are:

- Study the ecology of TMPs.
- Model the ecological niche of TMPs at present and in the future to know the favourable areas for TMP cultivation.
- Building capacity and understanding of the economic and ecological value of TMPs.
- Create in situ conservation gardens to preserve seedlings and living specimens of medicinal plants.
- Develop rapid and sustainable cultivation practices to meet the growing demand for TMPs.
- Study TMP domestication.
- Mass propagating of TMPs to increase their population.

## 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, indeed. The Rufford Foundation received publicity during radio programmes and workshops on TMP with traditional therapists and NGO/CVD leaders to enable associations and NGOs involved in plant and environmental conservation to apply their development projects to The Rufford Foundation for funding. The logo has been used in presentations, and acknowledgments have been shared in published articles, books, and catalogues (please see the project update), as well as during JSIL's international scientific communication.

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

**Dr AGBODAN Kodjovi Mawuégnigan Léonard (PhD)**, the coordinator of the project : questionnaire design, ethnobotanical data collection, TMP's photography, radio broadcast in Ewé, workshop restitution, presentation to the scientific days, conception and editing of the book about TMP, research on TMP's toxicity, identification of scientific names in the field, and statistical processing.

**Dr AMEGNAGLO Kossi Béssan (PhD)**: questionnaire design, translator, ethnobotanical data collection, workshop restitution, TMP's photography, identification of scientific names in the field, and statistical processing.

**Dr KODA Donko Koudzo (PhD):** questionnaire design, translator, ethnobotanical data collection, TMP's photography, identification of scientific names in the field.

**Dr SODJINOU Edjèdu Fidèle (PhD):** questionnaire design, translator, ethnobotanical data collection, TMP's photography, identification of scientific names in the field, collection and conservation of specimens for the herbarium.

**M. PASSIKE Hèzou (PhD student):** translator, ethnobotanical data collection, TMP's photography, and identification of scientific names in the field.

**M. AKAGANGO Benjamin (PhD student):** ethnobotanical data collection, and TMP's photography.

**M<sup>lle</sup> AGBODAN Eugenie (Bachelor):** conception and editing of the book about TMP.

#### **10. Any other comments?**

I would like to sincerely thank The Rufford Foundation for funding this project. Through this grant, the TMP cultural heritage is being preserved through the production and free distribution of books. Thus, this knowledge will not only be held by a few elderly individuals but can be shared and passed on to a wider audience, including younger generations, who can benefit from this valuable knowledge. To preserve these TMPs, it will be necessary to continue this project by studying the ecology of these TMPs as well as their current and future geographic distribution, especially in this climate context, which is worsening from decade to decade.