Final Evaluation Report

Your Details	
Full Name	Thin Zar Tun
Project Title	Conservation Status of rare species in Moist Upper mixed Deciduous Forests; (A Case Study: Phetsut and Nattaga Reserve Forest in Katha District, Myanmar)
Application ID	26733-1
Date of this Report	1/06/2022

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
Investigation of rare tree species composition, diversity and stand structure of two different forest types of moist upper mixed deciduous forests; Phetsut and Nattaga Reserve Forest.				I set up and investigated 20 plots, 10 for secondary forest and 10 for primeval forest.
Assessing the conservation status and distribution patterns of IUCN red list tree species in Phetsut and Nattaga Reserve Forest.				
Analysing the growth conditions of natural regeneration species including red-listed tree species in Phetsut and Nattaga Reserve Forest.				All locations of tree are measured and recorded.
Upgrading reliable scientific information for better management of moist upper mixed deciduous forests in Myanmar.				
Increasing local awareness on the importance of forest to contribute conservation status of rare species project, effective forest renovation, land use and national reforestation programs.				I worked with one range officer, two rangers from Phetsut and Nattaga reserve forests, and five local people who are knowledgeable on conservation of species. I trained them by sharing my knowledge and skills with them.
Improving moist upper mixed deciduous forest ecosystem and conservation of rare tree species and to promote importance of forest cover to combat forest cover change.				I shared the project results including tree species composition and stand structure of rare species in the project area to the forest department of Katha district in order to support better forest management of the moist upper mixed deciduous forest.

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

The three most important outcomes of my project are as follows:

a) The project presents the status of rare and endangered plant species in Phetsut and Nattaga Reserve Forests in moist upper mixed deciduous forests of Myanmar and their ecological and phytosociological characteristics. As a result of the floristic inventory, there were a total of 54 species belong to 29 families in the Phetsut Reserve Forest and 76 species with 34 families in Nattaga Reserve Forest with DBH ≥ 5 cm. Fabaceae was the most dominant family in old growth forest, and Dipterocarpaceae was the most dominant family in secondary forest. In the IUCN Red List, five tree species belonging to four families in the old-growth forest, and three species belonging to two families in the secondary forest were found in Phetsut and Nattaga Reserve Forest. IUCN Red List tree species reported in two study sites were: *Castanea sativa*, *Castanopsis argyrophylla*, *Dalbergia oliveri*, *Amoora rohituka*, *Schleichera oleosa*, *Xylia xylocarpa*, *Shorea siamensis*, *Dipterocarpus tuberculatus*. The distribution patterns of combination of all red-listed trees in the old growth forest was regular and in aggregate pattern while the regular distribution pattern was found only in the secondary forest.

   Dipterocarpaceae is the one of most dominant families for red-listed trees in secondary forests. The higher number of species for the natural regenerations are observed in the secondary forest. The basal area of the old-growth forest (25.77 m^2 ha^{-1}) with 507 stems was higher than that of the secondary forest (12.84 m^2 ha^{-1}) with 826 stems. The overall population structure of tree species shows a reverse J-shaped population curve. Therefore, this project revealed that the species diversity and regeneration of the tree species of the two different types which lead to the achievement of the desired ecological goal for sustainable management in Myanmar.

b) The species richness for red-listed trees of the secondary forest was greater than the old-growth forest. But the old-growth forest possesses the mean stand height and the arithmetic mean diameter than the secondary forest. The secondary forest was highly disturbed by human intervention because of illegal logging, charcoal burning, and fuelwood exploitation. The local authority informed about the importance of traditional land use for preserving the rare and endangered plant species habitats.

c) Our research will be published in an international peer-reviewed academic journal, and the project outcomes were already presented at the Vietnam National University of Forestry and forest department of Katha District.

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

- Old-growth forests are very far, so it is very difficult to get there and investigate. Moreover, food was hard to buy during the survey of the forest

and it was very difficult to access some locations as the topography is very high and steep.

- There was heavy rainfall in the forest during data collection. The flash flooding of streams was very dangerous to cross from one side to another. We had to prepare raincoats to withstand the heavy rain and extra packaging for electric tools.

- In addition, we frequently had to alter our work schedules because of the weather conditions and other incidents such as having motorbike accidents on the way to the forest.

- Despite the challenges, we could manage to finish the data collection process successfully.

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

I worked with three staff from the forest department and five local people including one local taxonomist. They helped me to set up plots, do measurements, prepare food and tools to investigate. Moreover, they were trained to use maps and instruments such as GPSs to measure tree diameter and position, data collection and recording. After training and their participation in survey, they gained knowledge about the species composition, stand structure, and natural regeneration status of moist upper mixed deciduous forests in different sites in Phetsut and Nattaga Reserve Forests. In addition, their knowledge concerned with the conservation status of rare tree species and human interference on the growth conditions of rare tree species (red-listed tree species) and species composition, are improved. These facts support positive influence on them to support conservation and forest management in Phetsut and Nattaga Reserve Forests. I discussed with this local team the importance of species conservation and the impacts of their daily behaviour on their environment.

From this opportunity, my team members of local people received benefits both directly and indirectly by gaining knowledge on the conservation status of valuable tree species. They also earned some amount of salary by participating in the project. In conclusion, the project benefits them not only knowledge and skills but also some additional income.

5. Are there any plans to continue this work?

Yes, I would like to continue this project for natural conditions of red-listed tree species in other landscapes so that I could figure out the valuable rare species in different area and raise awareness to protect them.

The further investigations of dynamics of the distribution patterns of red-listed tree species of moist upper mixed deciduous forests in Myanmar at protected areas are also planned. Moreover, I would like to assess the current threats that are facing the endangered species.

In addition, I intend to conduct a GIS analysis by using the high-resolution satellite imagery to develop a map of potential species richness of moist upper mixed deciduous forests to restore and conserve them.

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

Firstly, the results were used for my Master thesis at Vietnam National University of Forestry (VNUF), Vietnam. Also, I have already delivered my research results to the library of University of Forestry and Environmental Science (UFES), Yezin, Myanmar. Moreover, I have plan to organise a seminar at University of Forestry and Environmental Science (UFES), Yezin, Myanmar to share my knowledge gained from the project and discuss with others by listening their opinions for further development.

I am also making an effort to publish one research paper from these results. Based on these results, the draft version of research paper was prepared. It was under review process of Professor from University of Forestry and Environmental Science (UFES) in Myanmar.

Finally, informational posters will be published and distributed among concerned persons, scientific community, NGOs and other organisations.

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

Since the selected project area is relatively difficult to access and much research hasn't been done on mixed deciduous forests in Myanmar, it is radically needed to conduct further research for details about the valuable species in order to restore and conserve them.

Furthermore, it is essential to forest inventory for red-listed tree species in other reserve forest area in Myanmar.

Although the extent of the pressures of current human activities in this area is unknown, land-use changes and firewood collection might lead to the disappearance of the remaining habitat.

Organising awareness raising activities among community people and developing proper conservation plan will be a great consideration to improve the sustainability of the forest resources.

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, I acknowledged the Rufford Foundation logo in my master thesis defence at Vietnam National University of Forestry (VNUF). Also, I included the Rufford logo in my presentation at Katha Township Forest Department and in the Undergraduate Advance Program at University of Forestry and Environmental Science in Myanmar

when I presented my results of this research. Moreover, I will include the RF logo in every publication from this study in the future.

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

Team members are as follows:

Thin Zar Tun: Project coordinator, I was responsible for the whole activity of the project such as leading the team, preparing the field materials, mapping, planning, and data collection and reporting.

Myo Min Thant: Field expert, he supported us for data collection in the field. conducted all fieldwork and outreach activities.

Htike San Soe: Tree Identification Expert (Forest Research Institute)

U Tin Htun: Staff Officer, he provided information about the topography and study area information, and also helped for the arrangement of the data collection.

Kyaw Khaung: Range Officer

U Myo Min Oo and Si Thu Ko: Rangers, they were the local field assistants, managed logistics and helped with data collection.

Hein Wai Yan and Myint Kyaw Soe: Field volunteers, they supported me a lot to collect field data.

Two professors are assisting the project team by supervision. Their information are as follows:

Dr. Bui Manh Hung: Vice-Dean of Forestry Faculty, Vietnam National University of Forestry (VNUF). Guidance on field material collecting, preparing scientific articles and statistical analysis.

Dr. Idd Shwe Zin: Professor, Tropical Silviculture and Forest Ecology, University of Forestry and Environmental Science (UFES). Idea and realization of the project, field material collecting, preparing scientific articles and articles to publish, preparing information to publish booklets, seminars, lectures.

10. Any other comments?

I am very grateful to The Rufford Foundation for financial support to carry out my research. This project would not have been possible without the funding support of The Rufford Foundation. Also, I would like to thank my project team, referees of the project, and other stakeholders who were involved in our activities during project implementation.

The Project Team

Pictures of Project area and Field Data collection activities

Old-growth Forest (Phetsut Reserve Forest)

Secondary Forest (Nattaga Reserve Forest)


Field Data Collection Activities