Final 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.

Please DO NOT fill in and submit this form until the project has been completed.

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Anand Mandyam Osuri
Project Title	Partnering with private landowners to expand native tree nurseries and restore tropical rainforests in India's Western Ghats Biodiversity Hotspot
Application ID	37674-D
Date of this Report	30 Oct 2025

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
Evaluate native-shade coffee farms as potential seed sources of threatened and endemic tree species			Y	As planned, we completed a field study to document the abundance, diversity, and species composition, including the prevalence of threatened and endemic tree species, across eight polyculture coffee agroforests in our project landscape. This study contributed to an article titled "Shade coffee agroforests as native plant sources for restoration" that we published as a Practitioner's Perspective in the Journal of Applied Ecology. We are now preparing a second article, which compares the potential for tree conservation of arabica and robusta coffee farms, for submission to an international peer-reviewed scientific journal.
Pilot partnerships with coffee farmers for setting up restoration nurseries			Y	We initiated periodic rescues of native tree seeds and seedlings from three partner coffee agroforests. Seeds were collected from agroforest floors underneath and around fruiting target species, and seedlings were collected along trails and roadsides during rainy seasons. We rescued over 20,000 seeds and seedlings representing at least 60 native tree species during the project period. These plants

				are being raised at three local nurseries: (1) NCF's existing rainforest restoration nursery, (2) a new partner nursery at Narmada Estate, established with partial support from this project, and (3) an existing nursery of the local forest administration to which we started supplying native seeds and seedlings as part of this project.
Identify appropriate species and methods for ecologically restoring degraded and secondary rainforests in the region			Y	We completed field studies and experiments that aimed to identify barriers to forest recovery and design cost-effective restoration interventions in post-coffee secondary forests in the project landscape. Key barriers include limited seed arrival of many late-successional rainforest tree species, and competition from coffee to native tree seedlings, and experimental coffee removal plots and direct seeding restoration trials are appearing promising based on preliminary results. One scientific manuscript on restoration needs and opportunities in such forests has been published in Biological Conservation, and three more scientific manuscripts are in preparation.

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

a). We developed an innovative model that harnesses coffee agroforests as native plant sources for restoration. While coffee agroforests have long been recognised as important refuges for biodiversity in human-modified tropical landscapes, our model highlights a new dimension in which these agroforests can also contribute to scaling up plant conservation and restoration beyond their boundaries, while reducing the demand on remnant forests as seed sources. We coauthored a paper describing

this model with our agroforest owner/manager partners in the Journal of Applied Ecology:
Osuri, A. M., Kumar, V. S., Dutta, V., Vidwath, S. M., Cariappa, K. M., Purnesh, C. D., & Shetty, S. (2025). Shade coffee agroforests as native plant sources for restoration. Journal of Applied Ecology, 62, 1330–1336. https://doi.org/10.1111/1365-2664.70046.

b). We demonstrated our rescue-to-restoration model by initiating pilot plant rescue, nursery development, and restoration efforts in collaboration with coffee farmers and forest administrators. These efforts resulted the rescue of over 20,000 seeds and seedlings representing at least 60 native tree species, highlighting the promise of our model for ethically scaling up nursery development for ecological restoration. Our pilot efforts generated a number of learnings (summarized in Osuri et al. 2025) that can guide us and others for future development and expansion of this model. This work was covered by a number of media outlets:
Scroll India -- https://www.youtube.com/watch?v=EAsByN3Q2kQ
Mongabay -- https://news.mongabay.com/short-article/2025/05/seeds-rescued-from-indias-coffee-farms-could-help-forest-restoration/
Mongabay-India -- https://india.mongabay.com/2025/04/coffee-agrofarms-can-play-a-key-role-in-restoring-degraded-forest-study-says/
The Hindu, a national newspaper -- https://www.thehindu.com/news/cities/bangalore/how-coffee-agroforests-can-play-a-role-in-ecological-restoration/article69534063.ece
The Kodagu Express, a local news website -- https://www.kodaguexpress.com/post/shade-coffee-plantations-in-karnataka-offer-hope-for-forest-restoration-in-the-western-ghats
Rufford grantee news -- https://www.rufford.org/news/the-coffee-cure-rescuing-native-plants-in-the-western-ghats/

c). Beyond the rescue-to-restoration model, our research is generating new insights for tropical forest restoration in coffee-growing and other tropical human-modified landscapes. One study illustrates that despite forests in such landscapes often possessing seemingly structurally intact canopies, they may remain floristically highly degraded and impoverished in terms of tree community composition. Our article in Biological Conservation highlights the importance of not overlooking restoration needs and opportunities in such forests:
Osuri, A. M., Kasinathan, S., Raman, T. S., & Mudappa, D. (2024). Restoration opportunities beyond highly degraded tropical forests: Insights from India's Western Ghats. *Biological Conservation*, *291*, 110519. https://doi.org/10.1016/j.biocon.2024.110519

Our research is also elucidating the multiple pathways through which coffee, as a shade-tolerant alien invasive species, degrades and impedes recovery in secondary and remnant rainforests. This research is helping to identify appropriate species and methods for restoration of forests colonized by alien coffee. This work is presently at the stage of being written up for submission to international scientific journals.

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

1. One of our goals was to conduct a study examining whether and how shade tree species differ as foci for seed arrival of other tree species through seed dispersal by frugivorous birds and mammals in coffee agroforests. Our study design involved setting up seed-fall traps under the canopies of different tree species over the peak fruiting season of native species in the region -- April to October. However, seed arrival data were highly compromised due to extensive trap damage and losses due to heavy monsoonal rains, wildlife activity, and occasional theft. We addressed this setback by collecting additional data on seedling inventories under the canopies of different tree species.

2. A few research and nursery development activities were delayed due to extreme rainfall events, landslides, and other associated challenges during the monsoons of 2024 and 2025. I thank the Rufford Trustees and administrators for approving no-cost extensions that enables us to complete these activities.

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

To design and pilot our native tree species rescue-to-restoration model, we engaged with select individuals among coffee farmers and other private landowners interested in sustainable agriculture, biodiversity conservation, and restoration, and forest administrators involved in operating public nurseries in the project landscape. Our farmer and landowner partners played a variety of roles that were essential for the development of this project, such as collaboratively establishing native plant nurseries, initiating seed and seedling rescue efforts, and ecologically restoring degraded rainforests within their properties. The project benefitted our partners by creating avenues for them to engage in conservation and restoration, while our co-authored manuscripts and joint media engagements possibly strengthened their credibility as sustainability leaders within their communities.

Forest administrators supported our initiatives to supply rescued plants from coffee agroforests to expand and diversify native plant supplies in local public nurseries operated by them. While our engagement was relatively limited at the pilot stage, strengthening collaborations with forest administrators constitutes a crucial part of our strategy for scaling up our model and efforts.

Finally, our outreach materials including scientific articles, online booklets, and videos on the native tree flora of shade coffee farms aim to build awareness and appreciation of native species among various local stakeholder groups, and equip them to make more informed choices when selecting shade tree species and making land use decisions.

5. Are there any plans to continue this work?

Yes. Working towards biodiversity conservation and ecological sustainability in mixed-use landscapes of the Western Ghats based on rigorous science and collaborative approaches is a long-term priority for our team and organisation. Ecologically restoring rainforests on degraded and uncultivated lands and restoring diverse native shade overstories in coffee agroforests in partnership with farmers, landowners, administrators, and other stakeholders are central to our vision and

strategy in these landscapes. Our Rufford project has identified exciting new directions and established a solid platform for scaling up these restoration efforts. We are continuing core activities initiated during our Rufford project including seed sourcing from coffee, nursery development partnerships, public outreach initiatives, and preparation of scientific manuscripts, and simultaneously making plans and raising funds for their expansion and further development (see section 7 for next steps).

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

a. Scientific publications and reports: We are working to publish multiple articles as research papers, commentaries and practitioner-oriented perspectives in reputed international scientific journals. Two such articles are already published in the *Journal of Applied Ecology* and *Biological Conservation*, another is presently in review, and three others are being prepared for submission by early- to mid-2026. We also prepared a report for forest managers that we submitted to officials at multiple levels of the forest administration hierarchy.

b. Conferences: We are presenting project-related talks and posters at conservation and restoration conferences as well as in meetings of our stakeholder communities. We presented at the World Restoration Conference (Australia, 2023), Association for Tropical Biology and Conservation (Mexico, 2025), and Student's Conference in Conservation Science (India, 2025, for which team member Abhirami was awarded best speaker). We were also invited to gave a talk at the Karnataka Planter's Association Scientific Conference (2024), in which we highlighted native tree species that could serve as alternatives to non-native species in coffee and tea agroforests.

c. News media: We engaged proactively with news outlets to communicate our work to wide and diverse audiences in international, national, and regional circles. Our work was featured as a video story on Scroll.in, news articles in Mongabay and Mongabay-India, a national newspaper The Hindu, and The Kodagu Express and a few other local news outlets (URLs provided in Section 2).

d. Social media: We are collaborating with a local artist to develop local-language videos and booklets showcasing native species of ecological, conservation, cultural and economic importance that are grown as shade trees in coffee agroforests of the Western Ghats. The aim of this initiative is to revive local awareness and appreciation of native species, equip individuals and groups interested in planting native trees with information on selecting appropriate species and where to source them, and stimulate conversations and collaborations towards conservation and restoration. Section 8 contains URLs to the videos and booklet, which are also being circulated in WhatsApp groups and other community platforms.

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

a. Publish completed research and pursue follow up questions: Research undertaken as part of our Rufford project has generated a number of novel and practice-relevant insights on tree diversity in coffee agroforests, harnessing coffee agroforests as seed sources for restoration, and degradation and restoration in forests colonized by alien invasive coffee. Many of these insights are relevant for conservation and restoration both locally and in other regions where coffee is grown. Two scientific

articles are published and another is in review, and publishing the remaining in-preparation articles over the coming year is a priority.

b. Strengthen and scale up rescue-to-restoration model: Our Rufford project helped develop and pilot an innovative model for partnering with coffee growers to expand and diversity native plant nurseries and support restoration. A crucial next step is to evaluate and refine this model, followed by scaling it up within the project landscape and to other coffee-growing regions of the Western Ghats through new seed sourcing, nursery, and restoration partnerships.

c. Assess and grow demand for native trees: The relevance and value of our model for expanding and diversifying native plant nurseries ultimately depends on the extent to which there is demand for native tree species locally. A key next step, therefore, is to investigate present demand for native tree species and local communities' willingness to engage in native species restoration. Simultaneously, we plan to work on growing the demand for native trees through increased outreach efforts to strengthen awareness and appreciation of native tree species, and developing resources that can guide interested parties with selecting and sourcing appropriate native species for tree planting.

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, we have used the Rufford logo to acknowledge financial support for:
(1) a booklet on native tree species found in coffee agroforests of the Western Ghats. Link: https://images.assettype.com/ncfindia/2025-08-17/zbcmpqpi/NCF_native_trees_in_coffee_Malenadu.pdf
(2) a collection of five YouTube videos (the first of which is complete) showcasing a native tree species found in coffee agroforests of the Western Ghats. Link: https://www.youtube.com/watch?v=n3rvyAv072k&list=PLZCdoDE_LHIlvVOCcGDR9GFUNInv_IrYb

In addition, we have acknowledged the Rufford Foundation as a funder on two scientific manuscripts published from this project (a few more in-preparation publications will also carry an acknowledgement to Rufford):

Osuri, A. M., Kasinathan, S., Raman, T. S., & Mudappa, D. (2024). Restoration opportunities beyond highly degraded tropical forests: Insights from India's Western Ghats. *Biological Conservation*, *291*, 110519. https://doi.org/10.1016/j.biocon.2024.110519

Osuri, A. M., Kumar, V. S., Dutta, V., Vidwath, S. M., Cariappa, K. M., Purnesh, C. D., & Shetty, S. (2025). Shade coffee agroforests as native plant sources for restoration. Journal of Applied Ecology, 62, 1330–1336. https://doi.org/10.1111/1365-2664.70046.

Finally, we have used logo to acknowledge Rufford's funding support in all our project-related talks and presentations.

9. Provide a full list of all the members of your team and their role in the project.
The team comprises Anand Osuri (Scientist and Team Lead), Vijay Kumar (Project Coordinator), Vedika Dutta (Research Assistant), Abhirami Chethana (Doctoral Research Fellow), Vidwath SM (Project Assistant), and Manu M, Kiran S, and Gowtham K (Field Assistants). Their roles are described below. Vedika Dutta's stipend was paid from the Rufford grant, while the remaining are paid from other long-term project funding sources.

1. Vijay Kumar, with support from Vidwath SM, leads all restoration components of the project, including the development of nursery and restoration partnerships with coffee farmers and forest administrators. They also contribute to research including field data collection and manuscript preparation.

2. Vedika Dutta led the research on tree diversity and species composition in shade coffee agroforests. She collected field data, led analyses, and contributed to preparing presentations, reports, and manuscripts.

3. Abhirami Chethana leads research on the effects of alien coffee and its removal on tree regeneration dynamics and recovery in secondary and remnant rainforests. She leads research design, field data collection, analyses and manuscript preparation on all work related to this topic.

4. Manu M, Kiran S, and Gowtham K contribute in multiple capacities to all field-based activities research including data collection, seed collection, nursery management, and interactions with partners.

5. Anand Osuri heads the long-term research and restoration programme within which this project was implemented. He developed the idea, raised funds, and worked closely with all team members to oversee and guide its implementation, besides handling administrative and financial aspects.

We would also like to acknowledge support and contributions of:

Colleagues in the field: Vijay Karthick, Ramkumar Dasar, Abhishaek, Gauranshi Chamoli, Mintu, Dushyantha, Sowjanya P, Priya M, and Manisha M.

Colleagues at the head office: Smitha Prabhakar, Vinay Hegde, Haridas Bhat, Shivakumar M, Shivani Jain,

Collaborators: KM Cariappa (Kadamane Estates Company), Sohan Shetty (Satyanarayana Plantations), Chandini Purnesh (Harley Estate), Abhisheka Krishnagopal (creative consultant, NCF).

Advisors: Divya Mudappa, T R Shankar Raman, Rohit Naniwadekar.

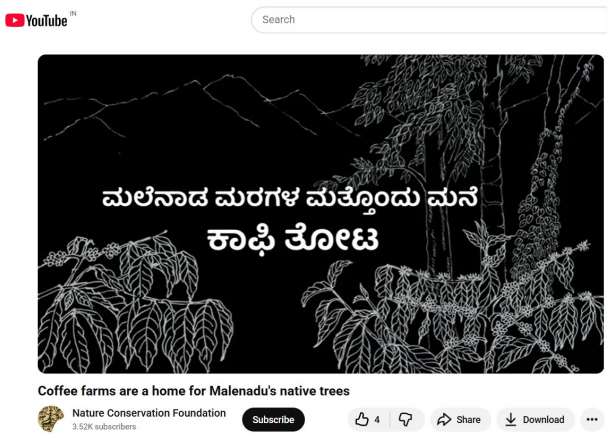
10. Any other comments?

A few representative project photographs are provided below


Team members surveying trees in a coffee agroforest (L) and examining seed dispersal in an abandoned coffee secondary forest (R) in the project landscape


Team members rescuing native tree seeds from a coffee agroforest (L), and rescued seedlings (R) ahead of sowing at a project nursery


View of a project nursery (L) and restoration planting in progress (R) in the project landscape



Project coordinator Vijay Kumar interacting with journalists at the project nursery (L) and a YouTube screenshot of an outreach video showcasing native tree species that find a second home in coffee agroforests of the Western Ghats

ANNEX – Financial Repor

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