

Final Evaluation Report

Your Details	
Full Name	Tesfay Gidey Bezabeh
Project Title	Local stakeholders-based interventions for sustainable conservation and restoration of the endangered <i>Boswellia papyrifera</i> and its degraded habitats in Ethiopia
Application ID	31671-B
Date of this Report	March 23, 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
Provide capacity building training for the local stakeholders (local community, forest rangers, experts and NGOs) on use of proper tapping for collection of frankincense from <i>B. papyrifera</i>				We provided capacity building training for the selected 25 key informants (gender inclusive) from the local stakeholders on proper tapping techniques of <i>B. papyrifera</i> for frankincense collection. The capacity building training included how to tap the species for resin(e.g., number of spots per tree; spot size).
Provide capacity building training for the selected 25 key informants of the local stakeholders on habitat restoration techniques, particularly about how to establish soil and water conservation structures (e.g., stone bunds) in the degraded habitats of the species.				We offered capacity building training for the selected 25 key informants of the local stakeholders on habitat restoration techniques, particularly about how to establish soil and water conservation structures (e.g., stone bunds) in the degraded habitats of the species.
Improve and diversify livelihoods of the local women through the alternative livelihood sources such as poultry and beekeeping				With consultation of the representatives, we first selected 30 local women, whose livelihood dependent on frankincense of the species. We then practically trained the women on the alternative livelihoods (poultry and beekeeping). We also provided them start-up inputs like chickens and beehives, and continuous technical support.
Establish habitat restoration like soil and water conservation structures (SWC) in degraded habitats of the species.				We established SWC structures (stone bunds) in 20 ha of degraded habitats of the species for improving its restoration (e.g., regeneration).
Develop a comprehensive manual for sustainable conservation of the species and its				We combined this project data with our previous data to develop a comprehensive conservation manual for the species, and we provided it to the local stakeholders to use it as a

degraded habitats; and handover it to the local stakeholders				guideline for conservation of the species and other endangered tree species in the area.
Share results of the project with relevant stakeholders through workshops				We shared results of the project with key stakeholders (researchers, policy makers, frankincense enterprises and students) through workshops for improving their awareness on conservation of the species.
Link results of the project (interventions) with our well-established local and national partners				We linked the project interventions (e.g., the trained women, the established SWC structures) with our local and national partners for their sustainable support and management.
Disseminate results of the project through different media outlets				We disseminated results of the project through printed (e.g., newsletters) and e-sources (e.g., websites, ResearchGate and Facebook).

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

a. Improved capacity and skills of the local stakeholders on proper tapping of the species for frankincense collection, and on the establishment of habitat restoration techniques (e.g., SWC structures) in the degraded habitats of the species

Before starting the project, we discussed with the local stakeholders of the Abergelle district, northern Ethiopia (local community, rangers, experts and NGOs) on importance of the project and to receive their feedback. After consensus, the local stakeholders selected their four representatives to join us in the project. Jointly with the representatives, we selected 25 key informants (gender inclusive) from the local stakeholders for capacity building training of the project. We then provided an intensive practical training for the key informants on tapping techniques of the species for frankincense production (e.g., how tap and when tap the tree). We also trained them on habitat restoration techniques, specifically on how to establish SWC structures in the degraded habitats of the species. During these activities, the key informants improved their knowledge and skills on tapping techniques of the species, and establishment of habitat restoration techniques for ecological restoration.

b. Improved and diversified livelihoods of the local women through production of new products (e.g., eggs) from their poultry and beekeeping farming activities.

In consultation with the representatives of the local stakeholders, we selected 30 local women, whose income was highly dependent on frankincense collection from the species. We then trained the women on the chosen alternative livelihood sources such as poultry and beekeeping farming. After the training, we provided them with start-up inputs (chickens and beehives) and continuous technical support. These interventions helped to reduce over-exploitation of the species for

frankincense. Our discussions with the local women also showed that their income increased since our interventions (e.g., one supported woman told us her chickens started to give eggs, almost daily, and this help her to fulfil her daily household expenditures).

c. Restored some degraded habitats of the species by our SWC structures.

We established SWC structures in 20 ha of degraded habitats of the species for improving its ecological restoration. These interventions helped restoration of the degraded habitats of the species through improving moisture and nutrient availability. To measure success of these interventions, we compared regeneration and seedlings growth of the target species and other associated woody species under our interventions with those of adjacent habitats without our interventions. Our findings then showed that a better regeneration, seed dispersal and seedling growth in the habits under our interventions than those of adjacent habitats without our interventions. These better performances would be due to the improvement of soil and nutrient availability because of our introduced soil and water conservation structures.

d. Raised awareness locally, nationally and globally on conservation of the species through workshops, printed and e-sources media outlets

We undertook two workshops to share our project results with relevant stakeholders, including local community, experts, researchers, students, local and national governmental officials and policy makers. In these workshops, about 50 stakeholders participated and shared their skills and experiences on conservation of the species and its degraded habitats.

We presented results of the project at national conferences, prepared by Adigrat University and Aksum University, Ethiopia. In these conferences, we shared our results with more than 60 participants.

We also disseminated results of the project through different printed and e-sources:
Facebook

<https://www.facebook.com/tesfay.gideybezabeh>

https://www.facebook.com/groups/793719180726678/?epa=SEARCH_BOX

<https://www.facebook.com/MEDfOR-244189478951956/>

Research-Gate

<https://www.researchgate.net/project/Local-Stakeholders-Based-Interventions-for-Sustainable-Conservation-and-Restoration-of-the-Endangered-Boswellia-papyrifera-and-its-Degraded-Habitats-in-Ethiopia>

Websites

At my organization's (Adigrat University) website - <http://www.adu.edu.et/>

At MEDFOR Alumni website (Consortium European Universities where I did my MSc) - <https://www.medfor.eu/news/environmental-project-funded-ruffor-uk-foundation>

Personal website - <https://conservationconnect.earth/member/3041>

Publication

Our manuscript paper on the species conservation status was published by Heliyon, Elsevier, <https://doi.org/10.1016/j.heliyon.2020.e05139>. We are also now preparing other two manuscripts for publication.

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

The unexpected civil war that broke out in Tigray region, northern Ethiopia, where the project was implemented, in late 2020 significantly impacted our project activities. The war continued for about 18 months, and it caused to delay some of our project activities. As we were closely working with the local stakeholders, it was helpful for us to resume our project activities since February 2022 as the intensity of the war diminished. Our close relation with the local stakeholders was also helping us to accomplish the delayed activities with their initially anticipated budget despite the impacts of the war were there.

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

All the local stakeholders (local community, rangers, local experts and NGOs) fully participated in the project. For example, the project provided capacity building training for selected representatives of the local stakeholders on tapping techniques of the species and habitat restoration methods. The project also offered capacity building training for selected local women whose income highly reliant on frankincense of the species on the chosen alternative livelihoods (poultry and beekeeping). The women were further provided start-up inputs (chicken and beehive) and technical support to start their poultry and beekeeping farming activities properly. In addition, the project recruited daily labours from the local community for its SWC activities and data collection. The project also invited some local community members in its workshops. These participatory activities of the project improved awareness and skills of the local communities on conservation of the species. The project also improved income of some poor local women whose income dependent on frankincense of the species. Furthermore, the project paid for some local community members who participated during its SWC activities and data collection. The project also freely provided to the local community different items such as manual and farming tools (hoe and fork).

5. Are there any plans to continue this work?

Yes, our livelihood improvement interventions to the poor local women whose income dependent on the species helped to reduce its over-exploitation. Then, based on our 1st Booster RSG results and discussions with the local stakeholders, we have learnt that the expansion of our livelihood interventions to those of local women whose income reliant on the species, and were not supported by our 1st Booster Grant is important. We will then focus on providing capacity building training to the selected local women on the alternative livelihoods (e.g., poultry, beekeeping, home-garden and agroforestry). We will also provide them with start-up inputs (e.g., chicken, beehive, seeds) and continuous technical support as to

start their farming activities properly. Furthermore, we will share and disseminate results of the project through workshops and media outlets (printed and e-sources); and link the supported women with our well-established partners for their sustainable support.

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

Results of the project were successfully shared with relevant stakeholders through different awareness raising materials (e.g., t-shirts, posters, photos). The results were also successfully shared with different relevant stakeholders through workshops (e.g., presentations at national conferences, prepared by Adigrat and Aksum Universities, Ethiopia). Besides, the results were disseminated through different printed (e.g., publication) and internet media (e.g., websites, Facebook and ResearchGate).

In addition, we plan to share results of the project through presenting it at nation and international conferences, printed (e.g., publication) and internet media (e.g., websites).

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

Based on our 1st Booster RSGs results, discussion with the local stakeholders and observations, we will expand our livelihood interventions (e.g., poultry, beekeeping, home-garden and agroforestry) to the local women whose livelihood dependent on frankincense of the species as these are important steps to reduce overexploitation of the species for subsistence income.

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, the Rufford Foundation logo was used during our capacity building training, workshops and presentations at conferences. It was also used it on the published materials like manuals, t-shirts and posters. Furthermore, it was used during disseminating our project results through websites, Facebook and ResearchGate. The foundation was also duly acknowledged in our published manuscript paper in the journal of Heliyon, Elsevier (<https://doi.org/10.1016/j.heliyon.2020.e05139>). All these activities then helped to increase publicity of The Rufford Foundation at local, national and global levels.

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

Aster Gebre - helped us during train the local stakeholders, establish SWC structures, technically support to the local women on the alternative livelihoods, and preparing manual and reports.

Selam Balehey - helped us during train the local stakeholders, support the local women on the alternative livelihoods, equipment management and disseminate results.

Alemseged Gebremedhin - helped us in organizing the local stakeholders for the project activities, technically support the local women on the alternative livelihoods, establish SWC structures, and prepare manual and workshops.

The four representatives from the local stakeholders - helped us in organizing the local stakeholders for the project activities, train the local stakeholders, establish SWC structures.

10. Any other comments?

We kindly acknowledge The Rufford Foundation for its funding to our consecutive three RSG projects and present them at the Rufford in country conference in 2019, Addis Ababa, Ethiopia. We also thanked to the IDEA-WILD foundation based in USA and the Adigrat University, Ethiopia for their equipment and financial support to our RSGs projects. We then kindly request the Rufford foundation for the 2nd Booster Grant Award to continue our efforts on conservation of the endangered *B. papyrifera* and its degraded habitats in Ethiopia.



Figure 1. Capacity building training for the key informants of the local stakeholders on tapping practices of *Boswellia papyrifera* and its habitat restoration techniques.



Figure 2. Capacity building training for the local women on the alternative livelihoods (poultry and beekeeping).



Figure 3. Provided start-up inputs for the trained local women to start their poultry and beekeeping farming activities.



Figure 4. Established soil and water conservation structures inside of the degraded habitats of *B. papyrifera* tree species.





Figure 5. Shared results of the project with relevant stakeholders (researchers, experts and students).