Final Evaluation Report

Your Details	
Full Name	Warda Kanagwa
Project Title	Creating awareness on the spread and control measures of Invasive species Parthenium hysterophorus in Northern Tanzania.
Application ID	35298-2
Date of this Report	22/2/2024

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
To conduct outreach program and capacity building on the spread and control of invasive P. hysterophorus in Northern Tanzania			■	Training and capacity building were conducted with local communities. They were told about *Parthenium hysterophorus* spread, effects on both people, livestock and wildlife, and rangelands which are shared by both livestock and wildlife along with possible control measures to this threat. Again, four schools from, Terrat Primary school and secondary school, Muriet primary schools and secondary schools was included in awareness creation about the control measures against *P. hysterophorus*. Total of 2000 people from all the selected wards were involved in awareness creation on the spread of *P. hysterophorus* and demonstration on the use of crude extracts.
To demonstrate the use of plant extracts as a measure to suppress the invasive P. hysterophorus in Northern Tanzania.			■	Samples of *Dovyalis caffra* and *Cassia auriculata* were collected and prepared in every village. This was done after training where communities prepared the samples based on the instruction they were given. All samples were washed with water, air dried at room temperature for 21 days and ground. Material was sieved and a mixture of 20 kg of leaves were immersed in 200 l of water. After 3 days, the solution was filtered.

				These stock solutions of 20g ml^{-1} were diluted into concentration 90 g l^{-1} (90%) (Kanagwa et al., 2020). Furthermore, extracts from fruits of *D. caffra* were collected from the field and washed with water. Samples of 8000 g was soaked in 5 l of water and allowed to ferment for 4 days. Fermented samples were filtered to obtain concentration of 8 g l^{-1}. After sample preparation, we did demonstration in the field, were we sprayed the highly infested areas with Parthenium. After 10 days we were able to see the results. Monitoring is going on in the areas we sprayed.
To impact the community on the use of biological control method (Z. bicolorata) in controlling the spread of P. hysterophorus in Northern Tanzania.				Adult Z. *bicolorata* was collected from *P. hysterophorus* plants in Burka ward and TPRI, where they had been released in a test trial. The beetles were collected during the rainy season, when Z. *bicolorata* was emerging from the soil after diapause. Beetles were transported to the sites where the demonstration took place. Communities were taught on the identification of male and female beetles and how to release them in *P. hysterophorus* plant. Then, beetles were released to the field and monitoring was conducted after every 2 weeks for 3 months by principal investigator, field assistants and selected representatives from the community. At the end of the experiment, all the participants involved in the evaluation of the

				results in the applied sites.

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

a). Awareness and Education:
Reaching about 2000 Individuals and Four Schools: Through sensitisation workshops, we successfully reached approximately 2000 people, including students from four schools. These participants are now well informed about the invasive species *Parthenium hysterophorus*, its spread, and effective control measures.

Empowering Knowledge: By raising awareness, we've empowered individuals to recognise *Parthenium hysterophorus* and take proactive steps to prevent its further proliferation. This knowledge will contribute to long-term environmental conservation.

b). Environmental Conservation Club: "FIGHT INVASIVE SPECIES":
Formation of the Club: We established an environmental conservation club named "FIGHT INVASIVE SPECIES" at Muriet and Terrat primary and secondary schools. This club serves as a platform for ongoing education, collaboration, and action.

Youth Engagement: Students actively participate in club activities, learning about invasive species management, biodiversity, and sustainable practices. By involving young minds, we ensure continuity and a sense of responsibility for our environment.

c). Comprehensive Teaching Manual
Practical Guidance: We developed a teaching manual that outlines practical strategies for controlling *Parthenium hysterophorus*. This resource provides step-by-step instructions, illustrations, and best practices.

Capacity Building: The manual equips educators, community leaders, and interested individuals with the necessary tools to combat invasive species effectively. It ensures that our efforts extend beyond the project duration.

The most significant achievement of this project was the successful creation of awareness among approximately 2000 people and students at primary and secondary schools. Through targeted campaigns, workshops, and educational sessions, we disseminated crucial information about our cause. By reaching such a large audience, we not only raised awareness but also empowered individuals to take informed actions. This ripple effect will undoubtedly contribute to positive change in our community and beyond.

Additionally, empowering communities through education on the utilisation of plant extracts for controlling *Parthenium hysterophorus* (a noxious weed) and leaf-feeding beetles, specifically *Zygogramma bicolorata*. By imparting knowledge about sustainable and eco-friendly methods, we not only tackled invasive species but also fostered environmental stewardship. The adoption of these natural solutions promises long-term benefits, safeguarding both crops and biodiversity.

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

- Excessive rains which caused delayed activities, to mitigate this challenge, we postponed the activities to later months when weather conditions improved. During the delay, we focused on planning and design adjustments.

- Inaccessibility of some areas due to rugged terrain and lack of roads hence motorcycles were a practical choice. Motorcycles are agile, can navigate narrow paths, and reach remote areas.

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

Awareness and Education:

- Invasive Species Control: Communities received comprehensive education on the management and control of the invasive species *Parthenium hysterophorus*. They now understand the ecological impact of this weed and recognise effective strategies to mitigate its spread.
- Natural Remedies: We taught community members about the use of plant extracts as a sustainable and eco-friendly solution for controlling *Parthenium hysterophorus*. This knowledge equips them to address the issue without relying on harmful chemicals.
- Biological Control: local communities were introduced to leaf-feeding beetles, specifically *Zygogramma bicolorata*, which naturally combat *Parthenium hysterophorus*. By promoting these beneficial insects, we've fostered a balanced ecosystem.

Practical Skills:

- Hands-On Learning: Community members actively participated in workshops and field demonstrations. They gained practical skills in identifying invasive species, preparing plant extracts, and releasing beneficial beetles.
- Adaptability: Armed with this knowledge, community members can adapt their practices to changing environmental conditions. They are better equipped to respond to future challenges related to invasive species.

Teaching Manuals:

- Sustainable Knowledge Transfer: Providing teaching manuals ensures that the acquired knowledge is not lost. These manuals serve as valuable resources for community members, enabling them to revisit the information and share it with others.
- Capacity Building: By equipping *local* communities with teaching materials, we've built their capacity for long-term environmental stewardship. They can continue to educate others and implement effective control measures beyond the project's duration.

5. Are there any plans to continue this work?

In our ongoing efforts to combat the invasive species *Parthenium hysterophorus*, we have made significant strides in controlling its spread across small areas in northern Tanzania. However, the battle is far from over. The severity of the infestation demands a comprehensive and sustained approach to ensure long-term success.

Our current plans focus on expanding our reach beyond the limited areas we've covered so far. We recognize that the impact of *Parthenium* extends far beyond the localised patches we've addressed. Therefore, we are committed to scaling up our efforts to tackle this ecological threat on a broader scale.

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

Our community awareness campaign on the spread and control measures of the invasive species *Parthenium hysterophorus* in northern Tanzania has yielded valuable insights and engaged local communities. To ensure the impact of our work reaches far and wide, we have devised a comprehensive plan for sharing our results:

Local Radio Stations:

- Collaborating with local radio stations will allow us to broadcast educational segments and interviews. Radio remains a powerful medium in rural areas, reaching diverse audiences.

- School Integration: We plan to work closely with local schools. Incorporating information about *Parthenium* into the curriculum will empower students with knowledge. Students can then become ambassadors, spreading awareness within their families and communities.

Feedback Mechanism:

- We will establish feedback channels to receive input from community members. Their insights will guide our future actions and ensure continuous improvement.

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

As we look ahead in our fight against the invasive species *Parthenium hysterophorus*, several critical next steps emerge. Our commitment to controlling this weed remains unwavering, and we recognise the importance of community engagement and innovative strategies. Here are the key actions we propose:

Sustaining Awareness Creation: Despite our progress, awareness remains pivotal. We will continue community outreach programmes, workshops, and educational campaigns. When funding becomes available, we'll intensify efforts to educate local communities about the dangers of *Parthenium* and its control measures. Leaf-feeding beetles (*Zygogramma bicolorata*), We have observed the potential of *Z. bicolorata* as a biological control agent. These leaf-feeding beetles can significantly impact *Parthenium*. We will focus on maximising the incidence of *Z. bicolorata* in the field, ensuring its widespread presence.

Collaboration and Advocacy: We will collaborate with NGOs, government agencies, and research institutions. Collective efforts amplify our impact. Advocacy for funding and policy support will be crucial. We will emphasize the urgency of *Parthenium* control.

Empowering Local Communities: Beyond awareness, we will empower communities to take ownership. Training local volunteers and involving schools will create a network of informed individuals. With the right mix of science, community involvement, and sustainable approaches, we can mitigate the threat posed by *Parthenium hysterophorus*.

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, in every presentation made, and on fliers and posters distributed, the Rufford logo was used to increase publicity and grant acknowledgment.

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

Scholastica D. Mbinile: Environmental Education Officer at Nature Tanzania. She holds a master's degree in biodiversity conservation and ecosystem management from Nelson Mandela African Institution of Science and Technology. Previously Scholastica worked for International Livestock Research Institute (ILRI Tanzania) to support farmers and management of rangeland in Morogoro- Tanzania.

Rahma Issa: Student at the University of Dodoma. She helped on community awareness.

Elias Pharles: Student at the University of Dodoma. He helped on community awareness.

Saakumi Philipo: Ward livestock officer: help on community sensitization.

Mathayo Fred, Shedrack Sanago, Ibrahim Amani, Neema Fanuel, Anna Olemaine- village chairpersons: they helped in organizing the meeting and making sure we had great attendance.

10. Any other comments?

This project would never have been accomplished without the blessing and power of Almighty God, and generous support and kind assistance of many dedicated individuals and not all of whom can be mentioned. I would like to express my heartfelt gratitude to the Rufford Small Grant for their unwavering support throughout this project. Additionally, I extend my sincere appreciation to Jane Raymond for her invaluable assistance in ensuring fund transfer. It is important to acknowledge that the project encountered unexpected delays due to personal circumstances. Specifically, I had to postpone certain activities to attend to my ailing mother. Thankfully, she has made a remarkable recovery, and I was able to resume the project with renewed dedication.

Figure 1: Trainings and capacity building on Parthenium hysterophorus control measures.

Figure 2: Collected samples of Dovyalis caffra and Cassia auriculata.

Figure 3: Demonstration in the field.

Figure 4: Picture with field assistants and community members.

Figure 5: Raising awareness on invasive species Parthenium hysterophorus spread, effects and control in primary and secondary schools.