

Darwin Initiative Main Annual Report

To be completed with reference to the “Project Reporting Information Note”:
(<https://www.darwininitiative.org.uk/resources-for-projects/information-notes-learning-notes-briefing-papers-and-reviews/>).

It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

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Darwin Initiative Project Information

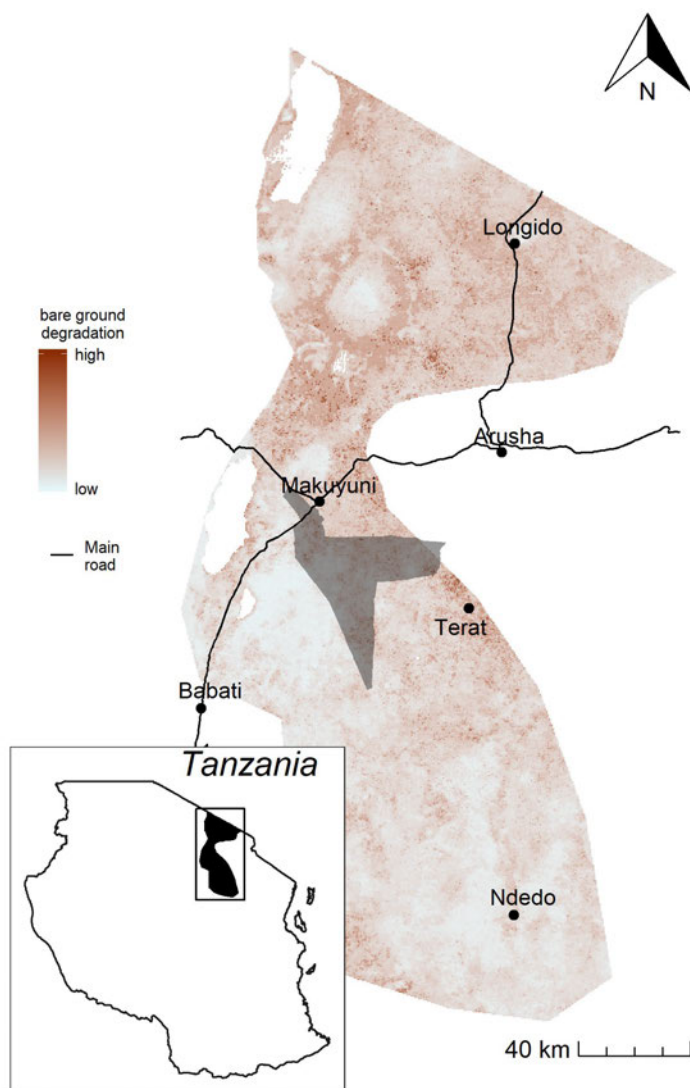
Project reference	27-008
Project title	Rangeland Guardians: women entrepreneurs for rangeland restoration
Country/ies	Tanzania
Lead partner	University of York
Project partner(s)	Oikos East Africa, Instituto Oikos, Ujamaa Community Resource Team
Darwin grant value	£ 379,432.00
Start/end dates of project	01/10/20 – 31/09/23
Reporting period (e.g. Apr 2021 – Mar 2022) and number (e.g. Annual Report 1, 2, 3)	Apr 2021 – Mar 2022 - Annual Report 2
Project Leader name	Dr Colin Beale
Project website/blog/social media	https://sites.google.com/york.ac.uk/rangelandguardians
Report author(s) and date	Dr Colin Beale, Dr Rob Critchlow, Dr Silvia Ceppi, Paine Eulalia Makko

1. Project summary

The savannas of Northern Tanzania are not only home to iconic biodiversity, but to >3 million pastoralists. Unfortunately, both wildlife and pastoralist livelihoods are at risk from societal and environmental change: increasing human population requires more livestock; modern society demands sedentary lifestyles, land-use change severs corridors, and climate change alters rainfall. Together these reduce rangeland biodiversity and compound rural poverty, with around 15% of remaining pastoralist rangelands in northern Tanzania showing signs of degradation (soil loss and invasions by noxious plants). When grazing is no longer possible, degraded land may be converted to agriculture, further exacerbating the problem. As a consequence, pastoralists are among the poorest members of Tanzanian society (monthly income among Maasai of 13,500 Tsh/adult/month compared to World Bank’s national food poverty at 26,085 Tsh/adult /month), women are particularly marginalised and wildlife numbers in northern Tanzanian rangelands have fallen >80% over 20 years. Although we cannot halt major external drivers like climate change, our theory of change suggests we can reverse degradation and loss of remaining rangelands by working with communities to adapt governance and management structures to new conditions.

Working together through the Northern Tanzania Rangeland Initiative, all partners have helped identify the problems: The University of York have been assessing ecological degradation and restoration, Instituto Oikos and Oikos East Africa have been working in community-based conservation and rangeland management and Ujamaa Community Resource Team have expertise in sustainable land use planning and community empowerment. All partners have all seen an increasing demand for assistance in restoration from the villages where we work, and decreases in biodiversity and movement of migratory ungulate populations. Although technical solutions to degradation are developed, tackling rangeland degradation at scale is difficult and landscape-scale restoration often fails.

Our project pilots a novel, culturally acceptable and research-informed eco-entrepreneurial solution to rangeland restoration that we anticipate will scale well. Rangeland restoration process will be driven by Rangeland Guardians; women who will implement restoration and sustainable management this wildlife rich, but degrading, corridor within the Tarangire-Manyara ecosystem, restoring grazing opportunities for both livestock and wildlife.



This project is focused on 3 villages (highlighted in grey) in the Monduli District of Northern Tanzania where the project partners have a history of successfully implementing conservation and socio-economic projects. The extent of bare ground degradation in this map (Figure 1) is a result from the University of York’s research into quantifying landscape scale rangeland degradation. The study villages all have areas of rangeland degradation.

Figure 1. Location of the study area in northern Tanzania and extent of bare ground degradation (2019)

2. Project stakeholders/ partners

Monthly project meetings with all partners have continued to ensure all partners are equally involved in planning, monitoring and activity progress updates. The in-country project partners (OEA and UCRT) have continued to collaborate with the University of York to design and implement all activities. Coordination between the two local partners (OEA and UCRT) is usually effective; the local teams share workplans and coordinate field activities where possible. with weekly updates of planned activities shared among the local teams to ensure efficient field activities.

The local project partners have experienced some challenges related to the practical implementation of the activities and to coordination and communication. Dedicated meeting sessions were held to try and improve communication, setting ground rules for reciprocal exchange of weekly workplans to aid fieldwork activities.

The project has continued to engage with all key local institutions including district, the highest governance body of the local government, the ward, the village and the sub-village, which the smallest cell of local government. The project team have engaged with additional stakeholders including the Tanzania Wildlife Research Institute (TAWIRI) to gain support additional support as the local collaborator who is a gender, conservation and climate change specialist (Annex 4.1 – support letter). We are also engaging with the Tanzania Livestock Research Institute to help facilitate and implement the livestock monitoring activity.

Due to COVID-19 travel restrictions, we involved local technical specialists to implement the baseline biodiversity surveys in June 2021 – this included three highly trained wildlife guides (Annex 4.1 – Sanjan agreement)

3. Project progress

3.1 Progress in carrying out project Activities

Output 1 - Biodiversity improvements: Degraded rangeland within key wildlife corridors in Northern Tanzania have restored function and increased biodiversity.

Throughout the study area and northern Tanzanian, both pastoralists and biodiversity are dependent on large areas of healthy, connected rangelands to support traditional livelihoods and sustainable wildlife populations. By focussing on degraded areas out with protected areas, which currently cannot sustain livestock, wildlife or agriculture, the project activities will ensure grazing resources and habitat are improved and rangeland connectivity is increased within what is a key wildlife corridor for migratory ungulates. The biodiversity improvements will come from the implementation of restoration activities and adaptive grazing management. Changes to biodiversity will be evaluated from the baseline vegetation and biodiversity assessment and continued monitoring during the project.

After the initial identification of pilot restoration areas in the first 6 months (2020/21) of the project, the project team realised that some parts of the areas were located in the CCROs which is against the CCRO by-laws. This resulted in new areas of degraded rangelands being identified in collaboration with village livestock committees, village elders and district representatives that can be used by the Rangeland Guardians (see Activity 1.1 below). This was a good collaborative reminder to the villages of Mswakini Chini and Naitolia on the exact location of CCROs and to ensure by-laws are implemented by the village governments.

Activity 1.1 Identification, mapping and baseline monitoring of initial 100 Ha of degraded rangelands

The final pilot degraded rangeland areas for management by the Rangeland Guardians are provided in Figure 2 and Table 1. The in-country project team have also worked with the schools involved in the school education program to identify further restoration areas (see Output 3; Activity 3.3) to get towards the 100 Ha pilot area target.

Table 1. Summary of pilot restoration areas

Village	Size of restoration area (Ha) 2021/22	Size of school restoration area (Ha)	Total restoration area (Ha)
Lolkisale	44.5	1.3	45.8
Mswakini Chini	14.8	2.1	16.9
Naitolia	27.6	1.0	28.6
Total	86.9	4.4	91.3

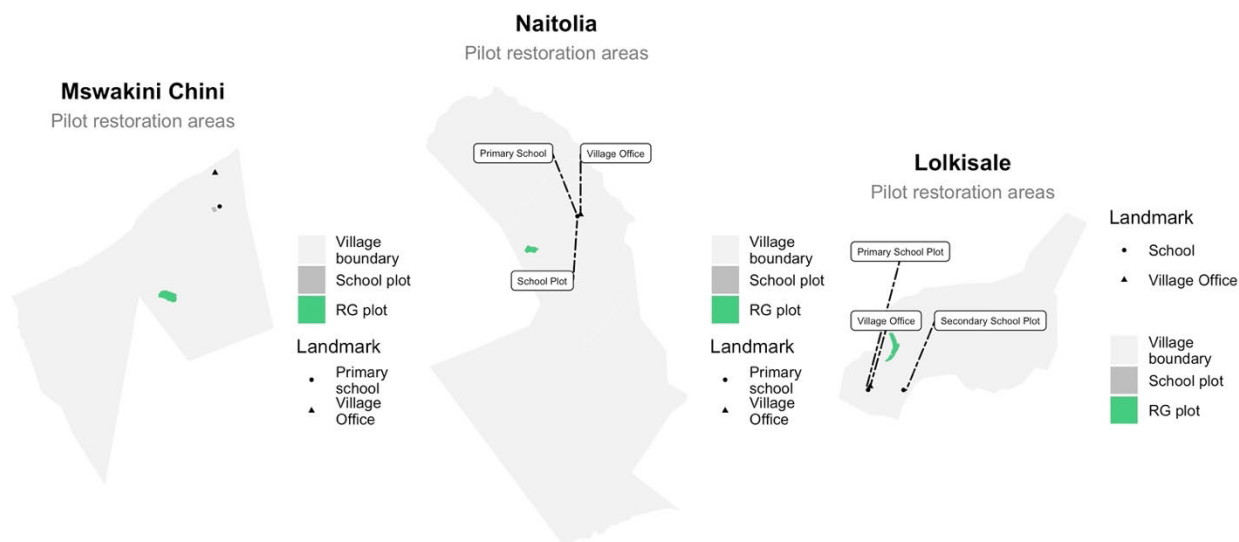


Figure 2. Locations of Rangeland Guardian and school restoration plots in each village

Activity 1.3 Training of Rangeland Guardians in rangeland restoration

The basic training on the removal of the invasive plants was provided to the rangeland guardians using the training manuals prepared University of York. Based on identified training need which was the high dominance of *Ipomea hildebrandtii*, *Solanum incunum* and *Senna obtusifolia* the techniques taught were mainly restriction of grazing and manual removal of young invasive plants where suitable. It must be highlighted that due to a prolonged dry season that stretched throughout the expected short rains, the vegetation growth was delayed.

Further training was conducted in March 2022 after the short-rains have started and vegetation is growth is visible in the restoration plots (Annex 4.2 and Annex 4.5) – this also included building seed traps in areas of bare ground.

Activity 1.4 Practical rangeland restoration activities by Rangeland Guardians

The Rangeland Guardians have been working on their respective village pilot restoration areas under the direct and indirect supervision of Oikos EA. In Lolkisale and Naitolia, the pilot were grazing barriers were constricted using old thorns (Figure 3), and invasive plants identified under the guidance of UoY and OEA were removed where suitable. The restoration plot in Mswakini Chini was protected from grazing using thorn barriers, at least partially, from grazing. The team has worked hard with the communities to identify what the main problem plant species are, ensuring community knowledge is fully incorporated into the restoration process.

The restoration plots were marked out using thorny branches of *Vachellia* species that were abandoned by illegal tree cutting activities, the wood of *Vachellia* has been used for illegal charcoal production. Unfortunately this tree-cutting had taken place in the restoration plots. The grazing restrictions of Naitolia’s plot started on the 23rd August and completed on 21st September 2021 in Naitolia and Lolkisale and on 05th November 2021 in Mswakini). Law enforcement against illegal tree cutting is a concern that remains a major issue in the target villages, despite repeated sensitisation of key community members (environmental officers, village authorities).

The aim for fencing of the restoration plots was to stop grazing hence promote recovery of the restoration plots. Prohibiting grazing in the restoration plots wasn’t easy in the beginning and was even harder in Lolkisale since the village has more limited alternatives to grazing areas compared to Naitolia and Mswakini Chini villages. The village governments were involved and have helped to a

large extent in stopping grazing in the restoration plots.

The Naitolia and Lolkisale Rangeland Guardians started the removal of some invasive species such as *Ipomea hildebrandtii* and *Senna obtusifolia* and clearing of the restoration plots.

In year 2 the restoration will continue after the onset of the long rains will promote regrowth of invasive plants. Initial reports suggest that transplanting of grass plugs, from good coverage areas to bare areas, should be possible.



Figure 3. The Lolkisale village RGs using the thorns left behind by charcoal makers to aid grazing restrictions at the restoration plot

Activity 1.5 **Scaling up - identification of additional degraded areas for restoration**

This activity has been deliberately postponed until the short rains have started enabling livestock to return to the villages, and ensure the local communities will be fully engaged about scaling the restoration activities as it does involve restricting grazing.

Activity 1.6 **Tagging of livestock**

The University of York imported the GPS units in May 2021. This activity has been delayed until May/June 2022, which will still enable more than 12 months of data collection. Initially this was due COVID-19 travel restrictions still impacting staff during 2021. However, due to the long period of drought from May 2021-February 2022, this caused significant pressure on pastoralists and their livestock – many livestock died of starvation, while most of the surviving animals were moved by the pastoralists to other areas in Tanzania with available pasture. The project team would have therefore been unable to attach collars as planned. As of February/March 2022, livestock have returned to the villages.

Staff at the University of York have also been delayed by lack of research permits, while TAWIRI (Tanzania Wildlife Research Institute) and TALIRI (Tanzania Livestock Research Institute) have approved the work, COSTECH (Tanzania Commission for Science and Technology) have yet to confirm approval. The project team are in regular contact with COSTECH to push this forward and expect approval by May 2022.

The project team have also recently engaged with TALIRI staff to involve them in this part of the project in order to assist with facilitating the work within the villages and providing further expertise (Annex 4.3). We expect a formal MOU/collaborator agreement to be signed in May 2022.

Activity 1.7 Biodiversity surveys for invertebrates and birds, ongoing surveys of vegetation composition and structure.

The baseline biodiversity surveys were conducted in June 2021 by local technical specialists due to COVID-19 travel restrictions preventing University of York staff travelling to Tanzania. The York team provided the contractors with training material and remote assistance for data collection that included fixed point bird surveys, vegetation transects, sweep netting for invertebrates and butterfly transects. 27 survey points were sampled. A summary of the vegetation cover is shown in Figure 4. For each village, restoration areas on average had more grass cover, fewer shrubs and more trees after the short rainy season in 2021 (Figure 4a) and fewer grass species and more invasive plant species than rangeland areas identified by the local communities as in relatively good condition (Figure 4b).

The second set of biodiversity are now planned for June 2022, to be conducted by the University of York team.

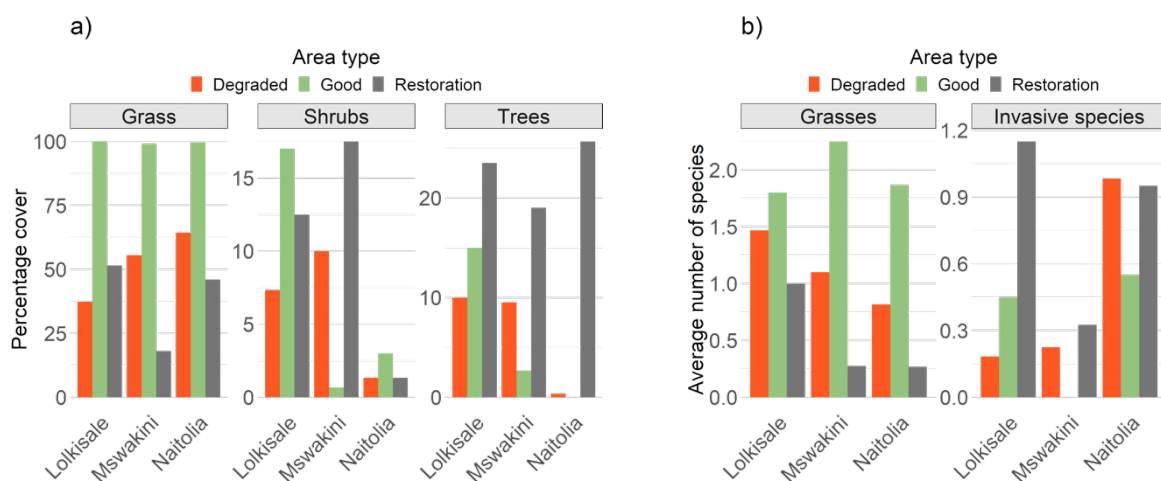


Figure 4. Summary of the baseline vegetation coverage (a) and diversity of grass and invasive species with the restoration sites and other degraded and non-degraded areas of rangelands within the village boundaries.

Output 2 - Direct benefit to Rangeland Guardians: Three Rangeland Guardians groups composed of women and youth from vulnerable pastoralist communities are established and trained and at least 60 members receive sustainable income from sale of grass from restored rangelands.

Women in the communities are broadly recognised as the most vulnerable and marginalised group of pastoralist societies, yet have the potential to drive improvements to household poverty through empowerment and community leadership. By providing training in marketplace literacy and opportunities to increase financial independence and leadership through the restoration and management of degraded rangelands, a selection of the community (Rangeland Guardians) will be able in help alleviate household and community poverty.

At the start of the project October-December 2020, the in-country partners selected and help form the three Rangeland Guardian (RG) groups (60 women), with the village and District representatives being involved in the process throughout. The RG training programs in marketplace literacy were completed in 2021, while the training in rangeland restoration techniques has been limited due to lack of rains during 2021/22, training will continue to be implemented to ensure the RGs can generate income from grass grown in the restored areas.

Activity 2.3 Training of the RG members (3 groups, 60 people) in MPL and basic saving group management

Between April and June 2021, a total of 42 women among the RG have successfully completed a cycle

of training in Marketplace Literacy. The rest of the RGs completed their training in Year 1. In Mswakini Chini and Naitolia the training included modules of Livestock to Market (see activity 3.2). All participants gain knowledge from the training, further details of the training and how this

Output 3 - Community benefits from restoration: Availability of dry-season fodder increases, improving livestock value.

By focussing on degraded lands with no value for pastoralism or agriculture, the project aims to ensure non-competitive land allocation while restoring grazing opportunities and basic ecological function of rangelands. The Rangeland Guardians, with training, will restore the land and receive financial compensation by selling the fodder that is produced. These areas will then be managed to maintain function and grazing resources while the Rangeland Guardians can move to restore further areas of degraded land. The techniques required to restore degraded grassland depend on local context, for example, degradation can take the form of invasive weed infestations, bare ground or bush encroachment. Training will continue to be provided throughout the project by all project partners to ensure that the restoration techniques are well implemented. Simultaneously, collaboration with the grazing management committees will develop sustainable grazing management protocols to ensure livestock value and fodder availability is increased.

Understanding the value of rangelands to the community is often well known by community elders, such as grazing resources availability and biodiversity. There is also financial value to some in the communities from the rangeland wildlife such as through ecotourism. To promote the potential worth of rangelands and biodiversity, a school awareness campaign is to be used to advocate the importance of rangeland conservation and the opportunities deriving from rangeland restoration to improve and maintain positive attitudes towards wildlife and the benefit of health rangelands.

Since the plentiful rains in early 2021, there has been a drought until late February 2022 resulting in significant livestock losses (Annex 4.4) and impact on available pasture. However recent (March 2022) field photographs (Annex 4.5) showing good initial vegetation growths suggests the recovery potential of the rangelands from restoration has not been reduced. To extend the school education program, the project team have also identified some rangeland restoration areas at the schools to ensure pupils can be directly involved in restoration and monitoring activities themselves.

Activity 3.2 Rangeland Guardian awareness raising / marketing to grazing committees

Between the 23rd of May and the 12th of June 2021, the Rangeland Guardians and interested livestock keepers were exposed to a livestock-to-market training through a tailored course of Livestock Marketplace Literacy. The main objective of was to help and enable participants to adapt to the social, economic and environmental changes that are affecting pastoralism as a lifestyle and as an economy and identify links between livestock value and rangeland's health.

The training course linked livestock markets and pastoralists' wellbeing as a result of ecological changes in the rangelands, it strengthened the capacity of the RG to operate successfully the potential income generated by restored grazing areas. At the end of the training the trainees were able to link climate change, increase of livestock, decrease of available healthy pastures has led to livestock overgrazing and eventually to rangeland degradation. A total of 19 women participated the training for five days at Naitolia village; 23 trainees, 18 women and 5 men participated the training at Mswakini village – with all participants increasing their knowledge of Livestock marketplace literacy (Figure 5). The trainings showed good cooperation of village leaders on mobilizing Rangeland Guardians to participate to the training After the training the male trainees from Mswakini village committed be part of the restoration of the area allocated to the women so to learn rangeland restoration methods.

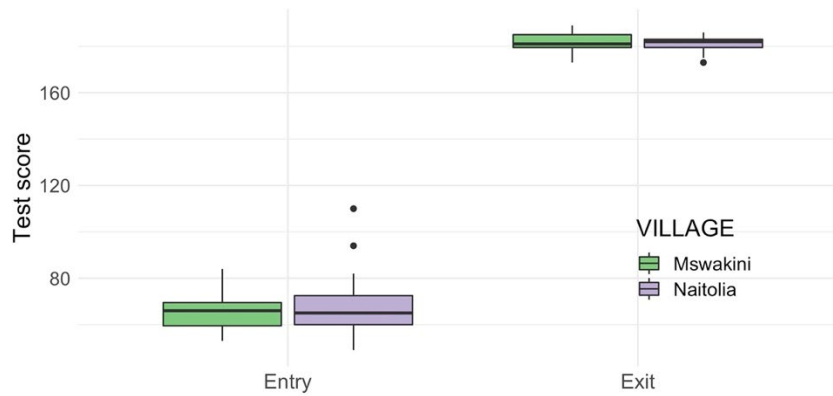


Figure 5. Summary of the entry and exist test scores for participants of the Livestock Marketplace Literacy training. All participants gained knowledge and improved their understanding of livestock markets.

Activity 3.3 Awareness campaign in primary and secondary schools on the importance of rangeland conservation and the opportunities deriving from rangeland restoration.

This awareness school awareness campaign was completed in October 2021 been completed: 10 episodes of the “Our rangeland, our pride” podcast has been delivered primary and secondary students, with an average of 1,194 students participating across the 10 episodes.

As an additional part to the school education program, 80 students have participated in identifying additional restoration areas at the schools (see Output 1, Activity 1.1), including marking of boundaries, and implementing grazing restrictions as the first step in rangeland restoration. For 2022/23 the project team will aim to include the school student in monitoring these school restoration plots for the changes in vegetation and biodiversity.

Output 4 - Governance improvements underpinning lasting impact: Village grazing committees have established adaptive principles of sustainable grazing management across non-degraded rangelands, with best practice shared with neighbour villages.

A crucial part of the pathway to rangeland restoration and prevention of further rangeland degradation is to ensure good governance in the target villages and within in the wider District. Governance will be improved through the increase and sharing knowledge of adaptive grazing management strategies which are necessary given the environmental and society change happening in the pastoral communities. Resource assessors in each village will be trained to continually monitor rangeland conditions and provide feedback to grazing committees who then have the authority to adapt rangeland management and grazing plans to ensure sustainable use. By the end of the project, we expect the principles of adaptive management to be implemented without the oversight of the project team.

Activity 4.1 Training of resource assessors

The Resource Assessor (RA) training was completed by October 2021. 17 RAs (5 in Lolkisale, 7 in Mswakini Chini and 5 in Naitolia) have each received 4 days of training in rangeland monitoring methods and data collection (Figure 6). Data collection outline and protocol can be found in Annex 4.6, with photos of training and data collection in Annex 4.7.



Figure 6. Resource assessor training the three target villages and data collection in Mswakini Chini in January 2022

The Resource Assessors will provide reports every two months on grazing conditions to the village grazing committees. In Figure 7 we show a summary of the some of the vegetation data that has been collected in Mswakini Chini in January 2022 and this is an example of how the data can be summarised. UoY and OEA will continue to develop a simple automated tool (i.e., a traffic light system) that can be used in the reporting to grazing committees based in the data collected by the Resource Assessors.

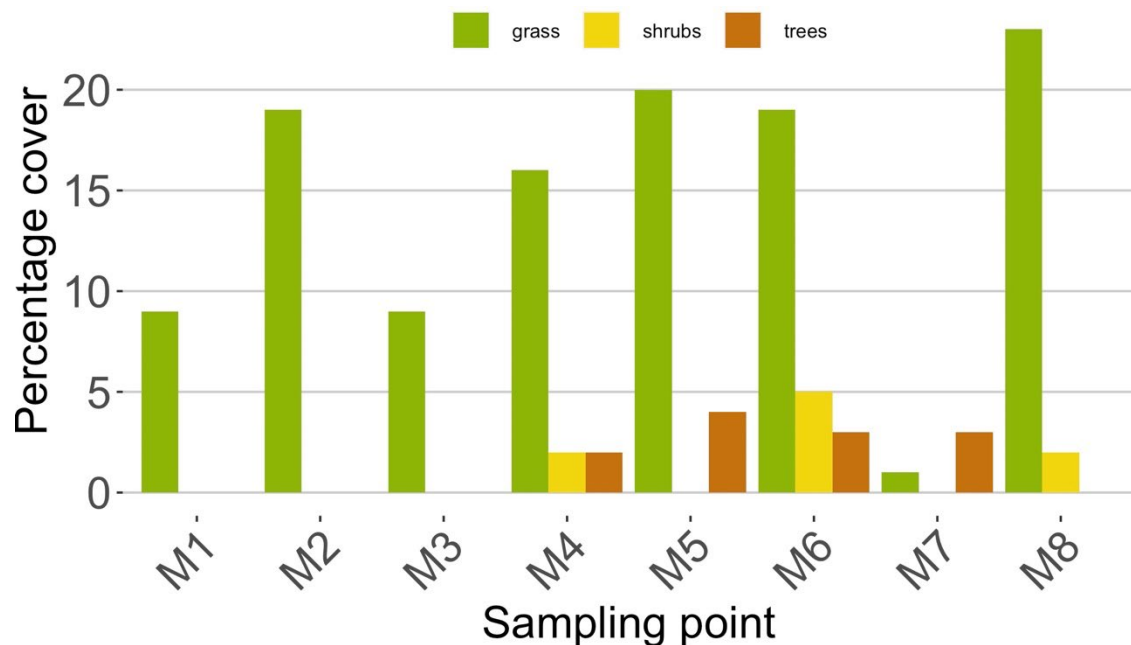


Figure 7. Baseline vegetation status in Mswakini Chini as recorded by the resource assessors in January 2022.

Activity 4.2 Training grazing committees on sustainable grazing management

This training of grazing committees has been delayed to ensure that the Rangeland Guardians have been fully trained and have started to implement restoration in the pilot areas restoration areas (Activity 1.4). In October 2021 we expected this activity to start before the end of December 2021, but the timing of this has been delayed by the lack of rains in late 2021/early 2022 which has

restricted the activities of the Rangeland Guardians. Since the rains have started, Rangeland Guardians training and restoration activities took place between 22-25th March 2021 in the villages of Naitolia and Mswakini Chini (see Section 3.1 - Activity 4.1).

Some training of the grazing committee on sustainable grazing management has been achieved through a practical learning visit which was considered a priority by the committees and through training of grazing committee members as resource assessors (RA). The grazing committees are fully informed and exposed about the rangeland restoration activities and have suggested some interventions from their indigenous experience, such as planting of grasses, which have been assessed by the project team, and will require following up in Year 2.

Activity 4.3 Learning events and exchange visits between local governments and district representatives targeting restored rangelands.

The first of two planned learning exchange visits took place between the 22nd and 24th November 2021 (Figure 8). The aim of this learning exchange was share knowledge between neighbouring villages and local governmental and district representatives on the sustainable grazing management is being implemented in other areas of the northern Tanzanian Rangelands. This exchange visit involved both Tanzanian in-country partners (UCRT and OEA) together with 14 participants from the study area villages: a Village Leader, Grazing Committee Member Rangeland Guardian and Resource Assessor from each of village, and livestock officers from Monduli District (study area) and Simanjiro District (neighbouring district). A summary by UCRT and additional photos of this visit can be found in Annex 4.7.

The project participants were surprised that pasture was still available whilst pastures were exhausted in Naitolia, Lolkisale and Mswakini. Participants showed strong interest in the holistic grazing management model and asked many questions on how to replicate it. Kitwai B is a remote village in Kiteto district with a much lower population and livestock density compared to Mswakini, Lolkisale and Naitolia, where agricultural expansion, population growth and livestock affect the availability of good pastures.



Figure 8. Learning exchange visit to Kitwai B village in Simanjiro District. Kitwai B has a very successful community lead rangeland management program, providing plentiful pasture even during long periods of no rain. The visit included presenting the Rangeland Guardians project activities, how the rangelands are being monitored and visits to successfully managed rangelands.

Activity 4.4 Presentation of results at national and international meetings

A conference poster (Annex 4.8) was presented at the TAWIRI 2021 Scientific Conference where, Plakizia Msalilwa the Junior Wildlife Ecologist from Oikos East Africa, attended as the project representative. This was a great opportunity to introduce the project to the Tanzania scientific community, disseminate some initial results on the biodiversity monitoring and for Plakizia to experience this biennial conference for the first time. The poster was requested by the TAWIRI management team to enable future use such as teaching aids in schools.

3.2 Progress towards project Outputs

Output 1 - Biodiversity improvements: Degraded rangeland within key wildlife corridors in Northern Tanzania have restored function and increased biodiversity. *Measurable indicators: 1.1 Grazing potential increased from baseline by 100% per year in restoration plots, 1.2 Plant species richness increases from baseline by 50% per year in target degraded rangeland. 1.3 Nutrient cycling rates increased by 30% start to end in restoration plots, 1.4 Use of restored sites by threatened wildlife (notably Zebra) has increased by 10% relative to baseline by end., 1.5. Invertebrate and bird diversity has increased by 50% relative to baseline by project end.*

91.3 Ha of degraded rangelands have been identified as pilot restoration areas. The second set of biodiversity surveys for all indicators: a) vegetation transects to assess density, structure, and species composition, sweep netting and identification of morphospecies for arthropods and c) observations of species and numbers for butterflies, d) point counts for birds, are due in May/June 2022 from which changes in biodiversity indicators from the baseline recorded in June 2021 will be assessed.

Output 2 - Direct benefit to Rangeland Guardians: Three Rangeland Guardians groups composed of women and youth from vulnerable pastoralist communities are established and trained and at least 60 members receive sustainable income from sale of grass from restored rangelands. *Measurable indicators: 2.1. Sixty informally educated pastoral women lease an average of 8 Ha of recovering rangelands (securing grazing for circa 30 small stock worth at least £1000) by end, 2.2. Sixty informally educated pastoral women are empowered through new skills: rangeland restoration techniques and marketplace literacy knowledge by end. 2.3. 3 cooperatives, microenterprises are registered with District government (year 2).*

The three rangeland groups with a total of 60 pastoral women have been selected as Rangeland Guardians participants (indicator 2.1), these participants have completed either basic Marketplace Literacy or more detailed Livestock Marketplace Literacy Training (indicator 2.2) – see section 3.1; Activity 2.3 and 3.2. The success of the training has been assessed through entry and exit assessments (Section 3.1 – Activity 3.2).

Output 3 - Community benefits from restoration: Availability of dry-season fodder increases, improving livestock value. *Measurable indicators: 3.1 >300 Kg / Ha.yr of grass biomass available to livestock across the restored rangelands (currently <100 Kg / Ha.yr) by end, 3.2 Purchases of grass at village level contribute to increased value of livestock, 3.3 2000 school students receive awareness raising and training in sustainable rangeland management (500 in year 1, 1000 in year 2, 500 in year 3).*

The school awareness program (indicator 3.3) is still in progress, with 1,194 pupils completing the program to date. There have been 204 entry and exit assessments which, after assessment by OEA, will be changed ensure the indicator is accurately representing knowledge change. 80 students have also participated in identifying additional restoration areas at the schools (see Activity 1.1), including marking of boundaries, and implementing grazing restrictions as the first step in rangeland restoration.

Output 4 - Governance improvements underpinning lasting impact: Village grazing committees have established adaptive principles of sustainable grazing management across non-degraded rangelands, with best practice shared with neighbour villages. *Measurable indicators: 4.1 Three village grazing committees have increased knowledge of adaptive grazing management strategies compared with baseline and understand the concepts of joint resource management (continuous increase in average understanding scores from baseline, 18 months and year 3 surveys), 4.2 Adaptive grazing management plans will have been developed and are in use for all communal grazing lands (none currently), 4.3 By-laws will have been passed defining and allocating restoration areas and implementing communal*

grazing management plans in all villages (none currently), 4.4 Resource Assessors will be able to monitor rangeland conditions in the target communities and feedback to grazing committees enabling adaptive management (none currently).

By-law documentation (indicator 4.3) is still in progress (originally planned for Year 1). Resource Assessor monitoring (indicator 4.4) is now being implemented in all villages (see Section 3.1 – Activity 4.1), a fully automated process of providing outputs to grazing committees after data entry will be completed by October 2022, after which there should be 5-6 resource assessor survey periods, across wet and dry seasons.

3.3 Progress towards the project Outcome

Outcome - A scalable and sustainable, community-led and culturally acceptable model of rangeland restoration and management is implemented over three villages, with tangible benefits for biodiversity and local communities.

The project team continue to progress towards the project outcome as demonstrated by the Rangeland Guardian rangeland restoration activities (Section 3.1 – Activities 1.3 and 1.4), biodiversity surveys (Section 3.1 – Activities 1.7), progress of the school awareness program (Section 3.1 – Activity 3.3) and the training of Resource Assessors and their regular vegetation monitoring activities (Section 3.1 – Activity 4.1).

0.1. 500 Ha of degraded rangeland under restoration in Monduli district (Tanzania) by project end (0 Ha in 2019, 100 Ha in year 1, 300 Ha in year 2).

By end of year 1 91.3 Ha of rangelands were under restoration. Identifying suitable grazing areas within the areas that are not already under by-laws such as the CCROs has been difficult. However, the grazing committees and CCRO management will allow restoration activities within the CCRO areas (following the by-laws in place). This will mean that the Rangeland Guardians will not be able to use the CCRO area to sell grass, but the community and conservation benefits of rangeland restoration will still be implemented. The project team will require to agree changes to the logframe for year 2 to account for this change. We do not expect the outcome of 500Ha rangelands under restoration to be affected.

0.2. By-laws passed in three villages ensuring commitment toward rangeland restoration and rights of Rangeland Guardians (year 1)

The project has been presented to all relevant village government representatives. The project team have not been provided with the official village approval documents, but will continue to engage with the village governments for these before the 2022 HY report.

0.3. 60 households record income generated by the rangeland restoration programme of £10 per month during the dry season (year 3).

N/A at the end of the 2021/22 financial year

0.4 Grassland productivity, plant, invertebrate and bird diversity are increased in restoration plots by at least 50% annually from baseline (to be established in within three months of start)

Baseline species diversity and biodiversity measures were generated in June 2021 (Section 3.1 – Activity 1.7). The second survey is due in June 2022.

0.5 Rangeland quality (measured by grass cover) over entire village grazing areas is increased by 10% relative to neighbouring villages not participating in pilot (year 3).

N/A at the end of the 2021/22 financial year

3.4 Monitoring of assumptions

0.1 District Governance remains supportive of the implementing partners work and of NGOs work more in general.

The district government continues to support the project. District officers have attended events such as trainings, education conservation events and were involved in the learning exchange visit (Section 3.1 – Activity 4.3).

0.2 The target villages remain committed to support the Rangeland Guardians programme throughout and beyond the life of the project.

The target villages and communities are still committed but the long dry season has caused stress and insecurity which brought some activities to a halt. Communities asked trainings and engagement to be postponed as many community members had to leave the villages with their herds in search for pastures.

0.3 National policies will not further marginalise pastoralism in favour of land conversion for farming purposes.

There have been no policy changes since the start of the project.

0.4 Prolonged droughts will not exacerbate conflict between communities and land invasions targeting available grass in the restored rangelands and simultaneously compromise recovery rates.

After the abundant rains at the end of 2020 and early 2021, there has been a significant drought throughout the rest of 2021 and the short rains have only arrived in the study area in late February. This has caused a significant number of livestock deaths due to a severe shortage of pasture (Annex 4.4) and created some concern in the communities about available pasture for the remaining livestock. This concern has delayed some discussions around the scaling up of restoring degraded areas to ensure community relationships are still strong and supportive of the existing RG work progress. Loss of livestock and environmentally unsustainable income-generating activities including tree cutting and invasion of the restoration plots for both pasture and briefly agriculture were detrimental to the programme. Nonetheless, as soon as it started raining and some grasses appeared, the rangeland guardians requested support to transplant and reseed some of the restoration plots. In March 2022 the Oikos team was in the field with the RG to identify effective transplanting methods and locate areas to sources of grass for transplanting.

1.1 Identified communities remain stable and committed to respect the agreements in terms of allocation of land to Rangeland Guardians (compliance will be monitored).

Village grazing committees remain committed to keeping the restoration areas for the RGs. Recent discussions with the village governments suggest that further restoration activities can take place in some degraded rangeland of legally-restricted grazing areas such as those with a Certificate of Customary Right of Occupancy (CCRO) – RGs can implement the restoration but will not be allowed to harvest the grass as fodder to sell (due to restrictions of the CCRO), but we anticipate if the restoration is successful, this will lead to further non-CCRO areas being identified for RG restoration management as part of the scaling up process.

There has been some land invasion in the Naitolia restoration site which was illegally ploughed for agriculture. This was stopped quickly, but the damage to the land was already done, and has resulted in some new invasive and problem species coming into the site

1.2 No prolonged drought: rangeland restoration is achieved by restoring recovery potential under normal conditions, continuous drought may render activity ineffective.

There has been prolonged drought during 2021 and early 2022, this has caused a significant number of livestock deaths (Annex 4.4). However, vegetation growth from February 2022 after a short period of rain suggests the recover potential remains (see Annex 4.5).

1.3 That our measures of biodiversity (vegetation, zebra, invertebrate and birds) reflect wider impacts on ungulate populations that change at slower rates than the project timeline.

This assumption continues to hold.

2.1 Compliance with by-laws established by local governments in the target villages.

N/A in 2021/22 financial year

2.2 There will be no dramatic change in land tenure or land grabbing episodes targeting or involving the restored areas.

There has been no land tenure change to date. Some illegal agriculture has occurred in Naitolia (Annex 4.5), but this was stopped by the village government immediately.

3.1 Northern Tanzania will not be affected by severe drought which will reduce recovery potential

The lack of rain in 2021/22 has caused significant problems for pastoralists. But recent rains and resulting vegetation growth (Annex 4.5) suggest recovery potential is not affected.

3.2 OEA will continue to be welcomed in local schools

OEA continues to work close collaboration with the government entities that regulate education in primary and secondary schools. OEA was received very positively by administrations of the target schools and continue to implement the school education program on rangeland conservation. The project team have also worked with the schools to have some example restoration sites in the school grounds, and have created a 'problem plant' poster (Annex 4.9) for schools (and communities) as part of the commitment to school education.

4.1 Tanzania will not implement zero livestock mobility policies that will increase dramatically rangeland degradation.

Livestock mobility regulations have not been addressed by the national policies during the project lifetime.

4.2 Villages maintain strong working relationships with UCRT and OEA.

To date all villages have been collaborative and appreciated the project idea. Village representatives have supported the restoration activities, attended meetings and participated in exchange visits to neighbouring areas.

3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

By improving rangeland health in northern Tanzania, the intended impact of this project is to reduce the vulnerability of pastoralist communities by increasing resource availability, reduce land-use conflict and preserve endangered wildlife corridors and landscape connectivity.

Positive biodiversity impact is being contributed to through rangeland restoration by increasing habitat availability at a local scale, but also improving habitat and connectivity within the currently fragmented landscape that is used as a corridor for migratory ungulates such as zebra, elephant and wildebeest. The project activities are occurring on non-protected village land, working outside of conservation areas such as national parks can be successful if the communities drive the process and are able to benefit directly through improved finances and resource availability. Furthermore, the long-term sustainability of conservation interventions increases dramatically when they are culturally acceptable, low-cost and scalable.

This project is contributing to poverty alleviation through improved grazing management, rangeland degradation awareness and education. These strategies will continue to be used throughout the project to reduce the impact of rangeland fragmentation and reduce the degradation rate (currently ~1% pa) that threatens the pastoralist lifestyle. To date school awareness programs and marketplace literacy training to pastoralist women have been implemented (Section 3.1 - Activities 2.2 and 3.3), as well as knowledge sharing between the Rangeland Guardian Women and the traditionally male dominated Grazing committees (Section 3.1 – Activity 3.2).

4. Project support to the Conventions, Treaties or Agreements

This project directly addresses 3 Aichi targets of the Convention on Biological Diversity (CBD): Target 4, sustainable consumption being key to sustainable use of grasslands; Target 5, reduction of habitat loss by preventing further loss of functional savannas; and Target 15, restoration and resilience of ecosystems, the key objective of this project.

To improve sustainable grazing and consumption (target 4), traditional management practices need to adapt due to (i) an increasing 'squeeze' on open rangelands available to pastoralists as a consequence of land conversion for agriculture, development or other purposes concentrates pastoralists on smaller areas of grassland and limits their nomadic movements, preventing natural recovery of grasslands; (ii) socio-economic changes within pastoral communities resulting in increasing sedentarisation, again limiting seasonal and nomadic movements and (iii) changes in climate altering the productivity of grasslands. This project will transfer scientific knowledge of grassland management under changed conditions to pastoralist communities to co-produce updated management practice and restore sustainable use.

Both pastoralist communities and rangeland wildlife require large, connected areas of savanna grasslands incorporating sufficient environmental variation to provide grazing opportunities throughout the range of climatic variation. As rangelands degrade, they are both more susceptible to conversion for other uses and functionally lost from the landscape, limiting the movements of animals and adding to the rangeland 'squeeze'. Habitat loss has been identified as the primary cause of the loss of connectivity between protected areas and closure of movement corridors, itself a key threat to the biodiversity of savanna ecosystems. Through a program of training and restoration of degraded rangeland areas, the project will reduce the amount of degradation, fragmentation and habitat loss within this important ecosystem (Target 5) as well as restoring landscape-scale connectivity for pastoralists and wildlife alike.

Rangelands degrade primarily through loss of resilience to environmental and climatic change. Restoring lost resilience (Target 15) is a primary focus of this project. We will improve the status of degraded rangelands to the benefit biodiversity and human livelihoods with direct benefits to ecosystem resilience.

To date (18 months) we have identified 91.3 Ha for piloting rangeland restoration, and begun implementation of these restoration activities (Section 3.1 - Activity 1.4)

5. Project support to poverty reduction

Pastoralists are among the financial poorest communities globally with monthly income among Maasai of 13,500 TSh/adult/month compared to World Bank's national food poverty at 26,085 TSh/adult/month). Changes in society and climate have resulted in more sedentary lifestyles, which has impacted the amount of healthy rangelands available to support communities and sustain biodiversity. This project aims to contribute to poverty reduction by improving access to grazing land by improving the quality of resources to support pastoralist livelihoods, provide training and education to communities and schools on the awareness of rangeland degradation and methods to manage it, while the restoration process itself aims to improve the ecosystem services provided by the rangelands, and provide resilience of the ecosystem to climate change impacts. We also aim to add to the governance structures already in-place by establishing adaptive management principles of sustainable grazing management in communal grazing areas that are not degraded.

In the 2021/22 financial year the training of Rangeland Guardians in Marketplace Literacy was completed (Indicator 2.2) and rangeland management training has continued, while the school education program for 1,194 students has continued (Indicator 3.3). The trained rangeland guardians have already begun to share their knowledge during an exchange visit to neighbouring villages (Section 3.1 – Activity 4.3), their restoration activities will improve grazing conditions and resource for livestock and continue to benefit pastoralist livelihoods. The data now being collected by the trained Resource Assessors will benefit the community governance and management of rangelands by providing an evidence base for management decisions (Indicator 4.4).

6. Consideration of gender equality issues

Women are broadly recognised as the most vulnerable and marginalised sector of pastoralist societies, yet they are also the most effective catalysts of behavioural change. Interventions specifically targeted at women in these communities can have larger impacts on household poverty rates than other targets, and empowers women to take a greater role in community leadership. Our project focuses explicitly on identifying, training and developing women's groups to increase their financial independence and leadership skills. The core programmes of both local partners Oikos East Africa and UCRT include women empowerment in pastoral communities (<http://www.ujamaa-crt.org/womens-rights-and-leadership-forums.html>). Both organisations have worked with thousands of women in Northern Tanzania and understand very well the mechanisms for both inclusion and empowerment.

The project specifically targets women, but men and traditional leaders from both the communities and district government have been included in the implementation of the project development, this has so far been well received by all (Activity 3.1). All pastoralist women selected as Rangeland Guardians have completed either the Marketplace Literacy or Livestock Marketplace Literacy training (Indicator 2.2) and continue to be trained in rangeland restoration techniques. UCRT will continue to facilitate women's participation through the established Women's Rights and Leadership Forum (WRLF), strengthening the WRLF role in the villages and guarantee equitable control of the RG's finances.

7. Monitoring and evaluation

Monitoring and evaluation is a core element of this project: success of restoration projects relies heavily on adaptive management processes. There will be routine monitoring, including regular monitoring of vegetation structure and composition in restoration sites (using established Rangeland Health methodology) and compliance with grazing restrictions on recovering sites. Vegetation monitoring is therefore embedded within the normal work plan and cannot be separated from core operating costs.

Additional monitoring for project evaluation includes separate, dedicated activities that investigate the Darwin Initiative Annual Report Template 2022

wider impact of the work on biodiversity and communities. These focus on three areas: (1) biodiversity monitoring, (2) Socio-economic monitoring (including compliance monitoring) and (3) monitoring of training effectiveness. Some of the monitoring approaches are based on annual changes, such as in vegetation change and satellite analysis of degradation. This remote sensing analysis will be implemented in May/June 2022 after the second biodiversity monitoring period – this will allow the satellite data to be link to two ground biodiversity assessments (Y1 – baseline and Y2).

To assess the Rangeland Guardian’s understanding of best practice within grazing committee membership, a report from the data collected during the training activities (marketplace literacy and rangeland restoration techniques) will be completed. Repeated surveys at the project end will enable direct evaluation of the impact on individuals involved or not in the intervention.

There have been no major changes the M&E plan in the past year, although the baseline ecological monitoring surveys were delayed by approximately 3 months to COVID-19 restrictions. In the next year, OEA will aim to improve the monitoring of the school education program by developing the entry and exit tests to better measure the impact of that program. Monitoring and evaluation is shared among the project partners.

8. Lessons learnt

Regular monthly virtual meetings have continued to be important and have worked well.

An important change for the coming year will be involving additional stakeholders (TAWIRI and TALIRI) to implement the Livestock monitoring. Originally this was planned to be conducted by UCRT, but due to the sensitive nature of the activity (i.e., detailed monitoring of livestock movements), it was agreed as a team, that to ensure the excellent community relationships that UCRT have in place continue – it would be best to have a more official approach to implementing this research through the relevant national research institutes. This unfortunately has caused some delays in implementing this activity, so for future work during the project and beyond it is fundamental to ensure all partners understanding the responsibilities that were agreed upon during the development of the project and importantly continued dialog about what the activities involve.

9. Actions taken in response to previous reviews (if applicable)

10. Other comments on progress not covered elsewhere

11. Sustainability and legacy

Throughout the project, we aim to increase promotion of the work to more villages in the Moduli District through the project partners and hopefully further afield where the in-country partners area working with other communities on different projects. Materials generated for the School Awareness program are already freely accessible (Annex 3: Standard Measures – Table 2). Other training materials will be made available through the project website and promoted among NTRI partners, the school education program and problem plant poster (Annex 4.9) will be distributed to schools and communities. The learning exchange (Section 3.1 – Activity 4.3) has generated interest from other villages and Districts regarding rangeland management activities.

The exit strategy is still valid. The Rangeland Guardian (RG) groups formed in the target communities will be self-sustaining as they are fully trained, and different forms of degradation will likely continue to be a problem. To achieve our ultimate impact requires that the programme expands to new locations after the project end. This will be ensured by training up to 9 RGs as trainers to ensure skills can be passed on in the communities and who will facilitate visits by district rangeland technical teams. This will prime programme expansion: we anticipate that if successful, RGs will have established a new income source and grazing quality on village lands will improve. Such tangible benefits ensure

neighbouring villages will want to get involved: with official district support (levered through NTRI's leadership role within the regional government's new 'Healthy and connected rangelands working group'), such roll-out can be self-fulfilling. While this may seem optimistic, successful interventions in pastoralist communities managed by the project partners have seen spectacular organic growth. For example, UCRT have seen growth following establishment of Women's Rights and Leadership Fora in 2011, with 35 village fora now established and over 900 women establishing legal land ownership rights. If a solution is simple, beneficial and culturally acceptable, uptake is strong.

12. Darwin identity

This project is recognised as a distinct project (funded through the Darwin Initiative), however the project expands on work by the partners who have been involved in a 6 year collaboration with the District as part of the Endangered Ecosystems of Northern Tanzania collaboration. Work will continue by project partners to ensure the project is clearly identified as funded by the Darwin Initiative.

The project website (with Darwin Initiative identity) can be accessed at <https://sites.google.com/york.ac.uk/rangelandguardians/>. The project is also listed on the York Research Database - [https://pure.york.ac.uk/portal/en/projects/darwin-rangeland-guardians\(a513d465-082a-4e0c-8230-3f8f868f4c9e\).html](https://pure.york.ac.uk/portal/en/projects/darwin-rangeland-guardians(a513d465-082a-4e0c-8230-3f8f868f4c9e).html) and available via person twitter profile (e.g. https://twitter.com/Rob_Critchlow). All participant information documents, presentation and training materials, such as the Marketplace Literacy Manuals, carry the Darwin and UKAid logos. The project is also described on the Oikos East Africa website (<http://oikosea.co.tz/projects/rangeland-guardians-women-led-initiatives-for-rangelands-restoration/>).

The project team developed additional promotional material such as the 'problem plant' poster (Annex 4.9). The project website continues to receive regular updates and news items.

13. Impact of COVID-19 on project delivery

The COVID-19 pandemic continued to have a significant impact on restricting international travel and delivering some of the activities on time as planned – particularly between March and August 2021. This meant 'change request' to ensure the biodiversity surveys could be implemented by suitably trained contractors in Tanzania.

During 2021 activities resumed with precautions such as outdoor meetings and social distancing, while the in-country teams have been working with PPE every time there has been a wave of COVID-19. Some of the field teams are fully vaccinated against COVID-19. In 2022 all activities resumed normally. The Omicron variant has not affected severely Tanzania.

We have mainstreamed the use of virtual meetings for coordination and planning and we will continue to do so. University of York staff will aim to develop training through videos and interactive sessions.

The outcomes and impacts of this project cannot assist with the COVID-19 responses. However, throughout the project so far, the in-country project partners are explaining the risks as best as possible to the communities and actively changing their behaviour and working practices to ensure safe working for both the participants and communities.

14. Safeguarding

Please tick this box if any safeguarding or human rights violations have occurred during this financial year.

If you have ticked the box, please ensure these are reported to ODA.safeguarding@defra.gov.uk as indicated in the T&Cs.

The University of York is legally obliged and committed to safeguarding and promoting the welfare of young people under 18 and vulnerable adults who access its activities or services. These include visits to the campus, users of the campus nursery, registered students who are under 18, children and vulnerable adults who come onto University premises as part of organised activities such as visits or summer schools and University staff and students engaged in activities off campus, including widening participation activities in local schools and volunteering. Also taken into consideration are the requirements for some students, as part of their course, to work with or undertake research or placements that will bring them into contact with children or vulnerable adults.

The University must ensure that reasonable steps to promote and safeguard the welfare of children, young people and vulnerable adults are taken and that relevant legislation and government guidance are complied with. In accordance with Aimhigher and the City of York Safeguarding Board the University has appointed the Academic Registrar as University's lead member of staff in relation to safeguarding issues.

A number of procedures and guidelines have been established and agreed within the University to work towards ensuring fulfilment of the duty of care towards young people and vulnerable adults. All members of staff who come into contact with children and vulnerable adults are in a position of trust and are responsible for being aware of this and act accordingly in ensuring their role in the University's duty of care is fully carried out.

Further details on the lead organisation's safeguarding framework and procedure can be found at these links:

- <https://www.york.ac.uk/media/abouttheuniversity/safeguarding/Safeguarding%20framework%20March21.pdf>
- <https://www.york.ac.uk/media/abouttheuniversity/safeguarding/Safeguarding%20procedure%20March21.pdf>

No safeguarding concerns have been raised during the 2021/22 financial year.

15. Project expenditure

Please note this is a draft expenditure table

Table 1: Project expenditure during the reporting period (1 April 2021 – 31 March 2022)

Project spend (indicative) since last Annual Report	2021/22 Grant (£)	2021/22 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	████████	████████	█	
Consultancy costs				
Overhead Costs	████████	████████	█	
Travel and subsistence	████████	████████	████████	
Operating Costs	████████	████████	████████	Permit and immigration delays (see below)
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)	████████	████████	█	
TOTAL				

Changes to the Travel and Subsistence and Operating Costs spend has unfortunately been unavoidable due to an unexpectedly lengthy process in obtaining research permits and

immigration clearance which has prevented travel to Tanzania. These permits are now confirmed and travel is expected in May/June 2022.

16. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Initiative Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here).

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the correct template (checking fund, type of report (i.e. Annual or Final), and year) and deleted the blue guidance text before submission?	Y
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	N/A
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	