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)

Submission Deadline: 30th April 2022

Darwin Initiative Project Information

Project reference	DIR2752\1028
Project title	Stock-proof hedges to improve farming livelihoods and conserve Malagasy forests
Country/ies	Madagascar
Lead partner	North of England Zoological Society (Chester Zoo)
Project partner(s)	Missouri Botanical Garden, Madagascar Research and Conservation Program (MBG)
Darwin grant value	£203,670
Start/end dates of project	Oct 2021 – June 2024
Reporting period (e.g. Apr 2021 – Mar 2022) and number (e.g. Annual Report 1, 2, 3)	October 2021 – March 2022
Project Leader name	Dr Claire Raisin
Project website/blog/social media	Twitter: @c_birkinshaw
Report author(s) and date	Dr Claire Raisin, Fidy Ratovoson, Dr Chris Birkinshaw 29th April 2022

1. Project summary

The Agnalazaha forest, one of the largest remaining fragments of rare littoral forest in Madagascar, is threatened by cutting trees to make stakes by local subsistence farmers who erect fences to protect crops from free-ranging cattle. Cutting these stems degrades the forest, reduces its integrity, and impacts rare native biota. We will support farmers by providing training, equipment, and materials (including hedging plants) to plant and manage stock-proof hedges thereby protecting crops, improving livelihoods, and conserving the forest.

2. Project stakeholders/ partners

This project is founded on two major partnerships: between Chester Zoo and MBG and between MBG and the local community living in the peripheral zone of the Agnalazaha Projected Area.

To date Chester Zoo has facilitated MBG in the implementation of this project in two major ways: a) facilitating the administrative process – especially guiding MBG staff in the reporting requirements and providing financial advances, and b) guiding the development of monitoring protocols for the evaluation of local perceptions of the project, of the protected area (and its associated management regimes) and of MBG. The current version of these monitoring protocols is included in "Evidence 1.5/4.1".

The second major partnership essential to the success of this project is between MBG and various parts of the local community, including: farmers who seek protection for their fields; unmarried mothers; and, local middle school students. MBG has been working at Agnalazaha Forest since 2004 and the development of the necessary relationships with these stakeholder groups posed no problems: farmers as beneficiaries of fences; unmarried mothers as nursery staff; and middle school students as assistants in monitoring indicators. The recruitment of specific participants in each of these groups (44 farmers, 10 unmarried mothers, and 10 students) was entirely transparent and no problems were encountered in this process. The local authorities and traditional leaders both appreciated this support for grassroots community members.

The British Ambassador to Madagascar and the Comoros is aware of the project, and one of us (Chris Birkinshaw) briefly discussed progress with him when he visited another site managed by MBG.

3. Project progress

3.1 Progress in carrying out project Activities

Output 1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences

1.1 *Radio broadcast and village workshops to launch of project to local community including solicitation of advice leading to adaptation*: carried out in manner and time planned – much useful feedback received including the significance of wild pigs (in addition to cattle) in destroying crops and the importance of treating Melaleuca stems (used for fencing posts) to prevent rotting.

1.2 *Workshop to select and orientate farmer participants:* carried out in manner and time planned – three village meetings held, one in each of the fokontany targeted by the project (i.e. where a large number of tree stems are normally extracted from the protected area to protect crops).

1.3 *Workshop to train farmers in installation of barbed-wire fences with national expert:* carried out in manner and time planned – participating farmers trained and then coached in each of the three participating fokontany by Patrice Antilahimena concerning best practice for the erection of barbed wire fences. The training included the reduction of risks and included the use of safety goggles and provision of gloves. Note that no national fencing expert as such could be identified but we were fortunate that Patrice, a member of MBG staff, had worked with barbed wire in previous employment.

1.4 *Installation of barbed-wire fences by participating farmers around their plots (4-strand fence for total 16 km; support posts every 2m)*: carried out in manner planned but the administrative process required to purchase and transport the barbed wire took longer than anticipated and thus the work to install the fences only began in March and thus is ongoing. To date 7 km of barbed wire fence have been installed.

1.5 *Pre-intervention surveys to establish baseline knowledge and attitudes*: carried out in manner and time planned but the data has not yet been fully analysed. No problems were encountered during the interviews even though each interview took slightly less than one hour to complete, on the contrary people seemed delighted to be consulted about their lives, livelihoods and perceptions.

Output 2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock- proof hedges

2.1 *Selection of women (unmarried mothers) nursery staff and two seed collectors:* carried out in manner planned but later than anticipated – following the announcement of the opportunity 22 candidates were received from which ten were selected by interview (10 nursery staff and nursery staff will also be responsible for collecting seeds). (Evidence 2.1.)

2.2 *Installation of tree nursery*: carried out in manner planned but later than anticipated (Evidence 2.2.)

2.3 *Installation of crèche associated for young children of nursery staff*: carried out in manner but later than anticipated and the creche is only being completed now (Evidence 2.3.)

2.4 *Workshop to train nurserywomen in best practice for the propagation of shrubs and trees (provided by horticulturalist from Chester Zoo)*: an expert horticulturalists from Chester Zoo was not able to travel to Madagascar due to covid related restrictions and instead a national expert horticulturalist David Rajaonarivelo provided the ten nursery women with 4 days of basic training. It is now proposed that an expert horticulturalist from Chester Zoo will travel to Madagascar to provide this training in YR2.

2.5 *Biweekly presentations on child care for nurserywomen from national experts*: not carried out in manner and time planned due to the late recruitment of the nursery women – this activity will begin in April 2022.

2.6 *Propagation of 16,000 seedlings of plants to be used to enrich hedges*: carried out in manner planned but later than anticipated – to date 10,551 seeds of 12 different native tree species have been collected and sown. (Evidence 2.6).

2.7 *Purchase and transport of living stakes (= 1 m long stems of plants that root if pushed into the soil)*: carried out in manner planned but later than anticipated because the stems need to be inserted along the lines of the barbed wire fences and we only began installing these in March 2022. To date 35,000 gliricidia stems have been purchased.

2.8 *Inserting living stakes along line of barbed wire fence to create basic hedge structure.* To date, gliricidia stems have only been inserted along 7 km of barbed wire fence. However, following the advice of the local community we are also planting offshoots of red pineapple that, through vegetative spread, can form a dense but low barrier that will help prevent wild pigs from slipping below the lowest barbed wire strand. (Evidence 2.8)

2.9 Out-planting seedlings of native trees within lines of living stakes (hedge enrichment). Not planned for YR1.

2.10 Workshop and coaching of farmers to lay hedges (provided by expert hedger from UK). Not planned for YR1.

Output 3. Capacity of farmers and nursery staff is improved and they have the ability to independently create and maintain stock-proof hedges, or cultivate trees in plant nurseries, respectively.

3.1 Workshop to train participating farmers in maintenance of their hedges (provided by expert hedger from the UK). Not planned for YR1.

3.2. Farmers coached to maintain hedges and evaluated. Not planned for YR1.

Output 4. A best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar

4.1. Communication about project through social media and website. Several posts have been made on twitter (see @c-birkinshaw) but a dedicated webpage has not yet been established – this will be priority for YR2.

4.2. Organisation of study trip to Agnalazaha for representatives for an array of conservation/development NGOs. Not planned for YR1.

Output 5. Effective project implementation based on adaptive management

5.1. *Workshop to define monitoring protocols and to train monitoring team in their application*: carried out in manner and time planned – two virtual workshops between Chester Zoo and

MBG project participants conducted to define monitoring protocols, then ideas transformed into a draft protocol, which was then trialled in the field before a final protocol was validated (see Evidence 1.5/4.1).

5.2 *Support for monitoring team to apply monitoring protocols*: carried out in manner and time planned – the project aimed to enable the participation in monitoring of the ten highest performing middle school students and these were selected at the end of the second trimester exams. The students included seven young men and three young women. They will now work every Saturday morning to monitor various indicators and in return receive a payment into an account that will help support their future education. (Evidence 5.2)

5.3. *Workshops to share information on project progress, to identify issues arising and to modify interventions to maximise efficacy*: carried out in manner and time planned – the management team for Agnalazaha Forest protected area meet every two weeks to discuss issues arising – Amadou and Elianne are included in these meetings to ensure that this work is well integrated into the overall management of the protected area.

5.4. *Formal reporting*: carried out in manner and time planned

3.2 Progress towards project Outputs

Output 1. A critical mass (~30%) of agricultural plots within the buffer zone of protected areas are protected effectively from incursion of livestock using barbed wire fences.

At the launch of the project no farmers living in the landscape of the Agnalazaha Protected Area project their crops with barbed-wire fences nor hedges, now, at end of YR 1, 7 km of barbed wire fences reinforced with gliricidia stems and red pineapple and a total of 44 farmers (ca. 60% of all farmers who previously protected their crops with stems of native trees) self identified as participants – this is the majority of the farmers growing crops close to the forest.

Output 2. Agricultural plots of the 35 participating farmers provided with long term protection with livestock-proof hedges

This Output will not be achieved until end of YR3 of the project. However, currently the progress towards this outcome includes the purchase and planting of gliricidia stems and red pineapples, and the installation of the nursery, recruitment and training of nursery staff and start of production of young native plants.

Output 3. Capacity of farmers and nursery staff is improved and they have the ability to independently create and maintain stock-proof hedges, or cultivate trees in plant nurseries, respectively.

The 44 participating farmers now have the skills to install a high-quality barbed wire fence and ten nursery women have basic skills in horticulture. Follow up evaluation will assess the level of skill retention.

Output 4. A best practice model for protecting forests by developing sustainable crop protection techniques and livelihoods (i.e. use of hedges and enabling access to employment in tree nurseries for young mothers) is developed and shared with other conservation and development organisations operating in Madagascar

This Output will be achieved towards the end of the Project, to date our awareness-raising concerning this project has been limited to a few communications on social media.

Output 5. Effective project implementation based on adaptive management

An M&E officer (Elianne Andriamiaja) has been recruited (see Evidence 5.2a), and in turn she has recruited ten assistants from bright local students (see Evidence 5.2b). Most T0 indicators have been collected with the exception of estimates of the abundance of diurnal lemurs and large birds.

3.3 Progress towards the project Outcome

The anticipated outcome of this project is that the degradation of Agnalazaha Forest is reversed (with participation and livelihood gains for local men and women) by providing hedges as demonstrably useful, effective, long-term and realistic alternatives for crop protection.

Currently we are unable to provide evidence that we are making progress towards this outcome other than that presented elsewhere in this document showing the successful implementation of activities and progress towards attaining outputs (see sections 3.1 and 3.2). However, we are now able to share baseline data for some of the indicators, specifically: 0.1. No. stems removed from forest for making fences in 2021 = 6757; 0.2. average total trunk basal area per hectare in zones exploited for fencing poles = 9.8 m²; and 0.4. crop loss among participant farmers in 2021 (N= 44) 0% = no crop loss; 14% <1/4 crop loss; 11% 1/4 -1/2 crop loss; 17% 1/2 - 3/4 crop loss; 54% nearly total crop loss; 2% don't know. The estimates of crop loss are startling indeed and suggest that this project should have a very significant impact on crop loss and therefore local livelihoods.

3.4 Monitoring of assumptions

Assumption 1: The provision of alternative methods of protecting crops from livestock will reduce need for fences made from stems extracted from the forest.
Comments: assumption not yet tested but interviews with participating farmers reveal that a large majority believe that this project will eliminate their need to exploit fencing poles from the forest.

Assumption 2: Forest and biodiversity not negatively impacted by exceptional events such as wildfires, cyclones, hunting parties. (Mitigation: continuing support for entire program of conservation activities at this site and integration of capacity of adaptation within project design)
Comments: assumption confirmed until now – since fortunately co-funding is available to reduce the risks of fire and hunting and the native forest (contrary to the surrounding plantations of alien exotic trees) provide resilient to the wind damage.

Assumption 3: Farmers are receptive to the new techniques shared and that hedges are not damaged/sabotaged by those communities/individuals not involved in this project. (Mitigation: engagement with whole community through comprehensive consultation and communication).
Comments: Assumption entirely confirmed, the participating farmers state that they are delighted with the project and are fully engaged.

Assumption 4: The covid-19 pandemic does not prevent free movement of project participants. (Mitigation: support strong-site based team that can, in the worse-case scenario, be trained virtually by international participants and then play the role of trainers themselves or in some cases, rescheduling activities)
Comments: The pandemic prevented staff from Chester Zoo travelling to Madagascar but this risk was mitigated through virtual interactions and also by postponing some of their interventions until YR2.

Assumption 5: There are sufficient remnant lemur and bird populations in the nearby higher quality forest to rapidly recolonise the areas where a reduction in exploitation of young trees for fencing stakes enables forest regeneration. (Mitigation: MBG's program of activities at this site continues to support action to control hunting).
Comments: While it is premature to confirm this assumption we can report that no incidents of hunting were reported within the Agnalazaha Forest in 2021.

Assumption 6: Barbed wire not stolen. (Mitigation: engagement with whole community through comprehensive consultation and communication – especially engaging the local traditional leaders to publicly express their support for the project).
Comments: Assumption confirmed.

Assumption 7: Barbed wire effectively protects the agricultural plots from incursion by livestock. (Mitigation: training and coaching in best practice for the installation and maintenance of fences).
Comments: Premature to confirm assumption but barbed wire fences erected to date are of high quality and extra measures have been adopted to prevent incursion by wild pigs (addition of a fourth line of barbed wire and use of red pineapples to create a natural barrier) (see Evidence 2.7/2.8).

Assumption 8: Barbed wire does not cause dismay among livestock owners (i.e. does not injure cattle). (Mitigation: engagement with whole community through comprehensive consultation and communication, openness to receiving feedback and objections).
Comments: Assumption confirmed: to date we have had no negative feedback concerning the barbed wire fences.

Assumption 9: Tree and shrub species that make effective hedges and that survive and grow well under the harsh conditions at this site can be identified and propagated. (Mitigation: from MBG's botanical knowledge at the site create a target list of likely species i.e. that are fast-growing, ideally spiny and regenerate robustly when cut)
Comments: Premature to confirm assumption however the MBG team have decided that 50% of the seedlings propagated to make the hedges should be of a species of *Strychnos* that appears to flourish in degraded habitats and has stems bearing long spines.

Assumption 10: At least 30% of local farmers are prepared to invest their time and energy in trialling a new method for protecting their crops. (Mitigation: a budget line has been included to provide participants with food during work associated with the project – so they will not experience extra hardship from participation).
Comments: Assumption confirmed - 44 farmers are participating with this project rather than the 35 initially proposed.

Assumption 11: Despite Agnalazaha being located in a remote part of SE Madagascar and a 2-day drive from the capital, influential people can still be persuaded to invest their time in visiting the site. (Mitigation: investment in good national-level communication during the whole project to make the conservation community aware of the work and to pique their interest).
Comments: Premature to confirm assumption.

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

The impact stated in the original proposal was "The Agnalazaha Forest with its rare fauna and flora is successfully conserved with livelihood gains for the local community". Now merely 6-months from the launch of the project we cannot provide objective evidence of positive long term gains in terms of conservation and poverty alleviation. However, we can report that MBG's site-based staff report that this project is proving highly popular in the local community and from it the conservation team have won additional support for the general conservation program. In this sense it was of great significance that, following the loss of crops due to Cyclone Emnati we were able to use defined project activities to support local livelihoods at a time of extreme need: 1416 local people shared ca. [redacted] and rice as compensation for providing fencing posts, *gliricidia* stems and pineapple crowns. This support was so appreciated that the Commune's Mayor sent an unsolicited message of thanks that is included in Evidence.

4. Project support to the Conventions, Treaties or Agreements

SDGs
Goals 1 and 2 (end poverty and hunger) by providing 44 subsistence farming families with more secure barriers that reduce the loss of their crops and reduces their investment in labour for crop protection, by providing new skills and employment to ten nursery staff, and providing generous day labouring compensation to 1416 local people at a particularly difficult time (when they had lost their crops due to the impact of Cyclone Emanti).

Goal 4 (lifelong learning opportunities) by upskilling farmers in the installation of barbed wire fences and the use of gliciridia and red pineapples to make cow and pig-proof barriers around crops and by training ten women in horticulture.

Goal 5 (gender equality) by enabling ten females to access employment in a tree nursery that is traditionally a male domain.

Goal 8 (decent work and economic growth) by providing temporary employment leading to new marketable skills for 54 local people. Diversity in economic activities is strongly associated with economic resilience.

Goal 12 (sustainable consumption and production) by reducing environmental degradation of the littoral forest without compromising the economic stability of communities by providing an alternative barrier from the annual use of thousands of stems of native trees as fences.

Goals 13 (combat climate change), and 15 (life on land) by initiating a process that will reduce deforestation and degradation of rare littoral forest and installing hedgerows thereby protecting and building carbon sinks and conserving threatened habitats of key biodiversity importance.

Goal 17 (partnerships for the goals) by creating a unique partnership of organisations and social groups with complementary skills including farmers in SE Madagascar, a protected area manager in Madagascar (Missouri Botanical Garden), horticulturalists and a social scientist from Chester Zoo.

CBD

This proposed project responds to one of the CBD main goals i.e. 'the conservation of biological diversity' by reducing degradation of a threatened vegetation type (littoral forest) that is the habitat for a very diverse and threatened fauna and flora. Given that the project was launched only in October 2021, it is not possible to demonstrate that this project contributes to this goal. However we have collected baseline information on the condition of the Agnalazaha Forest, and these values will provide the baseline to demonstrate future progress.

NBSAP

Ultimately the project will contribute Madagascar's National Biodiversity Strategy and Action Plan by reducing unsustainable harvesting of wooden fencing stakes in exceptionally rare littoral forest (thereby enabling its regeneration) and promoting woody vegetation in the landscape in the form of useful and sustainable hedges. However, given that the project was launched recently it is premature to detect the anticipated impacts. However, once again the baseline information has been collected (6757 poles collected from the forest in 2021) and our progress can be measured against this value.

UNFCCC

Ultimately this project will contribute to Madagascar's ambitious Intended Nationally Determined Contribution to the Paris Agreement. But this contribution will not become evident until the end of the project.

5. Project support to poverty reduction

This project is located in SE Madagascar where the majority of people gain meagre livelihoods from unreliable subsistence farming and where some of the highest levels of poverty in Madagascar are reported. The project will contribute to poverty alleviation in four major ways: 1) by reducing crop loss due to pigs and free-ranging cows among farmers growing crops adjacent to the Agnalazaha Forest PA (note: base-line survey reports that 71% of the 44 farmers participating in this project claimed they had lost more than 50% of their crops to pigs and cows); 2) providing employment for female nursery staff; 3) providing significant income for day labourers implementing activities (especially providing fencing posts, providing crowns of red pineapples and providing gliricidia stems); and 4) providing educational support for high achieving local students in return for their work in monitoring indicators.

Now, at the end of YR1, progress has been made in implementing activities that will assist each of these groups of beneficiaries: 1) barbed wire fences and gliricidia hedges are being installed for 44 local farmers; 2) ten female nursery women have been recruited, given contracts and have begun their work in the nursery; 3) more than 1416 people have gained a total of ca. [redacted] as compensation for services provided as day labourers; 4) ten high-achieving local students have signed agreements to work as assistant monitoring officers on Saturday mornings and will in return receive payments to a personal educational fund that will enable them to continue their education (Evidence 5.2).

6. Consideration of gender equality issues

While all the farmers benefitting from this project are male we have tried to address gender imbalance a little by recruiting ten unmarried mothers as nursery staff (Evidence 2.1). To accommodate this innovation we have also constructed a crèche adjacent to the nursery that can provide a safe, cool, comfortable and easily accessible place where the mothers can leave their babies while they work. Outside of Madagascar's capital, Antananarivo, it is exceptionally rare to see women working in nurseries so we were surprised to see from our social monitoring that local people were supportive of this approach, generally stating that "women need employment too" albeit expressing concern that women would not be able to do heavy lifting.

Among the 10 students engaged to help with monitoring every Saturday morning, only three were young women. This is because the choice was made transparently based on marks in the second trimester exam: as it happened, this year, contrary to our expectations, young men did better than young women.

7. Monitoring and evaluation

The Project logframe, as submitted as part of the Stage 2 application, lists the indicators for outcomes and outputs. These indicators and the associated methods of verification were the basis of our M&E plan. This plan was developed by the whole team, led by Greg Counsell (from Chester Zoo) and Chris Birkinshaw (from MBG) between October and December 2021, with the production of a written draft of the protocols (see evidence 1.5/4.1). The protocols for

social monitoring were validated by December 2021 and the plan trialled, slightly modified and validated by the site-based team (led by Amadou and Elianne) in February 2022. Then data collection using the plan began in March 2022. Greg Counsell will be responsible for analysing the social data and Chris Birkinshaw will analyse the biological data.

Full monitoring of all the indicators using the defined protocols will be time-consuming and the collection of this data will led by Elianne Andriamiaja (for cv see Evidence 5.2) and be helped by ten high achieving local students who were recruited in March 2022 (see Evidence 5.2). The students will be compensated for this work with payments into a personal saving fund which is destined to help support their on-going education since most young Malagasy, however intelligent they may be, do not pass into High School because their parents cannot support the associated costs.

8. Lessons learnt

All technical and social aspects of this project worked very well. Most significantly: we were delighted that the community seemed to understand and embrace this project easily – perhaps because of MBG's long presence at this site and the trust they have gained from nearly two decades of working here, and we were very pleased that the stems of the alien, invasive, fire-promoting tree *Melaleuca quinquenervia* could be quickly transformed into excellent fencing posts. However, by far the greatest impact of the project to date, and something we would like to share with others, was that through careful design the project was able to substantially help nearly 1,416 people whose crops had been lost through flooding related to Cyclone Emanti. Specifically payments (amounting to 23,556,000 MGA) and rice were given to all those who collected and transported the fencing posts, the gliricidia stems and the pineapple crowns required by the project.

The major obstacles we encountered were administrative – particularly the time required to compare the offers from different sellers for the goods we needs to purchase. This was especially arduous for the purchase of barbed wire, which, because of its high cost, required that a "request for offers" was placed in a national newspaper and deadline given for potential merchants to respond. This procedure, although likely unavoidable, took 6 weeks and substantially delayed the installation of the barbed wire fences and other related activities. The lesson learnt is that the time required for such purchases needs to be factored into plans: if one wants to install a barbed wire fence in January then one needs to begin the process in December at the latest!

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

The award letter shared the following concerns with the project design and here we will explain how each has been accommodated in the YR 1 implementation of the work

• it is a little disappointing that only two of the six named key staff are Malagasy -

please address in your first half year report (HYR)

Five key Malagasy staff were included in YR1 of the project: Fidy Ratovoson (Project Manager); Amadou Ranirison (Assistant Project Manager); Elianne Andriamiaja (Moniotring Officer), Patrice Antilahimena (expert fencer), and Roger Lala (Botanical Artist – for design of poster explaining sustainable use of natural resources).

• with no involvement of government, this may limit wider replication;

While we have worked very closely and very successfully for project implementation with the lower level of Malagasy government (fokontany and Commune) but have not yet endeavoured to engage national government this is because we feel that engagement will be more effective at a time when we have real tangible proof of concept

• no reference is made to whether cattle (for which the hedging is required) are also

causing damage in the forest (HYR);

Cattle certainly enter the forest on occasion and one of the reasons local people appreciate the forest is that the forest can provide a refuge for cows at times when bandit attack is threatened. As grazers rather than browsers we suspect that cattle damage may be modest but we do not have any data to support this supposition.

• there are no clear measurable biodiversity outcomes and it does not appear that the project will raise awareness the importance of forest biodiversity to farmers (HYR);

We are measuring the quality of the forest in terms of trunk basal area per unit area and also the abundance of diurnal lemur species and large birds. While this project will not endeavour to raise awareness of the importance of forest biodiversity (since other donors are funding this work), it will endeavour to share knowledge on the concepts of the sustainable use of natural resources. Concerning the latter, a large illustrated poster explaining these concepts has been produced and used as an educational support throughout the project (see Evidence). The monitoring and evaluation surveys have been designed to monitor changes in understanding of the importance of the forest.

• no reference is made to whether nurseries will sell stock, or if these are affordable beyond the project (HYR);

Currently in Madagascar buyers for young plants of native trees are very limited (except perhaps for exceptionally attractive species) since most reforestation projects here plant only tolerant and fast growing alien species (especially eucalyptus). However, in YR2 the nursery women will be given the training and materials to produce fruit and spice trees to sell for their personal benefit.

• further information on how green fences will be sourced would be welcomed, as well as commentary on the risk that wire provided for fences is used for other purposes (HYR)

The barbed wire fences are effectively a hook on which local farmers will be engaged to ultimately plant and manage hedges, and these fences are clearly not a viable solution to preventing cattle and wild pigs accessing crops. Currently there have been no cases of barbed wire being stolen or used for different purposes but this remains a risk. To mitigate this risk we will react immediately to any cases of such abuse to ensure that it does not become a common practice.

• the financial sustainability of fencing/hedging is not clear given that all inputs will be provided free to farmers, and there is no comment on whether farmers have the ability to pay for these items after the project (HYR);

Certainly farmers will not buy barbed wire after the end of this project – it is just too expensive. However, since this project will have much increased the presence of gliricidia in the landscape, it will be easy and inexpensive for them to make gliricidia hedges. Post project, farmers who wish to invest in making gliricidia hedges will be able to access seedlings of native trees to enrich these hedges, at no cost, from MBG.

• it will be important to ensure an open and fair selection process for the farmers to be involved (HYR).

Following our call to farmers to express their interest in this project we received 44 applicants. Although in the proposal we suggested that we would work with 35 farmers, we were happy to accommodate all applicants.

10. Other comments on progress not covered elsewhere

Following feedback from the farmers the project was enhanced by preserving the bottom of the fencing posts to impede rotting and also by adding red pineapple plants along the base of the barbed wire fence. These plants propagate vegetatively to form a dense prickly barrier that helps stop wild pigs squeezing under the barbed wire. Due diligence concerning red pineapples was conducted to confirm that they are not invasive.

11. Sustainability and legacy

Following best practice, whenever we provide training we also monitor the efficacy of this training in building capacity. Thus to date we have provided training to the nursery women in horticultural best practice, to the farmers on best practice for the installation of barbed wire fences, and to farmers on planting gliricidia and red pineapples. In each case, the knowledge and skills built through the training have been measured and the retention of this capacity will be monitored as time progresses. In YR2 the nursery women will be trained in the production of fruit and spice trees for sale and we expect that their success with this activity will ensure that good use is made of their newly acquired horticultural knowledge beyond the period of the project.

We have always acknowledged that the erection of barbed wire fences is not a viable long-term method for farmers to protect their crops from grazing and browsing animals – in the absence of outside support it is just too expensive. Rather our expectation is that hedges will ultimately provide low-cost but effective barriers - however we cannot be sure that this will be the case until the end of the project.

12. Darwin identity

To date only modest efforts have been made to publicise the Darwin Initiative through this project by means of designing and printing specially-themed t-shirts (prominently showing the DI logo) for project staff and participants (see Evidence 4.4), and through five tweets reporting project progress. Each of the tweets referenced the DI tag. In addition, the British Ambassador to Madagascar and the Comoros has referenced this project, along with others also funded by the Darwin Initiative, in some of his communications. The Darwin Initiative has a long and generous history of funding conservation/development projects in Madagascar, and this initiative is well known and respected in the conservation community here.

13. Impact of COVID-19 on project delivery

Covid-19 has impacted on project delivery in one way only: by preventing staff from Chester Zoo from coming to Madagascar. Specifically in YR1, Claire Raisin should have visited the project site to contribute her thoughts on project implementation; Greg Counsell to develop protocols for monitoring social impact, and an expert horticulturalists to provide training for the nursery women. However none of these visits were possible. To mitigate the impact of the travel restrictions, more virtual meetings between Chester Zoo and MBG project staff were organised and the physical visits have been postponed to YR2. Also basic horticultural training for the nursery staff was provided by a national expert. Compared to Covid-19, Cyclone Emnati, that hit the south-east of Madagascar in February, had a greater impact on the project delivery and causing the postponement of some activities due to flooding.

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.

Relevant policies, codes of conduct and reporting procedures have been shared with all relevant staff and partners. At project initiation, all staff were reminded of these, along with their associated rights and responsibilities, including incident reporting processes.

15. Project expenditure

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)	[redacted]	[redacted]	[redacted]	
Consultancy costs	[redacted]	[redacted]	[redacted]	Establishment of nursery was delayed so we have not employed the nursery staff for as long as initially budgeted.
Overhead Costs	[redacted]	[redacted]	[redacted]	
Travel and subsistence	[redacted]	[redacted]	[redacted]	
Operating Costs	[redacted]	[redacted]	[redacted]	See below
Capital items (see below)	[redacted]	[redacted]	[redacted]	
Monitoring & Evaluation (M&E)	[redacted]	[redacted]	[redacted]	Total budgeted for M&E = [redacted] over 3 years, initially factored into different budget lines in the application. Elianne (Monitoring Officer) salary was included in staffing line of initial budget, but now transferred to this line.
Others (see below)	[redacted]	[redacted]	[redacted]	
TOTAL	[redacted]	[redacted]		

We spent more than anticipated on barbed wire despite requesting tenders for the purchase. This is primarily due to feedback from the farmers suggesting that we add a fourth lower strand of wire to prevent pigs accessing their fields. However, a number of large project purchases were significantly cheaper than anticipated, particularly the posts and stakes required for construction of the fences which we were also able to purchase more locally therefore also saving on transport costs (budgeted: [redacted] - actual: [redacted]).

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?	
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.	
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.	
Have you involved your partners in preparation of the report and named the main contributors	
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	