
DIR27S2\1027

Native grass forage management to feed people and protect forests

We bring a modern approach to address a gap in Madagascar's environmental governance. Grasses and grasslands are neglected through the assumption they are of little value compared to forests. Fires are a long-term problem Madagascar does not have the expertise to manage. We aim to boost the wealth of 1300 people by integrating botanical knowledge, grassland ecology, agricultural science and fire management expertise to trial management methods which will support key forage grasses, improve livestock nutrition, and reduce forest fires.

Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Name Maria
Surname Vorontsova
Organisation Royal Botanic Gardens, Kew
Tel (Work) [REDACTED]
Email (Work) [REDACTED]
Address [REDACTED]
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GMS ORGANISATION

Type	General
Name	Royal Botanic Gardens, Kew
Phone (Work)	[REDACTED]
Email (Work)	[REDACTED]
Website (Work)	[REDACTED]
Address	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Section 2 - Title, Dates & Budget Summary

Q3. Project title:

Native grass forage management to feed people and protect forests

What was your Stage 1 reference number? e.g. DIR27S1\100123

DIR27S1\1176

Q4. Country(ies)

Which eligible host country(ies) will your project be working in? Where there are more than 4 countries that your project will be working in, please add more boxes using the selection option below.

Country 1	Madagascar	Country 2	No Response
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Do you require more fields? No**Q5. Project dates****Start date:**

01 July 2021

End date:

30 June 2024

Duration (e.g. 2 years, 3 months):

3 years

Q6. Budget summary

Year:	2021/22	2022/23	2023/24	2024/25	Total request
Amount:	£134,721.00	£148,856.00	£131,482.00	£39,162.00	£ 454,221.00

Q6a. Do you have matched funding arrangements? Yes**What matched funding arrangements are proposed?**

Kew will provide in-kind contributions of [REDACTED] for leader Vorontsova's salary, [REDACTED] for steering group member Wilkin's salary, and matched funding for their overheads. The University of Pretoria will provide in-kind contribution for the salary of the agricultural expert Truter. Vorontsova's GCRF International Collaboration Award will contribute research on the Digitaria forage grasses and associated farming practices. Local community governance and fire management at the three Protected Areas (PAs) in the Madagascar highlands will be supported by a number of other funders including commercial partners, through projects managed by Kew and the Missouri Botanical Gardens.

Q6b. Proposed (confirmed and unconfirmed) matched funding as % of total project cost (total cost is the Darwin request plus other funding required to run the project). [REDACTED]

Section 3 - Project Summary**Q7. Summary of project**

Please provide a brief summary of your project, its aims, and the key activities you plan on undertaking. Please note that if you are successful, this wording may be used by Defra in communications e.g. as a short description of the project on [GOV.UK](https://gov.uk).

Please write this summary for a non-technical audience.

We bring a modern approach to address a gap in Madagascar's environmental governance. Grasses and grasslands are neglected through the assumption they are of little value compared to forests. Fires are a long-term problem Madagascar does not have the expertise to manage. We aim to boost the wealth of 1300 people by integrating botanical knowledge, grassland ecology, agricultural science and fire management expertise to trial management methods which will support key forage grasses, improve livestock nutrition, and reduce forest fires.

Section 4 - Darwin Objectives and Conventions

Q8. Objectives for the Darwin Initiative

Please indicate which of the fund objectives (listed on p.8 of the guidance) you will be addressing.

- To understand and support action to address linkages between biodiversity and human health
- To understand and tackle impacts of agriculture practices on biodiversity, livelihoods and climate
- To promote the responsible stewardship of natural assets
- To promote the sharing of the benefits arising from the use of biodiversity
- Contributing towards reversing the increase in threats of extinction to the world's flora and fauna

Q9. Biodiversity Conventions, Treaties and Agreements

Q9a. Your project must support the commitments of one or more of the agreements listed below.

Please indicate which agreement(s) will be supported and describe which objectives your project will address.

- Convention on Biological Diversity (CBD)
- International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
- Global Goals for Sustainable Development (SDGs)

Q9b. Biodiversity Conventions

Please detail how your project will contribute to the aims of the agreement(s) your project is targeting. You should refer to Articles or Programmes of Work here.

I. CBD articles 7, 8, 10, 13

This project will support the CBD by contributing to the conservation of native and endemic grasses and forbs and their sustainable use as forage, through the development of grazing systems to maximise rangeland biodiversity. The unique biodiversity of the forest patches will be preserved at the same time through the prevention of fire damage.

Demonstration of the livelihood value of native Malagasy grasses during this project will contribute to CBD Article 7: "Identify components of biological diversity important for its conservation and sustainable use" and Article 13: "Promote and encourage understanding of the importance of the conservation of biological diversity". We will establish productive and sustainable grazing protocols which will improve cattle nutrition

while conserving native grasses, contributing to CBD Article 10: "Integrate consideration of the conservation and sustainable use of biological resources".

We will establish and demonstrate a flexible locally responsive fuel load and fire management system around humid forest patches through a mixture of grazing, cutting fire breaks, harvesting grasses, and controlled burns. Ownership and control of the fire regime will decrease the spontaneous setting of fires. Specialist skills will be developed by community members and methods will be added to protected area management protocols, contributing to CBD Article 8: "Develop guidelines for the management of protected areas".

II. ITPGRFA

We will support the ITPGRFA aims to "recognize the enormous contribution of farmers to the diversity of crops" and "access plant genetic materials" by recording community knowledge of native forage grasses, generating new knowledge on their grazing and nutritional value, and publishing a booklet on the key species and their exploitation.

III. Madagascar's National Biodiversity Strategy and Action Plans 2015-2025 strategic goals 1-5 (Rabarison 2016 pages 18-19).

The first author Harison Rabarison is already engaged with our work and has attended our workshops and personally expressed his support to Vorontsova; we will continue to engage him and seek his advice during this project.

We will contribute to goal 1: "awareness about the value of biodiversity" by researching, demonstrating, and publicizing native nutritious forage grass diversity and its effectiveness in boosting livestock nutrition.

We will contribute to goal 2: "minimization of direct pressures on biodiversity ... sustainable use is to be encouraged" by building more resilient and sustainable grazing livelihoods in the highland grasslands.

We will contribute to goal 3: "management of terrestrial protected areas" by creating the first custom-designed modern Fire Management Plans for Ankafobe, Ibity, and Itremo Protected Areas, to be included in each Protected Area management plan.

We will contribute to goal 4: "Strengthening the benefits of biodiversity .. under sustainable management" by building both productive and sustainable rangeland management valorising nutritious native grasses.

We will contribute to goal 5: "participatory planning of knowledge management and capacity building .. a system to protect traditional practices and knowledge" by co-creating this project with communities and implementing a community-led consultative approach throughout.

Q9c. Is any liaison proposed with the CBS / ABS / ITPGRFA / CITES / CMS / Ramsar / UNFCCC focal point in the host country?

Yes

If yes, please give details.

Kew Madagascar Conservation Centre (KMCC) has a long-term relationship with the CBD liaison Rantonirina Rakotoaridera through her previous role as protected area system director. She will be invited to national workshops.

The ITPGRFA focal point Avotiana Randrianarisoa, Ministry of Agriculture, Livestock and Fisheries (Agriculture Ministry or MAEP) is a colleague of our Darwin stakeholder Stephan Rakotomalala, who helped us design this project. We will seek her advice on developing our draft Madagascar National Strategy for Native and Invasive Grasses (Jeannoda 2018) written during Ralimanana and Vorontsova's GBIF BID project, with a view to expanding it to include forage grasses.

Q9d. Global Goals for Sustainable Development (SDGs)

Please detail how your project will contribute to the Global Goals for Sustainable Development (SDGs)

We will contribute to Madagascar's delivery of SDGs 2 and 15. Healthier cattle will improve human nutrition and food security, and better grazing practices will promote sustainable agriculture, contributing to SDG 2 "End hunger, achieve food security and improved nutrition and promote sustainable agriculture". Native grasslands will gain greater recognition and will be restored to a sustainable grazing regime, while biodiversity loss through forest fires will be halted, contributing to SDG 15 "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, and halt biodiversity loss."

Feedback from Malagasy colleagues has highlighted that our proposed methods are novel to Madagascar. The 2019 Global Sustainable Development Report emphasized that "business-as-usual pathways and upscaling current practices are not options if the global food system is to sustainably and equitably meet the needs of the global population in the future" (UN 2019). The situation has deteriorated since, including in Madagascar where population below the poverty line is expected to increase to 76.5% in 2020 (World Bank 2020). This means it is imperative to implement innovative approaches, such as this project, not seen in the country before.

Section 5 - Lead Organisation Summary

Q10. Lead organisation summary

Has your organisation been awarded a Darwin Initiative or IWT Challenge Fund award before (for the purposes of this question, being a partner does not count)?

Yes

If yes, please provide details of the most recent awards (up to 6 examples).

Reference No	Project Leader	Title
CV19RR12	Carly Cowell	Uncovering the illegal online trade in South African succulents
CV19RR01	Martin Hamilton	Impacts and consequences of Covid-19 on conservation in the BVI
27-014	Aaron Davis	Coffee natural capital for environmental and livelihood sustainability in Uganda


26-024	Bente Klitgård	Improving indigenous Bolivian Chiquitano people's livelihoods through sustainable forest management
DPLUS084	Martin Hamilton	Identifying and conserving resilient habitats in the British Virgin Islands
DARFW049	Juan Viruel	BaoBat – Conservation genetics of two mutualistic species in Madagascar


Have you provided the requested signed audited/independently examined accounts? If you select "yes" you will be able to upload these. Note that this is not required from Government Agencies.

Yes

Please attach the requested signed audited/independently examined accounts.


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 [annual-report-accounts-2019-20](#)

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Section 6 - Project Partners

Q11. Project partners

Please list all the partners involved (including the Lead Organisation) and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development.

This section should illustrate the capacity of partners to be involved in the project. Please provide Letters of Support for the Lead Organisation and each partner or explain why this has not been included.

N.B: There is a file upload button at the bottom of this page for the upload of a cover letter (if applicable) and all letters of support.

Lead Organisation name: Royal Botanic Gardens, Kew (RBG Kew, or Kew) including the Kew Madagascar Conservation Centre (KMCC) and managers of the Itremo Protected Area

Website address: www.kew.org; <https://teamkmcc.wordpress.com>

Details (including roles and responsibilities and capacity to engage with the project):

Kew is a world leader in plant diversity science and conservation, enabling taxonomists to apply their knowledge to real world challenges through the Darwin Initiative. Leader Vorontsova is a grass taxonomist studying the grasses of Madagascar since 2010, documenting 217 endemic grass species, 40% of the 541 grass species on the island (Vorontsova 2016).

KMCC is the Kew site in Madagascar operating under a host state agreement (Accord de siège) with the Madagascar government and leading projects across Madagascar since 1999. Co-leader Rajaonah will use his Darwin experience to run the project from the KMCC office in Antananarivo and supervise the project manager. Ralimanana will be responsible for Madagascar finance and integration with KMCC activities. Rajaonah and Randriamboavonjy will liaise with the Environment Ministry (Ministry of the Environment and Sustainable Development or MEDD) and the Agriculture Ministry. Grass and forb botanist Ralainarivo currently completing her MSc supervised by Vorontsova will analyse plot data.

KMCC, Randriamboavonjy, and the Itremo Protected Area (PA) manager Ramaromanana have close links with the community around Itremo since 2010 and secured its formal protection. Ramaromanana will facilitate integration with the local community. This project will be an integral part of ongoing KMCC work in Itremo.

Have you included a Letter of Support from this organisation?

Yes

Have you provided a cover letter to address your Stage 1 feedback?

Yes

Do you have partners involved in the Project?

Yes

1. Partner Name:

Missouri Botanical Gardens Madagascar (MBG), including managers of Ankafobe and Ibity PAs)

Website address:

<https://www.mobot.mg/conservation>

Details (including roles and responsibilities and capacity to engage with the project):

Missouri Botanical Gardens Madagascar (MBG) is the largest plant-focused conservation organisation in Madagascar and a leader in community-centred approaches to conservation, securing local association-led protection for eleven PAs including Ankafobe and Ibity. This project will be part of MBG's ongoing work to strengthen PA management through development projects in the surrounding areas. It reflects the close working relationship between Kew and MBG Madagascar.

MBG have worked with Vorontsova documenting the grasses of Madagascar since 2011, and with Lehmann on fire management since 2016. Ankafobe and Ibity are easily accessible from Antananarivo and MBG have invited Ralainarivo and other Kew students to study grasses at these sites. MBG have already obtained permission to carry out preventative burns in Ankafobe and Ibity and started implementing our fire management philosophy to protect forest fragments. Influential leader Raharimampionona, Ankafobe PA manager Tahirinirainy, and Ibity PA manager Rakotozafy were core members of the Darwin scoping project which underpins this application.

MBG will run all aspects of this project at Ankafobe and Ibity. Raharimampionona will be responsible for Ankafobe and Ibity coordination and finances. She will coordinate the post-project application of our methods to other MBG-managed sites across Madagascar.

Have you included a Letter of Support from this organisation? Yes

2. Partner Name: Royal Botanic Garden Edinburgh (RBGE, Caroline Lehmann)

Website address: <https://www.rbge.org.uk>

Details (including roles and responsibilities and capacity to engage with the project):

Caroline Lehmann is a tropical and fire ecologist and Global South savanna fire management expert with extensive research and practical experience in Australia and Africa. Collaborating with Vorontsova since 2016, Lehmann became convinced of the natural origin and high forage potential of Madagascar's highland grasslands, which evolved under prehuman fire regimes and grazing pressure from now-extinct megafauna. It became apparent that outdated views of fire were undermining both understanding and practical management of fire regimes.

Lehmann was the leader of the scoping project directly leading to this application, and leader of the 2019 Madagascar fire management workshop which established our approach to fire and built links between the Kruger National Park and Madagascar. Lehmann's work on Malagasy grasslands and fires is now at the core of her research interests. She will be responsible for our work with fires, analyse fire data, deliver training, and lead the community design of custom fire reduction strategies. She will also work with Vorontsova, Truter, and Ralainarivo on the grazing plot design and ecological statistics.

Lehmann and Vorontsova also collaborate on RBGE and Kew decolonisation work, with Lehmann leading for RBGE, underpinning our approach to ethics and collaboration within this project.

Have you included a Letter of Support from this organisation?

Yes

3. Partner Name:

University of Pretoria, Plant and Soil Sciences Department and Enterprises University of Pretoria (UP, Wayne Truter)

Website address:

<https://www.up.ac.za/plant-and-soil-sciences;>
<https://www.enterprises.up.ac.za>

Details (including roles and responsibilities and capacity to engage with the project):

Wayne Truter is an expert on the utilisation of forages for agricultural systems in southern tropical Africa. Madagascar lacks similar expertise. During the scoping study he visited Ibity and Ankafoibe with Lehmann, Vorontsova, Rakotozafy, and Tahirinirainy. During the visit Truter felt that the livestock and forage situation at the sites closely resembled his projects in South Africa, Mozambique and Zimbabwe, supporting the view that Malagasy highland grassland systems are functionally equivalent to those in tropical Africa, and will thus respond well to methods he developed for Africa.

Truter led the community consultation and Darwin scoping workshop discussion on the opportunities to improve livestock health and reproduction, securing strong interest from community representatives.

Truter will be responsible for livestock and agricultural production, directly mentoring the project manager, three project animators driving activity at the sites, and project households. He brings links with AGT Foods, a company who will supply forage crop seeds and help establish small businesses producing these post-project. Manager and animators will attend Truter's course Sustainable Pasture Based Livestock Production at Enterprises University of Pretoria (UP). Truter's AF4RICA laboratory will measure forage nutrition. During the project Truter will work with Agriculture Ministry representatives to build project legacy.

Have you included a Letter of Support from this organisation?

Yes

4. Partner Name:

Sarobidy Rakotonarivo, consultant sociologist (University of Antananarivo, School of Agronomy)

Website address:

<http://barrett.dyson.cornell.edu/staars/fellows/sarobidy.html>

Details (including roles and responsibilities and capacity to engage with the project):

Rakotonarivo is an interdisciplinary social scientist with extensive experience of working on social issues around natural resource management. For the past 10 years, she has led and designed quantitative and qualitative social research to explore a wide range of factors that influence the outcomes of development and conservation interventions. Her research highlights the importance of an evidence-based behaviour change strategy which incorporates learning and adaptation, and seeks to understand the specific social factors that increase programme effectiveness in a particular setting.

Rakotonarivo is a sociologist with Madagascar-specific knowledge. Vorontsova invited Rakotonarivo to co-design the sociological aspects of this application and participate. Rakotonarivo will spend an estimated 1-2 days a month to mentor project staff in the development and execution of the sociological, training provision, and livelihoods monitoring aspects of this project. She will design and interpret the Global Person Generated Index assessment and Likert scale questionnaires. She will advise on the ethics, recording oral consent of rural community participants, ensuring everyone feels able to leave the project at any time, protecting individually identifiable information, and creating a common participant information sheet in Malagasy.

Have you included a Letter of Support from this organisation?

Yes

5. Partner Name:

No Response

Website address:

No Response

Details (including roles and responsibilities and capacity to engage with the project):

No Response

Have you included a Letter of Support from this organisation?

Yes
 No

6. Partner Name:

No Response

Website address:

No Response

Details (including roles and responsibilities and capacity to engage with the project):





No Response

Have you included a Letter of Support from this organisation? Yes No

If you require more space to enter details regarding Partners involved in the project, please use the text field below.

No Response

Please provide a cover letter responding to feedback received at Stage 1 if applicable and a combined PDF of all letters of support.

 [letters](#)
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Section 7 - Project Staff

Q12. Project staff

Please identify the core staff on this project, their role and what % of their time they will be working on the project. Further information on who should be classified as core staff can be found in the guidance.

Please provide 1 page CVs for these staff, or a 1 page job description or Terms of Reference for roles yet to be filled. These should match the names and roles in the budget spreadsheet.

If your team is larger than 12 people please review if they are core staff, or whether you can merge roles (e.g. 'admin and finance support') below, but provide a full table based on this template in the pdf of CVs you provide.

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Maria Vorontsova	Project Leader	30	Checked
Mamy Tiana Rajaonah	Co-leader; coordination with ministries	40	Checked
Wayne Truter	Expert on agriculture	10	Checked
Caroline Lehmann	Expert on fire	15	Checked





Do you require more fields?

Yes

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Sarobidy Rakotonarivo	Expert on sociology, M&E	7	Checked
Narindra Ralainarivo	Grass and forb botanist	100	Checked
To be hired	Project manager, M&E	100	Checked
To be hired x 3	Animator, M&E (one per site)	100	Checked
Sedera Ramaromanana	PA manager Itremo	25	Checked
Brice Funk Lee Rakotozafy	PA manager Ibity	25	Checked
Dinasoa Tahirinirainy	PA manager Ankafoibe	25	Checked
To be hired x 6	Technician for cattle and grass (2 per site)	100	Checked

Please provide 1 page CVs (or job description if yet to be recruited) for the project staff listed above as a combined PDF.

Ensure the file is named clearly, consistent with the named individual and role above.

 [CVS](#)
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Have you attached all project staff CVs?

Yes

Section 8 - Problem statement

Q13. Problem the project is trying to address

Please describe the problem your project is trying to address in terms of biodiversity and its relationship with poverty. For example, what are the drivers of loss of biodiversity that the project will attempt to address? Why are they relevant, for whom? How did you identify these problems?

Please cite the evidence you are using to support your assessment of the problem (references can be listed in your additional attached PDF document which can be uploaded at the bottom of the next page).

Poverty in the Central Highlands of Madagascar is partly driven by poor livestock nutrition. Inefficient exploitation of pastures and native forage grasses, and poor fire management lead to low pasture nutrition as well as damage to fire-sensitive forest patches. Disconnected approaches to agriculture and

conservation are preventing progress as interventions fail to consider local ecosystems together with their human residents and their food systems. Poverty is extreme and becoming worse, with an average daily household income of ██████ in Itremo (KMCC 2019), and the recorded percentage of the country's population below the poverty line expected to increase to ██████% for 2020 (World Bank 2020). KMCC and MBG built close relationships with the pastoral communities closest to the forest patches now protected as Itremo, Ibity, and Ankafoibe New Protected Areas, giving us a detailed understanding of the local situation (KMCC 2012, MBG 2012, 2018). Our 2019 Darwin scoping project carried out surveys on cattle, grazing practice, and local opinions on these issues.

Malagasy grasses were dismissed as non-native weeds until research by Vorontsova demonstrated ubiquitous and diverse native and endemic species (Vorontsova 2014, 2016; Hagl 2020). Grasslands were assumed to be anthropogenic until research into their ecology led by Lehmann and Vorontsova in 2016 onwards identified ancient assemblages of highland grazing grasses (Solofondranohatra 2020).

Humped zebu, *Bos indicus* cattle, are of central importance in Madagascar as cultural symbols, rural banks, tradeable products, and working animals. This living tradition has grown disconnected from agricultural policy and herds have dwindled from 23 million in the early 1980s to about 6 million today (IFC 2018) and per capita annual consumption of beef dropped from 17kg per person in the 1970s to just 2kg per person in 2010 (MAEP 2012). Ankafoibe, Ibity, and Itremo households own between 0-18 animals each but most are undernourished and calving less than once a year due to inefficient grazing practice and limited use of crop residues.

Unique fire-sensitive forest patches at Itremo, Ankafoibe, and Ibity New Protected Areas are home to 15 endemic mammal species, 27 bird species, and 713 plant species. Late dry season fires lit in grasslands to stimulate forage become out of control and penetrate forest boundaries. Such fires have occurred in Ankafoibe and Itremo annually (KMCC 2012, MBG 2018), undermining community-led forest conservation.

Poor fire management practices arise from the outdated view that all fires are bad, unnatural, and must be prevented. Modern research confirms that "frequent-cool-small" fires typical for human-inhabited tropical grasslands are a normal component of Madagascar's highland ecosystems like those of mainland Africa, and impossible to prevent (Kull 2004, Archibald 2013, Lehmann in press). Contrary to popular misconceptions, highland fires have significantly decreased from 1998 to 2015 (Andela 2017). Misunderstanding of fire regimes, technically incorrect fire assessment practices that misinterpret satellite counts of fires, and management failures were apparent at Lehmann's 2019 fire management workshop. Research in Ibity confirms that standard fire suppression policies failed to reduce the area burned from 1985 to 2015 (Alvarado 2018).

Section 9 - Method, Change Expected, Gender & Exit Strategy

Q14. Methodology

Describe the methods and approach you will use to achieve your intended Outcome and Impact. Provide information on:

- How you have analysed historical and existing initiatives and are building on or taking work already done into account in project design. Please cite evidence where appropriate.
- The rationale for carrying out this work and a justification of your proposed methodology.
- How you will undertake the work (materials and methods).
- How you will manage the work (roles and responsibilities, project management tools, etc.).

Methodology follows our Darwin Scoping project which enabled co-development with local communities.

Decisions will be made by co-leaders Vorontsova and Rajaonah, advised quarterly by the steering group: Ralimanana coordinating with KMCC, Raharimampionona with MBG, and Wilkin with Kew. Experts Vorontsova, Truter and Lehmann will travel to Madagascar annually to adjust the methodology and deliver training. Activities will be coordinated by the project manager using the Trello management tool already in use by KMCC. The project manager will supervise three animators based at Ankafoabe, Ibity, and Itremo. Animators (driving activity at each site) will be responsible for project activities liaising with PA managers. Each Animator will supervise staff hired from the local community: a cattle technician, a grass technician, and casual labour for firebreak clearance and patrols.

Animators will work closely with communities to engage 90 cattle owning households. Tailored plans for boosting grazing and zebu health will be made for each project household, initially by Truter and later by animators taught through the Sustainable Pasture Based Livestock Production course. Participant households will drive decision making; communities will make final decisions on communal pastures.

Grassland health

Each site will work with four project demonstration animals on 2ha of communal or rented land. Sustainable grazing regimes will be trialled initially on four project cattle and tailored to sites, 1ha per site protected from fire and 1ha unprotected. Project households will observe during year 1 and consider implementing the methods when comfortable.

Our rapid grass plot survey method was first developed by Vorontsova (Vorontsova 2016) and is now widely used (e.g. Solofondranohatra 2020). Ralainarivo will carry out plot surveys and pasture quality assessments for all sites. Grasses will be labelled with metal pins during the wet season to enable recognition when dry. Ralainarivo will compare grazing values at different stages of plant growth; forage consumption at a nutritious stage prior to flowering will be encouraged. Ten candidate native and endemic forage grasses will be analysed for nutritional quality and key species identified for priority exploitation.

Cattle diet and health

At each site 1ha of an annual non-invasive Sorghum cultivar supplied by AGT Foods will be trialled as a forage crop for rapid generation of quality fodder (Truter 2015), maintained by the grass technician. Agricultural waste from existing crops such as rice and maize will be preserved as hay or silage; hay from firebreak clearance will be preserved. The animator and cattle technician will care for project animals and monitor their milk production, cattle condition, and calving rates. Interventions will begin at the demonstration farm; project households will be recruited during the first year and assisted to carry out their chosen interventions when ready.

Reduced forest fire risk

Methods are based on Lehmann's experience in Australia where fire is known to benefit traditional owners and ecosystems (Human Rights and Equal Opportunity Commission 2008). The consultative and co-constructed nature of fire management in Australia made it effective in managing fire over vast areas by changing the season of fire, and minimising destructive late dry season fire that is responsible for damage to fire-sensitive forests (Price 2012; Russell-Smith 2009, 2013).

Approximately 50ha of forest patches closest to the villages and demonstration farms will be chosen, so cattle can walk to forest edges. Lehmann will carry out baseline fire analysis and design custom strategies depending on topography, rainfall, seasonal variation, and prevailing winds, and print 3D landscape models to visualise fire spread. Similar analysis has been done for Ibity (Alvarado 2018). Additional firebreaks will be created where necessary and maintained at a minimum of 5m wide during the project dry seasons, using a combination of manual biomass removal, hay making, and direct cattle grazing of the firebreak

area. Biomass will be removed from the area between the firebreak and the forest to prevent larger fires from jumping. Preventative burns already used in Ankafobe and Ibity will be extended after additional community dialogue and PA manager work experience in Kruger National Park. Lehmann will lead a dialogue around understanding fires to develop a locally sustainable approach to controlling fuel loads (van Wilgen 2014).

Capacity-building, wealth, and wellbeing

Results of the trials will be assessed by a community-led review. In year 3, community volunteers from the three sites will meet in Antananarivo with village groups from across Antananarivo and Fianarantsoa provinces to share their experiences of the project. Rakotonarivo will use the Global Person Generated Index (Rasolofoson 2018) with participatory appraisal, to understand perceptions of the cause and effect relationship between the interventions, wealth, and wellbeing.

Q15. Raising awareness of the potential worth of biodiversity

If your project contains an element of communications, knowledge sharing and/or dissemination please provide a description of your intended audience, how you intend to engage them, what the expected products/materials will be and what you expect to achieve as a result.

For example, are you expecting to directly influence policy in your host country or is your project a community advocacy project to support better management of biodiversity?

Local communities

Local community representatives will continue to co-run all stages of the project, and representatives will attend annual national meetings. Training sessions and focus groups will be offered to all community members. Local radio is a ubiquitous communication method for our communities so broadcasts will be recorded in Malagasy by staff for radio stations near project sites. Branded project t-shirts used in previous KMCC projects encouraged a sense of ownership and camaraderie, while also serving a need for clothing: we will design a new set of 100 t-shirts for this project.

To raise awareness of nutritious forage grasses, the native forages poster for rural communities will be largely pictorial with limited Malagasy text and images created using high resolution scans of living grass plants at different life stages, created by Ralainarivo using the plant scanning method developed by Vorontsova (Vorontsova 2018). The poster will be displayed in community centres of the participant villages and then across regional offices of KMCC, MBG, and Agriculture and Environment Ministries.

Professional communities and policy

Stakeholder workshops in Antananarivo at project start and end will include ministry representatives engaged through our scoping project, fire workshops, and recent meetings with Randriamboavonjy. The Fire Management Plans will supplement each PA management plan and their consultative co-creation process will create a novel Malagasy model for PA managers and the Environment Ministry.

The English/Malagasy native forages booklet for Malagasy conservation, development and agriculture professionals will be produced by Kew Publishing using the same images as the posters. Vorontsova previously organised drafting of the Madagascar National Strategy for Native and Invasive Grasses (Jeannoda 2018): we aim to update this to include key forage grasses: *Aristida rufescens*, *Aristida tenuissima*, *Brachiaria subrostrata*, *Cynodon dactylon*, *Cyrtococcum deltoideum*, *Digitaria longiflora*, *Eragrostis lateritica*, *Panicum luridum*, *Panicum umbellatum*, and *Paspalum scrobiculatum*.

Q16. Capacity building

If your project will support capacity building at institutional or individual levels, please provide details of what form this will take and how this capacity will be secured for the future.

Grasses

Vorontsova has delivered grass identification training from 2012 onwards raising awareness of native grass diversity in the Malagasy botanical and conservation community. KMCC staff trained by Vorontsova now receive specimens for identification from around the country. This project will generate and deliver more applied knowledge on which grasses make good forages. New specimens at the Tsimbazaza herbarium will be used for teaching and reference material. Ministry representatives and the Malagasy professional community will gain grass knowledge and use the booklets and posters we produce.

Livestock

The Sustainable Pasture Based Livestock Production Systems course will demonstrate the land productivity potential to the project manager and animators for the first time; animators will transfer this knowledge to community members. If the pandemic prevents international travel the course will be delivered remotely using University of Pretoria software; animators will be given faster internet connections. Agriculture Ministry representatives will gain knowledge from observing all stages of the project and will gain long term direct links with the University of Pretoria.

Fire management

The previous Ibity manager attended the Southern Africa Fire Network (SAFNET, <https://gofcgold.umd.edu/regional-networks/southern-africa-fire-network-safnet>) meeting in 2018 invited by Lehmann. Knowledge was exchanged between foreign specialists and Malagasy scientists, management professionals, and community members from our sites at Lehmann's fire workshop. Funding was found for Malagasy representatives to attend the 2020 SAFNET meeting, but this is currently postponed due to the pandemic. PA managers will gain practical skills of starting and managing preventative burns at the Kruger National Park, working with the fire chief Navashni Govender for 10 days. In-project workshops and annual specialist training by Lehmann will build capacity for staff. Environment Ministry and PA managers at KMCC and MBG will witness the implementation of fire management strategies and their consequences and gain long term access to SAFNET expert advice.

Q17. Gender equality

All applicants must consider whether and how their project will contribute to reducing inequality between persons of different gender. Explain how your project will collect sex disaggregated data and what impact your project will have in promoting gender equality.

Traditional gender roles are the norm in our communities, where men look after cattle while women plant crops. At least 45 households engaged by the project will be married couples or single woman households. We will empower women through building on their existing area of expertise in plant cultivation and fodder preservation, and hire a female project technician for plants at each site, fostering respect for women and their roles. Female household members will be invited to fully engage in project meetings. Sex disaggregated data will be collected through questionnaires before and after the annual expert training and the community-led project and wellbeing review by Rakotonarivo.

We will protect women's workloads from the additional burden of cultivating Sorghum by initially growing

Sorghum only at the demonstration farms, using funded technician labour during the project. Sorghum cultivation by households will only be taken up optionally after the benefits are witnessed and workloads have been re-balanced accordingly. We were concerned women could be disproportionately affected by the need to carry extra water for project activities, but community members reassured us water was easily available. Other interventions will require a change of activity but little extra work. We hope that after the project ends, Sorghum seed production will become an income-generating business for women.

Vorontsova and Lehmann have a long-standing commitment to promoting equality and diversity, underpinning our approach. Vorontsova is a founding member of the gender@kew and [REDACTED] studies female contribution to botany (Lindon 2015) and led a recent analysis of the compounded inequalities affecting Malagasy botanists (Vorontsova 2020). Lehmann leads the RGE decolonising group while Vorontsova co-leads decolonising Kew Practice of Science subgroup with participation from Ralimanana. More than half of Malagasy and foreign professionals employed by this project are female, including influential Malagasy conservation leaders Raharimampionona and Ralimanana.

Q18. Change expected

Detail the expected changes this work will deliver. You should identify what will change and who will benefit a) in the short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended).

Please describe the changes for biodiversity and for people in developing countries, and how they are linked. When talking about people, please remember to give details of who will benefit and the number of beneficiaries expected. The number of communities is insufficient detail – number of households should be the largest unit used. If possible, indicate the number of women who will be impacted.

Grassland health

The management of native grassland grazing practice will increase the frequency of key nutritious native and endemic grasses. Cattle owners and herders will recognize more grasses, and value these more highly. They will see that pasture plots protected from fire generate higher quality fodder during the project. Native grasses and grassland ecosystems will flourish under a well-managed grazing regime.

Within 15 years higher grazing pressures in the best pastures will gradually establish and maintain productive grazing lawn ecosystems which naturally prevent fires (Hempson 2015), switching the highly grazed fire grassland systems to grazing lawn systems (Donaldson 2017, Solofondranohatra 2020).

Cattle diet and health

Three of the four main elements of cattle nutrition will receive a boost during the project: feed from the fodder crop, more widespread and efficient use of locally available hay and crop residue, and improved wild forage grass nutrition on fire-protected plots (nutrition on burned plots will remain the same). The Sorghum fodder crop cultivar was specifically bred for this purpose, has proven effective in similar climates, and is currently utilised across South Africa (Truter 2015). We expect the nutritional improvement to increase livestock milk production first, and then create a gradual but stable weight gain which will be seen through cattle body condition scores. Initial improvement in the demonstration farm animals (detectable in years 1-2) will be followed by a slower but similar improvement in the cattle owned by the participating households (detectable in year 3).

Within 15 years we anticipate that healthy cattle in more balanced and nutritious rangeland systems (Snyman 1998) will reproduce more frequently, leading to a 70% calving rate and more livestock.

Minimised forest fire risk

The custom program of fire management and firebreaks will minimise forest damage by fires during the project and thus protect the unique plants and animals inhabiting these forests. Controlled licensed firebreak burns are expected to reduce the number of unlicensed fires set by community members. Improved pasture productivity will reduce the need to burn pastures for a short-term flush of green grass.

Within 30 years an increase in heads of cattle will further reduce the fuel available to the fires around forest edges, leading to a decrease in fire frequency and intensity. A shift in the timing of grassland fires from late to early dry season will also lead to reduced fire severity and reduced carbon emissions from fire (Russell-Smith 2009; van Wilgen 2014). The risk to fire sensitive biodiversity in the forest patches will gradually decrease. We hope to develop a method for securing green firebreaks of grazing lawn grasses that are maintained by grazing (Donaldson 2017) providing a feedback to cattle health and community wealth.

Capacity-building, wealth and wellbeing

We anticipate that an estimated 700 members of the 90 project households (estimated 380 women, data from KMCC 2019) will experience improved wealth and food security within the project duration. An estimated 1300 residents of the participating communities will be directly exposed to the project activities including access to better managed communal pastures.

Q19. Pathway to change

Please outline your project's expected pathway to change. This should be an overview of the overall project logic and outline how you expect your Outputs to contribute towards your overall Outcome and, longer term, your expected Impact.

Outcome

Fodder flow supplemented by crop residue preservation and exploitation of a new forage crop (output 2) will provide more feed of higher quality and thus make cattle healthier. Improved understanding and more efficient exploitation of native and endemic forage grasses and forbs (output 1) will reduce fire frequency and bring pasture ecosystems closer to their pre-human equilibrium state where megafaunal grazing maintained grazing lawns, establishing more sustainable grassland exploitation. Efficient exploitation of grasses and forbs (output 1) will also reduce the loss of grassland biodiversity through reducing fires that are hotter and more frequent than those it evolved with, and thus allowing native grassland plants to flourish. Custom site-based fire management strategies implemented to prevent late dry season forest fires (output 3) will decrease fire damage to fire-sensitive forest, and thus reduce loss of the biodiversity dependent on forest.

Impact

Sustainable grassland exploitation and healthier cattle will build food system productivity and resilience, improving the welfare of communities through better food supply and eventually a surplus of cattle for sale. A gradual reduction in fires and the reduced loss of grassland and forest biodiversity will allow forest and grassland species to recover and result in the conservation of biodiversity.

Q20. Exit Strategy

State how the project will reach a stable and sustainable end point, and explain how the outcomes will be sustained, either through a continuation of activities, funding and support from other sources or because the activities will be mainstreamed in to “business as usual”.





Where individuals receive advanced training, for example, what will happen should that individual leave?

The agricultural aspects of the project will continue without additional funding as they will generate food and income. More livestock and the ability to sell them will increase the resilience of households. As recommended by the Agriculture Ministry, in the final year we will create local community associations for those directly benefitting, separate from the existing associations which manage the Protected Areas. Project cattle and farm equipment will be transferred to these new associations, and they will drive sustainable activity after project end. Project households and women enthusiastic about growing Sorghum may choose to become commercial seed producers for AGT Foods supported through the AGT4Producers portal.

Effective fire management may require longer term support from the protected area system, Environment Ministry, and international bodies such as the Southern Africa Fire Network (SAFNET) because it will require a deeper cultural change, perhaps over decades. Continued investment in PAs will broaden our methods.

Seven staff will travel to South Africa for training and work experience; extensive professional networks of the project team ensure replacements can be found quickly. Project experts all intend to develop this work further after project end, including responsive funding applications based on lessons learned during this project.

If necessary, please provide supporting documentation e.g. maps, diagrams, references etc., as a PDF using the File Upload below:

 [references seconddraft MSV4 final](#)
 09/02/2021
 12:41:13
 pdf 164.74 KB

Section 10 - Budget and Funding

Q21. Budget





Please complete the appropriate Excel spreadsheet, which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. Note that there are different templates for projects requesting over and under £100,000 from the Darwin budget.

- [Budget form for projects under £100,000](#)
- [Budget form for projects over £100,000](#)

Please refer to the Finance for Darwin/IWT Guidance for more information.

N.B.: Please state all costs by financial year (1 April to 31 March) and in GBP. The Darwin Initiative cannot agree any increase in grants once awarded.

Please upload your completed Darwin Budget Form Excel spreadsheet using the field below.

-  [Copy of Budget over 100K May 2020updated template 09022021](#)
-  09/02/2021
-  12:32:24
-  xlsx 72.49 KB

Q22. Funding

Q22a. Is this a new initiative or a development of existing work (funded through any source)?

New Initiative

Please provide details:

We will bring a novel approach to a critical gap in Madagascar's conservation and development. Grasses and grasslands have been neglected by conservation projects through the assumption they are of little value compared to forests, lemurs, and birds. Fires are a complex long-term problem across Madagascar, which the country does not have the expertise to manage beyond the current misleading fire assessment and ineffective suppression (e.g. Mongabay 2020). As far as we are aware this is the first Madagascar project to combine rangeland management with modern fire management and use an understanding of these issues to improve livelihoods and protect biodiversity.

We will build on a broad range of past and present investments including KMCC and MBG offices in Antananarivo and in each PA, office and field work equipment, vehicles, established staff and their professional networks. FAPBM-funded PA management has already built local community relationships, consultation and governance mechanisms, and local mechanisms for firebreaks and their monitoring. CEPF-funded assessment of livelihoods around Itremo provided data to help us plan this project. Vorontsova's 10-year research program on Malagasy grasses includes GCRF-funded research on Digitaria forage grasses common on project sites. Ongoing work by the Ministry of Agriculture provides local livestock expertise.

Q22b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?

Yes

Please give details explaining similarities and differences. Explain how your work will be additional to this work and what attempts have been/will be made to co-operate with and learn lessons from such work for mutual benefits.

Ongoing French Agricultural Research Centre for International Development (CIRAD) projects in Madagascar are working to increase milk and meat production by introducing foreign cattle breeds (less resilient *Bos taurus*), foreign commercial invasive forage grass cultivars such as *Lolium*, and adding fertiliser to pastures. These internationally accepted intensive production methods prioritise production above ecosystem resilience, exclude native forage grasses, and reduce ecosystem diversity altering them permanently. Our project will raise cattle productivity using local breeds of zebu (resilient *Bos indicus* humped cattle) and native (less productive but sustainable without fertiliser) grass and forb diversity, managing natural grasslands for grazing but not fundamentally altering these unique ecosystems.

The Agriculture Ministry are working on a livestock-focused project in Bongolava, trialling hay making

methods to improve livestock production in natural grasslands. This larger scale project treats grasses and forbs as a monolithic pasture production unit, not seeking to understand component species. Our project is more conscious of grass diversity and more cross-disciplinary. The ministry offered us links to the Bongolava project and our hay making strategy will be informed by their work following exchange visits. The Agriculture Ministry feel their capacity is still limited and an unmet need for rangeland work remains.

Q23. Co-financing

Are you proposing co-financing?

Yes

Q23a. Secured

Provide details of all funding successfully levered (and identified in the Budget) towards the costs of the project, including any income from other public bodies, private sponsorship, donations, trusts, fees or trading activity, as well as any your own organisation(s) will be committing.

Donor Organisation	Amount	Currency code	Comments
RBG Kew	██████	GBP	Kew will contribute 10% salary costs for Vorontsova, █████ salary costs for Wilkin, and an additional contribution to the overhead costs. £██████ of Vorontsova's grant funding (Global Challenges Research Fund Royal Society International Collaboration Award) will contribute in-depth research on Digitaria including farmer interviews and the development of forage grass identification techniques at Ibity and Itremo.
University of Pretoria	██████	GBP	University of Pretoria will contribute █████ of Truter's salary costs for the duration of the project.

Fondation pour les Aires protégées et la biodiversité de Madagascar, (Madagascar Biodiversity Fund or FAPBM, for Itremo)	[REDACTED]	GBP	FAPBM will support the daily management of the Itremo Protected Area through a grant to KMCC, including salaries and costs of conducting fire patrols that will monitor fires and maintain firebreaks for this project
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MBG (multiple funders for Ibity and Ankafobe)	[REDACTED]	GBP	Funding to MBG from the Critical Ecosystem Partnership Fund (CEPF) for the project "Building harmonious landscape of the Ibity Protected Area with the commitment of multisectoral partners" will contribute to local association work at Ibity. Global Environment Facility (GEF) Trust Fund project "Ankafobe - Implementing Alliance for Zero Extinction (AZE) Site Conservation and Preventing Global Extinctions" contributes to Ibity fire patrols. Nature Fund project "Dynamic agroforestry within the Ankafobe Protected Area landscape: reconciling traditional agriculture with the restoration of degraded landscapes" contributes to local association work and agricultural production management at Ankafobe.
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Q23b. Unsecured

Provide details of any co-financing where an application has been submitted, or that you intend applying for during the course of the project. This could include co-financing from the private sector, charitable organisations or other public sector schemes. This should also include any additional funds

required where a donor has not yet been identified.

Date applied for	Donor Organisation	Amount	Currency Code	Comments
30 September 2021	Fondation pour les Aires protégées et la biodiversité de Madagascar, (Madagascar Biodiversity Fund or FAPBM, for Itremo)	[REDACTED]	GBP	FAPBM will support daily management of the Itremo Protected Area, including salaries and costs of conducting fire patrols that will monitor fires and maintain firebreaks. Applications will be made annually in September.
31 December 2020	Biodiversity and Protected Areas Management Programme (BIOPAMA)	[REDACTED]	GBP	Project "Threat management in the Itremo Massif Protected Area in the face of COVID-19" will contribute to Itremo PA governance 2021-2022
31 January 2021	Commercial companies Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Holcim	[REDACTED]	GBP	Public Private Partnership Holcim and GIZ support local community efforts to conserve the Ibyty Massif landscape and improve the rural economy, and will contribute to environmental governance at Ibyty in 2021-22, through MBG

31 January 2021	Critical Ecosystems Partnership Fund (CEPF) implemented through the Tany Meva Foundation	██████	GBP	COVID-19 specific support for the local associations running protected areas, to support local associations at Ankafobe and Ibity, contribution estimated for 2021-22
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Do you require more fields?

Yes

Date applied for	Donor Organisation	Amount	Currency code	Comments
31 January 2022	Nature Fund	██████	GBP	Funding to MBG for the project "Dynamic agroforestry within the Ankafobe Protected Area landscape: reconciling traditional agriculture with the restoration of degraded landscapes" will contribute to local association meetings and agricultural production management at Ankafobe in 2022-23
28 February 2022	Mohamed bin Zayed Species Conservation Fund (MBZ)	██████	GBP	Funding to MBG will support fire management at Ankafobe 2022-23
<i>No Response</i>	<i>No Response</i>	0	<i>No Response</i>	<i>No Response</i>

Section 11 - Open Access and Financial Risk Management

Q24. Outputs of the project and Open Access

Please describe the project's open access plan and detail any specific funds you are seeking from Darwin to fund this.

Madagascar ranked 176th out of 186 countries for the proportion of the population using the internet in 2018 (Sachs 2019): rural network coverage is poor while internet is prohibitively expensive for most. True Open Access means freely distributed printed materials in addition to free digital versions. 200 copies of the bilingual native forage booklet will be professionally produced by Kew Publishing for free distribution of paper and digital versions. The budget line for lead organisation consumables and printing 2023/24 includes £[REDACTED] quoted by Kew Publishing to create a visually appealing booklet based on our Madagascar grass guide (Vorontsova 2018). The poster will be printed in Antananarivo using £[REDACTED] budgeted for 200 copies. High and low resolution versions of both will be available through the Kew Research Repository at <https://kew.iro.bl.uk>.

Secure data storage and daily backups with professional IT support will be provided by Kew IT. Plot data will be uploaded to the Dryad Digital Repository. Grass and forb species occurrence records will be shared to GBIF through KMCC uploads, and herbarium vouchers will be preserved at the Tsimbazaza and Kew herbaria. Species photographs will be made available to the biodiversity community through the iNaturalist project, and to the agricultural community through the WIKTROP Weed Identification and Knowledge Portal. New blog entries will be written by the animators and project manager at least quarterly for each site for the project blog and the Darwin newsletter. The Malagasy professional community are active on Facebook so a project Facebook page will aggregate communications.

Q25. Financial Risk Management

This question considers the financial risks to the project. Explain how you have considered the risks and threats that may be relevant to the successful financial delivery of this project. This includes risks such as fraud or bribery, but may also include the risk of fluctuating foreign exchange and internal financial processes such as storage of financial data.

Risks will be mitigated through the Kew and MBG fiscal control mechanisms, aligned with financial reporting standards required and strictly implemented by Kew. Budget design and review is carried out in collaboration with Kew, KMCC, and MBG professional accountants. The steering group of experienced Darwin leaders will meet with the project leaders quarterly including a budget review.

There is a risk that currency fluctuation during the project will alter the sums sent from the UK to Madagascar, also affecting overseas travel between UK, South Africa, and Madagascar. Within the last two years the strength of the Ariary against the Pound changed by around 20% (xe.com 2021), but with the current political stability in Madagascar we expect this to be more stable. We budgeted to minimise this risk by building in an allowance of 8% within all budget lines going to Madagascar and South Africa, and international travel in the financial years from 2022/23 onwards.

RBG Kew trustees have reviewed Kew's financial challenges in the wake of the pandemic and the expected self-generated income and cashflows from operating activities and taken mitigating actions to secure Kew's financial sustainability. We have included COVID tests and 2-week quarantine costs for each international journey.

Q26. Capital items

If you plan to purchase capital items with Darwin funding, please indicate what you anticipate will happen to the items following project end. If you are requesting more than 10% capital costs, please provide your justification here.

Motorbikes for the animators are the locally efficient mode of transport on poor quality roads between the villages and forest fragments at our sites. The motorbikes, laptops, smartphones, GPS devices and radios will remain property of KMCC and MBG to be used for future projects. As part of the coronavirus travel restriction mitigation shipping costs have been included to replace the numerous luggage items routinely carried from Kew to KMCC by staff travelling.

Cattle are the most valued possession for our project households and communities, so great care will be taken to look after the project livestock as well as livestock belonging to the households. Cattle will be legally registered as the property of the project animators; after project end legal ownership will be transferred to the new local associations established to continue project practice. Project farming equipment including silage choppers and hand harvesters will be given to these associations.

Q27. Value for Money

Please describe why you consider your application to be good value for money including justification of why the measures you will adopt will secure value for money.

More than half of our budget will be spent in Madagascar with the biggest spending allocated to staff salaries, enabling us to employ 15.5 full time equivalent Malagasy staff. We will utilise existing infrastructure, governance, and contact networks of MBG, KMCC, RBGE and UP. The local associations managing Ankafoabe, Ibity and Itremo protected areas already routinely work with KMCC, MBG, and our foreign experts. Truter's donation of his expert knowledge on agriculture and livestock removes the need for paid specialist advice. This project also delivers value by ensuring sustainability beyond project lifetime through building in continuity at our local sites and project future ensured by KMCC, MBG, Agriculture and Environment Ministries.

Kew supplier relationships, procurement process, and IT support will deliver value for money on motorbikes, IT equipment, and software, maintained throughout the project. On-the-ground costs are based on first-hand experience of local staff. Fieldwork costs were calculated at reduced rates for local accommodation through established contacts in Antananarivo, Ankafoabe, Ibity and Itremo. Kew-owned vehicles and the professional Kew driver/mechanic Roger Rajaonarison will ensure safe car travel at lower prices. Hotel accommodation will be in the low (for field work) to mid-price range (Antananarivo).

We have budgeted £250 a month for a new high-speed internet connection for KMCC's second office building in Antananarivo. High quality internet is significantly more expensive in Madagascar than the UK and we believe investing in high quality communications will deliver effective project coordination while mitigating coronavirus travel restrictions.

Section 12 - Ethics and Safeguarding

Q28. Ethics

Outline your approach to meeting Darwin's key principles for ethics as outlined in the guidance note.

Additionally, are there any human rights and/or international humanitarian law risks in relation to your project? If there are, have you carried out an assessment of the impact of those risks, and of measures that may be taken in order to mitigate them?

Access and benefit sharing, and traditional knowledge

Kew Overseas Fieldwork Committee approval will ensure compliance with CBD and health and safety standards. Rajaonah will negotiate research, transportation and exportation permits. Grazing, livestock, and fire workshops and training will record community knowledge, incorporate it with project data, and prioritise it in interventions and outputs. We adhere to Kew's policy on Access to Genetic Resources and Benefit Sharing.

Leadership from developing countries and communities

This project is driven from Madagascar. Long-term relationships with communities taught us local customs and taboos, including relationships with village chiefs. KMCC and MBG facilitated formation of the local community associations running the protected areas. Perspectives, interests, and wellbeing of those directly affected will be addressed by community representative attendance at all regional and national workshops.

Rights, privacy, safety, and Prior Informed Consent

Partners will work in accordance with The Code of Ethics of the International Society of Ethnobiology <http://www.ethnobiology.net/what-we-do/core-programs/ise-ethics-program/code-of-ethics/code-in-english>. Staff will be trained by Rakotonarivo. We will distribute a common participant information sheet in Malagasy to all participants, and obtain informed consent for all participation and data use. The focus will be on obtaining and recording oral consent, as signatures can cause unnecessary stress to illiterate participants. We have no right to expect people to participate, and will offer opportunities to leave. Sessions will include break points to check consent. We will record individually identifiable information, but data will be anonymised before sharing.

There are no human rights or international humanitarian law risks.

Q29. Corruption

This question specifically considers corruption. Explain how you have considered any risk of corruption that may affect the success of this project, and how you plan to manage this. This may include financial corruption, but may also deal with gifts or inducements, or other types of dishonesty or deceit.

The deep financial inequality between Malagasy stakeholders and foreigners can unfortunately drive corrupt practice in Madagascar, which is why our Malagasy advisors Ralimanana and Raharimampionona and co-leader Rajaonah are experienced in guarding against it through strong financial governance and staff training. British and South African staff will work to ensure all Malagasy stakeholders feel valued and respected. KMCC is part of Kew aligned to Kew's policies. MBG and the RBGE are already in a trusted working relationship with Kew and have their own anti-corruption policies in place.

Corruption becomes more likely when Madagascar's complex research administration process is negotiated under time pressure. KMCC permit specialist Landy Rajaovelona will help Rajaonah plan sufficient time for negotiating, obtaining and approving research permits, sample transportation permits, and exportation permits.

We will mitigate the risk of corruption by clear communication on budgetary details at project outset, and early management of expectation with new contacts. We minimize risk by working with reputable partners

and suppliers. Due diligence is performed on all partner organisations. Transfer of funds is undertaken through reliable payment methods and is allocated to specific activities. Quarterly payments to partners will allow us to evaluate progress before further funds are allocated.

Q30. Safeguarding

Projects funded through the Darwin Initiative must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, projects are required to have appropriate safeguarding policies in place. Please confirm the lead organisation has the following policies in place and that these can be available on request:

We have a safeguarding policy, which includes a statement of our commitment to safeguarding and a zero tolerance statement on bullying, harassment and sexual exploitation and abuse	Checked
We have attached a copy of our safeguarding policy to this application (file upload below)	Checked
We keep a detailed register of safeguarding issues raised and how they were dealt with	Checked
We have clear investigation and disciplinary procedures to use when allegations and complaints are made, and have clear processes in place for when a disclosure is made	Checked
We share our safeguarding policy with downstream partners	Checked
We have a whistle-blowing policy which protects whistle blowers from reprisals and includes clear processes for dealing with concerns raised	Checked
We have a Code of Conduct for staff and volunteers that sets out clear expectations of behaviours - inside and outside the work place - and make clear what will happen in the event of non-compliance or breach of these standards	Checked





Please outline how you will implement your policies in practice and ensure that downstream partners apply the same standards as the lead organisation.

Financial inequality and the resulting unequal power relationships are sadly common in Madagascar. Staff, and especially non-Malagasy staff, will be aware of their disproportionate power in this project and its potential consequences especially for community members, their livelihoods, and livestock. KMCC policies including safeguarding have recently been aligned to RBG Kew so the same documents and procedures apply across the organisation. Kew considers that bullying and harassment of any kind are in no-one's interest and will not be tolerated. Kew is committed to dealing with all instances of bullying and harassment seriously and has a Grievance Procedure in place to deal with this. Kew's policy sharing to downstream partners will be implemented and monitored by the project co-leads, facilitated and supported by Kew's safeguarding leads.

Kew safeguarding policy is reviewed at regular intervals to ensure it meets the legal and policy requirements and reflects best practice. All members of staff are provided with training to ensure that they are confident and competent in putting the safeguarding policy into practice. The policy includes clear

procedures for reporting, investigation, and disciplinary matters. A safeguarding oversight committee meets twice a year to review this and make recommendations for areas of improvement.

Please upload the lead organisation's Safeguarding Policy as a PDF

-  [Safeguarding-Policy-Nov-2020](#)
-  18/01/2021
-  09:04:42
-  pdf 1.13 MB

Section 13 - Logical Framework





Q31. Logical Framework

Darwin Initiative projects will be required to monitor (and report against) their progress towards their expected Outputs and Outcome. This section sets out the expected Outputs and Outcome of your project, how you expect to measure progress against these and how we can verify this.

- [Stage 2 Logframe Template](#)

Please complete your full logframe in the separate Word template and upload as a PDF using the file upload below. Copy your Impact, Outcome and Output statements and your activities below - these should be the same as in your uploaded logframe.

Please upload your logframe as a PDF document.

-  [Vorontsova R27 Darwin St2 Logical Framework seconddraft MSV4 final](#)
-  09/02/2021
-  12:35:46
-  pdf 106.16 KB

Impact:

Conservation of biodiversity and improved welfare of communities in the Central Highlands of Madagascar through optimal grazing of cattle and management of grasslands

Outcome:

Improved grazing system management capacity among 90 pastoral farming households in Ankafobe, Ibity and Itremo leading to healthier cattle, sustainable grassland exploitation, and reduced loss of grassland and forest biodiversity

Project Outputs

Output 1:

Improved preservation, understanding and more efficient exploitation of native and endemic forage grasses and forbs, in native grasslands near villages

Output 2:

Fodder flow supplemented by crop residue preservation and exploitation of new forage crop

Output 3:

Custom site-based fire management strategies conceived participatively and implemented to prevent late dry season forest fires

Output 4:

No Response

Output 5:

No Response

Do you require more Output fields?

It is advised to have less than 6 Outputs since this level of detail can be provided at the Activity level.

No

Activities

Each activity is numbered according to the Output that it will contribute towards, for example, 1.1, 1.2, 1.3 are contributing to Output 1.

Output 0: Project activities contributing to all outputs

- 0.1 National project launch and assessment workshops in Antananarivo
- 0.2 Regional project launch and assessment workshops in Itremo, Ibity, and Ankafobe area villages
- 0.3 Ministry and foreign expert site visits
- 0.4 3 hectares of land secured at each site for temporary use during the project, contracts drawn up and signed
- 0.5 4 cattle purchased for each site, legal process completed
- 0.6 30 cattle owning households engaged at each site
- 0.7 New local associations formed
- 0.8 Demonstration farm property and project cattle handover to the new local associations
- 0.9 Community-led project and well-being review organised by Rakotonarivo

Output 1: Improved preservation, understanding and more efficient exploitation of native and endemic forage grasses and forbs, in native grasslands near villages

- 1.1 Trial grazing regimes in demonstration farms established, plots fenced off, plot firebreaks created
- 1.2 Trial grazing regimes in demonstration farms maintained using project cattle
- 1.3 Grazing strategy mentoring on common and private land for project households
- 1.4 Grass and forb diversity and frequency surveys in project demonstration farm and communal pasture plots, starting in first wet season
- 1.5 Grazing value indices measured for ten candidate native and endemic grasses using samples collected and exported to South Africa
- 1.6 Exchange of experiences and training in community and focus groups, quarterly
- 1.7 Specialist grass training for project households, annual
- 1.8 Native grazing grass booklet and poster tested, produced, and distributed

Output 2: Fodder flow supplemented by crop residue preservation and exploitation of new forage crop

- 2.1 Baseline surveys of participant householder cattle
- 2.2 Training in South Africa for project manager and 3 animators
- 2.3 Sorghum cultivation, harvesting, and feed storage in demonstration farms, during wet season months
- 2.4 Sorghum cultivation, harvesting, and feed storage by project households, during wet season months year 2 onwards
- 2.5 Hay making in demonstration farms, during wet season months
- 2.6 Crop residue, hay making, and fodder bank mentoring with project households
- 2.7 Cattle farming and monitoring of milk production, body condition and calving in demonstration farms
- 2.8 Cattle farming and monitoring of milk production, body condition and calving with project households
- 2.9 Exchange of experiences and training in community and focus groups, quarterly
- 2.10 Specialist fodder training for project households, annual

Output 3: Custom site-based fire management strategies prevent late dry season forest fires

- 3.1 Fire analysis by Lehmann to measure baseline, design interventions, and assess progress
- 3.2 Firebreak creation and maintenance using physical clearing and hay making
- 3.3 Preventative burn training in South Africa for the Protected Area managers
- 3.4 Fire prevention using preventative burns in early dry season
- 3.5 Firebreak creation and maintenance through grazing with project cattle
- 3.6 Firebreak creation and maintenance through grazing with participant household cattle
- 3.7 Fires, firebreaks, and forest edge data recorded by monthly patrols using SMART-Mobile tool, including monthly photographs at 10 set photo points in each Protected Area
- 3.8 Exchange of experiences and training in community and focus groups, quarterly
- 3.9 Specialist fire training for project households, annual
- 3.10 Printing 3D models of landscapes to visualise fire spread
- 3.11 Co-writing and consultation to finalise Fire Management Plans to add to Protected Area Management Plans





Section 14 - Implementation Timetable

Q32. Provide a project implementation timetable that shows the key milestones in project activities

Provide a project implementation timetable that shows the key milestones in project activities. Complete the Excel spreadsheet template as appropriate to describe the intended workplan for your project.

[Implementation Timetable Template](#)

Please add/remove columns to reflect the length of your project. For each activity (add/remove rows as appropriate) indicate the number of months it will last, and fill/shade only the quarters in which an activity will be carried out. The workplan can span multiple pages if necessary.

 [Vorontsova 27 Darwin St2 Implementation Timetable seconddraft MSV3 final submitted](#)
 09/02/2021
 12:36:11
 xlsx 15.07 KB

Section 15 - Monitoring and Evaluation

Q33. Monitoring and evaluation (M&E)

Describe, referring to the Indicators above, how the progress of the project will be monitored and evaluated, making reference to who is responsible for the project's M&E.

Darwin Initiative projects are expected to be adaptive and you should detail how the monitoring and evaluation will feed into the delivery of the project including its management. M&E is expected to be built into the project and not an 'add' on. It is as important to measure for negative impacts as it is for positive impact. Additionally, please indicate an approximate budget and level of effort (person days) to be spent on M&E (see [Finance Guidance for Darwin/IWT](#)).

During M&E, we will record the same data necessary to adapt our methods throughout the project. The project manager will be jointly responsible with co-leaders and will coordinate and compile data from the three sites. Animators, assisted by the technicians, will record, maintain and analyse the data, and report to the manager quarterly. Vorontsova, Lehmann, Truter, and Rakotonarivo will review their respective indicator data quarterly. Ralimanana will coordinate with KMCC finance and Raharimampionona with MBG finance, with the steering group advising quarterly.

Community perceptions, wellbeing, gender, and specialist training

Rakotonarivo will be responsible for the overall sociological assessment using the Global Person Generated Index which will be carried out by the animators at the quarterly community meetings. Questionnaires for project household members before and after annual specialist training, including consultation on the draft grass poster and the draft Fire Management Plans in 2024, will be initially written by Vorontsova, Truter, and Lehmann, with Likert scale questions on perceptions of training and project usefulness by Rakotonarivo. Rakotonarivo will help the project manager analyse the gender-disaggregated questionnaire results.

Grasses and forbs

Grass and forb plot surveys will be carried out, analysed, and reported by Ralainarivo within the demonstration farm at first and then on communal pastures as agreed with communities. Herbarium vouchers and photographs of grasses and forbs will be made and verified at the Tsimbazaza herbarium by Ralainarivo. Vorontsova will assist with grass identification, Lehmann will assist with ecological statistics. The Enterprises University of Pretoria AF4RICA laboratory will determine Grazing Value Indices supervised by Truter.

Livestock, Sorghum, and fodder banks

Milk production, cattle body condition, and calving are standard indicators of animal health and will be used by Truter, project manager and animators to make tailored livestock management decisions during

the project in conjunction with the forage crop and fodder bank data which are also industry standard measurements. Animators and technicians for cattle will record milk production by household milk cows, photograph demonstration and project livestock from rear and side, and record calving. Body condition scores will be determined by comparison with animal pictures on the standard body condition reference cards from the University of Pretoria course. Technicians for plants will grow Sorghum and make hay and silage. Together with the animators they will measure Sorghum growth with a grazing stick, and weigh dry Sorghum harvest yields, and household fodder banks. Community members who join the new local associations will continue to monitor calving rate after project end.

Fires and firebreaks

Lehmann will use the Google Earth Engine to analyse Google Earth Image data and MODIS Burned Area data for 50 ha of forest patches at each site. Analysis will be carried out for January data (end of the dry season) every year, establishing January 2021 as the baseline and assessing changes detected by January 2022-2024. Fire patrols will identify the 10 set photo points on their standard route by metal pegs left in the ground. Patrols will send monthly SMART-Mobile app records and photographs to the animators.

Total project budget for M&E in GBP (this may include Staff, Travel and Subsistence costs)	£ [REDACTED]
Number of days planned for M&E	1,514
Percentage of total project budget set aside for M&E (%)	[REDACTED]

Section 16 - FCDO Notifications

Q34. FCDO Notifications


Please state whether there are sensitivities that the Foreign Commonwealth and Development Office will need to be aware of should they want to publicise the project's success in the Darwin competition in the host country.


No


Please indicate whether you have contacted your Foreign Ministry or the local embassy or High Commission (or equivalent) directly to discuss security issues (see [Guidance Notes](#)) and attach details of any advice you have received from them.


Yes, advice attached

Please attach details of any advice you have received.

 [FCDO support](#)

 06/02/2021

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Section 17 - Certification

Q35. Certification

On behalf of the

Trustees

of

The Royal Botanic Gardens, Kew

I apply for a grant of





£454,221.00

I certify that, to the best of our knowledge and belief, the statements made by us in this application are true and the information provided is correct. I am aware that this application form will form the basis of the project schedule should this application be successful.

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign contracts on their behalf.)

- I have enclosed CVs for key project personnel, letters of support, budget and project implementation timetable (uploaded at appropriate points in application).
- Our last two sets of signed audited/independently verified accounts and annual report are also enclosed.

Checked

Name	Professor Alexandre Antonelli
Position in the organisation	Director of Kew Science
Signature (please upload e-signature)	 Stage two - certification page  09/02/2021  12:33:24  pdf 104.49 KB
Date	01 February 2021

Section 18 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance, including "Guidance Notes for Applicants" and "Finance Guidance".	Checked
I have read, and can meet, the current Terms and Conditions for this fund.	Checked

I have provided actual start and end dates for the project.	Checked
I have provided my budget based on UK government financial years i.e. 1 April - 31 March and in GBP.	Checked
I have checked that our budget is complete, correctly adds up and I have included the correct final total at the start of the application.	Checked
The application been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have included a 1 page CV or job description for all the key project personnel identified at Question 12, including the Project Leader, or provided an explanation of why not.	Checked
I have included a letter of support from the the Lead Organisation and main partner organisation(s) identified at Question 11, or an explanation of why not.	Checked
I have included a cover letter from the Lead Organisation, outlining how any feedback received at Stage 1 has been addressed where relevant.	Checked
I have included a copy of the lead organisation's safeguarding policy, which covers the criteria listed in Question 30.	Checked
I have been in contact with the FCDO in the project country/ies and have included any evidence of this. If not, I have provided an explanation of why not.	Checked
I have included a signed copy of the last 2 annual report and accounts for the Lead Organisation, or provided an explanation if not.	Checked
I have checked the Darwin website immediately prior to submission to ensure there are no late updates.	Checked
I have read and understood the Privacy Notice on GOV.UK.	Checked

We would like to keep in touch!

Please check this box if you would be happy for the lead applicant (Flexi-Grant Account Holder) and project leader (if different) to be added to our mailing list. Through our mailing list we share updates on upcoming and current application rounds under the Darwin Initiative and our sister grant scheme, the IWT Challenge Fund. We also provide occasional updates on other UK Government activities related to biodiversity conservation and share our quarterly project newsletter. You are free to unsubscribe at any time.

Checked

Data protection and use of personal data

Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available [here](#). This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead organisation, location, and total grant value) on the GOV.UK and other websites.

Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we

act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).