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**Native grass pasture management to
feed people and protect forests**

Lehmann, Caroline | University of Edinburgh

Funding sought
Project start/end

£7,280.00
1 Mar 2019 - 26 Mar 2019

1. Contact Details

Q1. Lead applicant contact details

Please enter the contact details for the lead applicant. The lead applicant is the same as the Flexi-Grant account holder. Please note that the Flexi-Grant account holder will be the only contact point for the application.

Dr Caroline Lehmann

Lecturer

Primary Applicant

www.ed.ac.uk

School of GeoSciences, Crew Building, West
Mains Road, Edinburgh, Midlothian, EH93FF,
United Kingdom

Q2. Lead organisation contact details

Please enter the applicant organisation details

University of Edinburgh

www.ed.ac.uk

School of GeoSciences, School of
GeoSciences, Crew Building, West Mains
Road, Edinburgh, Midlothian, EH93FF, United
Kingdom

Please add any 'Committee Feedback' to the field below:

|

Please add any 'Specific Ineligibility' feedback to the field below:

|

Please add any 'Conditions' to the field below:

|

Please add any 'Positive Feedback' to the field below:

|

2. Title & Location

Q3. Working title of the proposed Darwin project

Native grass pasture management to feed people and protect forests

Q4a. Host country (of proposed Scoping trip)

Madagascar

Q4b. Other collaborating country/ies

South Africa, United Kingdom

Q5. Is this a resubmission of a previous scoping application?

No

3. Scoping Principals & Lead Organisation Summary

Q6. Principals in Scoping work i.e. the travellers

Please give the details of the individuals (up to 2) from the lead organisation who would be directly involved in the Scoping work - i.e. making a visit to a host country. One page CVs must be provided.

Details	Main traveller	Second traveller
Surname	Lehmann	
Forename(s)	Caroline	
Post held	Lecturer	
Department	School of GeoSciences	
Telephone/Skype		
Email		
Country travelling from	United Kingdom	
Please attach the traveller's CV		

Q7a. About the lead applicant organisation

Briefly discuss your expertise in sustainable use or conservation of biodiversity and/or development. Please refer to recent track record you have in this field. You may be asked to provide evidence of this track record.

The School of GeoSciences at the University of Edinburgh has worked across the global tropics, and across tropical Africa for over 20 years. GeoSciences has previously led multiple successful projects related to land management, conservation of biodiversity and human livelihoods in many tropical African countries such as

Mozambique, Zimbabwe, Tanzania and Malawi funded by the NERC Ecosystem Services and Poverty Alleviation program, the World Bank, DFID, Forests 2020, WWF, and CCAFS. Projects have included support from the Darwin Initiative, including 'Conserving pine woodland biodiversity in Belize through community fire management'. In common, these projects have focussed on improving understanding of the ecology of regions to develop sustainable and focussed land management interventions in collaboration with local communities.

Since 2016, GeoSciences has worked in Madagascar collaborating with Royal Botanic Gardens Kew and focussed in the Itremo Massif Protected Area in the Central Highlands where in savannas and grasslands over 100 species of grasses have been recorded. A key threat to the region's biodiversity are late dry season fires, lit for improved cattle forage, that get out of control and encroach into patches of humid forest. However, human livelihoods in the region are heavily dependent on cattle for both food and wealth.

Q7b. Would you like to include a letter of support from the lead applicant?

Yes

The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.

5. Project Partners

Q8. About the partner organisation(s)

Please list all the partners involved and explain their roles and responsibilities in the Scoping work. Briefly discuss your partner's expertise in sustainable use or conservation of biodiversity and/or development. Please refer to recent track record they have in this field. You may be asked to provide evidence of this track record. If there is more than 1 partner organisation, you can enter the details of more partners below. Please specify which of the partners is new to the partnership.

1. Partner Name:	Missouri Botanical Garden, Madagascar
Website address:	www.mbg.org
Details of anticipated roles and responsibilities:	MBG Madagascar will host the project in the protected areas under their management: Ankafoke and Ibity. They will gather data prior to the trip, set up discussions with local communities, and participate in workshop organisation. They will will provide local knowledge.
Expertise in sustainable use or conservation of biodiversity and/or development:	The Missouri Botanical Garden has had a sustained research presence in Madagascar since the 1970s, and established permanent base in the 1980s. The program grew locally and organically, and there are now more than 150 staff members associated with it, of which almost all are Malagasy. The influence of MBG on plant science, conservation, and sustainable development across Madagascar has been profound and multiple areas across the island are now under its management, including Anakafoke and Ibity. Forty-one of the 94 recently designated protected areas were identified as priorities in a Missouri Botanical Garden study conducted more than a decade ago. Conservation and development carried out by MBG at its multiple sites across Madagascar include a broad range of locally developed projects.
Name of main contact point and post held:	Lala Roger Andriamiarisoa, Botanist, MBG Madagascar

<p>Would you like to include a letter of support from this organisation?</p>	<p><input checked="" type="radio"/> Yes</p>
<p>Letter of Support:</p>	<p>The limit for any single file uploaded as supporting materials with your application is 6MB. Please ensure documents are saved in PDF form where possible in order to minimise size.</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div>

Do you have more than one partner involved in the Scoping work?

Yes

<p>2. Partner Name:</p>	<p>Royal Botanic Gardens, Kew, including the Kew Madagascar Conservation Centre (KMCC)</p>
<p>Website address:</p>	<p>www.kew.org</p>
<p>Details of anticipated roles and responsibilities:</p>	<p>KMCC will host the project in the Itremo protected area under their management, alongside MBG Madagascar. Maria Vorontsova will identify the forage grass species using her knowledge accumulated during seven years of research into the evolution and diversity of Madagascar's grasses. She will participate in the workshop via Skype.</p>

<p>Expertise in sustainable use or conservation of biodiversity and/or development:</p>	<p>Kew has worked in Madagascar for over 20 years and has established a local team of 40 Malagasy botanists and support staff. The Kew Madagascar team, based at the Kew Madagascar Conservation Centre in Antananarivo, is entirely funded through project work. Projects have included support from the Darwin Initiative, including the current project 'Cultivating Madagascar yams for conservation and livelihoods'. Another large project is the Millennium Seed Bank Partnership, which aims to bank 25% of the flora by 2020 and has already achieved this goal, but has recently increased the project by engaging 100 communities to collect seeds. Since 2010 Kew Madagascar has managed the 250 km² Itremo Massif Protected Area in the Central Highlands with the aim to effectively conserve biodiversity and natural capital in collaboration with local communities. The area is a mix of grasslands and humid gallery forest, with 700 species of plants of which over 200 are threatened applying IUCN criteria. We have recorded over 100 species of grass and are currently studying the grassland ecology. The main threats are burning to support cattle grazing and we do not yet know how this affects grassland diversity and forest regeneration.</p>
<p>Name of main contact point and post held:</p>	<p>Tianjanahary Randriamboavonjy, Team Leader (KMCC) and Dr Maria Vorontsova, Research Leader (Comparative Plant and Fungal Biology department, RBG Kew)</p>
<p>Would you like to include a letter of support from this organisation?</p>	<p><input checked="" type="radio"/> Yes</p>
<p>Letter of Support:</p>	<div style="border: 1px solid black; height: 60px;"></div>

3. Partner Name:	University of Pretoria (UP), Department of Plant and Soil Sciences (DePSS)
Website address:	www.up.ac.za
Details of anticipated roles and responsibilities:	Wayne Truter will travel to Madagascar for the first time, observe grazing practice at Itremo, participate in discussion with village communities, and share the South African experience at a workshop in Antananarivo. His knowledge will be used to improve grazing productivity and design the main project application to this end.
Expertise in sustainable use or conservation of biodiversity and/or development:	Wayne Truter with 17 years of experience in Pasture and Forage Science, is currently leading a Sustainable Livestock Production Programme on reclaimed / restored overgrazed rangelands in South African communal areas. This programme focuses on providing farmers with tools to 1) monitor native forage grass abundance and their successional status and 2) utilize these species through practical and sustainable grazing systems. The forage qualities of these species are of importance to determine why certain species are more attractive than others in different seasons. This aspect determines the sustainability of the utilization strategy applied to ensure the conservation of biodiversity. This programme involves post graduate and farmer training on resource assessment and management strategies. These outcomes are concluded from research studies on the biophysical environment in which these systems exist. The main objective of this programme is to understand the interrelationships between soil/ vegetation/ animal/ climate.
Name of main contact point and post held:	Dr Wayne Truter, Land Rehabilitation, Forage (Grasses/ Legumes), Rangeland and Livestock Specialist

Would you like to include a letter of support from this organisation?	<input checked="" type="radio"/> Yes
Letter of Support:	

4. Partner Name:	
Website address:	
Details of anticipated roles and responsibilities:	
Expertise in sustainable use or conservation of biodiversity and/or development:	
Name of main contact point and post held:	
Would you like to include a letter of support from this organisation?	<input type="radio"/> Yes <input type="radio"/> No

5. Partner Name:	
Website address:	
Details of anticipated roles and responsibilities:	
Expertise in sustainable use or conservation of biodiversity and/or development:	
Name of main contact point and post held:	

Would you like to include a letter of support from this organisation?	<input type="radio"/> Yes <input type="radio"/> No

6. Partner Name:	
Website address:	
Details of anticipated roles and responsibilities:	
Expertise in sustainable use or conservation of biodiversity and/or development:	
Name of main contact point and post held:	
Would you like to include a letter of support from this organisation?	<input type="radio"/> Yes <input type="radio"/> No

Q9. Can you confirm that none of the partners (excluding the lead applicant) have led a Darwin Initiative Main Project before?

No

Please provide further details

UP has not previously led such a project, to the best of our knowledge. Missouri Botanical Gardens and RBG Kew are large organisations which have led Darwin main projects. All staff leading this application are, however, new to the Darwin scheme: we can confirm that Caroline Lehmann, Roger Lala Andriamiarisoa, Tianjanahary Randriamboavonjy, Maria Vorontsova, and Wayne Treuter have had no direct personal involvement in past or ongoing Darwin projects. We hope this grant will allow us to learn from the experience of our institutional colleagues and partners, and build a new Madagascar – South Africa - UK team.

6. Justification & Concept Notes

Q10. Justification of need for a Scoping Award

Please provide written details of why alternative funding is not available from within your own organisation or from other sources. Will matched funding be provided?

Kew will cover travel costs for Wayne Truter to fly to Madagascar: this application seeks travel costs for Caroline Lehmann only. MBG and Kew will provide salary funding for staff time in gathering pre-visit data. The University of Pretoria, University of Edinburgh, and RBG Kew will all provide salary and overheads support for their staff members during their work on this project, as well as time spent on main application development.

The partners have not been able to identify any other suitable sources of funding because this partnership is still new. A direct collaboration between a fire manager and a rangeland manager is a fairly novel approach which has not yet achieved broad recognition and hence does not have a dedicated fund we can apply to.

Once this partnership has been established and initial data have been gathered, we will be in a stronger position to fundraise.

Q11. Concept note for the Scoping Award

This question concentrates on the scoping study work and should demonstrate the objectives of the Award including:

- objectives of the visit
- what work (including research, remote communications or other collaborations) has been carried out prior to applying for this Award
- what work will be carried out under the Award – please see the guidance for advice on what type of activity can be funded
- evidence of the proposed partners' intentions to collaborate in your Scoping work

This visit will share Lehmann and Truter's expertise with the Itremo Protected Area, Ibity Protected Area and Ankafobe Protected Area managers and local communities, towards an agreement on the best experimental methodology to explore improvements to the grazing and burning regimes, in order to improve zebu nutrition (and thereby human livelihoods) while protecting gallery forests from fire.

KMCC and MBG have carried out botanical research, conservation, and agroforestry work in these three areas since the 1990s and have established protected areas in collaboration with local village communities. Caroline Lehmann was the first modern savanna ecologist to visit Madagascar in 2016 starting a collaboration with Maria and KMCC; Caroline and Maria are co-supervising a KMCC PhD project on Madagascar's savannas and fire ecology. KMCC staff, Vorontsova, and Lehmann have observed poor zebu nutrition and irregular fires but have not had access to professional

rangeland expertise. No rangeland professional has ever carried out similar work in Madagascar to the best of our knowledge. Maria began to correspond with Wayne Truter in 2016, via a personal recommendation by Nigel Barker (University of Pretoria); he will travel to Madagascar for the first time. Maria Vorontsova has studied the taxonomy of Madagascar grasses since 2011. A KMCC MSc student supervised by Maria has published an Itremo grass checklist in 2017, finding that a quarter of the grasses are endemic to the Central Highlands.

Prior to the visit, Itremo, Ibity and Ankafobe Protected Area staff will gather data on household income and zebu ownership, and collect specimens of zebu forage grasses. Maria Vorontsova will identify the grasses (remotely from the UK, using high resolution plant scans). Lehmann will collate and analyse satellite fire history.

During the visit to Itremo Truter, Lehmann, Tiana and Roger Lala will observe local grazing practices and hold meetings with the local communities of the villages who are members of the three protected areas. The visitors will do their best to understand current practice, discover and record the wishes of the local community, and find out whether experimental burns and grazing enclosure experiments would receive local community support. The Darwin logframe will be used during our discussions.

After the Itremo visit we will hold a workshop at the University of Antananarivo with twenty Malagasy stakeholders, including managers of other protected areas on the Central Highlands. Truter will share experience of South African grazing practices and veld management. Lehmann will explain her research on fire regimes and development of sustainable practice that does not damage forest in Australia. Workshop outcomes will be used to develop the main Darwin proposal.

University of Edinburgh, MBG, University of Pretoria, and RBG Kew provide support letters.

Q12. Concept note for the resultant project

This question concentrates on the full Darwin application you intend to submit after the Scoping Award and should discuss:

- the expected outcome and outputs of the resultant Darwin project
- how the resultant Darwin project would meet a need in the host country (and the wider region if applicable e.g. if the proposed project would be based in a UMIC)
- how the project would contribute to any or all of the following Conventions: the Convention on Biological Diversity (CBD); the Nagoya Protocol on Access and Benefit-sharing (ABS); the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA); the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- how the project will contribute to sustainable development in the country concerned
- briefly what the proposed partner's/s' expected role in the resultant Darwin project will be
- briefly the expected role of the Scoping travellers in the resultant Darwin project.

The project will work to establish a recommended pasture management scheme and

fire regime for Ibity, Itremo and Akafobe, working towards sustainable zebu rearing using native forage grasses. This will improve the long-term food security of Madagascar's Central Highlands, while simultaneously protecting the gallery forests from fire damage.

Food provisioning in the grassland-dominated Central Highlands relies on the rearing of zebu cattle. The zebu populations are not currently growing fast enough to support the human population growth. MBG and Kew staff observations suggest this may be linked to poor forage nutrition and an erratic fire regime. MBG and Kew work 1995 – 2018 has focused on protecting the gallery forests which are regularly damaged by late season fires.

Standard methods of commercial pasture improvement bring in new breeds of cattle, new commercial forage grass cultivars, and add fertiliser to pastures. These intensive production methodologies permanently alter and damage ecosystems, as has been shown in Europe, Australia, South America, and South Africa. Maria Vorontsova's research with KMCC has recently demonstrated that the grasses and grasslands of the Central Highlands are largely natural and in need of protection. Our project seeks to avoid the introduction of any new species or any addition of fertiliser, and to improve production using native local grasses. Our project also aims to establish a fire regime to improve pasture production while also protecting the gallery forests, most likely through early season burning.

Caroline Lehmann will share her expertise on fire ecology and her experience of building a sustainable fire regime in Australia. Wayne Truter's visit to Madagascar will be the first time an experienced South African grassland manager visits the Central Highlands. We hope Truter will establish parallels between the South African and Central Highlands grazing systems, and share his experience on production improvement using native grasses. MBG and Kew will contribute knowledge of gallery forests and their conservation, share their expertise of running projects in the Central Highlands, coordinate communications and data gathering, and continue to manage our relationship with the local communities to ensure that any work is driven by genuine local need and in accordance with the local community wishes.

We hope that this Darwin project will build local knowledge and a pasture management methodology that will be applicable throughout the Central Highlands, Madagascar's most populous region. This will improve food provisioning in the long term to prepare Madagascar for its population growth expected to coincide with increased aridity and climate change. This would also reduce the long term cumulative damage to Madagascar's forests caused by poorly timed fires.

We will support the ITPGRFA by establishing the recognition and use of native Malagasy grasses as forage, building a locally sustainable food supply.

7. Costs

Q13. Costs

Provide a detailed breakdown of costs to be funded by the Darwin Initiative in GBP.

	Main traveller	Second traveller	Total
Airfare including travel to airport			1,100.00
Visas and other travel documents			50.00
Total daily subsistence claimed (please provide details below)			720.00
Workshop costs (please provide details below)			£1,260.00
Other costs (please provide details below)			£4,150.00
		Total request from Darwin (must not exceed £10,000)	7,280.00

Additional details to support the figures above

	Main traveller	Second traveller
Daily subsistence rate per day	£30.00	
Number of days subsistence claimed (max 30 days per traveller)	24	

Workshop costs

Please provide further details on your workshops costs.

Use of University of Antananarivo meeting area is £50 a day for 3 days = £150; per

diems @15 GBP per day, for 20 workshop participants, for 3 days = £900; transport to and from the workshop in Tana is £20 per day for 3 days = £60; stationary = £50; catering = £100.

Other costs

Please provide further details on your other costs.

Project visit MBG vehicle and driver @ £60 per day for 15 days = £900; fuel = £500; project visit MBG staff per diems @ £15 GBP per day, for 15 days, for 3 people = £675. Preparatory data gathering visit to Ibity, Ankafobe and Itremo for 3 MBG and KMCC staff, 15 days: vehicle @ £60 per day = £900; fuel = £500; MBG staff per diems @ £15 per day, for 15 days, for 3 people = £675.

8. Timetable & Activities

Q14. Activities and timings

Please complete the Scoping Award Timetable to include your anticipated dates of travel (start and finish) and activities to be undertaken on your trip. N.B.: this question is specifically about your travel plans – your dates and specific milestones during travel – NOT your timetable to Stage 1 application. Your application will be considered ineligible if this section does not specifically cover your planned scoping trip.

Date	Milestone
01/03/2019	START
01/03/2019	Lehmann and Truter travel to Madagascar (grasses flower during the raining season in March)
03/03/2019	Lehmann and Truter travel to Itremo
05/03/2019	Itremo work with local communities
10/03/2019	Ibity work with local communities
14/03/2019	Ankafobe work with local communities
17/03/2019	Return to Antananarivo
19/03/2019	Prepare workshop
20/03/2019	Workshop at the University of Antananarivo
23/03/2019	Prepare main project application

25/03/2019	Lehmann and Truter leave Madagascar
26/03/2019	FINISH

Q15. In what year would you expect to submit the full Darwin project application?

Round 26

9. Certification

Q16. Certification

On behalf of the

trustees

of

University of Edinburgh

I apply for a grant of

£7,280.00

in respect of all expenditure to be incurred during the lifetime of this project based on the activities and dates specified in the above application.

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 scoping 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 uploaded CVs for project principals
- I have uploaded letters of support from the lead application organisation and the partner(s)



Name	Caroline Lehmann
Position in the organisation	Lecturer
Signature (please upload e-signature)	

Date	01/02/2018
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If this section is incomplete the entire application will be rejected.

10. Submission Checklist

Checklist for submission

	Check
Have you provided anticipated start and end dates for your Scoping trip?	<input checked="" type="checkbox"/>
Has your application been signed by a suitably authorised individual?	<input checked="" type="checkbox"/>
Have you read the Guidance documents for both <u>Main projects</u> and <u>Scoping awards</u> , and are you satisfied that your concept would be eligible for a main project application?	<input checked="" type="checkbox"/>
Have you read the current <u>Terms and Conditions</u> for this fund and can you confirm you are willing to be bound by these if your application is successful?	<input checked="" type="checkbox"/>
Have you uploaded 1 page CVs and letters of support as required?	<input checked="" type="checkbox"/>
Have you checked the <u>Darwin website</u> immediately prior to submission to ensure there are no late updates?	<input checked="" type="checkbox"/>