



Submit by Tuesday 1 December 2015

DARWIN INITIATIVE APPLICATION FOR GRANT FOR ROUND 22: STAGE 2

Please read the Guidance Notes before completing this form. Where no word limits are given, the size of the box is a guide to the amount of information required.

Information to be extracted to the database is highlighted blue. Blank cells may render your application ineligible

ELIGIBILITY**1. Name and address of organisation**

(NB: Notification of results will be by email to the Project Leader in Question 6)

Applicant Organisation Name:	University of Leeds
Address:	School of Biology
City and Postcode:	Leeds LS2 9JT
Country:	UK
Email:	
Phone:	

2. Stage 1 reference and Project title

Stage 1 Ref: 3108	Title (max 10 words): Promoting biodiversity in sustainable oil-palm landscapes for West African smallholders
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3. Project description (not exceeding 50 words)**(max 50 words)**

By promoting best agricultural practice that boosts yields, minimises environmental damage and supports RSPO-certification, this project will increase incomes and welfare of Ghanaian oil-palm smallholders, provide multiple co-benefits for biodiversity of birds and insects in oil-palm and adjacent rainforest, and ensure robust land-use planning leading to protection of high-conservation-value rainforest.

4. Country(ies)

Which eligible host country(ies) will your project be working in? You may copy and paste this table if you need to provide details of more than four countries.

Country 1: Ghana	Country 2:
Country 3:	Country 4:

5. Project dates, and budget summary

Start date: 1st April 2016	End date: 31st March 2019	Duration: 3 years		
Darwin request	2016/17 £112,743	2017/18 £105,779	2018/19 £109,222	Total request £327,744
Proposed (confirmed & unconfirmed) matched funding as % of total Project cost				33%
Are you applying for DFID or Defra funding? (Note you cannot apply for both)		DFID		

6. Partners in project. Please provide details of the partners in this project and provide a CV for the individuals listed. You may copy and paste this table if necessary.

Details	Project Leader	Project Partner 1	Project Partner 2
Surname	Hamer	Asare	Hill
Forename (s)	Keith Charles	Rebecca Ashley	Jane Katharine
Post held	Professor of Ecology	Director of Programs and Research	Professor of Ecology
Organisation (if different to above)	University of Leeds, UK	Nature Conservation Research Centre, Ghana	University of York, UK
Department	Biology		Biology
Telephone			
Email			

Details	Project Partner 3	Project Partner 4	Project Partner 5
Surname	Asante	Addico	Ziv
Forename (s)	Winston Adams	Rosemary	Guy
Post held	Lecturer in Silviculture and Forest Management	Oil-palm Programme Co-ordinator	Lecturer in Ecosystem Services
Organisation (if different to above)	Kwame Nkrumah University of Science and Technology, Ghana	Solidaridad West Africa	University of Leeds, UK
Department	Faculty of Renewable Natural Resources		Geography
Telephone			
Email			

Details	Project Partner 6	Project Partner 7	
Surname	Lucey	Kumaran	
Forename (s)	Jennifer	Sanath	
Post held	NERC Knowledge Exchange Fellow	Head of Impact	
Organisation (if different to above)	University of York, UK	Roundtable for Sustainable Palm Oil (RSPO)	
Department	Biology	Secretariat	
Telephone			
Email			

7. Has your organisation been awarded a Darwin Initiative award before (for the purposes of this question, being a partner does not count)? **If so, please provide details of the most recent awards (up to 6 examples).**

Reference No	Project Leader	Title
10025	Keith Hamer	Molecular tools for promoting biodiversity in rainforest fragments of Borneo
EIDPO015	Simon Goodman	Building capacity and integrating disease surveillance with conservation management for Galapagos fauna
15024	Simon Goodman	Quantification and elimination of threats to the Caspian seal

9. Please list all the partners involved (including the Lead Institution) 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 written evidence of partnerships. Please copy/delete boxes for more or fewer partnerships.

<p>Lead institution and website: University of Leeds, UK: http://www.leeds.ac.uk</p> <p>Professor Keith Hamer: http://www.fbs.leeds.ac.uk/staff/profile.php?tag=Hamer_K</p> <p>Dr Guy Ziv: http://www.geog.leeds.ac.uk/people/g.ziv</p>	<p>Details (including roles and responsibilities and capacity to lead the project): (max 200 words)</p> <p>Keith Hamer has led two previous Darwin projects and collaborated with project personnel on two others. He has >25 years of research experience in sustainable management of forested tropical ecosystems including research in Ghana and on oil-palm, with particular expertise in the ecology and conservation of rainforest birds, butterflies and ants. He has successfully supervised >30 MRes and PhD research students, including five previous Darwin Research Fellows who now have senior roles in conservation and university education within their home country. Through his research, he recognized an urgent need to promote sustainable oil-palm cultivation in West Africa. As Project Leader, he will be responsible for overseeing the financial management of the project, chairing project steering group meetings held every 3 months and Darwin Research Fellow training committee meetings held every 6 months, and producing annual and final project reports. He will also provide expertise and assistance with bird and butterfly surveys and identification.</p> <p>Guy Ziv's research is at the interface between policy, land management decisions and impacts of land use change. He was one the Lead Scientists of the Natural Capital Project at Stanford University, where he contributed to the development of the InVEST (Integrated Valuation of Ecosystem Services and Trade-offs) programme. He led a project development workshop in June 2014 on 'Exploring the future of oil-palm in West Africa', attended by project partners. He will be a member of the Darwin Research Fellows' training committee and will be responsible for management of project databases. He will also oversee the spatial analysis of key drivers of oil-palm yields and biodiversity.</p>
Have you included a Letter of Support from this institution?	Yes/

<p>Partner Name and website where available:</p> <p>Nature Conservation Research Centre, Ghana: http://www.ncrc-ghana.org/</p> <p>Dr Rebecca Asare: http://www.researchgate.net/profile/Rebecca_Asare</p>	<p>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</p> <p>NCRC is a Ghanaian non-profit organisation implementing conservation initiatives to promote a greater awareness and protection of the natural, historic and cultural diversity of Ghana and West Africa. NCRC's initiatives have facilitated sustainable economic development in many poor rural areas of Ghana and other nations in West Africa. Rebecca Asare is Director of Programs and Research at NCRC, with over 15 years of research and work experience on agroforestry, community-based natural resource management and conservation in Africa. She highlighted an urgent need for effective land-use planning in relation to oil-palm expansion in Ghana, informed by a proper understanding of how improved management of smallholdings can benefit biodiversity and ecosystem services in addition to oil-palm yields. She will be a member of the project steering group and will be responsible for managing and co-ordinating the project in Ghana. She will also oversee the analysis of socio-economic and logistical constraints on smallholders' access to potential livelihood benefits of higher oil-palm yields.</p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes/</p>

<p>Partner Name and website where available:</p> <p>University of York, UK: http://www.york.ac.uk</p> <p>Professor Jane Hill: http://www.york.ac.uk/biology/research/ecology-evolution/kane-k-hill/</p> <p>Dr Jennifer Lucey: http://bit.ly/1pIMC3F</p>	<p>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</p> <p>Jane Hill has led two previous Darwin projects and collaborated with project personnel on two others. She has >20 years of experience of assessing insect biodiversity, including butterflies, ants and termites in tropical forests and oil-palm plantations, and in developing sustainable landscape designs. She will be a member of the project steering group and will provide information and advice on biodiversity assessment methods in addition to helping to train the Darwin Research Fellows in experimental design and statistical analyses of field data.</p> <p>Jennifer Lucey is a UK NERC-funded Knowledge Exchange Fellow working with the RSPO to enhance the application of their Principles and Criteria for sustainable palm oil production. She has five years of experience of examining spill-over of biodiversity between oil-palm and rainforest, and is an expert in identifying tropical insects. She will ensure effective knowledge exchange, translation of research implications and international dissemination of project findings through annual RSPO roundtable meetings. She will also provide knowledge and assistance with butterfly, ant and termite identification.</p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes/</p>

<p>Partner Name and website where available:</p> <p>Kwame Nkrumah University of Science and Technology, Ghana: http://www.knust.edu.gh/</p> <p>Dr Winston Asante: http://www.snvworld.org/en/redd/persons/winston-asante</p>	<p>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</p> <p>KNUST is a leading centre of excellence in Ghana for teaching in science and technology for sustainable development. Winston Asante has a PhD in Silviculture and Forest Management, with additional expertise in soil ecology and climate change mitigation. He has over 10 years of experience in tree crops, forestry and natural resource management, and he highlighted the timeliness of the project in view of the current push to rapidly expand oil-palm production in West Africa, with a strong emphasis on smallholder expansion in Ghana. He will provide advice and assistance on implementing Best Agricultural Practice and land-use planning. He will also assist with recruitment and training of Darwin Research Fellows, including being a member of their training committee, provide facilities for them at KNUST and curate the insect reference collections to be housed at KNUST.</p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes/</p>

<p>Partner Name and website where available:</p> <p>Solidaridad West Africa: http://solidaridadnetwork.org/regions/west-africa</p> <p>Rosemary Addico: https://www.linkedin.com/in/rosemary-addico-1359762b</p>	<p>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</p> <p>Solidaridad is an international civil society organisation with more than 45 years of global experience in facilitating the development of socially responsible, ecologically sound and profitable supply chains. Rosemary Addico is an economist with particular expertise in private sector development and promotion and training of small and medium-sized enterprises. She is Co-ordinator of Solidaridad's Oil-palm programme, which leads the Sustainable West African Palm Oil Programme (SWAPP) and hosts the RSPO process in Ghana. She highlighted a need for empirical data to inform best practices on biodiversity and farmers' decision-making more broadly. She will lead in liaising with smallholder communities and estate out-grower schemes that are pursuing RSPO certification, making full use of Solidaridad's strong established links through SWAPP. She will also provide advice and assistance with outreach and extension activities, including knowledge dissemination and training events in smallholder communities, and practical assistance and guidance to estate smallholder schemes and independent smallholders in applying for RSPO certification.</p>	
<p>Have you included a Letter of Support from this institution?</p>		<p>Yes/</p>

<p>Partner Name and website where available:</p> <p>Roundtable for Sustainable Palm Oil (RSPO) Malaysia: http://www.rspo.org/about</p> <p>Dr Sanath Kumaran: http://www.rspo.org/organisation/info/sanath-kumaran</p>	<p>Details (including roles and responsibilities and capacity to engage with the project): (max 200 words)</p> <p>Sanath Kumaran has a PhD in forest hydrology and meteorology, extensive experience of the oil-palm sector and particular expertise in tropical forest management, High Conservation Value forest assessment, biological diversity assessment, and in developing conservation management plans and monitoring guidelines for RSPO certified plantations.. He is the Head of Impact at the RSPO, and he confirmed a lack of scientific evidence on the effectiveness of sustainability criteria for smallholders. He will provide advice and information on uptake of certification by independent smallholders and estate smallholder schemes, sharing the experience of smallholders in other countries. He will also discuss with project partners the best ways of ensuring favourable involvement of Ghanaian smallholders in sustainable palm oil production, and provide guidance on how best to help Ghanaian smallholders to access and make full use of RSPO funds to assist with certification.</p>
<p>Have you included a Letter of Support from this institution? Yes/</p>	

10. Key Project personnel

Please identify the key project personnel on this project, their role and what % of their time they will be working on the project. Please provide 1 page CVs for these staff, or a 1 page job description or Terms of Reference for roles yet to be filled. Please include more rows where necessary.

Name (First name, surname)	Role	Organisation	% time on project	1 page CV or job description attached?
Keith Hamer	Project Leader	University of Leeds	15	Yes/
Rebecca Asare	Project Co-ordinator	NCRC Ghana	20	Yes/
Jane Hill	Fieldwork Manager	University of York	10	Yes/
Winston Asante	BAP Manager	KNUST	10	Yes/
Guy Ziv	Database Manager	University of Leeds	10	Yes/
Rosemary Addico	Outreach Manager	Solidaridad	5	Yes/
Jennifer Lucy	Certification Manager	University of York	5	Yes/
Sanath Kumaran	Certification Advisor	RSPO Malaysia	3	Yes/

11. Problem the project is trying to address

Please describe the problem your project is trying to address in terms of biodiversity and (essential for DFID projects) 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?

If your project is working on an area of biodiversity or biodiversity-development linkages that has had limited attention (both in the Darwin Initiative portfolio and in conservation in general) please give details.

(Max 300 words)

Palm oil is a globally important edible oil that governments in western Africa are increasingly targeting as a key sector for agricultural growth and to address rural poverty. Most oil-palm growers in the region are smallholder farmers who rely on cultivation for both income and household consumption. For instance in Ghana, ~90% of the land cultivated for oil-palm (~400,000ha) comprises smallholdings. Ghana also supports >550 species of rainforest birds, of which about 20 are globally threatened according to the IUCN, and >900 species of butterflies, of which about 100 are endemic to western Africa and threatened by forest loss. Ghana plans to expand smallholdings by a further 150,000ha over the next 5-10 years, making it vital to provide smallholders with tools and guidance to help them develop sustainable agricultural practices that optimise economic returns, reduce biodiversity losses and environmental threats, and ensure the protection of high conservation value rainforest; hence the need for this project.

Growing markets in sustainably-sourced palm oil provide ideal opportunities for smallholders in Ghana to boost their incomes through take-up of best agricultural practice (BAP) to increase yields, reduce economic and environmental costs of reliance on fertilizers and pesticides, and increase crop value through RSPO-certification as sustainable growers. Certification also ensures a commitment by smallholders to the continued protection of rainforest that supports high conservation values (HCVs). However, smallholder uptake of both BAP and RSPO-certification is very low, largely through uncertainties over the yield benefits attainable from BAP, poor knowledge of how to apply BAP, and a lack of scientifically-robust and cost-effective means for smallholders to identify and prioritise HCV-forest for sustained protection, as required for certification. By addressing these issues, this project will promote sustainable oil-palm cultivation that boosts smallholders' incomes and ensures the long-term protection of rainforest supporting high biodiversity.

12. Biodiversity Conventions, Treaties and Agreements

Which of the conventions supported by the Darwin Initiative will your project support? Note: projects supporting more than one convention will not achieve a higher scoring

Convention On Biological Diversity (CBD)	Yes
Nagoya Protocol on Access and Benefit Sharing (ABS)	No
International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)	No
Convention on International Trade in Endangered Species (CITES)	No

12b. Biodiversity Conventions

Please detail how your project will contribute to the objectives of the convention(s), treaties and agreements your project is targeting. You may wish to refer to Articles or Programmes of Work here. Note: No additional significance will be ascribed for projects that report contributions to more than one convention

(Max 200 words)

Our project will contribute significantly to Goals 1, 2, 8, 12 and 15 of the UN's Sustainable Development Goals and to all five Strategic Goals of the Aichi Biodiversity Targets. We will:

Goal A

Raise awareness of the values and sustainable use of biodiversity (Target 1), integrate biodiversity values into poverty reduction strategies (Target 2) and enhance sustainable crop production within safe ecological limits (Target 4);

Goal B

Enhance the sustainable management of agriculture, helping to ensure conservation of biodiversity (Target 7) and bringing pollution, including from excess nutrients, to levels that do not harm ecosystem function and biodiversity (Target 8);

Goal C

Enhance effective area-based conservation measures, fully integrated into the wider landscape (Target 11);

Goal D

Enhance and safeguard benefits of ecosystems services to the poor and vulnerable (Target 14);

Goal E

Enhance scientific knowledge of biodiversity and consequences of its loss (Target 19).

Through these achievements, the project will fulfil a major aim of Ghana's National Biodiversity Strategy and Action Plan (NBSAP) 'to pursue and promote the necessary international co-operation with donor organizations (and) development partners ... to ensure that sound policies are implemented for the sustainable use of biological resources of the nation'.

12c. Is any liaison proposed with the CBD/ABS/ITPGRFA/CITES focal point in the host country?

Yes if yes, please give details:

Our partnership with the Kwame Nkrumah University of Science and Technology provides us with strong links with Ghana's National Biodiversity Committee, formed by the Ministry of Environment, Science, Technology and Innovation as the focal point for the CBD in Ghana. The Chair of the Committee will be invited to attend our knowledge dissemination and training events with local communities and our end-of-project workshop, and will also be circulated into all policy statements and briefings developed as part of the project.

13. Methodology

Describe the methods and approach you will use to achieve your intended outcomes and impact. Provide information on how you will undertake the work (materials and methods) and how you will manage the work (roles and responsibilities, project management tools etc.).

(Max 500 words – this may be a repeat from Stage 1, but you may update or refine as necessary. Tracked changes are **not** required.)

Project implementation

1. Working with 40 smallholders in Ghana's High Forest Zone, we will survey current yields (fruit mass $\text{ha}^{-1} \text{ month}^{-1}$) in relation to crop management, environment (e.g. soil quality) and socio-economic variables (e.g. land tenure, education level) to highlight the key drivers of yield and indicate where there are opportunities for improvement.

2. We will also use standardised methods (e.g. baited and pit-fall traps, visual/aural censuses) to examine biodiversity along transects in these smallholdings and adjacent rainforest, focusing on birds, butterflies, termites and ants, which attain high densities and species richness in tropical regions, include many iconic threatened species, are excellent indicators of wider biodiversity and play important ecosystem functional roles.

3. We will assist half our 40 focal smallholders to employ BAP, whilst ensuring the other half continue with 'business as usual'. BAP will involve activities known to boost yields: under-cropping with legumes to provide green manure, regular weeding, pruning, mulching with cut fronds, and regular harvesting of ripe fruits, which have proven beneficial elsewhere.

4. After 12 months we will resurvey our smallholder and forest transects to determine impacts of BAP on yields, soil quality (organic matter, nutrients, etc), biodiversity (species-richness, composition and abundance) within oil-palm, and spill-over benefits for adjacent forest, compared with the control group. Bird abundance may respond relatively slowly, so we will also use focal sampling to quantify changes in their time/activity budgets and foraging success.

5. We will use these data to examine which characteristics of forest patches that are simple and cost-effective to measure (e.g. patch size, ground- and canopy-cover, leaf-litter depth, girths and densities of rainforest trees) are the best indicators of biodiversity and hence provide the most consistent and reliable means of identifying and prioritising HCV forest for sustained protection.

6. We will hold knowledge-exchange events with local communities to train >1000 smallholder farmers in BAP, provide them with evidence and guidance needed to identify and prioritise HCV forest robustly and cost-effectively, and provide practical assistance to help individual smallholders to form smallholder support networks and achieve RSPO-certification.

7. We will disseminate findings internationally through our project partners and their extension services, including guidance to RSPO on making certification criteria better suited to the needs of smallholders and so facilitating the wider uptake of certification.

Project Management

The project will be overseen by Leeds, including financial management and chairing steering-group meetings held every 3 months, and co-ordinated in Ghana by NCRC. Two Darwin Research Fellows will be recruited from our partner organisations and receive extensive training, which they will use under supervision to collect and analyse data and disseminate project findings. Ghanaian partners will assist with recruiting DRFs, liaison with smallholder communities, advice on BAP and RSPO-certification, and nationwide dissemination and outreach. NCRC and Solidaridad have long-standing expertise in rural development and economics, and will lead on examining constraints on adopting BAP and achieving certification. Knowledge-exchange activities with RSPO will be co-ordinated by York, capitalizing on existing links and ensuring that project findings are disseminated to other oil-palm regions.

14. 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 and b) in the long-term.

- If you are applying for Defra funding this should specifically focus on the changes expected for biodiversity conservation and its sustainable use.
- If you are applying for DFID funding you should in addition refer to how the project will contribute to reducing poverty. Q15 provides more space for elaboration on this.

(Max 300 words)

This project will:

- 1.** Improve the scientific understanding and take-up of Best Agricultural Practice for oil-palm smallholders, boosting crop yields by an estimated 50-100% and hence increasing household incomes by 5,000-10,000GHC (£900-£1800) annually, while increasing biodiversity within smallholdings and adjacent forest, and promoting robust land-use planning that ensures the protection of high-conservation-value (HCV) forest throughout the planned expansion of oil-palm cultivation by smallholders;
- 2.** Directly train >1000 smallholders in rural Ghana in BAP methods, particularly benefiting women who traditionally carry out much of the work of cultivation including application of agrochemicals and harvesting of fruit. Each smallholder financially supports 6 family members on average, creating an additional 6000+ indirect beneficiaries. Adoption of BAP also provides additional potential benefits through RSPO certification, which we will promote through knowledge-exchange activities and networks, including through the RSPO;
- 3.** Train two Darwin Research Fellows (DRFs) to Master of Research (MRes) degree level in experimental design and analytical methods, quantitative census methods, avian and insect identification and taxonomy, spatial modelling techniques and GIS. DRFs will continue to work for our project partners beyond the end of the project, ensuring that their skills and knowledge are retained and used to train others in the long term;
- 4.** Test Ghana's RSPO National Interpretation Guidance for smallholder certification and recommend a robust, efficient and cost-effective means for smallholders to identify and prioritise HCV forest for sustained protection, hence making RSPO criteria better suited to the needs of smallholders and facilitating the wider uptake of certification.
- 5.** Ghana's 4th CBD Report recognises that increased cultivation of cash crops is threatening ecosystems. By making palm oil production more efficient and sustainable, this project will create a "win-win" for poverty reduction and biodiversity conservation, supporting the country under its CBD commitments (e.g. Aichi targets 1, 4, 7, 8, 11, 14, 19).

15. Pathway to poverty alleviation – ESSENTIAL FOR DFID PROJECTS, OPTIONAL FOR DEFRA PROJECTS

Please describe how your project will benefit poor people living in low-income countries. Give details of who will benefit and the number of beneficiaries expected to be impacted by your project. 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.

(Max 300 words)

Oil-palm production contributes directly to the incomes of more than 3 million people in rural areas of Ghana (~10% of the country's total population) and smallholders contribute over 80% to this production. The sector accounts for much of women's labour, but is characterised by low productivity (less than half that achieved by large estates) and low incomes. By disseminating knowledge and enabling increased adoption of Best Agricultural Practice, this project will boost the oil-palm (fresh fruit bunch) yields of >1000 smallholder households by an estimated 50-100% while simultaneously reducing reliance on agrochemicals (fertilizers and pesticides), hence increasing net household incomes by 5,000-10,000GHC (£900-£1800) per annum by the end of the project. In addition, >10,000 people within rural communities, and especially women who typically tend to crops, will benefit from reduced exposure to agrochemicals and mitigation of soil erosion, surface runoff and risks of flash flooding, through improved soil management and better land-use planning. RSPO certification among an estimated 50% of smallholder households adopting BAP will then provide an additional premium for certified sustainable palm oil (CSPO) based on access to markets (e.g. the key palm-oil using sectors, NGOs and Government in the UK are aiming to source 100% of palm oil as CSPO by the end of 2015; DEFRA Annual Report). Hence smallholders' access to markets will be increasingly enhanced by certification as demand for CSPO continues to grow.

16. Exit strategy

State whether or not the project will reach a stable and sustainable end point. If the project is not discrete, but is part of a progressive approach, give details of the exit strategy and show how relevant activities will be continued to secure the benefits from the project. Where individuals receive advanced training, for example, what will happen should that individual leave?

(Max 200 words)

This is a discrete project that will reach a stable and sustainable end point. Evidence concerning benefits of Best Agricultural Practice will be established, shared among project partners and disseminated widely during the lifetime of the project. Databases and fully catalogued insect collections and bird records will be housed with project partners (NCRC, KNUST) and available online, and permanent GIS-referenced transects will be established for long-term monitoring of biodiversity. In addition, smallholder farmers will become fully independent on all technical activities by the end of the project: not only will they be knowledgeable, competent and confident in applying BAP and identifying and conserving HCV-forest, but they will also be supported by a functioning network of Smallholder Associations and certified by RSPO as sustainable growers or have the capacity to be. The project will also train two DRFs who will then be employed by project partners, ensuring that research and dissemination on improving agricultural practices and biodiversity changes in agricultural areas of Ghana continues beyond the lifetime of the project. Our previous experience is that DRFs complete projects but if staff were to leave, our strong links with KNUST and NCRC would ensure that a suitably-qualified replacement could quickly be found.

17a. Harmonisation

Is this a new initiative or a development of existing work (funded through any source)? Please give details (Max 200 words)

This is a new initiative responding to the rapid growth of the oil-palm sector in Ghana and the urgent need to reduce environmental threats from oil-palm cultivation and optimise economic returns and biodiversity benefits. Our Ghanaian project partners have extensive experience of promoting beneficial agricultural practices for a variety of cultivated crops but are lacking the evidence-base to link BAP for oil-palm to increases in smallholder yields and benefits for biodiversity, or to assist smallholders with efficient and cost-effective means to identify HCV forest and prioritise its protection. The need for this work was identified and highlighted through a project development workshop in June 2014, funded by the University of Leeds through its Africa College (<http://www.africacollege.leeds.ac.uk/>).

17b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work? **Yes/**

If yes, please give details explaining similarities and differences explaining 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.

Fauna and Flora International have been working with large-scale industrial palm oil growers to develop the National Interpretation of the RSPO Principles & Criteria for Liberia and Sierra Leone but have not been working with smallholders or focusing on BAP. The Zoological Society of London have been developing monitoring systems for high conservation values in oil-palm plantations and examining challenges to smallholder certification in the Solomon Islands but have not been examining BAP or links to biodiversity. The University of Wageningen is examining the social and economic factors that affect smallholder farmer choices to invest in sustainable intensification of oil-palm in SE Asia, but they have not considered the biodiversity impacts of those choices. We have already established links with these organizations (e.g. through our project development workshop, and through our Socially and Environmentally Sustainable Oil-palm Research [SEnSOR] project; <http://www.sensorproject.net/>) and we will use these links to exchange information and ideas throughout the project, including through circulation of project reports and invitations to knowledge dissemination and training events and to our end-of-project workshop.

18. Ethics

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

(Max 300 words)

Our project has strong leadership and participation from both research and development agencies in Ghana. Our project partners at NCRC and Solidaridad have experience of working with local communities and will lead a workshop for our focal smallholders at the start of the project to ensure that their perspectives, interests and well-being are properly addressed, and that the potential value of their traditional knowledge for enhancing BAP is recognized. We will ensure that our engagement with smallholders uses principles of prior informed consent, respecting smallholders' rights, privacy and safety. In addition, all data collection will be preceded by comprehensive ethical and risk assessments to be carried out by all project partners engaged in fieldwork, including the two Darwin Research Fellows, and independently approved by the Ethical Review and Fieldwork Safety Committees at the University of Leeds. The two DRFs will receive training in research methods at Leeds as well as direct supervision in the field, and all project findings will be subject to independent peer review before publication, ensuring the robustness of data and conclusions.

19. 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 there 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?

(Max 300 words)

Our project has communication, knowledge sharing and dissemination components with a primary target group of >1000 oil-palm smallholders. We will support better management of biodiversity by promoting the benefits of Best Agricultural Practice through knowledge dissemination and training events held within smallholder communities. A handbook on Best Agricultural Practice including ecosystem service benefits of biodiversity and a handbook on achieving RSPO certification including a robust and cost-effective means of identifying HCV forest and prioritising its protection will be produced for this target group and shared with environmental NGOs operating in the region. Wider communication activities will make use of Ghana's extensive local radio network to ensure that those without literacy skills can participate and benefit fully from these events.

We also aim to influence policy in Ghana and beyond, by encouraging greater governmental support for smallholder adoption of practices that boost biodiversity. Government engagement in the project will be maintained through policy briefings and technical reports and by organizing regular meetings with project staff in addition to invitations to attend dissemination and training events within smallholder communities and our end-of-project workshop.

The project will maintain dialogue with Ghana's CBD focal point (through KNUST) and contribute to helping Ghana meet its international obligations regarding the integration of biodiversity values into poverty reduction strategies and enhancement of sustainable crop production within safe ecological limits.

Internationally, the project will be promoted through online videos, blogs, presentations at RSPO Roundtable meetings and peer-reviewed papers in open-access scientific journals.

20. 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.

(Max 300 words)

Oil-palm production is highlighted in Ghana's Poverty Reduction Strategy (2012) and enshrined in the Ghanaian government's Master Plan Study for Oil-palm (2011), but increased cultivation is threatening ecosystems. By helping to make smallholder oil-palm production more efficient and sustainable, this project will create a "win-win" for poverty reduction and biodiversity conservation and support the country under its CBD commitments. By quantifying for the first time how different agricultural practices boost yields, and disseminating this information widely through our project activities and partner extension services, we will enable smallholders to make informed choices over the uptake of Best Agricultural Practice, thus removing one of the major impediments to improving smallholders' livelihoods.

The area of land cultivated by smallholders is likely to increase under Ghana's Poverty Reduction Strategy. Hence, by promoting practices that boost biodiversity within smallholdings and adjacent forest as well as increasing oil-palm yields, and by providing guidance and advice on effective land-use planning, we will minimize biodiversity losses resulting from any future expansion. By liaising with RSPO to facilitate the process of certification and assisting smallholders to form associations to apply for support with costs of certification, we will also ensure that high conservation value forest areas within these agricultural landscapes are fully protected from replacement by oil-palm, in adherence to RSPO Principles and Criteria for certification.

Our two Darwin Research Fellows, trained to MRes level in advanced statistics and experimental design, quantitative census methods, avian and insect identification and taxonomy, spatial modelling techniques and GIS, will continue to work for our project partners beyond the end of the project, ensuring that their skills and knowledge are retained and used in the long term to train others. Our permanent transects will also facilitate continued monitoring of longer-term biodiversity and soil quality benefits beyond the duration of the project.

21. Access to project information

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

(Max 250 words)

All peer-reviewed publications arising from the project will be made freely available (green open access route) via Leeds University's White-Rose repository, with supporting data deposited in a freely-available data repository (e.g. Dryad). We anticipate from previous experience that ~ 50% of ant species identified by the project will not have been described taxonomically; these new species will be uploaded to a freely-accessible global online database (<http://www.antweb.org>) with full descriptions and images, and assigned reference numbers within the collection. Similar rates of discovery of new species are also likely for termites, and a fully-catalogued reference collection of insect voucher specimens will be deposited at KNUST. Other data arising from the project will be shared in accessible formats via the Global Biodiversity Information Facility (<http://www.gbif.org/>) and the project website. Illustrated handbooks on Best Agricultural Practice and on Achieving RSPO Certification, including identifying and prioritizing High Conservation Value forest for long-term protection, will be shared with smallholders attending dissemination and training events held within local communities, distributed to government ministries and environmental NGOs in the region and made freely available via the project website. Project staff will present results to development partners such as government ministries, NGOs and universities at an end of project workshop, and will also disseminate project findings more widely at annual RSPO Roundtable conferences.

22. Match funding (co-finance)

a) 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.

Confirmed:

Project partners will provide leverage funds towards the cost of the project including the use of office and laboratory space, facilities, administration and the salaries of staff who will contribute time to the project. Funds for only a proportion of salaries and overhead costs have been requested by project partners, and the remaining costs will be met by their respective Institutions. This provides a saving to the project of £162,166 (33% of project expenditure).

22b) Unsecured

Provide details of any matched funding where an application has been submitted, or that you intend applying for during the course of the project. This could include matched funding from the private sector, charitable organisations or other public sector schemes.

Date applied for	Donor organisation	Amount	Comments
Oct-Dec 2018	RSPO	£40,000	Smallholder Associations and palm oil estates will be helped to apply to the RSPO's Smallholder Support Fund (RSSF) to cover costs of certification.

22c) None

If you are not intending to seek matched funding for this project, please explain why.

(max 100 words)

N/A

PROJECT MONITORING AND EVALUATION

MEASURING IMPACT

23. LOGICAL FRAMEWORK

Darwin projects will be required to report against their progress towards their expected outputs and outcomes if funded. This section sets out the expected outputs and outcomes of your project, how you expect to measure progress against these and how we can verify this.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Impact: Promotion of sustainable agriculture to improve rural livelihoods and protect biodiversity. (Max 30 words)</p>			
<p>Outcome: Improved agricultural practices increase incomes of Ghanaian oil-palm smallholders, boost biodiversity within smallholdings and adjacent forest, promote sustainability certification by smallholders and ensure robust land-use planning to protect high-conservation-value rainforest. (Max 30 words)</p>	<p>0.1 Oil-palm (fresh fruit bunch) yields of focal smallholders using Best Agricultural Practice increase by 50-100%, from 3-5 tonnes ha⁻¹ year⁻¹ to 7-10 tonnes ha⁻¹ year⁻¹, increasing annual household incomes by an average of 5,000-10,000 GHC (£900-1800) by end of Yr2.</p> <p>0.2 Bird, butterfly, ant and termite biodiversity within smallholdings using Best Agricultural Practice and adjacent forest, including foraging success of focal bird species, increase by >10% in comparison to controls by end of Yr2.</p> <p>0.3 Evidence-base of economic benefits of Best Agricultural Practice disseminated to >1000 smallholders together with training in applying BAP, including robust and cost-effective identification and prioritisation of HCV forest for long-term protection, resulting in widespread adoption by Yr 3.</p> <p>0.4 More than 500 smallholder farmers adopting BAP achieve RSPO certification, including approval of plans for identifying and conserving HCV forest, by Yr 3.</p>	<p>0.1 Two technical reports and two peer-reviewed publications on key drivers of variation in oil-palm yields and incomes, and on impacts of Best Agricultural Practice on yields and incomes from BAP experiment.</p> <p>0.2 Two technical reports and two peer-reviewed publications on impacts of Best Agricultural Practice on bird and insect biodiversity from BAP experiment, and on the robustness and reliability of cost-effective measurements of forest characteristics to identify and prioritise HCV forest for long-term protection.</p> <p>0.3 Material for use at smallholder knowledge-dissemination, training and certification events; report on outcomes of events including smallholder surveys, questionnaires and multiple-choice quizzes.</p> <p>0.4 Data on applications by Smallholder Associations for RSPO-certification, success rates of applications, and price premiums paid to certified growers provided by project partners RSPO and Solidaridad.</p>	<p>1. Current oil-palm fresh fruit bunch (FFB) yields are below maximum and can be substantially increased. Discussions with our project partners indicate that average yields are currently below half those achieved on industrial plantations in the region, and that this is largely the result of poor agricultural practices of smallholders.</p> <p>2. There is access to markets for additional oil-palm yields. The rapid and sustained increased in global demand for certified palm oil indicates this is very likely.</p> <p>3. Current levels of bird and insect biodiversity in smallholdings and adjacent forest can be enhanced by BAP. Available evidence indicates this is the case for other crops (e.g. coffee, cocoa) and hence is likely to also be the case for oil-palm.</p> <p>4. Adoption of BAP will enable smallholders to achieve RSPO certification. We will work closely with smallholder communities, palm oil estates wishing to get their smallholder out-growers certified and RSPO agencies to facilitate this process, drawing extensively on the considerable</p>

			<p>expertise and successful experience of our project partners at Solidaridad, and making full use of RSPO funds (their Smallholder Support Fund, RSSF,) specifically for this purpose.</p> <p>5. Smallholders adopting BAP will not subsequently increase the area under cultivation at the expense of high-conservation-value rainforest. In practice, the area of land given over to oil-palm cultivation by smallholders is set for a large increase under Ghana's Poverty Reduction Strategy, and so promoting effective land-use planning as a key component of BAP for both established smallholdings and new plantings is more important than ever. RSPO certification will ensure that high conservation value forest within areas designated for expansion is fully protected from replacement by oil-palm, whereas it is currently highly vulnerable.</p>
<p>Outputs:</p> <p>1. Two Darwin Research Fellows from project partner organizations trained to design and carry out field experiments and to analyse, interpret and report data obtained.</p>	<p>1.1 DRFs successfully complete MRes modules in advanced statistics and experimental design, quantitative census methods, avian and insect identification and GIS.</p> <p>1.2 DRFs each write up two reports on data and findings arising from BAP experiment, which are up-loaded onto the RSPO website.</p> <p>1.3 DRFs are each awarded MRes degrees and co-author a minimum of four peer-reviewed open access publications quantifying the FFB yield, income and biodiversity benefits of improved agricultural practices.</p>	<p>1.1 Transcripts and marks for module assessments, approved by MRes exam board.</p> <p>1.2 Four reports uploaded to RSPO website.</p> <p>1.3 MRes degree certificates and classifications (Pass, Merit or Distinction). Papers published in peer-reviewed journals and freely accessible via the White-Rose Open Access repository of scientific papers.</p>	<p>DRFs and smallholders can be recruited to the project and remain active and fully committed to its aims and objectives. This will be greatly enhanced by the strong links between project partners and the extensive experience and expertise of Ghanaian partners in working with rural farming communities.</p>
<p>2. Measurement and authentication of increases in Fresh Fruit Bunch yield, income and biodiversity resulting from</p>	<p>2.1 Monthly records of oil-palm income (quantity of FFBS sold and price from mill) from control (current management)</p>	<p>2.1 Excel Workbook with spreadsheets of monthly records; report uploaded to project website.</p>	<p>BAP experiment will yield clear results showing publishable benefits of BAP for biodiversity. Our previous research</p>

<p>Best Agricultural Practice, and of the usefulness of easily-obtained measures to identify HCV forest for land-use planning.</p>	<p>and experimental (Best Agricultural Practice) plots of 40 smallholders in BAP experiment, together with report on socio-economic and logistical constraints on both women and men from realizing income benefits of increased FFB yields.</p> <p>2.2 Permanent transects established and census data (species richness, abundance and composition) obtained for birds and insects in experimental and control plots of 40 smallholders in BAP experiment and adjacent forest plots. Additional census data on topographical and vegetation characteristics of study plots in forest. Database on foraging behaviour of focal bird species within oil-palm in experimental and control plots. Fully catalogued reference collections with online databases for new species.</p> <p>2.3 Published data quantifying the FFB yield, income and biodiversity benefits of Best Agricultural Practice for oil-palm smallholders in target communities, and the relationships between topographical and vegetation characteristics of forest and biodiversity.</p>	<p>2.2 Database of results of BAP experiment including bird and insect records published and freely accessible via project website and Global Biodiversity Information Facility. Insect reference collections deposited at KNUST, with full descriptions, images and accession numbers of new species in global online databases.</p> <p>2.3 Papers published in peer-reviewed journals and freely accessible via the White-Rose Open Access repository of scientific papers, with supporting data deposited in a freely-available data repository (e.g. Dryad).</p>	<p>elsewhere supports the notion that birds and insects respond quickly and are sensitive to habitat improvements.</p>
<p>3. More than 1000 smallholder farmers, comprising men and women equally, have raised awareness of benefits and better knowledge of how to apply Best Agricultural Practice, including robust land-use planning to identify, prioritise and protect HCV forest.</p>	<p>3.1 Before-and-after surveys of smallholders participating in Best Agricultural Practice experiment show measured increases in scores for importance of and satisfaction with BAP, equally among women and men.</p> <p>3.2 >1000 smallholders attend knowledge dissemination and training events held within smallholder communities and with smallholder out-growers at oil-palm estates.</p> <p>3.3 Multiple-choice quizzes completed anonymously by smallholders at start</p>	<p>3.1 Anonymised results of before-and-after surveys, stratified by gender, uploaded to project website with accompanying report summarising analysis and findings.</p> <p>3.2 National and social media coverage of smallholder knowledge-dissemination and training events, plus written material used at these events uploaded to project website.</p> <p>3.3 Results of questionnaires and multiple-choice assessments of training outcomes at these events, with reports,</p>	<p>>1000 smallholders, comprising men and women equally, will attend knowledge dissemination and training events, and complete anonymised multiple choice assessments. Our project partners' extensive experience of working with rural farming communities in Ghana strongly suggests that this will be the case.</p>

	and end of knowledge dissemination and training events show measured increases in average scores, equally among women and men.	uploaded to project website.	
4. More than 500 smallholder farmers form associations and support networks, receive assistance with costs of certification from RSPO and use this to apply successfully for certification.	<p>4.1 Local smallholder associations and support networks share good practice and knowledge, linked by text messaging networks, social media sites or alternatives as preferred by each community.</p> <p>4.2 Each smallholder association applies successfully for assistance from RSPO's Smallholders Support Fund (RSSF), assisted by community-based certification events and supported by a handbook on achieving RSPO-certification.</p> <p>4.3 Aided by RSSF and with continued support from project partners, each smallholder association applies successfully for RSPO-certification.</p>	<p>4.1 Facebook pages, twitter accounts and tweets, or alternatives as preferred by each community.</p> <p>4.2 Material used at certification events, including handbook on achieving certification, uploaded to project website. Annual reports from RSPO on numbers and outcomes of applications by Smallholder Associations and estates for RSSF assistance with costs of certification.</p> <p>4.3 Annual reports from RSPO on numbers and outcomes of subsequent applications to become RSPO-certified.</p>	Smallholders wish to achieve certification for sustainability. Evidence from RSPO shows strong support from smallholders elsewhere, and enthusiastic uptake of RSSF support once benefits of certification are evident.
5. Evidence and lessons learned from project disseminated to policy makers in Ghana and internationally.	<p>5.1 Fact sheets and policy recommendations submitted to Ghanaian government (Ministry of Food and Agriculture; Ministry of Environment, Science, Technology and Innovation) and equivalent ministries in neighbouring countries committed to rapid expansion of oil-palm cultivation.</p> <p>5.2 Powerpoint presentations to ~ 1000 delegates at each of two annual RSPO Roundtable meetings.</p> <p>5.3 Ministry of Food and Agriculture in Ghana and equivalents in neighbouring countries discuss with project partners how best to further disseminate project findings and facilitate RSPO certification in other communities in Ghana and other West African countries.</p>	<p>5.1 Fact sheets and policy documents, with records of dissemination to government ministries, universities, environmental NGOs and RSPO Roundtable meetings.</p> <p>5.2 Roundtable programmes and proceedings; Powerpoint presentations uploaded to RSPO and project websites.</p> <p>5.3 Minutes and Action Points arising from discussion meetings.</p>	Government agencies in Ghana and neighbouring countries recognize the importance of smallholders for oil-palm production and the value of promoting sustainable cultivation that improves rural livelihoods. CBD reports and Poverty Reduction Strategy Papers of different countries strongly indicate that this is the case.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)

1.1 Two graduate Darwin Research Fellows (DRFs) recruited to project from partner organizations.

1.2 DRFs visit UK for two periods of six months each, to take MRes modules at University of Leeds.

1.3 DRFs each complete two project dissertations reporting results of BAP field experiments, which contribute successfully to gaining sufficient credits for award of MRes degrees.

2.1 BAP experiment runs for 12 months; smallholders keep monthly records of FFB weights sold to mill and prices paid, and send data to DRFs by mobile phone texts (SMS).

2.2 Smallholder surveys to obtain data on crop management, socio-economic and environmental variables, including constraints on translating additional FFB yields into additional income, with particular focus on constraints imposed on women. Fieldwork to survey birds and insects in smallholdings and forest, and collect soil samples in smallholdings, at start and end of BAP experiment.

2.3 Spatial modelling of key drivers of variation in FFB yields and incomes, and of the robustness and reliability of cost-effective measures to identify HCV forest; analysis of BAP experiment data, including laboratory analysis of soil quality, identification of insects, and verification of bird vocalizations.

3.1 Organize 10 community-based BAP and land-use planning dissemination and training events, each for ~100 smallholders, supported by Handbook of Best Agricultural Practice and with assistance and input from participants in BAP experiment, who will be trained appropriately (i.e. training the trainers).

3.2 Conduct surveys via questionnaires and multiple-choice quizzes to gauge attitudes and levels of knowledge and understanding of BAP, including identification and prioritisation of HCV forest for long-term protection, before and after each knowledge-dissemination and training event.

3.3 Refine dissemination and training material based on feedback from events, and broadcast via means deemed most suitable by smallholders (social media, website, leaflets, pamphlets, posters, videos, etc).

4.1 Organize 10 community-based certification events, each for ~100 smallholders and supported by a Handbook on Achieving RSPO-Certification, giving guidance on forming Smallholder Associations and support networks, and on applying together to RSSF for assistance with costs of certification.

4.2 Monitor RSSF applications and provide feedback and assistance where needed to ensure successful outcomes.

4.3 Organize community visits and use newly-established support networks to assist Smallholder Associations in receipt of RSSF funding to successfully complete process of RSPO certification.

5.1 Meeting with Ministry of Food and Agriculture in Ghana to present fact sheets and policy recommendations arising from project.

5.2 Dissemination of material to other government ministries, universities and environmental NGOs operating in region, including through end of project workshop.

5.3 Presentations to RSPO Roundtable Meetings in 2018 (RT15) and 2019 (RT16).

24. Provide a project implementation timetable that shows the key milestones in project activities. Complete the following table as appropriate to describe the intended workplan for your project (Q1 starting April 2016)

Activity	No of Months	Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1 Training Darwin Research Fellows	27												
1.1 Two Ghanaian graduate students selected and recruited													
1.2 DRFs receive training in UK													
1.3 DRFs complete MRes project dissertations													
Output 2 Quantifying benefits of Best Agricultural Practice	27												
2.1 Best Agricultural Practice experiment													
2.2 Smallholder surveys and biodiversity sampling													
2.3 Data analysis and spatial modelling													
Output 3 Raising smallholder awareness and understanding of BAP	12												
3.1 BAP knowledge dissemination and training events													
3.2 Assessment of impact and effectiveness of events													
3.3 Publication and broadcast of training materials													
Output 4 Facilitating RSPO certification by smallholders	12												
4.1 RSPO-certification knowledge dissemination events													
4.2 Assistance with applications to Smallholder Support Fund													
4.3 Assistance with RSPO certifications													
Output 5 Influencing policy makers in Ghana and internationally	12												
5.1 Meetings with Ministry of Food and Agriculture in Ghana													
5.2 Dissemination of material to other GOs and NGOs in region													
5.3 Presentations at RSPO Roundtable Meetings and documents to RSPO secretariat													
5.4 End-of-project workshop													

25. Project based 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.

(Max 500 words)

Project management will be overseen by Leeds, with an adaptive approach ensuring that assumptions identified during project planning are regularly reassessed. A steering group (Hamer, Asare, Hill) will hold quarterly teleconferences and meet face-to-face with all project partners including DRFs at annual management meetings in Ghana, allowing the project logframe to be updated and adapted based on progress. DRFs will gather regular feedback from smallholders and present summaries to each steering group meeting, allowing project activities to be revisited and adapted if necessary. A final stakeholders' workshop will evaluate the project's success close to its end, make recommendations on future activities, and review the exit strategy. We will use the following specific means to establish baselines, monitor progress and evaluate impact:

(1) *Smallholder surveys and questionnaires* – All smallholders in the Best Agricultural Practice (BAP) experiment will provide monthly data by text-messaging on both fresh fruit bunch yields and prices paid at the mill, allowing not only quantification of baseline economic data and regular monitoring of impacts on poverty reduction, stratified by gender, but also monthly monitoring of continued smallholder engagement with the project. These smallholders will also be interviewed (by DRFs, supervised by Addico) before and after the experiment to ascertain initial knowledge, understanding and attitudes towards BAP, and subsequent changes, among those implementing BAP and those not doing so. In addition, the >1000 smallholders attending 10 knowledge-dissemination and training events will complete anonymous questionnaires and a multiple-choice quiz at the beginning and end of each event to quantify changes in their knowledge, understanding and intentions towards BAP, with a follow-up mobile-phone survey by Solidaridad (co-ordinated by Addico) to verify BAP uptake rates.

(2) *Field surveys* – By assessing bird and insect biodiversity and soil quality at the beginning and end of the BAP experiment, we will quantify changes against measured baselines over known time-periods. By sampling biodiversity in natural forest, we will measure changes against baselines for all species and for forest-dependent species of greatest conservation concern, and identify HCV forest areas for highest-priority protection (carried out by DRFs, supervised by Hamer (birds), Hill (butterflies, termites), Lucey (ants), Asante (soil quality)).

(3) *DRF Evaluations* – Progress of DRFs towards obtaining MRes degrees will be monitored at six-monthly meetings with their training committee (Hamer, Asante, Ziv) and via their scores for completed degree module assessments at Leeds. Overall success in this respect will be gauged from awarded degree classifications (Pass, Merit, Distinction).

(4) *Interrogation of RSPO data* – Smallholders' success in achieving sustainability certification will be assessed by Lucey using data provided by RSPO (Kumaran) at project start and annually thereafter on the number and outcome of: (i) applications by Ghanaian Smallholder Associations and estates for RSSF assistance with costs of certification, and (ii) subsequent applications to become RSPO-certified growers.

Further independent evaluation of project progress and impacts will be provided through annual and final reports to LTS, citations of peer-reviewed papers describing project findings (Google-Scholar data), and feedback on recommendations to policy makers (Ministry of Food and Agriculture, RSPO) and environmental NGOs.

Total budget for M&E	£8,200
Percentage of total budget set aside for M&E	2.5%

FUNDING AND BUDGET

Please complete the separate Excel spreadsheet which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet. You should also ensure you have read the 'Finance for Darwin' document and considered the implications of payment points for cashflow purposes.

NB: The Darwin Initiative cannot agree any increase in grants once awarded.

26. Value for Money

Please explain how you worked out your budget and how you will provide value for money through managing a cost effective and efficient project. You should also discuss any significant assumptions you have made when working out your budget.

(max 300 words)

A total budget of £489,910 is needed for the implementation of this project, including 65% (£327,744) requested from the Darwin Initiative and 33% (£162,166) as matching funds from other sources. Additional funding is also available from the RSPO's Smallholder Support Fund (RSSF), to help smallholders with costs of certification. We estimate that for 20 Smallholder Associations of ~50 member each, these costs will be ~£40K (£2,000 per Association), a sum which is likely to be secured by each association applying for funding, given RSPO's role as a partner in the project. >80% of the Darwin Initiative funding of this project will be invested in Ghana. Costs for the two Darwin Research Fellows are based on MRes fees at the University of Leeds and stipends equivalent to the maintenance component of RCUK postgraduate studentships. Costs of fieldwork, knowledge-dissemination and training events, and travel within Ghana are based on the knowledge and experience of our in-country project partners, and include 40,000 GHC (£7,000) to be paid directly to smallholders to support their participation in the Best Agricultural Practice experiment. Two 4x4 vehicles and experienced drivers, essential for reliable and safe transport of personnel, equipment and samples to and from remote fieldwork sites, will be provided by NCRC at a fraction of total cost. Salary costs are based on current emoluments and annual incremental adjustments where applicable, but not inflation. Funds for only a proportion of staff time allocated to the project have been requested by project partners, and the remaining costs will be met by their respective Institutions.

27. 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.

(max 150 words)

Computers, software, binoculars for censusing birds and digital sound-recorders (to record unfamiliar bird calls for later verification or identification using expert advice and global databases; e.g. <http://www.xeno-canto.org>) will be retained at KNUST and NCRC for continued use by the Darwin Research Fellows and project partners in Ghana.

FCO NOTIFICATIONS

Please check the box if you think that there are sensitivities that the Foreign and Commonwealth Office will need to be aware of should they want to publicise the project's success in the Darwin competition in the host country.

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 (no written advice)

✓

Yes, advice attached

No

CERTIFICATION

On behalf of the trustees/ of the University of Leeds
(*delete as appropriate)

I apply for a grant of £327,744 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 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 enclose CVs for key project personnel and letters of support.
- I enclose our most recent signed audited/independently verified accounts and annual reports (if appropriate)

Name (block capitals)	GILL HARRISON
Position in the organisation	Research and Innovation Manager

Signed**

PDF

Date:

27/11/2015

If this section is incomplete or not completed correctly the entire application will be rejected. You must provide a real (not typed) signature. You may include a pdf of the signature page for security reasons if you wish. Please write PDF in the signature section above if you do so.

Stage 2 Application – Checklist for submission

	Check
Have you read the Guidance Notes ?	✓
Have you provided actual start and end dates for your project?	✓
Have you indicated whether you are applying for DFID or Defra funding? NB: you cannot apply for both	✓
Have you provided your budget based on UK government financial years i.e. 1 April – 31 March and in GBP?	✓
Have you checked that your budget is complete , correctly adds up and that you have included the correct final total on the top page of the application?	✓
Has your application been signed by a suitably authorised individual? (clear electronic or scanned signatures are acceptable)	✓
Have you included a 1 page CV for all the key project personnel identified at Question 10?	✓
Have you included a letter of support from the <u>main</u> partner organisations identified at Question 9?	✓
Have you been in contact with the FCO in the project country/ies and have you included any evidence of this?	✓
Have you included a signed copy of the last 2 years annual report and accounts for the lead organisation?	✓
Have you checked the Darwin website immediately prior to submission to ensure there are no late updates?	✓

Once you have answered the questions above, please submit the application, not later than 2359 GMT on Tuesday 1 December 2015 to Darwin-Applications@ltsi.co.uk using the application number (from your Stage 1 feedback letter) and the first few words of the project title **as the subject of your email**. If you are e-mailing supporting documentation separately please include in the subject line an indication of the number of e-mails you are sending (eg whether the e-mail is 1 of 2, 2 of 3 etc). You are not required to send a hard copy.

DATA PROTECTION ACT 1998: Applicants for grant funding must agree to any disclosure or exchange of information supplied on the application form (including the content of a declaration or undertaking) which the Department considers necessary for the administration, evaluation, monitoring and publicising of the Darwin Initiative. Application form data will also be held by contractors dealing with Darwin Initiative monitoring and evaluation. It is the responsibility of applicants to ensure that personal data can be supplied to the Department for the uses described in this paragraph. A completed application form will be taken as an agreement by the applicant and the grant/award recipient also to the following:- putting certain details (ie name, contact details and location of project work) on the Darwin Initiative and Defra websites (details relating to financial awards will not be put on the websites if requested in writing by the grant/award recipient); using personal data for the Darwin Initiative postal circulation list; and sending data to Foreign and Commonwealth Office posts outside the United Kingdom, including posts outside the European Economic Area. Confidential information relating to the project or its results and any personal data may be released on request, including under the Environmental Information Regulations, the code of Practice on Access to Government Information and the Freedom of Information Act 2000.