

Applicant: **Minter, David**
Organisation: **CABI**
Funding Sought: **£10,000.00**

DIR27PP\1082

Quinoa-associated fungi in the Andes: diversity, conservation and sustainable use

Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Title Dr
Name David
Surname Minter
Tel (Work) [REDACTED]
Email (Work) [REDACTED]
Address [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

GMS ORGANISATION

Type	Organisation
Name	CABI
Phone	[REDACTED]
Email	[REDACTED]
Website	[REDACTED]
Address	[REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]

Section 2 - Title & Location

Q3. Working title of the proposed Darwin project

Quinoa-associated fungi in the Andes: diversity, conservation and sustainable use

Q4a. Host country (of proposed Partnership Project trip)

Bolivia

Q4b. If this is not the intended host country for the proposed Darwin project, please justify here

It IS the intended host country

Q4c. Other collaborating country/ies

UK, Mexico, Ecuador, Cuba

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







No

Section 3 - Partnership Project Principals & Lead Organisation Summary

Q6. Principals in Partnership Project work


Please give the details of the individuals (up to 2) who would be directly involved in the Partnership Project work – i.e. making a visit to a host country, or leading on the collaboration.


One page CVs must be uploaded below.


Details	Project Leader	2nd individual
Surname	Minter	Batista García
Forename(s)	David William	Ramón Alberto
Post held	Principal Mycologist	Full time Professor
Organisation	CABI	Universidad Autónoma del Estado de Morelos
		
		
Have you included an one page CV?	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes

Please upload one page CVs for all Principals involved in Partnership Project work as a combined PDF.

 [cvs bolivia proposal](#)

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 pdf 749.14 KB

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.

CABI is an international, inter-governmental, not-for-profit organization that improves people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment. Its approach involves putting information, skills and tools into people's hands. Gender equality is a key goal. CABI's 50 member countries guide and influence its work which is delivered by scientific staff based in its global network of centres.

CABI has a long history of working with the Darwin Initiative, having been awarded a wide range of projects starting with the first round in 1993 and continuing up to the present. Six of these, all successfully completed, were led by the Project Leader of this proposal. For the present project, the extensive specialist information in CABI databases and other resources are critically important, as is the global network of contacts acquired by the Project Leader during over 40 years of work in the organization.

CABI's international and inter-governmental status together with its culture of grass-roots outreach make CABI ideally placed for a project requiring impartiality, combined with authoritative scientific evaluations impacting at all levels from individual people up to national and international institutions.

Q7b. Have you obtained a letter of support from the lead applicant organisation?

(If yes, please upload with the partner letters of support on the next page)

Yes

Section 4 - Project Partners

Q8. About the partner organisation(s)

Please list all the partners involved and explain their roles and responsibilities in the Partnership Project 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.

Partner name:	Centro de Investigación en Dinámica Celular. Universidad Autónoma del Estado de Morelos [UAEM], México
Website address:	www.cidc.uaem.mx
Details of anticipated roles and responsibilities:	New to partnership. Prof. Batista-García will represent UAEM as Joint Project Leader, organizing programmes for project workshops and (with Dr Minter) meetings to establish the formal network and prepare the main project application. He will also liaise with PROINPA, a Bolivian foundation specializing in Andean crop biofertilizers and other bio-inputs.
Expertise in sustainable use or conservation of biodiversity and/or development:	UAEM is a public university in Morelos State (Mexico) with widely acknowledged experience in sustainable development. and sustainable use and conservation of biodiversity. Its research centres (Centro de Estudios en Biodiversidad, Centro de Investigación en Dinámica Celular) focus on biodiversity conservation at different levels: ecosystems, animals (including micro-invertebrates), fungi and plants, and micro-organisms inhabiting vulnerable zones. The university has led many national programmes to investigate and conserve biodiversity in Mexican ecosystems endangered by human activity. Its experience in sustainable use of biodiversity has been extensively documented: in recent years, use of microbes for ecosystem restoration has been one of the more promising projects. In particular, the Centro de Investigación en Dinámica Celular has a programme to study microbial biodiversity from different Mexican glaciers, and to explore their ecological rôle and potential applications. The programme also focuses on how to conserve that biodiversity before climate change melts the glaciers. All this work has, as a key component, connexion with vulnerable indigenous communities, aiming to improve local development through application of biotechnology.

Name of main contact and post held: Ramón Alberto Batista García. Full-time Professor (Titular)

Letter of support submitted? Yes

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

Yes

2. Partner Name: Centro de Biotecnología, Facultad de Ciencias y Tecnología, Universidad Mayor de San Simón [UMSS], Cochabamba, Bolivia

Website address: www.umss.edu.bo

Letter of Support: New to partnership. Representing UMSS as Bolivian partner, Prof. Guzmán will be responsible for venues, facilities etc. for meetings and workshops, and in-country travel, including visits to Andean quinoa-growing communities. He will liaise with the UK sustainable development partner to select suitable NGOs and collectives as potential partners.

Expertise in sustainable use or conservation of biodiversity and/or development: UMSS is a public university in Cochabamba (Bolivia), with wide experience in sustainable use and conservation of biodiversity, food security and co-impact sourcing. It supports gender equality and has an office explicitly devoted to women's rights. It hosts the Biodiversity, Natural Resources and Environment Network [RedBio] formed by more than 20 research centres including the Centro de Biodiversidad, Unidad de Limnología y Recursos Acuáticos, and Centro de Productos Naturales y Alimentos. RedBio seeks solutions to mitigate negative effects of the accumulating loss of biodiversity, deterioration of environmental services, over-exploitation of natural resources and environmental pollution. Its vision is to solve such problems through generation of scientific knowledge and technological development, while improving life quality and maintaining ecosystem sustainability. UMSS accordingly seeks to determine the state of important natural resources and their sustainable usage, and to preserve, protect, and restore fundamental components of biodiversity, thereby encouraging provision of adequate environmental resources and services (water, air, pollination, pest control, etc.) for local and regional populations. In particular, the Centro de Biotecnología is outstanding for its research into extreme environment microbial diversity, conservation and biotechnological applications.

Name of main contact point and post held: Daniel Guzmán. Researcher, Centro de Biotecnología

Have you included a letter of support from this organisation? Yes

3. Partner Name: Instituto de Ecología and Sistemática [IES], Havana, Cuba

Website address: www.ecosis.cu

Details of anticipated roles and responsibilities: Representing IES, and as one of the project's principal experts in fungal taxonomy, Dr Mena Portales will provide project meeting(s) and workshop(s) with advice regarding identification of fungi (particularly those associated with quinoa) and organizational needs for mycological capacity building in Andean countries.

Expertise in sustainable use or conservation of biodiversity and/or development: IES is part of the Environment Agency (AMA) within the Ministry of Science, Technology and Environment (CITMA) of Cuba. Its mission is to expand knowledge about biological diversity, through systematic, comprehensive ecological and biotechnological studies, and to promote its conservation and sustainable use in natural and replacement ecosystems through effective environmental management that increases its contribution to the scientific and socio-economic development of Cuba and the Caribbean. These investigations, supported by the country's most important national reference collections of animals, fungi and plants, provide base-line results for management of biological diversity through numerous national and international research projects and scientific-technical services.

Name of main contact point and post held: Julio Mena Portales. Senior Researcher

Have you included a letter of support from this organisation? Yes

4. Partner Name: Centro de Investigación, Innovación y Transferencia de Tecnología [CIITT], Universidad Católica de Cuenca, Ecuador

Website address: www.ucacue.edu.ec

Letter of Support: New to partnership. Representing CIITT, and as partner for Ecuador (one of the world's three largest quinoa producers), Prof. Yarzabal will participate in this project's meetings and workshops, contributing expertise in use of fungi for biofertilizers and biopesticides, and advice regarding contact with quinoa producers in Ecuador.

Expertise in sustainable use or conservation of biodiversity and/or development:

As a direct consequence of dramatic changes in tertiary education promoted by the most recent three national governments, the Universidad Católica de Cuenca (Ecuador) has undergone profound re-organization and change. It explicitly supports gender equality, and has seen sustained progress in research and development over the past five years. Research activities have been boosted, by acquisition of a modern and fully equipped infrastructure, by recruitment of researchers from abroad, who have been incorporated into the teaching and research staff, and by financing of internal projects. Establishment of CIITT, including laboratories for biotechnology, microbiology and active principles provides additional evidence of that progress. CIITT is currently a fully equipped and operational research centre, with excellent infrastructure, and a particular interest in the study of the native biodiversity, its conservation, and its potential for a range of uses.

Name of main contact point and post held:

Luis Andrés Yarzabal Rodríguez. Full-time Professor (Titular)

Have you included a letter of support from this organisation?

Yes

5. Partner Name:

Permaculture Association

Website address:

www.permaculture.org.uk

Letter of Support:

UK sustainable development partner. New to partnership. Responsibilities: help identify and contact suitable Andean NGOs and collectives; build understanding among them of skills needed for main project; listen to them and, liaising with them, revise draft of main project proposal taking into account their comments.

Expertise in sustainable use or conservation of biodiversity and/or development:

Established in 1983, the Permaculture Association is a registered charity working in the UK and worldwide to promote permaculture principles and practices. Permaculture means permanent culture based on sustainable land management through preservation of ecosystems, recycling, community solutions, innovative designs, and fair share. Recent projects include:

- The GROW Observatory Partnership (2016–2019), a project engaging thousands of growers, gardeners and small-scale farmers, scientists and policy makers, working with 19 partner organizations from 8 countries across Europe, contributing data on local soil conditions, to help validate climate change models generated by satellite.
 - Forest Gardens Research: a ten-year forest garden trial (2009–2019). Eleven projects in the process of setting up forest gardens were recruited. Research focused on yields, which were interpreted to include economic, social and biodiversity yields as well as actual crops harvested.
 - The Great GROW Experiment (2018): citizen research comparing productivity of three crops grown together in polyculture and separately in monoculture.
 - AMPPS projects (Approval of Member Projects and Proposals):
 - o Permaculture Institute of El Salvador;
 - o SASAL (Sustainable Agriculture in Southern Africa);
 - o Eco-Forest, Spain;
- The Jajarkot Permaculture Programme in Nepal (now closed).

Name of main contact point and post held:

Gihan Sami Abdel Sayed Soliman. Trustee

Have you included a letter of support from this organisation?

Yes

6. Partner Name:

No Response

Website address:

No Response

Details of anticipated roles and responsibilities:

No Response

Expertise in sustainable use or conservation of biodiversity and/or development:

No Response


Name of main contact point and post held:

No Response


Have you included a letter of support from this organisation?


Yes
 No

Please provide a combined PDF of letters of support from the lead organisation and partner(s).

 [support letters bolivia proposal](#)

 19/01/2021

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Q9. Can you confirm that at least one of the partners have not previously been in receipt of Darwin funds from the same lead partner?

Yes

Section 5 - Justification & Concept Notes

Q10. Justification of need for a Partnership Project

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?

CABI receives 3–4% of annual turnover as Member Country contributions. Its scientific work is 90% funded via bidding for competitive tenders. These funds are ring fenced for designated activity. This means that it does not have funding available for this sort of exploratory work, and so must secure money from donors to address such specific issues. CABI has a long and successful track record of delivering projects on time, on budget and in line with the contractual specification. The UK sustainable development partner has matched funding for travel costs. Other matched funding will be sought.

Q11. Concept note for the Partnership Project

This question concentrates on the Partnership Project work and should demonstrate the objectives of the project including:

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

Objectives of the visit.

- Where possible, meet representatives of potential partner NGOs and collectives, and, prioritizing gender equality, select the most suitable.
- Establish a working relationship with scientific project partners, and chosen NGOs, collectives and organizations.
- Establish a collaborative network between existing and new partners, including agreed systems for collaboration in pandemic conditions.
- Explore opportunities for fair trade development, and for knowledge exchange between indigenous populations and the UK sustainable development partner.
- Explore ways to make project scientific data accessible and understandable by indigenous populations.
- Where possible, with new partner NGOs / collectives, make field trips to provide visiting partners with direct experience of quinoa cultivation.
- Build an understanding between all partners of skills needed to deliver the main project, including use of logframes.
- Listen to partners, and revise draft of main project application taking into account their comments and

other new perspectives gained during visit.

- Hold workshops and meetings, including one to review the revised draft including budgets, and to agree activities and outputs necessary to deliver main project planned outcomes and impacts.

Work carried out by Lead Partner (Mexico) prior to applying for this project.

- Collaboration over more than five years with Prof. Mena Portales (Cuban partner) on desert fungi and their sustainable use as bioremediating agents.
- Collaboration for over one year with Prof. Guzmán (host scientist for Bolivia) and Prof. Yarzabal (host scientist for Ecuador) in studies and implementation of extremophilic microbes as biofertilizers to increase crop production in extreme climates, including publications documenting that work.
- Video conferences with host scientists for Bolivia and Ecuador, PROINPA, and Cuban partner, developing draft plans for Partnership Project, including scientific goals and methodology.

Work carried out by Lead Partner (UK) prior to applying for this project.

- Maintenance of Cybertruffle [this website provides key information about fungi and their associated organisms; its origins lie in six earlier Darwin Initiative projects going back to 1993, led and successfully completed by the UK Lead Partner; over 200,000 further records of fungi will soon be added].
- Identification of and contact with suitable UK sustainable development partner, including detailed discussions of sustainable development goals and means of achieving them.

Activities to be carried out under the Partnership Project.

- Identify a suitable mycologist as scientific partner for Perú.
- Identify sustainable development NGOs and/or quinoa-growing collectives as potential project partners for Andes.
- Identify organizations in Ecuador and Perú as suitable partners along with PROINPA (Bolivia) for developing biofertilizers and other beneficial products anticipated to arise from main project.
- Explore possibilities for in situ fungal conservation through regenerative farming practices.
- Prepare a first draft of the main project application.
- Mexican and UK project leaders and (matched funding permitting) other non-Bolivian partners, visit Bolivia for objectives listed above.
- After visit, gather necessary ancillary documentation, then finalize and submit robust main project application.

Evidence of the proposed partners' intentions to collaborate: see accompanying letters of support PDF file.

Q12. Concept note for the resultant project

This question concentrates on the full Darwin application you intend to submit after the Partnership Project 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 Conventions and Treaties supported by Darwin, including the SDGs
- how the project will contribute to sustainable development in the country concerned
- briefly explain the proposed partner role(s) in the resultant Darwin project
- briefly the expected role of the Partnership Project travellers in the resultant Darwin project.

Fungi are essential for sustainable life on this planet: producers (plants) and consumers (animals) can only survive if fungi (the recyclers) are also protected. Recognizing this, the CBD confers protection on all forms of life. Unfortunately, practice often falls short of that ideal. CBD national strategies of Bolivia, Perú and Ecuador reflect this [host country need]: fungi are either totally overlooked (Perú), or mentioned only in passing (Bolivia and Ecuador). This project's first desired impact is therefore full and fair inclusion of fungi in future CBD strategies of these countries [project contribution to CBD].

Outcomes required for this (outputs in brackets) [partner responsibility in square brackets]:

- public awareness of fungi, their importance and conservation needs (education of the general public,

policy-makers and politicians) [host country scientists; UK sustainable development partner; others identified by Partnership Project];

- national infrastructures for mycology (amateur and professional societies, culture collections for ex situ conservation, reference collections) [host country scientists];

- accessible relevant information about fungi (on-line national checklists, like those for Brazil, Chile, Cuba, Dominican Republic, Trinidad and Tobago, Venezuela etc. [<http://www.cybertruffle.org.uk/cgi-bin/robicoun.pl?glo=eng&ser=F>] from previous Darwin projects, on an updated Cybertruffle platform) [UK scientific partner; Cuban partner].

Fungi associated with quinoa (*Chenopodium quinoa*), the food crop so characteristic of the region, will form the project's flagship. Currently over 80% of the world's 160,000 ton annual quinoa harvest comes from Bolivia, Ecuador and Perú, with production expanding rapidly there and elsewhere. Searches for fungi associated with quinoa, using the CABI, Cybertruffle, IMI fungal reference collection, and USDA databases, found fewer than 50 species (mostly ubiquitous and plurivorous), collectively amounting to no more than 100 individual observations. For such an important commodity, that is astonishingly little information. Considerable undiscovered fungal diversity is thus anticipated on this and other Andean *Chenopodium* species. That diversity will probably reveal significant potential for biofertilizers, biological control, climate change amelioration and other beneficial uses. Almost all quinoa production in target countries is by small farms and associations, with about 40% of all farmers women, and incomes significantly affected by quinoa's recent surge in popularity [<https://www.theguardian.com/sustainable-business/2016/jul/17/quinoa-threat-food-security-improving-peruvian-farmers-lives-superfood>]. The project's second desired impact is therefore improved livelihoods and better gender equality for that sector through access to any resulting discovery [project contribution to SDGs; poverty alleviation].

Outcomes required for this (outputs in brackets) [partner responsibility in square brackets]:

- new collections of fungi, identified by traditional and molecular techniques [host country scientists; UK scientific partner; Cuban partner; Mexican partner]

- fungi evaluated for potential beneficial uses (new biofertilizers etc.) [host country scientists; Mexican partner; PROINPA];

- strengthened societal structures ensuring small farms and particularly women farmers are beneficiaries (education and support for individual farmers primarily through their associations) [UK sustainable development partner; others identified by Partnership Project];

- suitable organizations ready to produce any new products (formal agreements involving beneficiary representatives and organizations) [host country scientists, Mexican partner; PROINPA; others identified by Partnership Project].

Partnership Project travellers will be Mexican and UK joint project leaders.

Section 6 - Costs

Q13. Costs

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

	Project Leader	Second individual	Total
Airfare including travel to airport	£ [REDACTED]	[REDACTED]	[REDACTED]
Visas and other travel documents	£ [REDACTED]	[REDACTED]	[REDACTED]

Daily subsistence rate per day	£		
Number of days subsistence claimed (max 30 days per traveller)			
Total daily subsistence claimed (please provide details below)	£		
Workshop costs (please provide details below)			£
Other costs (please provide details below)			£
Total request from Darwin (must not exceed £10,000)			£

Additional details to support the figures above

	Project Leader	Second individual
Average expected subsistence rate per day	£	
Number of days subsistence claimed		

Workshop costs

Please provide further details on your workshops costs (N/A if not relevant).

workshop accommodation; food for workshop participants; travel costs for local participants (representatives from UMSS, PROINPA, NGOs, indigenous communities):

Other costs

Please provide further details on Other costs e.g. subscription to communications platforms, purchase of tablets for local partners etc (N/A if not relevant).

travel to Andean region quinoa-growing communities (this will require a guide to reach communities, and official transport of the Universidad Mayor de San Simón, including fuel costs and travel expenses for university staff),
 staff costs,

Covid-19 tests for UK & Mexican travellers, 4 @ 100 [estimate] =

Note: costs of any self-isolation required because of Covid-19 have not been included.

Section 7 - Timetable & Activities

Q14. Provide 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 Partnership Project trip.

Date	Milestone
06 November 2021	START
07 November 2021	Arrive in Bolivia. Meet existing partners
08 November 2021	Meet and select partner NGOs and collectives [2 days]
10 November 2021	Meeting to establish collaborative network and working practices, including necessary project skills
11 November 2021	Workshops on fair trade development and accessibility of scientific data
12 November 2021	Field trip(s) to quinoa-growing areas [3 days]
15 November 2021	Meeting to review and agree main project proposal activities, outputs, outcomes, impacts and budgets
16 November 2021	Depart from Bolivia
<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>
<i>No Response</i>	<i>No Response</i>
17 November 2021	FINISH

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

Round 29

Section 8 - Certification

Q16. Certification

On behalf of the

company

of

CABI

I apply for a grant of





£10,000.00

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

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

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

Checked

Name	Richard Shaw
Position in the organisation	Country Director
Signature (please upload e-signature)	 autosig  19/01/2021  10:02:03  jpg 18.68 KB
Date	19 January 2021

Section 9 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance Notes for Main projects as well as the Guidance for Partnership Projects and am satisfied that this concept would be eligible for a main project application.	Checked
I have read, and can meet, the current Terms and Conditions for this fund.	Checked
I have provided anticipated start and end dates for my Partnership Project trip.	Checked

I have checked that my budget is complete and correctly adds up.	Checked
My application has been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have included one page CVs and letters of support as required.	Checked
I have checked the Darwin website immediately prior to submission to ensure there are no late updates.	Checked
I have read and understood the Privacy Notice on GOV.UK.	Checked

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

Unchecked

Data protection and use of personal data

Information supplied in this application form, including personal data, will be used by Defra as set out in the latest copy of the Privacy Notice for Darwin, Darwin Plus and the Illegal Wildlife Trade Challenge Fund available [here](#). This Privacy Notice must be provided to all individuals whose personal data is supplied in the application form. Some information, but not personal data, may be used when publicising the Darwin Initiative including project details (usually title, lead organization, location, and total grant value) on the GOV.UK and other websites. Information relating to the project or its results may also be released on request, including under the 2004 Environmental Information Regulations and the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality nor will we act in contravention of our obligations under the General Data Protection Regulation (Regulation (EU) 2016/679).