Applicant: **Viruel, Juan**
Organisation: **Royal Botanic Gardens, Kew**
Funding Sought: **£396,655.00**

DPR11S2\1011

Biodiversity metrics for conservation management in the British Virgin Islands

Cutting-edge scientific methods will quantify native biodiversity in the British Virgin Islands (BVI) by collecting all BVI's angiosperm species. Three biodiversity metrics (phylogenetic diversity, species richness and species threat assessments) will be estimated to direct biodiversity conservation action and management, ecological restoration and research planning to respond to current biodiversity loss and climate change. Capacity building for local stakeholders will provide new skills to estimate and integrate biodiversity metrics into decision making and planning habitat restoration in key areas.

PRIMARY APPLICANT DETAILS

Title	Dr
Name	Juan
Surname	Viruel
Organisation	Royal Botanic Gardens, Kew
Website (Work)	[redacted]
Tel (Work)	[redacted]
Email (Work)	[redacted]
Address	[redacted]

Section 1 - Contact Details

PRIMARY APPLICANT DETAILS

Title	Dr
Name	Juan
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Organisation	Royal Botanic Gardens, Kew
Website (Work)	[redacted]
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GMS ORGANISATION

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

Section 2 - Title & Summary

Q3. Project Title:

Biodiversity metrics for conservation management in the British Virgin Islands

What was your Stage 1 reference number? e.g. DPR11S1\1123

DPR11S1\1008

Q4. Summary of project

Please provide a brief summary of your project: the problem it is trying to address, its aims, and the key activities you plan to undertake.

Successful Darwin Plus Main projects in Round 11 must demonstrate substantial measurable outcomes in at least one of the themes of Darwin Plus either by the end of the project's implementation or via evidenced mechanisms for post-project delivery.

Preference will be given to discrete projects implementing existing identified environmental solutions on the ground.

The broad themes of Darwin Plus Main are:

- **Biodiversity:** improving and conserving biodiversity, and slowing or reversing biodiversity loss and degradation;
- **Climate change:** responding to, mitigating and adapting to climate change and its effects on the natural environment and local communities;
- **Environmental quality:** improving the condition and protection of the natural environment;
- **Capability and capacity building:** enhancing the capacity within OTs to support the environment in the short- and long-term.

Please write this summary for a non-technical audience.

Cutting-edge scientific methods will quantify native biodiversity in the British Virgin Islands (BVI) by collecting all BVI's angiosperm species. Three biodiversity metrics (phylogenetic diversity, species richness and species threat assessments) will be estimated to direct biodiversity conservation action and management, ecological restoration and research planning to respond to current biodiversity loss and climate change. Capacity building for local stakeholders will provide new skills to estimate and integrate biodiversity metrics into decision making and planning habitat restoration in key areas.

Section 3 - UKOT(s), Dates & Budget Summary

Q5. UKOT(s)

Which UK Overseas Territory(ies) will your project be working in?

☑ British Virgin Islands (BVI)

*** if you have indicated a territory group with an asterisk, please give detail on which territories you are working on here:**

No Response

In addition to the UKOTs you have indicated, will your project directly benefit any other Territories or country(ies)?

⦿ Yes

Please list below.

Puerto Rico, US Virgin Islands, Caribbean Islands

Q6. Project dates

Start date:	End date:	Duration (e.g. 2 years, 3 months):
01 April 2023	31 March 2026	3 years

Q7. Budget summary

Year:	2023/24	2024/25	2025/26	Total request
Amount:	£132,882.00	£154,870.00	£108,903.00	**£** 396,655.00

Q8. Proportion of Darwin Plus budget expected to be expended in UKOTs (%) [redacted]

Q9a. Do you have matched funding arrangements?

⦿ Yes

What matched funding arrangements are proposed?

Confirmed secured match-funding from RBG Kew to the value of [redacted] ([redacted] in kind staff costs and [redacted] in-kind overheads). Confirmed National Parks Trust Virgin Islands (NPTVI) in-kind staff time and boat value totalling [redacted] as match-funding, supporting their commitment to this project.

Q9b. Total confirmed & unconfirmed matched funding (£)	£190,357.00

Q9c. If you have a significant amount of unconfirmed matched funding, please clarify how you fund the project if you don't manage to secure this?

Total matched funding confirmed

Section 4 - Problem statement

Q10. Problem the project is trying to address

Please describe the problem your project is trying to address in the UKOTs, relating to at least one of the themes of Darwin Plus.

For example, what are the specific threats to the environment that the project will attempt to address? Why are they relevant, for whom? How did you identify these problems? How will your proposed project help? Please cite the evidence you are using to support your assessment of the problem (references can be listed in your additional attached PDF document).

The British Virgin Islands (BVI) belong to the Caribbean biodiversity hotspot, comprise ca. 650 angiosperms in an area of 153 km2 and harbour 18 Tropical Important Plant Areas (TIPAs), key sites for the conservation of wild plants and threatened habitats, delimited by NPTVI and Kew in 2019 [1]. NPTVI is the statutory authority responsible for the conservation of terrestrial and marine habitats and the management of protected areas, including 21 National Parks. The governance of these natural resources is challenging due to numerous ongoing threats, including urbanisation, feral ungulates, invasive species, illegal clearance, and climate change. For example, the BVI are experiencing more severe weather events, such as Irma in 2017, the first recorded Category 5 hurricane to strike the BVI, followed by Maria a few weeks later. A broad inventory of species and habitats present in the BVI is essential to develop approaches to decrease biodiversity loss and climate change impacts. Conserving and restoring habitats by maintaining high biodiversity levels will enhance resilience to inevitable future threats and changes, especially in habitats identified as vulnerable to more intense weather events (DPLUS084) and other climate change related occurrences (DPLUS180). However, we lack knowledge required to identify key species that contribute more to the evolutionary diversity, heterogeneity and thus resilience of habitats, pivotal data for NPTVI to inform conservation action. We aim to support conservation management in the BVI by 1) collecting comprehensive data on all BVI angiosperm species, 2) compiling biodiversity metrics (species richness, threat status and phylogenetic diversity) for the entire BVI flora, 3) add these metrics as a new cutting-edge component to the toolkit of responses which NPTVI requires for effective biodiversity management.
Phylogenetic diversity, which measures evolutionary diversity by summing the branches linking all taxa on a phylogenetic tree [2], has been previously used as an effective prioritisation process in conservation [3]. Phylogenetic diversity also represents the variety of species traits that can be used for our current and future benefit. Thus, safeguarding this biodiversity also safeguards local resources for food, fuel and medicines and cultural heritage into the future. Generated data will include high resolution map layers [4] and will inform species composition per grid, which will be calculated at different scales including all the territory (habitats, protected and non-protected areas, TIPAs). We will identify key species with the highest contribution to biodiversity, thus indicating which species are the most appropriate for ecological restoration or ex-situ collection, which will be used by NPTVI and Kew to co-design and implement conservation plans. Through capacity building, NPTVI will integrate this scientific evidence into their activities to inform conservation management, including the identification of target species for future reforestation programmes and terrestrial parks management. Wider engagement will promote the value and cultivation of native plant species, which can contribute to

habitats' resilience by increasing biodiversity, and community engagement activities (eg. Arbour Day). These approaches have strong relevance to other Caribbean partners who could apply similar methodologies to their conservation action plans.

Section 5 - Environmental Conventions, Treaties and Agreements

Q11. Environmental Conventions, Treaties and Agreements

Please detail how your project will contribute to the aims of the national and/or international agreement(s) your project is targeting. What key OT Government priorities and themes will it address and how? You should also consider local, territory specific agreements and action plans here. Letters of support from UKOT Government partners/stakeholders should also make clear reference to the agreements/action plans your project is contributing towards.

Note: No additional significance will be ascribed for projects that report contributions to more than one agreement.

This project will provide tools to refine and improve two of the BVI's environmental policies. The British Virgin Islands Protected Areas System Plan 2007-2017, which was approved in 2008 and it is being updated by the NPTVI and by the BVI Government, making it an opportune time to conduct this work . BVI Government and NTPVI will be able to use the biodiversity metrics to review and propose new protected areas, because this project will help identifying areas with high species richness, high phylogenetic diversity and high levels of threatened plant species. Equally, these biodiversity metrics will allow the provision of scientific evidence to the BVI Government Virgin Islands Climate Change Adaptation Policy 2012 Achieving Low Carbon, Climate-Resilient Development. Specifically, 'Objective 1: Enhance the resilience and natural adaptive capacity of our natural resources, including terrestrial, coastal, and marine ecosystems as well as the fishery resource base.' Areas where phylogenetic diversity is higher are more likely to be more resilient to climate change. The dataset generated for this project will complement the ongoing DPLUS084, which aims to identify climate resilient habitats. The combination of these two datasets will render the BVI Government and the NPTVI better equipped to plan conservation actions across the Territory, which will include the restoration and enhancement of existing and future protected areas, using species that contribute the most to the overall biodiversity, and thus make habitats more resilient to future changes and threats.
This project will contribute to the BVI Government's response to the 1st draft of the CBD Post 2020 Global Biodiversity Framework: 2030 Action Targets. Specifically, goal A (Ecosystems, species and genetic diversity), Target 3, which aims to ensure that at least 30% of global land and sea areas, especially those of particular importance for biodiversity and its contributions to people; their goal is to create well-connected systems of protected areas (and other effective area-based conservation measures) that are integrated into the wider landscapes and seascapes, are effective and equitably managed, and ecologically representative. Through this project, we will be able to identify species that will contribute to well-balanced and heterogeneous ecosystems, guiding stakeholders to habitats containing species which contribute more to biodiversity. Additionally, by promoting the conservation and ecological restoration of biodiverse habitats with higher phylogenetic diversity, the project will also contribute to Target 8, 'to minimize the impact of climate change on biodiversity, contribute to mitigation and adaptation through ecosystem-based approaches, [...], and ensure that all mitigation and adaptation efforts avoid negative impacts on biodiversity'. This project equally contributes to the achievement of Targets 13 and 15 of the Sustainable Development Goals because it will direct conservation action to mitigate climate change and its impacts as well as promoting the protection and restoration of terrestrial ecosystems.

Section 6 - Method, Project Stakeholders, Gender, Change Expected, Pathway to Change & Exit Strategy

Q12. Methodology

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

- **How have you reflected on and incorporated evidence and lessons learnt from past and present activities and projects**

in the design of this project?

- **The need for this work and a justification of your proposed approach.**
- **How you will undertake the work (materials and methods).**
- **How you will manage the work (roles and responsibilities, project management tools, etc.).**

Evidence and lessons learnt: Our proposal builds on an established partnership between Kew and NPTVI. Several joint projects (eg., DPLUS030, DPLUS84, BVI TIPAs) have successfully increased our knowledge on the BVI's plants and habitats. This long-term collaboration resulted in a baseline dataset: ca.10,000 occurrence data for all native plant species, 36 global Red List assessments, and plant collections for 90% of species, including herbarium and tissue samples at Kew and living collections at JR O'Neal Botanic Gardens (CV19RR01). Our legacy was shown when Hurricane Irma destroyed many collections in 2017 demonstrating the importance of preserving duplicate specimens as well as seed banks.

Need and justification

This project has been co-designed with NPTVI and local BVI stakeholders devised on their needs to protect local biodiversity. We aim to generate internationally recognized biodiversity metrics (phylogenetic diversity, species richness and Red List assessments) to drive conservation action [2,3] specific to these threats and improve the range of evidence for management available to NPTVI.

Materials and Methods

1. Biobank for the BVI flora established: tissue and DNA of all native plant species from the BVI secured in accessioned collections

Kew holds tissues suitable for genetic analysis (herbarium and silica gel-dried samples) for 90% of the ca. 650 native angiosperms in BVI; and ca.10,000 occurrence data to enable Red List assessments and species distribution models. Two fieldwork campaigns (Y1) will complete tissue collections and increase occurrence data by sampling approximately 10% species (94 widespread and 45 Caribbean endemics). We will target areas with low occurrence data and generate species lists for new sites where conservation plans will be developed. Silica gel-dried samples and herbarium duplicates will be housed at Kew, NPTVI and regional herbaria (MAPR). A DNA bank representative of all native species in BVI will be established.

2. A complete BVI Plant Tree of Life and biodiversity metrics calculated (phylogenetic diversity, species richness and Red List assessments)

Hundreds of nuclear genes will be sequenced per species using a target capture approach developed and optimized at Kew (Angiosperms353 tool kit [5]). Standard phylogenomic methods [6] will be used to reconstruct the Tree of Life of BVI plants. Existing occurrence data from Kew's UKOTs Species and Specimens Database, regional herbaria and GBIF [7], and the new collected field data will be used to model distribution ranges for all BVI's native angiosperms [8]. Using climate and soil maps (eg., CHELSA [9] and layers developed in DPLUS160), a consensus model for each species will summarize outputs from different algorithms (eg., Maximum Entropy, Generalized Linear Model). Species richness maps will be generated by overlaying all species distributions. By combining the distribution maps with the phylogenetic tree, we will generate a phylogenetic diversity map using the Biodiverse software (http://www.purl.org/biodiverse), which will allow the identification of areas with the greatest phylogenetic diversity across the Territory, as well as species that contribute the most to phylogenetic diversity. The completion of global Red List assessments [10,11] for the remaining BVI angiosperms (ca. 615 species) will allow us to map threatened species and calculate the expected loss of phylogenetic diversity or the amount of evolutionary history that would be lost given the current extinction risks that species face [12].

3. Building capacity for integrating biodiversity metrics into conservation management, action and decision-making, and public engagement

Workshops, training, and manuals will provide capacity building and legacy for BVI conservation stakeholders to integrate biodiversity metrics into habitat management and conservation decision-making. We will raise local awareness to use native plants for landscaping by creating an educational animated cartoon and NPTVI annual Arbour Day activities. Scientists and stakeholders from other Caribbean Overseas Territories and the neighbouring islands will be invited for a virtual workshop.

4. Biodiversity metrics used to direct conservation action in the face of current and future threats

Maps of biodiversity metrics will help NPTVI and Kew to co-design conservation plans: ex-situ collection for sites susceptible to urbanisation; ecological restoration of cleared areas due to illegal activities, or heavily affected by ungulates, or to reinforce biodiversity in areas affected by invasive species; native plant species for landscaping use per island. Species selected will be grown in the JR O'Neal Botanic Gardens nursery, and habitats where these species occur will be targeted for future reforestation works.

Management

Kew will supervise the project (admin, reporting). Fieldwork will be organized by Kew in collaboration with the NPTVI team. Partner budget will be managed by NPTVI. Steering group chaired by Kew and NPTVI jointly. Lab work, red listing, spatial and phylogenetic analysis, and training led by Kew team.

Q13. Project Stakeholders

Who are the stakeholders for this project and how have they been consulted (include local or host government support/engagement where relevant)? Briefly describe what support they will provide and how the project will engage with them.

The main stakeholder and main partner in this application is the NPTVI. The NPTVI is the statutory authority responsible for terrestrial and marine habitats in the BVI and the conservation actions and examples provided in the application represent the work NPTVI does daily. Kew and NPTVI have jointly delivered numerous projects over 20 years, and engagement between the two institutions is inherent to this proposal: Kew and NPTVI will jointly conduct fieldwork activities and the NPTVI will be the beneficiary of most of the capacity building proposed. Both Kew and NPTVI have engaged with local government (see support letter) during the development of the proposal to better align the conservation plans and training that will be conducted at the local level. Local communities and school students will engage via Arbour Day and outreach activities.

Regionally, we will engage with the Herbarium of Mayaguez (MAPR, Biology Department, University of Puerto Rico). This is a recognised regional herbarium with collections across the Puerto Rican Bank, which will play a key role to provide a regional dataset for all species which occur in BVI and Puerto Rico, increasing the robustness of the dataset used for the species distribution models, as well as species represented on the reconstruction of the Tree of Life. MAPR will also participate in the regional workshop which will take place in Y3 of the project, together with colleagues from Caribbean UK Overseas Territories. They will hear Kew and NPTVI experiences in producing and applying biodiversity metrics to conservation action.

Q14. Gender equality

All applicants must consider whether and how their project will contribute to reducing inequality between persons of different gender. Explain how your understanding of gender equality within the context your project, and how is it reflected in your plans. Please summarise how your project will contribute to reducing gender inequality. Applicants should, at a minimum, ensure proposals will not increase inequality and are encouraged to design interventions that proactively contribute to increased gender equality.

The overall project team is gender balanced, with equal responsibilities shared among members of different genders. BVI staffing is an exemplar of gender inclusivity, with three women leading the NPTVI. A mixed steering group will evaluate workshops and public engagement activities, to avoid gender stereotypes and promote gender equality and inclusivity. We will encourage the use of pronouns when interacting (emails, meetings) to promote gender inclusivity (if transgender and non-binary people engage in any of the planned activities). Workshops will target a gender balanced audience. We will measure attendance and participation based on age, culture and mobility and will, if needed, adjust our channels to approach the stakeholders. School engagement will aim to exclude any gender stereotype linked to any job within our project (i.e., by demonstrating that people from any gender are scientists, conservationists, etc.). This will be delivered by a gender-balanced team in the project. Kew has recently been awarded the Bronze level Athena Swan accreditation, in recognition of Kew's good practices towards the advancement of gender equality. The Research Assistant recruitment will be done following Kew's guidelines on gender balanced interview panels.

Q15. Change expected

Detail the expected changes this work will deliver. You should identify what will change and who will benefit a) in the short-term (i.e. during the life of the project) and b) in the long-term (after the project has ended) and the potential to scale the approach. Please describe the changes for the environment and, where relevant, for people in the OTs, and how they are linked.

When talking about how people will benefit, please remember to give details of who will benefit, differences in benefits by gender or other layers of diversity within stakeholders, and the number of beneficiaries expected. The number of communities is insufficient detail – number of households should be the largest unit used.

Short-term
The biodiversity metrics and collections will directly impact on the ground conservation action in the BVI. Genetic sequence

data, species distribution ranges, Red List status and occurrence data for all native angiosperms occurring in the BVI will be made available to local stakeholders. Capacity building, involving at least five NPTVI staff, will provide tools to use these data to direct conservation management and guide ecological restoration. The biodiversity metrics will be available for use by the BVI Government and the NPTVI to aid decision making for urban planning and conservation related activities; and will add value to the NPTVI led Darwin Plus project (DPLUS180). Kew and NPTVI will pioneer conservation management techniques in the Caribbean, with potential to be scaled across neighbouring islands and the region. These techniques will be disseminated through a virtual workshop with stakeholders from six neighbouring islands to explain the impact that biodiversity metrics will have on conservation planning and how these can be applied elsewhere. Genetic sequence data will be incorporated into the Kew Tree of Life Explorer [5], thus having impact well beyond the region. A new practical activity for schools, plant extraction of DNA, will be delivered at JR O'Neal Botanic Gardens, and an animated cartoon which showcases native plant species will increase local knowledge on the native flora.

Long-term
Biodiversity metrics will be embedded in conservation actions to help protect biodiversity vulnerable to, and impacted by, climate change. These actions will aim to increase the heterogeneity of species in habitats by prioritizing those species known to contribute more to the overall diversity and protect those representing the greater potential loss of PD should they go extinct, and thus, providing habitats with natural based solutions to respond to future changes. Map layers containing biodiversity metrics and incorporated into BVI's national databases, will inform the design of ex-situ and in-situ conservation practices, such as protected areas management and identifying key species for ecological restoration projects. The aim is to change the proportion of native plants currently grown at JR O'Neal Botanic Gardens, by incorporating key native species based on their contribution to biodiversity. The J.R. O'Neal Botanic Gardens will improve their collections for their conservation and scientific programmes, including assimilating duplicates for BVI collections held at Kew. The existing partnership between Kew and NPTVI will be enhanced, as well as conservation science in the BVI consolidated through collections-based research. Conservation action will equally be strengthened, through future projects which can aim to identify key species for in-situ and ex-situ conservation measures. This will represent a step-change in the conservation capacity of the BVI based on the most innovative technologies available. Finally, the outcome of this project will constitute a unique reference for conservation science and action across the globe: we will have completed the Tree of Life of angiosperms for the territory and delivered tools to translate complex and cutting-edge scientific data directly to on the ground solutions to local threats to biodiversity. The regional workshop will enhance collaboration across the region.

Q16. Pathway to change

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

Changes in conservation management will occur by incorporating multi-faceted biodiversity metrics into conservation planning for current and future threats, including climate change. Kew and NPTVI will produce maps to identify phylogenetic diversity hotspots which will constitute the basis for terrestrial areas management and restoration, for example by quantifying biodiversity loss if a habitat is urbanised. NPTVI and Kew will co-design recovery plans for priority habitats. NPTVI will develop in-situ and ex-situ activities by selecting key species based on their contribution to phylogenetic diversity or by restoring the combinations of species that maximise phylogenetic diversity and resilience. The Tree of Life of the BVI flora will offer NPTVI a baseline for future plant science projects, by attracting collaborations and providing a methodological reference for other Caribbean nations. NPTVI staff will gain new skills which will promote career progression and improved conservation planning. The project team will promote the knowledge on native flora and the benefits of growing native plant species in BVI, eg. through Arbour Day activities. By managing habitats to maximise resilience using the biodiversity metrics developed by this project, we will enable habitats to become more resilient to threats, leading to a better outlook for BVI's biodiversity.

Q17. Exit Strategy

How will the project reach a sustainable point and continue to deliver benefits post-funding? Will the activities require funding and support from other sources, or will they be mainstreamed in to "business as usual"? How will the required knowledge and skills remain available to sustain the benefits? If relevant, how will your approach be scaled?

NPTVI staff will incorporate the skills gained during this project into their programme of work pattern, ie., extracting biodiversity metrics and using them to directly guide biodiversity conservation in the BVI and protected areas management, or for activities at JR O'Neal Botanic Gardens. Mrs Nancy Pascoe will receive training and oversee the use of

the project generated data, as part of her role as Deputy Director for Science, Research and Environmental Policy at NPTVI, as well as a member of the Town and Country Planning Department technical review committee for development planning applications at the BVI Government. NPTVI will be trained to use and maintain the biodiversity metric database. Equally, the knowledge generated during this project will remain in the form of written guidelines for using datasets and biodiversity metrics for on the ground conservation management of biodiversity. This manual will include step-by-step instructions to incorporate newly generated data that could be produced in the future (eg., new species discovered, new localities discovered for species), thus allowing an update of the biodiversity metrics and the continual benefits of their use. This analysis will not require further funding, furthermore, the recommendations produced from biodiversity metrics will direct and guide future funding applications and on the ground conservation management. Our approach can be scaled up across other Caribbean islands, benefitting conservation management of neighbouring islands and also for better understanding how BVI plants fit into the regional context. In this way, this innovative project will establish a new 'business as usual' for conservation management in the BVI and better prospects for its biodiversity and associate ecosystem services. The animated educational cartoon and the new DNA extraction activity at JR O'Neal Botanic Gardens constitute permanent resources for engagement with school children and outreach interest in protecting BVI's floral diversity.

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

SupplementaryMaterials
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Section 7 - Risk Management

Q18. Risk Management

Please outline the 6 key risks to achievement of your Project Outcome and how these risks will be managed and mitigated, referring to the Risk Guidance. This should include at least one Fiduciary, one Safeguarding, and one Delivery Chain Risk.

Projects should also draft their initial risk register using the Risk Register Template provided, and be prepared to submit this when requested if they are recommended for funding. Do not attach this to your application.

Risk Description	Impact	Prob.	Inherent Risk	Mitigation	Residual Risk
Fiduciary (Financial) Fluctuating British pound and American dollar rate conversions can significantly affect the delivery of the project for activities planned in BVI if British pounds continue declining significantly in during the project	Major	Possible	Major	Fieldwork activities and number of Kew staff travelling to BVI can be adapted. Fieldwork itineraries have been identified to target species collection. Increasing the proportion of virtual training and engagement. NPTVI has a sterling bank account that funds can be sent to and converted when the rate is optimal.	Moderate

Safeguarding Abuse or harassment happens between members of the project or with any participant of the planned activities	Moderate	Rare	Minor	Kew has a policy which includes our reporting process, incident form and code of best practice, will be shared with partners. We will ensure that these practices are shared and applied, safeguarding risk assessment	Minor
Delivery Chain Staff turnover (in both Kew and NPTVI teams) is such that loss of skills and experience within the team impacts project delivery	Moderate	Possible	Major	We will ensure capacity building is inclusive as possible so that skills are well distributed, as well as document all manuals and protocols. Efficient recruitment of new staff. Effective use of peer-to-peer skills sharing . If any of the Kew team leaves, others with equivalent experience could step in.	Minor
Risk 4 Heavy tropical storm or hurricane impact occurs in the territory during the project can affect fieldwork activities and collection of new samples.	Major	Possible	Major	If this happens in Y1, sampling strategy to gather samples from other herbaria or less affected neighbouring islands will be adopted. BVI staff, resident on the archipelago, would be able to carry with collecting efforts, depending on the damages inflicted by the storms . Fieldwork is planned outside hurricane season.	Moderate
Risk 5 During the time of the project, we are not able to obtain plant samples for DNA studies.	Minor	Unlikely	Minor	We will use specimens from other territories for the same species, herbarium material, or use another plant species of same genus as placeholder. Most of the species not yet collected are common, and widespread or endemics to the Caribbean.	Minor
Risk 6 New pandemic or COVID-19 outbreak happens during the project	Moderate	Likely topossible	Major	We learned from COVID-19 pandemics that we can deliver projects virtually. If lab work is disrupted, the work could be outsourced. Sampling in BVI could be delivered by NPTVI staff. A full revision of activities and times would be required as well as an adaptive project management approach.	Moderate

Section 8 - Implementation Timetable

Q19. Provide a project implementation timetable that shows the key milestones in project activities

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

template as appropriate to describe the intended workplan for your project.

Implementation Timetable Template

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

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Section 9 - Monitoring and Evaluation (M&E)

Q20. Monitoring and evaluation (M&E) plan

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

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

The project leader Dr Juan Viruel and Co-Principal Investigator Ms Sara Barrios will develop and circulate a Monitoring and Evaluation Plan by YR1 Q1. A grant agreement and a new Memorandum of Collaboration between Kew and the NPTVI will be signed at the start of the project, with roles and responsibilities of each partner clearly articulated.
The project will be delivered as a partnership between Kew and NPTVI. Each partner organisation will be a member of the Steering Group which will be co-chaired by Dr Colin Clubbe and Dr Cassender Titley O'Neal, who both have extensive experience of project management, evaluation, and monitoring. The Steering Group will meet quarterly, review progress and ensure the required six month and annual reports for Darwin are prepared on time. These meetings will be minuted, to provide a means of verification for the monitoring and evaluation plan and circulation to stakeholders. In between the quarterly Steering Group meetings, the project team will meet monthly to report on any milestones achieved. The project leader or the Co-PI will chair these meetings and produce minutes to track and evidence actions and decisions. The monthly meeting minutes and progress reports will be provided to the Steering Group and will be used to evaluate the project against the project log frame and identify any barriers that might be encountered to achieve the projects outputs. The Steering Group will also be responsible to evaluate the reports from all outreach activities, ensuring gender inclusion and equality throughout.
The final project report will include an evaluation of the impact of the project and its successes and failures. This report will be submitted to Darwin, as well as made public through the Kew Research Repository (https://kew.iro.bl.uk/). Scientific results will be submitted for publication in peer-reviewed journals. Success in publishing these results, will work as an external validation of the quality of the science undertaken. The publication of any scientific results is likely to happen after the lifetime of the project and will be delivered by the project leader and Co-PI who are both core members of Kew staff and able to follow these through post-project completion.
The project leader and Co-PI will monitor the project achievements and implement any changes, after consulting with NPTVI, in case of lack of progress. The logical framework, implementation timetable and activities will be used by the project leaders and Steering Group to evaluate progress against targets.
Budget considered the time required for M&E in the time committed to steering group meetings, and 5 to 10% of the time allocated to project leader and Co-PI (in kind match-funding) for M&E, organizing meetings and preparing reports. Steering group and monthly meetings will be held virtually, thus not requiring costs for travel and subsistence.

Total project budget for M&E in GBP (this may include Staff, Travel and Subsistence costs)	[redacted]
Percentage of total project budget set aside for M&E (%)	[redacted]
Number of days planned for M&E	100

Section 10 - Logical Framework

Q21. Logical Framework (logframe)

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

Stage 2 Logframe Template

The **logframe template** (N.B. there is a different template for Stage 1 and Stage 2) needs to be downloaded from Flexi-Grant, completed and uploaded as a PDF within your Flexi-Grant application – **please do not edit the logframe template structure (other than adding additional Outputs if needed) as this may make your application ineligible.** On the application form, you will be asked to copy the Impact, Outcome and Output statements and activities - these should be the same as in your uploaded logframe.

Please upload your logframe as a PDF document.

- BCF-St2-and-Single-Stage-Logical-Framework-Template-2022-23-FINAL
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Impact:

Plants and habitats of the BVI are better understood and conserved by using science-based management to increase their resilience to environmental change.

Outcome:

An integrated suite of biodiversity metrics is routinely implemented across the territory to mitigate against current and future threats.

Project Outputs

Output 1:

Biobank for the BVI flora established: tissue and DNA of all native plant species from the BVI secured in accessioned collections.

Output 2:

A complete BVI Plant Tree of Life and biodiversity metrics calculated.

Output 3:

Capacity built for integrating biodiversity metrics into conservation management, action and decision-making.

Output 4:

Biodiversity metrics used to direct conservation action in the face of current and future threats.

Output 5:

Outreach activities to reinforce the importance of conserving native plant species.

Do you require more Output fields?

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

⦿ No

Activities

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

1.1 Collect tissue material from all specimens available at Kew and extract DNA. Quantify the DNA obtained to assess if it is suitable for sequencing methods (see activities in Output 2).
1.2 Conduct fieldwork to collect plant material for ca. 150 native plant species not yet available at RBG Kew (Y1), and for any species not passing the DNA quality check in Activity 1.1 (Y2). Database all new herbarium and tissue samples.
1.3.1 Extract DNA from newly collected materials. Confirm appropriate amounts of DNA were extracted as expected from recently collected materials.
1.3.2 Database all DNAs and incorporate them in the DNA Bank and Tissue collection at RBG Kew.
1.4 Conduct fieldwork and carry out inventory lists of species in areas with low number of presence data, including areas that will be targeted for ecological restoration plans (Y1).

2.1.1 Process samples to generate genetic sequence data for all native plant species in BVI (ca. 650).
2.1.2 Conduct bioinformatic analysis and reconstruct a phylogenetic tree including all native plant species in BVI. Share the data with our colleagues from the Tree of Life Explorer (https://treeoflife.kew.org/).
2.2.1 Run species distribution models for all native plant species in BVI.
2.2.2 Generate a map layer with estimates of species richness using the output from 2.3.1
2.2.3 Conduct conservation assessments and write a full Red List for all native angiosperms in BVI.
2.2.4 Integrate all data in the Biodiverse software to calculate phylogenetic diversity and expected loss of Phylogenetic Diversity across the territory.

3.1 In-person training during Y1 fieldwork for tissue collection for DNA and herbarium.
3.2 In-person workshop with BVI staff for understanding biodiversity metrics use and interpretation of results.
3.3 In-person and online follow-up sessions in Y3 to train NPTVI staff responsible of conservation management decisions (Deputy Director) on using biodiversity metrics.
3.4 Organize an online workshop inviting colleagues and stakeholders from neighbouring islands. Report preparation to assess the attendance by gender and participation in workshops.

4.1 GIS analysis to prepare maps with biodiversity metrics, and lists of species, split by island, Tropical Important Plant Area (TIPA) and protected area.
4.2 Presentation preparation by NPTVI Deputy Director for explaining to different government departments about using biodiversity metrics in development planning.
4.3.1 List inventories prepared for three sites withing National Parks targets.
4.3.2 Species richness and threatened species lists within these areas extracted from the main database.
4.3.3 Analysis of biodiversity metrics to produce a list of key species for ecological restoration for Gorda Peak National Park (NP), Great Tobago NP, and Sandy Cay NP; and others if identified by NPTVI.
4.4 Extract lists of species per island with those contributing more to biodiversity. Share these data with NPTVI for integration in the 2025/26 annual work plan for growing plants.
4.5.1 GIS analysis overlapping habitat resilience to climate change from DPLUS180 and to extreme weather events from DPLUS084 with the biodiversity metrics herein developed.
4.5.2 Produce a list of key species per habitat in the context of climate change and their contributions to biodiversity.

5.1.1 Preparation of report explaining step by step the practical for DNA extraction.
5.1.2 Demonstration with NPTVI staff and training session. Demonstration with school group at J.R. O'Neal Botanic Garden.
5.2 Script and story preparation for educational animated cartoon. Production of the cartoons.

Section 11 - Budget and Funding

Q22. Budget

Please complete the template below which provides the Budget for this application. Some of the questions earlier and below refer to the information in this spreadsheet.

Budget form for projects over £100k

Please ensure you include any co-financing figures in the Budget spreadsheet to clarify the full budget required to deliver this project.

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

Please upload the Lead Partner's financial accounts at the certification page at the end of the application form.

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

BCF-Budget-over-£100k-MASTER-Apr22
13/10/2022
10:11:43
xlsx 94.42 KB

Q23. Funding

Q23a. Is this a new initiative or a development of existing work?

⦿ New Initiative

Please provide details:

This is a new initiative in which phylogenomic data for the entire BVI native flora will be generated for the first time. It will also be the first time that these biodiversity metrics, species richness, threat status and phylogenetic diversity, have been deployed simultaneously on a large scale in the Caribbean region. It relies on the long-term collaboration between Kew and NPTVI, and the vast amount of data and materials collected across many years of joint research projects, many of which were funded by Darwin Initiative.

Q23b. Are you aware of any other individuals/organisations/projects carrying out or applying for funding for similar work?

⦿ No

Q24. Balance of budget spend

Defra are keen to see as much Darwin Plus funding as possible directly benefiting OT communities and economies. While it is appreciated that this is not always possible every effort should be made for funds to remain in-Territory.

Explain the thinking behind your budget in terms of where Darwin Plus funds will be spent. What benefits will the Territory/ies see from your budget? What level of the award do you expect will be spent locally? Please explain the decisions behind any Darwin Plus funding that will not be spent locally and how those costs are important for the project.

The amount of [redacted] is expected to be directly spent in BVI during fieldwork and workshop activities; the remaining budget will cover costs of sequencing and spatial analysis (including staff and overheads). This is justified because RBG Kew has the laboratory facilities to generate the DNA sequence data that forms the basis for the reconstruction of the Tree of Life and the computational infrastructure to compile the biodiversity metrics. The latter will benefit BVI by the numerous on the ground conservation applications to which they will be applied in BVI by staff at NPTVI.

Q25. Capital items

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

NA

Q26. Value for Money

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

The proposed project builds on an existing partnership between RBG Kew and NPTVI across several projects, including several funded by the Darwin Initiative. It makes full use of all that has been achieved in the last two decades , including a large collection of well-identified plant specimens, extensive plant distributional data, unique and complementary staff expertise in both institutions, and cutting-edge facilities to generate innovative biodiversity metrics using phylogenomic data. The requested funds represent realistic values gained from extensive experience, including fieldwork planning (field work costs estimated at [redacted] per Kew staff for a period of two and a half weeks). The competitive sequencing costs per sample available due to the scale of the DNA sequencing operations across multiple projects at Kew (molecular lab and sequencing costs estimated at [redacted] per species). Several ongoing projects using this methodology at Kew allowed us having favourable agreements with companies for running the sequencing (final step of the process after molecular lab work). We have already produced pilot DNA sequence data for all known threatened species in BVI and reconstructed a phylogenetic tree using the methodologies and budget proportions herein proposed to demonstrate our capacity and the value for money of this project (see Supplementary Materials). In country staff costs will support warden daily costs, which was estimated based on [redacted] for 10 days of work for three Terrestrial Warden at NPTVI.

Section 12 - Safeguarding and Ethics

Q27. Outputs of the project and Open Access

All outputs from Darwin Plus projects should be made available on-line and free to users whenever possible. Please outline how you will achieve this and detail any specific costs you are seeking from Darwin Plus to fund this.

Scientific publications resultant from our work will follow the green open access approach, by posting an earlier version of a manuscript in a public repository such as Authorea (https://www.authorea.com/) or RBG Kew repository (https://kew.iro.bl.uk/). Interim reports produced during the project, including annual reports (see Monitoring and Evaluation section) will be made publicly available in a public repository (eg., RBG Kew research repository). Biodiversity metrics will be publicly available concomitant with the scientific publication of the results and using an appropriate public database for different types of data for interpretation using Biodiverse (https://shawnlaffan.github.io/biodiverse/). For example, genomic sequence data will be available in the Sequence Read Archive, SRA (https://www.ncbi.nlm.nih.gov/sra). and will be incorporated in the Kew Tree of Life Explorer (https://treeoflife.kew.org/). Newly collected specimens will be included in UKOTs Specimens and Species Database (https://brahmsonline.kew.org/UKOT/Home/Index) and in the Kew online catalogue (new version to be released in 2023).

Q28. Safeguarding

Projects funded through Darwin Plus must fully protect vulnerable people all of the time, wherever they work. In order to provide assurance of this, projects are required to have appropriate safeguarding policies in place.

Please confirm the Lead Partner has the following policies in place and that these can be available on request:

Please upload the lead partner's Safeguarding Policy as a PDF on the certification page.

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

Please outline how you will implement your safeguarding policies in practice and ensure that all partners apply the same standards as the Lead Partner.

Our safeguarding policy, which includes our reporting process, incident form and code of best practice, will be shared with partners. We will share our safeguarding risk assessment for the project with partners, so they are aware of the safeguarding risks and control measures we are putting in place to mitigate these. We will also complete due diligence checks on our partners to ensure they are appropriate to be working on the project. If we have any concerns regarding safeguarding during these checks, they will not continue to work on the project for the safety of the children and adults at risk that the project may come into contact with. Any safeguarding incidents that occur during the project work will be reported to and investigated by our Safeguarding department, as the lead organisation. Where necessary this will include external referral, again managed by us as lead.

Q29. Ethics

Outline your approach to meeting the key ethical principles, as outlined in the guidance. Additionally, are there any human rights and/or international humanitarian law risks in relation to your project? If there are, have you carried out an assessment of the impact of those risks, and of measures that may be taken in order to mitigate them? Any risk assessment and mitigation of human rights and/or international humanitarian law risks should be included in the Question 18 on Risk Management.

We will follow the key principles of good ethical practice. We did not identify any human rights and/or international humanitarian law risks in relation to our project.

Section 13 - Project Staff

Q30. Project staff

Please identify the core staff (identified in the budget), their role and what % of their time they will be working on the project.

Please provide 1-page CVs or job description, further information on who is considered core staff can be found in the Finance Guidance**.**

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Dr. Juan Viruel	**Project Leader**	10	Checked
Ms. Sara Barrios	Co-Principal Investigator	20	Checked
Dr. Colin Clubbe	Steering group co-chair	5	Checked
Mr. Thomas Heller	Co-investigator	80	Checked

Do you require more fields?

◉ Yes

Name (First name, Surname)	Role	% time on project	1 page CV or job description attached?
Dr. Carolina Tovar	Co-investigator	5	Checked
Dr. Felix Forest	Co-investigator	5	Checked
Research Assistant	Co-investigator	100	Checked
Dr. Cassander Titley O'Neal	Steering group co-chair	5	Checked
Mrs. Nancy Pascoe	Co-investigator	15	Checked
Keith Grant	Co-investigator	10	Checked
No Response	*No Response*	0	Unchecked
No Response	*No Response*	0	Unchecked

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

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

CombinedCVs
13/10/2022
09:58:01
pdf 2.05 MB

Have you attached all project staff CVs?

⦿ Yes

Section 14 - Project Partners

Q31. Project partners

Please list all the Project Partners (including the Lead Partner – i.e. the partner who will administer the grant and coordinate the delivery of the project), clearly setting out their roles and responsibilities in the project including the extent of their engagement so far and planned.

This section should demonstrate the capability and capacity of the Project Partners to successfully deliver the project. Please provide Letters of Support for all project partners or explain why this has not been included.

The partners listed here should correspond to the Delivery Chain Risk Map (within the Risk Register template) which you will be asked to submit if your project is recommended for funding.

Lead partner name:	Royal Botanic Gardens, Kew
Is the Lead Partner based in a UKOT where the project is working?	⦿ No
Please explain why this project is led from outside the UKOT	NPTVI has capacity to lead one DarwinPlus project, (currently is DPLUS180), and is project partner in other projects. Kew has cutting-edge infrastructure (laboratories, collections, computing) and expertise to deliver this project. With over 20 years of collaboration, both teams have jointly delivered numerous projects. M&E includes mixed steering group.
Website address:	www.kew.org
Details (including roles and responsibilities and capacity to engage with the project):	Kew will provide overall project management and financial controls. Project leader, Dr Viruel, has extensive experience in research projects leadership, and will coordinate data generation together with Ms Barrios, co-PI, who will lead fieldwork and Red List assessments. Dr Forest and Dr Tovar will coordinate phylogenetic diversity and spatial analysis, respectively (supported by research assistant position in Y2). Mr Tom Heller, expert on BVI flora, will conduct fieldwork and lab work. Dr Clubbe will coordinate the steering group, together with Dr Titley O'Neal (NPTVI). Mrs Pascoe (NPTVI) will lead local activities, with the support of NPTVI staff for fieldwork and data collection. The design of restoration programmes and enabling tools for conservation management based on biodiversity metrics will be jointly delivered by both teams.
Allocated budget (proportion or value):	[redacted]

Representation on the Project Board (or other management structure)	⦿ Yes
Have you included a Letter of Support from this organisation?	⦿ Yes
Have you provided a cover letter to address your Stage 1 feedback?	⦿ Yes

Do you have partners involved in the Project?

⦿ Yes

1. Partner Name:	National Parks Trust of the Virgin Islands (NPTVI)
Website address:	https://www.bvinpt.org/
Details (including roles and responsibilities and capacity to engage with the project):	NPTVI was legally established in 1961 to manage terrestrial and marine habitats through designated national parks and protected areas. NPTVI has successfully delivered nine Darwin Plus projects. Under the direction of Dr Cassander Titley O'Neal, NPTVI's biodiversity conservation and terrestrial parks programmes are managed by Deputy-Director for Science, Research and Environmental Policy, Mrs Nancy Pascoe. They will manage the project locally, including field support, supervision of local staff and collection of data and plant material.
Allocated budget (proportion or value):	[redacted]
Representation on the Project Board (or other management structure)	⦿ Yes
Have you included a Letter of Support from this organisation?	⦿ Yes

2. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Allocated budget (proportion or value):	£0.00

Representation on the Project Board (or other management structure)	○ Yes ○ No
Have you included a Letter of Support from this organisation?	○ Yes ○ No

3. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Allocated budget (proportion or value):	£0.00
Representation on the Project Board (or other management structure)	○ Yes ○ No
Have you included a Letter of Support from this organisation?	○ Yes ○ No

4. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Allocated budget (proportion or value):	£0.00
Representation on the Project Board (or other management structure)	○ Yes ○ No
Have you included a Letter of Support from this organisation?	○ Yes ○ No

5. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Allocated budget (proportion or value):	£0.00
Representation on the Project Board (or other management structure)	○ Yes ○ No
Have you included a Letter of Support from this organisation?	○ Yes ○ No

6. Partner Name:	*No Response*
Website address:	*No Response*
Details (including roles and responsibilities and capacity to engage with the project):	*No Response*
Allocated budget (proportion or value):	£0.00
Representation on the Project Board (or other management structure)	○ Yes ○ No
Have you included a Letter of Support from this organisation?	○ Yes ○ No

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

No Response

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

LoS_merged
14/10/2022
17:48:23
pdf 1.19 MB

Cover_letter_Stage2
13/10/2022
10:37:00
pdf 268.98 KB

Section 15 - Lead Partner Capability and Capacity

Q32. Lead Partner Capability and Capacity

Has your organisation been awarded Darwin Plus, Darwin Initiative or Illegal Wildlife Trade Challenge Fund funding before (for the purposes of this question, being a partner does not count)?

⦿ Yes

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

Reference No	Project Leader	Title
DPLUS114	Stuart Cable	Tropical Important Plant Areas and Important Plant Species in TCI
DPLUS084	Thomas Heller	Identifying and conserving resilient habitats in the British Virgin Islands
DPLUS080	Rosemary Newton	Securing South Georgia's native habitats following invasive species control
23-002	Martin Cheek	Important Plant Areas in Guinea-Conakry
28-012	Maria Vorontsova	Native grass forage management to feed people and protect forests
27-014	Aaron Davis	Coffee natural capital for environmental and livelihood sustainability in Uganda

Have you provided the requested signed audited/independently examined accounts?

If yes, please upload these on the certification page. Note that this is not required from Government Agencies.

⦿ Yes

Section 16 - Certification

Certification

On behalf of the

Trustees

of

Royal Botanic Gardens, Kew

I apply for a grant of

[redacted]

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

(This form should be signed by an individual authorised by the applicant institution to submit applications and sign

contracts on their behalf.)

- **I have enclosed CVs for project key project personnel, a cover letter, letters of support, a budget, logframe, Safeguarding Policy and project implementation timetable.**
- **Our last two sets of signed audited/independently verified accounts and annual report are also enclosed.**

Checked

Name	Professor Alexandre Antonelli
Position in the organisation	Director of Science
Signature (please upload e-signature)	AA sig new 12/10/2022 16:53:01 png 21.36 KB
Date	12 October 2022

Please attach the requested signed audited/independently examined accounts.

RBG-Kew-Annual-Report-2020-2021-Web-accessible-final
13/10/2022
12:19:04
pdf 822.21 KB

Kew annual-report-accounts-2019-2020
13/10/2022
12:18:57
pdf 785.52 KB

Please upload the Lead Partner's Safeguarding Policy as a PDF

Safeguarding Policy January 2022
13/10/2022
08:41:40
pdf 389.28 KB

Section 17 - Submission Checklist

Checklist for submission

	Check
I have read the Guidance, including the "Darwin Plus Guidance**", "**Monitoring Evaluation and Learning Guidance**", "**Risk Guidance**" and "**Financial Guidance**".**	Checked
I have read, and can meet, the current Terms and Conditions **for this fund.**	Checked
I have provided actual start and end dates for the project.	Checked
I have provided my budget based on UK government financial years i.e. 1 April – 31 March and in GBP.	Checked

I have checked that our budget is complete, correctly adds up and I have included the correct final total at the start of the application.	Checked
The application been signed by a suitably authorised individual (clear electronic or scanned signatures are acceptable).	Checked
I have attached my completed logframe and timeline as a PDF using the templates provided.	Checked
I have included a 1 page CV or job description for all the Project Staff identified at Question 30, including the Project Leader, or provided an explanation of why not.	Checked
I have included a letter of support from the lead partner and main partner organisation(s), including relevant OT Governments, identified at Question 31, or an explanation of why not.	Checked
I have included a cover letter from the Lead Partner, outlining how any feedback received at Stage 1 has been addressed where relevant.	Checked
I have included a copy of the Lead Partner's safeguarding policy, which covers the criteria listed in Question 28.	Checked
I have included a signed copy of the last 2 annual report and accounts for the Lead Partner, or provided an explanation if not.	Checked
I have checked the Darwin Plus website **immediately prior to submission to ensure there are no late updates.**	Checked
I have read and understood the Privacy Notice on the Darwin Plus website.	Checked

We would like to keep in touch!

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

Checked

Data protection and use of personal data

Information supplied in the application form, including personal data, will be used by Defra as set out in the **Privacy Notice**, available from the Forms and Guidance Portal.

This **Privacy Notice must be provided to all individuals** whose personal data is supplied in the application form. Some information may be used when publicising the Darwin Initiative including project details (usually title, lead partner, project leader, location, and total grant value).

Project Title: Biodiversity metrics for conservation management in the British Virgin Islands

	Activity	No. of months	Year 1 (23/24)				Year 2 (24/25)				Year 3 (25/26)			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1: Biobank for the BVI flora established: tissue and DNA of all native plant species from the BVI secured in accessioned collections		24												
1.1 New herbarium and tissue samples collected during fieldwork for the ca. 150 previously non-collected plant species in BVI by YR2 Q4, from a baseline of 75% available in Y1.	1.1 Collect tissue material from all specimens available at Kew and extract DNA. Quantify the DNA obtained to assess if it is suitable for sequencing methods (see activities in Output 2).	9												
1.2 DNA bank created for all plant native species (ca. 650) in the BVI by YR2 Q4, increasing the available DNAs ten times from a baseline in Y1 of 10% species.	1.2 Conduct fieldwork to collect plant material for ca. 150 native plant species not yet available at RBG Kew (Y1), and for any species not passing the DNA quality check in Activity 1.1 (Y2). Database all new herbarium and tissue samples.	15												
1.3 Databasing completed for all newly collected materials by YR3 Q4 to achieve a full representation of all ca. 650 native plans in BVI.	1.3.1 Extract DNA from newly collected materials. Confirm appropriate amounts of DNA were extracted as expected from recently collected materials.	6												
	1.3.2 Database all DNAs and incorporate them in the DNA Bank and Tissue collection at RBG Kew.	3												
1.4 Collect native plant species presence points to increase our current database by 30% by YR2 Q2, from a baseline of 10,000 points.	1.4 Conduct fieldwork and carry out inventory lists of species in areas with low number of presence data, including areas that will be targeted for ecological restoration plans (Y1).	18												
Output 2: A complete BVI Plant Tree of Life and biodiversity metrics calculated		18												
2.1 Generate genetic sequence data and complete the Tree of Life for all native plant species in BVI (ca. 650) by YR2 Q4, from a baseline of 36 species.	2.1.1 Process samples to generate genetic sequence data for all native plant species in BVI (ca. 650).	12												
	2.1.2 Conduct bioinformatic analysis and reconstruct a phylogenetic tree including all native plant species in BVI. Share the data with our colleagues working in the Tree of Life Explorer (https://treeoflife.kew.org/).	12												
2.2 Three biodiversity metrics calculated for the entire flora of the BVI: species richness, IUCN Red List assessments and phylogenetic diversity by YR3 Q2.	2.2.1 Run species distribution models for all native plant species in BVI.	12												
	2.2.2 Generate a map layer with estimates of species richness using the output from 2.3.1	6												
	2.2.3 Conduct conservation assessments and write a full Red List for all native angiosperms in BVI.	12												

Project Title: Biodiversity metrics for conservation management in the British Virgin Islands

	Activity	No. of months	Year 1 (23/24)				Year 2 (24/25)				Year 3 (25/26)			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	2.2.4 Integrate all data in Biodiverse software to calculate phylogenetic diversity across the territory.	9												
Output 3: Capacity built for integrating biodiversity metrics into conservation management, action and decision-making, and public engagement		15												
3.1 At least three NPTVI staff trained and actively collecting herbarium and tissue samples and associated data by YR1 Q4	3.1 In person training during Y1 fieldwork for tissue collection for DNA and herbarium.	6												
3.2 At least three NPTVI staff trained and step by step manuals produced for interpreting biodiversity metrics data and designing ecological restoration plans by YR3 Q4.	3.2 In person workshop with BVI staff for understanding biodiversity metrics use and interpretation of results.	6												
3.3 NPTVI Deputy Director trained to manage and update biodiversity metrics database and use it to design ecological restoration plans	3.3 In person and online follow-up sessions in Y3 to train NPTVI staff responsible of conservation management decisions (Deputy Director) on using biodiversity metrics.	9												
3.4 End of project workshop to integrate biodiversity metrics in conservation shared with wider stakeholders, including partners from other Caribbean islands (including overseas territories) by YR3 Q4.	3.4 Organize an online workshop inviting colleagues and stakeholders from neighbouring islands. Report is produced assessing the attendance by gender and participation in workshops	3												
Output 4: Biodiversity metrics used to direct conservation action in the face of current and future threats		12												
4.1 Identify areas with the highest and lowest biodiversity levels per island, Tropical Important Plant Area (TIPA) and protected area to inform conservation management by local stakeholders by YR3 Q2.	4.1 GIS analysis to prepare maps with biodiversity metrics, and lists of species, split by island, TIPA and protected area.	12												
4.2 NPTVI provide feedback on future planning based on biodiversity metrics to at least three government departments (town & country planning, disaster management, agriculture).	4.2 Presentation preparation by NPTVI Deputy Director for explaining to different government departments about using biodiversity metrics in development planning.	6												

Project Title: Biodiversity metrics for conservation management in the British Virgin Islands

	Activity	No. of months	Year 1 (23/24)				Year 2 (24/25)				Year 3 (25/26)			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
4.3 At least three ecological restoration plans developed within National Parks using biodiversity metrics to respond to biodiversity loss by YR3 Q4.	4.3.1 List inventories prepared for three sites withing National Parks targets.	9												
	4.3.2 Species richness and threatened species lists within these areas extracted from the main database.	9												
	4.3.3 Analysis of biodiversity metrics to produce a list of key species for ecological restoration for Gorda Peak NP, Great Tobago NP, and Sandy Cay NP; and others if identified.	9												
4.4 The 2025/26 annual work plan at the JRO'Neal Botanic Garden includes propagation of five species per island for ecological restoration that contribute the most to biodiversity.	4.4 Extract lists of species per island with those contributing more to biodiversity. Share these data with NPTVI for integration in the 2025/26 annual work plan for growing plants.	9												
4.5 Identification of key plant species to increase habitat resilience based on GIS analysis overlapping biodiversity metrics and ecosystem services data from DPLUS180 and habitats resilience by DPLUS084 by YR3 Q4.	4.5.1 GIS analysis overlapping habitat resilience to climate change from DPLUS180 and to extreme weather events from DPLUS084 with the biodiversity metrics herein developed.	3												
	4.5.2 Produce a list of key species per habitat in the context of climate change and their contributions to biodiversity.	3												
5. Outreach activities to reinforce the importance of conserving native plant species.		12												
5. Educational workshop for schools taken place at JRO'Neal Botanic Garden, on how to extract DNA from plants.	5.1.1 Preparation of report explaining step by step the practical for DNA extraction.	9												
	5.1.2 Demonstration with NPTVI staff and training session. Demonstration with school group at JRO'Neal Botanic Garden	9												
5.2 Produce educational tools and activities about the importance of safeguarding native biodiversity and growing native plants instead of exotic species by YR3 Q4.	5.2 Script and story preparation for educational animated cartoon. Production of the cartoons.	12												

Project Title: Biodiversity metrics for conservation management in the British Virgin Islands

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: (Max 30 words) Plants and habitats of the BVI are better understood and conserved by using science-based management to increase their resilience to environmental change.			
Outcome: (Max 30 words) An integrated suite of biodiversity metrics is routinely implemented across the territory to mitigate against current and future threats.	0.1 Curated collections and presence data enhanced to represent 100% of all known native plant species in BVI and stored as duplicates in Puerto Rico (MAPR) and UK (Kew) herbaria by YR3 Q4, from a baseline of 75% available in Y1. 0.2 Three internationally recognized biodiversity metrics completed for approximately 650 BVI native angiosperms and publicly available by YR3, from a baseline of 5% available in Y1. 0.3 BVI conservation stakeholders use biodiversity metrics to respond to different threats, directing their conservation action planning by Y3.	0.1 Database comprising BVI's specimens, tissue, and DNA collections at RBG Kew and supplemented with collections at regional herbaria (MAPR) for all ca. 650 native plant species in BVI. 0.2 Map layers containing biodiversity metrics incorporated as GIS layers into NPTVI databases, on the BVI National GIS and other regional stakeholders. 0.3 Published participant list and report for workshops, delivered for local stakeholders and regional partners. Change after training measured by the number of conservation plans developed by stakeholders using the biodiversity metrics. Assessment of gender inclusivity across workshops and outreach activities.	Kew and BVI GIS specialists remain committed to the project, IT equipment, software and infrastructure are fit for purpose at Kew and in BVI. Project partners able to get into the field to collect specimens. Project is not disrupted by major environmental events e.g., hurricanes, pandemics. Online resources are maintained during and beyond the life of the project.

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Outputs: **1.** Biobank for the BVI flora established: tissue and DNA of all native plant species from the BVI secured in accessioned collections.	1.1 New tissue samples (with verified herbarium vouchers) collected during fieldwork for the ca. 150 previously non-collected plant species in BVI by YR2 Q4, from a baseline of 75% available in Y1. 1.2 DNA bank created for all plant native species (ca. 650) in the BVI by YR2 Q4, increasing the available DNAs ten times from a baseline in Y1 of 10% of species. 1.3 Databasing completed for all newly collected materials by YR3 Q4 to achieve a full representation of all ca. 650 native plans in BVI. 1.4 Collect native plant species presence points to increase our current database by 30% by YR2 Q2, from a baseline of 10,000 points.	1.1 Tissue material collected for at least 150 species and published in fieldwork reports. Data included in Y2 annual report and open access databases (dnabank.science.kew.org, brahmsonline.kew.org/ukot/). 1.2 Report with the results of DNA extractions in Y2 annual report. Accession numbers created in the DNA & Tissue Bank at Kew (dnabank.science.kew.org). 1.3 Herbarium vouchers data recorded and available in database (http://brahmsonline.kew.org/ukot/). Data shared with local partners. 1.4 UKOTs Species and Specimens Database (http://brahmsonline.kew.org/ukot/) updated with new presence points and reported in Y2 annual report.	Kew staff are able to travel to the BVI to collect materials. Export and import (e.g., CITES) permits issued for all missing species. Being able to locate all the unstudied species. Kew remain committed to maintain and enhance their specimen databases and making these publicly available. Kew's UKOTs team retains capacity to be able to maintain the UKOTs Species and Specimens Database.

2. A complete BVI Plant Tree of Life and biodiversity metrics calculated.	2.1 Generate DNA sequence data and complete the Tree of Life for all native plant species in BVI (ca. 650) by YR2 Q4, from a baseline of 36 species. 2.2 Three biodiversity metrics calculated for the entire flora of the BVI: species richness, IUCN Red List assessments and phylogenetic diversity by YR3 Q2.	2.1 DNA sequence data publicly available in SRA (https://www.ncbi.nlm.nih.gov/sra), and number of sequences produced in Y3 annual report. Phylogenetic analysis completed and a fully resolved phylogenetic tree for all native plants in BVI available. Data shared with Kew Tree of Life Explorer (https://treeoflife.kew.org/). 2.2 GIS layers available for BVI National GIS containing biodiversity metrics and inputs to generate them. Red List assessments completed, ready to be reviewed and submitted to the IUCN Red List of Threatened Species.	DNA successfully extracted from problematic species (e.g., containing secondary metabolites, polysaccharides, etc.). The incorporation of new data and maintenance of the Kew Tree of Life Explorer continues at current levels. Sufficient presence points (10-15 per species) available from fieldwork activities and online resources (see methods) to adequately calculate species model distribution for each species.

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3. Capacity built for integrating biodiversity metrics into conservation management, action and decision-making.	3.1 At least three NPTVI staff trained and actively collecting herbarium and tissue samples and associated data by YR1 Q4. 3.2 At least three NPTVI staff trained and step by step manuals produced for interpreting biodiversity metrics data and designing ecological restoration plans by YR3 Q4. 3.3 NPTVI Deputy Director trained to manage and update biodiversity metrics database and use it to design ecological restoration plans. 3.4 End of project workshop to integrate biodiversity metrics in conservation shared with wider stakeholders, including partners from other Caribbean islands (including overseas territories) by YR3 Q4.	3.1 List of specimens collected by NPTVI staff included in Y2 annual report. Gender balance measured per fieldwork activity. 3.2 In person workshop conducted for interpretation of biodiversity metrics data. Knowledge change measured by pre- and post-questionnaire, and report of participation by gender. 3.3 Three GIS layers with biodiversity metrics incorporated in NPTVI´s workflow. NPTVI able to produce an ecological restoration plan independently at the end of the project as a result of in person and online support training. 3.4 Report produced assessing the attendance by gender and participation in workshops, inviting representatives from Anguilla, Bermuda, Puerto Rico, TCI, Cayman Islands and Montserrat. Report of a questionnaire on how to use our methods elsewhere.	NPTVI retains trained staff. Appropriate designer is selected to produce cartoon.

4. Biodiversity metrics used to direct conservation action in the face of current and future threats.	4.1 Identify areas with the highest and lowest biodiversity levels and with the highest proportion of threatened plants, per island, Tropical Important Plant Area (TIPA) and protected areas to inform conservation management by local stakeholders by YR3 Q2. 4.2 NPTVI provide feedback on future planning based on biodiversity metrics to at least three government departments (Town and Country Planning, Disaster Management and Agriculture and Fisheries Departments). 4.3 At least three ecological restoration plans developed within National Parks using map layers containing biodiversity metrics to respond to biodiversity loss by YR3 Q4. 4.4 The 2025/26 annual work plan at the J.R. O'Neal Botanic Garden includes propagation of five species per island for	4.1 Local stakeholders with access to newly generated map layers with all three biodiversity metrics (species richness, phylogenetic diversity and threatened species) per island, TIPA and protected area. 4.2 NPTVI give a presentation to the Development Planning Committee and the National GIS groups. 4.3 At least three ecological restoration plans available: Gorda Peak NP (illegal urbanisation and illegal agriculture), Great Tobago NP (invasive plants and feral goats), and Sandy Cay NP (hurricane impacted). Extract lists of key species from biodiversity metrics map layers to prioritise in ecological restoration produced. 4.4 Planning for 2026 Arbour Day propagation plant list incorporates the five species contributing the most to biodiversity per island.	Kew staff are able to travel to the BVI to collect materials and new data. We have continued access to high-capacity computing at Kew and capacity to maintain databases. Biodiverse software is maintained. Evidence bases successfully established from outputs 1 and 2. BVI National GIS maintained by BVI Government. J. R. O'Neal Botanic Garden maintains capacity (facilities and staff) to grow native plants in the nursery.

	ecological restoration that contribute the most to biodiversity. 4.5 Identification of key plant species to increase habitat resilience based on GIS analysis overlapping biodiversity metrics and ecosystem services data from DPLUS180 and forest resilience by DPLUS084 by YR3 Q4.	4.5 At least three ecological restoration plans (lists with species suitable for ecological restoration) developed for areas where GIS layers overlap between this project, DPLUS180 and DPLUS084 layers.	
5. Outreach activities to reinforce the importance of conserving native plant species.	5.1 Educational workshop for schools taken place at JRO'Neal Botanic Garden, on how to extract DNA from plants. 5.2 Produce educational animated tools and activities about the importance of safeguarding native biodiversity and growing native plants instead of exotic plant species by YR3 Q4.	5.1 At least three NPTVI staff trained to carry out an experiment with school children, on how to extract DNA from plants, gender balance reported. Demonstration delivered with at least one school group, and with community groups during the Arbour Day. Workshop materials made available for further use in the botanic garden outreach activities. 5.2 Educational animated cartoon to showcase the programme completed and shared on public channels in BVI (social media, local television, etc). Importance of growing native species in BVI the main theme of future Arbour Day activities. Participation report including gender balance attendance.	Kew staff are able to travel to the BVI for training and educational activities.

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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. Each activity should start on a new line and be no more than approximately 25 words.)

1.1 Collect tissue material from all specimens available at Kew and extract DNA. Quantify the DNA obtained to assess if it is suitable for sequencing methods (see activities in Output 2).
1.2 Conduct fieldwork to collect plant material for ca. 150 native plant species not yet available at RBG Kew (Y1), and for any species not passing the DNA quality check in Activity 1.1 (Y2). Database all new herbarium and tissue samples.
1.3.1 Extract DNA from newly collected materials. Confirm appropriate amounts of DNA were extracted as expected from recently collected materials.
1.3.2 Database all DNAs and incorporate them in the DNA Bank and Tissue collection at RBG Kew.
1.4 Conduct fieldwork and carry out inventory lists of species in areas with low number of presence data, including areas that will be targeted for ecological restoration plans (Y1).

2.1.1 Process samples to generate genetic sequence data for all native plant species in BVI (ca. 650).
2.1.2 Conduct bioinformatic analysis and reconstruct a phylogenetic tree including all native plant species in BVI. Share the data with our colleagues from the Tree of Life Explorer (https://treeoflife.kew.org/).
2.2.1 Run species distribution models for all native plant species in BVI.
2.2.2 Generate a map layer with estimates of species richness using the output from 2.3.1
2.2.3 Conduct conservation assessments and write a full Red List for all native angiosperms in BVI.
2.2.4 Integrate all data in the Biodiverse software to calculate phylogenetic diversity and expected loss of Phylogenetic Diversity across the territory.

3.1 In-person training during Y1 fieldwork for tissue collection for DNA and herbarium.
3.2 In-person workshop with BVI staff for understanding biodiversity metrics use and interpretation of results.
3.3 In-person and online follow-up sessions in Y3 to train NPTVI staff responsible of conservation management decisions (Deputy Director) on using biodiversity metrics.
3.4 Organize an online workshop inviting colleagues and stakeholders from neighbouring islands. Report preparation to assess the attendance by gender and participation in workshops.

4.1 GIS analysis to prepare maps with biodiversity metrics, and lists of species, split by island, Tropical Important Plant Area (TIPA) and protected area.
4.2 Presentation preparation by NPTVI Deputy Director for explaining to different government departments about using biodiversity metrics in development planning.
4.3.1 List inventories prepared for three sites withing National Parks targets.
4.3.2 Species richness and threatened species lists within these areas extracted from the main database.

4.3.3 Analysis of biodiversity metrics to produce a list of key species for ecological restoration for Gorda Peak National Park (NP), Great Tobago NP, and Sandy Cay NP; and others if identified by NPTVI.
4.4 Extract lists of species per island with those contributing more to biodiversity. Share these data with NPTVI for integration in the 2025/26 annual work plan for growing plants.
4.5.1 GIS analysis overlapping habitat resilience to climate change from DPLUS180 and to extreme weather events from DPLUS084 with the biodiversity metrics herein developed.
4.5.2 Produce a list of key species per habitat in the context of climate change and their contributions to biodiversity.

5.1.1 Preparation of report explaining step by step the practical for DNA extraction.
5.1.2 Demonstration with NPTVI staff and training session. Demonstration with school group at J.R. O'Neal Botanic Garden.
5.2 Script and story preparation for educational animated cartoon. Production of the cartoons.