Darwin Plus: Final Report

To be completed with reference to the "Project Reporting Information Note": *(https://darwinplus.org.uk/resources/information-notes/).*

It is expected that this report will be a **maximum of 20 pages** in length, excluding annexes.

Submission Deadline: no later than 3 months after agreed end date.

Submit to: BCF-Reports@niras.com including your project ref in the subject line.

Darwin Plus Project Information

Project reference	DPLUS102
Project title	Saving Tristan's only native tree and its associated unique buntings
Territory(ies)	Tristan da Cunha
Lead Organisation	Royal Society for the Protection of Birds (RSPB)
Project partner(s)	Conservation Department, Tristan da Cunha Government Centre for Agriculture and Bioscience International (CABI) Fera Science
Darwin Plus Grant value	£306,653
Start/end date of project	July 2020 - March 2024
Project Leader name	Andy [redacted]
Project website/Twitter/blog etc.	N/A
Report author(s) and date	David [redacted] (RSPB), Norbert [redacted] & Corin [redacted] (CABI) and Chris [redacted] (Fera)

1 Project Summary

This project is an urgent intervention to prevent the collapse of the *Phylica* forest ecosystem, and the global extinction of unique bunting species in Tristan da Cunha. Invasive alien species are one of the greatest threats to the archipelago's biodiversity. Over the course of the past decade, an invasive scale insect (*Coccus hesperidum*) has infested Tristan's only native tree species, *Phylica arborea*, smothering, weakening and limiting seed setting in many trees on Tristan, Nightingale and Inaccessible Island World Heritage Site (WHS) (Figure 2). Endemic large-billed *Nesospiza* buntings, evolved to specialise on the fruit of *Phylica* trees, are threatened with extinction due to insufficient availability of habitat and food. Invasive New Zealand flax (*Phormium tenax*) presents a further pressure to the *Phylica* habitat on Inaccessible WHS and has the ability to outcompete the island's native species.

In close collaboration with international experts and Tristan's Conservation Department, we have selected, safely tested, and released two biocontrol agents in heavily infested *Phylica* stands on the three northern islands (see map, Figure 1) to sustainably manage invasive scale numbers. We have also controlled invasive flax on Inaccessible Island and built local capacity in specialist rope access skills. These actions will, in the long-term, deliver significant biodiversity benefits, facilitate the restoration of the *Phylica* forest ecosystem - making it more resilient in a changing climate - and safeguard threatened bunting species.

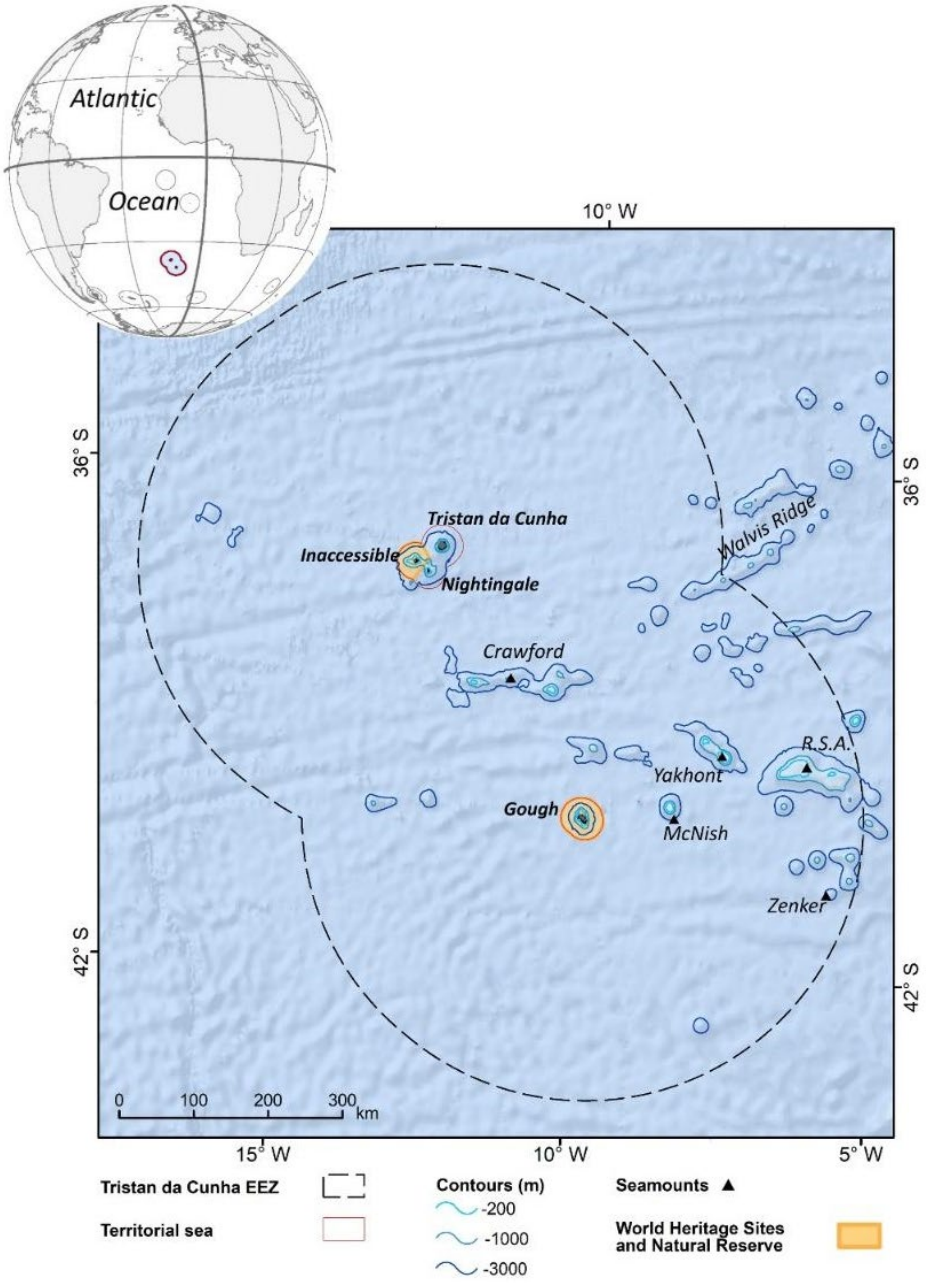

Figure 1. *(above) Tristan da Cunha archipelago is the world's most remote inhabited island group, located almost half-way between South America and South Africa. The project will work on the three main northern islands: Inaccessible, Nightingale and Tristan.*

Figure 2. *(right) The devastation on Nightingale from invasive scale insects and the two storms in 2019.*

2 Project Partnerships

The partnership was made up of the Conservation and Agriculture Departments within the Tristan da Cunha Government, the Centre for Agriculture and Bioscience International (CABI), Fera science, and the Royal Society for the Protection of Birds (RSPB). Each partner brought unique knowledge and experience to the project: technical skills, local knowledge, expert knowledge in biocontrol agents and invasive species, experience of working with Territories and on-the-ground conservation knowhow. All partners have been involved in preparing this Final Report.

The partnership was formed because of a request from Tristan to tackle the threats to the Critically Endangered Wilkins' Bunting, and partners with the appropriate expertise were brought together. Tristan's Agriculture Department was not an initial project partner but was brought in during the project's second year to utilise the skillset of the team to propagate seedlings for the new *Phylica* nursery on the island.

Although it was the primary responsibility of the RSPB to monitor and evaluate the project, all partners regularly met to discuss project progress, make decisions together, and feed into planning. Full team meetings occurred throughout the project, generally planned for critical periods (e.g., receiving a new shipment of wasps, prior to releases, following a visit etc.). These were supplemented by more regular meetings with individual partners to ensure project activities remained on track and issues were identified before they could escalate.

It is testament to the project's partnership and that, despite the restrictions of Covid and relying on remote supervision, the team were able to successfully test, rear and transport a biocontrol agent (BCA) to Tristan in the first year - a journey which took almost a month with the tiny wasps travelling by land, sea and air, changing hands five times! Tristan's conservation team were able to successfully establish a culture on the island from these wasps and make some releases - a remarkable achievement for a team who had no prior experience with BCAs. **Kirsty Repetto** (TDC) took real ownership for caring for the wasps on Tristan: *"I was quite daunted by the responsibility when the wasps first arrived, especially because of how much danger the Wilkins' Bunting was in....one year on I am quite happy with what I've achieved and have learnt a huge amount; it's been stressful at times but very rewarding...I feel I have made a big contribution to conservation in my islands"* (March 2022). Kirsty's commitment to the work generated real on-island trust in the project and she engaged many members of the community over the years, showing them the rearing set up and answering questions.

COVID-19 clearly presented several challenges for this project and partnership, not least because it took almost three years before a specialist could visit Tristan and support the team in person (and that visit was less than four days!). Following his short visit to the islands in January 2023, **Dr Norbert Maczey** (CABI) had these reflections:

"*Remote training and supervision of the local activities via Zoom and other media worked very well and allowed the establishment and maintenance of the parasitoid culture and first releases of the agent on Nightingale. However, because nobody based on Tristan had got any previous experience working with insects, the team still struggled with some specific tasks such as finding sufficient scales for upscaling numbers of the parasitoid for more substantial releases and providing evidence for its establishment. These minor, but still important, difficulties could quickly be sorted out when the ease of travel restrictions made visits feasible again. Although the logistics of travel still only allowed a comparably short field visit, this was sufficient to improve the applied methodology significantly. Hands on training and joint setting up of upscaled cultures resulted in the successful production of almost 1,000 parasitoids within a month after the visit leading to improved releases at all target sites. The onsite collaboration with the conservation team on Tristan worked extremely well and jointly we managed to keep the project on track*".

With the baseline knowledge Tristan's conservation team already had, the effect of this short visit was transformative to the project's success, highlighting that there is no substitute for in-person support. The individual expertise and efforts of each project partner, as well as their ability and willingness to adapt during challenging operating circumstances, was key to the

overall achievement. Relationships formed over the last few years makes it highly likely that this partnership will be maintained; there have already been discussions in the team about future biocontrol work on Tristan. **Trevor Glass** (Head of Tristan's Conservation Department) writes, *"We're very keen that Norbert can come out to the island again because we learned a lot from his visit*". Meanwhile, Fera continue to support the Agriculture Department with biocontrol solutions for crop pests and the Horticulture team are committed to growing more *Phylica* trees for the nursery. The project leaves a significant conservation legacy and a skilled team on Tristan to deliver similar projects in the future.

3 Project Achievements

The first time an Annex is mentioned it is in bold. For subsequent mentions, it is not in bold and just represented by the number e.g., '**Annex 5.01**' to '5.01'.

'Tristan', 'Nightingale' and 'Inaccessible' refer to each of the three main northern islands in the Tristan da Cunha Group. 'Island' has been removed after each to avoid repetition throughout the text.

3.1 Outputs

Output 1. Suitable biological control agents for *C. hesperidum* on Tristan selected, risk assessed and tested

The project fully achieved Output 1, the success of which was measured against four indicators.

> *1.1 At least three suitable control agents identified and selected from commercial, research and wild South African sources by end of Q4 in year three*

Permanent slide mounts were initially made of adult female scale insect samples received from Tristan. These were identified as *Coccus hesperidum* (soft brown scale) using standard published morphological keys. The specimens were then critically compared with specimens of *C. hesperidum* in the Fera reference collections and found to be morphologically consistent. In Year 2, Fera successfully sequenced samples of *C. hesperidum* from Tristan and found a range of genetic variation (suggesting multiple introductions, or a single introduction of a genetically variable population) (**Annex 5.01**).

From a long list of natural enemies associated with *C. hesperidum*, several species were shortlisted for use on Tristan in Year 1. The selection of these biological control agents (BCA) considered the following:

- The species should be host specific.
- The species should already be present in South Africa to avoid any non-target effects in case it was accidentally transported back from Tristan after establishment there.
- The species should be tolerant of the cool climate conditions on Tristan.

From these criteria, *Microterys nietneri* was initially selected for further assessment due to its positive track record of successfully controlling *C. hesperidum*, being available and already established in South Africa. In Year 2, other parasitoid wasp species, cf. *Coccophagus lycimnia* and *Microterys seyon*, were brought into culture and tested for suitability to be used for scale control on Tristan.

In Years 2 and 3, South African surveys for *C. hesperidum* and associated parasitoids were conducted by Prof. Martin Hill (Director of the Centre for Biological Control, Rhodes University). The aim of the survey was to potentially find another BCA which could work alongside *M. nietneri* on Tristan to maximise control efforts. Unfortunately, neither the first nor second round of surveys succeeded in obtaining any of the target genera, despite finding eight distinct species (see **Annex 5.02** for survey report). It was therefore decided to stop surveys and not jeopardise the potentially sufficient control impact of *M. nietneri* with the release of a very closely related species which may compete.

1.2 One control agent tested through standardised methods and under controlled conditions in Q3 of year one, and at least one further agent by Q2 of year two

As there seemed to be no precedence of other classical biological control (CBC) attempts for *C. hesperidum* under conditions similar to Tristan, testing of potential BCAs for their climate suitability was a major focus for the project. *M. nietneri* was tested at CABI's quarantine facilities for climate suitability and efficacy against *C. hesperidum* during Years 1 and 2. Results clearly demonstrated the suitability of *M. nietneri* as a promising control agent for *C. hesperidum* under the climatic conditions prevalent on Tristan da Cunha (**Annex 5.03**). In Year 2, *M. seyon* was also tested for climate suitability and efficacy against *C. hesperidum*.

1.3 At least one control agent demonstrated to be highly effective against the C. hesperidum strain present on Tristan by end of Q2 of year two

The success of the team on Tristan in establishing viable cultures of *M. nietneri* on Tristan's scales from very low starting numbers, when this BCA was shipped to the island, further supported the suggestion that this was a suitable host for the wasp. In September 2022, CABI specialists succeeded in collecting *M. nietneri* from another scale species in Cornwall/Scilly and established a culture from these specimens. By originating from a coastal environment climatically well-matched to conditions on Tristan, it was likely that this strain would be a more effective control than the initial glasshouse strain. Once on island, both strains were mixed to maximise genetic diversity and increase chances of establishment.

1.4 PRA on one tested and recommended control agent completed by end of Q3 in year one, and of all tested and recommended agents by Q3 of year two

Due to the promising initial test results, the project focused largely on the use of *M. nietneri* for scale control on Tristan. The species was risk assessed (**Annex 5.04**) by Fera (with support from CABI) in Year 1 and recommended for release. The assessment clearly demonstrated that:

- The biology and host range of the species were very well understood. *M. nietneri* develops oligophagously (eating specific foods) inside a relative wide range of Coccidae (scale insects). There are few additional records from Diaspididae (Armoured scales) and a single record from Pseudococcidae (Mealybugs), although these remain doubtful.
- None of the three families with host records for *M. nietneri* had native/endemic representatives on Tristan.
- *M. nietneri* is already present in South Africa, the only country with a direct transport link to Tristan, where it has previously been used for control of *C. hesperidum* in *Citrus* plantations. This demonstrated that a release of the agents on Tristan did not pose any risks for other countries/geographical regions.
- There were no anticipated side or non-target effects predicted for a release on Tristan.
- No additional host range testing was required for its use on Tristan.

During a visit to Tristan by Dr Jill Key (formerly GB Non-Native Species Secretariat) in February 2022, specimens of a ladybird species associated with *C. hesperidum* on *Phylica* were collected. These were identified as *Nephus reunioni*, a known predator of scale insects. The species was not thought to be present on Nightingale or Inaccessible, and a risk assessment (**Annex 5.05**) showed the risk of transferring this species to both islands to be minimal. As a secondary, non-competing BCA, it was thought this would be a complementary scale predator alongside the parasitoid *M. nietneri.*

Informed by both risk assessments, Tristan Government approved the release/transfer of both BCAs (**Annex 5.06**).

Output 2. Tristan Council and community understand and approve of selected control agent release

The project fully achieved Output 2, the success of which was measured against four indicators.

> *2.1 Publicity materials and video are submitted to Tristan Council and screened for public viewing by Tristan Conservation Department in Q2 of Yr1. At least 75% of Tristan Council members, at least 75% of Tristan school classes, and at least 50 Tristanians have face-to-face discussions with community engagement lead in Q2 of years two and three*

An educational video was produced by Fera in the first year of the project and shared with Island Council, showing the control of the invasive soft brown scale insect by parasitoid wasps (**Annex 5.07**).

Covid restrictions no doubt impacted visits to Tristan during this project, but the Community Engagement Lead (CEL) was still able to visit in September/October 2021 and March/April 2022. During these visits they were able to have face-to-face meetings with all 12 members of Island Council, both Government Administrators, the entirety of the school (24 children and two teachers) and could field questions about the project from the community on an ad-hoc basis.

Kirsty Repetto (Tristan Conservation Department) was a real asset to the project, not only keeping the culture going on island, but also engaging many members of the community and showing them the rearing set-up of the parasitoids (**Figs. 3 & 4**). She also arranged an open day in the lab for the 14 children from the upper school to come and see the wasps and ask questions, with two of the children helping with the first release on Nightingale in Autumn ’21. Kirsty’s commitment generated real on-island trust in the project.

Figure 3. & 4. *Kirsty Repetto tending to the wasps (left) and collecting wasps for a release (right) © Tristan da Cunha Government*

> *2.2 Independent opinion on first PRA produced by APHA and explained to Tristan Council via phone, by end of Q3 in year one, and subsequent PRAs by Q3 of year two*

APHA, a subsidiary of DEFRA, provided an independent opinion on the risk assessment (**Annex 5.08**) which was explained to Tristan Council. A risk assessment was also completed for *M. seyon* but due to the effectiveness of *M. nietneri* at controlling soft brown scale, an independent opinion was not sought as the parasitoid was never released. Following the discovery of the predatory ladybird species *N. reunioni* on Tristan, a risk assessment (5.05) was completed for the species to ensure it would have no non-target species effects should it be released on Nightingale and Inaccessible Islands.

> *2.3 Tristan Council and community approval granted for introduction, rearing and release of one tested and recommended control agent by end of year one and of all tested and recommended agents by Q3 of year two*

Island Council discussed and approved the release of *M. nietneri*, with a permit produced (5.06). With the risk assessment showing non-target species effects of *N. reunioni* to be very unlikely and the species already present on Tristan, a permit was issued for its transference to Nightingale and Inaccessible as a secondary BCA of soft brown scale.

2.4 Potato crop pest assessments completed for at least 8 growers (4 male / 4 female), as well as the Agriculture Department vegetable production polytunnel, and potential for benefits from biocontrol evaluated, by end of year four

Covid restrictions prevented experts from visiting Tristan until the third year of the project. However, this delay was partially compensated by remote supervision once the pest problems were understood. Norbert Maczey (CABI) carried out a potato crop pest assessment alongside Tristan's Head of Agriculture, Neil Swain in January 2023 (For a short report of the potato crop assessment, see **Annex 5.09**). CABI remain in contact with Neil to provide guidance.

Glasshouse whitefly (*Trialeurodes vaprariorum*) was identified as the most pressing issue in Tristan's polytunnels, with enormous populations developing each year on vegetable crops and tomato, pepper and cucumber particularly susceptible. Based on the successful control of whitefly in polytunnels on St Helena using biological control methods, a similar programme on Tristan was initiated. The parasitoid *Encarsia formosa* is an effective control of whitefly so a risk assessment (**Annex 5.10**) was completed for its release on Tristan. *E. formosa* was released in two greenhouses in December 2023 by Chris Malumphy (Fera) alongside Neil Swain and Natasha Glass from the Agriculture Department. Fera remain in contact with Neil as the team monitor the effectiveness of this BCA.

Output 3. Selected control agent reared under controlled conditions on Tristan

This output consisted of five indicators, four of which were successfully completed with alternative activities arranged as part of Indicator 3.4 due to reasons outlined below.

3.1 Rearing facilities established on Tristan to allow repeated releases without long-distance imports by the end of year one

A makeshift setup on Tristan (due to Covid restrictions and Covid-related shipping difficulties, a polytunnel could not be installed as initially planned) using four pop-up cages allowed the conservation team on Tristan, with regular remote supervision, to slowly increase numbers of the control agent from initially very low numbers. The BCA was cultured using both the target host (*C. hesperidum*) and the target host plant (*P. arborea*).

3.2 At least one well suited control agent brought into permanent culture under controlled rearing conditions on Tristan by end of year one

A shipment of 300+ adult *M. nietneri* wasps reached Tristan in January 2021 after a challenging three-week journey. During transport, the parasitoids were housed inside standard specimen tubes and transported in a small cool box packed according to international quarantine standards and accompanied with the required licences and documentation. Only a small number of wasps survived the journey, during which they were exposed to both very high and freezing temperatures alike. However, this was sufficient to establish a culture on Tristan. After a collapse of the culture on Tristan during austral winter 2022, an additional shipment of parasitoids was required to jumpstart the culture again and ca. 200 wasps were shipped to Tristan in August 2022. Due to the long journey, only a small number of these wasps survived, but this was sufficient to build up a new culture. This was supplemented by a shipment of ca. 150 wasps from the Cornish outdoor population in January 2023. Of these, around fifty specimens survived the transport and culturing of these on Tristan was equally successful.

3.3 Three Tristan Conservation Department staff (2 male / 1 female) trained in rearing control agents by the end of year one

In-person training of the project team on Tristan, as originally planned, was not possible during the first two project years due to the ongoing Covid-related travel restrictions. Instructions how to handle the BCA, during transport and after they had arrived on Tristan, were sent by email. This was accompanied by frequent online meetings to supervise setup and maintenance of the culture on Tristan as tightly as possible. In 2023, training was mainly provided in person during

two visits to the Island in January and November/December 2023, supplemented by remote advisory meetings. The team on Tristan was shown how to implement some improvements to the rearing approach of parasitoids wasps and how to scale up production of them. In addition, hands on demonstrations were provided on how to find, collect, store, transport and release the ladybird *N. reunioni*, which was already present in large numbers on Tristan, but was not yet established on Nightingale and Inaccessible.

3.4 At least 14 school children (7 female / 7 male) involved in propagating/growing plants for the control agents by the end of year one, and subsequent rearing by Q3 of year two

Unfortunately, due to travel restrictions and reduced capacity of the Conservation Department, it was not possible to involve school children until later in the project. A steady supply of hosts (scales) was also required to maintain the BCA culture, and it was found that plant propagation times would take too long to provide this. Instead, we opted for scale-infested *Phylica* cuttings which were readily available and provided sufficient resources for rearing subsequent generations of the BCA. To involve the school, emergence boxes were provided for the youngsters to see if any wasps appeared out of scale-infested branches, thereby confirming successful establishment of the BCA outside of the rearing cages. Kirsty Repetto (Tristan Conservation Department) also spent a morning with the children, showing them the wasps and the rearing set-up, as well as answering questions about the project. Two school leavers (1 female / 2 male) were involved later in the project, helping with a first release of wasps on Nightingale in April 2021, as well as assisting specialists from CABI and Fera with monitoring work during their visits.

3.5 Production of at least 300 female control agents for release by the end of year one and 500 females in years three and four

Because of the low numbers of parasitoids surviving the long journey to Tristan, it took longer than initially anticipated to build up numbers sufficient for a first release. Once established, the culture on Tristan had the capacity to produce sufficient numbers (>300) of the BCA for a first release on Nightingale in April 2021 (**Fig. 5**). In 2023, after the introduction of a second strain of the BCA, both cultures were merged to obtain a genetically diverse wasp population aiming to increase chances of establishment. By end of February 2023, over 1,000 wasps of this mixed population were in culture on Tristan ready for releases on Nightingale, Inaccessible and Tristan itself.

Figure 5. *A first release of wasps in infested Phylica on Nightingale © Tristan da Cunha Government (April 2021)*

Output 4. Control agents released and successfully established on Tristan da Cunha, Inaccessible & Nightingale Islands

The project fully achieved Output 4, the success of which was measured against two indicators. We were not able to confirm establishment of the biocontrol agent on Inaccessible but think it's likely due to the reasons outlined below.

4.1 At least one well suited control agent released in at least two sites with heavy infestations of C. hesperidum on one of the islands in Q4 of year one and in each of the three islands by the end of year four

A first release of *M. nietneri* took place on Nightingale Island in April 2021. Despite negotiating Covid challenges, this was only slightly delayed compared with our initial best-case scenario. A release site on Nightingale, in a sheltered newly planted *Phylica* copse had been identified prior to this release. This was followed by further releases on Nightingale during Year 2. By end of February 2023, over 1,000 wasps of a mixed culture population (see 3.5) were released on

Nightingale, Inaccessible and Tristan during February and early March 2023. On Tristan itself, releases took place on branches of infested fruit trees (pear) in a very sheltered place within the settlement. To increase chances of establishment, further wasps were released at this site within sleeves made of a light fabric to contain the agents in close vicinity to the target scales. Releases were also conducted at a place on Tristan called Pigbite where infestation rates by *C. hesperidum* on *Phylica arborea* were very high.

The specialised scale feeding ladybird, *Nephus reunioni* was first discovered on Tristan in January 2022. The presence of the species on plants (*Phylica arborea, Empetrum rubrum*) heavily infected with *C. hesperidum* was confirmed in January 2023. The beetle was abundant and large numbers could be collected on Tristan. Checks (sweep netting, beating) revealed that the species was not established on Nightingale at the time. Following a risk assessment of the species (5.05), 108 beetles were collected on Tristan and released on Nightingale during the visit in January 2023; a further batch of beetles was released on Inaccessible in December 2023 following prey preference trials (**Annex 5.11)**. Although *N. reunioni* is very abundant on Tristan, it currently doesn't appear to exert significant control on *C. hesperidum* yet. It is not clear at this stage whether this could be because this agent may have only recently arrived on the islands.

> *4.2 Monitoring of infestation rates of C. hesperidum by visiting expert at release sites shows at least one control agent established in at least one site by end of year three, and on all three islands by end of year four*

Due to Covid restrictions, training for Tristan's Conservation Department team had to take place remotely until a first visit by a specialist in January 2023. A release and monitoring protocol was provided in Year 1 (**Annex 5.12**) which was revised in Year 2 (**Annex 5.13**), alongside an instructional 'how-to' video – see: Tristan training video - OneDrive (sharepoint.com). Unfortunately, despite the team becoming well experienced in culturing and releasing the BCA, given limited on-island support, limited opportunities to visit Nightingale and other pressing activities during these visits, it was too challenging for the team to do any significant monitoring work. This was further complicated by observations from the Tristan team suggesting a relatively high natural population dynamic in place regarding infestation levels caused by *C. hesperidum* on Nightingale (**Annex 5.14**); this made monitoring without expert supervision very challenging. However, Tristan Conservation Department were able to assist CABI and Fera during their visit in November/December 2023, learning monitoring skills from these specialists.

Figure 6. & 7. *New Phylica growth in amongst the dead wood left from the 2019 storms (top); new, healthy Phylica growth with sooty mould receding © Chris Malumphy, Nightingale Island (December 2023)*

Post-release surveys conducted in November and December 2023 found *M. nietneri* had established at three of four release sites on Tristan. Parasitism could not be observed at the fourth site because almost all the scales were covered in fungus. The Estimated Generational Parasitism Percentage (EGPP) (effectively, parasitism rate) was determined on plant samples (20 cm ± 2 cm length) containing 10 or more *C. hesperidum*

adults. The EGPP on Tristan at Pigbite, was 10% on *Phylica* and up to 100% on leather fern (*Rumohra adiantiformis*), and in the Settlement, 25% on lemon (*Citrus limon*) and 60% on plum (*Prunus domestica*). More detailed surveys were conducted on Nightingale which found *M. nietneri* had established on the lower ground at the *Phylica* nursery, but it is unclear if it had established on the higher ground. The EGPP varied between 13 and 100% on *Phylica* at the nursery. Only a single parasitised scale was found on the higher ground, at Pond One. Establishment appeared to be more successful on plants sheltered from the wind, which are likely to have been slightly warmer. For more detail on results from the November/December 2023 visit, see **Annex 5.15**.

The levels of scale infestation and sooty mould cover at the nursery on Nightingale were much lower than previously reported, indicating that the biocontrol of *C. hesperidum* has initially been successful (**Fig. 7**). The *P. arborea* plants grown from seed at the nursery are showing strong and rapid growth and the *Phylica* forest is showing signs of recovery following two devastating storms in 2019 (**Fig. 6**).

Output 5. Invasive New Zealand flax closest to Phylica habitat controlled on Inaccessible Island World Heritage Site, with an increased local capacity to undertake control activities

This output consisted of four indicators, two of which were successfully completed with significant progress made towards the remaining two which will now be continued as part of DPLUS191.

5.1 All flax plants present on island plateau are mapped and removed in Q4 of year one

In Year 1, a team visited Inaccessible Island from January to March 2021, to begin removing New Zealand Flax plants and produce updated coverage maps (**Annex 5.16**). Unfortunately, due to the logistical issues around accessing some areas and the team discovering significantly more flax plants than pre-project surveys had estimated, it was not possible to clear the plateau of flax in Year 1.

5.2 The 2019 baseline map of cliff flax presence is updated and the top 50m of invaded cliff beneath plateau is cleared of flax in Q4 of year one

Figure 8. *Inaccessible living up to its name with two of the team abseiling down "Waterfall Ridge" © I-Rigging Solutions*

Due to the reasons mentioned previously, it was not possible to clear the top 50m of flax invaded cliff in Year 1. For the remainder of the project, the team decided to concentrate efforts on "Waterfall Ridge" (200-250m high cliffs – **Fig. 8**) which from initial surveys appeared to hold the greatest density of plants. Logistically, it made more sense to remove plants down the entire cliff face rather than just the top 50m due to the significant time spent rigging the area. In Year 2, a total of 4,410 flax plants were removed from this area (3,489 small, 679 medium and 233 large) (**Annex 5.17**). Considering a large flax plant took on average two hours to remove (and eight hours in extreme cases), this was an impressive effort by the team. A further 496 plants (246 small, 149 medium, 101 large) were removed from "Waterfall Ridge" in Year 3, largely clearing the cliffs and plateau of this heavily infested area of flax plants.

Year 3 marked the final year of flax control work under the BEST 2.0+ grant (with Year 1 funded by Darwin). The work is now being continued as part of a larger package of invasive plant control in the Tristan Group under the Darwin Plus funded project, *Enabling invasive plant eradications and long-term management in Tristan* (DPLUS191). Following on from the team's successful clearing of "Waterfall Ridge", the aim is to re-survey and remove all emergent individuals by the end of the project, working towards the eradication of this highly invasive species from Inaccessible.

5.3 All year one plateau and cliff clearings re-checked and re-controlled where necessary in Q4 of year two (repeat in Q4 of year three)

The flax team returned to Inaccessible in Year 2, revisiting sites where plants had been removed in the previous year. Several new seedlings were discovered in these areas which were manually removed and/or treated with herbicide. These cleared sites were visited again in the final year and more seedlings had emerged. It is likely that due to the number of mature individuals on the island which have been left unchecked for many years, there is a significant seedbank which will deplete over time with continued control. By targeting mature individuals in the future, the aim of eradication remains achievable.

5.4 Local trainee demonstrates year on year improvement in rope access skills

Local Tristanian, Christiaan Gerber, joined the flax team for every year of the project. As well as assisting with plant removal work, Christiaan received on-the-job training each year and amassed an impressive 447 rope hours over the course of the project. These hours will contribute towards the 1,000 hours which he requires to achieve his IRATA Level 2 qualification, putting him in a position to teach other Tristanians in rope access techniques. In Year 1, Christiaan received refresher training for rope access skills as well as gaining experience in gear inspection and abseiling. In Year 2, he built upon this experience covering techniques such as ascending/descending, knots, hitches, rigging, simple rope rescues, personal safety and equipment maintenance (**Annex 5.18**). In the final year, Christiaan took on more of a leadership role in the team because of his experience on Inaccessible. The team lead also put in additional effort in training him in Level 2 techniques and rescues, putting his knowledge into practice to ensure he is a strong Level 2 when it comes to doing his assessment.

Output 6. Community nursery of scale-free *Phylica* trees established on Tristan for Nightingale reforestation

This Output comprised four indicators, all of which were largely completed. Despite not achieving the target of *Phylica* seedlings for this output, the team exceeded the number of small trees planted on Nightingale before project-end.

6.1 Two-person nursery team, a weather-resistant polytunnel and at least 250 seedlings planted, all in in place by end of Q1 (Year 3)

A nursery team was recruited, once this additional Output was approved by Darwin, utilising the skillset of two horticulturalists (both female) from Tristan's Agriculture Department. To assist the team, we sought the advice of experts from Kew Gardens who trialled different methods of sowing seed and taking cuttings, providing the team with *Phylica* growing advice. The team had great success in the first year, producing almost 100 seedlings from seed and taking 50 cuttings, capturing their learning as they went along (**Annex 5.19**).

6.2 500 healthy Phylica seedlings established by end of Year 3

Unfortunately, the cuttings from *Phylica* trees didn't take for an unknown reason, with no roots showing after a month in a propagator. However, growing from seed was successful with 157 healthy small trees produced after two years. Interestingly, the team found they had little success with germination until they started using soil from Nightingale itself, rather than commercially bought compost. More seedlings are underway in a heated propagator (**Fig. 9**) to provide the next generation of trees, with the team committed to this work going forwards.

6.3 Five-person planting team (roughly 50/50 split taking into account nursery team gender split) in place by Q2 end (Year 4). Enough previously forested areas

cleared/prepared on Nightingale for a minimum of 125 tree seedlings by Q3 end (Year 4)

In April 2023, a planting team (1 female: 4 Male - one of the nursery team was on maternity leave and so unavailable) visited Nightingale for three weeks. During this visit, the team cleared scrub, prepared the ground and planted the 157 young *Phylica* trees (**Fig. 10**).

Figures 9. & 10. *Natasha Glass (Tristan Horticulturist) growing seedlings in heated propagator (left) and planting a young Phylica tree in cleared ground on Nighingale (right) © Tristan da Cunha Government*

6.4 Continued maintenance of planted Phylica trees on Nightingale to ensure maximum survival by project end

On recent visits to Nightingale, the team have continued to monitor the young trees, keeping scrub in check and watering if necessary. The vast majority (>80%) of planted trees are healthy and growing well.

3.2 Outcome

<u>Outcome:</u> Sustainable community-supported control of *Coccus hesperidum* successfully established, community nursery created and invasive flax buffer provided that enables recovery and planting of *Phylica* trees, restoration of seed-setting and ultimately increased food availability for *Nesospiza* buntings.

The project has largely achieved its Outcome after almost four years of hard work. *M. nietneri*, an effective biocontrol agent of *C. hesperidum*, has now been confirmed to have successfully established in multiple sites on Tristan and Nightingale. Releases have been made on Inaccessible under similar conditions to those on the other two northern islands, so we suspect establishment but we haven't yet had a chance to confirm this yet. Levels of scale infestation and sooty mould cover on Nightingale is much lower than previously reported, indicating that the biocontrol of *C. hesperidum* has initially been successful. *Phylica* forest is showing signs of recovery following the devastation of storms in 2019 where an estimated 80% of trees were lost. A community-established *Phylica* nursery has successfully grown and planted over 150 young trees for Nightingale to support forest recovery on the island, restoring vital habitat for the Critically Endangered Wilkins' Bunting. Significant New Zealand Flax removal from some of the most heavily infested areas on Inaccessible will support *Phylica* recovery on the island, supporting Vulnerable populations of *Nesospiza* buntings.

0.1 In year four at least one control agent successfully established on each of the three northern islands in compliance with Tristan legislation and Council permissions

Following rigorous testing (5.03) a comprehensive risk assessment (5.04), community consultation and an explanatory video (5.07), Tristan Council approved the release of *M.*

nietneri on the three northern islands (5.06). Tristan Conservation Department reported seeing emergence holes in the scale insect, *C. hesperidum* on Nightingale in April 2023, with specialists confirming establishment in multiple sites on Tristan and Nightingale in November/December 2023. *M. nietneri* was released under similar conditions on Inaccessible but due to the specialists not having enough time to reach the sheltered release site before having to depart, we haven't yet confirmed establishment; given the success on the other islands, it would be unusual if it hadn't established.

Following a comprehensive risk assessment (5.05) and relevant permissions (5.06) from Tristan Council in compliance with legislation, the predatory ladybird, *Nephus reunioni* was transferred from Tristan (where it was already) to Nightingale and Inaccessible as a secondary BCA. As a predator rather than a parasitoid, it was thought that *N. reunioni* would be a complementary secondary BCA to *M. nietneri* and wouldn't compete with the wasp, as another parasitoid species may.

> *0.2 In year four, lower densities of C. hesperidum and resulting sooty mould cover of foliage recorded on Phylica compared to 2020 baseline*

Due to it taking almost three years before a specialist could visit the islands, because of Covid restrictions, and *C. hesperidum* exhibiting natural population fluctuations making it very difficult for a non-expert to monitor, we were unable to get accurate baseline data. However, following the successful establishment of *M. nietneri* at multiple sites on Tristan and Nightingale, with some plants showing an Estimated Generational Parasitism Percentage (EGPP) of 100%, levels of scale infestation and sooty mould cover was much lower than previously reported. It was easier to measure the impact of the BCA at the nursery on Nightingale, a defined area of trees which has been visited frequently throughout this project, where there was clear evidence of recovery (see 5.15 for more detailed information). Considering establishment has only been confirmed for less than a year, the high EGPP and observed reduction in infestation rates/mould cover is really promising, with the situation only likely to improve.

> *0.3 No New Zealand flax is recorded on the plateau of Inaccessible Island or top 50m of surrounding cliff by end of year 2*

Following visits to Inaccessible in Year 1 and 2, it soon became apparent that this indicator would not be fully achieved during this project. The team discovered significantly more plants than pre-project surveys had estimated (5.16) and the challenges around accessing certain areas (e.g. safely rigging areas with sea cliff 200-250m high) meant that time available within this project would not be sufficient to clear the target areas of flax. Additional funding was secured (EU BEST 2.0+) which enabled an additional year of flax survey and removal work. The team instead focussed efforts on "Waterfall Ridge", a heavily infested area which from initial surveys appeared to hold the greatest density of plants. Over the course of the project, the team cleared over 5,000 flax plants, largely clearing the cliffs and plateau of this area of flax plants. The work is now being continued as part of a larger package of invasive plant control in the Tristan Group under the Darwin Plus funded project, *Enabling invasive plant eradications and long-term management in Tristan* (DPLUS191), with the indicator above remaining achievable.

> *0.4 3 Tristan Conservation Department staff (2 male / 1 female) trained and able to successfully rear, release and monitor a biological control agent*

We had to rely on remote training for much of the project due to travel restrictions in place. However, regular online meetings between all project partners and a training video (Tristan training video - OneDrive (sharepoint.com) worked well in the absence of specialists able to visit Tristan. Despite very few wasps surviving the first shipment to the island (due to the journey taking almost a month and being exposed to fairly extreme conditions), the Tristan team (1 female: 2 male) successfully reared enough wasps from the survivors to make a successful release (5.12) on Nightingale in April 2021. Over the course of the project, Tristan Conservation Department have demonstrated that they are skilled at rearing and releasing a BCA. Due to the reasons stated previously (Indicator 0.2) around the challenges of monitoring, the team were unable to learn specific techniques until the specialists visited at the end of 2023. This did, however, enable the new conservation apprentices in the department (1 female: 2 male) to also shadow the specialists, with the full team learning how to monitor infestation

and parasitism rates. These skills will enable the team to monitor the effectiveness of *M. nietneri* at controlling *C. hesperidum* post-project.

0.5 Within 3-5 years of project start, observed regeneration of Phylica forest compared to 2021 baseline, and population density of buntings stabilised.

It wasn't possible to obtain baseline data due to the reasons stated previously (Indicator 0.2). However, with the successful establishment of *M. nietneri* in multiple sites, levels of scale infestation and sooty mould cover was much lower than reported pre-project (5.15), with observed regeneration of *Phylica* forest (e.g. sooty mould fading from branches, new healthy growth from affected trees etc. - **Figs. 6 & 7**). Forest recovery on Nightingale has also been supported by the planting of over 150 young trees from Tristan's new *Phylica* nursery, established in the second year of this project.

In February 2024, a specialist visited Nightingale Island where they carried out the first comprehensive survey of Wilkins' Buntings since 2017 (when the population was an estimated 120 breeding pairs) (**Annex 5.20**). Despite the population being down by up to 75% in areas of significant forest loss, the density in many other areas was similar to pre-2019 storm numbers and the overall population was estimated to be between 60-90 breeding pairs (**Fig. 11**). Historical satellite imagery shows similar forest loss from severe storm events in the past, indicating the birds can survive such extreme events. The concern is that these storms will become more commonplace with climate change, but the successful establishment of *M. nietneri* will mean a stronger forest which is more able to withstand such pressures.

Figure 11. *A surviving Wilkins' Bunting, ringed during surveys in 2017 and observed during the survey in 2024 © Peter Ryan*

0.6 At least 125 Phylica trees planted in priority sites on Nightingale Island by end of Year 4

Following the creation of the *Phylica* nursery on Tristan in Year 2, the team trialled various techniques and had greatest success growing new plants from seed (5.19). After two years, they had produced 157 healthy small trees which were all planted on Nightingale in April 2023. These trees will contribute towards the recovery of forest on the island where trees were flattened by the storms in 2019.

3.3 Monitoring of assumptions

All key assumptions are outlined in the logframe (**Annex 2**) and have been monitored throughout the course of the project as associated activities progressed. Most of the identified risks held true throughout the project, but travel restrictions imposed by the pandemic, amongst other things, no doubt impacted project delivery. Exceptions include:

Outcome

Assumption: Tristan Conservation Department and the RSPB continue monitoring beyond the life of the project.

Comments: Tristan Conservation Department (TCD) and the RSPB have a long-term monitoring work programme and so are committed to monitoring the impact of the BCA on infestation levels and resulting *Phylica* recovery. However, given the challenges around monitoring mentioned above (Indicator 0.2), and limited in-person support during this project, the team will be more limited with the data that they can collect. However, given the change recorded in a relatively short time since establishment, regular observation and photographs

will provide sufficient evidence for the effectiveness of *M. nietneri* given the noticeable reduction in sooty mould cover.

Output 1

Assumption: Suitable control agents can be obtained from existing cultures or through field surveys.

Comments: Eventually, this held true, but it wasn't until September 2022 (more than two years into the project) that specialists succeeded in acquiring an outdoor strain of the target BCA, *M. nietneri*. Various methods were trialled throughout the project, using trap plants at CABI's facilities and multiple surveys in the UK and overseas (South Africa and St Helena). One of the limiting factors during the overseas surveys were low scale numbers meaning acquiring a target parasitoid was more challenging. Led by our expert partners, surveys were combined with work on other projects to widen the search area and increase chances.

Output 3

Assumption: Control agents can be reared and cultured under controlled conditions.

Comments: TCD were very successful at establishing a culture of the BCA from a small starting number surviving the journey to the island. Unfortunately, lower winter temperatures and confusion over another insect species found in the rearing cages led to the culture being lost in 2022. Further remote supervision was given, and more wasps were shipped to Tristan to re-start the culture, with the team able to maintain the population until a specialist was able to visit in January 2023. Small tweaks to the set up made during this visit were transformative, with the team producing over 1,000 wasps in a couple of months, highlighting that there is no replacement for in-person support.

Assumption: Tristan Conservation Department able to work closely with the Island school.

Comments: TCD had great success engaging the school throughout the project. However, early on it became apparent that the aim of getting the youngsters to help propagate plants to provide scales for the wasp culture (indicator 3.4) was going to be too time consuming; infested *Phylica* provided a faster, readily accessible supply of scales. However, as a team we discussed alternative ways of getting the youngsters involved with activities such as: TCD hosting the school for a morning, learning about the wasps and the project as a whole; learning how to use emergence boxes to see if establishment had been successful; older children helping with wasp releases and follow up surveys. Indeed, three of the school leavers have now joined TCD as apprentices and supported project activities in the final year, leaving a valuable legacy.

Output 4

Assumption: Environmental conditions allow establishment of agents.

Comments: Initial releases proved unsuccessful, but this was unsurprising given the time of year and weather conditions (windy) at the time of release. It was thought better to make a release in less-than-ideal conditions rather than the wasps sitting idle in the rearing cages. Lessons were learned, with releases made in gentle summer conditions in sheltered spots, and our partners providing the team with cloth sleeves to contain the released BCA close to infested branches; this ultimately resulted in establishment.

Output 5

Assumption: Suitable weather conditions enable timely team drop-off and pick-up, plus working conditions on the island plateau.

Comments: Weather significantly impacted the progress the flax team were able to make in the 2021 field season. Firstly, due to sea conditions, the team landed at Waterfall Beach rather than the preferred landing point of Blenden Hall which resulted in a delayed timeline. Weather further impacted the retrieval of project gear, delivery of equipment from Tristan, and mobility of the team on island which resulted in delayed access to the plateau to begin removal work. However, these challenges were a useful learning experience and were mitigated against in subsequent seasons by building in contingency time into workplans and the flax team lead having more regular 'check-ins' with the head of TCD, coordinating activities more precisely.

Assumption: Unmapped first-hand reports from February 2019 team on flax presence on the island plateau suggest that full removal is possible

Comments: As mentioned previously (indicator 0.3), the team discovered significantly more flax in Year 1 than unmapped first-hand reports from 2019 had suggested. This, combined with the significant challenges around rigging areas of the island and accessing plants, indicated that full removal was not going to be possible within this project. An additional year of flax removal work was possible thanks to securing additional funding (EU BEST 2.0+) to remove as many plants as possible. Survey and eradication work will continue as part of DPLUS191, building on the success of clearing "Waterfall Ridge", one of the most heavily infested areas of Inaccessible.

Output 6

Assumption: Successful propagation of *Phylica* seedlings

Comments: The horticulture team on Tristan had great success in growing *Phylica* from seed, but unfortunately none of their cuttings rooted. We sought the advice of experts from Kew and decided to stop taking cuttings, with the team focussing efforts on germinating from seed. Despite not reaching seedling targets for Year 3, the team was able to plant over 150 healthy young trees on Nightingale before the end of the project, exceeding this target.

4 Contribution to Darwin Plus Programme Objectives

4.1 Project support to environmental and/or climate outcomes in the UKOTs

After four years, the biocontrol agent (BCA), *M. nietneri* has successfully established on Tristan and Nightingale (Inaccessible TBC). The small wasps have already had a noticeable impact, with scale infestation and sooty mould cover on Nightingale lower than previously reported. Establishment of the BCA will provide a long-term control of *C. hesperidum*, reducing it to levels seen in other geographic areas where the pest is generally unproblematic. *Phylica* forest is starting to show signs of recovery, supported by a community-established *Phylica* nursery which has successfully grown and planted over 150 young trees to support forest recovery. Significant New Zealand Flax (*Phormium tenax*) removal from some of the most heavily infested areas on Inaccessible will similarly support *Phylica* recovery on the island and the resilience of *Nesospiza* bunting populations.

By finding a way of controlling the invasive scale insect *C. hesperidum*, and removing a significant number of New Zealand Flax plants, the project has made excellent progress on a key environmental issue for the Territories. Invasive species were identified as a core biodiversity challenge by 57% of the respondents to Defra's Call for Evidence on 'Safeguarding in British Overseas Territories' (second only to the threat from economic development). Invasive scale insects and flax are specifically identified as a threat in Tristan's Biodiversity Action Plan, with this project delivering against this plan under Objective 4: The impact of invasive species is reduced or eliminated. The project has also enabled Tristan Government to deliver work against Commitment 2 of their Environment Charter - 'Ensure protection and restoration of key habitats…and attempt the control and eradication of invasive species' - and Commitment 6 - 'Implement effectively obligations under the Multilateral Environmental Agreements already extended to Tristan'.

The survey of Wilkins' Buntings in 2024 showed the population to have declined between 25-50% since the previous census in 2017. However, it was evident that the greatest declines were in areas where there was significant *Phylica* forest loss after the storms in 2019, with numbers in forested areas remaining largely stable. These results indicate that forest loss has been the primary driver of decline of this Critically Endangered species. By providing an effective BCA, thereby improving forest resilience, and planting trees from the community nursery, Tristan da Cunha has directly delivered towards their obligation under the Convention on Biological Diversity (CBD), protecting threatened and endemic species across their islands.

Significant training was delivered during this project, with Tristan Conservation Department now skilled at rearing, releasing and monitoring BCAs, delivering against CBD Article 12 on

research and training. Given the regular public engagement over the last few years about invasive species and their impact, the project also delivered against CBD Article 13 on public education and awareness. Not only did the project have significant conservation benefit but it also delivered livelihood and community benefits by testing and releasing a BCA to control whitefly in Tristan's polytunnels, as well as carrying out pest assessments of other crop plants; such work has contributed towards Sustainable Development Goal 11 (sustainable communities).

Visits by specialists towards the end of this project highlighted how much we still don't know about non-native insect pests in the Tristan Group and their potential impacts. However, they also demonstrated what can be achieved in a relatively short space of time, highlighting to the Tristan community the effectiveness of BCAs and the significant conservation and livelihood benefits they can deliver. The project has certainly helped to embed this environmental issue into future decision making as discussions are already underway about future biocontrol work that can be delivered on Tristan to create meaningful change.

4.2 Gender Equality and Social Inclusion (GESI)

Please quantify the proportion of women on the Project Board[1].	2:5 (Female:Male)
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[2].	2:1 (Female:Male)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn't quite meeting the requirements of a 'sensitive' approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	
Empowering	The project has all the characteristics of a 'sensitive' approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X
Transformative	The project has all the characteristics of an 'empowering' approach whilst also addressing unequal power relationships and seeking institutional and societal change	

[1] A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

[2] Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

We believe the project has been 'Empowering' on the GESI scale. Previously on Tristan, roles have been divided down traditional gender norms, with males typically carrying out practical tasks and the women more administrative-focused. The project logframe was therefore designed to give training and practical opportunities on as equal a basis as possible, whilst considering what was realistic in three years. The Conservation Department on Tristan used to be male dominated but there are now two female members; these women serve as role models to others in the community, which we believe the project has strengthened. Kirsty Repetto, primarily responsible for the administrative running of the Conservation Department, took on substantial new responsibilities on top of her existing role because of this project. Kirsty was integral to the rearing and survival of the BCAs and building numbers to a level where releases were possible. She also engaged many members of the community over the last few years, with her commitment generating real on-island trust in the project.

The project achieved its gender-based indicator of training 2 male / 1 female members of staff from the Tristan Conservation Department in rearing, releasing and monitoring BCAs (SI: DPLUS-A01). It also achieved its gender-based indicator of carrying out potato crop pest assessments for an equal number of female and male growers (SI: DPLUS-B06). A project underspend from the first year, due to Covid restrictions, enabled us to create a new output and set up the community *Phylica* nursery on Tristan (SI: DPLUS-A04). This gave an opportunity for two horticulturalists (both female) to lead in establishing the nursery, as well as directing clearing/ planting work on Nightingale in the final project year. Recently, the Conservation Department has taken on three school leavers (1 female: 2 male) as apprentices. All took an active role in the project in the final year, having equal opportunity to learn from and assist the specialists during their visits. We believe these youngsters will inspire the younger generation to get involved in practical conservation, showing opportunities are open to anyone who shows interest irrespective of gender.

The flax team lead from I-Rigging Solutions is female and recruited team members on a team dynamics and skills basis throughout the project. The team varied between years in composition but in Year 2 achieved an equal gender ratio (2:2). Following the expedition to Inaccessible Island in the last two project years, rope access training was given to the three Conservation Department apprentices on Tristan (1 female: 2 male), with the hope that such work will continue under DPLUS191 for future school leavers.

RSPB has strict employment policies in place to ensure fair and non-discriminatory recruitment practices, and these are always followed for any roles to be filled. The CEO, Executive Director of Conservation and Head of the UK Overseas Territories are all roles currently held by women, helping to inform the RSPB's work in Tristan, the UK and globally.

Ultimately, invasive species do not discriminate, negatively impacting biodiversity, the economy and public health; the entire Tristan community benefits from their removal and better biosecurity. This project has taken another significant step towards this key issue for Tristan and the UK Overseas Territories as a whole.

5 Monitoring and evaluation

Throughout its life, the project underwent several changes:

- In August 2020, we responded to the Covid-19 pandemic and associated travel restrictions/border closures, having to adjust various activities and timelines.
- In December 2020, we requested further changes due to the continuation of travel restrictions. Again, adjusting activities and timelines, a significant change was a year's no-cost extension, moving funding into the final project year to enable a specialist visit to the island when restrictions were likely to be lifted.
- In June 2021, Fera were moved from partner to consultant due to being in the commercial sector, with an obligation to shareholders, thereby not aligning with Darwin's Ts & Cs.

- December 2021 saw a significant request with various changes required because of the pandemic and findings of the first year and a half. The main changes saw an additional *Phylica* nursery output added (utilising an underspend), as well as adding an additional year of flax eradication work by securing additional funding.
- In August 2022, Fera were moved from partner to consultant for the project's remainder due to the reasons stated previously.
- In December 2022, we were forced to move more funding to the final project year to enable specialists to visit Tristan (with associated changes to logframe indicators). Following restrictions being lifted, berths to- and from Tristan became even more of a premium due to people being keen to travel after two years of not being able to; this prevented specialists travelling when we'd planned.
- In October 2023, we made some adjustments to the logframe as suggested in the previous year's annual review, as well as some minor budgetary changes to better utilise resources in the final project year.

The list above clearly demonstrates the impact of the Covid-19 pandemic for more than half of the project, with travel and in-person activities/training unable to take place. Uncertainty was also a huge issue, both for the Tristan community given their greater reliance on the outside world, and for project planning as it was very difficult to predict when an activity could take place with the emergence of multiple Covid variants. The number of change requests is testament to this, but also showed the project team's ability to quickly adapt the project design and operate effectively, albeit remotely.

Monitoring and evaluation was primarily led by the RSPB, with partners feeding into the process. The logframe and timetable were continually referenced to monitor project progress and identify delays, with partners feeding into overall project monitoring during more formal partner meetings and regular informal catch ups. Full team meetings occurred at regular intervals throughout the project but were generally timed for critical periods (e.g. receiving a new shipment of wasps, prior to releases, pre- and post-visit etc.), to effectively coordinate key activities. Partners were informed of any adjustments (outlined above) prior to submission of change requests.

The primary indicators of achievement, as outlined in the logframe, were the establishment of at least one biocontrol agent on three of the northern islands, removal of flax and propagation of *Phylica* seedlings; all were measured quantitatively via monitoring protocols or mapping activities. As mentioned earlier in the report, changes to monitoring protocols were required throughout the project due to specialists not being able to visit Tristan and unexpected discoveries, such as the target species showing a natural population fluctuation. As a project team, we worked hard to provide support and resources to the Conservation Department to ensure outputs remained achievable.

Due to the many changes this project has undergone, there are plans over the next few months to bring partners together again and capture lessons learnt as a team to be used for future project design. Similarly, we are also in the process of trying to arrange a full evaluation of the project by the RSPB and will notify Darwin of progress. The pandemic created many challenges for the project, the majority of which could not have been prepared for and weren't all covered in the logframe's assumptions. However, the indicators remained an effective way of monitoring success and ensuring the overall Outcome was realistic.

6 Lessons learnt

Tristan da Cunha is one of the remotest inhabited island groups in the world. Naturally, there are many challenges of working in such a place, be it limited capacity on island, unreliable communication, extremes of weather, to simply getting personnel and equipment to and from the Territory. Thanks to our long-standing partnership with Tristan Government, all of this was known and factored into the development of the project. However, a global pandemic could not have been foreseen and the restrictions imposed (for a project with several face-to-face (F2F)

and travel-dependent activities) cannot be understated, and certainly affected our ability to deliver all elements.

We are grateful for the flexibility and understanding of Darwin, allowing us to rescope the project multiple times given the more limited capacity of the project team and partners, and moving all F2F activity to later in the project. Not only did this significantly reduce the administrative load of what could have been continuous revisions to the project plan and reporting to Darwin, but it enabled the project team to successfully negotiate restrictions and deliver on the overall Outcome. Therefore, one of the main takeaways from this project is the importance of building in contingencies and adaptive workplans to be able to adapt and respond to significant events.

Other lessons learnt from this project include:

- Monitoring was a challenge throughout due to the difficulty of getting specialists to the island to support Tristan Conservation Department. Our partners did what they could remotely, such as simplifying monitoring protocols and recording training videos, but this was no substitute for an in-person visit. We could not have envisioned how long it would take for travel to be possible again, nor the natural population fluctuations seen in the target species. However, for future projects we will ensure that more specialist work is reduced for the conservation team but can be built upon following successful visits from partners.
- Despite Covid restrictions, selecting a suitable biological control agent, breeding them successfully in captivity, rearing them on Tristan and planning for a release at the start of the second year was a remarkable achievement for Year 1. This process would normally take years (it has taken about 4 years to obtain a license to release a parasitoid in the UK). It demonstrates what can be achieved with a strong partnership and with contingency planning built into the project plan.
- Transporting the wasps to Tristan in the first year was very challenging, taking three weeks and changing hands five times before reaching the island. However, given travel restrictions, it made us utilise other contacts/projects within our network to coordinate the delivery, which is something we will take into future projects when transporting equipment remotely.
- Recent visits to Tristan by specialists from CABI and Fera have revealed that there are additional emerging problems regarding the attack of endemic and native plants on the Tristan Group by insect pests, which will need to be addressed urgently (see annex 5.15). There are also potential future threats identified in Cape Town which could make their way to Tristan if they aren't picked up on biosecurity checks. Due to the challenges of getting people to such remote places, these visits demonstrate how under-surveyed places like Tristan can be and the huge benefits of such trips for current and future project planning.
- It was evident after the second year on Inaccessible that full eradication of New Zealand Flax, as part of this project, was not going to be possible. This has taught us that it is essential to have accurate, mapped data when planning ambitious eradication projects as it identifies what is realistic in a limited timeframe. We have taken this learning into DPLUS191 by carrying out full surveys of a range of invasive species on Tristan to direct an invasive plant strategy for the islands going forwards.

As invasive species are something that impact everyone, we have tried to put the Tristan community at the heart of all project decision making. We have done what we can to clearly convey that biocontrol doesn't just deliver conservation benefits but also has huge implications for the economy and health of communities as well. Indeed, the release of *E. formosa* to control whitefly in Tristan's greenhouses wasn't initially an activity of the project but was seen as a complementary activity to demonstrate the benefits of BCAs to livelihoods. We'd recommend other projects really reinforce the socio-economic benefits of protecting and enhancing local ecosystems as it makes the topic more tangible and easier to garner community support for specific actions. The project partnership worked well (see Section 2), and our strong relationships with in-Territory leads was invaluable for responding to questions/concerns from the community given the challenges of getting to Tristan.

7 Actions taken in response to Annual Report reviews

All comments from previous reviews were discussed with partners and addressed in subsequent annual reports. Outlined below are responses to the most recent report where comments haven't yet been responded to:

Comment: *The report indicates that cuttings have not rooted, and states that they were taken from 'various Phylica trees'. It would be interesting to know the age of the trees and whether vigorous young shoots were selected. The reviewer found that a nursery in California has propagated Phylica cuttings successfully from seedlings obtained from seed collected on Nightingale in 2022. Perhaps the project could contact the grower for further information? Google San Marcos Growers – their website includes the name of the seed collector.*

The team took cuttings from new growth of mature *Phylica* trees. We reached out to experts at Kew after the cuttings hadn't rooted who recommended that the team focus their efforts on growing from seed due to the success they were having.

Comment: *Financial reports should be completed and submitted to Darwin as soon as possible.*

An up-to-date financial report for financial year 2022-23 was submitted soon after submission of the previous annual report.

Comment: *Does Phylica seed collection have any impact on the buntings that feed on the fruit?*

The team collected seed from healthy, mature trees on Tristan where there are no buntings present. Four seeds are gathered from each seed pod (5.19) so relatively low numbers have been harvested during this project due to the team's success at germinating from seed using soil from Nightingale.

8 Sustainability and Legacy

In four years, the project has largely achieved the planned short-term changes which will lead to the significant long-term benefits, as outlined in the application. An effective biocontrol agent (BCA) has successfully established on the islands, with observed reductions in scale infestation and sooty mould cover. *Phylica* forest is showing signs of recovery following the devastation of storms in 2019 where an estimated 80% of trees were lost. A community-established *Phylica* nursery has successfully grown and planted over 150 young trees on Nightingale to support forest recovery on the island, restoring vital habitat for the Critically Endangered Wilkins' Bunting. Significant New Zealand Flax removal will similarly support *Phylica* recovery on Inaccessible, supporting Vulnerable populations of *Nesospiza* buntings.

The achievements mentioned above are all likely to endure. The BCA should now be self-sustaining, reducing *C. hesperidum* to levels where the pest is unproblematic. This, in turn will enable *Phylica* forest to recover, supported by the *Phylica* nursery which the horticulturists are committed to keeping going beyond the project utilising the equipment provided - "being able to grow certain plants and trees for conservation has been a highlight for me and something that I would love to continue to do in the future" (Natasha Glass, Tristan Horticulturist). These successes will all contribute towards improving the resilience of *Phylica* forest on Nightingale and elsewhere, safeguarding this vital habitat and contributing towards the recovery of the Wilkins' Bunting population. Despite not achieving full flax eradication on Inaccessible, the team is committed to the work going forwards under DPLUS191, with the project recognised as a priority by Island Council, Administrator, and the community.

Thanks to the significant training element of this project from CABI and Fera, Tristan Conservation Department (TCD) have gone from having no experience of BCAs to catching, rearing, releasing and carrying out basic monitoring of their impact. Such a specialist skillset will be invaluable for future biocontrol work on the island as well as facilitating knowledge exchanges with other Territories. By bringing the apprentices from TCD into the final year of the project and giving them an opportunity to learn from specialists, the project has contributed

towards the development of future conservation leaders on Tristan. RSPB and TCD have a long-term monitoring work programme which is not dependent on further project funding, so project staff will remain in post and BCA monitoring will slot into the already established workplan.

Trevor Glass (Head of TCD) has commented about how valuable visits by CABI and Fera were during this project, raising awareness about scale insects and demonstrating how damaging insect pests can be to the community. This, combined with Kirsty Repetto's (TCD) commitment to the project, have garnered real community support for future BCA projects on Tristan. Crop pest assessments and the release of *E. formosa* to tackle whitefly in greenhouses is likely to have a positive effect on crop yields and has also introduced the agriculture team to BCAs and their potential uses on Tristan. Indeed, the Agriculture Department are now in communication with CABI/Fera outside of this project following visits, as well as the Horticulturists being able to contact experts from Kew.

9 Darwin Plus Identity

The Darwin identity continues to be positively regarded within the community on Tristan da Cunha and there is a good understanding of Darwin, particularly within the Conservation, Agriculture and Fisheries Departments. Approximately 10% of the community have worked directly on a Darwin project, and project updates are given at the fortnightly Government Department meetings. Following ongoing engagement and visits by partners throughout this project, the work was well recognised within the wider community as being funded by Darwin but seen as part of a wider programme of work focusing on controlling invasive species on the islands.

Project publicity has been broad and varied, including RSPB blogs, the Darwin Newsletter, press releases and the project, alongside the Darwin handle or hashtag, has been promoted on X by Tristan Admin, Tristan Nature and Tristan da Cunha: all accounts run by Tristan Government with a combined audience of over 20,000. Project documentation has also included the Darwin Plus logo where possible. Examples of such communications include:

- At the start of the project, the partnership published press releases on the CABI and RSPB websites, alongside an article in the UK press and a complementary blog written by RSPB's director of Global Conservation, which all publicised the Darwin Initiative.
- As part of the wider dissemination work, the partnership submitted a poster to the Second International Congress of Biological Control (ICBC2) which was accepted, with CABI virtually representing the project and the Darwin Initiative in April 2021 (**Annex 5.21**).
- An RSPB blog written in December 2022 covering the fantastic work of Natasha Glass and Kelly Swain in the setting up of the community Phylica Nursery on the island, acknowledging the importance of Darwin Plus funding.
- An article written for the Darwin newsletter on the theme of 'Charismatic Conservation', highlighting the importance of the project for saving Tristan's only native tree species and Critically Endangered Wilkins' Buntings. The article featured the work of the Conservation Department and Kirsty Repetto in particular.
- Some example tweets are posted below – one celebrating the creation of the new *Phylica* nursery on Tristan for #WorldPlantingDay and two (featuring the Darwin logo) highlighting the vital flax removal work on Inaccessible Island:

  https://x.com/NatureTristan/status/1506205565957165059 = 668 impressions

  https://x.com/NatureTristan/status/1508423154099761157 = 2,543 impressions

  https://x.com/NatureTristan/status/1509170645678104577 = 1,929 impressions

Following the completion of the project, articles have been prepared for the RSPB Annual Report (2023-24), the Autumn-Winter 2024 edition of the RSPB Magazine (with a readership of over a million people), and a joint press release between partners which we are hopeful will

lead to some long-lead media pieces about the success of the project. All articles acknowledge the UK Government's contribution towards the work with specific reference to the Darwin Plus scheme.

10 Risk Management

Fortunately, no new risks arose in this final reporting year that hadn't previously been accounted for. However, the project did have to make significant adaptations to the workplan mainly due to the impact Covid-19 had on the first two years.

In Year 1, there was an initial three-month delay to the project start date, all international travel was restricted, and some members of the project team went on furlough resulting in reduced capacity. As a result, we extended the project by a year, moved all travel to Tristan and the survey in South Africa into Year 2, and provided remote support to Tristan in the rearing and culturing of the parasitoid wasps. Access to propagation and quarantine facilities were restricted due to social distancing measures, and shipments between the UK and Tristan became significantly longer and at a much greater expense. Using our network, we instead coordinated in-person transportation of agents in temperature controlled cool boxes to reduce transit times and successfully deliver the parasitoids to Tristan. Regular remote meetings were then established with partners to closely monitor the parasitoids on Tristan and deliver training. It was also decided to focus work on one BCA species during Year 1 and to use available capacity to produce sufficient specimens of this species for an early release on Nightingale.

Covid-19 continued to impact the project in Year 2, with severe travel restrictions introduced in South Africa (Tristan's gateway) and Tristan itself. This made a visit by the CABI/Fera team to Tristan unviable, which was partially compensated through remote training and supervision. The visits and associated activities (the survey for crop pests on Tristan and the collection of scale and parasitoid population data on Nightingale) were moved and completed in the final project year. Some adjustment had to also be made to the planned survey of BCAs in South Africa. Instead of a direct survey by the project team, we decided to outsource this element to biological control experts already located in South Africa.

In the end, a one-year extension mitigated for delays in certain project activities ensuring the outcome remained achievable. This is also thanks to a real collective effort amongst partners and Tristan Conservation Department managing to maintain the parasitoid culture despite only remote supervision. Once borders opened again post-pandemic, berths on vessels to Tristan were at a real premium due to Tristanians being keen to get to the mainland to see family and for delayed medical treatment. However, by utilising a yacht charter as part of another project (DPLUS191), we were able to transport members of the Inaccessible team out and use the return leg for CABI/Fera specialists, thereby reducing berth pressure on the Tristan community.

11 Safeguarding

The RSPB have clear safeguarding policies and procedures (updated in January 2022) which apply to our international work and includes appropriate annual training for all our staff members working internationally. We now have an internal Global Safeguarding Subgroup who oversee and advise on our international safeguarding work. This group includes staff with extensive safeguarding experience as well as representation from staff posted overseas working with partners and local communities. Fortunately, there have been no safeguarding concerns in this reporting year or throughout the project, but this subgroup would advise should any concerns arise.

We have a strong commitment to work closely with all our partners to ensure they adhere to good safeguarding practices; the sub-grant contract with Tristan Government, CABI, Fera and I-Rigging Solutions included our standard Annex outlining the obligations of the partner to safeguarding and how they report, record and mitigate any incidents.

Has your Safeguarding Policy been updated in the past 12 months?	No (updated Jan '22)
Have any concerns been investigated in the past 12 months	No
Does your project have a Safeguarding focal point?	No
Has the focal point attended any formal training in the last 12 months?	N/A – All lead partner staff have completed online safeguarding training in the last 12 months.
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 75% [6] Planned: NA
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. No	
Please describe any community sensitisation that has taken place over the lifetime of the project; include topics covered and number of participants. NA	
Have there been any concerns around Health, Safety and Security of your staff over the lifetime of the project? If yes, please outline how this was resolved. No	

12 Finance and administration

12.1 Project expenditure

The RSPB's International Finance Department will populate the tables below once the project audit is complete and final figures are confirmed.

Project spend (indicative since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs				
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				

Project spend (indicative since last Annual Report	2023/24 Grant (£)	2023/24 Total actual Darwin Plus Costs (£)	Variance %	Comments (please explain significant variances)
Capital items				
Others				
TOTAL				

Staff employed (Name and position)	Cost (£)
TOTAL	

Consultancy – description and breakdown of costs	Other items – cost (£)
TOTAL	

Capital items – description	Capital items – cost (£)
TOTAL	

Other items – description	Other items – cost (£)
TOTAL	

12.2 Additional funds or in-kind contributions secured

Matched funding leveraged by the partners to deliver the project	Total (£)
TOTAL	

Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project	Total (£)
TOTAL	

12.3 Value for Money

This project has delivered excellent value for money, largely achieving the ambitious Outcome and leaving a significant legacy (see Section 8), all in the challenging context of a global pandemic and cost-of-living crisis. The project has provided a long-term and sustainable solution for a potentially high-profile conservation issue for Tristan, delivering against multiple environmental/climate targets for the Territory (see Section 4). Although we cannot say for certain that the activities of this project have prevented the extinction of a British bird species, early indications are that we have significantly improved the resilience of the *Phylica* habitat (critical for the survival of Wilkins' Buntings), with the situation likely to improve in the coming years.

A pre-project survey, jointly funded by RSPB and the GB Non-Native Species Secretariat, enabled us to measure the impact of the scale insects, determine if there were any natural enemies already present, and to survey for potential non-target hosts on any BCAs that might be selected. This survey saved considerable effort and money which would have otherwise been factored into the first year of the project at greater cost. Had we not taken these steps, it would have been almost impossible to select, test, risk assess, transport and rear a BCA on Tristan in the first year; something which often takes multiple years, and considerably more funding, in the UK to achieve.

The RSPB managed the project extremely cost effectively, seeking minimal funding from Darwin and committing match funding to cover any shortfall. RSPB's expertise in project management, co-ordination and community relations therefore came at good value for money, building the project management deliverables into our existing partnership with Tristan Conservation. Travel was also realistically costed at the lowest available price for RSPB and partners due to our 20+ years' experience of working with Tristan. CABI reduced its overheads from their standard 120% to 40%, and as a not-for-profit organisation, could provide the highest levels of expertise at competitive rates. Fera is a Joint venture company with DEFRA and selected to use the Defra Long-Term Service Agreement rates to ensure value for money. Finally, Tristan Conservation Department committed staff time in-kind, fitting the project work around their already established work programme on biosecurity and invasive species control.

Additional funding was secured from the John Ellerman Foundation (JEF) and EU Best 2.0+, which not only allowed us to effectively navigate the challenges of the pandemic but also expand upon certain outputs (e.g. funding an additional year of flax removal work on Inaccessible).

The polytunnel and planting equipment purchased under this project are now being repurposed by the Agriculture Department to increase crop production for the community. Additional activities, such as risk assessing and releasing *E. formosa* in Tristan's greenhouses to control whitefly, were added to utilise the specialist skillset of partners whilst they were on island. In combination with the additional growing space provided by this project, crop damage will be lessened by the BCA reducing Tristan's reliance on importing produce (with associated biosecurity risks).

13 Other comments on progress not covered elsewhere

NA – all information covered in previous sections.

14 OPTIONAL: Outstanding achievements of your project (300-400 words maximum). This section may be used for publicity purposes.

I agree for the Biodiversity Challenge Funds Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here).

File Type (Image / Video / Graphic)	File Name or File Location	Caption, country and credit	Online accounts to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
				Yes / No
				Yes / No
				Yes / No
				Yes / No
				Yes / No

Annex 1 Report of progress and achievements against logframe for the life of the project

Project summary	Progress and achievements
Impact Healthy *Phylica* forests cover their available habitat niche on the northern islands of Tristan da Cunha and sustain their maximum possible populations of endemic *Nesospiza* buntings for long-term resilience	*Phylica* forest has started to recover following the successful establishment of the biocontrol agent (BCA) *M. nietneri*. By protecting and restoring native habitat, populations of endemic *Nesospiza* buntings will stabilise and start to increase. Crop pest assessments and release of the BCA, *E. formosa* in Tristan's greenhouses will improve crop yields for the community. The control/removal of invasive species in the Tristan Group will all contribute to the climate resilience of the islands and the health and livelihoods of the community.
Outcome Sustainable community-supported control of *Coccus hesperidum* successfully established, community nursery created and invasive flax buffer provided that enables recovery and planting of *Phylica* trees, restoration of seed-setting and ultimately increased food availability for *Nesospiza* buntings.	*See Section **3.2**.* *M. nietneri* has established at multiple sites throughout the Tristan Group and *Phylica* is starting to show signs of recovery. *Phylica* planting and removal of invasive NZ Flax have all contributed towards restoring this vital habitat for vulnerable populations of endemic *Nesospiza* buntings.
Outcome indicator 0.1 - In year four at least one control agent successfully established on each of the three northern islands in compliance with Tristan legislation and Council permissions	*See Section **3.2**., Indicator **0.1**.* Following rigorous testing (5.03), risk assessing (5.04) required permits (5.06) and the release of *M. nietneri* on the three northern islands, the BCA has been confirmed to have established on Tristan and Nightingale and likely to have done on Inaccessible. *N. reunioni* also transferred from Tristan to Nightingale and Inaccessible as secondary scale predator.
Outcome indicator 0.2 - In year four, lower densities of *C. hesperidum* and resulting sooty mould cover of foliage recorded on *Phylica* compared to 2020 baseline	*See Section **3.2**., Indicator **0.2**.* With the BCA established on Tristan and Nightingale, parasitism levels of scales shown to be 100% in some sites and levels of scales infestation and associated sooty mould lower than previously reported (5.15).
Outcome indicator 0.3 - No New Zealand flax is recorded on the plateau of Inaccessible Island or top 50m of surrounding cliff by end of year 2	*See Section **3.2**., Indicator **0.3**.* Flax infestation shown to be much greater than pre-project surveys estimated (5.16). Heavily infested 'Waterfall Ridge' cleared of over 5,000 plants during this project and work to continue as part of DPLUS191.
Outcome indicator 0.4 - 3 Tristan Conservation Department staff (2 male / 1 female) trained and able to successfully rear, release and monitor a biological control agent	*See Section **3.2**., Indicator **0.4**.*

	Reliance on remote training for much of the project due to Covid restrictions. However, Tristan team able to successfully rear and release BCAs (5.12) independently, learning monitoring skills from specialists in final year.
Outcome indicator 0.5 - Within 3-5 years of project start, observed regeneration of *Phylica* forest compared to 2021 baseline, and population density of buntings stabilised	*See Section **3.2**., Indicator **0.5**.* Observed recovery of *Phylica* forest on Nightingale following establishment of BCA, during Dec 2023 visit. Wilkins' Bunting population declined by 25-50% but declines likely due to forest loss which will be remedied by this project, allowing population to recover.
Outcome indicator 0.6 - At least 125 *Phylica* trees planted in priority sites on Nightingale Island by end of Year 4	*See Section **3.2**., Indicator **0.6**.* Successful establishment of *Phylica* nursery on Tristan with over 150 healthy, young trees grown during the project and planted in priority sites on Nightingale.
Output 1. Suitable biological control agents for *C. hesperidum* on Tristan selected, risk assessed and tested	
Output indicator 1.1 - At least three suitable control agents identified and selected from commercial, research and wild South African sources by end of Q4 in year three	*See Section **3.1**., Indicator **1.1**.* Parasitoid wasps *Microterys. nietneri, M. seyon* and *Coccophagus lycimnia* identified and selected as potential BCAs of brown soft scale on Tristan.
Output indicator 1.2 - One control agent tested through standardised methods and under controlled conditions in Q3 of year one, and at least one further agent by Q2 of year two	*See Section **3.1**., Indicator **1.2**.* *M. nietneri* and *M.* seyon tested for climate suitability and efficacy against *C. hesperidum* during Years 1 and 2.
Output indicator 1.3 - At least one control agent demonstrated to be highly effective against the *C. hesperidum* strain present on Tristan by end of Q2 of year two	*See Section **3.1**., Indicator **1.3**.* In Year 2, efficacy trials of *M. nietneri* at different temperatures (5.03) demonstrated BCA to be effective against *C. hesperidum*, with an outdoor strain sourced in Year 3 and thought to be climatically well-matched to Tristan conditions.
Output indicator 1.4 - PRA on one tested and recommended control agent completed by end of Q3 in year one, and of all tested and recommended agents by Q3 of year two	*See Section **3.1**., Indicator **1.4**.* Risk assessment (5.04) completed for *M. nietneri* in Year 1 and species recommended for release on Tristan. Risk assessment (5.05) completed for *N. reunioni* (predatory ladybird) in Year 3 and recommended for transference to Nightingale and Inaccessible.
Output 2. Tristan Council and community understand and approve of selected control agent release	

Output indicator 2.1 - Publicity materials and video are submitted to Tristan Council and screened for public viewing by Tristan Conservation Department in Q2 of Yr1. At least 75% of Tristan Council members, at least 75% of Tristan school classes, and at least 50 Tristanians have face-to-face discussions with community engagement lead in Q2 of years two and three	*See Section **3.1**., Indicator **2.1**.* Fera educational video shared with Island Council in Year 1 (5.07). Throughout project, community engagement lead had F2F discussions with all Council members, all school children, Administrators. Kirsty Repetto (TDC) discussed the project with many community members, generating real on-island trust in project.
Output indicator 2.2 - Independent opinion on first PRA produced by APHA and explained to Tristan Council via phone, by end of Q3 in year one, and subsequent PRAs by Q3 of year two	*See Section **3.1**., Indicator **2.2**.* APHA, a subsidiary of DEFRA, provided an independent opinion on the risk assessment of *M. nietneri* (5.08) which was explained to Tristan Council.
Output indicator 2.3 - Tristan Council and community approval granted for introduction, rearing and release of one tested and recommended control agent by end of year one and of all tested and recommended agents by Q3 of year two	*See Section **3.1**., Indicator **2.3**.* Tristan Council approved the release of *M. nietneri* (Year 1), and the transference of *N. reunioni* from Tristan to Nightingale/Inaccessible (Year 3) (5.06).
Output indicator 2.4 - Potato crop pest assessments completed for at least 8 growers (4 male / 4 female), as well as the Agriculture Department vegetable production polytunnel, and potential for benefits from biocontrol evaluated, by end of year four	*See Section **3.1**., Indicator **2.4**.* Potato crop pest assessment completed by CABI in Year 3 (5.09). Ongoing discussions about control of glasshouse whitefly in Tristan's polytunnels, with the BCA *E. formosa* released in Year 4 following a risk assessment (5.10).
Output 3. Selected control agent reared under controlled conditions on Tristan	
Output indicator 3.1 - Rearing facilities established on Tristan to allow repeated releases without long-distance imports by the end of year one	*See Section **3.1**., Indicator **3.1**.* 4 pop-up cages filled with *Phylica* branches infested with *C. hesperidum* enabled Tristan Conservation Department, with regular remote supervision, to successfully rear the BCA from low starting numbers in Year 1.
Output indicator 3.2 - At least one well suited control agent brought into permanent culture under controlled rearing conditions on Tristan by end of year one	*See Section **3.1**., Indicator **3.2**.* 300+ wasps (*M. nietneri*) shipped to Tristan in January 2021, of which only a small number survived the 3+ week journey. Tristan Conservation Department were able to establish a culture from low starting numbers using methods above (Ind. 3.1)
Output indicator 3.3 - Three Tristan Conservation Department staff (2 male / 1 female) trained in rearing control agents by the end of year one	*See Section **3.1**., Indicator **3.3**.* Training delivered remotely due to Covid restrictions. However, Tristan team (2 male / 1 female) successfully established culture in Year 1. In-person training in Year 3 showed team how to improve rearing approach and scale up production.

Output indicator 3.4 - At least 14 school children (7 female / 7 male) involved in propagating/growing plants for the control agents by the end of year one, and subsequent rearing by Q3 of year two	*See Section **3.1**., Indicator **3.4**.* A regular supply of hosts (scales) was required to maintain culture on Tristan, with propagating plants taking too long. Youngsters instead involved in monitoring wasp emergence boxes, visiting wasp rearing cages and older youngsters assisting in first release, and shadowing specialists during visits in Years 3 and 4.
Output indicator 3.5 - Production of at least 300 female control agents for release by the end of year one and 500 females in years three and four	*See Section **3.1**., Indicator **3.5**.* 300+ BCAs reared and released on Nightingale in April 2021, with a 1,000+ released across Tristan, Nightingale and Inaccessible in Feb-Mar 2023.
Output 4. Control agents released and successfully established on Tristan da Cunha, Inaccessible & Nightingale Islands	
Output indicator 4.1 - At least one well suited control agent released in at least two sites with heavy infestations of *C. hesperidum* on one of the islands in Q4 of year one and in each of the three islands by the end of year four	*See Section **3.1**., Indicator **4.1**.* *M. nietneri* released at two, sheltered and infested sites on Nightingale in April 2021 and at multiple sites on Tristan, Nightingale and Inaccessible in Feb-Mar 2023. *N. reunioni* transferred to Nightingale and Inaccessible in Year 3 and 4 respectively, as a secondary scale predator.
Output indicator 4.2 - Monitoring of infestation rates of *C. hesperidum* by visiting expert at release sites shows at least one control agent established in at least one site by end of year three, and on all three islands by end of year four	*See Section **3.1**., Indicator **4.2**.* Establishment of *M. nietneri* confirmed in multiple sites on Tristan and Nightingale by specialist in November 2023 (5.15). Establishment could not be confirmed on Inaccessible due to limited time on island, but likely due to releases made under similar conditions.
Output 5. Invasive New Zealand flax closest to *Phylica* habitat controlled on Inaccessible Island World Heritage Site, with an increased local capacity to undertake control activities	
Output indicator 5.1 - All flax plants present on island plateau are mapped and removed in Q4 of year one	*See Section **3.1**., Indicator **5.1**.* Not possible to remove all plateau flax plants due to team discovering significantly more plants than pre-project surveys had estimated and challenges of accessing all sites. Mapping and removal work started in Year 1 with efforts focussed on the heavily infested 'Waterfall Ridge' area (5.16).
Output indicator 5.2 - The 2019 baseline map of cliff flax presence is updated and the top 50m of invaded cliff beneath plateau is cleared of flax in Q4 of year one	*See Section **3.1**., Indicator **5.2**.* Efforts focussed on 'Waterfall Ridge' with the team clearing down the entire cliff face rather than just the top 50m due to time spent rigging the area. Around 5,000 flax plants removed from this area during project (5.17).

Output indicator 5.3 - All year one plateau and cliff clearings re-checked and re-controlled where necessary in Q4 of year two (repeat in Q4 of year three)	*See Section **3.1**., Indicator **5.3**.* The flax team returned to Inaccessible in Years 2 & 3, revisiting areas cleared in the previous years and controlling new seedlings. Flax work to continue as part of DPLUS191.
Output indicator 5.4 - Local trainee demonstrates year on year improvement in rope access skills	*See Section **3.1**., Indicator **5.4**.* Christiaan Gerber joined the flax team each year, gaining 447 rope hours throughout the project. He built on his experience year-on-year (5.18), taking more of a leadership role in the final year and learning IRATA Level 2 techniques to plan for future assessment (under DPLUS191).
Output 6. Community nursery of scale-free *Phylica* trees established on Tristan for Nightingale reforestation	
Output indicator 6.1 - Two-person nursery team, a weather-resistant polytunnel and at least 250 seedlings planted, all in in place by end of Q1 (Year 3)	*See Section **3.1**., Indicator **6.1**.* Two-person nursery team (both female) recruited in Year 2, producing 100 healthy *Phylica* seedlings and taking 50 cuttings in the first year (5.19).
Output indicator 6.2 - 500 healthy *Phylica* seedlings established by end of Year 3	*See Section **3.1**., Indicator **6.2**.* Unfortunately, cuttings didn't root so team focussed on growing from seed. Team successfully produced 157 healthy young trees from all seedlings grown.
Output indicator 6.3 - Five-person planting team (roughly 50/50 split taking into account nursery team gender split) in place by Q2 end (Year 4). Enough previously forested areas cleared/prepared on Nightingale for a minimum of 125 tree seedlings by Q3 end (Year 4)	*See Section **3.1**., Indicator **6.3**.* 157 young *Phylica* trees planted in prepared ground on Nightingale in April 2023.
Output indicator 6.4 - Continued maintenance of planted *Phylica* trees on Nightingale to ensure maximum survival by project end	*See Section **3.1**., Indicator **6.4**.* The team continue to monitor the young trees, keeping scrub in check and watering if necessary. >80% of planted trees growing well and healthy.

Annex 2 Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: Healthy *Phylica* forests cover their available habitat niche on the northern islands of Tristan da Cunha and sustain their maximum possible populations of endemic *Nesospiza* buntings for long-term resilience			
Outcome: Sustainable community-supported control of *Coccus hesperidum* successfully established, community nursery created and invasive flax buffer provided that enables recovery and planting of *Phylica* trees, restoration of seed-setting and ultimately increased food availability for *Nesospiza* buntings.	0.1 In year four at least one control agent successfully established on each of the three northern islands in compliance with Tristan legislation and Council permissions 0.2 In year four, lower densities of *C. hesperidum* and resulting sooty mould cover of foliage recorded on *Phylica* compared to 2020 baseline 0.3 No New Zealand flax is recorded on the plateau of Inaccessible Island or top 50m of surrounding cliff by end of year 2 0.4 3 Tristan Conservation Department staff (2 male / 1 female) trained and able to successfully rear, release and monitor a biological control agent 0.5 Within 3-5 years of project start, observed regeneration of *Phylica* forest compared to 2021 baseline, and population density of buntings stabilised. 0.6 At least 125 *Phylica* trees planted in priority sites on Nightingale Island by end of Year 4	0.1 Environmental permits. Rearing and release reports. Assessment report of control agent population establishment. 0.2 Assessment report of sooty mould cover on *Phylica* trees. Photographic evidence. 0.3 Flax assessment report. Photographic evidence 0.4 Biological control agent Training, Release & Monitoring reports verified by CABI and Fera. Feedback forms. Photographic evidence. 0.5 Assessment report of Phylica regeneration. Photographic evidence. (recruitment). Bird population monitoring data. 0.6 Nursery/planting staff timesheets. Photographic evidence	By the end of the project a decline of the pest species and tree coverage by sooty mould should start to be reflected in the recorded data. Recovery of *Phylica* trees and bird populations can only be measured and verified several years after the termination of project however as part of long-term monitoring activities. Assumption: Tristan Conservation Department and the RSPB continue monitoring beyond the life of the project. This holds true as RSPB and Tristan Conservation have a long-term monitoring work programme which is not dependent on further project-funding, so will be able to deliver on this. We also commit to reporting the results to Darwin Plus / DEFRA post grant.

Output 1. Suitable biological control agents for *C. hesperidum* on Tristan selected, risk assessed and tested	1.1 At least three suitable control agents identified and selected from commercial, research and wild South African sources by end of Q4 in year three 1.2 One control agent tested through standardised methods and under controlled conditions in Q3 of year one, and at least one further agent by Q2 of year two 1.3 At least one control agent demonstrated to be highly effective against the *C. hesperidum* strain present on Tristan by end of Q2 of year two 1.4 PRA on one tested and recommended control agent completed by end of Q3 in year one, and of all tested and recommended agents by Q3 of year two	1.1 Literature Review. South African survey report. 1.2 Efficacy testing results report 1.3 Efficacy testing results report 1.4 Pest Risk Assessments.	Assumption: Suitable control agents matching the target pest can be identified. This is highly likely as the different strains of *C. hesperidum* have been successfully controlled under a wide range of environmental conditions. Indeed, *C. hesperidum* is one of the best assessed pest species in the world regarding associated parasitoids and other natural enemies. The CABI Invasive Species Compendium alone lists more than 40 parasitoids and predators for this target pest. Suitable control agents can be obtained from existing cultures or through field surveys. This is highly likely as some agents are commercially available and more are in use in agricultural research institutes with which CABI has long-established contacts. Additional species can relatively easily be sourced during field surveys in particular from citrus growing areas, where *C. hesperidum* can be frequently found. The methodology for required surveys is already established at CABI and will draw on substantial past experiences in controlling this species.
Output 2. Tristan Council and community understand and approve of selected control agent release	2.1 Publicity materials and video are submitted to Tristan Council and screened for public viewing by	2.1 Photographs from public meetings and school talks. Publicity materials demonstrating biocontrol	Possible community fears about the introduction of a parasitoid wasp can be allayed. This is highly likely

	Tristan Conservation Department in Q2 of Yr1. At least 75% of Tristan Council members, at least 75% of Tristan school classes, and at least 50 Tristanians have face-to-face discussions with community engagement lead in Q2 of years two and three 2.2 Independent opinion on first PRA produced by APHA and explained to Tristan Council via phone, by end of Q3 in year one, and subsequent PRAs by Q3 of year two 2.3 Tristan Council and community approval granted for introduction, rearing and release of one tested and recommended control agent by end of year one and of all tested and recommended agents by Q3 of year two 2.4 Potato crop pest assessments completed for at least 8 growers (4 male / 4 female), as well as the Agriculture Department vegetable production polytunnel, and potential for benefits from biocontrol evaluated, by end of year four	agents. Educational pack for school. Short educational video. Trip report. 2.2 APHA Opinion document. Tristan Council meeting minutes 2.3 Environmental Permits 2.4 Potato crop & Agriculture Department polytunnel pests report. Potential biocontrol report	as Tristan Council has already formally approved this project application, Tristan Conservation Department is a core partner, the RSPB has excellent long-term community links and thus understanding of local concerns, and clear communications will demonstrate that the (likely) agents are c.2mm long and harmless to humans and the wider environment. The potato crop is largely all grown close together at the 'patches', so assessments conducted with 8 growers will be sufficient to provide insights and lessons for all growers of this staple crop.

Output 3. Selected control agent reared under controlled conditions on Tristan	3.1 Rearing facilities established on Tristan to allow repeated releases without long-distance imports by the end of year one 3.2 At least one well suited control agent brought into permanent culture under controlled rearing conditions on Tristan by end of year one 3.3 Three Tristan Conservation Department staff (2 male / 1 female) trained in rearing control agents by the end of year one 3.4 At least 14 school children (7 female / 7 male) involved in propagating/growing plants for the control agents by the end of year one, and subsequent rearing by Q3 of year two 3.5 Production of at least 300 female control agents for release by the end of year one and 500 females in years three and four	3.1 Photographic evidence of rearing facilities 3.2 Rearing protocols. Photographic evidence 3.3 Training protocol provided as annex to second annual project report 3.4 Teacher feedback in second annual project report. 3.5 Results from rearing protocols provided in second annual project report	Pest Risk Assessment ensures that no native species are harmed by the control agent. To date, no native scale insects have ever been recorded for the Tristan group, but further surveys by a world-leading entomologist, and rigorous testing as part of the PRA process, will provide extremely high levels of confidence in this assumption. Control agents can be reared and cultured under controlled conditions. This is highly likely as standardised rearing protocols for both parasitoid and predatory control agents of *C. hesperidum* exist. Tristan Conservation Department able to work closely with the Island school. This is highly likely as occurs frequently already.
Output 4. Control agents released and successfully established on Tristan da Cunha, Inaccessible & Nightingale Islands	4.1 At least one well suited control agent released in at least two sites with heavy infestations of *C. hesperidum* on one of the islands in	4.1 Release reports. Photographic evidence.	Suitable weather conditions allow field releases. Environmental conditions allow establishment of agents (which is

	Q4 of year one and in each of the three islands by the end of year four 4.2 Monitoring of infestation rates of *C. hesperidum* by visiting expert at release sites shows at least one control agent established in at least one site by end of year three, and on all three islands by end of year four	4.2 Annual monitoring reports. Final report includes post-release evaluation.	highly likely as testing will have aimed to replicate conditions on Tristan as much as possible)
Output 5. Invasive New Zealand flax closest to *Phylica* habitat controlled on Inaccessible Island World Heritage Site, with an increased local capacity to undertake control activities	5.1 All flax plants present on island plateau are mapped and removed in Q4 of year one 5.2 The 2019 baseline map of cliff flax presence is updated and the top 50m of invaded cliff beneath plateau is cleared of flax in Q4 of year one 5.3 All year one plateau and cliff clearings re-checked and re-controlled where necessary in Q4 of year two (repeat in Q4 of year three) 5.4 Local trainee demonstrates year on year improvement in rope access skills	5.1 Plateau flax presence map. Control team report. Photographic evidence. 5.2 Updated cliff flax map. Control team report. Photographic evidence. 5.3 Monitoring trip report. Updated plateau and cliff flax presence maps. Photographic evidence. 5.4 Baseline skills assessment on rigging techniques, gear inspection and rope management. Trainer's report.	Tristan Government retains this as a key priority. Highly likely as included in the project at Tristan's specific request and a key action of the World Heritage Site management plan. Suitable weather conditions enable timely team drop-off and pick-up, plus working conditions on the island plateau. Control therefore to be conducted in the Tristan summer (Jan-March) to maximise good weather. Unmapped first-hand reports from February 2019 team on flax presence on the island plateau suggest that full removal is possible. COVID-19 travel restrictions allow for the flax team to travel to Tristan in Q4 of Yr1. This will be a direct voyage from South Africa to

			Inaccessible Island, with the potential not to stop at Tristan da Cunha entirely, so is less likely to be affected by global travel restrictions.
Output 6. Community nursery of scale-free *Phylica* trees established on Tristan for Nightingale reforestation	6.1 Two-person nursery team, a weather-resistant polytunnel and at least 250 seedlings planted, all in in place by end of Q1 (Year 3) 6.2 500 healthy *Phylica* seedlings established by end of Year 3 6.3 Five-person planting team (roughly 50/50 split taking into account nursery team gender split) in place by Q2 end (Year 4). Enough previously forested areas cleared/prepared on Nightingale for a minimum of 125 tree seedlings by Q3 end (Year 4) 6.4 Continued maintenance of planted *Phylica* trees on Nightingale to ensure maximum survival by project end	6.1 Nursery staff timesheets, photographic evidence 6.2 Nursery staff timesheets, photographic evidence, *Phylica* tending protocols 6.3 Planting team timesheets, photographic evidence 6.4 Photographic evidence	Successful propagation of *Phylica* seedlings – Trevor Glass already has had success with this, so this is likely Environmental conditions allow establishment and survival of young *Phylica* trees once planted in affected areas – planting can occur during releases of control and in areas where control is already established to protect young trees from scale insect
Activities (each activity is numbered according to the Output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1) 1.1 Identification of scale insect from samples collected on Tristan; use of molecular methods to identify the strain/subspecies present on Tristan 1.2 Analysis of pre-project survey and literature survey to match agents to scale taxon present on Tristan; this includes climate matching of previous successful control projects of *C. hesperidum* with the conditions present on Tristan 1.3 Selection of suitable and readily available agents, including use of agents commercially available and agents currently used in other research institutes 1.4 Shipment of living scale insects from Tristan to quarantine at CABI to test agents on the correct target taxon			

1.5 Culturing of *C. hesperidum* from Tristan at CABI for testing and mass rearing of agents

1.6 Survey in SA for additional agents; the survey will focus on areas with significant citrus growing where *C. hesperidum* is widespread

1.7 Risk assessment for selected agents with a focus on published host specificity records

1.8 Efficacy testing of agents in quarantine at Egham UK looking into infestation rates and rates of encapsulation by the target species

2.1 Tristan Conservation Department screen educational video and share publicity materials to Council and with community. Community engagement lead visits Tristan in Q2 of Years 2 and 3 to engage Council, school children and community members via public meetings, informal discussions, classroom teaching and film screening.

2.2 The PRA is submitted to APHA for independent scrutiny, and their feedback then provide direct to Tristan Council both in writing and via a phone explanation.

2.3 Tristan Council meeting discusses PRA and approves issue of an environmental permit by the 'Administrator in Council'.

2.4 Visiting expert conducts pest assessments on potato crops of at least 8 growers, as well as the Agriculture Department vegetable production polytunnel, providing immediate verbal feedback and a follow-up report.

3.1 Rearing of agents for release at CABI quarantine facilities using several chambers to keep individual agents separated and supply population of scales uninfected

3.2 Development of training material and rearing protocols for Tristan, including photographic identification guide for the species involved in word format and as PowerPoint presentation

3.3 Establishment of polytunnel rearing facilities on Tristan

3.4 First shipment of approved agent(s) on Tristan and establishment in prepared rearing facilities on the island

3.5 Training of biosecurity staff on Tristan how to rear control agents followed by remote supervision after the training

3.6 Culturing of agents on Tristan in person and under remote supervision by FERA and CABI

4.1 Training of biosecurity staff on Tristan how to culture, release and monitor control agents

4.2 First release of agent(s) on at least two sites on one of the target islands

4.3 Follow on shipments and releases of agent(s) to cover all three target islands

4.4 Monitoring of establishment by local staff once every year in late summer/early autumn

4.5 Monitoring of impact (infestation rates of *C. hesperidum*) by local staff once every year in late summer/early autumn

5.1 Experienced flax control team visit Inaccessible island in year one to complete island plateau flax mapping and update the 2019 cliff flax map baseline
5.2 All island plateau flax, and the top 50m of invaded cliff beneath the plateau, is cleared of flax in year one
5.3 Experienced flax control team revisit Inaccessible in year two to re-check and re-control year one clearings where necessary (repeat in year three)
5.4 One Tristanian resident accompanies the experienced flax team on each visit to Inaccessible island and receives on-the-job training
6.1 *Phylica* nursery established on Tristan
6.2 Successful mass-propagation of *Phylica* seedlings in nursery by Tristanian team
6.3 Ground cleared of scrub and prepared in previously forested areas of Nightingale by Tristanian team
6.4 Oldest, most robust nursery *Phylica* trees planted in suitably prepared, previously forested areas of Nightingale by project end

Annex 3 Standard Indicators

Table 1 Project Standard Indicators

DPLUS Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total achieved	Total planned
DPLUS-A01	3 Tristan Conservation Department staff (2 male / 1 female) trained and able to successfully rear, release and monitor a biological control agent	People	Women:Men			2:3	2:4	1:2 (exceeded target)
DPLUS-A04	Two-person nursery team, a weather-resistant polytunnel and at least 250 seedlings planted, all in in place by end of Q1 (year 3) Local trainee demonstrates year on year improvement in rope access skills	Number of organisations	Conservation and Agriculture Departments			2	2	2
DPLUS-B06	Potato crop pest assessments completed for at least 8 growers (4 male / 4 female), as well as the Agriculture Department vegetable production polytunnel, and potential for benefits from biocontrol evaluated, by end of year four	People	Women:Men Potato growers			4:4	4:4	4:4
DPLUS-C01	PRA on one tested and recommended control agent completed by end of Q3 in year one, and of all tested and recommended agents by Q3 of year two	Number	BCA Risk Assessments			3	3	2? (not known how many would be necessary)
DPLUS-D03	Tristan Council and community approval granted for introduction, rearing and release of one tested and recommended control agent by end of year one and of all	Number of instruments	TDC Government Research Permits			2	3	2? (not known how many would be necessary)

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)

Annex 5 Supplementary material (optional but encouraged as evidence of project achievement)

Annex	Evidence provided	Document name
5.01	Genetic sequencing of TDC scale pests	5.01_DPLUS102_Scale_Sequencing
5.02	Results of SA BCA survey	5.02_DPLUS102_SA_ Survey
5.03	Climate testing of selected BCA	5.03_DPLUS102_Climate_matching_of_M.nietneri
5.04	Risk assessment for *M. nietneri*	5.04_DPLUS102_M.nietneri_RA
5.05	Risk assessment for *N. reunioni*	5.05_DPLUS102_N.reunioni_RA
5.06	BCA permits issued by TDC Gov	5.06_DPLUS102_Release_Permits
5.07	BCA explanatory video for TDC	5.07_DPLUS102_BCA_Video
5.08	Independent opinion on *M. nietneri*	5.08_DPLUS102_DEFRA_Opinion_M.nietneri
5.09	TDC potato crop pest assessment	5.09_DPLUS102_Potato_Pest_Assessment
5.10	Risk assessment for *E. formosa*	5.10_DPLUS102_E.formosa_RA
5.11	*N. reunioni* prey preference trials	5.11_DPLUS102_N.reunioni_Prey_Preference
5.12	TDC guidance for releasing BCA	5.12_DPLUS102_Release_Protocol
5.13	TDC guidance for monitoring BCA	5.13_DPLUS102_Parasitoid_Surveys_SOP
5.14	Possible reasons for TDC scale declines	5.14_DPLUS102_C.hesperidum_Nightingale_Decline
5.15	Fera/CABI 2023 full TDC trip report	5.15_DPLUS102_TDC2023_Visit_Report
5.16	Flax team report for 2021 season	5.16_DPLUS102_Inaccessible_Report_2021
5.17	EU BEST flax team report 2020-23	5.17_DPLUS102_Inaccessible_Report(BEST)
5.18	Trainer report for TDC flax team member	5.18_DPLUS102_C.Gerber_TR
5.19	TDC *Phylica* growing learnings/tips	5.19_DPLUS102_Growing_Phylica
5.20	DRAFT Wilkins' Bunting survey results	5.20_DPLUS102_DRAFT_WB2024_Population
5.21	ICBC2 CABI poster for project	5.21_DPLUS102_Project_Poster

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	x
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	x
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line. All supporting material should be submitted in a way that can be accessed and downloaded as one complete package.	
If you are submitting photos for publicity purposes, **do these meet the outlined requirements (see section 14)?**	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	x
Have you involved your partners in preparation of the report and named the main contributors	x
Have you completed the Project Expenditure table fully?	
Do not include claim forms or other communications with this report.	