Darwin Initiative/Darwin Plus Projects
Half Year Report
(due 31st October 2021)

Project reference	DPLUS102
Project title	Saving Tristan's only native tree and its associated unique buntings
Country(ies)/territory(ies)	Tristan da Cunha Island Group
Lead organisation	Royal Society for the Protection of Birds (RSPB)
Partner(s)	Conservation Department, Tristan Government Centre for Agriculture and Bioscience International (CABI) The Food and Environment Research Agency (FERA)
Project leader	Andy Schofield
Report date and number (e.g. HYR1)	HYR2
Project website/blog/social media	N/A

1. Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).

The project is well on track and further shipments of *M. nietneri* have so far not been necessary as the culture on Tristan is developing very well. The current focus is on bringing this culture safely through the winter season and to firm up wasp numbers in spring/early summer for further substantial releases on Nightingale and Inaccessible Island:

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

1.1 *Identification of scale insect from samples collected on Tristan; use of molecular methods to identify the strain/subspecies present on Tristan*

This work is on-going using both specimens from Tristan and those from the culture that has been built up at CABI's quarantine facilities. We are confident this will be achieved in the next few months and the results will be included in the annual report.

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*

The BCA we are primarily working with, *Microterys nietneri*, had been tested at a temperature regime of 18°C during daytime and 16°C at night, resembling conditions on Tristan for long periods of the year. This has now been complemented with a second experiment at 26°C during day and 24°C at night to allow an assessment of the efficacy of the BCA, comparing the reproduction at lower temperatures with the higher ones in greenhouses where the agent is most often used to control soft brown scale.

The experiment has recently been completed, but we are still assessing the results. Early indications are that reproductivity at the lower temperature (resembling outdoor conditions on Tristan) leads to a reduced reproduction rate; this is even lower taking expected reduced development times at cooler temperatures into account. One explanation might be that at lower temperatures females will develop and deposit fewer eggs in a given timespan. Although rate of reproduction is significantly reduced at low temperatures, we still believe that the rate observed at the 18/16°C regime is sufficient to exert a sufficient degree of *Coccus hesperidum* control, once fully established in the target area.

1.3 *Selection of suitable and readily available agents, including use of agents commercially available and agents currently used in other research institutes*

A lot of effort has gone into this. An initial review into the availability and feasibility of the use of further agents resulted in the selection of the following species as possible additional agents to work on:

Microterys nietneri (UK outdoor strain), *Metaphycus stanleyi, Metaphycus helvolus, Chilocorus bipustulatus* and *Coccophagus scutellaris*

The main criteria for the selection of further BCAs have been:

- 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
- The species should not have a negative impact on the already released *M. nietneri*

The project team also decided to focus firstly on trying to obtain a second strain/population of *M. nietneri* from outdoors in the UK. We believe a release of a strain better adapted to outdoor conditions compared to the already released strain, which has been cultured in warm greenhouse conditions for many generations, is likely to increase efficacy of control, and in any case would have beneficial effects by increasing the genetic diversity of the released species. So far, we have not been able to obtain any specimens to establish a new culture but efforts are ongoing.

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

Currently in the process of being conducted for the species provisionally selected (see 1.3).

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

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.*

Our community engagement lead visited Tristan in September/October and was able to field questions about the project from the community on an ad-hoc basis with a generally positive response. Kirsty Green (TdC Conservation Department) has been fantastic at not only keeping the culture going on island, but also for engaging many members of the community and showing them the rearing set-up of the parasitoids. 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 has generated real on-island trust in the project.

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

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*

The culturing of *M. nietneri* is ongoing at the CABI facilities in Egham. So far further shipments to Tristan have not been necessary as the culture, now established in the facilities on Tristan, is doing very well and has already provided wasps for several releases on Nightingale Island.

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

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

Training for all of these aspects has been provided remotely.

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

This has successfully been done. Wasps have been released twice in autumn 2021 on Nightingale Island. Further releases are planned for spring/summer 2022.

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

Monitoring was planned to take place along with the first release on Nightingale Island in April 2021. However, due to deteriorating weather conditions at the time there was no time to do this. A first monitoring of levels of scale infestation and establishment of *M. nietneri* is now planned for January/February '22.

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

As described above, baseline data could not be collected due to the weather conditions at the release site. Monitoring is planned to start in January/February '22. We expect that, although already released in late Autumn '21, the control agent will not have been able to replicate during the winter conditions in any significant way. The data obtained in the upcoming spring can therefore still be regarded as baseline data.

Output 5 - Invasive New Zealand flax closest to Phylica habitat controlled on Inaccessible Island World Heritage Site

(**5.2 – 5.4**) The flax team is set to return to Inaccessible WHS in the next few months.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months (for COVID-19 specific delays/problems, please use 2b). Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Due to the difficulty of winter travel to Nightingale, and the lack of biocontrol specialists on island over the last few months, it hasn't always been easy to understand the impact of the scale insects and interpret results from the first release. However, Andy Schofield's feedback from his recent trip will be invaluable for updating our CABI/Fera partners and focus plans for spring/summer. There have also been issues sourcing additional control agents for suitability testing. The test plants haven't yet yielded the desired species and commercial suppliers have stopped trading them as well. However, trapping is ongoing and we are hopeful for progress in the next few months.

2b. Please outline any specific issues which your project has encountered as a result of COVID-19. Where you have adapted your project activities in response to the pandemic,

please briefly outline how you have done so here. Explain what residual impact there may be on your project and whether the changes will affect the budget and timetable of project activities.
Covid-19 has caused many of the same issues of the last two years. With South Africa only recently coming off the Red List for travel from the UK, it was a real achievement to get Andy on island over the last few weeks. The pandemic has meant that space on vessels has been at a premium, for kit, let alone berth capacity. Sailings have been cancelled due to Covid outbreaks aboard vessels which has restricted passage of personnel and supplies - testament to this is the fact that Tristan have had to ration both fuel and food for the last few months. It is therefore worth noting that this limited vessel capacity alongside the many unknowns of the pandemic over the next few months as the UK heads into winter (and hinted restrictions by the government), travel to Tristan may be impacted and some fieldwork/training may need to be conducted remotely. There haven't been too many direct impacts on the project in the last six months, although the survey in South Africa for additional agents has had to be delayed due to restrictions – this will hopefully be happening in the new year using a partner of CABI already based in SA. At this stage of the project all partners, both on and off island, have become very adaptable and as such the project timetable looks set to be achieved for the year.
2c. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?
Discussed with LTS: No
Formal change request submitted: No
Received confirmation of change acceptance No

3a. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this year?
Yes ☒ **No** ☐ Estimated underspend: £
We are reviewing the budget and are currently unable to determine the estimated value of the underspend. A change request will be submitted in November.
3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.
If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary. Please DO NOT send these in the same email as your report.
4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?
N/A

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but should also be raised with LTS International through a Change Request. Please DO NOT send these in the same email.

Please send your **completed report by email** to Darwin-Projects@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 25-001 Darwin Half Year Report**