



## Darwin Initiative Main Project Annual Report

**Important note:** *To be completed with reference to the Reporting Guidance Notes for Project Leaders:*

*it is expected that this report will be no more than 10 pages in length, excluding annexes*

**Submission Deadline: 30<sup>th</sup> April 2017**

### Darwin Project Information

Project reference	22-001
Project title	Rescuing and restoring the native flora of Robinson Crusoe Island
Host country/ies	Chile
Contract holder institution	CABI
Partner institution(s)	CONAF, INIA, MMA, Oikonos
Darwin grant value	£227427
Start/end dates of project	1 <sup>st</sup> April 2015 - 31 <sup>st</sup> March 2018
Reporting period (e.g., Apr 2016 – Mar 2017) and number (e.g., Annual Report 1, 2, 3)	April 2016 - March 2017 Annual Report 2
Project Leader name	Steve Edgington
Project website/blog/Twitter	<a href="http://www.cabi.org/projects/project/46827">www.cabi.org/projects/project/46827</a>
Report author(s) and date	S. Edgington, V. Lagos, A. France, P. Hodum. 20 April 2017

### 1. Project rationale

Invasive plant species have colonised around 90% of the native forests on Robinson Crusoe Island (RCI). The invasive species must be controlled and replaced by native plants to prevent the complete loss of all viable RCI native forest including many rare plant species. RCI is part of the Juan Fernández Archipelago (JFA), a UNESCO International Biosphere Reserve with one of the highest densities of endemic plant species in the world, many of which are endangered. This Darwin project is part of an invasive species management programme for JFA. There is coordinated removal of invasive species from the archipelago, the Darwin project is enabling the conservation, propagation and replanting of native species in their place. The project is conserving many of RCI's native plants and restoring key native species to 1 ha of cleared land. The project is improving seed conservation and nursery propagation on RCI, protecting plants threatened with extinction and ensuring sufficient numbers are available for replanting. At the programme level it supports the restoration of 30 sq km of JFA by 2033. The Chilean Ministry of the Environment approached CABI to provide technical and scientific assistance for improving the conservation, propagation and re-establishment of RCI's native plants, with the aim of safely storing many of RCI's native species and piloting the re-introduction of ecologically important species, including two plants on the IUCN Red-List.

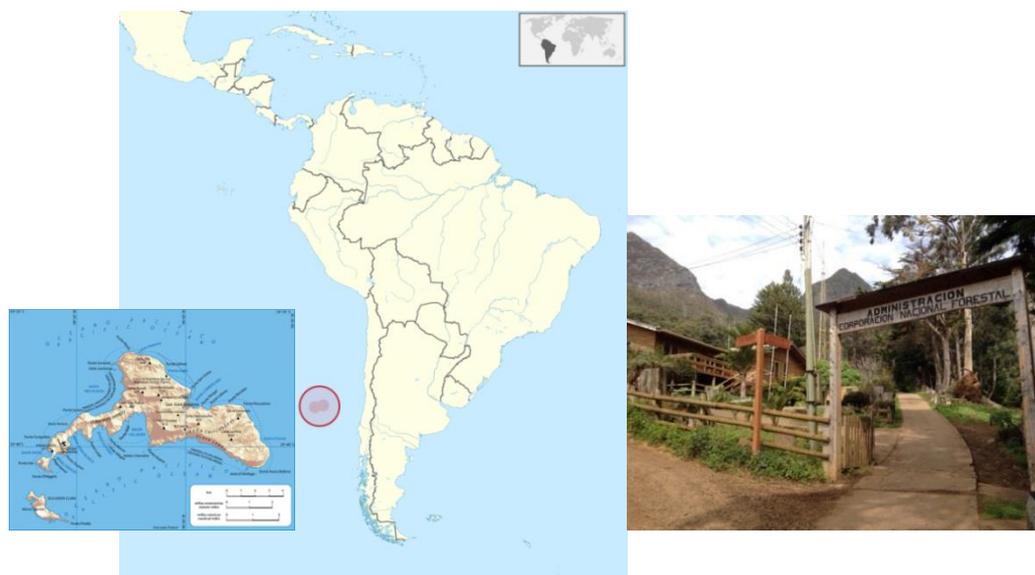


Figure 1. Robinson Crusoe Island is within the Juan Fernandez Archipelago, about 360 miles off the coast of Chile. The project's HQ is at the CONAF administration centre (above right), where the nursery and new seed bank are located. Photo: S. Edgington CABI; Maps: <https://commons.wikimedia.org>

## 2. Project partnerships

The project has four official partners (excl. the UK lead):

- Chilean National Forestry Commission (CONAF): Host-country lead. CONAF is the government body responsible for all of Chile's National Parks (of which RCI is one) and is key to project implementation. CONAF has led on all in-country activities in Y2, including mid and year end project meetings in Chile, finalising an agreement with Chile's National Seed Bank and organising a Nagoya/ABS seminar. CONAF has been punctual with internal reporting.
- Chilean Ministry of the Environment (MMA): In Y1 it was agreed that MMA's staff budget would go to CONAF to enable a full-time Darwin project officer role on RCI. MMA attended all project planning meetings in Y2 and the Nagoya/ABS seminar.
- Instituto de Investigaciones Agropecuarias (INIA): INIA's primary project activity is researching the use of soil microbes to aid nursery and field planting. They have been present at every project meeting, presented two project posters at the National Symposium of Biological Control and recently produced a project YouTube film (see Table 2 Annex 3 for link)
- Oikonos: Oikonos is an international NGO focused on studying and protecting threatened ecosystems. They have been manually clearing invasive species for the project in Y2.

## 3. Project progress

### 3.1 Progress in carrying out project Activities

#### Output 1. Seed-bank established to conserve native RCI plant species

##### Activity 1.1 Adaptations to botanical garden to establish seed-bank facility

New RCI seed bank installed, fitted and operational - see Figure 2. Suitable doors, windows and a roof added, plus electricity, cabinets, sinks, lab equipment internally. The bank adjoins an old laboratory which the project has renovated to facilitate processing of seeds. The project is grateful to the RCI municipality for provision of a crane to aid installation.



Figure 2. New RCI seed bank installed, fitted and operational in Y2

### Activity 1.2 Seeds and spores obtained from native forest and conserved in seed-bank (duplicate collection in separated facility/store)

Seeds of 27 RCI plant species were collected in Y2 of which 20 have gone into the seed bank; the remaining seven species went straight to nursery. Those put into storage included four IUCN Red List critically endangered species and three of the five project priority species (see Table 3 Annex 4 for accession records).

The project assessed seeds collected at the pre and early project stage and discarded all due to poor condition.

The project team visited Chile's National Seed Bank in northern Chile where an agreement to duplicate the RCI collection was finalised. The national bank is a partner with the Millennium Seed Bank, Kew, collecting and conserving wild crop species, and has significant expertise in seed conservation and curation. The agreement is tremendous news for the project.

### Activity 1.4 Release of seeds and spores of five native species for nursery production

The seed bank released the following seeds to the nursery in Y2: 126 *Dendroseris litoralis*, 106 *Rhaphithamnus venustus*, 288 *Gunnera bracteata* and 2 *Haloragis masatierrana*.

## Output 2. Improved nursery facility to ensure sufficient plant material available for 1 ha habitat restoration

### Activity 2.1 Alterations to expand nursery ground space

Early Y2 the team discussed nursery priorities based on habitat restoration requirements. Ferns are urgently needed for restoration as they provide a relatively quick means of reducing soil erosion and preventing invasive return. This meant a change in emphasis from a simple increase in ground space to instead providing a means of self-contained fern production. A fern-specific propagation unit was purchased, fitted-out and is now operational (see Figure 3). The unit was purchased with support of the Chilean Institute of Ecology and Biodiversity (it does, incidentally, add an additional 20sqm floor space to the nursery).



Figure 3. Fern propagation unit installed and operational in Y2

### Activity 2.3 Five native plant species propagated by year 2, more by year 3

*Gunnera tinctoria* was replaced by *G. bracteata* as a priority species as seeds of *G. tinctoria* are taking longer to obtain than anticipated. Of the priority species nursery records (Table 5 Annex 4) show the following numbers were added to the nursery in Y2: 126 *D. litoralis*, 106 *R. venustus*, 288 *G. bracteata* and 2 *H. masatierrana*.

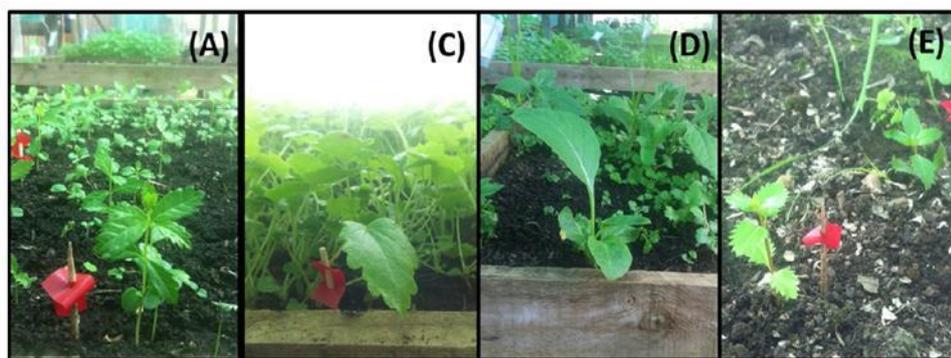


Figure 4. Priority species added to the RCI nursery in Y2; A= *R. venustus*; C= *G. bracteata*; D= *D. litoralis*; E= *H. masatierrana*.

### Output 3. Enhanced technical capacity of local staff for propagation, storage and quality control of native plant species

#### Activity 3.1. Training in plant propagation, seed/spore preservation and quality control given to local staff and local citizens

Two weeks of evening courses, which included aspects of plant propagation, were run in Oct-Nov of Y2. The courses were advertised via social media, radio and fliers (see Figure 5) and were open to all RCI residents. Twenty one people in total attended, however not for every course. As well as plant propagation the courses included management of invasive species, habitat restoration and various aspects of tourism. The courses were organised by CONAF, Oikonos, the Unit for Tourism and Culture of the Municipality of Juan Fernandez, the Office for National Tourism and Chile's Agriculture and Livestock Service. See Table 4 and Figure 6 in Annex 4 for full course schedule and list of participants.



Figure 5. Flier advertising a series of evening courses run for residents of RCI

### Activity 3.2 Trialling of propagation techniques in nursery

Following a review of activities at the nursery in Y1 the following recommendations were implemented in Y2: adding compost to the potting media; no more sterilisation potting media (in order to maintain native biota); more strategic use of fungicides; and quarantine of plants for 1-2 weeks prior to field planting and treating with appropriate pesticides, to stop the spread of pests and diseases.

### Activity 3.3 Production of propagation and quality control guidelines

In Y2 a manual was produced on the conservation, distribution and propagation of 18 endemic tree and shrub species (ranging from vulnerable to critically endangered). The project team will add to this booklet in Y3 and anticipate having details of approximately 60 species by project end. The manual has been provided as a separate pdf attachment to this report.

### Output 4. One ha of land cleared and five native plant species re-established

#### Activity 4.1 One hectare of land manually cleared of invasive species, in total by Year 3

Thirty pockets of native forest were cleared of invasive species in Y2. When combined with the pockets cleared in Y1 this represents approximately 2.5 ha of cleared land.

**Activity 4.2 Seedlings of five native plant species replanted in 1 ha of cleared land. Species (minimum number replanted): *Dendroseris litoralis* (20), *Rhaphihamnus venustus* (30), *Gunnera tinctoria* (20), *Haloragis masatierrana* (20) and *Fagara mayu* (10)**

Four hundred and twenty eight seedlings representing 17 native species were planted in 2210 sq m of native forest in Y2 (22 % of project target area). A full list of the planted species is in Table 6 Annex 4. The total seedling numbers of the priority species were as follows: *R. venustus* 20, *G. bracteata* 12, *H. masatierrana* 19 and *F. mayu* 29. As none of the cleared land matched the habitat requirements of *D. litoralis* this species was not planted. Instead 102 seedlings of *D. litoralis* were distributed amongst the RCI community, including the school, as a means of passive restoration of this IUCN critically endangered plant. The project's strategy for replanting is attached as an electronic pdf.

**Activity 4.3 Testing of plant health and growth at intervals, to demonstrate successful re-establishment**

This activity is in its infancy. The success of the replanting activities will be measured by survival and spread of the native plants and, return rate (if any) of the invasives. This will be measured in Y3 and beyond.

**Output 5. Beneficial plant-microbe complexes understood, and microbes produced for re-establishment activities; species conserved at INIA's Genetic Resources facility**

**Activity 5.1 Determination of microbial complexes associated with native plant species and conserved at INIA's Genetic Resources facility**

The focus of Y2 was to conclude the identification and conservation of all microbes obtained from the RCI surveys. The project obtained 440 microbes in total: 179 insect- or nematode-killing fungi, 45 disease-inhibiting fungi, 181 growth-promoting fungi or bacteria and 35 plant pathogens. The microbes are being cryopreserved at Chile's National Microbial Bank (at INIA). Specific details are available on request

**Activity 5.2 Production of selected microbes**

The project has selected *R. venustus* for tests with growth-promoting microbes at INIA. INIA had earlier proposed to test on two other species but sufficient seeds were not available. Tests using tomato as a control are underway and tests involving *R. venustus* will start in Q1 Y3 (when a shipment of 1000 seeds from RCI arrive).

**Activity 5.3 Trialling of propagation techniques and interactions with microbial complexes in nursery**

The project anticipates introducing microbes into the nursery by mid-Y3. CONAF (and indirectly INIA) will monitor plant growth during and beyond the project.

## 3.2 Progress towards project Outputs

**Output 1. Seed-bank established to conserve native RCI plant species**

An operational seed bank is now in place on RCI, prior to the proper the island had no proper seed bank. Accession records show that seeds and spores of 33 native plant species have been collected of which 21 are now in storage, this includes four IUCN critically endangered and four IUCN vulnerable species. The target is 50% of native species (another 55 species, approximately) which the project is confident will be achieved.

**Output 2. Improved nursery facility to ensure sufficient plant material available for 1 ha habitat restoration**

In Y2 the nursery floor space was increased by 20 sq m by the addition of a propagation unit specific for ferns. The unit was installed, fitted-out and in operation by year end.

**Output 3. Enhanced technical capacity of local staff for propagation, storage and quality control of native plant species**

During Oct-Nov 2016 the project ran evening courses over two weeks for RCI staff and residents on a range of subjects, including plant propagation. In total 21 people attended, 13 specifically for the plant propagation course. The manual on the conservation and propagation of 18 RCI native plant species was distributed to the attendees to accompany the course.

#### **Output 4. One ha of land cleared and five native plant species re-established**

Field visits by project staff confirmed that over 30 pockets of land were cleared in Y2, bringing the total area of cleared land to 2.5 ha. The project is keeping 1 ha as its target for restoration however will restore more land if possible. The targets for minimum number of plants re-introduced are still fine and may well be exceeded.

#### **Output 5. Beneficial plant-microbe complexes understood, and microbes produced for re-establishment activities; species conserved at INIA's Genetic Resources facility**

Laboratory records show all microbial groups have been isolated from RCI plants or from their associated soil. The project team has selected one priority native plant and will screen a sub-sample of the microbes obtained. The indicator holds true.

### **3.3 Progress towards the project Outcome**

**Project outcome: Improved seed-bank and nursery facilities, with conserved soil microbiota, enable the protection of RCI native plants and restoration of five important species to 1 ha (N.B. Darwin project level)**

**Indicator 1. 50% (minimum) of RCI's native flowering species and 50% (minimum) of known non-flowering vascular species stored as seed or in culture in the new seed-bank, by Year 3**

Seed bank records show that 17% of RCI's native species are now in the seed bank. There were a number of species collected pre-project or at early-project stages but these had to be discarded as they had lost viability (primarily due to inadequate storage facilities).

**Indicator 2. 100% increase in production capacity of healthy planting stock at the RCI nursery by Year 2, by enlarged facilities by Year 1 and more efficient throughput by Year 2**

The word healthy has been added to this indicator to ensure the emphasis is on quality not just quantity. A number of best practices have been implemented at the nursery and a fern-specific production unit purchased and installed. The revised indicator is adequate for measuring the outcome

**Indicator 3. Native plant species: *Dendroseris litoralis* (20\*), *Rhaphihamnus venustus* (30), *Gunnera tinctoria (bracteata)* (20), *Haloragis masatierrana* (20) and *Fagara mayu* (10) re-established in 1 ha of RCI by Year 3. \*minimum number re-established**

This indicator was adjusted at the start of Y2 with *Gunnera tinctoria* being replaced by *G. bracteata* as a priority species (due to collections of *G. tinctoria* taking longer than anticipated). Four of the five key species have been collected and put into the bank. All five species have been propagated in the nursery and four have been replanted in native forest (some 80 specimens planted). The indicator is adequate for measuring the outcome

**Indicator 4. Three project staff and 10 citizen scientists trained in production and maintenance activities at the nursery and seed-bank by Year 1**

Sixteen national park officers and one local citizen trained in the collection and ex-situ conservation of seeds in Y1. Twenty one people in total attended Y2 evening courses on various themes of which 13 attended a plant propagation component.

**Indicator 5. Microbial complexes associated with five RCI species (as above) deposited in genetic resources collection by Year 2; complexes of 50% (minimum) of RCI native flora deposited by Year 3**

Microbial complexes have been obtained from the five priority native species or from their associated soils. The project will not hit the target of isolating microbes from 50 % of RCI's native species; as over 400 microbes were obtained from just 2% of RCI's native plants the original target of 50% was too ambitious.

### 3.4 Monitoring of assumptions

**Outcome Assumption 1.** Natural disasters, such as earthquakes and tsunamis do not disrupt nursery and seed bank facilities. These facilities to be situated above the height of the areas affected by the 2010 tsunami: New seed bank located above tsunami safety line

**Outcome Assumption 2.** Local communities and MJFA remain open and committed to working on the project; representatives from both will be on a project steering committee, to ensure (and gauge) their engagement: Still holds true though to note there will be a new Mayor of MJFA in 2017 and it's vital the project engages with them to ensure continued support from MJFA.

**Outcome Assumption 3.** Chilean Government maintains support for the project after 2018: A visit by Chilean ministers has been delayed but is still expected: CONAF has confirmed that the conservation and restoration activities will continue beyond project end.

**Outcome Assumption 4.** Biological control agents work as expected from relevant experience (N.B. programme level): **Still holds true**

**Outputs Assumption 1.** Low proportion of plant species recalcitrant regarding seed storage: Some concern here as this is somewhat of an unknown until the team has done the work; many of the plant species are new to the team. Fortunately the project has the expertise of Chile's National Seed Bank for assistance.

**Outputs Assumption 2.** CONAF remit of conserving biodiversity in JFA National Park remains: Holds true. CONAF are presently preparing a proposal for conservation of 100% of RCI's native plants and restoration of 10 ha of cleared land.

**Outputs Assumption 3.** Turnover of local staff remains manageable: Holds true, there have been no staff departures since project start

### 3.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

The Darwin project is a component of an invasive species management programme in JFA. Project and non-project organisations are systematically removing invasive species from the native forests, the Darwin project is enabling the conservation, propagation and replanting of native species in their place. The Darwin project has contributed to the clearance of 2.5 ha of invasive species on RCI, it has established a permanent seed bank, renovated the RCI laboratory and co-financed the purchasing of a controlled propagation unit for ferns. The project has implemented better practice within the RCI nursery, trained staff and local residents on plant conservation and propagation and produced manuals and other educational literature to support the training. Chile's National Seed Bank (on mainland Chile) has agreed to conserve and curate a duplicate RCI seed collection beyond project end. The project has collected and stored 17% of RCI's native flora, including a number of critically endangered species, has propagated its priority native species in the nursery and, started a programme of native forest restoration. Enhanced technical capacity and improved infrastructure will significantly support the restoration of approximately 30 sq km of JFA by 2033, at a programme level. To note, with regards to poverty alleviation, whilst this is not a primary objective of the project, there are direct employment benefits for a small number of residents on RCI in the nursery and seed bank and possibilities for increased tourism (following tourism courses for RCI residents in Y2).

## 4. Contribution to the Global Goals for Sustainable Development (SDGs)

The project is making a direct contribution to SDG 15: 'Protect, restore and promote the sustainable management of terrestrial ecosystems...'. In particular activities in Y2 contributed to: 15.2: by planting 400+ native plants in cleared areas of native forest; 15.5 by storing (in the new seed bank) 27 species of native plant from RCI of which four are critically endangered; 15.6 by organising a half-day seminar on Nagoya and ABS which was attended by around 100 people including researchers, lawyers, biodiversity officers and Government officials; and 15.8 by clearing approximately 1.5 ha of invasive species from RCI native forest.

## 5. Project support to the Conventions, Treaties or Agreements

The project co-organised an ABS seminar with the Ministry of Economy, Promotion and Tourism. The half-day seminar was held at the National Institute of Industry Property (INAPI) in Santiago, Chile and included presentations on Nagoya/ABS policy and practice by CABI's

Director for Biological Resources, a case study on implementing biodiversity legislation in Brazil by CABI's Regional Director for Latin America and a paper on the project's efforts to rescue and restore RCI's genetic resources by INIA's Director of Microbial Resources. The seminar was an open-invite and was attended by around 100 people; it generated good discussion on issues of intellectual property rights, access to genetic resources and Chile's ABS policy (of note Chile is yet to ratify the Nagoya Protocol). The Director of INAPI introduced the seminar and highlighted the importance of Chile to embrace the Nagoya Protocol and, to establish national standards/procedures for accessing and sharing genetic resources. Eileen Frodden Kelly, a legal advisor at INAPI, said the seminar opened opportunities and provided ideas of how Chile should shape their response to the Nagoya Protocol. The seminar was filmed for use by INAPI lawyers. See Annex 4 for full seminar programme. Certain components of the seminar were at a high level and not directly related to present project activities. The project team anticipate a running a modified ABS seminar on RCI in Y3 for RCI residents.

The project contributed to CBD Article 9 through its collection and conservation of native RCI plants, Article 10 through its support of improved nursery facilities and best practices for producing planting stock, Article 8 through its replanting of native species and Article 12 through its complementary scientific and technical training for park officers and local RCI citizens.

## **6. Project support to poverty alleviation**

Poverty alleviation is not the primary objective of this project however there will be direct employment benefits for a small number of residents on RCI, e.g. the nursery and seed bank are employing several local residents. The project has also created a project officer on RCI. There were sessions on tourism, e.g. managing tourist groups, adventure tourism, during a two week training course in Y2 to encourage local residents to pursue tourism as an income generator.

## **7. Project support to gender equality issues**

Any opportunities for local citizens to participate in project activities have not discriminated against age or gender.

## **8. Monitoring and evaluation**

Dr Steve Edgington (project manager) has remained responsible for M&E in Y2. The process has been one of continuous, systematic monitoring of activities, both self-assessment and internal monitoring. CONAF is the primary in-country support for M&E. As in Y1, Dr Edgington is satisfied with CONAF's M&E activities; they have coordinated all internal 6- and 12-monthly reporting inputs from partners and facilitated three project planning and implementation meetings in Chile. CABI's Regional Director for Latin America (a member of the project board) visited Chile to participate in the project's 6-monthly review meeting and, presented a case-study paper at the aforementioned ABS seminar. The project board on the whole has monitored the project via reports and direct contact with the project manager. If/when Chilean ministers visit RCI in Y3, CABI has agreed to send a senior member of CABI management (their staff costs covered by CABI). The project continues to be monitored as work packages, each being a collection of outputs with respective activities. The delivery of each work package is managed, monitored and evaluated as a unit, enabling any changes to the work plan, e.g. the switch in focus from a simple increase in nursery floor space to provision of a specific fern propagation unit, to be suitably controlled. Chilean inputs coordinated by CONAF for all but the soil microbiology work package.

## **9. Lessons learnt**

Victor Lagos (CONAF) is the host-country lead and his expertise, project management experience and overall enthusiasm continues to be extremely valuable to the success of this project. Of note however, Chile is continuously fire-fighting natural disasters (literally in Y2 with Chile's largest wild fire on record) and this at times can lead to a fall in project activity as staff and resources are re-directed, particularly from CONAF. This is why the early decision to employ a designated project office to live on RCI, i.e. away from mainland influences, has proved an excellent move.

## **10. Actions taken in response to previous reviews (if applicable)**

The project team is grateful to the Y1 reviewer highlighting a lack of SMART indicators for the project. The project lead has addressed this and is presenting a revised log frame in Annex 1 for the Darwin Initiative's consideration. Other comments from the reviewer were a request for a Nagoya update in this report, more details on the clearance and replanting strategy, training notes for courses and updates on the Firecrown hummingbird; with the exception of the latter all are covered in this report or provided as attachments. At the time of writing this report Oikonos had not provided details on their hummingbird surveys.

## **11. Other comments on progress not covered elsewhere**

## **12. Sustainability and legacy**

CONAF, MMA and Oikonos have continued to communicate with the RCI community on project activities and on the broader programme activities, i.e. the large scale removal of invasive species. Raising awareness has been done through a monthly meeting on RCI between representatives from CONAF, RCI conservational groups and local residents. Of particular note in Y2 CONAF was invited to present a paper on the project at the 1<sup>st</sup> National Congress on Protecting Wild Areas organised by SNAPSE (The National System of Protected Land Areas), the presentation is attached as a pdf file. A potential visit to RCI by government ministers that was proposed for Y2 didn't happen, but there is promise that it will happen in Y3. The project's planned exit strategy is still valid, by the end of the project there will be sufficient capacity and infrastructure on RCI to enable propagation and replanting activities to continue for the duration of a much larger restoration programme. CONAF has responsibility for the RCI National Park and is committed to continue and expand the replanting work, as well as regular monitoring of progress and, disseminating relevant information. CONAF is presently coordinating a new proposal to conserve 100% of RCI native plants, stabilise 5 ha of soil presently under risk of erosion and restore native plants to 10 ha of invaded wild forest.

## **13. Darwin identity**

A number of project partners have given presentations this year, on each occasion details of the Darwin Initiative were given and on most occasions the logo used, exceptions were some of the training material used during evening courses in Y2 (see Annex 3 for details). INIA produced a YouTube film about the project with specific reference to the Darwin Initiative. Dr David Smith, Director of Microbial Resources at CABI, was interviewed on film by INIA's marketing team on the value of the Darwin Initiative project for Chile's microbial resources. Dr Edgington and Dr Smith also discussed the Darwin Initiative in a recent interview for a local Chilean magazine (not in print yet).

#### 14. Project expenditure

Table 1: Project expenditure during the reporting period (1 April 2016 – 31 March 2017)

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			-8%	
Consultancy costs	0	0		
Overhead Costs			-48%	The overhead is based on CABI staff time. CABI staff time in the period was lower than plan as the focus was on staff time deliverables for CONAF and INIA.
Travel and subsistence			-8%	
Operating Costs			-16%	Lead staff had anticipated paying full costs for an international conference but come the time the costs were part funded by another project. Can the lead carry these funds forward to enable a conference visit in Y3?
Capital items	0		0	
Others			-8%	
<b>TOTAL</b>				

Highlight any agreed changes to the budget and **fully** explain any variation in expenditure where this is +/- 10% of the budget. Have these changes been discussed with and approved by Darwin?

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2016-2017

Proposed modifications are in red

Project summary	Measurable Indicators	Progress and Achievements April 2016 - March 2017	Actions required/planned for next period
<p><b>Impact</b></p> <p>Native biodiversity on JFA is substantially conserved through a programme of invasive species control and habitat restoration (N.B. programme level)</p>		<p>The project conserved 13% of RCI native plants this year (17% in total) and restored 2210 sq m of native forest</p>	
<p><b>Outcome</b> Improved seed-bank and nursery facilities, with conserved soil microbiota, enable the protection of RCI native plants and restoration of five important species to 1 ha (N.B. Darwin project level)</p>	<p>1. 50% (minimum) of RCI's native flowering species and 50% (minimum) of known non-flowering vascular species stored as seed or in culture in the new seed-bank, by year 3. <b>Pre-project records show 17% of native species in storage and four of the five priority species, although quality not known</b></p> <p>2. 100% increase in production capacity at the RCI nursery by year 2, by enlarged facilities by year 1 and more efficient throughput by year 2. <b>Current nursery capacity approx. 3000 plants, including all five priority species, however many in bad health.</b></p> <p>3. Native plant species: <i>Dendroseris litoralis</i> (20*), <i>Rhaphihamnus venustus</i> (30), <i>Gunnera bracteata</i> (20), <i>Haloragis masatierrana</i> (20) and <i>Fagara mayu</i> (10) re-established in 1 ha of</p>	<p>1.1. New seed-bank open.</p> <p>1.2. 13% of RCI native plants collected and conserved this year, including four of five priority species and four critically endangered species. Source of evidence Annex 4 Table 3. Seeds collected pre-project germ-tested and discarded due to poor quality.</p> <p>2.1. Five new nursery practices implemented following review in Y1.</p> <p>2.2. Seedlings of all five priority species propagated at nursery; 522 seedlings in total</p> <p>3. 2210 sq m native forest replanted, included 80 specimens of four priority species</p> <p>4. Thirteen people trained in plant propagation</p> <p>5. Microbial complexes from all five priority species deposited in INIA's</p>	<p>1. Seeds and spores collected in Year 3, with a minimum of 50% of RCI plants obtained and stored by year end. Duplicate collection established at National Seed Bank</p> <p>2. Sufficient seedlings provided for replanting activities</p> <p>3. Total of 1 ha native forest replanted by year end</p> <p>3. Beneficial microbes complement planting of one priority species</p>

	<p>RCI by year 3. *minimum number re-established</p> <p>4. Three project staff and 10 citizen scientists trained in production and maintenance activities at the nursery and seed-bank by year 1. <b>Present trained staff = 1</b></p> <p>5. Microbial complexes associated with five RCI species (as above) deposited in genetic resources collection by year 2. <b>At present the collection contains no microbes from these species</b></p>	<p>microbial resource collection</p>	
<p><b>Output 1.</b> Seed-bank established to conserve native RCI plant species</p>	<p>1. Physical presence of functioning seed-bank facility. <b>Presently no seed bank exists (seeds simply stored on shelves at nursery), accompanying laboratory in bad state</b></p> <p>2. Seed-bank and nursery records record show minimum of 50% native species conserved by year 3. <b>Presently 17% of native species in storage</b></p> <p>3. Seeds of five priority species passed to the nursery. <b>Presently no transfer of seed from bank to nursery</b></p>	<p>1. New RCI seed bank installed, fitted and operational.</p> <p>2. Accession records show 31 RCI's native species (17%) now conserved (see Annex 4 for 2016 accessions).</p> <p>3. Seed bank provided the nursery with seeds of four of the five priority species.</p> <p>Indicators appropriate.</p>	
<p>Activity 1.1 Adaptations to botanical garden to establish seed bank facility</p>	<p>RCI seed bank installed, fitted and operational. Suitable doors, windows and roof added, with electricity, storage cabinets, sinks, lab equipment all fitted. The bank is physically joined to the old RCI laboratory which was also renovated with new benches, sinks etc, to facilitate processing and germ testing of seeds.</p>		
<p>Activity 1.2, Seeds and spores obtained from native forest and conserved in seed bank (duplicate collection in separated facility/store)</p>	<p>Seeds collected from 27 RCI plant species in Y2 of which 20 stored in seed bank. Seeds of pre and early project stages assessed and all discarded due to poor condition.</p>		

		Agreement in place with Chile's National Seed Bank to conserve and curate RCI plant species (as a duplicate collection)
Activity 1.4 Release of seeds and spores of five native species for nursery production		The seed bank released some 700+ seeds for nursery production in Y2 of four of the five priority species
Activity 1.5 Monitoring and evaluation, recording and dissemination of above		Project team met three times for review and planning. Six-month and 12-month Darwin reports submitted on time. Internal reporting from partners as per agreed schedule.
<b>Output 2.</b> Improved nursery facility to ensure sufficient plant material available for 1 ha habitat restoration (assuming growth from re-established species as well)	<p>1. Productive, protected floor space increased from 100 sq m to 150 sq m, open nursery field production to be doubled</p> <p>2. Internal fittings and fixtures are modern and suitable for effective plant propagation. <b>Presently in unsuitable state for modern production</b></p> <p>3. Nursery records demonstrate improved production efficacy of native plants. <b>Present capacity 3000 plants but many in bad health with heavy reliance on chemical pesticides</b></p>	<p>1. Floor space increased by 20 sq m however emphasis switched to high quality production of ferns. Fern-specific propagation unit purchased, installed and operational by year end.</p> <p>3. Better nursery practices implemented following review in Y1</p> <p>Indicators appropriate.</p>
Activity 2.1. Adaptations to expand nursery ground space		The team met early in Y2 to discuss nursery improvements in the context of field planting requirements and decided planting activities and therefore nursery activities should focus on ferns, as these will reduce erosion and invasive return. This meant a change in emphasis from floor space to healthy material. A controlled propagation house for ferns was purchased in Y2 with the support of the Chilean Institute of Ecology and Biodiversity and will be operational by mid-2017 (increasing nursery floor space by 20 sq m)
Activity 2.3 Five native plant species propagated by year 2, more by year 3		<i>Gunnera tinctoria</i> has been replaced by <i>G. bracteata</i> as a priority species as seeds of <i>G. tinctoria</i> will take longer than anticipated. The nursery received seeds of the priority species and the following numbers were grown in Y2: <i>D. littoralis</i> 126, <i>R. venustus</i> 106, <i>G. bracteata</i> 288 and <i>H. masatierrana</i> 2.

Activity 2.4 Monitoring and evaluation, recording and dissemination of above	Manual on plant propagation of 18 native plant species disseminated to course attendees
<b>Output 3.</b> Enhanced technical capacity of local staff for propagation, storage and quality control of native plant species	1. Local working group on plant propagation established by year 1. <b>Presently one person on RCI involved in plant propagation</b> 2. Manual of plant propagation and quality control distributed to local staff by year 2. <b>Presently no manual exists</b> 3. Training notes demonstrate technical capacity building of local staff
Activity 3.1 Training in plant propagation, seed/spore preservation and quality control given to local staff and local citizens	A training course covering aspects of plant propagation was run over several days in Oct-Nov of Y2 (see flier below). This course also covered aspects of conservation, management of invasive species, habitat restoration and guidelines for tourism. The course was organised by CONAF, Oikonos, the Unit for Tourism and Culture of the Municipality of Juan Fernandez, the Office for National Tourism and Chile's Agriculture and Livestock Service. The course was open to all RCI residents, including CONAF park officers and in total 21 people attended.
Activity 3.2 Trialling of propagation techniques in nursery	Following recommendations were implemented in Y2: adding compost to the potting media; stopping the sterilisation of potting media; more strategic use of fungicides post emergence; quarantine plants for 1 or 2 weeks prior to outside planting and treat with appropriate pesticides
Activity 3.3 Production of propagation and quality control guidelines	Manual produced on the conservation, distribution and propagation of 18 endemic tree and shrub species (ranging from vulnerable to critically endangered) (see attachments for manual). The project team will add to this booklet in Y3 and anticipate having details of approximately 60 species by project end.
<b>Output 4.</b> 1 ha of land cleared and five native plant species re-established	1. Field visits confirm 1 ha of land cleared <b>since project start</b> 2. Botanical records show, <b>since project start</b> , successful re-establishment of 1 ha with
1. Chemical and manual means were used in Y2 to clear invasives from 30 pockets of RCI native forest. When combined with the pockets cleared in Y1 this represents approximately 2.5 ha of cleared land. 2. 2210 sq m of native forest replanted in Y2; including <i>R. venustus</i> 20 specimens, <i>G. bracteata</i> 12 specimens, <i>H. masatierrana</i> 19 specimens	

	<i>Dendroseris litoralis</i> (20*), <i>Rhaphihamnus venustus</i> (30), <i>Gunnera bracteata</i> (20), <i>Haloragis masatierrana</i> (20) and <i>Fagara mayu</i> (10) by year 3. *minimum number	and <i>F. mayu</i> 29 specimens. Seedlings of <i>D. litoralis</i> grown and given to RCI residents Indicators appropriate.
Activity 4.1 1 ha of land manually cleared of invasive species		Manual and chemical means were used in Y2 to clear invasives from 30 pockets of RCI native forest. When combined with the pockets cleared in Y1 this represents approximately 2.5 ha of cleared land. 2.5 ha.
Activity 4.2 Seedlings of five native plant species replanted in 1 ha of cleared land. Species (minimum number replanted): <i>Dendroseris litoralis</i> (20), <i>Rhaphihamnus venustus</i> (30), <i>Gunnera tinctoria</i> (20), <i>Haloragis masatierrana</i> (20) and <i>Fagara mayu</i> (10)		2210 sq m of native forest replanted in Y2; including <i>R. venustus</i> 20 specimens, <i>G. bracteata</i> 12 specimens, <i>H. masatierrana</i> 19 specimens and <i>F. mayu</i> 29 specimens. Seedlings (102) of <i>D. litoralis</i> grown and given to RCI residents
<b>Output 5.</b> Beneficial plant-microbe complexes understood, and microbes produced for re-establishment activities; species conserved at INIA's Genetic Resources facility	<ol style="list-style-type: none"> <li>1. Records of microbial complexes for key native plants. <b>Presently no records.</b></li> <li>2. Records of conserved and characterised microbial diversity. <b>Presently no records.</b></li> <li>3. Improved plant propagation through the use of microbial amendments. <b>Presently no records.</b></li> </ol>	<ol style="list-style-type: none"> <li>1. Microbes obtained from all five priority species or their associated soils, including insect- and/or nematode-killing fungi, disease-inhibiting fungi, growth-promoting fungi and/or bacteria and plant pathogens. Microbes cryopreserved at Chile's National Microbial Bank (at INIA). Specific details are available on request.</li> <li>3. The project has selected one endemic plant, <i>R. venustus</i> for tests with growth-promoting microbes at INIA; scheduled for Y3.</li> </ol> Indicators appropriate.
Activity 5.1 Determination of microbial constituents from native forest soils and associations with plant species		The focus of Y2 was to identify and conserve all microbes obtained from RCI plant and soil samples. The project obtained 440 microbes in total: 179 insect- and/or nematode-killing fungi, 45 disease-inhibiting fungi, 181 growth-promoting fungi and/or bacteria and 35 plant pathogens. The microbes are being cryopreserved at Chile's National Microbial Bank (at INIA). Specific details are available on request
Activity 5.2 Production of selected microbes		The project has selected one endemic plant, <i>R. venustus</i> for tests with a selection of growth-promoting microbes, at the INIA laboratories.
Activity 5.3 Trialling of propagation techniques and interactions with microbial complexes in nursery		There is a delay with this activity. The project anticipates introducing microbes into the nursery by mid-Y3. CONAF (and indirectly INIA) will monitor plant growth beyond the timeframe of the project.

## 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
<p><b>Goal:</b> Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.</p>			
<p><b>Outcome:</b> Improved seed-bank and nursery facilities, with conserved soil microbiota, enable the protection of RCI native plants and restoration of five important species to 1 ha (N.B. Darwin project level)</p>	<ol style="list-style-type: none"> <li>1. 50% (minimum) of RCI's native flowering species and 50% (minimum) of known non-flowering vascular species stored as seed or in culture in the new seed-bank, by year 3</li> <li>2. 100% increase in production capacity at the RCI nursery by year 2, by enlarged facilities by year 1 and more efficient throughput by year 2</li> <li>3. Native plant species: <i>Dendroseris litoralis</i> (20*), <i>Rhaphihamnus venustus</i> (30), <i>Gunnera bracteata</i> (20), <i>Haloragis masatierrana</i> (20) and <i>Fagara mayu</i> (10) re-established in 1 ha of RCI by year 3. *minimum number re-established</li> <li>4. Three project staff and 10 citizen scientists trained in production and maintenance activities at the nursery and seed-bank by year 1</li> <li>5. Microbial complexes associated with five RCI species (as above) deposited in genetic resources collection by year 2; complexes of 50% (minimum) of RCI native flora deposited by year 3</li> </ol>	<ol style="list-style-type: none"> <li>1. Seed-bank log book; botanical survey records for RCI</li> <li>2. Nursery production records</li> <li>3. Botanical survey records for RCI</li> <li>4. Staff training records</li> <li>5. Resource collection records; INIA research records</li> </ol>	<p>Natural disasters, such as earthquakes and tsunamis do not disrupt nursery and seed bank facilities. These facilities to be situated above the height of the areas affected by the 2010 tsunami.</p> <p>Local communities and MJFA remain open and committed to working on the project; representatives from both will be on a project steering committee, to ensure (and gauge) their engagement</p> <p>Chilean Government maintains support for the project after 2018</p> <p>Biological control agents work as expected from relevant experience (N.B. programme level)</p>

<p><b>Outputs:</b></p> <p>1. Seed-bank established to conserve native RCI plant species</p>	<p>1.1. Physical presence of functioning seed-bank facility</p> <p>1.2. Seed-bank and nursery records record show minimum of 50% native species conserved by year 3</p> <p>1.3. Seeds are used for nursery production and, where appropriate, for direct re-establishment activities</p>	<p>1.1. Photo records: of facilities</p> <p>1.2. Project records: accessions to seed-bank</p> <p>1.3. Project records: nursery; photo records: of re-planting</p>	<p>Low proportion of plant species recalcitrant regarding seed storage</p> <p>CONAF remit of conserving biodiversity in JFA National Park remains</p> <p>'Turnover' of local staff remains manageable</p>
<p>2. Improved nursery facility to ensure sufficient plant material available for 1 ha habitat restoration (assuming growth from re-established species as well)</p>	<p>2.1. Productive, protected floor space increased by 50 sq m, open nursery field production to be doubled</p> <p>2.2. Internal fittings and fixtures are modern and suitable for effective plant propagation</p> <p>2.3. Nursery records demonstrate improved production efficacy of native plants</p>	<p>2.1. Project records: nursery; Photo records: of facilities</p> <p>2.2. Photo records: of facilities</p> <p>2.3. Project records: nursery and training and education; project video of breeding successes</p>	<p>Low proportion of plant species recalcitrant regarding seed storage</p> <p>CONAF remit of conserving biodiversity in JFA National Park remains</p> <p>'Turnover' of local staff remains manageable</p>
<p>3. Enhanced technical capacity of local staff for propagation, storage and quality control of native plant species</p>	<p>3.1. Local working group on plant propagation established by year 1</p> <p>3.2. Manual of plant propagation and quality control distributed to local staff by year 2</p> <p>3.3. Training notes demonstrate technical capacity building of local staff</p>	<p>3.1. Project records: training and education</p> <p>3.2. Project notes</p> <p>3.3. Project notes</p>	<p>CONAF remit of conserving biodiversity in JFA National Park remains</p> <p>'Turnover' of local staff remains manageable</p>
<p>4. 1 ha of land cleared and five native plant species re-established</p>	<p>4.1. Field visits confirm 1 ha of land cleared by year 1</p> <p>4.2. Botanical records show successful re-establishment of 1 ha with <i>Dendroseris litoralis</i> (20*), <i>Rhaphihamnus venustus</i> (30), <i>Gunnera tinctoria</i> (20), <i>Haloragis masatierrana</i> (20) and <i>Fagara mayu</i> (10) produced by the nursery, by</p>	<p>4.1. Project notes: field notes; photo records</p> <p>4.2. Project notes: field notes on native species' presence; photo records</p>	<p>Low proportion of plant species recalcitrant regarding seed storage</p> <p>CONAF remit of conserving biodiversity in JFA National Park remains</p> <p>'Turnover' of local staff remains manageable</p>

	year 3. *minimum number re-established		
5. Beneficial plant-microbe complexes understood, and microbes produced for re-establishment activities; species conserved at INIA's Genetic Resources facility	5.1. Records of microbial complexes for key native plants 5.2. Records of conserved and characterised microbial diversity 5.3. Improved plant propagation through the use of microbial amendments	5.1. Project notes: laboratory notes on microbial associations 5.2. Project records: accessions to microbial collection 5.3. Project notes: laboratory and nursery notes on microbial associations	'Turnover' of local staff remains manageable
<b>Activities:</b>			
Activity 1.1 Adaptations to botanical garden to establish seed bank facility			
Activity 1.2, Seeds and spores obtained from native forest and conserved in seed bank (duplicate collection in separated facility/store)			
Activity 1.3 Testing of seeds/spores at yearly interval to demonstrate efficacy of procedures			
Activity 1.4 Release of seeds and spores for nursery production and/or direct seeding into cleared areas			
Activity 1.5 Monitoring and evaluation, recording and dissemination of above			
Activity 2.1. Adaptations to expand nursery ground space			
Activity 2.2. Internal fittings and fixtures upgraded and improved			
Activity 2.3 Key native species prioritised and propagated			
Activity 2.4 Monitoring and evaluation, recording and dissemination of above			
Activity 3.1 Training in plant propagation, seed/spore preservation and quality control given to local staff and local citizens			
Activity 3.2 Trialling of propagation techniques in nursery			
Activity 3.3 Production of propagation and quality control guidelines			
Activity 3.4 Monitoring and evaluation, recording and dissemination of above			
Activity 4.1 1 ha of land manually cleared of invasive species			
Activity 4.2 Seedlings of five native plant species replanted in 1 ha of cleared land			
Activity 4.3 Testing of plant health and growth at intervals, to demonstrate successful re-establishment			
Activity 4.4 Monitoring and evaluation, recording and dissemination of above			

Activity 5.1 Determination of microbial constituents from native forest soils and associations with plant species

Activity 5.2 Production of selected microbes

Activity 5.3 Trialling of propagation techniques and interactions with microbial complexes in nursery

Activity 5.4 In-field trialling of microbial complexes with native plants, in 1 ha replanted area

Activity 5.5 Monitoring and evaluation, recording and dissemination of above

## Annex 3: Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Gender of people (if relevant)	Nationality of people (if relevant)	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
6A	New project officer received >30h training in microbial resources at Chile's national microbial resource collection (INIA)	male	Chile	1			1	0
7	Plant propagation guidelines				1		1	1
7	Quality control guidelines			1			1	1
9	Habitat restoration plan				1		1	1
10	Manual of native species				1		1	1
13A	Inventory of seed-bank accessions			1			1	1
13A	Inventory of microbial accessions			1			1	1
13A	Inventory of nursery accessions			1			1	1
14A	Workshop: Collection and <i>ex-situ</i> conservation of seeds		Chile	1			1	1
14A	Workshop: Record keeping for seed banks		Chile	1			1	1
22	Field plots for habitat restoration			1ha			1ha	1ha
14A	Seminar on Nagoya and ABS		Chile		1		1	1
14B	Dissemination				1			1

	at National Biocontrol Symposium							
14A	Workshop: plant propagation		Chile		1		1	1
14A	Workshop: Importance of RCI's native flora and fauna		Chile		1		1	1
14A	Workshop: Invasive species and threats to biodiversity		Chile		1		1	1
14A	Workshop: Processes of biological invasions		Chile		1		1	1
14A	Workshop: Control and management of invasive species		Chile		1		1	1
14A	Workshop: Restoring native forest		Chile		1		1	1
14A	Workshop: Importance of ecosystem services		Chile		1		1	0
14A	Workshop: Types of customers and how to communicate as a guide		Chile		1		1	0
14A	Workshop: General behaviour of a tourist guide		Chile		1		1	0
14A	Workshop: Managing groups as a tourist guide		Chile		1		1	0
14A	Workshop: Adventure tourism		Chile		1		1	0
14A	Workshop: Production of goods for tourists.		Chile		1		1	0
14A	Workshop: Tourism protocols		Chile		1		1	0

21	Seed bank				1		1	1
21	Renovated laboratory				1		1	1
21	Fern propagation unit				1		1	0

**Table 2 Publications**

<b>Title</b>	<b>Type</b> (e.g. journals, manual, CDs)	<b>Detail</b> (authors, year)	<b>Gender of Lead Author</b>	<b>Nationality of Lead Author</b>	<b>Publishers</b> (name, city)	<b>Available from</b> (e.g. weblink or publisher if not available online)
El rescate y la restauración de la vegetación nativa de la isla Robinson Crusoe	Seminar presentation	Victor Lagos (2016)	Male	Chile		*As attachment
Seminario internacional abordará formas de acceder a beneficios que microorganismos generan en la sociedad	Web piece	Andrés France (2017)	Male	Chile		<a href="http://www.inia.cl/blog/2017/01/09/seminario-internacional-abordara-formas-de-acceder-a-beneficios-que-microorganismos-generan-en-la-sociedad/">http://www.inia.cl/blog/2017/01/09/seminario-internacional-abordara-formas-de-acceder-a-beneficios-que-microorganismos-generan-en-la-sociedad/</a>
Seminario Internacional: Acceso Justo a Recursos Genéticos Microbianos	Seminar presentation	Andrés France (2017)	Male	Chile		<a href="http://www.uss.cl/blog/seminario-internacional-acceso-justo-recursos-geneticos-microbianos/">http://www.uss.cl/blog/seminario-internacional-acceso-justo-recursos-geneticos-microbianos/</a>
INIA QUILAMA PU: Rescate y restauración flora isla Robinson Crusoe	You tube film	Andrés France (2017)	Male	Chile		<a href="https://www.youtube.com/watch?v=SFTToST-cFSQ&amp;t=">https://www.youtube.com/watch?v=SFTToST-cFSQ&amp;t=</a>
Diversity of entomopathogenic fungi on Robinson Crusoe Island	Symposium poster	Ocares, Y.; Barra-Bucarei, L. & Carrasco J. (2016)	Female	Chile	Symposium proceedings	<a href="http://www.controlbiologicochile.com/gallery/simposio%20chileno%20control%20biologico%20libro.pdf">http://www.controlbiologicochile.com/gallery/simposio%20chileno%20control%20biologico%20libro.pdf</a>

Pathogenic fungi of sclerotia of Sclerotinia sclerotiorum isolated from soils of Robinson Crusoe island	Symposium poster	Santelices, C.; Carrasco, J.; Cisterna, V. & Barra-Bucarei, L. (2016)	Female	Chile	Symposium proceedings	<a href="http://www.controlbiologicochile.com/gallery/simposio%20chileno%20control%20biologico%20libro.pdf">http://www.controlbiologicochile.com/gallery/simposio%20chileno%20control%20biologico%20libro.pdf</a>
Política de acceso a los recursos genéticos de INIA	Seminar presentation	Fernando Ortega (2017)	Male	Chile		<a href="http://www.cchrgm.cl/img/05_ACCESO_RRGG_INIA-CHILE_FORTEGA.pdf">http://www.cchrgm.cl/img/05_ACCESO_RRGG_INIA-CHILE_FORTEGA.pdf</a>
Patentamiento de microorganismos en Chile	Seminar presentation	Carolina Garrido (2017)	Female	Chile		<a href="http://www.cchrgm.cl/img/04_BRGM_PATENTAMIENTO_MICROORGANISMOS_CGARRIDO.pdf">http://www.cchrgm.cl/img/04_BRGM_PATENTAMIENTO_MICROORGANISMOS_CGARRIDO.pdf</a>
CABI América del Sur - Control Biológico. Implementación de programas de Control Biológico	Seminar presentation	Yelitza Colmenarez (2017)	Female	Venezuela		<a href="http://www.cchrgm.cl/img/03_BRGM_ACCESO_RECURSO_GENETICOS_BRASIL_YCOLMENARES.pdf">http://www.cchrgm.cl/img/03_BRGM_ACCESO_RECURSO_GENETICOS_BRASIL_YCOLMENARES.pdf</a>
Rescate y valorización del patrimonio microbiano del archipiélago Juan Fernández	Seminar presentation	Andres France (2017)	Male	Chile		<a href="http://www.cchrgm.cl/img/02_BRGM_RESCATE_Y_VALORIZACION_AFRANCE.pdf">http://www.cchrgm.cl/img/02_BRGM_RESCATE_Y_VALORIZACION_AFRANCE.pdf</a>

## Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Table 3. Seed Bank accession records of seeds collected and stored in Y2 (shaded are project priority species)

Species	Year collected	Origin	Location	IUCN status
<i>Apium fernandezianum</i>	2016	Jardín nº 3 CONAF-Santa clara	Nursery and bank	Not listed
<i>Azara serrata</i>	2016	Jardín CONAF-plazoleta	Nursery and bank	Not listed
<i>Cuminia eriantha</i>	2016	Plazoleta-jardín CONAF	Nursery and bank	Critical
<i>Dendroseris gigantea</i>	2016	Jardín CONAF	Nursery and bank	Critical
<i>Dendroseris litoralis</i>	2016	Jardín CONAF	Nursery and bank	Critical
<i>Dendroseris marginatha</i>	2016	Jardín CONAF	Nursery and bank	Not listed
<i>Dendroseris micrantha</i>	2016	Jardín CONAF	Nursery and bank	Critical
<i>Dendroseris nerifolia</i>	2016	Los chifladores-El lápiz	Nursery and bank	Not listed
<i>Dendroseris pruinatha</i>	2016	Santa clara, Jardín CONAF	Nursery	Not listed
<i>Escallonia callcottiae</i>	2016	Jardín nº1, conaf	Nursery and bank	Not listed
<i>Haloragis santaclarae</i>	2016	Plazoleta-Santa clara	Nursery and bank	Not listed
<i>Juncus procerus</i>	2016	Jardín CONAF	Nursery	Not listed
<i>Lactoris fernandeziana</i>	2016	El mirador	Nursery	Not listed
<i>Libertia chilensis</i>	2016	Jardín nº2, CONAF	Nursery and bank	Not listed
<i>Nicotiana cordifolia</i>	2016	Jardín CONAF	Nursery and bank	Not listed
<i>Nicotiana santaclarae</i>	2016	Jardín CONAF	Nursery and bank	Not listed
<i>Ochagavia elegans</i>	2016	Jardín CONAF	Nursery and bank	Not listed
<i>Rhaphithamnus venustus</i>	2016	Plazoleta	Nursery and bank	Vulnerable
<i>Selkirkia berteroi</i>	2016	Plazoleta	Nursery and bank	Not listed
<i>Spergularia confertiflora</i>	2016	Parte baja de Villagra	Nursery	Not listed
<i>Ugni selkirkia</i>	2016	El mirador	Nursery	Not listed
<i>Drymis confertifolia</i>	2016	La Pascua-plazoleta	Nursery and bank	Not listed
<i>Solanum fernandezianum</i>	2016	Poblado	Nursery and bank	Not listed
<i>Sophora fernandeziana</i>	2016	Poblado	Nursery and bank	Not listed
<i>Fagara mayu</i>	2016	Plazoleta	Nursery and bank	Vulnerable
<i>Chenopodium cruseanum</i>	2016	Vaquería	Nursery	Not listed
<i>Myrceugenia fernandeziana</i>	2016	Plazoleta	Nursery	Vulnerable



## **PROGRAMA SEMINARIO INTERNACIONAL**

### **ACCESO JUSTO Y EQUITATIVO DE BENEFICIOS ASOCIADOS A LOS RECURSOS GENETICOS MICROBIANOS.**

**Martes 17 de enero del 2017, a partir de las 9:00 horas.**

**Auditorio de INAPI. Av. Libertador Bernardo O'Higgins 194, piso 18, Santiago.**

- 
- |                      |   |
|----------------------|---|
| <b>9.00 - 9.15</b>   | <b>Registro de participantes.</b>   |
| <b>9.15 - 9.30</b>   | <b>Palabras de Bienvenida.<br/>Director Nacional de INAPI, Sr. Maximiliano Santa Cruz.</b>  |
| <b>9.30 – 10.15</b>  | <b>CABI y su vinculación internacional para la protección y uso sustentable de los recursos genéticos: casos de microorganismos y beneficio compartido.<br/>David Smith. Director Recursos Biológicos de CABI, Reino Unido.</b>                   |
| <b>10.15 - 10.35</b> | <b>Rescate y valorización del patrimonio microbiano del archipiélago de Juan Fernández. Andrés France. Director Colección Chilena de Recursos Genéticos Microbianos, Instituto de Investigaciones Agropecuarias – INIA.</b>                       |
| <b>10.35 - 10.55</b> | <b>Acceso a los Recursos Genéticos Microbianos y protocolos de procedimiento en Brasil. Yelitza Colmenarez. Directora de CABI Brazil y Coordinadora Regional de Plantwise para Latino América y el Caribe, CABI.</b>                              |
| <b>10.55 - 11.15</b> | <b>Protección de los Recursos Genéticos Microbianos: Generación de una Linea Base Ambiental de Tapetes Microbianos presentes en Lagunas del Salar de Atacama, dela Región de Antofagasta.<br/>Paula Díaz, Min. Medio Ambiente. Did not attend</b> |
| <b>11:15 - 11:35</b> | <b>Patentamiento de microorganismos en Chile. Carolina Garrido, Examinadora de Biotecnología, INAPI.</b>  |
| <b>11:35 - 12:00</b> | <b>Politica de acceso a Recursos Genéticos de INIA-Chile.<br/>Fernando Ortega, Coordinator de Programa Nacional de Recursos Genéticos de INIA</b>   |
| <b>11:35 - 12:00</b> | <b>Consulta y Conclusiones</b>  |

**Organizan: INIA - INAPI y CABI**

Table 4. Schedule for series of evening courses in Y2 on RCI

<b>Week</b>	<b>Time</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>1</b>	18-19h	Course introduction	Importance of RCI's native flora and fauna	Invasive species and threats to biodiversity	Control and management of invasive species	Restoring native flora
	19-20h	Concepts of biodiversity	Conserving and propagating native species	Processes of biological invasions	Restoring native forest	Importance of ecosystem services
<b>2</b>	18-19h	Free		Types of customers and how to communicate as a tourist guide	Managing groups as a tourist guide	Production of goods for tourists
	19-20h			General behaviour of a tourist guide	Adventure tourism	Tourism protocols
<b>3</b>	18h	Course evaluation and social event				

Figure 6. Training record of participants for Y2 training courses on plant propagation and other themes (week 1 = lunes = Monday = plant propagation course)

Week 1

Capacitación y Acreditación de Guías en Isla Robinson Crusoe

Listado de asistencias curso de capacitación de Guías en IRC Semana I.

N°	APELLIDO	NOMBRE	RUN	TELÉFONO	LUNES	MARTES	MIÉRCOLES	JUEVES	VIERNES	SÁBADO
1	CHACON	NESTOR	7.935.803-7	985840667						
2	CHAMORRO	ARIADNE	9.435.353-K	988641026						
3	CHAMORRO	ELIAS								
4	CHINCHAY	ROXANA	24.246.915-1	958903442						
5	GONZALEZ	BRENDA	91454924	91454924						
6	MELGAREJO	CAROLINA	16.755.329-	989928612						
7	PAKARATI	TUPUNA	18.658.510-0	956903731						
8	RECARBAREN	ROSA MARIA		971617106						
9	SANTOS	KARLA	6.484.855-8	975182301						
10	SCHILLER	MARCELO	12.167.282-0	988782286						
11	TORRES	KENET		971426803						
12	ARAYA	Camilo	13.793.074-1							
13	Thelen	Lake	464028889	953893745						
14	Clausssem	Ariane	16.652.462-0	897466106						
15	Gonzalez	Tomás	16.359.318-1	91996560						
16	Rodriguez	Victor	13.920.123-12	898360511						
17	Robinson	Rey	21.603.360-1	91454924						
18	Rey	José								
19	Rey	José								
20	Castro	Héctor	16.647.822-7	82217183						
21	José	José	21.603.360-1	91454924						

Week 2

Capacitación y Acreditación de Guías en Isla Robinson Crusoe

Listado de asistencias curso de capacitación de Guías en IRC Semana II.

N°	APELLIDO	NOMBRE	RUN	TELÉFONO	LUNES	MARTES	MIÉRCOLES	JUEVES	VIERNES	SÁBADO
1	CHACON	NESTOR	7.935.803-7	985840667						
2	CHAMORRO	ARIADNE	9.435.353-K	988641026						
3	CHAMORRO	ELIAS								
4	CHINCHAY	ROXANA	24.246.915-1	958903442						
5	GONZALEZ	BRENDA	12.957.719-3	91454924						
6	MELGAREJO	CAROLINA	16.755.329-	989928612						
7	PAKARATI	TUPUNA	18.658.510-0	956903731						
8	RECARBAREN	ROSA MARIA		971617106						
9	SANTOS	KARLA	6.484.855-8	975182361						
10	SCHILLER	MARCELO	12.167.282-0	988782286						
11	TORRES	KENET		971426803						
12	ARAYA	Camilo	13.793.074-1	998345704						
13	THELEN	LAKE	464028889	953893745						
14	Clausssem	Ariane	16.652.462-0	897466106						
15	Gonzalez	Tomás	16.359.318-1	91996560						
16	Rey	Victor	13.920.123-12	898360511						
17	Robinson	Rey	21.603.360-1	91454924						
18										
19										
20										

Table 5. Nursery records of native species in propagation in Y2 (shaded are project priority species)

Nombre científico	stock año2016	produccion año 2016	Produccion total
<i>Abutilon striatum</i>	78	108	186
<i>Adiantum chilense</i>	72	0	72
<i>Apium fernandezianum</i>	196	196	392
<i>Azara serrata</i>	84	84	168
<i>Berberis corimboza</i>	84	84	168
<i>Blechnum cycadifolium</i>	18	0	18
<i>blechnum hastatum</i>	134	0	134
<i>Boehmeria excelsa</i>	421	161	582
<i>Boehmeria excelsa</i>	320	161	481
<i>Carex berteroniana</i>	9	2	11
<i>Chenopodium nesodendron</i>	188	0	188
<i>Chenopodium crusoeanum</i>	304	339	643
<i>colletia spartoides</i>	1	0	1
<i>Coprosma oliveri</i>	540	0	540
<i>coprosma pyrifolia</i>	8	6	14
<i>Cuminia eriantha</i>	196	84	280
<i>Cuminia eriantha</i>	196	84	280
<i>Dendroseris gigantea</i>	27	3	30
<i>Dendroseris litoralis</i>	164	126	290
<i>Dendroseris macrantha</i>	108	96	204
<i>Dendroseris marginatha</i>	0	91	91
<i>Dendroseris marginatha</i>	0	91	91
<i>Dendroseris micrantha</i>	0	56	56
<i>Dendroseris nerifolia</i>	194	33	227
<i>Dendroseris pruinata</i>	0	181	181
<i>dendroseris regia</i>	24	0	24
<i>eringyum bupleuroides</i>	26	0	26
<i>Escallonia callcotiae</i>	2	38	40
<i>Fagara mayu</i>	94	0	94
<i>Gunnera bracteata</i>	200	288	488
<i>Haloragis masatierrana</i>	2	2	4
<i>histiopteris insisa</i>	36	0	36
<i>hypolepis poeppigii</i>	50	0	50
<i>juania australis</i>	130	0	130
<i>Juncus procerus</i>	219	187	406
<i>lactoris fernandezianum</i>	1	0	1
<i>Libertia chilensis</i>	98	0	98
<i>margyraeaena skottsbergii</i>	6	0	6
<i>margyricarpus digynus</i>	1	0	1
<i>Myrceugenia fernandeziana</i>	82	40	122
<i>Nicotiana cordifolia</i>	112	0	112
<i>nicotiana cordifolia sub.sanctaclarae</i>	104	104	208
<i>Peperomia berteroaana</i>	76	69	145
<i>Peperomia fernandeziana</i>	2	0	2
<i>Pteris berteroaana</i>	305	99	404
<i>pteris chilensis</i>	116	0	116
<i>Rhaphithamnus venustus</i>	305	106	411
<i>robinsonia gallana</i>	35	0	35
<i>robinsonia gracilis</i>	8	0	8
<i>robinsonia masafuerae</i>	2	0	2
<i>rumohra berteroaana</i>	18	0	18
<i>Solanum fernandezianum</i>	268		268
<i>Sophora fernandeziana</i>	166	0	166
<i>Sophora fernandeziana var. reedeana</i>	15	15	30
<i>spergularia confertiflora</i>	0	23	23
<i>ugni selkirkii</i>	3	0	3
<i>wahlenbergia larrainii</i>	91	14	105

Table 6. Records of native species replanted in Y2 (shaded are project priority species)

Area (sq m)	Species																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
120	8	0	0	2	1	1	1	1	1	1	1	1	2	1	0	0	2	23
100	5	0	0	1	1	1	0	1	1	0	1	1	1	0	0	0	1	13
105	5	0	0	1	1	1	0	1	1	0	1	1	1	0	0	0	1	14
180	11	0	0	2	1	2	1	1	2	1	1	2	2	1	0	0	3	29
105	6	0	0	1	1	1	0	1	1	0	1	1	1	1	0	0	2	17
1500	63	10	20	23	24	17	17	19	13	9	17	18	23	5	6	3	33	319
100	5	0	0	1	1	1	0	1	1	0	1	1	1	0	0	0	1	13
2210	104	10	20	31	29	23	20	23	19	12	21	24	30	9	6	4	44	428

Species key: 1. *M. fernandeziana*; 2. *J. australis*; 3. *A. serrata*; 4. *C. eriantha*; 5. *F. mayu*; 6. *B. excelsa*; 7. *R. venustus*; 8. *C. pyrifolia*; 9. *H. masatierrana*; 10. *G. bracteata*; 11. *S. fernandezianum*; 12. *L. chilensis*; 13. *B. hastatum*; 14. *B. cordatum*; 15. *B. cycadifolium*; 16. *R. berteriana*; 17. *P. berteriana*

Figure 7. Planting and monitoring of native plants in cleared areas of RCI forest, in Y2.  
(apologies for poor quality of images)



## Checklist for submission

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Have you involved your partners in preparation of the report and named the main contributors	yes
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