

Darwin Initiative Annual Report

Darwin Project Information

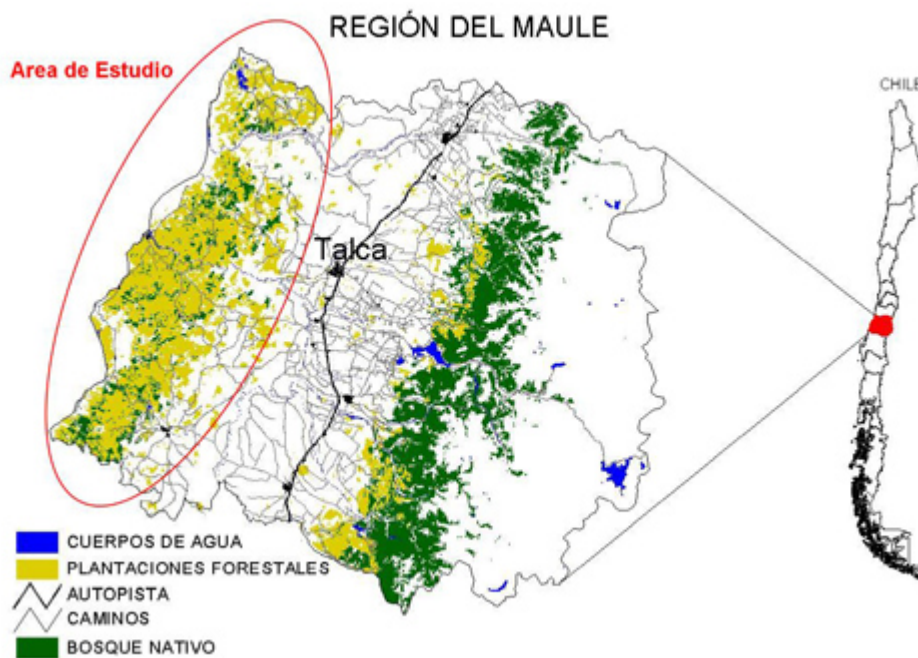
Project Ref Number	15/023
Project Title	Conservation of endangered coastal biodiversity hotspots of Central Chile
Country(ies)	Chile
UK Contract Holder Institution	University of Oxford
UK Partner Institution(s)	
Host country Partner Institution(s)	University of Talca; CODEFF; CONAMA; CONAF
Darwin Grant Value	£224,036
Start/End dates of Project	1 st May 2006 – 30 th April 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	Annual Report 1
Project Leader Name	Dr Stephen Harris
Project website	http://www.darwinmaule.cl/
Author(s), date	Stephen Harris (Oxford) and José San Martín (Talca), April 2007

1. Project Background

The project is aimed at developing a Conservation and Sustainable Management Strategy (CSMS) for the Maule region's coastal forests in the Chilean Biodiversity Hotspot, and building the technical and educational capacity and policy framework for the CSMS's implementation. The landscape-oriented conservation approach adopted in this project will take account of the population dynamics of endangered species and their habitats in geographically explicit manners and establish a monitoring system for the Maulino-forest conservation strategy. Conservation and conservation-related research in the project area, and the Chilean Mediterranean vegetation zone as a whole, is scarce and dispersed. The project builds on the CONAMA-coordinated Regional Biodiversity Strategy (RSBD) and focuses on the coastal Maulino ecosystems which, despite their international biodiversity significance, are underrepresented in existing policy frameworks, conservation strategies and protected area networks. Furthermore, essential biological information on many of the endangered/endemic species and rare ecosystems of coastal Maule is lacking. For example, the biological quality of forest patches is poorly known, as are the population dynamics of endangered species. The project will enhance biological understanding of Maule and its species, providing a sound scientific basis for conservation planning and management. The research will focus on the genetic viability of a model endangered species (*Gomortega keule*) in fragmented forests and the Rapid Botanical Survey (RBS) and Bio-quality Assessment of Maule's forest remnants. The CSMS developed during this project will be supported by education programmes and policy frameworks to ensure its effective implementation. Since 90% of the region's forest is privately owned, implementation of the project results will depend on the participation of large forestry companies and small land owners. The forest companies involved in the project are committed to integrating and implementing the CSMS in their environmental management systems, whilst small-forest owners will be encouraged to adopt the conservation and management strategies through multi-stakeholder consultation processes. In addition, project partners are committed to providing extension and education materials and technical assistance to all forest owners, ensuring the project's findings and outputs are implemented effectively. Major capacity building will be through the provision of training in RBS techniques. Since the project aims to incorporate conservation practice into land-management in the region in general, not just in Conservation Reserves or on government land, it is important to undertake a wide-ranging environmental education programme aimed at rural land-owners, children, and future policy makers. The project's main contribution to the conservation of Chilean coastal forests will be a systematic approach to conservation in the Maule Region, filling critical gaps in

knowledge and generating a participatory planning process aimed at balancing biodiversity needs with the prevalent social and economic realities of the area.

Fig. 1. Map of Maule (Chile) showing the area of study and the extreme fragmentation of the native forest.



2. Project Partnerships

Project partnerships: The project is a partnership of the University of Oxford, University of Talca, CODEFF, CONAMA, CONAF. Each of these organisations have their own roles and responsibilities within the project and these have been established in the form of a Memorandum of Understanding (MOU). Oxford is responsible for the genetic analyses, providing training on Rapid Biodiversity Strategies (RBS), reporting back to the Darwin Initiative and overall project management. The University of Talca is responsible for developing the programme of biodiversity monitoring, production of the manual of Maule forest conservation, University level dissemination of results and overall project management in Chile. CODEFF is responsible for coordinating the public extension and programme of environmental education. Together with CODEFF, CONAMA will coordinate participatory planning workshops. Together CONAMA, CODEFF, and CONAF will develop, publish and promote the Strategy of conservation and sustainable development that will result from this project.

During the past year, the development of this project the University of Talca, CODEFF, CONAMA and CONAF have increased the level at which they work together. The most important capacity-building step has been training in RBS methodologies to the Chilean partners. The importance of the herbarium in the University of Talca in the University of Maule has been explicitly recognised and steps have been taken to ensure that this will be available on-line to the project and that the Curator is appropriately trained in databasing skills. The strength of the project is that the skills of the various partners complement each other very well; much better than we imagined when the project was being put together. The particular challenges have been associated with ensuring that administrative systems between organisations within Chile and between Chile and the UK have been satisfied. This is most obviously seen in the protracted negotiations that have occurred over the signing of the MOU. University of Oxford has become more responsive to the needs of the Chilean partners, proactive in providing information and advice and understanding the Chilean situation.

Other Collaborations: The Chilean partners in the project have contributed to workshop of all Darwin projects in Chile, which has led to the recognition that RBS approaches may be suitable for other

projects operating in Chile. The current Darwin project in Trinidad and Tobago has been particularly valuable for refining field protocols. Herbarium databasing projects run in Valdivia and through the BRAHMS Project have provided the opportunity to database the University of Talca herbarium. Other collaborations are being explored with researchers working on dry forests in Bolivia and Brazil.

3. Project progress

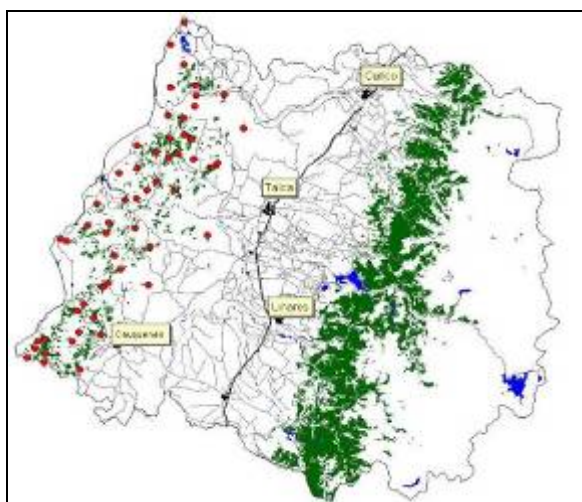
3.1 Progress in carrying out project activities

There are six outputs expected from the project; activities are reported under the areas.

1. Bio-quality analysis of coastal forests and woodlands in the Maule region.

The first official joint workshop took place on 25-26th July in the University of Talca. During this workshop, 56 RBS sites across the coastal Maule forest were selected and located on GIS maps. The sites were selected to represent all of vegetation communities in the coastal range of the Maule Region (Fig. 2.).

Fig. 2. Maule region and the RBS sites (red) selected for analysis. Remnant natural vegetation is shown in green.



The vegetation units to be investigated are the coastal Maulino forests with *Nothofagus glauca* and *N. alessandrii*, Ñirre-forests with *N. antarctica* as the main species and forests with *N. nervosa* and *N. obliqua*. Furthermore, the hygrophilous vegetation along water courses, the swamp forests with *Drimys winteri*, *Luma chequen* and *Myrceugenia exsucca*, sclerophyllous bush and forest formations and those units containing *Gomortega keule* and *Pitavia punctata*.

To successfully use the RBS methodology, field teams need to be trained. Dr William Hawthorne, one of the main developers of RBS methodologies, went to the University of Talca to train field teams (8th January 2007 – 20th January 2007). These included participants from the University of Talca, CODEFF, CONAMA, Forestal CELCO, MASISA and MININCO. An intensive RBS and bioquality workshop for project participants, and students and teachers from other university departments was also undertaken.

The Chilean team worked during summer 2007 investigating 30 sample points. Under favourable conditions, up to three sample points per day are possible but travel distances and access problems make this a difficult target; work started on the southernmost points and progressed north. 900 plant samples and duplicates have been collected. All samples are being prepared for inclusion in the University of Talca herbarium and are being incorporated into a BRAHMS database. To date, the following areas have been investigated: Comuna de Pelluhue: Quile, Copiulemu, Trehualemu, Ramadillas, Canelillo, Salto de Agua; Comuna de Cauquenes: Coronel de Maule, Cayurranquil, El Trozo, Tabolguén; Comuna de Chanco: El Corte, La Bodega; Comuna de Constitución: Pullaullao.

The following vegetation units were included: (i) *Nothofagus alessandrii* forests in Reserva Nacional Los Ruales; (ii) Hualo *N. glauca* forests in Constitución, Tregualemu, Quile, El Trozo; (iii) Queule *Gomortega keule* forests in Reserva Nacional Los Queules y Copiulemu; (iv) Hygrophylous vegetation along the rivers Cayurranquil, Rahue (la Bodega) y de Copiulemu; and (v) Canelo and Myrtaceae in swamp forests in Constitución, Pullaullao.

During the RBS training it became obvious that efficiency in later stages of the project could be increased by enhancing the capacity of the existing, very out-dated, database associated with the herbarium of the University of Talca. William Hawthorne implemented BRAHMS in the University of Talca herbarium and established protocols for the management of field material. Field photography of living plants is also an important part of this project and to date 150 native species have been recorded. These will be made available through the Virtual herbarium Website (VFH; <http://herbaria.plants.ox.ac.uk/vfh/>).

This part of the project has proceeded a little slower than expected since the field training had to take place later than expected due to unforeseen circumstances. Furthermore, poor weather this year meant that it was difficult to move between some field sites. It has also been found that taking pictures in the field slows the process of RBS data gathering. However, the future value of these images is such that this is a constraint worth accommodating.

2. PVA of model species (*G. keule*) and development of conservation models.

The first stages of the *Gomortega keule* (queule) have been successfully completed. During field visits to Maule (August 2006), 19 field sites were chosen and leaf or cambium samples were collected from 650 adult trees, including 120 maternal trees; 110 seedling leaf samples and 1200 seeds were also collected. Ecological surveys were made for all study sites and the surrounding non-forest land. In Oxford a modified DNA extraction technique was developed to accommodate extreme oxidation and high concentrations of secondary metabolites in the dry leaf and cambium material. DNA has been extracted from all of the samples. Eight microsatellite molecular markers have been developed, the first species specific primers developed for this species, and a manuscript has been submitted to *Molecular Ecology Notes*. One third of the genotyping necessary for the paternity analysis has been completed.

There is no previous work on the reproductive biology of queule and very little on the general ecology of the species. Insects were therefore collected landing on queule flowers in order to identify the pollinators. Insects were identified to family or species level with assistance from James Hogan and Darren Mann (University of Oxford Natural History Museum), F. Christian Thompson (US Department of Agriculture), Stephen D. Gaimari (CDFA Sacramento), James M. Carpenter (American Museum of Natural History), and Tim New (La Trobe University, Australia). Queule appears to be pollinated by a suite of generalist pollinators, but the majority of the flower visitors, and those carrying the most queule pollen, were hover flies (Syrphidae). A limited number of controlled pollination experiments were also conducted to test for selfing ability. Additional new information on the biology of this species includes the strongly protogynous nature of the flowers and the rather more limited flowering season than is claimed in some of the literature. Following on from the field studies, experimental queule seedling herbivory plots and a phenology study programme were established in cooperation with CONAF.

The identification of suitable genetic markers took longer than expected. However, these problems have now been overcome and we are in the position to make up lost time through the use of high-throughput methodologies.

3. Conservation and Sustainable Management Strategy (CSMS).

The activities under (1) and (2) provide the baseline data for this part of the project.

4. Biodiversity conservation skills and capacity increased in Maule Region.

The RBS training undertaken under (1) contributes directly to this output.

5. Monitoring programme for critical areas.

The activities under (1) and (2) provide the baseline data for this part of the project.

6. Environmental education programme and participatory extension programme.

The project website (<http://www.darwinmaule.cl/>) is an important first point of contact for people interested in the project. A series of meetings have been held with the aim of consolidating the participation of important public stakeholders, such as the forest service (CONAF) and the commission for the environment (CONAMA) as well as the three main forest companies in the project area (Forestal CELCO, MASISA, MININCO). Five technical meetings with participants from Talca University, CONAF, CONAMA and the forest companies have been carried out. Meeting protocols, including agreements about each participant's responsibilities and commitments had been created. At the same time, a 'consultant' to support the project's coordination and technical work in respect of the development of the conservation strategy, conservation manual and the monitoring strategy has been suggested. The participation of private forest companies is a delicate matter and the commitment of them all has not been achieved. Forestal MASISA, which in recent times has undergone several restructuring exercises, is a case in point; it has not officially endorsed the project but in practice, though access to their land for

field research and other project activities, it has done so. Special meetings with forest enterprise representatives were undertaken but it is yet clear how they might support the project.

3.2 Progress towards Project Outputs

Overall progress to the project outputs has been good; all of the initial assumptions remain. However, there have been delays experienced through problems associated with getting suitable field teams trained (this has been overcome) and in the speed of marker development (which have been overcome). The use of high throughput methods will speed the genetic analysis and the field work proceeds apace. If progress continues at the current rate then the project outputs should be realised.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
1B	Oxford D.Phil. student (UK); studentship funded from sources outside DI and UK Government.			1		1
6A	Chileans trained in RBS & Bioquality Assessment	8	8			16
6A	BRAHMS training	1				1
6B	Training in RBS & Bioquality Assessment	2	3			5
6B	BRAHMS training	1				1
7	Training Course materials on project website	1				1
7	Project website online	1				1
7	One educational video produced and distributed		1			1
7	Conservation Manual for Maulino Forests			1		1
8	Harris, Boshier, Lander, Hawthorne	9	4	4		17
9	Conservation & Sustainable Management Strategy for Coastal Maulino Forests			1		1
10	Technical Guide for Conservation Monitoring			1		1
10	RBS bioquality maps			1		1
11B	Geneflow/fragmentation and RBS analyses.	1		3		4
12A	Herbarium database			1		1
12A	VFH database			1		1

12A	RBS Botanical Database available on project website			1		1
13A	RBS Herbarium Reference Collection			1		1
13B	RBS herbarium specimens to Talca herbarium			1		1
14A	University lectures to include project results	1	1	1		3
14A	School presentations to include project results	1	3	1		5
14A	Workshop to present final results of the project			1		1
14B	Project presentation and results	3	3	3		9
15A	Press release to mark signing of Memorandum of Understanding		1			1
19C	Two radio programmes produced and broadcast		2			2
22	RBS plot sites; not standard PSPs but baseline data for these sites			>50		>50
23	Support for D.Phil student from 1B					

Table 2 Publications

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	
Website	Darwin Maule, Project team, 2007		http://www.darwinmaule.cl/	No cost

3.4 Progress towards the project purpose and outcomes

The progress of the project to date in relation to meeting the project purpose is good but a little slower than would have been hoped. The foundations have been laid to meeting the target.

3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The forests that we are studying in this project are highly diverse, fragile and extremely fragmented. Understanding the biological effects of such fragmentation on species in these forest ecosystems is crucial for their long-term survival. The availability of objective evidence about these effects will enable planning processes and conservation processes to be developed. The adoption of the CSMS in Chile is likely to have positive impacts on these forests. To date we have drawn attention to the issue of forest fragmentation and some its potential consequences to different stakeholders. If the CSMS is to be effective then these stakeholders must be convinced of the importance of the case. This process has started.

4. Monitoring, evaluation and lessons

Regular meetings are held among Chilean and Oxford partners to ensure that goals are being attained; the role of 'consultant', identified in 3.1.6, has become very effective at ensuring that the activities are directed towards the project purpose. The current project activities are associated with generating data that is necessary for later aspects of the project. Sample sites have been chosen through an iterative process of discussion and modification among people who know the vegetation of the region very well; the areas are currently the best estimate of coverage of the natural vegetation of the study area (given the amount of anthropogenic modification of the landscape). The sampling points that are to be added to the initial ones will be based on principles of ensuring that 'gaps' are filled and that a sufficient of sample points occur in particular regions to ensure fine-scale map resolution. The indicators of achievement for the RBS are complete sets of survey results along with herbarium material correctly identified and correlated with photographic material. A similar strategy has been adopted for the analysis of genetic data. In both cases, monitoring is done through regular checks of results files.

The Oxford partner has learnt that the field season is narrower than previously supposed due to the difficulties of moving between sample points in the winter months. Strategies are going to be put in place that intensify sampling during the summer months, and leaving most of the data analysis to the winter months. The Chilean partners were unfamiliar with international projects and hence structures have had to be introduced internally that allow this project to function effectively. Movement of financial resources between the UK and Chile was initially slow. However, we have now established procedures, which, whilst they might not speed the movement of resources, do ensure that there is a smoothing of financial flows.

5. Actions taken in response to previous reviews (if applicable)

Not applicable; first year of project.

6. Other comments on progress not covered elsewhere

The cooperation of land owners in allowing access to study sites has been easier to obtain than initially expected. This has meant that we have been able to sample over a much wider area of the distribution of Maule natural vegetation than would have been possible.

7. Sustainability

Cesar Sepulveda and Pedro Garrido from this project represented the current Darwin project on the 21st November 2006 at a Darwin projects seminar in Santiago, Chile. The seminar was organised by the Catholic University of Chile under the auspices of the British Embassy. The main objective was to bring together the different project teams and to identify their connections with the Chilean National Biodiversity Strategy and the British Governmental environmental priorities. This was a useful seminar for establishing contacts between Darwin projects based in Chile and at the same time ensuring that the Chilean governmental representatives were aware of the project. There is interest among forestry companies in this project and in the methods that are being employed. However, the project profile does need to be increased.

The proposal was developed in close collaboration with local project partners whose long-term missions will be enhanced by the project results. Rather than introducing new areas of work the explicit decision was taken to enhance existing work programmes that could not be implemented through lack of appropriate scientific and technical expertise. Both CONAF and CONAMA's remit is sustainable management and conservation of Chile's biological resources. These agencies are ideally placed to implement effectively the CSMS in the long term and their participation in its development will ensure it is realistic and applied as extensively and appropriately as possible.

8. Dissemination

Dissemination, to date, has been focused through the web site and to student audiences in the University of Talca. However, a general radio programme has been prepared and will be broadcast. Similarly, plans for the coming year include another radio broadcast and the release of a video; all of which are target are local users of the forests. Dissemination and public education are the remit of CONAF and CONAMA and

it is fully expected that dissemination activities will continue once the project finishes. The data on the web site will continue to be made available at the end of the project, either via the University of Talca or the University of Oxford.

9. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

Item	Budget	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (e.g. postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries Dr D. Boshier Dr W. Hawthorne University of Talca			
TOTAL			

10. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

No additional information this year.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Goal: <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>		<p><i>None to date</i></p>	<p><i>Completion of the RBS analysis and gene flow investigation.</i></p> <p><i>Discussions with stakeholders.</i></p>
<p>Purpose <i>Develop a public-private biodiversity conservation strategy for coastal forest ecosystems in the Maule Region (build the technical capacity and policy framework to implement the strategy)</i></p>	<p>Conservation strategies and management plans for coastal native woodlands based on scientific information generated by the project</p> <p>Conservation proposals accepted and implemented and a procedure agreed for their continued implementation</p>	<p>RBS field training completed.</p> <p>DNA markers available and all material collected.</p> <p>Major stakeholders committed to project.</p>	<p>Continue RBS data collection.</p> <p>Complete DNA analysis.</p> <p>Continue discussions with small scale forest owners.</p>
<p>Output 1. Bio-quality analysis of coastal forests and woodlands in the Maule region</p>	<p>4-8 people trained in RBS methodology, digital maps of forest bio-quality, digital photographs in interactive website and botanical database</p>	<p>Progress is good here. Indicators are effective. Needs to be more activity in the coming year to meet the overall project purpose.</p>	
<p>Activity 1.1. Identification of sample points.</p>		<p>First sets of sample points identified; remained to be done when first round of field data collected.</p>	
<p>Activity 1.2. Field-based training in RBS techniques.</p>		<p>Completed for 8 people in Chile. Analysis phase of RBS training to be completed in Year 2.</p>	
<p>Activity 1.3. Sampling of points identified in 1.1.</p>		<p>Completed for 30 sample points. Remaining points to be analysed in Year 2, together with additional points identified under 1.1.</p>	

Output 2. PVA of model species (<i>G. keule</i>) and development of conservation models	Genetic research results, conclusions and conservation models available	General progress has been good but slow than would have been hoped. Difficulties for marker identification slowed progress. Technical issues should have been more clearly highlighted in the Assumptions.
Activity 2.1. Reliable extraction of DNA from <i>Gomortega</i> .		Complete.
Activity 2.2. Set of microsatellite markers available for <i>Gomortega</i> .		Eight microsatellite loci developed; paper submitted to <i>Molecular Ecology Notes</i> .
Activity 2.3. Collection of leaf and seed material from 19 field sites.		Complete.
Activity 2.4. Screening of material from (2.3) with markers from (2.2).		One-third complete. Rest to be completed in year 2.
Output 3. Conservation and Sustainable Management Strategy (CSMS) agreed and implemented by stakeholders	stakeholder workshop conclusions available, implementation procedure defined and agreed	This Output will synthesis material from Outputs 1 and 2. It is therefore dependent on these outputs and therefore much of the work to date has been in the nature of planning. The Assumptions are realistic.
Activity 3.1. Identification of main stakeholder groups.		Completed. However, links will continue to develop over the course of the project.
Activity 3.2. Establishment of CSMS Development Group		Completed. However, its interaction with other parts of the project will continue over the rest of the project.
Output 4. Biodiversity conservation skills and capacity increased in Maule Region	2 RBS Survey/Bio-quality Assessment training courses completed, project partners participate in field research programme.	Progress has been very good here with an effective field team trained, plus other researchers made familiar with the methodology. The Assumptions are appropriate, assuming that Dr Hawthorne is available for the next phase of training.
Activity 4.1. Training in field RBS techniques.		Completed. Phase 2 will follow in Year 2.
Output 5. Monitoring programme for critical areas	Monitoring guidance published as a specific technical monitoring guide. 1 or 2 local institutions establish monitoring programme by end project	Strong interest has been shown in the Project. However, the Assumption for this part of the project is a strong one and post-Darwin funding opportunities are being actively explored.
Activity 5.1. Engage local institutions in project planning.		Local institutions have been part of all Chilean planning meetings and have input into all parts of technical planning. Representatives of these organisations also included in activities for Output 4. These links will be enhanced over the coming year and specific protocols for monitoring established.
Activity 5.2. Training institutions in RBS methods.		See Activity 4.1

Output 6. Environmental education programme and participatory extension programme with forest owners and general public	Project website, 2 radio programmes, 1 educational video, min. 5 school presentations, min. 3 university lectures	The products of this part of the project are essential to the overall public success of the project. We need to identify more routes by which to monitor uptake of these outputs.
Activity 6.1. Establish project website		Completed and in Spanish. The site needs additional content that is applicable to a wider range of users.
Activity 6.2. Preparation of radio programme		Completed but yet to be broadcast on Chilean radio. Another radio broadcast is planned for Year 2.
Activity 6.3. School presentation		Completed, also planned for Years 2 & 3.
Activity 6.4. University lecture		Completed. Lectures are also planned for years 2 & 3.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</p>			
<p>Purpose</p>			
<p><i>Develop a public-private biodiversity conservation strategy for coastal forest ecosystems in the Maule Region (build the technical capacity and policy framework to implement the strategy)</i></p>	<p>Conservation strategies and management plans for coastal native woodlands based on scientific information generated by the project</p> <p>Conservation proposals accepted and implemented and a procedure agreed for their continued implementation</p>	<p>New scientific publications</p> <p>Project reports</p> <p>Workshop reports</p> <p>Conservation Strategy documents</p> <p>Management plans of forest companies</p> <p>Sustainable forest management certification</p>	<p>No significant changes in Chilean Government's National Biodiversity Action Plan with respect to public-private conservation policies</p> <p>Private stakeholders, particularly forest enterprises, maintain favourable attitudes towards implementing conservation in the area</p> <p>Small forest owners and their representatives disposed to collaborate in planning and implementation of the strategy</p>
<p>Outputs</p>			
<p>1) Bio-quality analysis of coastal forests and woodlands in the Maule region</p>	<p>4-8 people trained in RBS methodology, digital maps of forest bio-quality, digital photographs in interactive website and botanical</p>	<p>Project reports, maps, technical documents, herbarium specimens, plot data, photographs, website and botanical database</p>	<p>Access to private land facilitated by landowners, local resources (maps, aerial photos, libraries, botanical collections, satellite images, data bases, GIS, etc.) accessible</p>

	database		
2) PVA of model species (G. keule) and development of conservation models	Genetic research results, conclusions and conservation models available	Lab. protocols, progress reports, peer reviewed publications	Agreed access to private land maintained
3) Conservation and Sustainable Management Strategy (CSMS) agreed and implemented by stakeholders	stakeholder workshop conclusions available, implementation procedure defined and agreed	Workshop materials and reports from participants, CSMS reports, forest management plans	Conflicts of interests between actors and management goals of specific land areas in respect to proposed conservation measures are resolvable
4) Biodiversity conservation skills and capacity increased in Maule Region	2 RBS Survey/Bio-quality Assessment training courses completed, project partners participate in field research programme.	Training course materials published on-line, participants course reports, online digital photos from RBS and data on key species.	Trained staff stay in posts (private/public), given opportunity to apply and disseminate skills, continued interest among public and private actors in conservation issues relevant to the region
5) Monitoring programme for critical areas	Monitoring guidance published as a specific technical monitoring guide) 1 or 2 local institutions establish monitoring prog. by end project	Conservation Manual for Maulino Forests Technical guide for conservation monitoring including geographical and thematic priorities.	Post-Darwin Initiative financial support for post-project monitoring activities obtained
6) Environmental education programme and participatory extension programme with forest owners and general public	Project website, 2 radio programmes, 1 educational video, min. 5 school presentations, min. 3 university lectures	Website, presentation and lecture materials published on-line, participant reports, project progress reports, interviews with actors and beneficiaries	N/A

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ectf-ed.org.uk putting the project number in the Subject line.	Yes
Is your report more than 5MB? If so, please advise Darwin-Projects@ectf-ed.org.uk that the report will be send by post on CD, putting the project number in the Subject line.	N/A
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	N/A
Have you completed the Project Expenditure table?	Yes
Do not include claim forms or communications for Defra with this report.	Yes