7/078

Botany Department
Charles Darwin
Research Station

Friends of
Galapagos
Saving Darwin's treasured islands.

Galapagos Conservation Trust

Darwin Initiative for the Survival of Species

Project:

Threatened Flora of Galapagos

Final Report

Contents

1. Darwin Project Information

Project title	**Threatened Flora of Galapagos**
Country	Ecuador
Contractor	Galapagos Conservation Trust
Project Reference No.	162/07/078
Grant Value	£ 124,500
Starting/Finishing dates	April 1998 to April 2001

2. Project Background/Rationale

The project was located in the Galapagos Archipelago, a province of the state of Ecuador. Project research took place throughout the archipelago.

Before the project, Galapagos plant conservation was hampered by a lack of up to date and comprehensive information. There had been no review of the status of the endemic plants and native vegetation communities of Galapagos since the mid-1980s. Botanists had never even surveyed many parts of the archipelago. About 50 endemic plant species were thought to be threatened, based on the last review, which had been carried out under IUCN criteria that have since been replaced. Several entire communities were known to be in danger of disappearing, but there was little recent information on the current status of many critical species and key sites, nor on the detailed threats affecting each. Further, there was no comprehensive, scientifically planned programme for investigating and alleviating the threats.

Up to date knowledge of species distribution and abundance, and of type and degree of threat, are essential for the development of rational conservation measures. The project aimed to establish a baseline of information for the design and implementation of a comprehensive conservation programme for the Galapagos flora, including prioritisation of research and conservation measures.

The need for this work was identified during internal reviews of research and conservation priorities by the Charles Darwin Research Station (the local partner) and Galapagos National Park Service, the two bodies charged with conservation research and management in Galapagos. GNPS is an arm of the Ecuadorian Government and CDRS is the official advisor to the Government on scientific research in the islands. The work was recognised as the most under-funded and neglected area of conservation research, and at the same time one of the most urgent priority areas, essential to the preservation of the biodiversity of Galapagos. The project was included within

the management plans of the GNPS and CDRS. It investigated species, communities and ecosystems that are entirely restricted to the Galapagos islands, many of which are in immediate danger of extinction.

The work assists the Ecuadorian Government in meeting its Biodiversity Convention obligation to maintain intact the unique natural ecosystems in its care and avoid the extinction of species. Both GNPS and CDRS took advantage of the project to seek additional funding for threatened plant research and conservation, and will continue to do so in the future.

3. Project Summary

The project aimed to collect and organise the data necessary for the design and implementation of a comprehensive conservation programme for the endemic flora of Galapagos. Major objectives included:

- Field surveys to determine the status and distribution of threatened endemic plant species.
- Collation of existing published and unpublished data relating to the status of endemic plant species.
- Revision of the threat status of all endemic species and subspecies according to the red data book criteria of IUCN.
- Preparation of management plans for all endemic species.
- Construction of an *ex situ* cultivation facility.
- Awareness raising of the problems and needs of threatened plant conservation in Galapagos.

These original objectives were not modified during the project period.

The project has assisted the Ecuadorian Government to meet its obligations under the CBD, with regard especially to Articles 7 (Identification and Monitoring), 8 (In-situ Conservation) and12 (Research and Training). It also assists Articles 9 (Ex-situ Conservation), 13 (Public Education and Awareness) and 17 (Exchange of information). Article 7 best describes the project.

The project met all of its major objectives, although certain activities have taken longer than anticipated. However, the local partner is committed to completing these objectives in the shortest possible time. Objectives met in full during the project period include:

- Field surveys.
- Collation of existing information.
- Revision of the threat status of endemic species and subspecies.
- Refurbishment of the CDRS Herbarium.
- Construction of *ex situ* cultivation facility.

Objectives for which the outputs were delayed or not fully achieved during the project period include:

- Preparation of management plans for all endemic species. Data have been fully collected and partial draft plans written for each species. The definitive texts remain to be finalised.

- Awareness raising. This objective was successful, but the number of outputs anticipated was not fully realised.

The project achieved significant additional accomplishments, including exceeding many of the outputs projected (see Appendix 2). A major achievement beyond the objectives of the original project was the collection of data on *all* endemic species and subspecies. The original objective focused on the "25-30% of the Galapagos endemic flora considered threatened" at the time of project formulation. In fact, it was possible to review the complete endemic flora, and revise threat status for every species and subspecies. This has completely changed our view of threatened plants in Galapagos, with some 50% now considered threatened.

4. Scientific, Training, and Technical Assessment

Student training

During the three years of the project, 3 Ecuadorian thesis students (Vanessa Coronel, Ana-Mireya Guerrero and Walter Simbaña) and 10 Ecuadorian student research assistants (Ricardo Aldaz, Susanna Chamorro, Vanessa Coronel, Sabina Estupiñán, Ana-Mireya Guerrero, Eliana Ramírez, Diego Reyes, Walter Simbaña, Pamela Toscano, Freddy Villao) were supported. These figures considerably exceed those accepted in the project document, owing to success in finding additional financial support. All three of the thesis students were selected from among the research assistants, and another of the assistants (Susanna Chamorro) was selected as a thesis student to work on a related project funded by other sources. In addition to these, a succession of 6 international volunteers, all recent graduates, took part in the project, assisting especially with plant mapping and establishment of new digitised mapping systems.

The research assistants were selected according to established criteria of the CDRS, the aim being to give Ecuadorian undergraduate students and recent graduates the opportunity to gain work experience in conservation science. CDRS circulates notices about positions available to tertiary educational institutions throughout Ecuador. Applicants fill in a standard form, provide CV and additional information, and are selected by interview when a position becomes available. Similarly, thesis research positions are advertised in Ecuadorian universities and applicants selected at interview after a similar application procedure. Although thesis students need not previously have worked at CDRS, the research assistantship programme provides a testing ground for potential thesis applicants, as evidenced by the three thesis students accepted under this project all having first undergone a period of such work experience. The Project Leader in consultation with other project staff did assessment of research assistants. Assessment of thesis students was carried out jointly by project staff and the student's university. The thesis must pass through the assessment procedures established by the student's university in order for the work to be approved and the degree granted.

The research assistants worked on all aspects of the project, including

especially field survey and monitoring work, and sample preparation and data entry for the CDRS Herbarium and database of the flora of Galapagos.

The research projects carried out by the three thesis students were:

- Ecology and reproductive biology of three threatened plant species, *Linum cratericola*, *Scalesia atractyloides* and *S. stewartii* (W. Simbaña). This project studies two of the most Critically Endangered plants of the archipelago and a less endangered but still threatened relative of one of them.
- Ecology and restoration of *Opuntia megasperma* on Española island (V. Coronel). This is a pilot project investigating the viability of populations of this Galapagos endemic cactus on Española and the feasibility of restoring an extinct population of it.
- The role of Galapagos bird species in seed predation and dispersal of endemic and other plants (A.-M. Guerrero). This project examines the role of birds in destroying or dispersing seed of a range of Galapagos plant species, including several threatened species. This work provides an understanding of one of the processes affecting rarity, distribution and recovery after removal of threat factors.

The fieldwork for all three studies was completed during the project period, and the students are currently analysing the results and writing up their theses, which should be submitted to their respective universities by the end of 2001.

Short-term courses

The Ecuadorian project co-ordinator, Patricia Jaramillo, was sent for 2.5 months' training in herbarium management at the Royal Botanic Garden, Kew, and returned to Galapagos to take up increased responsibilities as Curator of the CDRS Herbarium (the most complete reference collection of Galapagos plants in the world). This training contributed to permanent capacity building in Galapagos, as Dr Jaramillo is a permanent member of CDRS and resident of the islands. She has considerably improved the standard of management of the CDRS herbarium and has taken charge of training research assistants in herbarium techniques. Following further training in Spain in 2001, she has also gone on to establish a pollen collection for Galapagos plants.

All three of the thesis students attended a 2-week international course in experimental design and analysis, held in Colombia and Chile.

Technical work

Technical work supported by the project has included refurbishment of the CDRS herbarium and construction of an *ex situ* cultivation facility. The herbarium room was expanded to twice its size, and additional storage cabinets installed. A herbarium microscope was purchased to replace an old low-power microscope whose mounting was not appropriate for work with herbarium specimens. A new computer for the database was obtained, to permit inclusion of more complete data, and a further machine purchased to permit mapping of endemic plant distributional data in a geographic

information system. The GIS was an invaluable aid to the project's work of collating endemic plant data and determining red data book threat categories. The *ex situ* facility was constructed adjacent to the Dept of Botany at CDRS, to permit cultivation of threatened plants in a secure and protected environment, essential for preventing inter-island genetic contamination. The facility has been used for the thesis studies mentioned above, especially for cultivation of *Opuntia* seedlings for re-establishment of the extinct population.

Research

In addition to the student projects described above, the project's research has focussed on bringing up to date our knowledge of the status and distribution of Galapagos endemic plants. Most of this work fell into two categories: field surveys, and data collation and mapping. Most staff time was devoted to surveys and analysis of the specimens and records accumulated, while the mapping and threat evaluation took place concurrently. Staff working on these aspects included the Project Leader (Dr Alan Tye), the Co-ordinator (Dr Patricia Jaramillo) and all of the research assistants, thesis students and international volunteers. In addition, other CDRS staff took part in the work, including especially Heinke Jäger, who was employed with complementary funding as senior plant ecologist to carry out a large part of the field survey work, and Iván Aldaz, who provided additional plant records.

Research findings include collated data on abundance and distribution, including digitised maps, for all endemic species and subspecies. This has enabled classification of all endemic species and subspecies according to the new IUCN (2000) red data book criteria. These results are an important baseline and indispensable tool for the adequate prioritisation of future research and conservation work. We now know which are the most threatened species and also for which species our data are inadequate and therefore require further survey. The results enable us to focus future research and specific management actions on the most threatened species.

Publication of the research results will largely follow the termination of the project, since most aspects of the research occupied the full project period. Publications to date are cited in Appendix 3.

5. Project Impacts

The project purpose was to collect the data necessary for the design and implementation of a comprehensive conservation programme for the flora of Galapagos. All major specific objectives contributed to this goal. All such objectives were achieved, and the preliminary strategy designed (draft management plans for all species, and all species prioritised). Unexpected impacts included the rediscovery of a plant considered probably extinct, and previously unknown populations of other highly endangered species. In addition, a subspecies new to science of an endangered endemic plant was also described (see Appendix 3: Tye & Jäger 2000). Project results to date were also incorporated in a new national review of the threat status of the endemic plants of Ecuador, a national Red Data Book (the first complete national plant red data book for any tropical country, see Appendix 3). The

data that were contributed from Galapagos to this work were of considerably higher quality than the average for the country as a whole, entirely as a result of the research done by this project.

The project has helped Ecuador to meet its obligations under the Biodiversity Convention in several ways. It has helped Galapagos to develop a regional strategy for plant conservation (given the physical and relative political independence of the Province this is, in many ways, equivalent to a national strategy) (Art. 6 of the CBD). It has identified and established a baseline for monitoring the entire endemic vascular flora of Galapagos, especially those species requiring urgent conservation, and it has identified threats to these species (Art. 7). It has collated all available information on these species and refined and expanded a database and reference collection of them, which will be continually updated (Art. 7). It facilitates and promotes *in situ* conservation in that its results are fed into the Galapagos National Park planning process, enabling prioritisation of conservation action for the most threatened species, thus promoting their better conservation, restoration and recovery, and it provides data for the control of the primary threat to these species (alien species) (Art. 8). The project also begins serious attempts at *ex situ* management of selected species (Art. 9). It further expands a vital training programme for scientific education of students who will be Ecuador's future biodiversity researchers and conservation managers (Art. 12), and contributes to public education and awareness through the CDRS programmes of school curricular reform and other school activities, and community education and awareness by radio and TV (Art. 13). Through out-of-country training, and support of expatriate staff and equipment purchase for Galapagos, the project provides access to and transfer of technology (Art. 16) and exchange of information (Art. 17), which is also facilitated by the project's establishment of a network of international contacts and the planned formation of an IUCN Specialist Group for Galapagos plants, which stems from the project's work.

The training function of the project comprised three elements. First, training in the UK was provided for the Ecuadorian project co-ordinator, Patricia Jaramillo. Patricia joined CDRS originally as an undergraduate student and was then given a job as research associate in botany. She has worked on the project throughout its whole period of operation and has progressed greatly in responsibility, largely as a result of her UK training at Kew, and experience working as part of the project team. She has taken initiatives in improving the Galapagos plant research collection, including the establishment of pollen and digital photograph collections. She has thoroughly overhauled the collections and raised maintenance standards possibly even higher than they are at Kew! She will continue to work at CDRS, as she and her husband, who is from Galapagos and is a Technical Director in the Galapagos National Park Service, have a long-term commitment to the islands.

The second training element comprises work experience for Ecuadorian undergraduates or recent graduates. The project has supported 10 such students, of which several have gone on to do their thesis research at CDRS. Judging from the performance of such assistants who have passed through CDRS in the past, many of these will end up in senior positions in

conservation biology and management in Ecuador and other Latin American countries, not just in Galapagos. The programme thus has a much broader influence in the country as a whole than might be imagined, since CDRS is recognised as one of the most highly competent scientific and conservation organisations in the country.

The third element comprises the thesis students, of which three were supported by the project. All three are still working on their theses, and it is likely that at least two of them will go on to MSc or PhD courses outside Ecuador. Experience has shown that such students often do return to Galapagos. CDRS has one researcher of Galapagos origin who gained her PhD in Canada, another who is currently doing his PhD in Oxford and a third who is finalising her plans for such a course in Australia. Aside from these indigenous Galapagos researchers, CDRS has many current Ecuadorian staff (of mainland origin) who commenced their research careers as students at CDRS.

The project has improved an already strong link between the UK (GCT) and local (CDRS) partners. GCT is largely responsible for raising funds for conservation and CDRS is the organisation responsible to the Ecuadorian Government for conservation science in the archipelago. The project forged close personal links between the staff of the two organisations, including the hosting by GCT of the co-ordinator's visit for training at Kew. The two organisations have worked together to raise further funding for the conservation of Galapagos plants, during the project period, and will continue to do so in the future.

The project has promoted local collaboration between the Galapagos National Park Service and the local partner (CDRS). All of the project research takes place within the National Park, and much of its operation is carried out with GNPS logistical assistance. This has promoted increased interest in and understanding of plant conservation problems by GNPS staff and planners.

The major direct beneficiaries of the project include the institutions involved in conservation of the Galapagos National Park, including CDRS and GNPS. However, since the major source of income and employment in Galapagos is ecotourism, which depends absolutely on the maintenance of Galapagos in its near-pristine state, then it could be said that the entire population of the islands has benefited from this work, which is aimed at avoiding extinction and degradation of the unique species and ecosystem of the archipelago. The project has had no identifiable negative impacts on the local population of the islands.

6. Project Outputs

See Appendices 2 and 3.

Analysis and dissemination of project results continues following project termination, since the remaining project outputs (especially the revised checklist and monitoring manual) are essential conservation tools vital to the implementation of further work, which will build upon the baseline established

by the project. Local project staff at CDRS are undertaking these activities, which are recognised as of highest priority to the conservation missions of CDRS and the Galapagos National Park Service. The two project partners, CDRS and GCT, will bear the costs of this continuing work, by raising further funding from additional sources. Funding from two counterpart sources to the project, Frankfurt Zoological Society and Keidanren Nature Conservation Fund, is assured for the future (FZS at least until the end of 2001 and probably for further years; KNCF three more years).

7. Project Expenditure

a) Total Grant Received £124,500.00
b) Total Grant Expenditure £124,498.36

c) Please provide a breakdown of grant expenditure using the main expenditure headings in the original application form

Original Project Budget			Total Project Budget	
		Notes		**Variance**
Staff Costs: salaries.		*1		+11.24%
Rents, rates, lighting etc.				
Postage, telephone, stationery.				+1.2%
Travel and subsistence.		*2		-23.49%
Printing.		*3		-35.01%
Conferences, seminars etc.		*4		-44.44%
Other (please specify)				
Capital items: field & lab equip., computers etc.				-4.44%
Other:consumables, admin, backup}		}		}
Training }		}		-4.34%
Total		**Total**		

f) Explain any variations in expenditure (+/-10%) from the original application form.

1. REASON: The dollarization process whereby Ecuador changed its national currency from the Sucre to the dollar, which was pegged to the US dollar, was completed during the third year of the DI project. Changes described in the Year II DI report pinpointed the initial stages of the process of currency change as a partial reason for project salary underspend during Year II. This underspend was reversed once the currency change was complete and all salaries were revised to provide across-the-board increases at new US dollar equivalent rates. The dollarisation process, which will be beneficial for Ecuador in the long term has proved difficult in transition and caused budgetary problems throughout the country.

2. REASON: Considerable savings were made overall by obtaining donated trips aboard private boats touring the islands who wished to make a contribution to conservation. Each trip by boat costs ca. US$3,000 (i.e. ca. £2,000). Full costs of trips must always be budgeted for because donated inter island travel cannot be relied upon in advance.

3. Preferential rates were negotiated with Quito printing companies who had been given contracts for major CDRS printing requirements and were thus willing to carry out smaller printing jobs at lesser cost.

4. Overlapping interests in project terms allowed division of budget line costs across project headings resulting in cost savings.

8. Project Operation and Partnerships

The major local partner was the Charles Darwin Research Station, with the major adjunct partner the Galapagos National Park Service, as planned. CDRS designed, supervised and implemented all project activities in Galapagos, while GNPS provided logistical support and provided policy and direction input.

CDRS and GCT initially planned the project together, with policy support from GNPS. GCT managed and implemented the project's international activities, while CDRS managed the project in Galapagos.

CDRS is an international NGO, based in Galapagos, and is the official advisor to the Ecuadorian Government on conservation science in the archipelago. CDRS also has an important national function, in being one of the top conservation science and training institutes in the country. CDRS plays a key

policy role in the islands. During the project period, CDRS provided crucial input into the formulation of Ecuador's new Special Law for conservation and sustainable development of the Province of Galapagos, and of its implementation regulations. It also co-organised with WWF an international symposium in Galapagos, of some 50 scientists, to formulate a key conservation policy document "*A Biodiversity Vision for the Galapagos Islands*" (see Appendix 3) which sets out conservation goals for the next 50 years. The plants part of this document was written by project staff and relied heavily on results from the project.

GNPS is an arm of the Ecuadorian Government, charged with managing the two Galapagos reserves, the terrestrial National Park and the Marine Reserve. GNPS is responsible for implementing conservation management. CDRS and GNPS work hand-in-hand for the conservation of Galapagos. Their offices are adjacent to one another, programmes are planned in consultation, staff take part in programmes of the other institution, and facilities are made available between the two. This partnership is a model of co-operation between conservation science and management organisations and has proved invaluable for the work of the project. GNPS assisted the project's work in such ways as providing boat transport, guides, field assistants and emergency support.

During the project, collaboration was established with the National Herbarium of Ecuador, where contributions were made to the national plant reference collection. The Herbarium at CDRS is currently the world's most complete collection of Galapagos plants, and is likely to remain so, but the national collection is obviously an important research resource for Ecuadorian botanists on the mainland and an important backup for the CDRS collection. Collaboration was also established between the project and a national effort to produce the first plants Red Data Book for Ecuador. Project results up to the closing date (mid-2000) were included in the first edition "*Libro Rojo de las Plantas Endémicas del Ecuador 2000*", which was published in October 2000 (see Appendix 3). Project results were summarised in the annual "*Informe Galápagos*" or "*Galapagos Report*" (produced in both languages in most years), published by the Ecuadorian conservation NGO Fundación Natura (see Appendix 3). Besides these more formal collaboration agreements, project personnel established many personal professional links with Ecuadorian botanists and conservationists working on the mainland.

Both CDRS and GNPS work in consultation with the Ecuadorian Ministry of the Environment, of which GNPS is a branch. The Environment Ministry is Ecuador's Biodiversity Strategy Office.

The principal international partner working on the project was GCT, based in London, whose role mainly comprises international fund-raising and publicity for Galapagos conservation.

Major additional international partners include IUCN—The World Conservation Union, WWF, the Royal Botanic Garden at Kew, and the project's main counterpart funding agencies (Frankfurt Zoological Society and Keidanren Nature Conservation Fund). Collaboration was also established

with seven research groups in other countries for molecular genetic and taxonomic research on Galapagos endemic plants.

IUCN is the foremost international organisation working on biodiversity conservation policy and international co-ordination. Collaboration included provision to IUCN of feedback on the operation of their red list classification system when applied to an oceanic archipelago, and provision of data on threatened species for various international red-listing projects (including the 1998 *World List of Threatened Trees* and the 2000 *IUCN Red List of Threatened Species*). An unplanned outcome of these activities was the suggestion of the formation of a new IUCN Specialist Group on Galapagos plants, which is currently under consideration by IUCN. If approved, this will give added international credibility to the work done by the project staff (who would formulate the new group) and help to ensure its continuation.

Collaboration with WWF included contributions of data to publications produced by its local partner organisation (Fundación Natura), and organisation of the international symposium on Galapagos biodiversity, mentioned above.

The Royal Botanic Garden, Kew, collaborated with the project by providing key training for the project co-ordinator, and expert advice on taxonomic and conservation issues such as the proposed establishment of a seed bank for Galapagos threatened plants. Project results and experiences were included in a chapter written by the project leader in a book edited and published at Kew with financial support from another Darwin Initiative project (*Plant Conservation Manual for the Tropics*: see Appendix 3).

An important result to emerge from the project is that we know little about the detailed taxonomy, relationships and variation among many groups of Galapagos endemic and threatened plants. This impedes conservation planning in that we are unable to identify the most important populations, in some cases not even being certain which populations belong to which species. These problems can be addressed by modern molecular genetic techniques, but there is currently no in-country capability for carrying out such work. The project has therefore actively encouraged the involvement of interested research groups in other countries. Joint projects have so far been established with seven such groups, including the Natural History Museum (London), the Royal Belgian Institute of Natural Sciences, and the universities of Copenhagen, Antwerp, California, Harrisonburg, New Mexico and Texas. CDRS is hoping to obtain funding for the installation of a molecular genetics (DNA and enzyme analysis) laboratory in Galapagos, an impetus generated largely as a result of the present project.

All of the local partnerships established by the project are continuing and are envisaged as permanent activities by CDRS, as are most of the international collaborations.

9. Monitoring and Evaluation, Lesson learning

The project was monitored and evaluated according to two main schedules. The first was that established by the Darwin Initiative's own guidelines, which provided an impetus to ensure that six-monthly and annual reports were completed and project outputs measured against the agreed indicators. Both partners in the project prepared the reports. The second monitoring schedule was according to the local partner's own reporting requirement. CDRS produces annual reports and semi-annual project evaluations to its own parent body, the Charles Darwin Foundation for the Galapagos Islands, and project achievements and performance were reported therein. Reports were also provided annually to the two main counterpart funders, FZS and KNCF, and semi-annually also to KNCF, according to the requirements of these agencies.

The Project Leader, according to the established CDRS personnel system did annual evaluation of local project staff. The CDRS Director evaluated the Project Leader's performance annually under the same system.

Monitoring results showed that all major objectives have been met or will be met shortly after project termination. Some of the delays were due to an increase in the scope of the project. Most output measures were exceeded although some were not fully met, particularly those referring to number of dissemination outputs. However, the outputs produced have a high overall impact factor in that many were aimed directly at local and international conservation policy-makers (such as the *Biodiversity Vision* workshop report: see Appendix 3) and conservation managers (especially GNPS).

The value of the project is demonstrated by the indispensable baseline information collected. Before the project, our knowledge of the endemic plants of Galapagos, including their population status and degree of threat, was based largely on patchy information collected more than 15 years previously, with the most recent records for some species and islands being a century or more old. The complete review initiated by the project has both brought this knowledge up to date and also identified gaps that still need to be filled by further research. The information collected by the project is now being used to plan conservation research and management action in order to improve the status of the most critically endangered species. The plant conservation work of CDRS and GNPS in the near future will be directed entirely towards priorities identified by this project. The project's results, and the databases, GIS plant mapping system, reference collections and planning processes established by it, together constitute an indispensable conservation tool that will continue to guide Galapagos plant conservation in both short and long terms.

Evaluation by the Darwin Initiative's six-monthly and annual reports was found to be an excellent way of assessing the success of the project. The system of milestones and quantitative outputs as indicators clearly demonstrated where objectives were achieved or exceeded, where programmes had slipped, and where more effort needed to be made. This system makes reporting for the project a relatively painless task and assists

project staff to plan and schedule activities in order to achieve the goals projected in the project document.

Lessons that were learned during the project stem from both positive and negative experiences. First, the project's relatively smooth operation and great success has proved that such ambitious and fundamental programmes can successfully be carried out in Galapagos, largely by the conservation institutions based within the islands. The project also proved the great advantages deriving from collaboration between the UK and Galapagos partners. Specific project planning and management lessons perhaps stem partly from difficulties that are unavoidable in a three-year project or inherent in the Darwin Initiative project operation system, and partly from inexperience or over-ambition on the part of the partner organisations. For example, although the Darwin reporting system was found to be generally painless and easy to use, there was some difficulty in distinguishing milestones from outputs. It may be worth considering whether to define these more clearly. The Darwin project quantitative outputs render reporting very straightforward and clear, but perhaps encourage over-ambition or over-optimism when writing project proposals. This probably occurred in the present project with respect to the dissemination outputs. A lesson learnt while managing the project budget was that it is very difficult to plan the detail of a budget for three years into the future, since many items depend on circumstances, such as changes in project staffing, success in finding counterpart funding for different budget lines etc. Darwin Initiative staff were exceedingly helpful in permitting flexibility between budget lines in the present project, which proved indispensable in allowing us to reprogram the use of funds to achieve objectives most efficiently. Another lesson was that staff recruitment can take a considerable time, so key staff should either be recruited (or at least identified) before project initiation (which may be difficult given that recruitment may depend on project funds), or the project should be planned so that early activities do not depend on the rapid recruitment of new staff. Early delays in the recruitment of the Project Co-ordinator and thesis students did not, however, substantially delay project progress.

10. Darwin Identity

Britain's Darwin Initiative is widely recognised among the conservation community worldwide as one of the most useful sources of funding for biodiversity conservation, anywhere. It is difficult to think of any comparable scheme that is dedicated to biodiversity research and conservation in the tropics. The Darwin Initiative is simply unique and its value incalculable, and it enjoys a well-deserved reputation everywhere. For relatively modest financial inputs, enormously valuable results are often obtained. This has certainly been the case with the present project, which we hope will help to maintain this excellent reputation.

Within Ecuador, the several DI projects that have been run (including three in Galapagos), have confirmed this image among the local biodiversity research and conservation community, including within the Ecuadorian Government.

extinct. Our priority now is therefore to seek additional international funding to carry on this most crucial work — saving from extinction the most endangered plants of the islands.

13. Value for money

In terms of value for money, this has been one of the most effective plant conservation research projects ever carried out in Galapagos. Its impact will continue to be felt for decades. The evidence is clear in the objectives and results: establishment of a baseline of knowledge for effective conservation of the entire endemic flora of the archipelago. This objective has been achieved and the results are already being applied in conservation planning in the islands. Future Galapagos plant scientists and conservationists will rely on the project's results, systems and resources for many years to come.

Author(s) / Date

Dr Alan Tye (Project Leader)
31 July 2001