



**Horticulture and education for conservation in
Nezahat Gökyiğit Botanik Bahçesi,
Istanbul, Turkey**

**Final Report
April 2005 – March 2008**



Survey of native species at NGBB, 2006

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The following appendices are submitted on the accompanying CD

- Appendix I Project Logical Framework
- Appendix II Project Contribution to Articles under the Convention on Biological Diversity
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- Appendix VII *Centaurea iconiensis* poster
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1. Darwin Project Information

Project Ref. Number	14-026
Project Title	Horticulture and education for conservation in Nezahat Gökyiğit Botanik Bahçesi, (Istanbul, Turkey)
Country(ies)	Turkey
UK Contractor	Royal Botanic Garden Edinburgh
Partner Organisation(s)	Nezahat Gökyiğit Botanik Bahçesi, (Istanbul, Turkey)
Darwin Grant Value	£132, 013
Start/End dates	1 April 2005 – 31 March 2008
Project website	N/A
Author(s), date	Dr David Rae and Prof Dr Adil Güner



Repotting the bulb collection, 2005

2. Project Background/Rationale

The project is based at Nezahat Gökyiğit Botanik Bahçesi (NGBB) which is located in the intersection of two motorways in eastern Istanbul. NGBB was established as a park in 1995 and was subsequently designated a botanic garden in 2003. The garden is therefore young and, while the staff are very enthusiastic and innovative, they lack core skills in horticulture and education. Without these skills the garden will not progress from being a park to becoming a 'true' botanic garden, able to contribute to native plant conservation. Turkey has a large and important flora but with increasing development and few other botanic gardens or environmental NGOs there is real concern for its conservation.

The primary purpose of NGBG is the conservation of Turkey's unique flora through education, research and direct, practical conservation (*in situ* and *ex situ*) techniques. To do that it needs skilled staff. Until the staff have the relevant experience and expertise the Garden will not be

able to contribute to the objectives of the Convention on Biological Diversity (CBD). Likewise, until the Garden is attractive and functioning well it will not attract visitors, either local or tourist, and will not be able to inform people about biodiversity/conservation issues. Put simply the project aims to increase expertise in horticulture and education so that the Garden will eventually be able to play its part in conservation, education and research and therefore fulfil its responsibilities within the CBD.

The purpose of the project was to develop the cultivation and educational potential of NGBB so that it could contribute effectively to species conservation in Turkey. Delivered through a series of workshops, staff exchanges, hands-on practical work and field trips, the project was planned to equip staff with the training and knowledge necessary to conserve plant species through cultivation techniques and educational programmes. The idea was that, through these programmes of training, capacity building and technology transfer, the Garden would be able to contribute effectively to the objectives of the Convention on Biological Diversity (CBD), the Global Strategy for Plant Conservation (GSPC) and to sustainable development.

The need for the project originated from Professor Dr Adil Güner and his colleagues in Turkey. Having observed the potential of the motorway site to grow plants and act as a memorial park they realised that its value could be enhanced greatly if turned into a botanic garden to champion the conservation and cultivation of Turkish plants. They also realised that through creating an attractive green space in an urban environment that people could visit it could become an important centre for environmental education. Through Prof Dr Güner's extensive network of botanical and horticultural contacts he set about the task of creating this imaginative botanic garden and to explore the potential for collaboration in the project. So, the demand for the work originated in Turkey and there was, and continues to be, strong commitment from the local partner.



NGBB with backdrop of towerblocks, 2005

3. Project Summary

As described in the heading above, the purpose of the project was to develop the horticultural and educational potential of NGBB so that it could contribute effectively to species conservation in Turkey. In summary, outputs included an improved botanic garden with staff trained in fieldwork, an effective nursery with staff able to propagate and grow on plants for the Garden, a database able to contain plant records with staff trained to use it and education staff able to use the facilities of a botanic garden for biological, environmental and conservation purposes. Other outputs included education workshops arranged with garden staff and school teachers aimed at improving knowledge about the importance of conservation, two workshops focussing on networking, legislation, conservation and the CBD with external attendees invited and an interpretation master plan. Nothing in the logical framework was changed and all outputs were achieved on time and on budget.

The original objectives and operational plan outlined at the start were not changed during the period of the project and no significant changes were made. The only slight changes were the timing of some elements of the project. Some had to be altered to fit with personal diaries but, with one exception (that was agreed with the Darwin Secretariat), everything took place within the year concerned. The Project Logical Framework, presented in the second stage of the application form, presented a clear, tabulated outline of project summary, measurable indicators, means of verification and important assumptions. This table was a key tool in organising the project and measuring outputs and, despite the initial difficulty in filling it in, became a really useful (perhaps the most useful) piece of documentation to continually refer back to and to check that everything that had been planned was being undertaken. It is reproduced in Appendix I and everything has been achieved.

The whole point of the project was to assist the host country in its implementation of the CBD. There are very few conservation agencies in Turkey and the vegetation is very rich and threatened in many ways. NGBB was potentially in a position to help the government of Turkey fulfil its CBD responsibilities, but only if it was helped in terms of training and capacity building. With its unique mix of natural, seminatural and man-made habitats within the environment of Istanbul NGBB, through this Darwin project, was able to contribute to Article 8, Article 9, Article 12, Article 13 and, to a certain degree, to Articles 16, 17 and 18. The project also contributed to relevant crosscutting themes including Access and Benefit-sharing, Biodiversity and Tourism and Public Education and Awareness. Appendix II summarises the most relevant articles of the CBD to this project.

We believe that this Darwin project met all its objectives, and met them successfully. Everything that was promised in the application form was delivered and, in addition, many other elements were added at no additional cost to the Darwin project. The training has been successful and this has been recognized not only in the improved quality of cultivation but also through the audience questionnaires distributed and analysed in year two. The educational activities were a great success and involved not only NGBB education staff but also local teachers. The two workshops were a great success and involved numerous professionals in the fields of botany, horticulture, botanic gardens, legislation and government. They were very well attended, presentations were good, discussions and 'Question Times' were vigorous and well debated. All who attended said that they benefited greatly. The horticultural workshops and exchanges were well organised and all parties benefited a great deal. Finally, the interpretation planning discussions and eventual Master Plan were well received.

There have been a number of significant additional accomplishments and these include the delivery of Practical Horticultural Certificate courses (validated by RBGE), the invitation of botanical artists to Edinburgh, additional horticultural workshops, the invitation of high-profile speakers to the workshop, such as Professor Vernon Heywood (the former Director-General of Botanic Gardens Conservation International - BGCI), Sarah Oldfield (current Director-General of BGCI), Joachim Gratzfeld (BGCI) and Professor Mary Gibby (Director of Science at RBGE).



Construction work in the amphitheatre, 2006

4. Scientific, training, and technical assessment

The project was not designed to incorporate research but it did include strong elements of technical training and capacity building activities and these are briefly described below.

Year one

In September 2005 two staff from Edinburgh travelled to Turkey for a demonstration field trip with NGBB staff. An additional benefit was that two staff from the Forestry Commission in Britain were able to join the visit at their own expense and were able to input their knowledge and experience. The demonstration field trip was highly successful and achieved everything expected of it. A full report appeared in Appendix II of the Year 1 report but, in summary, groups of staff from NGBB were able to undertake a demonstration field trip with staff from RBGE and the Forestry Commission where they saw, and practiced, specimen collection in the field - both herbarium and seed, along with all the techniques involved in recording, preparing, drying and storage. Selection of staff was made by NGBB's Director, Prof Dr Güner and included any staff who might be involved in field work in the future. The content of the training was presented in Appendix II of the Year 1 report. No formal assessment or accreditation was undertaken as this was not promised in the application but informal assessment took place continually through questions and answers, demonstration and practice.

Two horticultural staff from RBGE visited NGBB in October 2005 to give practical instruction in horticultural techniques and to help work on current projects. Again, this was highly successful and a lot was achieved. Their training manual appeared in Appendix III and the report in Appendix IV of the Year 1 report. All staff from NGBB were selected for this training as they were all eligible and would all benefit. Again, no formal assessment or accreditation was undertaken as this was not promised in the application but informal assessment took place continually through questions and answers, demonstration and practice.

In November 2005 two staff from RBGE visited NGBB to lead a series of plant records and database workshops. Their report appears in Appendix V of the Year 1 report. Selection of staff to attend the workshops was based on the recommendations of Prof Dr Güner as he had the necessary knowledge of his staff and knew who would benefit. Basically, those attending were staff dealing with plant records, accessioning, nursery work, labelling and recording - essentially all who would need to know about plant records and would need to know how to enter and extract data. As before, no formal assessment or accreditation was undertaken as this was not promised in the application but informal assessment took place continually through questions and answers, demonstration and practice.

In January 2006 Professor Dr Adil Güner visited the UK for the management visit that should have taken place in Year 2. As agreed with the Darwin Secretary, this visit was swapped with a visit that two staff from NGBB should have made to RBGE for horticulture experience. A very full and detailed programme of visits and discussions were prepared for Prof Dr Güner - both with staff in Edinburgh and also to visit other botanic gardens in Scotland so that he could discuss management issues with them. An additional benefit from this visit was that money was found in Turkey to fund Prof Dr Hayri Duman and Margaret Johnston to join the visit. A report of the visit can be found in Appendix VI of the Year 1 report.

In March 2006 two horticultural staff from RBGE visited NGBB to lead a series of propagation workshops. Training notes were prepared beforehand and everything that should have been achieved was achieved. All of NGBB's horticultural staff attended. As before, no formal assessment or accreditation was undertaken as this was not promised in the application but informal assessment took place continually through questions and answers, demonstration and practice. The notes and report appeared in Appendix VII of the Year 1 report.

Also in March 2006 Dr Kerry Walter from RBGE visited NGBB to install *BG-BASE*, the plant records database, that was purchased by this Darwin project and to train staff in its use. After installation Dr Walter spent the rest of his visit training staff in its use. Staff selection for this training was based on their need to enter and use plant records. It was also possible to include one volunteer. There was no formal assessment or accreditation, as this was not appropriate.



Children's picnic and educational event, 2006

Year 2

Project progress during Year 2 was good. All the planned activities took place on time and within budget and a few additional activities were made possible through additional external funding.

In Spring 2006 two staff from RBGE visited NGBB for three weeks to lead a training workshop in horticultural techniques. All staff from NGBB were given horticultural training which was broken up into three sections - formal instruction in specific techniques, work on a particular project and shoulder to shoulder work with NGBB staff undertaking routine maintenance. A report on their work appeared in Appendix I of the Year 2 report.

Later in the spring of 2006 four staff from NGBB, selected by Prof Dr Adil Güner, spent five weeks at RBGE undertaking horticultural training. As agreed by the Darwin initiative Secretariat and reported in the Year 1 report, instead of two staff from NGBB coming to RBGE in Year 1 and a further two in Year 2, it was decided that, for a number of reasons (including translation), it would be better for four to come over in Year 2. During their time at RBGE the NGBB staff attended formal training demonstrations of horticultural techniques, worked alongside staff on routine maintenance and took part in discussions on aspects of botanic garden work and purposes. During their visit they were able to pay a visit to the Royal Botanic Gardens Kew and Benmore Botanic Garden. These were structured visits and they were shown around by members of staff. As before, no formal assessment or accreditation was undertaken as this was not promised in the application but informal assessment took place continually through questions and answers, demonstration and practice.

The next stage of the programme involved educational activities. The original plan, as presented in Stage 2 of the application form, was that three of RBGE education staff would visit NGBB for two weeks to lead education workshops. Having discussed NGBB's particular needs and requirements with Dilan Bayindir (NGBB's Education Officer who had not been appointed at the time of the original Darwin project application) and Prof Dr Adil Güner it

seemed better to undertake two separate visits, each with a different focus. Additionally, there were sufficient funds available in the budget to send two staff for two weeks and a further two staff for one week.

Leigh Morris (Head of Education at RBGE) and Cath Evans (primary school teacher) took part in the first visit. Leigh Morris concentrated on horticultural skills training and, after discussion, started adapting RBGE's Certificate in Practical Horticulture, an introductory courses in basic horticulture that is 'certified' by RBGE, but could be delivered at a later date. This would give staff the opportunity to study core skills, adapted to their environment and then receive recognition in the form of a certificate from RBGE. Discussions were very fruitful and it was planned to offer these certificate courses to staff in 2008 (but not specifically as part of the Darwin project). These certificate courses were undertaken right at the end of Year 3 of the project but as previously mentioned they were not an integral part of the original project. They are mentioned in more detail in the report on Year 3.

Cath Evans' work focussed on the children's garden and how this could be used effectively to convey issues about recycling, composting, sustainability, the importance of plants, food, plant growth and cultivation. The site of a children's garden had been prepared during the visit by Graham Stewart and Phil Ashby earlier in the year and so Cath was able to go straight in and utilise the area for educational purposes for the children. She was able to work with the Education Officer (Dilan Bayindir), often accompanied by schoolchildren and teachers, to discuss and develop ways of using the Garden for educational purposes. The report on this visit appeared in Appendix 2 of the Year 2 report

Towards the end of the project year Suzie Kelpie (Head of School's education and secondary school teacher) and Jacqui Pestell (arts education officer) visited NGBB for one week to develop an education programme for secondary school pupils. Suzie Kelpie worked with Dylan Bayindir and a group of secondary school teachers to develop the best and most effective ways of using the resources of the Garden for teaching secondary school children aspects of plant biology.

At RBGE Jacqui Pestell uses art to teach plant biology for primary school children right the way through to adult education courses. During her visit to NGBB she worked with Dylan Bayindir and a group of teachers to explore ways of using the resources of the Garden and simple, cheap and easy to source items from shops to lead workshops. All these were highly successful and very well received. Suzie Kelpie and Jacqui Pestell's joint report appeared in Appendix 3 of the Year 2 report. Selection of teachers to attend the course was made by Dylan Bayindir and assessment was informal but continuous.

In the spring of 2007 Dr David Rae (Directive Horticulture at RBGE and Darwin Project Leader), Professor Mary Gibby (Director of Science, RBGE) and Tony Miller (taxonomist and South East Asia plant specialist, RBGE) travelled from RBGE to take part in a workshop at NGBB. It had also been possible to invite Sarah Oldfield (Director General Botanic Garden Conservation International) to take part, based on a funding package arranged by NGBB separately from the Darwin Project. Furthermore, again using additional funds secured by NGBB, it was possible to invite several more staff from botanic gardens, universities and institutions than had at first been thought possible. Invitees were selected by Prof Dr Adil Güner and it was not appropriate to assess delegates.

Presentations were given by all staff from RBGE and BGCI along with Prof Dr Adil Güner and other staff in Turkey. Topics covered included the work of botanic gardens in conservation, examples of conservation projects, important plant areas, the value of networking and the global strategy to plant conservation.

The workshop was attended by 47 people and appeared to be a great success. English presentations were translated into Turkish. Apart from raising the potential of plant conservation in botanic gardens and discussing conservation issues and techniques, a major outcome was the intention to try and form a Turkish network of botanic gardens.

The short descriptive accounts above cover all the planned areas of activity from Year 2. However, using additional external money a number of additional, but linked, activities were made possible. These were as follows - Tony Garn, Robert Tyndall and Fiona Inches visited NGBB to give instruction on horticultural techniques, help with maintenance and provide further plant records training. Tony Garn and Robert Tyndall visited for two weeks and Fiona Inches for one week. Phil Ashby (who had visited earlier in the year) was able to return to NGBB for a further period to continue the installation of the metrological station and helped further with the construction of the children's garden.



Teacher training workshop, 2007



Joachim Gratzfeld (left) and Professor Vernon Heywood (right) at the 2007 Conference

Year three

In April 2007 David Rae visited NGBB for the annual management visit. The purpose of the visit was to check outcomes and progress to date and finalise arrangements for the Year 3 programme.

In June Dilan Bayindir (Education Officer, NGBB) and Salih Kanoglu (Plant Records Officer, NGBB) visited RBGE for practical training. Dilan joined the Education Department and took part in practical hands-on education programmes for primary and secondary school teachers and children while Salih spent time on plant records training. These two members of NGBB staff were selected by Prof Dr Adil Güner as they were the most appropriate to the training being offered. No assessment took place as it was not appropriate.

Also in June, Simon Crutchley and John Dunn from RBGE visited NGBB to deliver practical horticultural training. As before they focused on specific techniques of training also worked alongside staff at NGBB on hands-on practical on-the-job work. All horticultural staff at NGBB took part and the training included basic horticultural techniques (such as weed control, composting and hedge maintenance), horticulture for *ex situ* conservation, based on *Globularia hedgei*, *Pyrus serikensis*, *Iris masia* and *Rhazya orientalis*) and new construction works (on the arid/halophytic garden).

In October three staff from NGBB visited RBGE for practical horticultural training. The original plan had been to invite two staff out for a period of three weeks but with additional funds found from RBGE it was possible to invite three staff out for the same period. During this time they worked with horticultural staff at RBGE developing horticultural skills and practical knowledge.

In late October David Rae and Professor Mary Gibby from RBGE visited NGBB for a conference based on conservation and CBD issues. Additional funds were found to also invite Professor Vernon Heywood (former Director General of BGCI and now at Reading University) and Joachim Gratzfeld (BGCI) to take part in the conference. Numerous delegates from botanic gardens, universities and government departments took part in the conference which was a great success. The delegate list and conference programme can be found in Appendix III. Delegates were selected by Prof Dr Adil Güner.

In February and early March 2008 Vlasta Jamnicky (Interpretation Officer, RBGE) and Max Coleman (Science Communicator, RBGE) visited NGBB to take place in an interpretation workshop with the eventual purpose of producing an interpretation masterplan. Discussions were held with staff and also with teachers and a focus group to discuss the types of interpretation that would be suitable in the Garden. Following these discussion sessions an interpretation masterplan was drawn up. This can be found in Appendix IV of this report.

This account of Year 3 activities officially brought to an end the three year Darwin Initiative Project. As with Year 1 and 2 all the activities in Year 3 were completed on time and within budget. However, it is pleasing to be able to report that a significant number of additional activities were able to take place during the year and others are planned for the next financial year, showing that the project will be able to continue after the Darwin funding period. All the additional activities have been funded externally from the Darwin project.

In July and August of 2007 two horticultural students, Laura Cohen and Alan Elliott, were able to visit the garden for an extended, six-week period of practical work. In October 2007 three botanical artists visited RBGE from NGBB to undertake training in botanical art. During their time at RBGE they were able to sit in on various art classes to develop their technique.

In March and early April 2008 Alan Elliott and Emily Wood from RBGE were able to visit NGBB and deliver the Practical RBGE Certificate in Horticulture course developed by Leigh Morris and discussed in Year 2 of the Darwin Project. Eight staff from NGBB were able to participate in this training course that led straight into assessment and then the Practical Certificate. While the course was very hectic and busy it was a great success and all the staff were able to pass.

In early June 2008 David Rae and Professor Steve Blackmore (Regius Keeper, RBGE) visited NGBB to take part in a review of their five-year Masterplan, discuss a new agreement looking to future collaboration between these two botanic gardens and Professor Blackmore also presented RBGE Certificates in Practical Horticulture course certificates to the successful candidates in the practical horticultural training course.

Two of the three botanical artists are currently working at RBGE further developing their botanical painting skills and also contributing to a book.



Professor Mary Gibby, Director of Science, RBGE at the 2007 Conference



Secondary school teacher workshop, 2006

5. Project Impacts

The purpose of the project was to develop the horticultural and educational potential NGBB so that it could contribute effectively to species conservation in Turkey. While it was noted in the application form that it would take time for the Garden to develop to a stage where it could contribute to species conservation through horticulture and education it is none-the-less pleasing to see that the achievements are beginning to lead to the accomplishment of the project purposes. For instance, as noted in the Year 2 report, it is remarkable that NGBB has already managed to reintroduce a native species back into the wild. This is remarkable because it is such a young botanic garden and re-introduction is a complicated process requiring planning and horticultural skills that are usually only found in well-developed and older botanic gardens. As reported in section 10 NGBB is now cultivating 117 threatened species with seven being cultivated for re-introduction programmes.

While it is difficult to provide concrete evidence that project achievements have led to the accomplishment of the project purpose it can certainly be demonstrated that the necessary early investment into horticulture and education are leading NGBB to a situation where they will be able to contribute to species conservation in Turkey. Without the necessary horticultural skills, including plant recording and data recording skills, it will not be possible for staff to take part in field work, collect material or cultivate and grow-on plants. Likewise, without the horticultural skills required to produce an attractive, botanically rich garden it will not attract the public and therefore any potential for education and interpretation will not be realised. Also, while an investment into primary education is important and has been developed through the Darwin project it will be many years before the children are in a position to change their habits or influence others to adopt more sustainable lifestyles. None-the-less, if that investment is not made then there is no opportunity for making the changes necessary. In helping to develop NGBB's educational potential, through the workshops and interpretation masterplan, the Darwin project will ensure that achievements lead to the accomplishment of the project purpose.

Again, it will be some time before it is possible to know if the Garden has helped Turkey to meet its obligations under the CBD. However, in helping to invest in the fundamentals of horticulture and education and through the two highly successful conservation and CBD workshops it is reasonable to suggest that the Garden is moving towards a situation where it will be able to contribute positively to the CBD and to Turkey's obligations towards it. In the second workshop, held in Year 3 of the project, it was interesting to hear about conservation planning and the development of policy from government authorities and it was useful to have those discussions in a botanic garden environment and from those ministerial members to contribute towards discussion of the CBD and the way in which organisations like botanic gardens could contribute. Without NGBB developing, looking attractive, being involved in plant propagation, reintroduction, education programmes and other events it would not have been realistic to invite academics and politicians to such a workshop. It could justly be claimed that the Darwin project contributed to creating the necessary environment and ambience for it to be possible to invite such people to the Garden to take part in those discussions. This further demonstrates that, even though the project cannot easily demonstrate specific CBD initiatives, it is investing in an institution that certainly will be able to deliver those activities.

Appendix II shows the contribution made by different components of the project to the measures of biodiversity conservation defined in the CBD articles.

The training and capacity building elements of the project have certainly improved the local capacity to further biodiversity work in the host country. As well as delivering horticultural training and education training to staff at NGBB the two workshops, in particular, were opened to a wider audience than simply NGBB staff. Many academics, other botanic garden managers, local authorities and central government officials attended the workshops and, through the knowledge they gained, will be able to improve the local capacity for further biodiversity work. The education workshops involved teachers from local schools and, armed

with new knowledge and techniques, they will be able to contribute to local capacity to further biodiversity work through education.

The collaboration between RBGE and NGBB has been excellent and it is pleasing to note that not only (as reported in the paragraph above) has it been possible to involve people in Turkey outside of NGBB, but it has also been possible to involve more people from the UK than was originally expected. As reported in previous annual reports staff from the Forestry Commission, the Director-General of BGCI (Sarah Oldfield), Professor Hayward from Reading University, Joachim Gratzfeld (BGCI) and horticulturists from other UK gardens have all been brought in to strengthen the collaboration between the two institutions

It has been delightful to take part in this project and particularly pleasing to observe the social benefits of this project. When RBGE staff have visited NGBB they had been looked after very well and have been taken on excursions, visits and numerous meals out. Likewise, RBGE has enjoyed hosting staff from NGBB and, as the years of the project have increased, so it has been pleasing to invite all participate in the project to social gatherings and, over the years it has become bigger and bigger, sometimes involving 20 or 30 people. Through this social interaction both parties have understood the cultural background of each other's country better and have understood and learnt a lot about the natural environment, and the pressures on it and the measures necessary for its conservation.



Professor Blackmore, Regius Keeper, RBGE, presenting NGBB staff with RBGE Certificate in Practical Horticulture certificates

6. Project outputs

Table 1, below, shows the project outputs arranged according to the Darwin Initiative Standard Output Measures. In addition to all the outputs agreed in the application form it shows additional outputs not anticipated at the start of the project.

Additional outputs included:

further horticultural training visits, by both RBGE staff going to NGBB and by NGBB staff coming to RBGE, made possible by applications to other grant giving bodies

additional colleagues making presentations at the conference and one of the workshops (eg Sarah Oldfield, Director General of Botanic Gardens Conservation International, Prof Vernon Heywood, Reading University, and Joachim Gratzfeld, also from BGCI

delivery of 'Certificate in Practical Horticulture' training course, leading to the award of certificates

interaction with, and visits by, three young and talented botanical artists

a workshop just after the project came to an end to discuss the next 5 year strategy for NGBB and the signing of a new agreement between NGBB and RBGE to facilitate continued collaboration and partnership working

Information relating to project outputs and outcomes has been disseminated (via description, not in published texts) three times- to attendees at the conservation and networking workshop in Year 2, to attendees at the CBD and conservation conference in Year 3 and at the (post project) meeting in June 2008 at which the future direction of NGBB and its emerging five year Master Plan were discussed.

Code No.	Description	TOTAL
6A	Horticultural training	215 weeks
6A	Propagation & nursery training	16 weeks
6A	Education workshop	9 weeks
6A	Conservation and Networking workshop	8 weeks
6A	Education training	2 weeks
6A	Plant Records Training	2 weeks
6A	CBD conference	11 weeks
6B	Number of training weeks not leading to formal certificate	173 weeks
7	Number of types of training manuals produced for use by the host country	1 (handouts/notes to accompany training course)
8	Number of weeks spent by UK project staff on project work in host country	55 weeks
12A	Number of computer-based database established and handed over to host country	1
6A & 13A	Field work training & enhancement of one collection	6 weeks
6A & 12A	Database training & installation	18 weeks & 1 database
15B	Number of local press releases or publicity articles in the host country	1
20	Cost of database	£6,903
20	Cost of nursery equipment	£5,000
23	Resources raised from other sources	£113,650

Table 1. Project outputs tabulated using the coding and format of the Darwin Initiative Standard Output Measures.



Prof Dr Adil Güner at the 2006 Conference



'Art for education' workshop, 2007

7. Project Expenditure

Table 2, below, shows final project expenditure and Table 3 shows expenditure over the three year duration of the project. Figures have been collated by RBGE's Finance Department and have been subjected to RBGE's internal and external auditors. This project came within its final budget and variances from the original budget for individual components are explained below the Tables.

	Overall Revised budget	Overall Expenditure	Variance	Comment
Staff costs			0%	
Rent, rates, heating, lighting etc.			-100%	Not required
Postage, telephone & stationery				
Travel and subsistence			-9%	Costs of flights from Edinburgh to Istanbul fell during the course of the project.
Printing				
Conferences, seminars etc			0%	
Capital items:				Overspend on capital items offset against underspend in T&S
BG Base			17%	
Nursery Facilities			44%	
Audit fee & bank charges			-51%	Audit fees were less than budgeted. 2008/09 audit fee outstanding.
Total	132,013.00	130,497.89		

Table 2. Project expenditure

Budget Revisions.

2007/08: Virement of £100 from office costs and £160 from audit fees to T&S agreed L Spencer.

2005/06: £2,240 T&S Carry forward to 2006/07 agreed with Darwin Secretariat.

2006/07: Overspend on capital items offset against underspend in T&S agreed with Darwin Secretariat.



Delegates at the 2007 Conference

	2005/06 Revised budget	2005/06 Actual Expenditure	2006/07 Revised budget	2006/07 Actual Expenditure	2007/08 Revised budget	2007/08 Actual Expenditure	2008/09 Revised budget	2008/09 Actual Expenditure	Overall Revised budget	Overall Expenditure	Variance	Comment
Staff costs										52,742,222	227	
Rent, rates, heating, lighting etc.												
Postage, telephone & stationery												
Travel and subsistence												
Printing												
Conferences, seminars etc												
Capital items:												
BG Base												
Nursery												

Facilities	
Audit fee & bank charges	
Total	

Table 3. Project expenditure for each of the three years of the project.

- 2007/08: Virement of £100 from office costs and £160 from others to T&S agreed L Spencer 12/03/08
- 2006/07: £2,240 T&S carry forward from 2005/06 agreed with Darwin Secretariat.
Travel and Subsistence underspend was due to the falling costs of flights from Edinburgh to Istanbul
Overspend in capital items/equipment was offset against underspend in T&S and agreed with Darwin Secretariat
- 2005/06: £2,240 T&S carry forward to 2006/07 agreed with Darwin Secretariat



NGBB, 2005

8. Project Operation and Partnerships

The main partner in the project was NGBB- it was planned in this way from the start and didn't change during the duration of the project. Other organisations were involved during the project as noted below, below. Involvement ranged from attending conferences/workshops and giving specific papers/presentations in conferences/workshops to active advice and project help.

Local partners and organisations involved in the project:

- Abant İzzet Baysal University, Bolu
- Aegean Agricultural Research institute, Menemen, Izmir
- Akdeniz University
- Atatürk Arboretum, Istanbul
- Botanic Gardens Conservation International, UK (not local)
- Bozok University
- Central Anatolian Forestry Research Directorate, Ankara
- Central Research Institute for Field Crops
- Çukurova University Botanic Garden
- Ege University Botanic Garden, Izmir
- Erciyes University
- Gazi University, Ankara
- Gaziantep University Botanic Garden, Gaziantep
- General Directorate for Agricultural Research, Ankara
- General Directorate for Nature Conservation and National Parks
- General Directorate for Specially Protected Areas
- Hacettepe University Botanic Garden, Izmir

- Harran University, Atatürk Arboretum, Urfa
- Istanbul University, Alfred Heilbronn Botanic Garden, Istanbul
- Istanbul University, Istanbul
- Karaca Arboretum, Yalova
- Palmiye Merezi, Köyceğiz
- Reading University, UK (not local)
- Selçuk University
- Süleyman Demirel University Botanic Garden
- TEMA organisation

As stated above NGBB was the main local partner and their role in biodiversity issues is the cultivation of Turkish plants including an 'international standard' wild origin geophyte collection (which, of course, is of particular significance to Turkey) and many IUCN-listed species (*ex situ* conservation), biodiversity education and interpretation to increase public awareness, *in situ* conservation of the native plants of Istanbul and reintroduction programmes. NGBB was involved in this project from the start. They invited RBGE staff to Istanbul for a workshop before the project was conceived and then the project proposal was worked up jointly to ensure that the ideas being suggested were really needed on the ground. Collaboration in project development and delivery has been excellent and the relationship between RBGE and NGBB has developed and strengthened significantly. Initial plans were modified at the project proposal stage in response to local consultation but, once finalised, there was no need to make further changes as the two partners were in complete agreement about the project and how it was implemented.

During the lifetime of the project there was no collaboration with other Darwin projects in Turkey as, to the best of our knowledge, there were no other Darwin projects in the region. There was, however, on-going dialog within RBGE between other Darwin projects and this always provided helpful feedback on plans, ideas and problems. Names of other international partners were Reading University (Professor Vernon Heywood) and Botanic Gardens Conservation International (Sarah Oldfield).

It is too soon after the end of the project to know if local partners have been active. However, it is possible to report that in early June (3 months after the completion of the project) a meeting was held at NGBB to discuss their Master Plan and the development of strategy for the next five years and at that meeting many of the institutions listed above were present. Also, it should be noted that Prof Dr Adil Güner is highly respected within Turkey and his reputation alone, along with his personal network of professional colleagues, will ensure that partners continue to contribute to the project. Finally, NGBB now has such a good public profile that others want to associate with it, again ensuring that partnerships will continue.

As always it would be wonderful to have more community participation and this is already growing at a rapid rate. However, until access issues can be fully resolved (they are currently in the process of being resolved by the construction of a bridge over the motorway) it is not feasible to encourage the public much more than at present. There is certainly a role for the private sector and this is already being fully utilised through Nihat Gökyiğit and his group of companies, Tekfen.

9. Monitoring and Evaluation, Lesson Learning

The project was evaluated throughout its duration. David Rae visited the project at the start of each year to evaluate the previous year and finalise the programme for

the coming year. He and Prof Dr Adil Güner were able to have in-depth discussions about the delivery, value and monitoring of the project and through this format the project was monitored very carefully. Partly thanks to the detailed nature of the two application forms, which require considerable detail, every single small detail of each element had been carefully worked out in advance and so the project was quite easy to monitor against these pre-developed plans and expectations. It is true to say that the project stayed very close to the original expectations of what was planned and outcomes, and therefore the monitoring process, was quite straightforward. The application form made it very clear about what was going to be delivered and how it would be measured. Section 4 of this report matches very closely the plans given in the application form showing that everything intended was achieved. If this was deemed to be valuable when the project was selected for a Darwin Initiative project then the fact that all the anticipated outcomes have been achieved demonstrates amply that the project had value.

Practical outcomes that demonstrate that the project had value include:

- Successful collection and introduction of native plants
- Successful propagation and cultivation techniques
- Improve visual quality of the garden leading to increased visitor numbers
- Reintroduction of *Centaurea iconiensis*
- Delivery of numerous primary and secondary schools classes
- Successful operation of the children's garden
- Improving garden interpretation
- Increase in the number of teacher training classes
- Increased confidence of the staff in what they are achieving
- Successful outcome in staff training and in the RBGE Certificate of Practical Horticulture

In addition to the evaluation and monitoring carried out by David Rae and Prof Dr Adil Güner a meeting was held each year at RBGE to evaluate and monitor the project (internal evaluation). Also, while it would be wrong to suggest that this happened because of direct planning by the Darwin project, it could be said that the Master Plan meeting held at NGBB in June 2008 with representatives from many external organisations could be considered to be external evaluation as the operation and future programme of the whole of NGBB was considered, including the contribution of the Darwin project.

The key lessons drawn from the experience of this project (which were based on the experience of a similar project in Bhutan) are as follows (in no order of importance):

- Break the project down in simple, easily understood stages or elements
- Make sure that everybody taking part knows exactly what they have to do and what their budget is
- Make sure both institutions know exactly what is expected and what the outcomes need to be
- Ensure that there is no confusion or misunderstandings about money
- Don't be overambitious
- Encourage participating staff to write reports while carrying out their work, rather than months later
- Select practical resourceful staff to take part in project elements
- Practical, hands-on projects and training are greatly appreciated by host countries

- Careful planning at the start of the project and at the start of each year is essential and can save time later

Our general comment about Darwin Projects is to keep a balance between purely scientific projects and practical projects such as this one. While underpinning biodiversity research is, of course, absolutely essential, so are hands-on practical projects such as this. Also, by helping to strengthen a biodiversity institution such as NBGG through training and capacity building, it allows them to work more efficiently and effectively on their biodiversity. So, institutional capacity building through training and practical projects is of fundamental importance for Darwin funding and is something that RBGE and others can do very well, to the benefit of both organisations and the ultimate benefit of biodiversity.



Primary school education, 2006

10. Actions taken in response to annual report reviews

Reports in Year 1 and 2 were very favourable and we were very grateful for the positive and helpful feedback given. The only firm suggestion made from the Year 1 report was that we should evaluate our training by issuing feedback sheets and we subsequently did this (as reported in year 2). Luckily, the feedback was positive and it seemed that the training was being delivered in a helpful and understandable way but it was a very helpful comment and we were reassured by the responses made.

Five comments were made in response to the Year 2 report. These were all fair and reasonable questions which are answered below.

1. The comment was made that no reference could be found to Professor Güner's visit to RBGE and other botanic gardens scheduled for March 2007.

The reason for this was that his visit was re-scheduled to take place in Year 1 and this was reported on page 6 of the Year 1 report and also agreed with the Darwin Secretariat. For ease of reference that paragraph is reproduced below.

In January 2006 Prof Dr Adil Güner visited the UK for the management visit that should have taken place in Year 2. As already explained this visit was swapped with the visit that two staff from NGBB should have made to RBGE for horticultural experience. A very full and detailed programme of visits and discussions was prepared for Prof Dr Güner – both to meet staff in Edinburgh and also to visit other botanic gardens in Scotland so that he could discuss management issues with them. An additional benefit from this visit was that money was found in Turkey to fund Prof Dr Hayri Duman and Margaret Johnston to join the visit. A report of the visit can be found in Appendix VI

2. The second question referred to the programme for the propagation of threatened species from Turkey. Appendix VI shows the threatened plants growing in NGBB and lists their IUCN category and whether they are endemic or not. Numbers 83-90 are being grown (except *Thermopsis turcica*) with the intention of re-introducing them back to the wild. It is remarkable that such a young garden is in a position first of all to be growing so many threatened species and second to be considering re-introduction. In the application forms we kept on stressing that while NGBB had a long-term goal of contributing to the CBD, conservation and sustainability issues it could not do so until it was 'up and running' as a botanic garden. Therefore, before even considering the propagation of threatened species it was important to get the horticulture, propagation, cultivation and educational protocols working correctly and it might well have been many more years before the cultivation and re-introduction of threatened species was even considered. It is therefore remarkable that such a garden should have come so far so quickly to the extent that it is cultivating 117 threatened species. As can be seen from the list in Appendix VI most of these are bulbs which is entirely appropriate for a country like Turkey and this is the focus of their threatened plants programme. However, the Table shows that the Garden holds other threatened species particularly species growing in the new dry and halophytic garden. While the programme on bulbs will continue to dominate, the number of species growing in these other sections of the Garden will continue to grow slowly and a new focus will soon be threatened plants of the Istanbul region.
3. The third point related to the re-introduction of *Centaurea iconiensis*. NGBB has prepared a small poster to be displayed on BGCI's stand at the Beijing Olympics and a copy of that poster is shown in Appendix VII. *C. iconiensis* is a critically endangered endemic species from Central Anatolia. Only 22 plants were known in the wild and over a two year period seeds were collected, propagated and grown at NGBB. In 2007 in a programme involving local people 300 plants were transplanted into a fenced area in its original native habitat, 800km away from NGBB. It is only a year since the plants were re-introduced and so it is still too early to know if the programme has been a success but, to date, it is known that most of the original 300 plants have survived.
4. On re-reading the Year 2 report it is true that there is not a great deal on information on communication and dissemination and, while these aspects are touched upon in various parts of the Final Report there is no actual

section heading on Communication and Dissemination as in Annual Reports. NGBB in general and Mr Nihat Gökyiğit in particular are very good at communication and publicity and take every opportunity to ensure that NGBB, including the Darwin Initiative input into it, are included in TV programmes, radio programmes, press and marketing literature. Every time there is an activity, staff exchange, education programme or event it is recorded on video and frequently shown on Turkish TV. In addition Prof Dr Adil Güner has made presentations about NGBB (including the Darwin Initiative input into it) to many national in international programmes, most recently to a joint BGC/Italian Botanical Society meeting in Palermo in the Spring of 2007. At RBGE a lecture was given by David Rae at the annual staff conference and the project, along with Darwin's involvement, has been highlighted in presentations to numerous clubs, societies and meetings. A full article in RBGE's newsletter *The Botanics* was published in autumn 2007 and a copy of this is shown in Appendix VIII and a hard copy has been sent with the CD of this report. Likewise, a report has just been written to be included in RBGE's annual report for 2007/08. The authors therefore believed that even though they have not highlighted it particularly well in reports that communication and dissemination about NGBB in particular and the Darwin Initiative input in general has been good.

5. It was noted that an underspend in T&S had been re-allocated to capital items in Year 2, even though the total for the project was still within budget. I can confirm that this re-allocation was agreed between RBGE's Finance Department and the Darwin Secretariat.



Database training, 2006

11. Darwin Identity

The project has made every effort to publicise the Darwin Initiative and tell people what the programme is all about. The logo has been used on as many opportunities as possible, for instance on handouts, Powerpoint presentations, in reports and on attendance certificates. All staff, from both RBGE and NGBB have been informed about the Darwin Initiative, what it is for and what it tries to achieve. It is difficult to assess the extent of understanding of the Darwin Initiative in the whole of Turkey. It's obviously a very big country and while there are many protected areas there are not that many agencies or NGOs dealing with conservation issues neither, to our knowledge, are there any other Darwin Initiative projects taking place. Our conclusion, therefore, is that while everybody who has had anything to do with this project knows about the Darwin Initiative, understanding of it nationwide is not strong.



Workshop at the post Darwin project 2008 Master Plan meeting

12. Leverage

As already reported, it is pleasing to note that, due to the Darwin funding for the project, additional funds have been found to support other aspects of the project. Additional elements, over and above the initial project proposal, that were achieved are summarised as follows.

Year two

- Tony Garn, Robert Tyndall and Fiona Inches visited NGBB to give instruction on horticultural techniques, help with maintenance and provide further plant

records training. Tony Garn and Robert Tyndall visited for two weeks and Fiona Inches for one week.

- Phil Ashby (who had visited earlier in the year) was able to return to NGBB for a further period to continue the installation of the metrological station and helped further with the construction of the children's garden.

Year three

- In July and August of 2007 two horticultural students, Laura Cohen and Alan Elliott were able to visit the garden for an extended, six-week period of practical work.
- In October 2007 three botanical artists visited RBGE from NGBB to undertake training in botanical art. During their time at RBGE they were able to sit in on various art classes to develop their technique.
- In March and early April 2008 Alan Elliott and Emily Wood from RBGE were able to visit NGBB and deliver the practical RBGE Certificate in Horticulture course developed by Leigh Morris and discussed in Year 2 of the Darwin Project. Eight staff from NGBB were able to participate in this training course that led straight into assessment and then the Practical Certificate
- In early June 2008 David Rae and Professor Steve Blackmore (Regius Keeper, RBGE) visited NGBB to take part in a review of their five-year Masterplan, discussed a new agreement looking to future collaboration between these two botanic gardens and Professor Blackmore also presented RBGE Practical Certificate in Horticulture course certificates to the successful candidates in the practical horticultural training course.
- Two of the three botanical artists are currently working at RBGE further developing their botanical painting skills and also contributing to a book.

It is estimated that additional funding leveraged for this project, over and above that listed in the Stage 2 application form, amounted to just over £25,000. It is pleasing to note that not all of this came from the UK and that a substantial proportion came from efforts made by NGBB.



Semi natural area of NGBB showing native oak plantings

13. Sustainability and Legacy

Having been involved in other Darwin Initiative project, both directly and indirectly I (David Rae) am convinced that the impact of this Darwin initiative project will endure for a considerable length of time. The reasons I believe this to be the case are as follows:

- The aspirations for the project, as presented in the application forms, were well planned, practical and achievable
- Staff at NGBB are enthusiastic, hard working and well managed
- The relationship between RBGE and Turkish botany (in general) and NGBB (in particular) have strong historical roots and all parties knew what to expect and how 'things' would be done
- With RBGE's special interest in Turkey/NGBB this was regarded as one in a series of partnership projects, not just a 'one-off', and other projects will follow
- NGBB has a very committed, hard-working and visionary Director (Prof Dr Adil Güner) who will ensure that the legacy lives on, that the lessons learnt will be applied and that the two institutions will carry on working together into the future
- Sufficient staff from both institutions have been involved in the project meaning that if one or two staff from each place left, then there are still enough who have been involved for the legacy to live on.

All project staff are permanent employees of either NGBB or RBGE and they will continue to be employed after the project ceases. The resources purchased by the project, like the database, are now property of NGBB and will continue to be used. So, neither staff or equipment will be 'lost' at the end of the project. NGBB and RBGE have developed an agreement to continue the partnership after the conclusion of the Darwin project and, already, there has been a meeting at NGBB after the conclusion of the project. We therefore believe that the partners will very definitely keep in touch after the end of the project and funds will be sought to continue the project, including a further application to the Darwin Initiative.



Delegates at the 2006 Conference

14. Value for money

Both partners believe that the project has been excellent value for money. A lot has been achieved and there is a tangible increase in the quality of NGBB in terms of garden landscape, collection quality, staff training and confidence and their ability to propagate and cultivate plants. The application form made it very clear that the ultimate purpose of the project was to enable NGBB to contribute to the objectives of the CBD but that prior to that being a possibility a whole lot of basic practices and procedures had been learnt and put in place. We both believe that the 'nuts and bolts' of being a botanic garden are now in place, thanks largely to the Darwin Project, and that NGBB is now poised, able to start contributing to the wider issues of plant conservation through improved horticulture and education.



The peace and serenity of NGBB contrasts with the backdrop of high rise flats and the motorway