



## Darwin Initiative Annual Report



Department  
for Environment  
Food & Rural Affairs

### Darwin Project Information

Project Reference	20-013
Project Title	Medicinal root trade, plant conservation and local livelihoods in southern Morocco
Host Country/ies	Morocco
Contract Holder Institution	Global Diversity Foundation
Partner institutions	High Atlas Foundation; Institut Scientifique, Université Mohammed V-Agdal, Rabat; Regional Herbarium and Ecology & Environment Laboratory, Cadi Ayyad University; Department of Environment, Ministry of Energy, Mines, Water and Environment
Darwin Grant Value	£279,950
Start/end dates of project	1 April 2013 – 31 March 2016
Reporting period (eg Apr 2013 – Mar 2014) and number (eg Annual Report 1, 2, 3)	Apr 2013 – Mar 2014 Annual Report 1
Project Leader name	Gary J Martin
Project website	A general description of the project is available on GDF's UK website, <a href="http://www.global-diversity.org/north-africa/projects/medicinal-root-trade">http://www.global-diversity.org/north-africa/projects/medicinal-root-trade</a> and periodic updates are posted on the GDF North Africa news page <a href="http://www.global-diversity.org/north-africa-news">http://www.global-diversity.org/north-africa-news</a>
Report author(s) and date	Gary J Martin and Emily Caruso with input from Hassan Rankou, Larbi Didouquen, Yossef Ben-Meir and colleagues from other partner institutions. 31 July 2014

### 1. Project Rationale

As set out in our project proposal, we are addressing threats to the sustainable harvest of vulnerable plant resources in unique and biodiverse Moroccan Mediterranean ecosystems. This is essential in maintaining the ecological integrity of Important Plants Areas (IPAs), ensuring the subsistence of millions of herbal remedy users, and sustaining commercial trade that contributes to the livelihoods of thousands of collectors, vendors and traditional practitioners. Our previous ethnobotanical research in southern Morocco, which identified more than 300 species of commercialized medicinal plants, led us to focus on medicinal roots, particularly vulnerable to unsustainable harvesting yet in high demand in domestic and international trade. We enhanced our understanding through interactions with colleagues from academic, government and non-governmental institutions, and through participatory research with rural collectors and urban herbalists. This project also addresses poverty alleviation in Morocco. The 12<sup>th</sup> largest exporter of medicinal and aromatic plants (MAPs) in the world with a centuries old tradition of trade in herbal products, Morocco faces the challenge of conserving biodiversity while encouraging rural peoples to benefit economically from wild-crafting and value-adding activities. According to the UNDP, the annual national income is nearly \$25 million from cultivated MAPs and \$37 million from wild-crafted species. Morocco is keen to expand its share of a \$15 billion global market while mainstreaming biodiversity conservation throughout the value chain.

Our project focuses on two rural communes in the Atlas Mountain corridor of Morocco – Imegdale and Ait M'hamed. These communities are situated in highly biodiverse areas – with significant levels of plant endemism – and are highly dependent on agriculture, with approximately 70% of the population involved in animal husbandry and crop production.

Ait M'hamed in Azilal Province has a population, as reported in the 2004 ten-yearly census, of nearly 21,742 people in 3190 households in 47 douars, with an average of 6.8 people per household. Ait M'hamed comprises a sub-basin of the Oum Er Rbia river basin and is situated near the proposed Western High Atlas National Park. The population is highly rural, with only 10% of people living in urbanized areas. Indicators of development are low: around 10% of the households have domestic drinking water, electricity and plumbing. Agriculture and animal husbandry, dependent on grazing in forests and pastures, are the primary economic activities. Most agricultural plots are smaller than 5 ha, and irrigation reaches only 6% of cultivated lands. There are about 94,000 apple, almond and walnut trees, far from the agroforestry potential of the commune. Seasonal and permanent migration are an important factor, with more than 350 families having permanently left the area, and more than 2,200 individuals who seek temporary work in Morocco's urban areas. Collection of *Anacyclus pyrethrum* and other medicinal and aromatic plants is historically important and currently practiced by hundreds of community members. The commune authorities are keen to expand the cultivation of these plant resources, and are collaborating in the establishment of a nursery, funded in part through this project, that will produce fruit and nut trees as well as medicinal plants for distribution to community members.

Imegdale, in Al Haouz Province, has a population of over 5,500 people in more than 1,000 households, with an average of 5.3 people per household, distributed in 17 douars (villages). As with Ait M'hamed, the population is highly rural, and indicators of development are low: only 7% of the households have domestic drinking water, 14% have electricity and 29% have a septic tank. Imegdale neighbors Toubkal National Park and the Tiradine and Takherhort Hunting Reserves and is a sub-basin of the Nfis river basin. The wild harvest of thyme, lavender, artemisia and other medicinal and aromatic plants is an important economic activity of nearly 900 community collectors. Through this project, the members of a local cooperative and the commune authorities are establishing a community-based plant nursery and exploring other ways of ensuring the sustainability of plant harvesting and improving their livelihoods.

In annex 4, we present various maps of the location and main geographical features of these rural communes.

## **2. Project Partnerships**

All project partners participated in the launch workshop of the project, held in 31 May-1 April 2013 near Tahanaoute in the High Atlas mountains. Mr Larbi Didouquen and Dr Abderrahim Ouarghidi represented the High Atlas Foundation, Mr Mostafa Madbouhi came from the Department of Environment, Ministry of Energy, Mines, Water and Environment while the Scientific Institute of Université Mohammed V-Agdal, Rabat sent Mohammed Sghir Taleb. Prof Ahmed Ouhammou of the Regional Herbarium and Ecology & Environment Laboratory, Cadi Ayyad University was able to attend the second day with his colleague Nadia Bouab. Our *de facto* partners were also represented, as the workshop was attended by Dr Ali Chafai Elalaoui of the UNDP/GEF Medicinal and Aromatic Plants Programme and Ms. Soraya Mokhtari, Director of Toubkal National Park, which is part of the Division of Parks and Natural Reserves of the High Commission of Water and Forests. The workshop was an opportunity to reconfirm the interest from diverse institutions in the Darwin Initiative project and share concerns about sustainable harvest of medicinal and aromatic plants and community livelihoods, which respond to specific goals of the host country.

The Global Diversity Foundation has maintained a relationship with all of the above named individuals, and other representatives of these institutions, and they were involved in project planning and decision-making according to the roles noted in our project proposal. As evidenced by the number of joint visits for participatory planning and project implementation in

the communities, GDF had a particularly close collaboration with the High Atlas Foundation during the first year of this project, during which the establishment of plant nurseries and other community activities were a central focus. We also had frequent interactions with Ahmed Ouhammou of the Cadi Ayyad University, who supported field research and training opportunities. Both HAF and Cadi Ayyad University are located in Marrakech, a city near the two field sites and the place where GDF has its base in Morocco. Institutions in Rabat, which is about four hours from Marrakech, were consulted on key elements of the project development, but have had – as planned – a less active role in field activities.

One challenge of working with government institutions, such as the High Commission of Water and Forests and Department of Environment, Ministry of Energy, Mines, Water and Environment is the amount of administrative effort and time required to maintain collaboration and to assure participation in specific events. We have met this challenge by requesting support from Dr Mohammed Rejdali, a member of the Moroccan Parliament, and head of the governmental oversight committee for these institutions. Dr Rejdali, when he was a professor of botany at the Agricultural and Veterinary Institute, was a partner on previous Darwin Initiative grants in Morocco, and is highly supportive of the work being carried out in the current project.

The relationship among institutions involved in the project was further cemented by the establishment of the Moroccan Plants and Livelihoods Special Group (MPLSG), which was established at the launch workshop. Although a significant amount of work remains to consolidate the MPLSG, its official acceptance by the IUCN as a part of the Mediterranean Plant Specialist Group shows promise of expanding communication among partner institutions and other stakeholders in Morocco.

### **3. Project Progress**

#### **3.1 Progress in carrying out project activities**

We put special emphasis in this report on detailing and illustrating progress in completing activities anticipated in year one of the project, as we will be in a better position to outline general progress toward outputs and outcome as the project advances.

Output 1. Understanding of change in abundance, distribution and harvest of 10 species of medicinal roots and in overall plant diversity of communal lands, forest domains and protected areas in two rural townships

Hassan Rankou contributed to baseline studies of medicinal roots by gathering data through field and herbaria visits and consultation of the scientific literature. His focus was on completing draft conservation status assessments of ten species (*Ammoides pusilla*, *Anacyclus pyrethrum*, *Aristolochia paucinervis*, *Bunium bulbocastanum*, *Carlina gummiifera*, *Corrigiola telephiifolia*, *Corrigiola litoralis*, *Ferula communis*, *Mandragora autumnalis*, *Silene vulgaris*, *Valeriana tuberosa*). Dr. Mohamed Fennane of the Institut Scientifique of Mohammed V-Agdal Rabat University and Prof. Ahmed Ouhammou of the Regional Herbarium of Marrakech's Cadi Ayyad University have reviewed and provided specialist input for the assessments. As one example, we have included the draft assessment of mandrake (*Mandragora autumnalis*) as annex 5.

These assessments will be edited and completed with additional field observations during the course of the project. As part of this work, Hassan is compiling data for a database of red-listed plants including not only the species noted above but also a broader range of endemic and medicinal plants, and specific taxonomic groups such as the monocots (see annex 6 for an excerpt of a manuscript on redlisting of monocots – including some medicinal roots – prepared in the first year of the project). These assessments provide insights to understand change in abundance, distribution and harvest of medicinal roots of communal lands, forest domains and protected areas in two rural townships and more broadly in Morocco.

Although Darwin funds arrived too late to conduct initial plant diversity surveys in spring 2013, we engaged in consultations to obtain consent to carry out botanical collections in 2014. In addition, we identified candidates who can work as community researchers to conduct the plant diversity surveys and participate in other collaborative research projects during the course of the project. The plant collections they will make in spring and summer 2014 and beyond enable

the establishment of community herbaria and the enrichment of botanical collections held in the herbaria of Cadi Ayyad University in Marrakech and the Institut Scientifique in Rabat. We also made progress in planning the ecological studies of species such as *Anacyclus pyrethrum* in future years of the project. Consolidating the data collected by Abderrahim Ouarghidi for his doctoral thesis prior to the beginning of the Darwin project will provide a baseline for monitoring of harvested plant populations over the next two years. See annex 7 for an initial photo essay of plant surveys in spring 2014.

Output 2. Participatory planning conducted in two townships, generating socio-economic and environmental data to assist community decision-making throughout the project cycle and delivering a comprehensive assessment of livelihood impacts by project end

Participatory planning has proceeded apace since the project began.

Our efforts to compile socio-economic and environmental assessments already conducted in Ait M'hamed produced limited results, as the 'monographs' required by the Moroccan government's decentralization programme contain quite general data and the HAF's participatory processes yield valuable qualitative data that requires systematization. HAF conducted baseline surveys, with a particular focus on assessing community needs in Imegdale and other communities in the Al Haouz Province. We engaged in planning more robust socio-economic and environmental assessments in 2014, including an in-depth ethnographic study to be conducted by a University of Kent masters student, Laura Boyd-Clowes, who will assess the impact of HAF's fruit and nut tree distribution in a selected community of Imegdale rural commune. In addition, we plan to support Abderrahim Ouarghidi to conduct household surveys, historical timelines and focus groups in Ait M'hamed to generate additional socio-economic and environmental baseline data.

Output 3. Two community plant nurseries established, leading to production of 40,000 individual seedlings and saplings, and their distribution to 1000 households engaged in terrace cultivation and enrichment planting.

With our partner the High Atlas Foundation we are fully engaged in establishing fruit and nut tree and medicinal plant nurseries in the two rural communes where we work, Ait M'hamed and Imegdale, to enable terrace cultivation and enrichment planting of selected medicinal roots and tree crops. HAF obtained formal permission from local and national authorities and private owners to use land dedicated to the plant nurseries, and their establishment is now well advanced.

In October 2013, Mohamed El Haouzi and Larbi Didouqen travelled to the Imegdale rural commune in El Haouz Province, and visited the 2 hectare parcel of land kindly offered by the commune itself for the creation of a plant and tree nursery, the water tower and the pump that permits water to reach the water tower. They met with community members at Douar Ighrm. The 20 people present at the meeting, who come from different douars (villages) of the Imegdale commune, expressed their desire to have specific fruit trees and medicinal and aromatic plants in the nursery, and listed them in order of priority. All present at the meeting agreed that the first step in the creation of the nursery would be to arrange for water to be channeled from the water tower to the nursery via a piping system and an electrical substation. Two community members, Hassan Ait Ba and Hamid Ait Baskad, were chosen to work in the nursery and to eventually collaborate in community-based research. We identified Fadma Ait Iligh, from the neighbouring community of Talat n'Yacoub as the community research coordinator, to be employed starting in May 2014. A native speaker of Amazigh, she is also fluent in Arabic and French. She holds an undergraduate degree in geography from the Cadi Ayyad University, and has four years of experience with community outreach and non-profit organizations.

The 2 ha nursery has now been established and is capable of growing up to 200,000 trees. By March of 2014, community members had planted 200 trees, consisting of 120 olives and 80 almonds. A 165 m<sup>3</sup> basin is now functional, fed by both the water in a nearby ravine and the pumped water from the tower that is fed by a riverside well. With both manual labor and a tractor, three terraces were built, with the following dimensions: 120m x 7m = 840m<sup>2</sup>; 180m x 8m = 1440m<sup>2</sup> and 30mx7m = 210m<sup>2</sup>. In April, the drip irrigation system will be installed, opening

the possibility of planting many thousands of seeds and seedlings. This progress was facilitated by 10 site visits by GDF and HAF personnel and 3 additional community meetings discussing the implementation of the work. HAF is planning another round of visits in the context of the exchange program Direction Provinciale d'Agriculture (DPA), and other activities in collaboration with GDF.

The establishment of the plant nursery at Ait M'hamed is even more advanced, because HAF has conducted participatory planning exercises and in-depth discussions with local authorities about development projects there since 2010. In fact, its interest began in 2007, when the commune of Ait M'hamed was identified as one of the poorest in the province of Azilal by the *Agence de Développement Social*. Ait M'hamed represented an interesting development challenge: the valley is divided into *Bernat*, which is wealthy in natural resources and has quite well developed human resources and *Afla Noudrar*, which is significantly less developed and suffers greatly during severe winter weather. HAF had begun project planning in 2010 through community meetings, focus group discussions and other qualitative assessments with local medicinal plant collectors and farmers in the *Alfa Noudrar* side of the valley.

Thanks to the partnership agreement with the Commune of Ait M'Hamed, and with the collaboration of GDF, a 800 m<sup>2</sup> nursery was established. It is projected to produce 20,000 trees (10,000 almonds and 10,000 walnuts). By March 2014, the land was prepared and drip irrigation installed, allowing the planting of 20,000 seeds, despite some serious winter weather disruptions. A full-time community caretaker of the nursery has been identified, and is being trained. The almonds trees will be grafted after one year, and all the trees will be ready to distribute within two years. HAF is now negotiating another parcel of land for the medicinal plant nursery. It is expected that the work on the medicinal plant nursery will start in the second year of the Darwin project. See annex 8 for an initial photo essay of the plant nursery construction.

Output 4. Policy guidelines developed based on international expertise and practical case studies to advise government agencies and other stakeholders responsible for implementation of the GSCP, NBSAP, National Strategy on MAPs and other instruments related to the environment and sustainable development.

As proposed, an initial stakeholders workshop launched the project (see annex 9 for a report of workshop). The kick-off, which took place on 31 May and 1 June, focused on equitable medicinal plant trade, biodiversity conservation and local livelihoods in Morocco. It was held in Kasbah Angour near the rural town of Tahanaout, and was attended by thirty participants representing government agencies with jurisdiction over natural resources, environmental and conservation NGOs, scientific and academic institutions, and horticultural organisations.

All participants were asked to reflect on individual efforts and institutional commitments to ensure the conservation and sustainable use of medicinal plants in order to support local livelihoods in Morocco. The workshop provided them with a vital platform both to engage in mutual learning about current initiatives and to explore potential collaboration between institutions and projects. This was facilitated by short 15 to 30 minute presentations with questions and answer sessions, and small working group discussions of 6 to 7 people on the topics "Assessing conservation status", "Ensuring *in situ* sustainability", "Implementing conservation policy", "Optimizing *ex situ* production" and "Sustaining local livelihoods".

The workshop ended with a final plenary session in which the Moroccan Plant and Livelihoods Specialist Group (MPLSG) was created as a new network that will be guided in its early stages by focal point Hassan Rankou. The main role of the MPLSG will be to contribute to documenting, conserving and sustaining plant diversity use in Morocco, thereby leading to a measurable improvement in local livelihoods and a reduction in the loss of biodiversity. The group will also provide information to the general public on the conservation of plants in Morocco and on the inherent value of species to ecosystem health and functioning, the provision of ecosystem services and support of human livelihoods. It is hoped that its members will form a highly-regarded and influential network of species experts that is able to influence

conservation and livelihood outcomes at local, national and global scales, through engaging with each other and collaborating with the CBD Secretariat and IUCN.

It was agreed that the MPLSG will assist in assessments of the status of species according to IUCN criteria and categories, develop species conservation action plans and strategies, support community development initiatives, prepare technical guidelines and contribute to policy statements. It will deliver and promote this technical knowledge, advice and policy guidance to those who can influence the implementation of conservation action in Morocco. Another important role of the MPLSG is to create a Red List Threatened Species for Morocco in collaboration with the Global Species Programme (GSP) staff in the IUCN Secretariat, and in partnership with other organisations in order to identify threats to these species and landscapes, and prioritise and promote necessary conservation and livelihood support actions. MPLSG members, comprised of conservation and social scientists and practitioners, will maintain contact with the focal point and respond to requests that help the MPLSG to pursue its objectives in a timely manner.

Among other dissemination activities, we would like to call attention to a TedxMarrakech talk on the Darwin Initiative project presented by Gary Martin, who was introduced by Clive Alderton, the British Ambassador to Morocco. The talk went online on 18 November (see [www.youtube.com/watch?v=BXOXBx5LVw0](http://www.youtube.com/watch?v=BXOXBx5LVw0)) and has already been viewed nearly 950 times.

### **3.2 Progress towards project outputs**

Overall, progress towards project outputs has proceeded as planned.

Regarding output 1, this period we have progressed towards generating an “Understanding of change in abundance, distribution and harvest of 10 species of medicinal roots and in overall plant diversity” through the production of conservation assessments of 10 species of medicinal plant roots and the launching of the floristic and ecological surveys. These establish the baseline upon which we can assess changes in subsequent years. The photo essay in Annex 7 provides evidence of this.

Regarding output 2, we are well advanced in the “Participatory planning [...] in two townships, generating socioeconomic and environmental data to assist community decision-making [...] and delivering a comprehensive assessment of livelihood impacts by project end”. We have compiled the limited existing socio-economic data and have launched participatory research to enhance this baseline, and to broaden its scope by embracing assessments of human wellbeing.

Progress towards output 3 is well underway, with two community plant nurseries established, and over 20,000 seedlings growing so far and regularly supervisory visits carried out. The photo essay in Annex 8 provides evidence of this.

Regarding output 4, we have built the foundation for developing “policy guidelines [...] based on international expertise and practical case studies [...]” to support Moroccan policy-making and implementation. Through participants at the two project workshops to date, we have collated a draft portfolio of case studies on medicinal plant conservation. Through the establishment of the Moroccan Plant and Livelihoods Specialist Group we have gathered national and international expertise to support the project’s goal of conserving the nation’s diverse and endemic plants while ensuring sustainable livelihoods for rural communities.

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

To date, we have made steady progress on key elements of the outcome expected by the end of year 1 of the project. In particular, the draft conservation assessments for 10 medicinal plant roots have all been produced (see activities). Hand-in-hand with the plant specimen collection carried out with students and community members, this contributes to the establishment of a baseline of plant diversity in the two project field sites. This baseline is essential in order to be able to assess later whether the project is contributing to the conservation of vulnerable plant

species in the collection areas of the community members from participating communes. The indicators for this element of the outcome are appropriate and the assumptions hold true.

Furthermore, in both communes, the plant nurseries have been established and seedlings of fruit and nut trees and medicinal plants are being grown. This is the first step towards the 'viable income increases for medicinal plant collectors and supplementary livelihood benefits for other community members' element of the outcome. There are signs that the indicator for this element of the outcome is appropriate, especially given communities' stated desire for these plant nurseries as income support and willingness to work with the project to establish them.

However, in line with a growing trend in the social sciences towards using the more holistic 'wellbeing' approach to assessing socio-economic status rather than the traditional reliance on economic indicators, we are planning to assess the project's outcome related to improving incomes by using both wellbeing indicators and a participatory and dialogue-based (ethnographic) approach rather than relying exclusively on economic figures. Relatedly, the socio-economic baselines for each community are being prepared using this participatory approach. The assumption that the communities would be willing participants and that local governments would grant land and authorisation for nurseries held true.

The project is contributing to the building of individual capacity at community level, particularly through the employment of young community researchers with an interest in community-based sustainable development. On a broader level, a multi-institutional partnership has already been established and formalised under the umbrella of the IUCN Species Survival Commission – the Moroccan Plant and Livelihoods Specialist Group, which counts 30 individuals already. In the first year the establishment of this group constituted the first step towards the project's input to Morocco's fulfilment of specific targets of the GSPC. The indicators are appropriate for this element of the Outcome and the assumptions have so far held true.

It is likely that it might take longer than 3 years to obtain a full picture of the conservation outcomes for floristic and ecological diversity of the areas under study, and the increase in income and wellbeing for community members. We expect that the specialist group we have established will allow continuity in the pursuit of these goals, and we are seeking additional funds to continue our work beyond March 2016. We have succeeded in obtaining a large grant from the Critical Ecosystems Partnership Fund that complements the work we are doing under the Darwin grant, in particular by adding a hydrological focus. We plan to submit a proposal to the MAVA Foundation for a three-year grant for a project on cultural practices that lead to plant conservation at a genetic, species and landscape level that would continue our work in Ait M'hamed and Imegdale through the end of 2017.

### **3.4 Goal/ Impact: achievement of positive impact on biodiversity and poverty alleviation**

The project proposal's Impact reads:

“Drawing on Indigenous knowledge and practice, Moroccan medicinal plants are sustainably harvested and profitably cultivated, strengthening the ecological integrity of Important Plant Areas, subsistence practices of millions of rural and urban herbal remedy users, and commercial trade that improves livelihoods of thousands of collectors, vendors and traditional practitioners. Morocco incorporates the Global Strategy for Plant Conservation in its revised NBSAP and makes substantial progress on all five GSPC objectives, contributing to its efforts in achieving the Millennium Development Goals of halving poverty, improving health and enhancing environmental sustainability by 2015, and meeting Aichi Biodiversity Targets by 2020.”

While it is yet premature to make claims about the project's overall impact, it is clear that the current project progress is paving the way for the achievement of this stated impact. At this stage of the project we are laying the foundations not only for achieving the project's own goals (as explained in other sections of the report) but also for generating a replicable and adaptable approach that can be scaled up to other Important Plant Areas in Morocco where communities

rely on collecting wild medicinal plants for their livelihoods, yet where plant populations are rendered vulnerable by this collection.

The clear stages and elements of this approach are already clear in this reporting period's achievements: (i) generating socio-economic and environmental baselines (conservation assessments of vulnerable plant species, floristic and ecological surveys, participatory research into community needs and priorities); (ii) establishing plant nurseries with fruit and nut trees; (iii) fostering community ownership of the project through the training of community researchers and a highly participatory approach; and (iv) the establishment of a multi-institutional partnership for sharing lessons learned, innovations and practices in plant conservation and local livelihoods.

Key Moroccan government agencies – in particular the Environment Department that is responsible for the revision of the NBSAP – are fully participant in the project through the steering committee. The solid connection and continuous communication between the project and these agencies will pave the way for Morocco to incorporate the GSCP in the revised NBSAP and make good progress on the achieving the GSPC objectives, the MDGs and key Aichi Biodiversity targets.

As this report makes clear, human development and welfare are at the centre of project activities. We provide direct economic benefits to plant-collecting dependent communities through the cultivation and distribution of fruit and nut trees and medicinal and aromatic plant from plant nurseries. We also work towards ensuring that the traditional activity of medicinal plant harvesting – both for the generation of income through sale and local wellbeing through use in herbal remedies – is sustained by improving management and regenerating wild populations.

#### **4. Project support to the Conventions (CBD, CMS and/or CITES)**

One of the explicit objectives of the project is to assist the Moroccan government as it implements the Global Strategy for Plant Conservation (GSPC), contributing to its revised National Biodiversity Strategy and Action Plan (NBSAP) and to achieving specific Aichi targets.

In terms of the GPSC, the project specifically seeks to support its implementation in Morocco by:

- (i) Contributing to the global and Moroccan database of plant species (Target 1). This is being done by collecting data from floristic and ecological surveys. See Annex 7 for a photo essay on this process.
- (ii) Providing assessments of the conservation status of plant species (Target 2). To date, Dr. Hassan Rankou has produced conservation assessments for 10 medicinal root species; Dr. Rankou is also compiling data from a broader range of endemic and medicinal for a database of red-listed plants.
- (iii) Creating a Moroccan Plants and Livelihoods Specialist Group that provides a platform for governmental and non-governmental institutions, individuals and organisations interested in the conservation of Moroccan biodiversity to work cohesively towards plant conservation (Target 16). The MPLSG was created in May 2013 and welcomed by the IUCN Species Survival Commission as a formal sub-group of the IUCN Mediterranean Plant Specialist Group. The MPLSG is set to work closely with Moroccan government agencies to strengthen the implementation of the GSPC at the national level and embed it into the NBSAP; it also establishes a forum for participation and information-sharing in the implementation of the GSPC (Target 3).
- (iv) Reducing the pressure on wild-harvested medicinal plant species through income-generating projects in communities who collect medicinal plants for a living (Target 11). Income-generating activities – the establishment of plant nurseries and

enrichment planting – have already begun in the two project field-sites as illustrated in annex 8.

There are a number of specific Aichi biodiversity targets that this project addresses directly (2; 7; 9; 11; 12 and 13). However, in this first reporting period, we have specifically focused on Target 2 – assessing the conservation status of plant species to guide conservation action (see above on Dr. Hassan Rankou's work) – as all of the other targets to be addressed require this as a baseline and will be tackled in years 2 and 3.

Three of the CBD Moroccan National Focal Points noted on the CBD website (<http://www.cbd.int/countries/nfp/?country=ma>) are involved in our project. Prof. Mohamed Fennane, our main project partner, is the National Focal Point (NFP) for the CBD's Global Strategy for Plant Conservation for Morocco. He was directly involved in the kick-off workshop and is a principal contributor to Year 2's workshop on the GSPC. Prof. Fennane has also provided institutional support to Dr. Hassan Rankou, the projects' conservation assessment and red-listing consultant, on the development of the conservation assessments of 10 species of medicinal plant roots and other endemic and medicinal plants.

Another project partner, Dr. Mostafa Madbouhi, is NFP for the Clearing-House Mechanism and for Access and Benefit Sharing and the Intergovernmental Committee for the Nagoya Protocol. He represents Mme Latifa Lakfifi, CBD National Focal Point, in the project. Among his responsibilities in the Department of Environment is the reformulation of Morocco's NBSAP. The Moroccan Plant Specialist Group, formed in Year 1 of the project, will be instrumental in gathering data and information to feed in to the process of revision of the NBSAP. A third *de facto* partner, Mohammed Ribí is the Protected Areas National Focal Point for Morocco. In Year 1 of the project, Mostafa Madbouhi participated in the project's kick-off workshop in May 2013.

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

Although it is too early to show evidence that the project is working to alleviate poverty, we have described above the creation of the plant nurseries, and the successful germination of thousands of almond and walnut seeds, which is a notable achievement for the first year of the project and a first step to providing livelihood benefits.

The immediate beneficiaries are the over 27,000 Amazigh people in more than 4000 households in 64 villages of two rural communes, described in more detailed in section 1 - Project Rationale. As noted in our proposal, we hope to achieve direct impacts by building on proven income improvement strategies, such as the production of fruit and nut saplings for distribution to households that have available land and labour. Given low yields in current agricultural activities, we provide the necessary support to establish orchards, improve yields, and enhance post-harvest processing with HAF. Given a continuously growing local demand, we expect that distribution of fruit and nut trees for thousands of households will increase wellbeing and enhance economic security for medicinal plant collecting households and others. Finally, by cultivating medicinal plants and promoting culturally and ecologically appropriate harvesting techniques, we envisage improving the livelihoods of medicinal root traders. In sum, the goal of the plant nurseries is to not only generate viable income increases for medicinal plant collectors thus providing a direct benefit for the livelihoods of rural families, but also supplement the income of a wider range of families through cultivation and marketing of organic fruits and nuts that have an expanding market in Morocco and internationally.

## **6. Monitoring, evaluation and lessons**

Monitoring and evaluation of achievements is built in to the very structure of the project. The first year of the project has been dedicated to establishing socio-economic and environmental baselines upon which to measure the progress of project activities. Our indicators of achievement are therefore, to a large extent, planned for fulfilment by the end of the project.

During this reporting period, the conservation assessments of 10 medicinal plant roots have been carried out, providing us with a baseline upon which to assess changes in abundance and

distribution of these roots at project's end. A preliminary socio-economic baseline has been established, although it is being deepened with participatory and ethnographic research that also takes into account community wellbeing parameters.

On a day-to-day basis, the project's progress is monitored by the steering committee, which is composed of representatives of 5 institutions: Dr Gary Martin for GDF, Yossef Ben-Meir for High Atlas Foundation, Prof. Mohamed Fennane for the Institut Scientifique, Prof. Ahmed Ouhammou for Cadi Ayyad University, and Mostafa Madbouhi for the Environment Department. The steering committee has met twice since the inception of the project (June 2013 and March 2014), with plans for more regular meetings in the next two years of the project. During these meetings progress in project activities and measures to ensure timely achievement are discussed. We hope the other approaches and methods we employ internally to monitor and evaluate the project have been made clear in previous sections, but we are happy to respond to any questions from the reviewer of this report.

One of the questions we had when beginning this project was the relative role of Moroccan consultants, postgraduate students and community researchers in conducting the fieldwork needed to analyse the conservation status of medicinal roots, the overall plant diversity and the socio-economic status of two rural communes in the Middle and High Atlas mountains. A key lesson learned this year is that a combination of consultants and community researchers will allow us to achieve the goals of the project. Hassan Rankou has demonstrated a keen ability to produce results while interacting in a culturally sensitive way with other stakeholders in Moroccan communities and institutions, and we fully expect Abderrahim Ouarghidi to achieve similar success. In addition, they will play a key role in monitoring and evaluating the outputs and ensuring legacy once the project finishes. We were pleased to find skilled individuals, the majority with university degrees, who could collaborate as community researchers. Although they will require substantial capacity building and supervision by GDF, HAF and other institutional partners, they bring to the project the advantages of local knowledge and residence. We have been less convinced by the potential role of university students, who are rather constrained by the requirements of their postgraduate programs and have a limited amount of time – and perhaps little ambition – to spend the extended time in the field that the project requires. This realisation will be built into our future plans, as we dedicate more effort to working with consultants and community researchers. We remain open to discovering one or more postgraduate students who have a passion for fieldwork and the intellectual curiosity to pursue a research project that fits the goals of our project.

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

Not applicable, as this is the first annual report.

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

We did not face any particular difficulties or risks in the first year of the project. Receiving the first advance of funds nearly three months after the official start date of a project is a challenge for small organizations like GDF that do not have large amount of unrestricted funds to pre-finance activities. This led us to delay some aspects of the project such as initiating botanical collecting, establishing of plant nurseries and compiling socio-economic data. As noted elsewhere, we are integrating a wellbeing approach to documenting the socio-economic benefits derived from the project.

## **9. Sustainability**

Our efforts to raise the profile of the project and to promote our work have been addressed in other sections that discuss the launch workshop and public presentations. Because broader impact will take significantly longer than the three years of Darwin funding, our project is designed to be readily scalable to a national level. Part of our exit strategy is to implement activities that provide added value to ongoing initiatives, especially the community nurseries of

HAF – which is keen to be engaged in medicinal plant cultivation – and the herbarium club of Cadi Ayyad University, which is building the capacity of postgraduate students interested in biodiversity management and research. In our original proposal, we noted that we expect young professionals like Abderrahim Ouarghidi and Hassan Rankou to maintain their commitment to biodiversity conservation and community development in Morocco, and this remains a core part of our exit strategy. While it is premature to claim increasing interest and capacity for biodiversity resulting from the project, we are pleased with the consent and enthusiasm of community members who are engaged in botanical collecting and the establishment of plant nurseries. Because of all of the reasons above, we are cautiously optimistic that project outputs, purpose/outcome and impacts could be sustained.

## 10. Darwin Identity

Despite the relatively small amount of Darwin Initiative grants awarded for work in Morocco since the inception of the programme, it is relatively well known among people involved in biodiversity research and conservation. The kick-off workshop described above was a major opportunity to reinforce this public recognition. Many of the stakeholders were already familiar with the Initiative because they had received or collaborated on Darwin grants in the past, and this includes people who hold influential positions in academia and the government. In a presentation in the workshop, our Darwin Initiative support was portrayed as funding for a distinct project with a clear identity. In the context of training events at Cadi Ayyad University, the Darwin Initiative was explained to Biodiversity master students. The Darwin Initiative logo was used in presentations, including the TEDx talk cited above.

## 11. Project Expenditure

Please expand and complete Table 1.

**Table 1 project expenditure during the reporting period (1 April 2013 – 31 March 2014)**

Project spend since last annual report	2013/14 Grant (£)	2013/14 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			1.2	Slight overspend due to currency variation
Consultancy costs			11	Slightly higher than expected costs for consultants in first year
Overhead Costs			0	N/A
Travel and subsistence			-2.6	Slightly lower than expected travel costs
Operating Costs			-1.5	Slight underspend due to lower than anticipated community costs in first year
Capital items (see below)			0.1	Insignificant difference
Others (see below)			-0.4	Insignificant difference
<b>TOTAL</b>				

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

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

I agree for the Darwin Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here)

The following story – submitted as part of a longer editorial to Samara, a publication of the Millennium Seed Bank of the Royal Botanic Gardens, Kew – may be useful for Darwin Initiative dissemination and promotion purposes:

As the sun rises over Imegdale, an Amazigh community in the High Atlas mountains south of Marrakech, there is a new feature on the landscape. A two hectare plant nursery is starting to green the arid lands surrounding the village, with a water basin, drip irrigation system, greenhouse and sprouting almond and walnut seedlings. Imegdale is home to hundreds of seasonal collectors of medicinal and aromatic plants, especially local species of artemisia, lavender and thyme. They are keen to explore cultivation of these wild-harvested species as well as domesticated medicinal and aromatic plants. Along with the almond and walnut trees, plants produced in the community plant nursery will be distributed in coming years to many families who live in the dispersed villages that make up Imegdale.

Some 300 km to the northeast, a plant nursery in Ait M'hamed will have another story to tell. Amazigh plant harvesters in this Middle Atlas community seek pellitory (*Anacyclus pyrethrum*) root above all other medicinal plants. The region witnessed yields that declined by more than 75% over the last decade as commercial value and harvesting pressure soared. A small plot of 10,000 almond and 10,000 walnut seedlings for distribution in the community promises some economic relief in coming years, but there is even greater enthusiasm for a planned half hectare nursery that will be dedicated to pellitory and other medicinal plants. An enrichment planting scheme for private lands and well-managed commons will hopefully restore the *Anacyclus* population while continuing to support livelihoods based on customary harvest. Global Diversity Foundation and High Atlas Foundation are collaborating on the creation of these nurseries, which are part of a broader development and research initiative that blends agroforestry, biodiversity and hydrology. Learning techniques of botanical collection, plant cultivation and seed saving, whether for wild or domesticated species, is part of the capacity building program for the community researchers who also tend the community nurseries.

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2013-2014

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
<p><b>Goal/Impact</b></p> <p>Drawing on Indigenous knowledge and practice, Moroccan medicinal plants are sustainably harvested and profitably cultivated, strengthening the ecological integrity of Important Plant Areas, subsistence practices of millions of rural and urban herbal remedy users, and commercial trade that improves livelihoods of thousands of collectors, vendors and traditional practitioners. Morocco incorporates the Global Strategy for Plant Conservation in its revised NBSAP and makes substantial progress on all five GSPC objectives, contributing to its efforts in achieving the Millennium Development Goals of halving poverty, improving health and enhancing environmental sustainability by 2015, and meeting Aichi Biodiversity Targets by 2020.</p>		<p>Initial steps towards sustainable use of medicinal plants in Morocco have been taken: baseline floristic, ecological and socio-economic surveys are underway as is the provision of environmentally and economically sustainable sources of income for wild-harvesting communities.</p> <p>Steps have been taken towards embedding the GSPC in the revised NBSAP through targeted communications with responsible government agencies and representatives of these being partners of the policy- and action-oriented specialist multi-institutional group launched by this project.</p>	
<p><b>Purpose/Outcome</b> Conservation assessment, sustainable harvesting, cultivation and protection of ten wild-crafted medicinal roots in two High Atlas Amazigh townships contributes to:</p> <ul style="list-style-type: none"> <li>• viable income increases for medicinal plant collectors and supplementary livelihood benefits for other community members</li> <li>• conservation of vulnerable plant species in protected areas, forest domains and <i>agdals</i> (community conserved areas) leading to effective management and governance of genetic, species and landscape diversity in Important Plant Areas representative of unique High Atlas Mediterranean</li> </ul>	<p>(1) Assessment of the conservation status of ten wild-harvested medicinal roots includes perspectives of diverse stakeholders by year 2 leading to implementation of specific measures to reduce overexploitation by year 3;</p> <p>(2) In two participating townships, annual income from trade in roots increase by 50% for 200 households of medicinal plant collectors, and annual income increases by 10% - 20% for another 800 households, reducing poverty levels by year 3.</p> <p>(3) Marked decrease in population loss of target species in sampled transects in <i>agdals</i>, forest domain and protected areas accompanied by maintenance of overall floristic richness of Important Plant Areas and increased cultivation of</p>	<p>(1) draft conservation assessments have been prepared for 10 wild-harvested medicinal plant roots.</p> <p>(2) government and communal authorities have granted land and authorisation for plant nurseries in the 2 participating townships; these have been established, fruit and nut seedlings planted and management begun; communities have provided their free prior and informed consent for all current project activities and households are willing and active in the management of the nurseries</p> <p>(3) floristic and ecological surveys have begun; nursery production records have started; all academic institutions and individuals are willing and active in</p>	<p>(1) Finalisation of the draft conservation assessments; further assessments of other endemic and medicinal plant species to be prepared by Dr. Hassan Rankou</p> <p>(2) management of the nurseries will continue, including planting of income-generating medicinal plant seedlings;</p> <p>(3) floristic and ecological surveys will continue and intensify;</p> <p>(4) A third stakeholder workshop will be organised on the topic of best practices in ethical approaches to community-based research, plant harvesting, and application of the Nagoya protocol in Morocco;</p> <p>(5) further consolidation of the MPLSG;</p>

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
<p>vegetation types;</p> <ul style="list-style-type: none"> <li>nondirect benefits from Moroccan policy changes related to the Global Strategy for Plant Conservation;</li> <li>building of individual capacity and multi-institutional partnerships on conservation and sustainable livelihoods.</li> </ul>	<p>medicinal plants by year 3;</p> <p>(4) GSPC embedded in the NBSAP by year 2 and progress in achieving the general objectives and specific targets of the GSPC by year 3.</p> <p>(5) Creation of a multi-institutional partnership by year 1 creates increased dialogue among at least 25 representatives of academic institutions, government agencies and non-governmental organisations by year 3, resulting in consensus on conservation action.</p>	<p>this element of the project; community researchers have been elected by participating communities to carry out monitoring and community liaison work.</p> <p>(4) Commitment to implementing the GSPC and embedding it in the NBSAP is present; communication with government agencies responsible for producing the NBSAP and reviewing GSPC targets in Morocco is good.</p> <p>(5) multi-institutional partnership, the <i>Moroccan Plant and Livelihoods Specialist Group</i> has been formed, composed of 30 individuals to date; all partners are willing and motivated to collaborate for plant conservation and sustainable livelihoods.</p>	<p>Dr. Gary Martin will give a paper presentation on early project results at the Congress of the International Society for Ethnobiology in Bhutan in June 2014.</p>
<p><b>Output 1.</b> Understanding of change in abundance, distribution and harvest of 10 species of medicinal roots and in overall plant diversity of communal lands, forest domains and protected areas in two rural townships</p>	<p>Baseline studies of abundance, distribution and harvest of medicinal root species produced by yr 1 and reviewed by relevant members of the steering committee</p> <p>Overall plant diversity surveys of communal lands, forest domains and protected areas near two rural townships completed over two seasons by yr 2 and reviewed by steering committee</p> <p>Changes in abundance, distribution and harvest of medicinal roots and overall plant diversity documented by yr 3</p> <p>Conference on ethnobotany, plant diversity and ecology hosted by Herbarium Club at Cadi Ayyad University for students, researchers and other stakeholders in yr 3</p> <p>Paper on change in medicinal root</p>	<p>Dr. Hassan Rankou carried out draft conservation assessments of 10 medicinal plant root species – this constitutes the baseline studies of abundance, distribution and harvest.</p> <p>Given the delay in the arrival of funds (first transfer arrived on 19/06/2013) – and that the prime season for field studies is April to early June – we effectively missed the botanical survey season in Year 1. The plant diversity surveys will therefore be carried out in year 2 and year 3 and if needed in year 4 if a no-cost extension is granted</p> <p>The other indicators relate to Years 2 and 3 of the project.</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
	harvesting and plant diversity under different governance scenarios submitted for peer review by yr 3		
Activity 1.1. Baseline studies of medicinal roots produced		Our work in the first year focused on producing preliminary conservation assessments of the medicinal roots.	
Activity 1.2. Initial plant diversity surveys completed		Given the relatively late arrival of funds, as mentioned above, we focused on defining the area where the plant diversity surveys would be conducted, and in identifying community researchers who would be involved. We have now identified a team of 6 community researchers (3 per participating township); they have participated in plant specimen collecting activities and will be trained in monitoring techniques throughout the next period.	
<b>Output 2.</b> Participatory planning conducted in two townships, generating socioeconomic and environmental data to assist community decision-making throughout the project cycle and delivering a comprehensive assessment of livelihood impacts by project end	<p>Compilation of existing socio-economic and environmental assessments by middle of yr 1</p> <p>Baseline surveys conducted by end of yr 1 used to update existing data and explore trends</p> <p>Community evaluation of participatory planning conducted by middle of yr 2 reviewed by steering committee</p> <p>Working paper on change over time in socio-economic and environmental parameters submitted to Department of Environment and High Commission on Water and Forest by yr 3</p>	<p>Given the limited nature of available socio-economic and environmental data, we have had to be more creative while establishing socio-economic baselines. This involves the systematisation of qualitative data resulting from in-depth participatory processes and the planning of further ethnographic and participatory data-gathering activities as mentioned in section 3.1. This is planned for completion by the middle of yr 2.</p> <p>Given the delay in generating these baselines, it is likely that the community evaluation of participatory planning will take place towards the end of yr 2 or early in yr 3. It might also slightly delay the submission of the working paper, as it ideally we would leave sufficient time between the establishment of the baselines and the assessment of change.</p>	
Activity 2.1. Socio-economic and environmental assessments compiled		Existing socio-economic and environmental assessments have been compiled; however these do not produce a sufficient standard of data so further research has been planned.	
Activity 2.2. Baseline surveys conducted		Given the low quality of existing data this task has been more onerous than predicted. The activity has begun, as explained in section 3.1, but we are planning on finishing by the middle of yr 2.	
<b>Output 3.</b> Two community plant nurseries established, leading to production of 40,000 individual seedlings and saplings, and their distribution to 1000 households	<p>Two nurseries, with 180 m<sup>2</sup> greenhouses, fencing and irrigation installed by yr 1</p> <p>Production and distribution of a total of</p>	Progress towards this output has taken place as planned, with the nurseries established, planted and irrigated in both townships; a greenhouse in Imegdale has been built and will be covered with netting in yr 2 and a greenhouse is planned for the medicinal plant nursery of Ait M'hamed in yr 2, by the end of year 1 planting had already begun in earnest ensuring that the second indicator will be	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
engaged in terrace cultivation and enrichment planting.	<p>20,000 plants per rural township by yr 3</p> <p>Overview of periodic supervisory field visits submitted at end of yr 1, 2 and 3; reviewed by steering committee</p> <p>Community exchanges organised among key participants from target rural townships and from the MAP Programme site in the Middle Atlas</p> <p>Income derived from medicinal root trade increased 50% to £450/yr for 200 collector HH; income for 800 HH increased on average by £125/yr (10%-20%) from cultivation and processing of fruits, nuts and orris roots by yr 3</p> <p>Summary analysis of survival rate of seedlings and saplings compiled by end yr 3</p>	<p>achieved in advance of schedule.</p> <p>As explained in section 3.3 of this report, we are seeking a more holistic and socially relevant approach to assessing the success of our income-generating activities: we are planning to do so using a wellbeing based approach. Such approaches are being developed by a wide variety of institutions. We will rely to a large extent on the work carried out by researchers at the Centre for Development Studies of Bath University, and we will use ethnographic and interactive approaches. If culturally appropriate we will assess income levels as planned within the context of these approaches.</p> <p>The remainder of the indicators are, so far, appropriate and achievable.</p>	
Activity 3.1. Nurseries established		This activity has been completed.	
Activity 3.2. Seedlings and saplings produced and distributed		<p>20,000 seeds (10,000 walnut and 10,000 almond seeds) have been planted in the nursery at Ait M'hamet.</p> <p>120 olive trees and 80 almond trees have been planted in the nursery at Imegdale.</p> <p>Both nurseries are being prepped to plant further medicinal plant seeds and, in the case of Imegdale, fruit and nut trees.</p>	
Activity 3.3. Periodic supervisory field visits made		Multiple supervisory visits have been carried out in yr 1. See the photo essay in Annex 8.	
Activity 3.4. Community exchanges organized		<p>No community exchange has taken place in year 1. Our proposal's schedule indicates that we would carry out 3 community exchanges, one in each year. However, given that we would like the community exchanges to grapple with the core project components of increased medicinal plant root availability and the income-generating potential of the nurseries – both of which are at an incipient stage – we have decided to carry out two community exchanges in yr 2 and yr 3. This also makes more sense given the fact that we are working with 2 rural townships, each being able to visit each other in one given year. We are exploring the possibility of conducting exchanges between the two rural communes where we work and those involved in the UNDP/GEF Medicinal and Aromatic Plants</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
		Programme.	
<p><b>Output 4.</b> Policy guidelines developed based on international expertise and practical case studies to advise government agencies and other stakeholders responsible for implementation of the GSCP, NBSAP, National Strategy on MAPs and other instruments related to the environment and sustainable development</p>	<p>Three stakeholder workshops conducted by end of yr 2</p> <p>Project results disseminated in four international academic and policy venues by end of yr 3</p> <p>Steering committee established by month 3 leading to formulation of a broader working group on plant conservation</p> <p>Case studies and expert opinions submitted to the Department of Environment, High Commission for Water and Forest and Institut scientifique for inclusion in revised NBSAP, MAP National Strategy and reviews of Important Plants Areas study and GSPC implementation in Morocco by yr 3</p>	<p>Progress on completing this output is ongoing as planned, with a steering committee established early on in the project and one of the three stakeholder workshops completed. The case studies to be shared with government agencies take root in all of the above activities; these case studies are currently being shaped through the continuous work being carried out in Imedgale and Ait M'hamet. In Morocco, the project is being disseminated to a lay yet influential audience through popular communication platforms such as the TEDx Marrakech. More in-depth, academic presentations are planned for yrs 2 and 3.</p>	
Activity 4.1. Workshops conducted		<p>The first stakeholder workshop was held 31 May-1 June 2013 near Tahanaout in the High Atlas. The second stakeholder workshop was planned and carried out on 31 March-1 April 2014 (although we will report that workshop in yr 2).</p>	
Activity 4.2. Presentations made		<p>On 21 September 2013, Dr. Gary Martin gave a TEDxMarrakech talk on this project – entitled <i>Aphrodisiacs and Botanical Livelihoods</i> – to a diverse audience of 150 people. The video on youtube (<a href="https://www.youtube.com/watch?v=BXOXBx5LVw0">https://www.youtube.com/watch?v=BXOXBx5LVw0</a>) has been seen 956 times (on 24 July 2014)</p> <p>Dr. Martin also presented on 22 February 2014 a talk at the <i>Colloque Botanique</i> of the Jardin Majorelle in Marrakech to about 150 people including members of the International Dendrology Society. His talk was entitled <i>Reflections on resilient trees of Morocco : argan, cedar, cypress, and other tales</i>; he discussed elements of the Darwin-funded project.</p> <p>He will present an overview of the Darwin project in a session on 'Medicinal plant itineraries: new analytical approaches on the production, trade and use of herbal remedies' at the 14<sup>th</sup> congress of the International Society of Ethnobiology in Bumthang, Bhutan in June 2014</p>	

Project summary	Measurable Indicators	Progress and Achievements April 2013 - March 2014	Actions required/planned for next period
Activity 4.3. Steering committee established, meet regularly		The steering committee was established early on in the project. It is composed of Dr. Gary Martin (Project Leader and Director of GDF), Dr. Mohamed Fennane (Institut Scientifique, Rabat), Prof. Ahmed Ouhammou (Regional Herbarium of the Cadi Ayyad University, Marrakech), Yossef Ben-Meir (High Atlas Foundation), and Mostafa Madbouhi (Environment Department of the Ministry for Water and Environment). It has met twice: in May 2013 at the kick-off workshop and in March 2014 at the second stakeholder workshop. A third meeting in late 2014 is being planned.	

## Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal/Impact Drawing on Indigenous knowledge and practice, Moroccan medicinal plants are sustainably harvested and profitably cultivated, strengthening the ecological integrity of Important Plant Areas, subsistence practices of millions of rural and urban herbal remedy users, and commercial trade that improves livelihoods of thousands of collectors, vendors and traditional practitioners. Morocco incorporates the Global Strategy for Plant Conservation in its revised NBSAP and makes substantial progress on all five GSPC objectives, contributing to its efforts in achieving the Millennium Development Goals of halving poverty, improving health and enhancing environmental sustainability by 2015, and meeting Aichi Biodiversity Targets by 2020.</p>			
<p>Purpose/Outcome</p> <p>Conservation assessment, sustainable harvesting, cultivation and protection of ten wild-crafted medicinal roots in two High Atlas Amazigh townships contributes to:</p> <p>(1) viable income increases for medicinal plant collectors and supplementary livelihood benefits for other community members;</p> <p>(2) conservation of vulnerable plant species in protected areas, forest domains and <i>agdals</i> (community conserved areas) leading to effective management and governance of genetic, species and landscape diversity in Important Plant Areas representative of unique High Atlas Mediterranean vegetation types;</p> <p>(3) nondirect benefits from Moroccan policy changes related to the Global Strategy</p>	<p>(1) Assessment of the conservation status of ten wild-harvested medicinal roots includes perspectives of diverse stakeholders by year 2 leading to implementation of specific measures to reduce overexploitation by year 3;</p> <p>(2) In two participating townships, annual income from trade in roots increase by 50% for 200 households of medicinal plant collectors, and annual income increases by 10% - 20% for another 800 households, reducing poverty levels by year 3.</p> <p>(3) Marked decrease in population loss of target species in sampled transects in <i>agdals</i>, forest domain and protected areas accompanied by maintenance of overall floristic richness of Important Plant Areas and increased cultivation of medicinal plants by year 3;</p> <p>(4) GSPC embedded in the NBSAP by year 2 and progress in achieving the general objectives and specific targets of the GSPC by year 3.</p> <p>(5) Creation of a multi-institutional partnership by year 1 creates increased</p>	<p>(1) Written conservation assessments for 10 species prepared according to IUCN guidelines; community management plans that specify conservation measures for each species;</p> <p>(2) Socio-economic surveys demonstrating income change and poverty reduction as compared to new and existing baseline studies;</p> <p>(3) Results of ecological surveys, floristic inventories and community-based monitoring; nursery production records specifying number of plants produced and distributed; results from in-field cultivated plant sample survey;</p> <p>(4) 5th national CBD report (due in March 2014) and mid-term review of the GSPC in 2015, both including case studies and recommendations from the Darwin project;</p>	<p>(1) Sufficient data available through scientific literature, field research and stakeholder consultation to complete conservation assessments and reach consensus on measures to reduce overexploitation;</p> <p>(2) Academic institutions provide sufficient expertise, field research and student supervision to achieve ecological surveys and floristic inventories; communities motivated to engage in periodic monitoring;</p> <p>(3) Governmental and communal authorities grant land and authorisation for nurseries, and permission provided for research, monitoring and evaluation;</p> <p>(4) Households motivated to plant and tend seedlings and saplings, continue sustainable harvesting techniques and embrace new practices as necessary;</p> <p>(5) Current level of national government commitment to implementation of GSPC and its integration in the NBSAP maintained throughout project;</p> <p>(6) All stakeholders find common ground</p>

for Plant Conservation; (4) building of individual capacity and multi-institutional partnerships on conservation and sustainable livelihoods.	dialogue among at least 25 representatives of academic institutions, government agencies and non-governmental organisations by year 3, resulting in consensus on conservation action.	(5) Reports from steering committee meetings and stakeholder workshops; roster of participants in all events.	and purpose when establishing action partnership over the course of the project.
<p>Outputs</p> <p>(1) Understanding of change in abundance, distribution and harvest of 10 species of medicinal roots and in overall plant diversity of communal lands, forest domains and protected areas in two rural townships</p>	<p>Baseline studies of abundance, distribution and harvest of medicinal root species produced by yr 1 and reviewed by relevant members of the steering committee</p> <p>Overall plant diversity surveys of communal lands, forest domains and protected areas near two rural townships completed over two seasons by yr 2 and reviewed by steering committee</p> <p>Changes in abundance, distribution and harvest of medicinal roots and overall plant diversity documented by yr 3</p> <p>Conference on ethnobotany, plant diversity and ecology hosted by Herbarium Club at Cadi Ayyad University for students, researchers and other stakeholders in yr 3</p> <p>Paper on change in medicinal root harvesting and plant diversity under different governance scenarios submitted for peer review by yr 3</p>	<p>Analysed data sets and draft reports of ecological and floristic surveys</p> <p>Conference proceedings</p> <p>Draft manuscript for review</p> <p>Photo essay of community-based botanical research</p>	<p>Students available to assist in scientific research and are diligent in finishing projects in a timely manner</p> <p>Agreements reached with local and national authorities on community nurseries and research protocols</p> <p>Staff turnover manageable and project partners maintain participation for three years</p> <p>Free, prior and informed consent given by community for all development and research activities</p>
Activity 1.1 Baseline studies of medicinal roots produced			
Activity 1.2 Initial plant diversity surveys completed			
Activity 1.3 Final ecological and floristic surveys conducted			
Activity 1.4 Conference organized			
Activity 1.5 Peer review paper submitted			

<p>(2) Participatory planning conducted in two townships, generating socio-economic and environmental data to assist community decision-making throughout the project cycle and delivering a comprehensive assessment of livelihood impacts by project end</p>	<p>Compilation of existing socio-economic and environmental assessments by middle of yr 1          Baseline surveys conducted by end of yr 1 used to update existing data and explore trends          Community evaluation of participatory planning conducted by middle of yr 2 reviewed by steering committee          Working paper on change over time in socio-economic and environmental parameters submitted to Department of Environment and High Commission on Water and Forest by yr 3</p>	<p>Compiled assessments, surveys and evaluations;          Draft working paper</p>	<p>Free, prior and informed consent given by community for all development and research activities          Agreements reached with local and national authorities on community nurseries and research protocols</p>
<p>Activity 2.1 Socio-economic and environmental assessments compiled</p>			
<p>Activity 2.2 Baseline surveys conducted</p>			
<p>Activity 2.3 Community evaluation conducted</p>			
<p>Activity 2.4 Working paper submitted</p>			
<p>(3) Two community plant nurseries established, leading to production of 40,000 individual seedlings and saplings, and their distribution to 1000 households engaged in terrace cultivation and enrichment planting.</p>	<p>Two nurseries, with 180 m<sup>2</sup> greenhouses, fencing and irrigation installed by yr 1          Production and distribution of a total of 20,000 plants per rural township by yr 3          Overview of periodic supervisory field visits submitted at end of yr 1, 2 and 3; reviewed by steering committee          Community exchanges organised among key participants from target rural townships and from the MAP Programme site in the Middle Atlas          Income derived from medicinal root trade increased 50% to £450/yr for 200 collector HH; income for 800 HH increased on average by £125/yr (10%-20%) from cultivation and processing of</p>	<p>Photo essay of nursery construction          Project notes from supervisory visits          Survey data of seedling and sapling survival rates          Economic data on HH income improvement          Video of community exchanges</p>	<p>Agreements reached with local and national authorities on community nurseries and research protocols          Free, prior and informed consent given by community for all development and research activities          Agroforestry products (fruits, nuts) and roots (medicinal and orris) continue to be easily marketed and maintain monetary value throughout project</p>

	fruits, nuts and orris roots by yr 3 Summary analysis of survival rate of seedlings and saplings compiled by end yr 3		
Activity 3.1 Nurseries established			
Activity 3.2 Seedlings and saplings produced and distributed			
Activity 3.3 Periodic supervisory field visits made			
Activity 3.4 Community exchanges organised			
Activity 3.5 HH income surveys completed			
Activity 3.6 Plant survival rate assessed			
(4) Policy guidelines developed based on international expertise and practical case studies to advise government agencies and other stakeholders responsible for implementation of the GSCP, NBSAP, National Strategy on MAPs and other instruments related to the environment and sustainable development.	Three stakeholder workshops conducted by end of yr 2 Project results disseminated in four international academic and policy venues by end of yr 3 Steering committee established by month 3 leading to formulation of a broader working group on plant conservation Case studies and expert opinions submitted to the Department of Environment, High Commission for Water and Forest and Institut scientifique for inclusion in revised NBSAP, MAP National Strategy and reviews of Important Plants Areas study and GSPC implementation in Morocco by yr 3	Case study working drafts Expert opinion submissions Final modified versions of government policy instruments External evaluations	Staff turnover manageable and project partners maintain participation for three years
Activity 4.1 Workshops conducted			
Activity 4.2 Presentations made			
Activity 4.3 Steering committee and working group established			
Activity 4.4 Case studies and expert opinions submitted			
Activity 4.5 External midterm and final evaluation			

## Annex 3 Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for reporting period	Total planned during the project
4C 4D	Postgraduate students from Marrakech carried out short training on botanical field methods (1 week training course)	15	15	0	0	15	15	30
5	6 community researchers, 4 of whom have undergraduate degrees, 4 months in year 1	4	4	4	0	4	4	4
8	Gary Martin and Emily Caruso time on project work in Morocco (weeks)	10	15	15	0	10	10	40
9	Conservation assessments for 10 species of endangered plants in Morocco	10	0	0	0	10	10	10
10	Reports of ecological and floristic surveys	0	2	0	0	0	0	2
11A 11B	Papers to be published in peer reviewed journals Papers submitted for peer review	0 0	1 0	2 0	0 2	0 0	0 0	3 2
12B	Database of redlisted species enhanced and made available in Morocco	0	0	1	0	0	0	1
13A 13B	Community herbaria established in Imeddale and Ait Mhamed and collections enhanced at Cadi Ayyad and Institut Scientifique herbaria	0	2	2	0	0	0	4
14A 14B	Stakeholder workshops organised near Marrakech	1	1	1	0	1	1	3
15A	1 national press release on the creation of the	1	0	1	0	1	1	2

	Moroccan Plant Specialist Group							
16A 16B 16C	GDF newsletter circulated to 2500 recipients internationally	1	1	1	0	1	1	3
17A	Dissemination network as a result of the kick-off workshop – the Moroccan Plant Specialise Group dissemination network	1	0	0	0	1	1	1
20	2x water pumps, 2x greenhouse materials, 2x wells and water basins, 2x production materials for plants  Plant collecting monitoring supplies	£24,000  £3,500	0  £3,500	0  £3,500	0  0	£24,000  £3,500	£24,000  £3,500	£24,000  £10,500
21	NGO to be established	0	0	1	0	0	0	1
23	CEPF small grant CEPF large grant	£20,000	£39,600	£34,500	£28,000	£20,000 0	£20,000 0	£115,300 (includes 13% overheads)

**Table 2 Publications**

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
N/A				

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

We have included the following supplementary material in annexes sent as separate files to accompany this report:

Annex 4. Project location maps

Annex 5. Draft conservation assessment of mandrake (*Mandragora autumnalis*)

Annex 6: excerpt from the first manuscript on Conservation Assessments and Red Listing of the endemic Moroccan Flora

Annex 7. Photo Essay: Plant specimen collection in Ait M'hamed and Imegdale communes

Annex 8. Photo Essay: The establishment of plant nurseries in Ait M'hamed and Imegdale

Annex 9. Report from the Workshop on Plant Conservation and Local Livelihoods in Morocco (project kick-off workshop)

## Checklist for submission

	Check
<b>Is the report less than 10MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	Yes
<b>Is your report more than 10MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	No
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Yes
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Pending
Do not include claim forms or other communications with this report.	