

# Implementing the GSPC in the Caribbean UK Overseas Territories

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## INTRODUCCION

The Global Strategy for Plant Conservation (GSPC) has been embraced by the Royal Botanic Gardens, Kew as a guiding document for working with international partners (Ali, 2008; GSPC, 2002). Capacity building is an essential component of all activities in recognition of the importance of achieving Targets 15 and 16 (Clubbe & al. 2008).

The UK Overseas Territories (UKOTs) comprise 16 former British colonies that have elected to retain their direct British links and as such form part of the United Kingdom. Kew's UK Overseas Territories Programme is working to help Territories implement the GSPC (UKOTs, 2008) and this paper highlights our work with partners in the Caribbean UKOTs – Anguilla, British Virgin Islands (BVI), Cayman Islands, Montserrat and Turks and Caicos Islands (TCI). Like many small islands, Caribbean UKOTs face a wide range of challenges in conserving their biodiversity and retaining ecosystem services whilst enabling development and the maintenance of livelihoods. Within the context of the current and on-going threats to plant diversity in these Territories habitat loss and fragmentation, invasive alien species, development, and the increasing threat of global climate change are the most significant.

At the heart of the UKOTs programme is a comprehensive work plan of specimen and data collection, mapping and capacity building in Territories plus facilitating access to historical specimens and data held at Kew. This enables progress towards achieving Targets 1, 2 and 3 (understanding and documenting plant diversity) and Targets 5, 7, 8 and 10 (conservation of plant diversity). With this information materials can be developed to promote education & awareness raising of plant conservation to achieve Target 14. This is all underpinned by an extensive programme of capacity building which contributes to the achievement of Targets 15 and 16.

## Understanding and Documenting Plant Diversity in Caribbean UKOTs

Currently our main focus is on delivering Targets 1 (checklist) and 2 (red list) which underpin the achievement of virtually all other Targets. We are scanning and databasing all the Caribbean UKOT specimens in Kew's Herbarium built-up from more than 150 years of collecting. Scanning herbarium specimens is a very time-consuming

process and we are being assisted by volunteers who receive training in scanning procedures and to date more than 4000 specimens have been scanned. These images and their associated data will be available on-line so they can be viewed directly from computers in Territory providing there is sufficient bandwidth to download the images. In the interim images and data are copied to DVD and sent directly to partners for immediate use. During databasing plant taxonomy is being up-dated where necessary in the light of new developments and understanding and old names retained as synonyms within the database.

Historical data held at Kew can only provide a picture of the past and although comprising a useful dataset it is important to supplement it with recent collections to determine the current status of the flora and to guide conservation decision making. The current status and distribution of plant species is being evaluated by field data collection. For example as part of a recently completed Darwin Initiative funded project in Montserrat a biodiversity assessment was completed (Young 2008). This included a comprehensive assessment of the status of Montserrat plants, the first since much of the island was destroyed by a series of volcanic eruptions and associated pyroclastic flows in 1995-1997 (Hamilton & al. 2008). Over 1000 plant species have been identified, an increase of nearly 30% on earlier work (Howard 1974-1989), although virtually all this increase is accounted for by introduced species, some of which are highly invasive and pose a real threat to native communities. Fieldwork continues in all the Territories and there is a real possibility that Target 1 will be met for all five Caribbean UKOTs.

The combination of a field checklist together with distributional information enables assessments to be made using the International Union of Conservation Nature (IUCN) red list criteria to determine which species are threatened with extinction (IUCN 2001). Assessing the whole flora enables a Red List to be completed for each Territory which can act as a guide to developing conservation priorities based on risk of extinction. The Red List for the Cayman Islands is complete (Burton 2008) and candidate red lists have been produced for Montserrat (Hamilton & al. 2008), and are in preparation for BVI and TCI. More fieldwork is required for Anguilla, but achieving Target 2 for all the Caribbean UKOTs is still a possibility by 2010.

The current focus of activity in implementing Target 3 is the development of horticulture protocols for threatened species and in training local counterparts in horticulture techniques. A full horticulture protocol involves determining experimentally the optimal germination and growing conditions for a threatened species through to first flowering and successful seed set. The completed protocol comprises details of the horticulture trials together with a full species dossier detailing current knowledge of the species and its status. Protocols are repatriated to the relevant partners in Territory and horticulture needs identified, usually in the context of supporting the local botanic garden. Recently completed horticulture protocols include for the critically endangered tree *Acacia anegadensis* endemic to BVI (Hamilton & al. 2007) and the critically endangered shrub *Rondeletia buxifolia* endemic to Montserrat (Corcoran & al. 2008). Several more are underway in the Tropical Nursery at Kew on threatened species from TCI and the Cayman Islands.

### Conserving Plant Diversity in Caribbean UKOTs

Conservation of plant diversity must be based on robust, reliable botanical information which is why achieving Targets 1 and 2 are so vital. Conserving threatened species *in situ* (Target 7) can be achieved through using the threatened species criteria for identifying Important Plant Areas (IPAs - Target 5). Although in its very early stages in Caribbean UKOTs some progress is being made. In Montserrat two IPAs have been identified based on the occurrence of two critically endangered endemics, *Rondeletia buxifolia* and *Epidendrum montserratense*. Species action plans are being developed for these two species and recommendations made for long-term conservation measures, both *in situ* and *ex situ*. In BVI, the whole island of Anegada is a candidate IPA based on the presence of five endemic and threatened plant species (Clubbe & al. 2004).

Kew's Millennium Seed Bank Project has an active programme of seed collecting, storage and training with the Caribbean UKOTs. Training has taken place in BVI, Cayman Islands, Montserrat and TCI, and funding provided to support on-going seed collecting. A significant proportion of the threatened species from these islands is banked at the Millennium Seed Bank and these Territories are well on the way to achieving Target 8. Several Territories have established native species nurseries and are growing native species, including threatened species for reintroduction programmes and to increase the use of native species in landscaping. In Grand Cayman the recently re-discovered endemic Cayman sage (*Salvia caymanensis*) has been bulked up at the Queen Elizabeth II Botanic Park and is being sold commercially. It has been widely planted around the island and the original re-discovered population is thriving. In Montserrat the endemic *Rondeletia buxifolia* has been planted out as a demonstration hedge bordering the newly

established Montserrat Botanic Garden. Early indications are that this species grows really well as a hedging plant and will be used for landscaping. In Middle Caicos, TCI a nursery has been established and seeds and rescued seedlings of the endemic national tree, *Pinus caribaea var bahamensis*, are being grown as an *ex situ* collection. The wild population of this species is being devastated by an introduced scale insect. The *ex situ* plants will eventually be used as a basis for a re-introduction programme once there is reasonable potential for success.

It is widely recognised that invasive alien species are the second most severe threat to biodiversity after habitat destruction and that the impacts of invasive species are particularly severe on small island ecosystems. Target 10 of the GSPC is a response to this situation. A review of the non-native species in United Kingdom (UK) Overseas Territories confirmed the widespread occurrence of invasive species in UKOTs and highlighted their severe threats and impacts (Varnham 2006). We are documenting non-native species and evaluating their invasive status on an initial 3-point scale: introduced, naturalised or invasive. Some invasive species are widespread and pose threats to all Caribbean UKOTs whilst others are more localised in their occurrence and impacts. The sandy beach shrub, *Scaevola sericea* originally from the Indo-Pacific is spreading throughout the Caribbean and negatively impacting indigenous sandy beach communities. In Grand Cayman the native *Scaevola plumeri* is being out-competed by *S. sericea* and has been reduced to two small populations of a few individuals on the south coast of Grand Cayman. Seed has been collected and plants grown at the native species nursery at Queen Elizabeth II (QEII) Botanic Park in an attempt to prevent the extirpation of this species from Grand Cayman. A programme of *S. sericea* removal has also been started. In Montserrat more than 150 non-native plant species have been documented and several of these pose a real threat to the indigenous plant communities. These include *Psidium guajava*, *Casuarina equisetifolia*, *Cryptostegia madagascariensis* and *Spathoglottis plicata* (Hamilton & al. 2008).

### Promoting Education and Awareness about Plant Diversity in Caribbean UKOTs

Target 14 highlights the need to promote the importance of plant diversity, and the need for its conservation in communication, education and public awareness programmes. This has become a central element of Kew's Caribbean UKOTs programme. The involvement of local communities, school children and society in general with our field programmes is well established. Regular radio interviews, press releases and newspaper articles together with project newsletters all provide the community with access to field activities, results and information. A

series of biodiversity posters has been produced for BVI, Montserrat and TCI and are viewable in key public buildings, in schools and on the Kew website ([www.kew.org/ukots](http://www.kew.org/ukots)). Plant naming competitions have been a great success in BVI. Some local endemic species have no common name, usually due to a lack of use by the local community or a rare plant that is little known locally and we have held plant naming competitions. Schoolchildren are taken out on a field trip to see the plant species and a talk is given in the school about its importance and the need for conservation. A competition is then held to choose a local name for it. Consequently, the single island endemic, *Metastelma anegadense* is now known on Anegada as wire wist and the two-island endemic cactus, *Leptocereus quadricostatus* is known as prickly web. Both species are critically endangered and face threats from habitat fragmentation, invasive species and potentially from climate change as most of their habitat in Anegada is less than 3m above sea level.

#### **Building Capacity for the Conservation of Plant Diversity in Caribbean UKOTs**

Capacity building is the cornerstone of Kew's activities. Kew promotes a wide range of opportunities for collaborators to gain the skills needed to implement the GSPC. These include informal placements, internships, fellowships working with specific individuals plus formal courses at Kew as well as workshop based training in country (Ali & *al.* 2008, Clubbe & *al.* 2008). Caribbean UKOTs collaborators have attended a wide variety of training programmes at Kew and have participated in many project-based workshops, both regionally based and in individual Territories. Funded by the UK Government's Department of Environment, Food and Rural Affairs (Defra) a regional workshop was hosted in Montserrat in 2006 on implementing the GSPC in the Caribbean and a network established to try and take this forward (CBD 2008).

Support has been provided to improve the botanical infrastructure required to implement the GSPC. In TCI a herbarium has been established at the National Trust's Middle Caicos Conservation Centre and the first batch of mounted herbarium specimens repatriated from Kew to form their first national reference collection. The Centre is being landscaped with indigenous species to raise awareness about the conservation of the native flora. With funding from the UK Government's Overseas Territories Environment Programme (OTEP) a new botanic garden has been developed in Montserrat, managed by the Montserrat National Trust. Native species nurseries have been established at QEII Botanic Park on Grand Cayman and the J. R. O' Neal Botanic Garden in Tortola, BVI. An extensive programme of collection of endemic and threatened species of these Territories is underway and most of the threatened species are now in cultivation.

#### **CONCLUSIONS**

The Caribbean UKOTs have been working with Royal Botanical Gardens (RBG) Kew to prioritise activities in order to implement the GSPC and to identify those targets of most relevance locally. Initial project work has focussed on Objective 1 of the GSPC: documenting and understanding plant diversity and as a consequence there is a real chance of Targets 1 and 2 being met by 2010, although a lack of activity in Anguilla means that there are still some knowledge gaps. All these data are being made available on-line and RBG Kew will be launching a UK Overseas Territories on-line herbarium in 2009. There is some positive activity towards achieving Target 3.

There is mixed progress with Objective 2 of the GSPC: conserving plant diversity. Excellent progress has been made with the *ex situ* target 8, but more limited progress with the *in situ* targets and plant species still face many threats. Although we've made good progress in documenting invasive species, there is a major resource investment need to implement invasive species control strategies.

Good progress has been made with Target 14 and awareness is increasing, but there is a definite need for mainstreaming plant conservation issues.

Some progress with Objective 5, building capacity for plant conservation, has been made, but a large 'capacity gap' remains and more trained personnel are needed with improved facilities and resources in order to implement the GSPC and meet its demanding targets.

Other targets are perceived as lower priorities by Caribbean UKOTs. For example, there are no plants in international trade so Target 11 can either be considered redundant or completely achieved. There is little exploitation of plant products and where this occurs it is often of non-native species and not covered by the GSPC and on a small, local scale. Thus Targets 12 and 13 are not considered priorities.

Botanic Gardens are at the vanguard of many of the activities leading to the implementation of the GSPC in Caribbean UKOTs and are well placed to provide an increased education and awareness role. However, they still lack resources to completely fulfil their potential.

#### **REFERENCES**

- Ali, N. (ed) 2008 Global Strategy: Kew and the Global Strategy for Plant Conservation. Royal Botanic Gardens, Kew, Richmond. Available at [www.kew.org/conservation/](http://www.kew.org/conservation/)
- Burton, F. J. 2008. Threatened Plants of the Cayman Islands: the red list. Royal Botanic Gardens, Kew, Richmond.
- CBD 2008. Plant Conservation Report. Available at: [www.cbd/int/gspc/pcr-report](http://www.cbd/int/gspc/pcr-report)

Clubbe, C., Gillman, M., Acevedo-Rodriguez and Walker, R. 2004. Abundance, distribution and conservation significance of regionally endemic plant species on Anegada, British Virgin Islands. *Oryx* 38 (3), 342-346.

Clubbe, C., Gold, K. and Griggs, P. (eds) 2008. Growing Expertise for Plant Conservation. Royal Botanic Gardens, Kew, Richmond. Available at: [www.kew.org/education/index.html](http://www.kew.org/education/index.html)

Corcoran, M.R., Robbins, S.K., Hamilton, M.A. & Clubbe, C. 2008. Report on the status of *Rondeletia buxifolia* Vahl., including a germination and cultivation protocol. Unpublished Report, Royal Botanic Gardens Kew.

GSPC 2002. Global Strategy for Plant Conservation. Published by the Secretariat of the Convention on Biological Diversity. Available at: [www.cbd.int/gspc/](http://www.cbd.int/gspc/)

Hamilton, M. A., Robbins, S. K., Johnson, N. P., Sanchez, M. D. & Clubbe, C. 2007. Report on the status of *Acacia anegadensis* Britton including a germination and cultivation protocol. Unpublished Report, Royal Botanic Gardens Kew. Available at: [www.kew.org/scihort/ukots/Pages/bvi2bi.htm](http://www.kew.org/scihort/ukots/Pages/bvi2bi.htm)

Hamilton, M. A., Clubbe, C., Robbins, S.K. & Bárríos, S. 2008. Plants and Habitats of the Centre Hills, Montserrat pp 40-55 in A Biodiversity Assessment of the Centre Hills, Montserrat. R. P. Young, (ed.). Durrell Conservation Monographs No. 1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands.

Howard, R. 1974-1989. Flora of the Lesser Antilles: Leeward and Windward Islands. 6 volumes. *Arnold Arboretum*, Harvard University, USA.

IUCN 2001. IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge. Available at: [www.redlist.org](http://www.redlist.org)

UKOTs 2008. The UK Overseas Territories Programme. [www.kew.org/ukots](http://www.kew.org/ukots)

Varnham, K. 2006. Non-native species in UK Overseas Territories: a review. JNCC Report No 372. Joint Nature Conservation Committee, Peterborough, UK. Available at: [www.jncc.gov.uk/default.aspx?page=3634](http://www.jncc.gov.uk/default.aspx?page=3634)

Young, R. P. (ed) 2008. A Biodiversity Assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph No1. Durrell Wildlife Conservation Trust, Jersey, Channel Islands. Available at: [www.durrell.org/Conservation/Where-we-work/Caribbean-Islands/](http://www.durrell.org/Conservation/Where-we-work/Caribbean-Islands/)

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