



samara

The International Newsletter of the Partners of the Millennium Seed Bank Project

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Integrated Conservation at Kirstenbosch National Botanical Gardens

The purpose of this article is to show how the Threatened Plants Program at Kirstenbosch has been refined to address the conservation targets set in the Global Strategy for Plant Conservation (GSPC), in particular Target 8:

“60 % of threatened plants in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes”

Kirstenbosch Gardens has attempted to build up collections of threatened plant species within its target plant families over the last few decades. Our success in conserving threatened plants in the gardens has been limited mainly to those groups that are long-lasting such as cycads, bulbs and trees. The majority of fynbos species are however short-lived, can be difficult to grow and pose other problems such as susceptibility to various pathogens such as phytophthora.

We therefore asked the following questions when reviewing our conservation efforts:

- How do we effectively conserve so many threatened plant species?
- How do we preserve a good representation of the gene pool of each threatened species in *ex-situ* collections?
- Where should we focus our efforts?
- For how long can we keep these plants in effective *ex-situ* conservation?
- How do we accommodate these ever increasing *ex-situ* collections?
- How do we get the conservation message through to policy and decision makers, the public and school learners?

Focussing our Conservation Efforts

The first exercise involved using available research and information to focus and target our conservation efforts.

Kirstenbosch Botanical Gardens are situated in the middle of the Cape Floristic Kingdom, which is one of the world's richest regions in terms of biological diversity. It is estimated to have about 9000 species of vascular plants of which about 69% are endemic (Goldblatt & Manning 2000). However, it is also the part of the country with the most threatened ecosystems. A comparison between lowland habitats versus mountainous or higher areas clearly shows that the Cape lowlands are the most threatened and therefore in most need of our conservation attention (Rouget *et al* 2004).

Integrated Conservation

Research carried out by Mathieu Rouget and his team in Geographical Information Systems (GIS), the Conservation Biology Unit including the Protea Atlas Project and the Threatened Species Project has been most useful in helping us develop a new Integrated Threatened Plant Strategy for



The author with restored *Erica verticillata* at Rondevlei Nature Reserve

Kirstenbosch Gardens. The new strategy still embraces the conservation targets set by the GSPC, but with focus on the areas of greatest conservation need. The basic conservation strategy being implemented at Kirstenbosch Gardens is the following:

- To target threatened habitats for conservation efforts such as the lowland areas near Cape Town
- To target threatened species within these habitats
- To prioritise *in-situ* conservation by implementing restoration where possible
- To increase our ability to be effective by working together with researchers at Kirstenbosch and local universities, Cape Nature Conservation, MSB and South African National Parks
- To practise *ex-situ* conservation at Kirstenbosch Gardens in combination and collaboration with the MSBP

In this way we focus on the areas of immediate need in threatened habitats. At the same time we are expanding our ability through collaborative projects to effectively preserve a greater portion of the gene pool in the MSB.

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Workshops on Seed Conservation Techniques in South Africa



Preparing herbarium vouchers at Pretoria
Carly Cowell with participants on the Cape Town course

In May 2005, the South African National Biodiversity Institute (SANBI), the MSBP partner in South Africa, renewed the interim five-year (2000–2005) MSB Project Agreement with the Royal Botanic Gardens, Kew. A new five-year Access and Benefit Sharing Agreement was signed on 25 May 2005, which officially started Phase 2 (2005–2010) of the Project in South Africa.

Within the framework of the activities proposed for Phase 2, the SANBI recently hosted two three-day workshops on Seed Conservation Techniques at the Kirstenbosch (6–8 July) and Pretoria (13–15 July) National Botanical Gardens. The workshops were facilitated by Kate Gold, Training Manager for the MSBP International Programme and Erich van Wyk and Carly Cowell of the MSB South Africa Project and were attended by 27 participants in total. The workshops were aimed at building technical capacity among staff of SANBI and partner conservation authorities. In all, 22 SANBI horticultural staff, representing all nine SANBI National Botanical Gardens (NBGs), and five participants from partner organisations attended the workshops. The course included two days of theory on seed collecting and handling techniques and a one-day practical collecting exercise in the field.

recently donated 31 collections to the MSB South Africa Project. Further north, horticulturalists from the Lowveld and Free State NBGs have joined MSB-Pretoria collecting trips and in addition to the opportunity to make collections for their own gardens, have also helped a lot with making MSB seed collections, herbarium specimen preparation as well as data recording.

The workshops have also strengthened participants' capacity to participate in and contribute effectively to other SANBI *ex situ* conservation programmes, such as the Gardens Directorate's Threatened Plants Programme, which strives to contribute to Target 8 of the Global Strategy for Plant Conservation. This programme encompasses the *ex situ* conservation of threatened plants through horticultural research, display and the establishment of living collections in the eight National Botanical Gardens.

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USA Seeds of Success training

2005 saw more than 115 people trained through the Seeds of Success USA programme. Training is based on a curriculum developed in 2002 by BLM and RBG Kew, with guidance from the BLM National Training Center, which aims to provide trainees with the essential skills and knowledge needed to plan seed collecting trips and collect and manage seeds, field data and herbarium vouchers. The courses combine theory with a full day's field practice.

Lady Bird Johnson Wildflower Center's (LBJWFC) Michael Eason attended the 3 week Seed Conservation Techniques course at WTMB in Sept 2004 and has since been actively involved in training volunteer seed collectors. A total of 87 volunteers took part in 3 training courses organised by LBJWFC in 2005. Training support on each course was provided by a member of Kew's SCD staff.

10 people attended a Bureau of Land Management (BLM) course in Yuma, Arizona in May, delivered by Carol Spurrier, Joan Seevers (both BLM) and Nicola Cotton (SCD). Later in the



Far left:
Participants on the Yuma course prepare herbarium voucher specimens

Left: SCD's Nicola Cotton in the field in Yuma

year, SCD's Steph Miles delivered a 2 day course on Seed Processing for 19 volunteers at Chicago Botanic Garden (CBG).

The courses have all received positive feedback and should result in increased numbers of quality seed collections. 10 trainees from the November LBJWFC course took part in a recent collecting trip, obtaining collections of 6 targeted species.

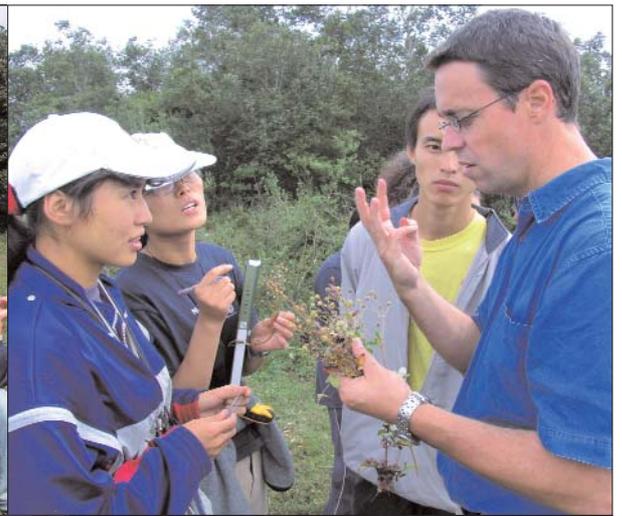
In addition to training volunteer seed collectors, the MSBP is also helping to build research capacity at CBG through support to

Jennifer Ison's PhD research work into the effects of the timing of seed set on the genetic diversity of seed collections of prairie species *Echinacea angustifolia* and *Penstemon digitalis*. The work, co-supervised by SCD's Peter Toorop, will provide valuable information to assist seed collectors in capturing the maximum amount of genetic diversity in their collections.

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Training course on Collecting Seeds for *ex-situ* Conservation in China



Seventeen months ago Professor Sir Peter Crane signed an agreement between RBG Kew and the Chinese Academy of Sciences (CAS). Now the MSBP China Programme, which aims to help China conserve 4,000 threatened and endemic plants before 2010, keeps moving.

To launch the MSBP China partners' first seed collecting season, a training course was held at the Kunming Institute of Botany (KIB) on 19-21 October 2005. KIB will be the home for the Southwest China Wild Species Bank (SCWSB), the biggest wild species seed bank in China. The building should be completed this year.

Twenty-four participants from KIB, including five newly recruited SCWSB staff, participated in the training. The 3-day course focused mainly on seed collecting skills. Dr. Paul Smith and Dr. Kate Gold spent the first day in the classroom to introduce general protocols on seed conservation and collecting skills. This was followed by field trips to Guodong, a small village near Kunming city, and to Qiongzhu Si (bamboo temple) of Kunming to practice collecting and post-harvest handling.

Nine species were collected during the training course and will be recorded as the first batch of collections accessioned by the SCWSB. Dr. Hugh Pritchard also shared a half day with other Chinese botanists and students in KIB's lecture room with a talk on seed conservation science.

This training course received positive feedback from partners and trainees. Another comprehensive seed conservation training course in China is planned for next year, to meet the interest and demand from other botanical institutes and organizations nationwide.

The MSB delegation also met the SCWSB project team before the training course. Some collaborative activities in the next five years have been reviewed and developed, such as joint seed collecting, staff exchanges, PhD student co-supervision and technical training in both China and UK.

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Top left: **Participants at the training course in Kunming, together with RGB, Kew staff members.**

Top right: **Paul Smith and course participants**

Above left: **Kate Gold (RBG Kew) demonstrate post-harvest handling**

Above right: **Course participants preparing herbarium vouchers in the field**

MSBP training programme

2005 was a busy year for the MSBP training programme. Kew staff contributed to training courses in New South Wales, Cape Town, Pretoria, Morogoro, Macará, Kunming, Yuma, Austin, Houston and Chicago, training a total of 228 people. Most of these courses focused on seed collecting and post harvest handling and processing. Partners and collaborators from Australia, USA, Jordan, Italy, Poland and Israel received technical training at the MSB. The MSB provided taught courses in Seed Conservation to a total of 18 MSc students from the Universities of Birmingham and Sussex, and a week-long Seed Conservation module to the Kew International Diploma in Plant Conservation Strategies. Three students from the Sussex University Plant Conservation MSc course undertook research projects with us: one examined seed longevity of *Rhododendron* spp., the other two worked with an allotetraploid hybrid of *Dactylorhiza incarnata* and *D. fuchsia*; one looking at the reproductive output of the hybrid compared to its parents, and the other studying the seed longevity of the hybrid and its parents. Last, but not least, SCD staff continued to co-supervise a total of 22 PhD students in 10 different countries. At least 6 additional students are due to begin PhD studies in 2006.

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A selection of international programme activities

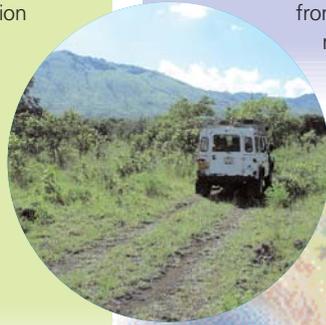
Kenya

"Jambo" from Kenya!

The Seeds for Life partners in Kenya continue to make good progress with their ambitious collecting programme despite the terrible drought that is affecting the whole of East Africa this season. Sadly the failure of the late rains in 2005 has not just depleted seed production of wild species but with a major country-wide crop failure our thoughts go to our colleagues at this difficult time. Nevertheless, with some new MSBP-funded vehicles in place, a recent joint collection mission with MSBP staff should mean that we have successfully reached the annual seed intake target with some really exciting material brought in and some areas explored for the first time by the collection teams. Two days on the Chyulu Hills just South of Nairobi was a particular high point, as was a new species of *Kalanchoe* for which we have secured seed. There is no doubt that the development of the specimen databases, collection guides and more targeted approach to seed collection is now paying dividends to the whole programme. Collection guides are near completion for over 500 target taxa which means that Kenyan conservation agencies are well placed to develop species and habitat recovery programmes as a direct result of the efforts of the Seeds for Life project.

D.O. Nyamongo has submitted his PhD thesis and we hope to be able to report positively on the result in the next issue.

**Seeds for Life
Team in the
Chyulu Hills**



Madagascar

The MSBP in Madagascar contributes to high quality seed and plant specimen collections of the wild species that are ecologically vulnerable and threatened. The collections are securely conserved for the longer term, in duplicate at Silo National des Graines Forestières (SNGF) in Madagascar and at the MSB. The project also enables SNGF to improve their seed banking facilities, testing protocols, and train their staff (2 MSc and 1PhD completed so far, and 1PhD ongoing). Overall, it is contributing to meet objectives of the Global Plant Conservation Strategy (Targets 8, 15) in Madagascar, in particular, in making about 60% of threatened plant species from the SNGF collections accessible to seed users.

During the first five years, the collaboration between SNGF and the MSBP has increased in efficiency. The collecting team has been operating effectively and more threatened and endemic species have been collected, exceeding 100 new species every year. Stuart Cable at Kew Herbarium has made a great contribution to Madagascar seed collections. The quantities and processing qualities of collections (and herbarium vouchers) have improved over time.

These past years have also seen a great contribution from Dr Guy Rakotondrany, Director of SNGF, who has completed his doctoral studies at Tana University in November 2004. From his PhD work, a peer review paper on *Ravenea rivularis* seed physiology has been accepted for publication (2006) in *Seed Science and Technology*. Guy has been helping and supporting the re-introduction and planting programmes, using some of the project collections in Madagascar, as well as setting up SNGF seed research collaboration programme on palm and other important species of Madagascar.

SNGF and MSBP moved swiftly to sign a second phase of partnership, starting immediately at the end of the first phase in September 2005. This renewed ABSA extends the collaboration till 2010. In October 2005 the MSB Co-ordination has changed and Dr Paul Smith transferred his co-ordinating duty in Madagascar to Dr Moctar Sacande.



Solofo Rakotoarisoa from the Madagascar team collecting *Aloe suzannae*, one of the rare species.

Lebanon

In Lebanon, Simon Khairallah has been out in the field for much of the year, collecting seeds for the MSBP. He recently retired from LARI and plans to spend even more time on our important work. The relatively large Lebanese flora of around 2,600 species has again, in the 2004 and 2005 seasons, allowed Simon to collect a steady stream of new species; in fact the 2005 results were the largest for any one year in Lebanon. As before, a wealth of new species was discovered during trips to the high (2,000–2,600 m altitude) ranges of Mount Lebanon as well as more south in the Chouf Mountains. By the end of the season, in December 2005, we had managed to make no less than 185 collections from what is, in effect, a very limited area in a small country. Rare and endangered species have been targeted for the first time during 2005 with the aid of the

Collection Guide, produced by RBG Kew's GIS Unit with support from the MSB Enhancement Grant. This will now take a more central role from 2006 onwards.

Namibia

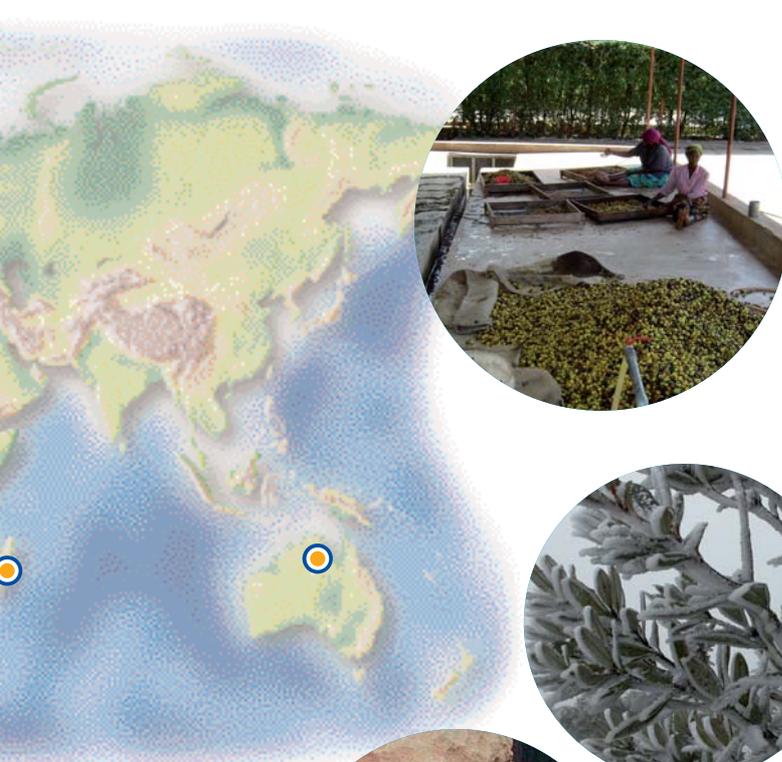
Two collecting trips resulted in 77 species new to the MSB, 20 endemic, 48 near-endemic, 4 rare, 10 data deficient, 9 of economic importance and 2 threatened species (*Ruschianthus falcatus* and *Lithops dinteri* subsp. *multipunctata*) bringing the number of seed samples conserved for threatened species in Namibia to 8 out of 24.

The good rains over the entire country, will make 2006 a busy year, and it is difficult to decide where to go collecting first! We expect to find a number of species that only appear in "wet" years. We have just started compiling a collecting guide for the more than 600 Namibian endemic species and other species of interest. An NPGRC staff member will receive training in GIS at Kew in March for this project as well.

The Namibian node of the SEPASAL project has updated almost 400

During recent years we have also been steadily improving the cleaning and storage side of the operation. As a result the Curation Section at the MSB is now spending relatively little time in processing the collections from Lebanon. The Lebanese half of the collections will remain to be held *in trust* at the MSB, with only a representative sample at LARI. The reason for this is that a dry room cannot be fitted and that drying is, in fact, under ambient conditions. Hence to be certain of the degree of dryness we decided to safeguard the Lebanese half in the UK. All this, of course, happens with full support of the Directorate at LARI.

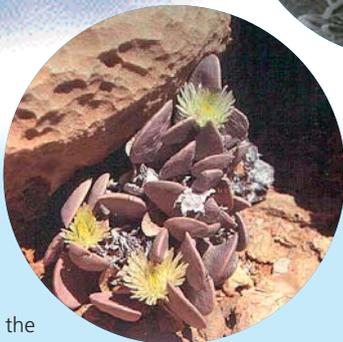
Another development is that six herbarium cabinets, left over from the old facilities of Kew's Seed Conservation Section (before it turned into the MSB) have now found a new home in Lebanon: they will serve as the herbarium, associated with the expanding seed collections.



Ruschianthus falcatus

species on the database, with available information for southern Africa.

Negotiations between the NBRI and Kew have resulted in a project between the Rio Tinto owned Rössing Uranium mine, Kew and the NBRI. The project looks at managing the endemic, rare and threatened plants in the mining concession area, it will start with red data assessments mainly of two species (*Adenia pechuelii* and *Lithops ruschiorum*) and seed conservation of the target species and mine staff will be trained to assist in these activities.



Tanzania

Tanzania has recently become the 18th country to join the MSBP. The Director of Forests, on behalf of the Government of Tanzania, signed an Access and Benefit Sharing Agreement with RBG Kew in November 2005. The MSBP Tanzania partnership involves four local organisations in addition to RBG Kew: The Tanzania Tree Seed Agency, the National Herbarium of Tanzania, the National Plant Genetic Resources Centre, and the University of Dar es Salaam Department of Botany.

Project activities began in August in anticipation of the ABSA signing. Staff from all four organisations participated in a seed collecting workshop, hosted by TTSA in Morogoro. The course was facilitated by Clare Tenner and Janet Terry of the SCD together with Patrick Muthoka and Jonathon Ayayo from National Museums of Kenya (NMK) in Nairobi. In addition, staff from the two herbaria have already started work on the list of target species for seed collecting. They will be collating data from specimens in their own herbaria, plus the East Africa Herbarium and the RBG Kew Herbarium.

The MSBP Tanzania programme will be focusing on species which are endemic to Tanzania, especially those which are threatened or have local value. The team will be challenged to avoid collections already made by MSBP partners in neighbouring Kenya and Malawi, but have a large flora to work with.

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Left: **Seed processing at Tanzania Tree Seed Agency**

Below left: **Portrait of *Banksia saxicola***

Australia

Victorian Conservation Seedbank joins the Australian MSBP network

A big welcome to our seed conservation colleagues from the State of Victoria who signed up as full MSBP partners in June last year.

The Victorian Conservation Seedbank, is indeed as it's strapline says; An Investment Against Extinction.

By Australian standards the Victorian flora is modest in numbers with 3276 native species currently recorded. But with nearly 400 listed as threatened, 46 now known to be extinct in the State, and with 32 threatened plant communities the Victorian Conservation Seedbank team of Neville Walsh, Jeff Jeanes and Megan Hirst have set up an excellent facility at the National Herbarium of Victoria in Melbourne. With no realistic opportunity to develop dry room facilities, a purpose built stand alone drier cum incubator has been installed. We all eagerly await the results of how this unit operates but with the first batch of material received last week, the signs are very encouraging. The benefit of the Victorian Conservation Seedbank's programme to the State's species recovery and plant community restoration targets has been clearly recognised. The team works closely with field staff from the Government Department of Sustainability & Environment who have also contributed financially to the project. We look forward to some great plant conservation success stories for the State in the coming years.

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Value-adding to seed conservation in Western Australia



Placing plugs of wood infected with *Phytophthora cinnamomi* into pots containing seedlings of priority flora germinated from seed collected for *ex situ* conservation.

Banksia aculeata (Proteaceae) is endemic to the Stirling Ranges National Park and is highly susceptible to the dieback pathogen, *Phytophthora cinnamomi*. Seed of *B. aculeata* and other species considered to be at risk of extinction due to disease have been collected and duplicated at the MSB and CALM's Threatened Flora Seed Centre.

South west Western Australia has a highly diverse and rich flora that is threatened by the soil-borne water mould, *Phytophthora cinnamomi*. This pathogen is spread via infected soil and root to root contact and is known as the "biological bulldozer". It is an unparalleled example of an introduced pathogen with a wide host range that is causing irreversible damage to a range of unique, diverse, but mainly susceptible, plant communities. As the disease spreads through susceptible vegetation it reduces community composition, structure and function and may result in extinction for those species that are highly susceptible. The disease has a high impact on biodiversity in areas such as the flora-rich heathlands of the Stirling Range National Park in the south of Western Australia. This National Park boasts more than 1500 taxa, 80 of which are endemic to the Park.

The Department of Conservation and Land Management, a partner of more than five years in the MSBP in Western Australia, has developed an integrated plant conservation strategy that includes seed conservation and recovery activities. The reintroduction of threatened species and the restoration of degraded landscapes are a vital part of this strategy. In addition to these on-ground measures, seeds that are germinated through routine viability tests and the monitoring of *ex situ* collections in storage are used in a value-adding project that involves the investigation of species susceptibility to *Phytophthora cinnamomi*. Investigations aim to mimic

disease epidemics in pots under nursery conditions. Plant mortality is followed over time and susceptibility assessed for each species. The resulting information assists in the long term management and conservation of threatened flora populations. Depending on the results of the investigations appropriate dieback hygiene mechanisms can be put in place and spraying of critical populations with the fungicide phosphite can be implemented. The outcome of these investigations can also assist in directing further studies towards understanding possible mechanisms of resistance in threatened plant species.

Through these pot trials, and in conjunction with a comparison of a number of databases on species susceptibility gained from field observations and recovery of infected soil, it is now estimated that more than 40% of the flora of south west Western Australia is susceptible to this killer disease. For this reason, it is vital to continue our activities in seed conservation, both as an insurance against loss in the wild and to provide the all important material for further investigations into disease susceptibility.

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Kenya's Seed Studies Programme

An important aspect to Phase II of Kenya's Seed for Life Project is the seed studies programme. Five seed studies were identified by the Kenyan partners as being important to understanding the seed biology of their native species and the subsequent potential utilization of seed germplasm. The first study is a review of on-farm seed drying and storage technologies, involving both a literature review and visits to three districts in order to gather information from local people. Peterson Wambugu, GBK, has recently returned to Kenya after two months at Wakehurst Place working on the literature review. The second seed study will validate and, hopefully, improve on these technologies in participation with the local farmers.

The three other studies are more laboratory-based. Determining the dormancy-breaking treatments / germination requirements of seeds from previously un-studied wild plant species is a fundamental activity of the MSBP as a whole. In Kenya, as well as the routine testing of seed collections as they arrive at the laboratory, researchers at NMK, GBK, and KEFRI are carrying out more detailed germination experiments on seeds which are more difficult to germinate. They are also increasing their use of vital staining to assess seed viability and evaluating different germination media,

complementing trials being run at the MSB and other MSBP partners.

The programme is also running comparative longevity experiments on Kenyan species providing data which will contribute to the broader study which commenced at the MSB a few years ago (see Samara 6). Patrick Muthoka and his team at NMK have already determined the relative longevity of a number of succulent species and assisted by a new MSBP-funded oven at GBK, D.O. Nyamongo will be stepping up this activity, focusing on cultivated vs. wild relatives of indigenous vegetables and on native species from families which are thought to be short-lived.

Finally, William Omondi at KEFRI is carrying out research on Kenyan species which may be difficult to store using conventional seed banking techniques, looking at issues around seed maturity and optimum moisture contents for storage.

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South American Research

Brazil

As part of his PhD studies at the Universidade Federal de Lavras (UFLA), Department of Forestry, Anderson Cleiton José conducted a nine-month project at the MSB on *Talauma ovata* seeds¹, funded by the MSBP. *T. ovata* is a tree widely distributed in the Brazilian Atlantic forest, ranging from the north (Para State) to the south (Rio Grande do Sul State). It is common in different vegetation types like rainforest, semideciduous forest and cerrado (Brazilian savannah). The species is used in restoration programmes because it easily grows in swampy soils and parts are used as a traditional medicine. Anderson's work included physiological characterisation of dormancy and desiccation behaviour. Two-dimensional protein electrophoresis was performed, identifying proteins that are expressed during germination and that are associated with dormancy and the loss of viability during desiccation.

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¹Authorisation for collection, shipment and access to genetic resources of *T. ovata* was granted by the Genetic Heritage Management Council, Brazilian Ministry of the Environment, application 0115073BR.



Fruits of *Talauma ovata* containing the desiccation sensitive seeds that disperse upon dehiscence.

Guyana

A six-month research project was carried out at the MSB by Dr. Theo Velloza. Theo is a staff member at the University of Guyana and was awarded a Commonwealth fellowship. He performed AFLP analysis to characterise genetic diversity in *Aesculus hippocastanum* sampled from different geographic areas in Europe. Theo found genetic differences that may explain differences observed in seed physiological behaviour between seeds from these regions.

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Dr. Theo Velloza at work in the lab running AFLP gels with DNA samples from *Aesculus hippocastanum* seeds.

Recent Meetings

XVII International Botanical Congress, Vienna, Austria, 17-23 July 2005

The MSBP and BGCI organised a joint symposium to consider implementation of Target 8 of the Global Strategy for Plant Conservation. Target 8 requires that 60% of threatened plant species are conserved in *ex situ* collections by the year 2010, and that 10% of these are used in recovery and restoration programmes. Clare Tenner-Trivedi, MSBP International Programme Officer, chaired the session in which several MSBP partners gave presentations.

Herta Kolberg (NPGRC, Namibia) outlined the difficulties in identifying, targeting and locating threatened species for seed collecting. Pedro Leon (INIA, Chile) spoke on the use of seed conservation in Chile. Anthony Hitchcock (SANBI, South Africa) described how MSBP seed collections, garden collections and *in situ* expertise is being pulled together to restore habitats in South Africa (see article on page 1). Other speakers covered the role of botanic garden living collections and tissue culture techniques.

2005 World Conference on Ecological Restoration, Zaragoza, Spain, 12-18 September 2005

Clare Tenner-Trivedi (International Programme Officer) and Tizian Ulian (Americas Project Officer) attended this conference to learn more about the application of ecological restoration. Clare gave a presentation on the potential roles of MSBP resources (skills, collections, data) and their application to date.

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Advances in plant conservation biology: implications for flora management and restoration

Over 200 delegates, mainly from Australia, attended a symposium on 'Advances in plant conservation biology: implications for flora management and restoration' in Perth, Western Australia from 25-27 October 2005.

The symposium was co-organised by the Department for Conservation and Land Management (CALM) and the Botanic Gardens and Parks Authority. Invited speakers from Europe and the US included Hugh Pritchard and Robin Probert from the MSB who spoke on management tools for plant conservation and the importance of pre-storage factors on seed quality, respectively. Several papers were given by MSBP Australian partners including Dave Coates (symposium organiser); Andrew Crawford; Leonie Monks; Anne Cochrane; Kingsley Dixon and Dave Merritt. The meeting was a resounding success providing a blend of excellent science underpinning and outstanding examples of successful restoration, particularly in Australia and the US. Papers will appear in a special issue of Australian Journal of Botany.

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Plant conservation Conference Kunming, China, 15-16 October 2005

Dr Paul Smith and Dr Hugh W. Pritchard were invited speakers at the Plant Conservation Conference in Kunming, China on 15-16 October 2005, attended by more than 150 scientists from nine conservation institutes in China and three from the UK (RBG Kew, RBG Edinburgh, and the Natural History Museum). The conference was the culmination of a week-long series of conservation events in Beijing, Wuhan, and Kuming sponsored by the Chinese Academy of Sciences, the National Natural Science Foundation of China, and the Royal Society. The events were part of the UK-China Partners in Science programme that has run throughout 2005, supported by the British Council and British Embassy and Consulates-General in China.

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Damien Hicks

Damien Hicks joined the MSBP as seed collector in November and joined expeditions in Malawi and Botswana in December. Damien is a biologist specializing in botanical survey and identification, with both laboratory and fieldwork experience in western Europe, Southeast Asia, southern South America and South Africa. Prior to work at the MSBP he coordinated a three-year capacity-building project in Manokwari Herbarium, Papua, providing scientific equipment and training, the Interactive Key to Malesian Seed Plants and a series of taxonomic publications on the genera *Pittosporum* and *Ilex*.

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Technology Specialist MSBP

Vanessa Bertenshaw has recently been appointed to the position of Technology Specialist, having worked for almost three years for the MSBP in the Curation Section of the Seed Conservation Department. Prior to joining RBG Kew, she studied an MSc degree in Biological Diversity at the University of Plymouth, worked for local conservation groups in the UK, and attempted to satisfy her passion for travel. As Technology Specialist, Vanessa will address process-related constraints to seed banking amongst MSBP partners. She will be involved in training programs in-country and will facilitate technology transfer to partner institutions.

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Jonas Müller

Jonas Müller joined the MSBP as the new ENSCONET co-ordinator in October, taking over the position from Monique Henry. The "European Native Seed Conservation Network" is made up of 19 institutions from 12 EU countries with an interest in seed banking and wild plant conservation.

Jonas holds a diploma in Biology from the University of Freiburg and a Ph.D. from the University of Frankfurt (Germany). Before joining the MSBP, Jonas worked as a vegetation ecologist in several research projects in the West Mediterranean region and in tropical West Africa. He is especially interested in, and has dealt with, anthropogenically influenced vegetation types – e.g. semi-natural dwarf scrub-communities, roadside vegetation or Sahelian savannas. Furthermore, he has experience in teaching undergraduate and graduate courses in Ecology and Vegetation Science.

To learn more about the ENSCONET, please visit the network's website www.ensconet.com or contact Jonas directly: j.mueller@kew.org

Paul Smith – New Head for MSBP

I'd like to take this opportunity to introduce myself to those of you who don't know me. My name is Paul Smith, and I have been involved in the MSBP since its International Programme began in 2000. My background is in plant ecology and, until August 2005, I was the International Co-ordinator responsible for the MSBP country partnerships in southern Africa and Madagascar, a role I greatly enjoyed and will miss very much. My previous responsibilities

have been split between Mocar Sacande (now International Co-ordinator for Burkina Faso, Madagascar, Malawi, Mali, and Botswana) and Michiel van Slageren, who will revert to co-ordinating our programmes in South Africa and Namibia.

My new role, as head of the MSBP, will of course bring many new challenges. These include gaining a more thorough understanding of the wide range of activities and outputs that the MSBP delivers; getting to know you, our partners; and finding solutions to practical problems such as improving seed intake numbers and quality. One of my major challenges is to start the process of planning



Paul Smith in front of the Wellcome Trust Millennium Building

for post-2010, when our current funding stream runs out. We are determined that the network of seed conservationists that is the MSBP should continue to evolve and seek new funding to ensure that our work continues. With the current backdrop of climate change and other anthropogenic-induced plant extinctions, our work has never been more vital.

Although 2010 seems a long way off, it is not too soon to be thinking about these issues. To this end, with your help, we will be reviewing the current project and asking for your views on how we should proceed. I believe the MSBP is exceptional in that we are actually implementing the Global Strategy for Plant Conservation – not designing strategies or arguing about how best to achieve the targets – we are in the field, collecting and conserving species. It will be no coincidence that by 2010 the countries who have made progress on target 8 will be partners in this project. This is surely a record we can build on beyond 2010. I look forward to working with you all, and hopefully meeting many of you, in the future.

For further information, please contact:

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Tips for seed collectors

- Place spikey/hairy/very small seeds in paper (not cloth) bags.
- Put labels on outside of bags.
- Mark bag if irritant collection.
- If stapled, please only use enough to close the bag.
- Make sure that paper bags containing small seeds are taped up well on the base.

For more information, please contact:

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Millennium Seed Bank Collection Figures to 3 February 2006

	total in MSB	since Phase III started
Collections	27,284	15,819 (1,592 UK)
Species	14,098	9,562 (589 UK)



WE WANT TO HEAR FROM YOU!

Samara is your newsletter, so send us news and articles about yourself and your work.

Please let us know if you want to be removed from the mailing list.

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