



samara

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

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Australian partner visits Kenyan partners

With networking at the heart of the MSBP, a collecting trip with a difference took place in Kenya in September as part of the Seeds for Life Project developed between the MSBP and its Kenyan Partners.

Luke Sweedman, a seed collector from the MSBP Western Australian project, together with Tim Pearce and Clare Tenner from the MSBP travelled to Kenya to share collecting experiences and discuss similar issues shared between the two projects.

Kenya and Western Australia share an early history in the MSBP, both having completed a first three-year phase of collaboration, as well as geographically having some affinity in their landscapes. Tim was keen to get both partners together and to spend some time in the



Above: **Luke Sweedman, Mathias Muindi and Patrick Muthoka (both National Museums of Kenya and Kenyan Seeds for Life Project)** on a hill in Mwingi.

Left: **A pre-collection briefing.**



field so they could mutually share experiences to improve both project outcomes. This sharing of ideas is enormously beneficial as in many cases, partners work in fairly isolated parts of the world and really only make contact with other country partners via the training courses held at the MSB.

Assembling in the Kenyan capital, Nairobi, our party of 11 headed northeast to Mwingi, a town about three hours drive away. The country is essentially arid *Acacia* woodland with occasional, floristically rich, granite outcrops dotting the landscape. This area contains fine examples of Baobab (*Adansonia digitata*); some trees were up to 30 metres high and 7 metres across. These trees are close to my heart as the Baobab *A. gregorii* occurs in the Kimberley region of Western Australia and interestingly we use

the term Boab as the common name. They are considered to be a relic from the Gondwanan super-continent that joined Australia and Africa. Our African colleagues call them the trees god planted upside down.

Over the next three days we worked in the Mwingi area collecting seeds from a variety of habitats. We compared notes and discussed our programmes informally as we worked together in the field as well as at a number of more formal talks. Some of the issues that we worked on were the best ways of using GPS systems in the field, record keeping and what were the most relevant details to include in the field data. I outlined how we developed our collection programme for the year and how we made a number of trips over the course of years to the same areas to ensure we collected thoroughly from those areas (at different times). We also worked on making assessments in the field as to what collection would yield enough material to provide us with a sound MSBP collection. We are after 10,000 seeds where possible, but as our experience in Australia shows, it is difficult to obtain this quantity from many species. Together we made some useful collections of *Euphorbia candelabra* and *Albizia tanganyikensis* ssp.

Story continues on page 2

Australian – Kenyan Link Up *continued from page 1*

adamsoniorum. The collecting of the succulent *Euphorbia* was a new experience for me as this species has caustic sap, leaving an impressive burn on Tim's arm as we were collecting.

Our collecting group all enjoyed the experience and we found after a few days that it was much easier in the field to share information in a practical way. There is nothing like being in the field to break down the formality of the collection process and to get your hands dirty, or burnt, as it goes. I found the experience very worthwhile and I learnt techniques



from the African partners that I can adapt to our situation in Australia. It was a very positive outcome for me to be able to assure the Kenyan partners that the way they go about practical aspects of collecting were similar to the ways adopted in other countries. Examining how others are approaching the same tasks should lead to improvements in how we carry out collecting programmes. Overall, sharing experiences on a collecting trip helps to build a sense of united purpose and connection between partners.

Luke Sweedman

Curator, Western Australian Seed Technology Centre,
Kings Park, Western Australia.



Above: **Mathias using pole pruners to collect *Euphorbia* seeds**

Far left: **Baobab (*Adansonia digitata*)**

Above left: **The landscape around Mwingi**

MSBP Research gathering momentum in the Americas

The MSBP Americas programme has been strengthened with the joining of two new Kew staff in 2004. Dr Tiziana Ulian, Latin American Programme Officer and Dr Dario Prada, Americas Research Officer both joined the staff of the Seed Conservation Department under the Millennium Commission Enhancement Grant. During visits to Ecuador, Mexico, the USA (Chicago), Chile, and Argentina between August and December 2004, Tiziana and Dario held discussions with partners to strengthen joint research on seed conservation and to plan links with *in situ* conservation and sustainable use projects.

In the USA, studies by the Applied Conservation Division of Chicago Botanic Garden on germination patterns and comparative longevity of seed collections made from the Great Basin are proceeding in collaboration with Dr Fiona Hay and Dr Matt Daws. Projects are also under discussion concerning the temporal effects of seed sampling and the effects of seed ageing in *ex situ* storage.

Two main projects were discussed in Mexico. The first, in collaboration with Alejandro Casas from the Centre for Research in Ecosystems (CIECO) of UNAM, aims to combine *ex situ* and *in situ* conservation of columnar cacti species. The columnar cacti reach their peak of diversification in Mexico with 48 genera (73% endemic) and 850 species (85% endemic), but are facing increasing threats, such as urban sprawl, expansion of the agricultural frontier, introduction of exotic species, overgrazing by cattle, uncontrolled tourism, and poaching driven by the demand of exotic plant markets.

The second Mexican project aims to study the storage behaviour of seeds of different oak (*Quercus*) species and their genetic variability. Again, oak species reach their greatest number and diversity in Mexico of any country in the world, but 36 species are listed as globally threatened. These threatened

oaks have great ecological, economic and cultural importance to the people of Mexico, and their conservation is an urgent priority.

In Chile, additional academic and technical partnerships were created with the Instituto de Investigaciones Agropecuarias (INIA), to carry out a project on *ex situ* conservation of endemic, vulnerable and endangered plant species from desert and Mediterranean zones. Meetings with scientists from the Centre for Advanced Studies of Arid Regions (CEAZA), the University of Concepcion, and the Pontificia Católica University de Chile, in Santiago were held to set up a programme of research on the ecophysiology of selected plant species.

Discussions were also held in Argentina, with Dr Ana Scopel of the IFEVA Institute of FAUBA who will take forward research on the ecophysiology of native aromatic, medicinal and ornamental plants from central and northern Argentina. In Ecuador, discussions were held to develop a conservation and sustainable use project in the south west Ecuadorian dry forest ecoregion, considered an area of great biological importance due to the large number of species and high levels of endemism present, but affected by a high impact of human activity.

Michael Way, Americas Coordinator stated 'we are seeing some strong research lines being established with our Americas partners; Dario and Tiziana's experience is really helping to drive this part of the program forward'. For more information please contact:

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Ex situ conservation of a newly discovered species of Dioscoreaceae in Mpumalanga Province, South Africa.



Dioscorea sp. nov. ined. J.P.H. Hurter

In 1999, a sample of what was thought to be a *Dioscorea* species was brought to a local, community-driven, medicinal plant nursery by an old traditional healer. According to this man, the plant has been extensively collected for its medicinal properties. The plant was brought to the attention of Gerhard Strydom of Mpumalanga Parks Board (MPB), and was then taken to the Lowveld Botanical Gardens in Nelspruit where Johan Hurter confirmed that it was an undescribed *Dioscorea* species.

A visit by Gerhard Strydom and Johan

Hurter to the plant locality in June 2000 revealed the scarcity of this plant. Information from local traditional healers and extensive exploration of the area left us convinced that this was indeed the only population in the area. To make matters worse, a quick survey revealed that the population consisted of 107 plants, of which only around 40 were mature. In addition, the species is monoecious, and with only 9 plants being female, it became increasingly clear that survival of this species was in doubt.

Although the plant is being cultivated in the local community nursery and in the SANBI's botanical garden in Nelspruit, concern for the over-exploitation of the plants culminated in the involvement of the MSBP. In April 2001, the South African MSBP team collected approximately 3000

seeds, by sampling small amounts from all the female plants bearing seed at the time. The collection is currently being stored long-term at the MSB. While collecting the seed, all relevant demographic data was collected about the population, ecology and site. Apart from serving as a back-up collection in case of the worst, the collection will also be used to develop a propagation protocol. During this process any problems with dormancy or seed behaviour will be revealed at the MSB. If necessary, over time the seed collection could even be bulked up by cultivating the species and collecting more seeds from the cultivated plants. Seed viability can be determined from the seed harvested in nature and from cultivated plants, giving insight into conservation problems that might arise in the wild population.

All the data accumulated will be compiled in a species dossier and distributed to the MPB and all relevant botanical gardens. These data will enable the MPB to make informed decisions and develop tailored conservation strategies for the species. In addition, the germplasm is available for conservation activities (e.g. re-introduction, supplementation etc.) as and when these are appropriate.

The conservation status of the newly described *Dioscorea* sp. is being assessed according to the latest IUCN criteria. This taxon must obtain priority conservation and legal status to ensure the survival of this unique species.

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First PhD awarded as part of the MSBP in Madagascar

Guy Rakotondranony has successfully defended his PhD at the University of Antananarivo.

Ravenea rivularis is an endemic palm, the seeds of which were exported from Madagascar in large quantities for the horticultural industry. These export activities have put pressure on the few remaining natural stands of *R. rivularis*; it is now confined to a limited number of gallery forests in central Madagascar. In addition, the burgeoning informal sapphire mining industry has more or less wiped out the species in the Ilalakala region, where the trees have been mainly used for building shelter for the workers. The species has recently been CITES listed.

Guy studied the ecological and economic factors affecting *R. rivularis* seed production and regeneration, as part of the MSBP research programme in Madagascar. He found that the seeds are desiccation intolerant, dying when

dried below 22% water content, but germinating easily at 20-30°C within a week when fresh.

The results of his investigations into the species' population dynamics, the organisation of the informal *R. rivularis* market, and the biology of its seeds are presented in his thesis, successfully defended on the 24th November 2004. Guy has also co-authored a publication, on the response of *R. rivularis* to desiccation, which has been accepted in the *Proceedings of the Third International Conference on the Comparative Biology of Monocotyledons*.

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Guy Rakotondranony inspecting palm seeds.

A selection of international programme activities

USA

The **Bureau of Land Management** (BLM) has continued to work with the Center for Plant Conservation and Student Conservation Association to make seed collections from the Western states. 615 BLM seed samples that have been cleaned and processed by Kew are being repatriated to the Agricultural Research Service of USDA for long-term storage and propagation under an inter-agency agreement with BLM.

Michael Eason at the **Lady Bird Johnson Wildflower Center** (LBJWC) in Texas is implementing an agreed three-year work plan and has succeeded in gaining landowner permission for many new collecting sites on the Edwards Plateau. Michael travelled to the UK in September to participate in the Seed Conservation Techniques (SCT) course run by the MSBP.

Dr Rachel Cook, project co-ordinator at the **Chicago Botanic Garden** (CBG) also attended the SCT course in September, and is now working to establish a network of cooperating landowners and volunteers that will be called upon to assist in 2005.

North Carolina Botanic Garden and the **New England Wildflower Society** are collaborating on an Atlantic Flora proposal which will facilitate seed conservation action across many of the Eastern states between 2006 and 2008.

Seeds of Success has also been strengthened by a new partnership with the **Zoological Society of San Diego** (see page 6).

Left to right:
Antennaria parvifolia, *Castilleja haydenii*,
Nolina bigelovii, *Gaillardia parryi*



Kenya

In September 2004 the Kenyan Minister of the Environment and Natural Resources, the Hon. Stephen Kalonzo Musyoka, signed a renewed ABSA between the Government of Kenya and the Royal Botanic Gardens, Kew. This allowed the project partners to commence activities under phase 2 of the Kenyan 'Seeds for Life' Project.

An external evaluation of the first three year phase of the Project stated that it has been a success based on achievements against targets, and recommended continuation into phase 2. The five Kenyans partners will work together for another six years. They have identified three key project outputs to be achieved:

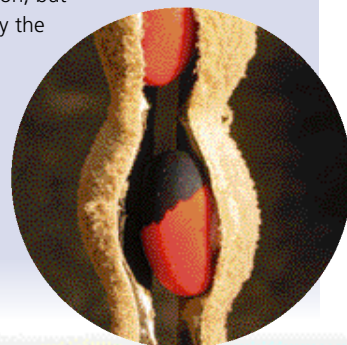
- Capacity of communities and their partners to conserve and use plant genetic resources improved
- *In situ* and *ex situ* conservation of priority plant diversity in drylands enhanced
- Uptake of information and adoption of appropriate technologies for plant genetic resources conservation enhanced.

Work with communities forms an important part of phase two. This will include training communities on aspects of seed collection, handling and storage and support in the establishment of community

Madagascar

The Madagascar seed collecting team had a record year in 2004. Information from herbaria in Madagascar, Missouri, Kew, and Paris has been used to pinpoint the localities and fruiting times of many of Madagascar's most threatened species. The team used this information to make 283 seed collections, compared with 213 collections made last year. This total includes a number of endangered species such as *Aloe suzannae*, *Kalanchoe tetraphylla*, and *Erythrina madagascariensis* (pictured). The improvement in quality and quantity of seed collections made is not just down to better information, but is also due to the very hard work put in by the team and its leaders, Mamy Andriamahay (Silo National des Graines Forestières) and Solofo Rakotoarisoa (RBG Kew). Congratulations are also due to Guy Rakotondranony, Director of SNGF, who was awarded a doctorate in November (see page 7).

Erythrina madagascariensis seed pod



seed centres, nurseries and demonstration plantings. Dr Kate Gold from the MSBP visited Kenya in February to work with partners to plan this work. In addition Dr Fiona Hay visited in January to work with Patrick Muthoka on his PhD.

Great achievements have been made in the data-basing of Kenyan specimens and the production of collection guides. About 12,000 specimens have been data-based. Mr Simon Kangethe and Mr Paul Kisika, both from the East African Herbarium have spent time at the Kew Herbarium and collection guides have been completed for the Leguminosae and the Asteraceae. Work on the Euphorbiaceae will be completed in the next few months by their colleague Ms Halima Saado.

Right: *Acacia mellifera*

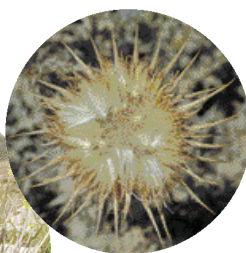


South Africa

Carly Cowell, Co-ordinator for the Western Cape Area in South Africa, under went four weeks of training at the MSB at Wakehurst Place in August 2004. Her training was mainly with the curation team under the direction of James Wood. She received training in the various techniques for seed cleaning and storage particular to the South African collections. Lectures on the drying of seeds for optimal seed longevity were attended. Another training module was on assessing potential collections and field collecting techniques both in the class and in the field. Here techniques were developed to suit the kind of collecting conditions in South Africa and the species targeted. The main aim of this training programme was to sufficiently equip Carly to train up the South African team and further develop their ability to make quality collections.



Carly Cowell looking for target species in a sea of grasses



Left to right:
Ephedra pachyclada
Iris cedretii
Onopordum macrocephalum seed head

Lebanon

Simon Khairallah of the Lebanese Agricultural Research Institute (LARI) has been out in the field most of the year, often with his colleague Joëlle Breidi, collecting seeds for the MSBP. The relatively large Lebanese flora of around 2,600 species has again allowed Simon to collect a steady stream of new species throughout 2004. Collecting efforts increasingly focus on the higher altitudes: the 2,000 – 2,600 m altitude ranges of Mount Lebanon, as well as its western slopes. At the end of the season in December we could look back on a grand total of 180 collections for 2004.

The addition of a seed blower to the developing seed bank's equipment at LARI has enabled Simon and Joëlle to pre-clean nearly all collections to a high standard, following Simon's earlier visit to the MSB in March of this year during which he worked with this machine. While the Lebanese half of the collections is presently held in trust at the MSB, the moment is nearing that LARI will be capable of maintaining the collections under equally good conditions – and hence that the Lebanese half can be repatriated.

In another development, a target list of around 275 species was drawn up under the Enhancement Grant support for the MSBP. Data will be gathered on the distribution of these species in Lebanon in order to target them for future collecting. A full conservation assessment will be made for a selection of the listed species. The list contains many endemic, threatened and economically important native species. Targeted collecting has become ever more necessary in view of the increasing urbanisation and expansion of agriculture that leaves less and less undisturbed, natural habitat outside protected areas.

Jordan

As in previous years, collecting has concentrated on the roughly 30% of the land surface of the country that is *not* steppe or desert. By the end of 2004 around 100 collections had been made in the greener part of the country, from the Syrian border in the north to the Saudi Arabian border in the south.

The MSBP's lead counterpart at the National Center for Agricultural Research and Technology Transfer (NCARTT) visited the MSB at Wakehurst Place in September to discuss the ongoing collecting work, equipment that will be supplied and plans for a research collaboration that may lead to a PhD degree. In addition our Jordanian colleagues have published a booklet on Jordanian wild species, both in Arabic and English.

Lastly, supported by the MSBP's Enhancement Grant around 200 species have been selected for targeting during future collecting trips. These include many rare and threatened species. Kew's Herbarium has limited holdings of Near Eastern species and our colleagues will visit several herbaria in Jordan to try to collect pertinent distribution and other data on them. These data will then be added to the developing database. A selection of the most important ones will be researched for a full conservation assessment early in 2005.

San Diego Native Seed Gene Bank joins MSBP

In September 2004, the San Diego native seed gene bank, recently developed by the Zoological Society of San Diego (ZSSD) California, signed a partnership agreement with RBG Kew to conserve seeds from the flora of San Diego County. San Diego Zoo, famous for developing the Frozen Zoo® for animal tissues, is now expanding the range of botanical services that it can provide in the region. The seed banking of native plants from the region complements existing programmes of the Conservation and Research for Endangered Species (CRES) Department, and will provide material and

expertise for conservation, restoration and management efforts. See http://cres.sandiegozoo.org/projects/hc_seed_bank.html.

San Diego County is home to more species of endemic plants than any other county in the continental United States. Among San Diego County's 1550 native plant species, there are nearly 1300 species that are not listed by federal and state governmental agencies and not currently being studied by other conservation groups. From this total, a list of about 450 key target species will be developed to guide the collecting efforts. Seed conservation and botanical research from the region complements ZSSD's ongoing studies on the ecology of small vertebrates from the coastal sage scrub habitats around its wild animal park.

The partnership with RBG Kew mirrors existing collaborations in the USA, co-ordinated under the Seeds of Success Program, (www.nps.gov/plants/sos/). ZSSD staff will co-ordinate botanical volunteers in the targeting and collection of native plant species over the five years of the project. Seeds will be processed, studied and stored at the innovative straw-bale seed bank and nearby Beckman Center for Conservation Research.

The ZSSD project team is led by Jonathan Dunn, formerly Project Manager and restoration ecologist with the Soil Ecology and Restoration Group (SERG), San Diego State University. Laurie Lippitt will co-ordinate collecting, processing and conservation of the seed collections. Stacey Spackman (research assistant), volunteers and students complete the project team.

Kew has already provided seed conservation techniques training to Jonathan and Laurie, who received sponsorship from Delta airlines to travel to Wakehurst Place in January 2005. RBG Kew and ZSSD are working together on a fund-raising strategy and discussing further development of the ZSSD seed conservation facilities.



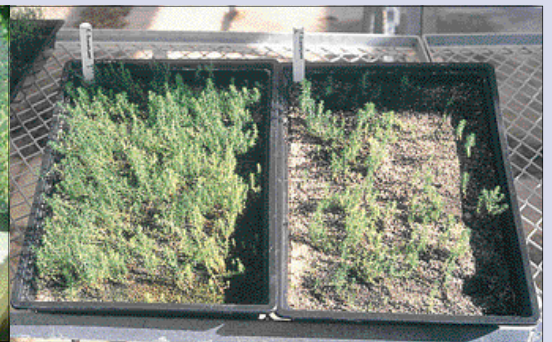
ZSSD project manager Jonathan Dunn checks the condition of *Yucca whipplei* seeds.

Predicting species response to smoke treatments

Dr Neville Brown from SANBI Kirstenbosch, South Africa, has screened large numbers of fynbos species for a germination response to smoke. In collaboration with Dr Matt Daws from the MSBP this dataset of c. 300 species has recently been analysed to test whether it is possible to predict whether a species will respond to smoke, based on attributes such as seed mass and growth form (see South African Journal of Botany 2003, **69**: 514-525). This study found that c. 50% of all species tested responded to smoke and that a smoke response was found in all growth forms, and for large and small-seeded species. However, geophytes, species with aerial seed banks and those that can re-sprout after fire were statistically less likely to respond to smoke. This work also indicates that the analysis of large comparative data sets has the potential to simplify germination testing at the MSB by enabling informed decisions to be made with respect to the germination conditions used in routine testing.



The experimental procedure used to subject seed trays to smoke.



Seedling emergence of an *Erica* sp. illustrating, on the left, the beneficial effects of the smoke treatment.

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Seeds for Queensland – Seeds for Life!

Native seed conservation, research, and use are set to surge ahead in Queensland in the next few years following the launch of its Seeds for Life project; Australia's sixth state partnership in the MSBP's growing international network.

The Seeds for Life project received the state government's official involvement in July, when Premier Peter Beattie signed an ABSA for the government and on behalf of the consortium of the six research, NGO and government bodies implementing the project. This "QSeed" consortium comprises the Queensland Environmental Protection Agency, the Australian Centre for Mining Environmental Research (ACMER), the University of Queensland, Griffith University, Brisbane Botanic Gardens, and Greening Australia (Qld) and is poised to develop into a "one stop shop" for all matters related to the conservation and use of seed from native Queensland plants for the State.

The Seeds for Life project was launched at a ceremony in Queensland in

December by Roger

Smith, Head of the Seed Conservation Department, Wakehurst Place and the Hon Andrew Fraser MP, Member for Mt Coot-tha, when Roger Smith happily accepted the first duplicate seed collection from GA representative, Mr Geoff Borschmann.

To date, only a limited number of seed collections from native species have been actively conserved in long-term scientific collections. Even fewer have been adequately studied for germination and/or storage characteristics. The project will ensure the collection and safe storage of seed from some 1000 species of Queensland plants, many of which will be used to improve the various revegetation and species recovery plans around the State.

The Australian Centre for Mining Environmental Research, working closely with the University of Queensland, has sought support from a variety of mining companies including BHP Cannington, Xstrata's Ernest Henry mine, Zinifex Century mine, BHP Billiton-Mitsubishi Alliance, and Rio Tinto who have all expressed particular interest in contributing to the project as well as collectively topping-up the MSBP financial input to the tune of some AU\$200,000.

The project partners will be delivering training to volunteer collection partner networks throughout Queensland in 2005. Greening Australia (Qld)



Above: **The Seeds for Life team**

Left: **Macadamia embryo**

Far left: **Citrus garrawayi (Mount White lime) fruit**



and ACMER will conduct the advanced seed collection workshops for experienced industry and community seed collectors wishing to become involved in the Seeds for Life project. The skills learned over the two days of the workshop will cover planning, sampling strategies (seed

maturity, genetic sampling), collection, curation activities (cleaning, cut tests, seed counts), post-harvest seed handling, drying and storage. These volunteers will be encouraged to collect seed for the MSBP in exchange for ongoing training and support in the form of follow-up one-day workshops, feedback on collections with seed quality data and an on-line help service for collection partners in finding solutions to seed-related challenges.

"Improving germination, or seeding efficiency of our native plant species is one of the biggest challenges in landscape rehabilitation. Many species have developed dormancy as a protective measure from the arid environment they grow in and will not germinate unless conditions are just right" said Associate Professor Stephen Adkins, project leader of the University of Queensland team.

"A better understanding of seed biology will assist us to develop improved revegetation technologies for mine site, floriculture, forest and other ecological restoration projects. That means trying to identify the optimum time for collecting high quality seed, the best post-harvest handling and storage practices, germination protocols and dormancy-breaking techniques."

Dr Ashmore's team from Griffith University will focus on the conservation of native and tropical fruit seeds, which are typically derived from fleshy fruits and are both short-lived and difficult to store.

"Our main focus will be on important species currently threatened in the wild, including *Macadamia* species and native relatives of important crops such as citrus and mangosteen. We will consider the development of alternative conservation techniques, including cryopreservation and tissue culture. With cryopreservation, seeds are frozen in liquid nitrogen and can in theory be stored indefinitely" Dr Ashmore said.

For more information on the Queensland Seeds for Life project and the QSeed consortium, please contact:

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Tim Pearce at the MSB
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Geoff Borschmann shaking hands with Roger Smith after giving him the first collection of seed from Queensland

NEWS

International Conservation Symposium

Two MSBP partners are hosting an International Symposium entitled "Advances in plant conservation biology: implications for flora management and restoration" to be held in Perth, Western Australia, 25-27 October 2005 (dates to be confirmed). The symposium will be jointly sponsored by the Department of Conservation and Land Management and the Botanic Gardens and Parks Authority (Kings Park), WA.

The proceedings will be published as a special edition of the Australian Journal of Botany.

Any interest in attending this symposium should be addressed to:

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or **Professor Kingsley Dixon**.

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ENSCONET

Monique Henry joined the Seed Conservation Department at Wakehurst Place this March. She will be co-ordinating the European Native Seed Conservation Network (ENSCONET), an initiative funded for five years by the European Union under its Sixth Framework Programme.

ENSCONET is composed of a group of 19 institutes from 12 member states covering five out of the six European biogeographical regions. The network is organised in four activities: seed collection, curation, data management, and dissemination.

Through regular exchange visits, meetings and joint activities, the members seek to further integrate their activities at a bioregional scale and expect to share and spread good practice for collecting and curation, develop common databases, and achieve a better public understanding of this aspect of plant science and conservation.

The first management meeting was held at Wakehurst Place in March; the first annual meeting will be held in Crete in June and will be followed by a field trip.

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Seed Conservation Techniques 2004 course

The second Seed Conservation Techniques course was held at the MSB recently. 12 participants from 5 MSBP partner countries spent an intensive 3 weeks at the MSB. Having expanded from two to three weeks, the course now includes a full day at the Herbarium at Kew and more time for practicals. Feedback from participants suggests that the course confirmed and supported current practice but also highlighted areas for improvement or change.



Above: **SCT participants in the field: Standing Rachel Cook, Dominic Gondwe, Tiziana Ulian (Kew), Patricia Del Fuego, Phil Cameron, Chris O'Donnell, Tim Pearce (Kew), Frank Kambadya, Daniel Duval, Richard Johnstone.**

Left: **Daniel Duval, Rachel Cook, Chris O'Donnell, Dominic Gondwe, Michael Eason, Frank Kambadya, Patricia Del Fuego, Richard Johnstone, Midori Jones, Koogale Mathibidi, Kate Gold (Kew).**

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Helping to set international standard methods for seed testing

Since 1924 the International Seed Testing Association (ISTA), based in Switzerland, has aimed to provide internationally standardised definitions and methods to be used in evaluating seed for transactions in international trade as well as monitoring the performance of its accredited member laboratories through an ISTA Quality Assurance Programme.

However, there is increasing recognition of the value of extending quality assurance to the handling of seeds of species of more local value. Over the last few years staff of the Seed Conservation Department along with MSBP collaborators have been at the forefront of these efforts. Together with Dr Pedro Léon-Lobos (Chile), Mr. Heriel Msanga (Tanzania), Prof. Patricia Berjak (South Africa) and Craig McGill (New Zealand) SCD staff participate in four ISTA committees.

Dr Matt Daws (Moisture Committee) is contributing to the development of international standards for the determination of differential moisture content in seed tissues and the rapid determination of seed oil content in diverse seeds.

Dr Chris Wood (Tetrazolium Committee) is pioneering a rapid diagnostic of seed viability using vacuum infiltration of tetrazolium chloride into seeds.

Dr Moctar Sacandé (Forest Tree and Shrub Seed (FTSS) Committee and Seed Storage Committee) is promoting the introduction of guidelines for dryland tree seed germination and storage. Finally, Dr Hugh Pritchard, who helps co-ordinate the work plans of two committees (Seed Storage and FTSS), continues to promote improved methods for the conservation of orthodox and recalcitrant seeds; this includes the use of cryopreservation. In addition, Dr Robin Probert has accepted an invitation to join the Scientific Programme Advisory Committee (SPAC) for the 2007 ISTA Seed Symposium to take place in Brazil. These activities bolster support for Target 8 of the Global Strategy for Plant Conservation.

Our scientific innovations are disseminated, in Seed Science and Technology, the house journal of ISTA and for whom Moctar serves as an Editor, and the triennial ISTA Seed Congresses, the last three of which (Pretoria, 1998; Angers, 2001; Budapest, 2004) we have supported.

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Millennium Seed Bank Collection Figures to 3 February 2005

	total in MSB	since Phase III started
Collections	22,009	10,534 (1,570 UK)
Species	10,887	6,349 (587 UK)



WE WANT TO HEAR FROM YOU!

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